Lucent Technologies
Bell Labs Innovations

DACS II AX 4/11
Release 1.0

User's Guide

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The complete Federal Communications Commission Statements Part 68 and 15 and the Canadian Interference Information are found in Chapter 1 of this guide.

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Identification No.: 365-359-201   Issue No.: 1   Date: March 1999

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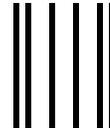
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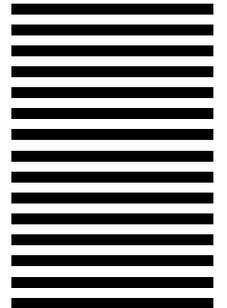
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About This Guide

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Overview

Purpose of This Guide

This guide provides procedures and reference information on the installation and operation of the DACS II Access Cross-Connect (AX) system.

Intended Audience

This guide is intended for users of the DACS II AX.

Recommended Prerequisites

The DACS II AX administrator should have a working knowledge of the following:

- basic data communications
- the administration of Local Area Networks (LANs)
- operational characteristics of the network interfaces to the AX
- SNMP and IP concepts
- application modules
- digital cross-connect systems

Document Organization

Chapter Contents   This guide is divided into the following chapters:

- **About This Guide** provides information on how this guide is organized, and how to order documents.

- **Chapter 1: Introduction** provides information on the DACS II AX and its features.

- **Chapter 2: Start Up** provides information on setting up the hardware, logging into the AX and using the DACS II AX software.

- **Chapter 3: System Configuration** provides information on slot configuration, system parameters, and user administration.

- **Chapter 4: Connections Maps** provides information on setting up Connections Maps and configuring connections.

- **Chapter 5: Node Summary Menu** introduces the Node Summary Menu which is used to access the installed application modules on the DACS II AX equipment chassis.

- **Chapter 6: System Events** provides information on monitoring events, displaying the event log, and saving event data.

- **Chapter 7: Utilities** provides information on the diagnostic utilities that you can access on the DACS II AX, including ping, MIB tables, IP routing, and ARP tables.

- **Chapter 8: Interfaces and Cables** provides information on connectors and pin assignments.

- **Chapter 9: Quad DS-1 Module** provides information on configuration and diagnostics of a Quad DS-1 module.

- **Chapter 10: Quad High Speed Module** provides information on configuration and diagnostics of a Quad High Speed module.

- **Chapter 11: DS-3 Module** provides information on configuration and diagnostics of a DS-3 module.

- **Chapter 12: Quad OCU Module** provides information on configuration and diagnostics of a Quad OCU module.

- **Chapter 13: Quad DS-1 with xDSL Module** provides information on configuration and diagnostics of a Quad DS-1 with xDSL module.

- **Chapter 14: Test Access Module (TAM)** provides information on test access.

Document Organization (Continued)

Chapter Contents (Continued)

- **Appendix A: Software Downloading** provides information on downloading software using TFTP or Xmodem.

- **Appendix B: Telnet Application** provides information on using telnet to access a remote DACS II AX system.

Related Background

Networking Primers

For background information on protocols and networking concepts, you may want to visit the Library of Congress Internet Resource Page at:

http://lbweb.loc.gov/global/internet/training.html

In addition, Lucent Technologies' Learning and Performance Center offers several courses on data networking. For course descriptions and further information:

■ From the U.S., call 1-800-228-0710

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Documentation Conventions

Typeface　　　　The following conventions are used throughout this guide.

- Field names appear in bold type; for example:

    Site Name

- User entries appear in capital letters in bold type; for example:

    Type **B** to scroll to the previous menu choice.

> **NOTE:**
> When typing single-letter commands, such as **B**, the AX system is not case-sensitive. You can type uppercase or lowercase letters for commands.

Terms　　　　Throughout this guide, DS-1 and DS-3 are used to refer to the DS-1 and DS-3 module types. The actual cards and screens on your DACS II AX system may say T1, T-1, T3, or T-3. The DACS II AX screens are being updated so that they match the screens shown in this guide.

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Overview

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Background

Introduction   Lucent Technologies' DACS II Access Cross-Connect (AX) system is designed specifically for the ever present changes that take place in the LAN and WAN domain. The AX allows both circuit-switched and packet-oriented traffic to share the same platform for access to the wide area trunks. Circuit switching, packet switching, data compression and routing functions are combined under one platform. The AX optimizes today's LANs and central office digital services while positioning you for the future with new devices, new interfaces, and new technologies.

Available
Configurations   The AX is available in two configurations: DACS II AX 4 and DACS II AX 11.

■   The DACS II AX 4 is a tabletop chassis, supporting 4 application modules (32 DS-1/High Speed ports), a power module, and redundant system manager modules. It is designed as a cost-effective solution for small or remote applications.

■   The DACS II AX 11 is the larger of the two configurations, supporting 11 application modules (88 DS-1/High Speed ports), redundant power modules and redundant system manager modules. It is designed for large, more sophisticated central site applications.

Features

Overview

In addition to transmitting data efficiently, economically and reliably, the AX also incorporates special features. The special features include Twin Bus Architecture, Mid-Plane Flexibility, Built-In Diagnostics, Redundant System Managers and Power Modules, Console Control, SNMP, Telnet Management, User Security, and Copy Configuration. Each of these features is described below.

Twin Switch Bus Architecture (TDM and ATM)

The AX has two integrated switching buses. The TDM switch bus accommodates circuit-switched applications such as voice and video. It is ideal for today's leased-line or switched network connection-oriented services. The TDM switch bus accommodates up to 256 Mbps of bandwidth.

> **NOTE:**
> Future development of the ATM switch bus will address the packet-oriented or "bursty" data applications. With 1 Gbps of bandwidth, it is perfect for high-speed connectionless network services.

Mid-Plane Flexibility

The AX employs a mid-plane design. Each AX chassis has either 4 or 11 slots which can be used for the various application modules. There are associated slots in the rear of the AX chassis. These slots are used for the electrical interface modules (one for each front application module). In this manner, each application module is a two-card set, with one card in the front (containing the switch-bus interface circuitry and control-processor functions) and one card in the rear (containing the electrical interface functions). These rear interface modules provide the connectors for the various interfaces. Typically, the interface modules include DTE and network connectors.

The modular construction provides flexibility for change. New interfaces can be added to existing AX units by the addition of a front and rear application module combination. All modules can be hot-inserted and removed without disrupting the interface module and associated cabling. Application modules may have more than one rear interface module so that different connector schemes can be supported.

A pair of half-height card slots are used for the AX System Manager modules. These modules are fully redundant and provide two serial interfaces for console control and a LAN port for telnet and SNMP management of the AX equipment chassis.

Features (Continued)

Built-In Diagnostics

Diagnostic testing can be performed without the need for special test equipment. All application modules support built-in BERT and loopback tests. Testing is initiated from the console or through a telnet session.

Redundant System Managers and Power Supplies

The optional standby System Manager helps ensures that the AX stays online. The standby System Manager is automatically switched in should the "online" unit fail.

In addition, an optional redundant load-sharing Power Module is available for the DACS II AX 11. Each of the independent power supplies is capable of assuming total system load.

Console Control

The system console provides complete control of the network from the central site. System configuration and testing can be accomplished by pushing a few keys to select functions and options. Password-protection prevents unauthorized access to the console. Most ASCII-compatible terminals with cursor control can be used. The console port (TERM) supports terminals that operate at a rate of 1200 to 19200 bps. The recommended setting is 9600 bps.

SNMP and Telnet Management

Comprehensive network management capabilities include performance, error statistics, and alarm gathering. The network administrator can monitor the network from an SNMP management station, or from a PC or workstation using a telnet or dialup connection anywhere in the network.

User Security

There are four levels of security: View only, test, provisioning, and administration. Passwords are encrypted for security purposes. Refer to Chapter 3 for additional information on user security.

Audit Trail Identifier

Tracks user actions and events. An audit trail identifier is assigned to each user. Refer to Chapter 3 for additional information on the Audit Trail Identifier.

Components

Overview   The DACS II AX includes an equipment chassis, system managers, application
                      modules, and load-sharing power modules.

**Equipment   There are two types of equipment chassis:
Chassis**
                          ■   DACS II AX 4

                          ■   DACS II AX 11

                      All application modules are interchangeable between the DACS II AX 4 and
                      DACS II AX 11.

DACS II AX 4   This four-slot version of the AX chassis is available in both AC and DC models.

                      The DACS II AX 4 accommodates up to four application modules and four
                      interface modules. The Quad DS-1 modules enable the DACS II AX 4 to be used
                      as a 16-port Digital Cross-Connect System (DACS). Various combinations of data
                      and DS-1 trunk cards can suit the requirements of many network applications.

                      The DACS II AX 4 chassis has two half-height slots for System Manager Cards
                      (SMC). One SMC is required, while the second slot provides capacity for an
                      optional redundant System Manager.

                      A single power supply is included as part of the base chassis.

                      One System Manager Card and one System Manager Interface module are
                      required for system operation.

Components (Continued)

DACS II AX 11   This eleven-slot version of the AX chassis accommodates up to eleven application modules and eleven interface modules. In its simplest configuration, the DACS II AX 11 can be used as a 44-port DS-1 DACS, or several channel banks within one chassis.

The DACS II AX 11 chassis has two half-height slots for System Manager Cards (SMC). One SMC is required, while the second slot provides capacity for an optional redundant System Manager.

The DACS II AX 11 chassis has two slots for AC or DC power supplies. One power supply is required, while the second power supply is optional. The redundancy can be implemented with two AC supplies or two DC supplies.

One power supply, one System Manager Card and one System Manager Interface module are required for system operation.

AX System Manager   All of the application modules in the AX chassis are under the control of the AX System Managers. The System Manager module, and optional redundant System Manager, occupy a pair of half-height card slots. The application modules are controlled via a pair of communication buses on the AX midplane. These dual buses increase the reliability of system management by giving the managers two paths for controlling the modules in the AX chassis.

The System Manager module includes a microprocessor, non-volatile FLASH memory for configuration storage, a battery-clock for maintaining the time and date, an ASCII terminal port, a modem port, and an Ethernet LAN port for SNMP network management. The LAN port is presented as an AUI and a 10baseT interface. The redundant System Manager ensures that there is a hot standby always present for configuration and control of the system.

Components (Continued)

AX Application Modules

The AX application modules can access the TDM bus to facilitate transport of data or voice across the system's midplane. The AX can be an inexpensive channel bank, a DS-3 access multiplexer, or a multi-trunk DS-1 access node.

All applications modules have LED indicators that show successful tests or indicate a loopback condition or an error. Some also have LEDs that indicate alarm conditions.

The DACS II AX supports the following application modules:

- **Quad DS-1 Module** contains 4 DS-1 links, a microprocessor, and FLASH memory for program storage.

- **Quad High Speed Data Module** contains 4 high-speed links, a microprocessor, and FLASH memory for program storage. The high-speed links support synchronous data rates from 48 Kbps to 1.920 Mbps.

- **DS-3 Module** contains 28 DS-1 links, a microprocessor, and FLASH memory for program storage.

- **OCU-DP Module** contains 4 data ports, a microprocessor, and FLASH memory for program storage. The OCU-DP Module supports data rates of 56/64Kbps.

- **Quad DS-1 with xDSL Module** contains 4 DS-1 links, a microprocessor, and FLASH memory for program storage. The xDSL mini module fits into the rear of the DS-1 module to extend the length of the DS-1 line.

- **Test Access Module (TAM)** has four independent test ports that provide access to circuits that pass through the system at the N by 56/64 Kbps rates. Each port operates independently of the other ports on the module. The TAM provides operators with the ability to send DDS Latching Loopback codes and execute test patterns at 56 and 64 Kbps. The module can also be used for testing full and fractional DS-1 or E1 circuits at the payload level (less framing and overhead).

⟹ **NOTE:**

If an application module is not present in the equipment chassis, you can not access the individual screens associated with it. The menus for each application module are derived from the actual application module.

Components (Continued)

Optional Redundant Power Supplies

The DACS II AX 11 is equipped with a single power supply and can be equipped with a redundant power supply. When equipped for redundancy, the DACS II AX 11 will have either two AC supplies or two DC supplies. The power supplies are load-sharing. Either supply is capable of assuming the full load should one of the supplies fail. Each power supply module (PSM) has its own independent AC or DC inlet.

Indicators

AX System Manager

The indicators on the AX System Manager are:

- **ONLINE** - indicates that the System Manager is "online".

- **STANDBY** - indicates that the System Manager is in a standby state, waiting to go "online" should the other manager fail.

- **ALARM** - indicates that the System Manager is malfunctioning.

- **LAN** - indicates that data is being forwarded to/from the LAN port.

- **NVM** - indicates reads/writes to the FLASH memory.

Manager Interface

The labels on the Manager Interface are:

- **AUI** - An Ethernet LAN port, labeled AUI, provides a DB-15 pin AUI connection.

- **10baseT** - An Ethernet LAN port, labeled 10baseT, provides an RJ-45 modular connection.

- **TERM** - A console port, labeled TERM, provides an RJ-11 telco port for a terminal connection.

- **Phone Line** - An RJ-11 port, labeled PHONE LINE, is provided for modem connections.

Quad DS-1 Module

There are four sets of LEDs, one set for each trunk, and an ERROR LED for the DS-1 module itself.

- **ALARM** - indicates an alarm condition has occurred on the trunk.

- **LOOP** - indicates that a loopback condition has occurred on the trunk.

- **TEST** - indicates that a test is being performed on the trunk.

- **ERROR** - indicates that an error condition exists for this application module.

$\Longrightarrow$ **NOTE:**
During idle time (when there are no Alarm, Loop or Test conditions), all LEDs will strobe every five seconds from the center of the card to the edge, if this option is selected from the Quad DS-1 Configuration menu.

Indicators (Continued)

Quad High Speed Data Module

There are four sets of LEDs, one set for each port, and an ERROR LED for the Quad High Speed Data module itself.

- ■ **DCD** - indicates that carrier has been detected at the port.

- ■ **LOOP** - indicates that a loopback condition has occurred on the port.

- ■ **TEST**- indicates that a test is being performed on the port.

- ■ **ERROR** - indicates that an error condition exists for this application module.

➡ **NOTE:**
   During idle time (when there are no DCD, Loop or Test conditions), all LEDs will strobe every five seconds from the center of the card to the edge, if this option is selected from the Quad High Speed Configuration menu.

Specifications

Table 1-1.   Specifications Table

STANDARDS	
FCC	Part 15, Sub-Part A, Part 68 Registration #2J3USA-75166-DE-N
UL	Listed per UL1459, Second Edition
CSA	C22.2 No. 0.7
AT&T	Tech Pubs 62411, 54016 and 54019A
DOC	1986 5434 A
BABT	Approval #0876 for manufacturing quality per EC Council Directive 91/263/EEC
USER INTERFACES	
Synchronous Data	Input Data Rates: N x 56/64 Kbps to 1.920 Mbps Number of Ports:16 maximum (DACS II AX 4), 44 maximum (DACS II AX 11) Interfaces: V.35, RS530/422, RS232
DS-1 Interface	Framing: Full ESF/D4 compatibility, AT&T 62411, 54016, ANSI T1.403 Termination: 8-position RJ48C Number of Ports: 16 maximum (DACS II AX 4), 44 maximum (DACS II AX 11)
SWITCHING CAPACITY (non-blocking)	
Circuit-switched	256 Mbps
Packet (ATM)[*]	1 Gbps
MECHANICAL	
Dimensions	DACS II AX 4: 12" W x 5.25" H x 14" D [3 rack units] DACS II AX 11: 17" W x 10.5" H x 14" D [6 rack units]
Weight	DACS II AX 4: 14 lbs. max. DACS II AX 11: 25 lbs. max.
Mounting	DACS II AX 4: tabletop or rack DACS II AX 11: 19" or 23" rack
Power	90-230 VAC, 47-63 Hz 24-72 VDC
Environment	0-50 degrees C., 90% Humidity (non-condensing)

* ATM bus will be available in a future release of DACS II AX 4/11.

Power Input Requirements

DACS II AX 4

Table 1-2.   Power Input Requirements for DACS II AX 4

DC Inputs	-24VDC (range 21.6 to 36VDC), 100W 26.4 VDC. (Approvals based on 24+/-10%; 21.6 to 26.4 VDC) -48VDC Power Input (range 43-56VDC), 100W (Approvals based on 48+/-10%; 43.2 to 52.8 VDC) -48VDC Talk Battery (1.5A max) -48VDC Signalling Battery (1.5A max.) Maximum heat dissipation in unit from Talk and Signalling Battery is 48W. Total heat dissipation in DC unit is 148W maximum.
AC Input	110VAC or 220VAC, 47 to 63Hz (range 90 to 264VAC), 125W (Approvals will be based on rating 100 to 240VAC, +6%-10%)

DACS II AX 11

Table 1-3.   Power Input Requirements for DACS II AX 11

DC Inputs	-48VDC Power Input (range 38 to 60 VDC), 250W max. (Approvals based on 48+/-10%; 43.2-52.8VDC) Talk Battery (5A max.) -48VDC Signalling Battery (5A max.) Maximum heat dissipation in unit from Talk and Signalling Battery is 120W. Maximum total heat dissipation in unit is 370W.
AC Input	110VAC, 47 to 63 Hz (Range 90 to 132VAC), 250W max. (Approvals based on 100 to 240, +6%-10% 200W) 220VAC 47 to 63Hz (Range 180 to 264 VAC), 250W max.

FCC Information

This equipment complies with the requirements in Part 15 of FCC Rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and television reception, requiring the operator to take whatever steps are necessary to correct the interference. Lucent Technologies shielded cables should be used with this unit to ensure compliance with the Class A limits.

This equipment meets the technical criteria specified in the Part 68 rules, sub-part A through F, (for connection of terminal equipment to the telephone network) as well as the requirements specified in AT&T Technical Publications 62411, 54016 and 54019A (ESF).

This equipment meets the safety requirements of the Underwriters' Laboratories (UL) technical publications UL 1950.

FCC User Requirements

The following instructions are provided to ensure that you comply with the Federal Communications Commission (FCC) Rules, Part 68:

1. All direct connections to the T1 digital lines or DSX-1 must be made through standard plugs and jacks furnished by the telephone company. No connections can be made to party lines or coin lines. Before connecting your unit, you must do the following:

    a. Tell your local telephone company that you have an FCC registered device that you wish to connect to the company's lines. Provide the fourteen-digit FCC registration number listed on the label. The telephone company will also need to know the facility interface code (04DU9-B) and service code (6.0N) in order to connect the necessary service.

    b. Inform the telephone company that you wish to use the RJ48C jack arrangement.

    c. After the telephone company has installed the RJ48C jack, you may connect the CSU with the appropriate cable.

2. If the unit appears to be malfunctioning, it should be disconnected from the telephone line until the source of the problem is confirmed. If the unit needs repair, it should not be reconnected until after the repair is completed.

3. The CSU has been designed to electronically isolate the DDS or T1 network. If the telephone company determines that it is exceeding tolerance parameters, they are permitted to temporarily disconnect service. When possible, the customer will be given advance notice.

4. Under FCC Rules, no customer is authorized to repair the equipment, regardless of its warranty status.

5. If the telephone company alters the equipment in a manner that will affect its usage, advance notice must be given to prevent service interruption.

6. Normally, CSU equipment will be used to interface either FCC registered or grandfathered digital terminal equipment to the digital service channel. If the equipment to be connected is not of this type, institutional procedures provide that an affidavit be supplied to the telephone company. This affidavit must state that the system will be operated only by trained individuals and that the signal power at the telephone company interface will not exceed the limits set forth in Part 68 of the FCC's Rules and Regulations.

Canadian Department of Communications Statement

NOTICE: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

⚠ **WARNING:**
Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

Start Up

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Hardware Installation

Site Preparation

Before installing the DACS II AX, make sure that your site has the proper communication networks and lines installed. For bridging/routing/network management applications, the site must have at least one Ethernet network in place. Depending upon the application being supported, you may also need dial-in telephone lines, leased lines, or network access lines (frame relay and/or PPP networks). Contact your service provider to ensure that the proper transmission equipment and lines are installed.

⟹ **NOTE:**
   Lead time for telephone line installation is normally 3 to 5 business days. Lead time for leased line, or network access line installation is normally 30 to 90 days.

Unpacking the DACS II AX

Equipment is normally shipped in cardboard cartons with foam inserts to protect the units from shock and vibration during shipment. Upon arrival of the equipment, inspect the condition of the boxes and compare all items to the packing list. Notify Lucent Technologies and the carrier immediately if there are any damages or shortages.

Store the cartons and packing material in case the unit has to be shipped at a later date.

Parts List

You should receive a carton for each of the items ordered for the DACS II AX. Each item is boxed separately. The shipment should contain the DACS II AX 4 or DACS II AX 11 equipment chassis and one or more of *each* of the following:

- System Manager Module (Front I/O)

- System Manager Interface Module (Rear I/O)

- Application Card (Front I/O module)

- Interface Module (Rear I/O)

- Power Module

⟹ **NOTE:**
   The application cards are hot-swappable. For information on interfaces and cabling, refer to Chapter 8.

Hardware Installation (Continued)

Console

A system administrator uses the console to configure the interface protocol and parameters for each device port, to monitor the network and to perform diagnostics. Access to the console is password-protected.

Connection Methods

A PC, workstation, or dedicated terminal can act as the AX console. You can connect a console to the AX in any of these three ways:

- telnet access from a PC or workstation via an Ethernet LAN

- dial call to the AX's modem port from any PC or workstation on the network

- dedicated terminal connected to the AX's console port

Connecting the Console

To connect the AX console, locate the AX System Manager Interface on the rear of the chassis, then refer to the following table.

If	Then
an asynchronous terminal will be directly connected to the AX	Locate the RJ-11 craft interface connector labeled TERM. Attach your terminal to this connector. Attach the power cord to the rear of the terminal and then into an AC power source.
a PC or workstation in the network will dial in to the AX	Locate the RJ-11 telco connector labeled PHONE LINE. Insert a phone line in this connector. The AX has a built-in modem.
a PC or workstation in the network will use an Ethernet cable to connect to the AX	Connect the AX to the LAN using the AUI or 10baseT Ethernet connector on the AX System Manager Interface. Users establish a telnet session to connect to the AX. The necessary wire or cable that attaches to the connectors should be installed at your site. For pin assignments and descriptions of these interfaces, refer to Chapter 8.

Hardware Installation (Continued)

Terminal Communications Parameters

Configure your terminal communications parameters as follows:

- Baud Rate: 1200, 2400, 4800, 9600 or 19200 bps (9600 recommended)

- Data Bits: 8

- Stop Bit: 1

- Parity: None

- Flow Control: None

⇒ **NOTE:**
Some terminal manufacturers might identify the data bit configuration as 7-N-1 (seven data bits plus a "not used" parity bit) while other manufacturers might identify the same configurations 8-N-1 (eight bits including a "not used" parity bit). Check the terminal's user manual.

Logging into the DACS II AX

Procedure

Once you have set up the connection to the DACS II AX, you can log in.

1. Press Enter on your terminal keyboard to activate automatic baud rate recognition (ABR).

2. Enter your login name and password. To use the default login name and password, press Enter for each entry.

3. If the AX System Manager cannot automatically detect your terminal type, the Terminal Selection Menu displays. Select your terminal type from the list.

```
login:
password:

WELCOME ...
Sat, Jan 28, 1999 16:22:32 pm
Software 1.00F, Hardware 0.0os: 2.1


Terminal types supported:

(1) ADDS Regent 25                      (11) Hazeltine 1500
(2) ADDS Viewpoint                      (12) IBM 3101
(3) Attis 4410/4425                     (13) ICL 6401
(4) Data General DASHER                 (14) LSI ADM 11/31
(5) Datamedia 1521                      (15) Paradyne 7811
(6) Datamedia EXCEL 30                  (16) Qume QVT-101/102/108
(7) Datamedia EXCEL 42                  (17) Teletype 5410/5425
(8) DEC VT-52                           (18) Televideo 900
(9) DEC VT-100/131/220                  (19) Wyse WY-50
(10) Freedom 100                        (20) Wyse WY-75


Enter your terminal type [1...20]...
```

Figure 2-1.   Terminal Selection Menu

4. When you have logged in and the AX has determined the terminal type, the AX Main Menu displays.

DACS II AX Main Menu

```
Lucent Technologies      DACS II AX 4 System Manager          Help = [?]


                             Lucent


                             Node Summary
                             Connection Maps Manager
                             System Configuration
                             Events
                             Utilities
                             About

```
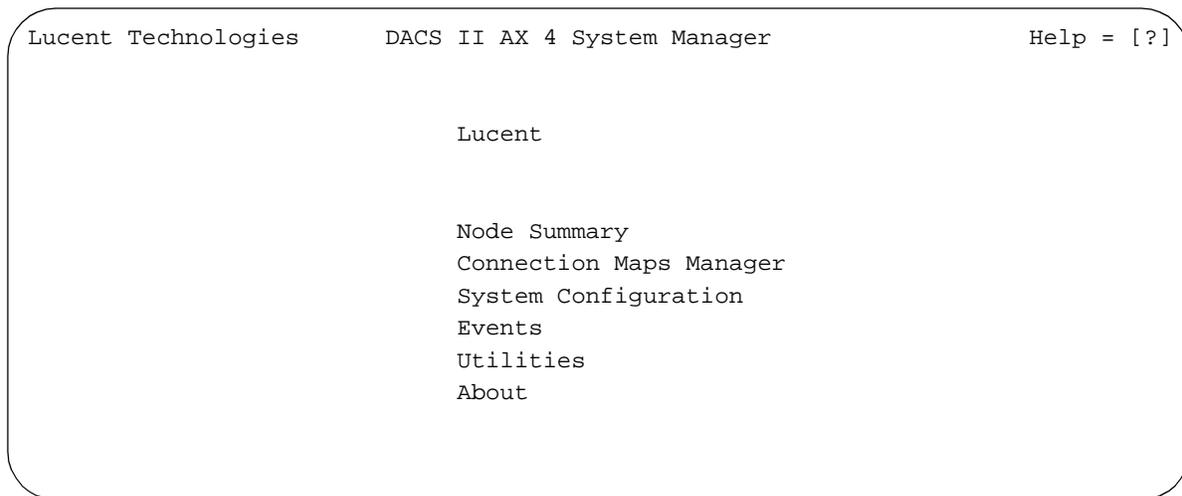
Figure 2-2.   DACS II AX Main Menu

Main Menu Options

There are six choices on the DACS II AX Main Menu:

Menu Option	Description
Node Summary	Provides status of each slot and access to the installed modules. Select a slot from Node Summary to configure, run diagnostics, or use utilities for the module in the selected slot. If a module is not in a slot, you can not access the screens associated with it.
Connection Maps Manager	Provides options for manipulating cross-connection maps.
System Configuration	Enables you to set system parameters and administer users.
Events	Allows you to monitor events, display the event log, and send events to a host PC or workstation running syslog.
Utilities	Provides system diagnostics and utilities.
About	Provides options for system and user identification.

Moving the Cursor and Entering Data

Screen Types   The DACS II AX user interface has two types of screens:

■   **Menus** - where you can choose a menu item, return to a previous menu, or select a command listed at the bottom of the screen.

■   **Menus with fields** - where you enter information.

Menu Actions   Table 2-1 lists the keys you use to navigate through the AX menus.

Table 2-1. Menu Actions

Action	Key
Move to the next item in a menu	SPACEBAR or ↓
Move to a previous item in a menu	BACKSPACE or ↑
Select the current option	Enter
Return to the previous menu	**X** or Esc
Get list of the screen navigation commands	**?**
Select a command listed at the bottom of the screen	Type the letter indicated in brackets.

Moving the Cursor and Entering Data (Continued)

Menus with Fields   Two types of fields appear on AX menus:

- **Option fields**: These fields contain a list of the valid entries. In these fields, scroll through the options until the option you want appears on the screen, then move to the next field.

- **Text fields**: These fields require you to type in an entry, then move to the next field.

Table 2-2 lists the keys you use on menus that contain fields.

Table 2-2. Actions on Menus with Fields

Action	Description	Key
Cursor Movement	Move to the next field	SPACEBAR or ⬇
	Move to the previous field	BACKSPACE or ⬆
Option Fields	Scroll to the next option	Enter
	Scroll to the previous option	**B**
Text Fields	Enter text.	Press Enter. When line appears, type the new text, then press Enter again.
	Clear changes and revert to last saved entry.	Esc Esc
	Erase characters.	BACKSPACE or ⬅
Save Changes	Save changes on screen and exit to previous menu	**X** then type **Y** when prompted with "Update Configuration? Are you sure (Y/N)?
Exit without Saving	Exit to previous menu without saving changes	Esc , then type **Y** when prompted with "Abort edits? Are you sure (Y/N)?

Moving the Cursor and Entering Data
(Continued)

**Menus with Fields
(Continued)**

⇒ **NOTE:**
> To activate the values that you enter or select on the configuration screens,
> you must exit the screen. Diagnostic parameters are activated immediately,
> as soon as you change the value on the screen.

Help Menu   To list the screen navigation commands from any screen, type **?**.

```
**********************************************************************
*                        - HELP <?> -                              *
*                                                                  *
*  To select any menu or field on any screen, position the cursor  *
*  on the entry and press <RETURN>.                                *
*                                                                  *
*  CURSOR MOVEMENT                                                 *
*      Move forward                      = <SPACE> / <Down Arrow>  *
*      Move backward                     = <BACKSPACE> / <Up Arrow> *
*                                                                  *
*  FIELD CHANGE                                                    *
*      Options field: Scroll forward    = <RETURN>                *
*                     Scroll backward   = <B>                     *
*                                                                  *
*      Text field:    Update entry      = <RETURN>                *
*                     Recall last entry = <ESC>                   *
*                                                                  *
*  SCREEN EXIT                                                     *
*      Save any changes                  = <X>                     *
*      Abort all changes                 = <ESC>                   *
*                                                                  *
*                   - Press any key to exit -                      *
*                                                                  *
**********************************************************************
```

Figure 2-3.   AX Help Menu

Moving the Cursor and Entering Data
(Continued)

Summary

To:	Actions:
Select a menu option	Press SPACEBAR, ↓, BACKSPACE, or ↑ until cursor is located on desired option, then press Enter.
Select a command from a menu	Type the letter that appears in brackets.
Supply information on a menu with fields,	Press SPACEBAR or BACKSPACE to move from field to field. To enter text, press Enter. When line appears, type the new text, then press Enter again. To select options, press Enter to scroll forward or **B** to scroll backwards through list. When desired option is displayed, press SPACEBAR to move to the next field. To save entries, type **X** then type **Y** when prompted with "Update Configuration? Are you sure (Y/N)? You automatically return to the previous menu.

Using the DACS II AX System

**Set Up and
Maintenance
Activities**

The following table outlines set-up and maintenance activities and lists the related chapters in this guide where additional information can be found.

Table 2-3. AX Set Up and Maintenance Activities

Activity	Description	See:
Define users (optional).	If you need multiple logins to the AX, set them up. ⇒ **NOTE:** Create the system administrator's login with the Admin security level first.	Chapter 3
Check card and slot assignment.	You may want to make sure that the card physically present in a slot matches the type of card that the slot is configured for.	Chapters 3 and 5
Set system parameters.	Configure port IP addresses, SNMP agent, date and time, source clock, and node name.	Chapter 3
Configure ports on the application modules.	Set communication parameters for each application module.	Configuration section of Chapters 9 through 14
Create and activate maps.	You can create up to five cross-connection maps. A map can be scheduled to activate or activated manually.	Chapter 4
Monitor AX.	You can monitor events, review the event log, or log events to syslog on a PC or workstation in the network.	Chapter 6
Perform diagnostics and use utilities when needed.	Use the diagnostics and utilities available for the application module. Use the AX utilities. **Warning:** Only knowledgeable users should use Utilities, since they may be service-affecting.	Chapter 7 and Diagnostics and Utilities sections of Chapters 9 through 14
Back up to host PC or workstation	You may choose to backup the system configuration to a host PC or workstation.	Chapter 3 or Chapter 4

DACS II AX Menu Structure

Description   This section briefly describes each of the DACS II AX menus.

⟹ **NOTE:**
The following menus are visible to a user with an Admin security level. Users with restricted access may not see all of the menu options shown in this section.

Main Menu   The **Main Menu** is the top-level menu. The Main Menu provides access to the Node Summary, Connection Maps Manager, System Configuration, Events, Utilities, and About sub-menus.

```
                        ┌──────────────┐
                        │  MAIN MENU   │
                        └──────────────┘
   ┌──────────┬──────────────┬──────────────┬──────────┬──────────┬──────────┐
┌──────┐ ┌──────────────┐ ┌──────────────┐ ┌────────┐ ┌──────────┐ ┌───────┐
│ NODE │ │  CONNECTION  │ │    SYSTEM    │ │ EVENTS │ │UTILITIES │ │ ABOUT │
│SUMMARY│ │MAPS MANAGER │ │CONFIGURATION │ │        │ │          │ │       │
└──────┘ └──────────────┘ └──────────────┘ └────────┘ └──────────┘ └───────┘
```
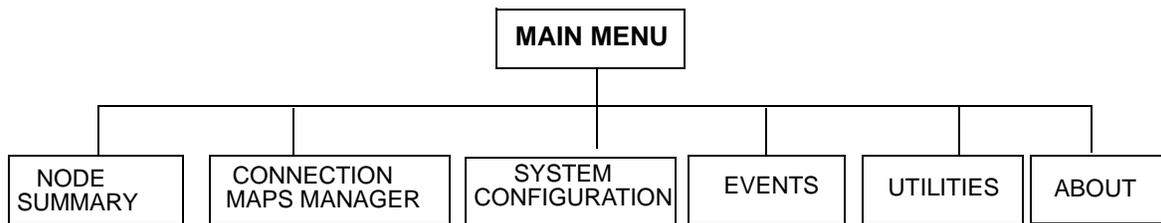
Figure 2-4.   Main Menu Structure

Node Summary Menu   The **Node Summary Menu** lists each slot in the AX and its contents. Select a slot to display the submenu for that module. The submenus provide options for configuration, diagnostics, and utilities for that particular module. For details, see Chapter 5.

```
                     ┌──────────────┐
                     │ NODE SUMMARY │
                     └──────────────┘
   ┌────────────┬───────────────┬─────────┬────────────┬──────────────┐
┌──────────┐ ┌─────────────┐ ┌──────┐ ┌──────────┐ ┌─────────────┐
│QUAD DS-1 │ │QUAD HIGH SPEED│ │ DS-3 │ │QUAD OCU  │ │ TEST ACCESS │
└──────────┘ └─────────────┘ └──────┘ └──────────┘ └─────────────┘
```
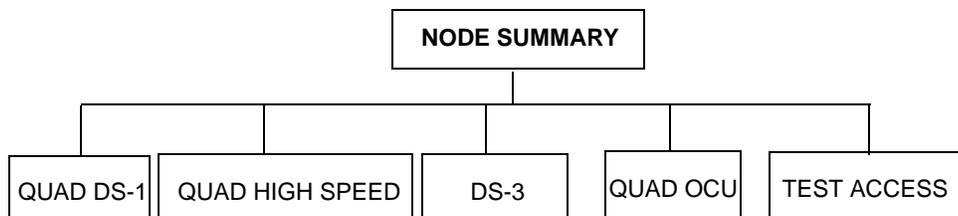
Figure 2-5.   Node Summary Menu Structure

DACS II AX Menu Structure
(Continued)

Connection Maps Manager   The **Connection Maps Manager** provides access to submenus for configuring, defining and testing cross-connections as well as activating cross-connection maps. For details, see Chapter 4.

```
                          ┌──────────────────┐
                          │   CONNECTION     │
                          │  MAPS MANAGER    │
                          └──────────────────┘
```

ACTIVE MAP	MAP CONFIGURATION	MAP DEFINITION	TIME OF DAY CONFIGURATION	DATE AND TIME	SAVE/RESTORE DATABASE
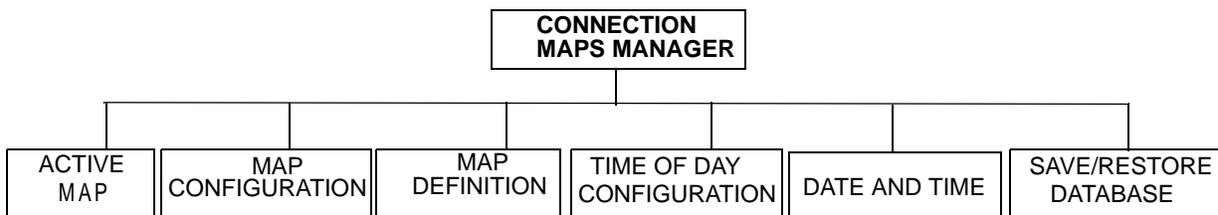
Figure 2-6.   Connections Map Manager Menu Structure

System Configuration Menu   The **System Configuration Menu** provides access to submenus for configuring slots, the source clock, port IP addresses, SNMP agent and such database management tasks as setting the time, date, node name and password, and saving/ restoring a configuration to/from a remote host. For details, see Chapter 3.

```
                          ┌──────────────────┐
                          │     SYSTEM       │
                          │  CONFIGURATION   │
                          └──────────────────┘
```

SLOT CONFIG	SOURCE CLOCK MENU	USERS MENU	PORT IP ADDRESS	SNMP AGENT CONFIG	DATE AND TIME	NODE NAME	SAVE/RESTORE DATABASE
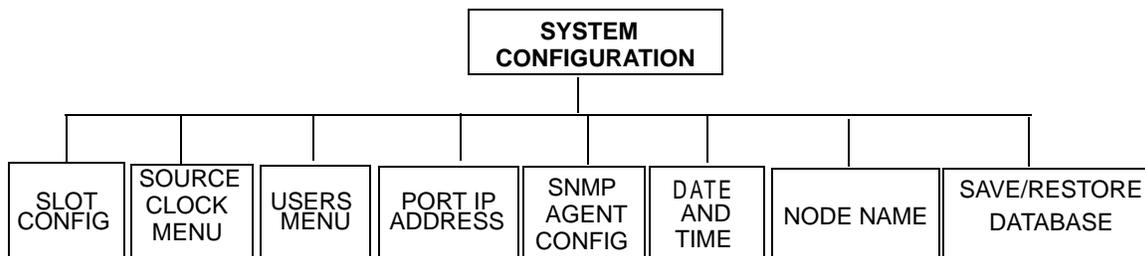
Figure 2-7.   System Configuration Menu Structure

DACS II AX Menu Structure
(Continued)

Events Menu   The **Events Menu** provides the user with the ability to monitor and display system
                        events. For details, see Chapter 6 of this manual.

```
                        ┌─────────────────────┐
                        │       EVENTS        │
                        └─────────────────────┘
         ┌──────────────────────┼──────────────────────┐
┌─────────────────┐  ┌─────────────────────┐  ┌─────────────────────┐
│ MONITOR EVENTS  │  │  DISPLAY EVENT LOG  │  │       EVENT         │
│                 │  │                     │  │    CONFIGURATION    │
└─────────────────┘  └─────────────────────┘  └─────────────────────┘
```
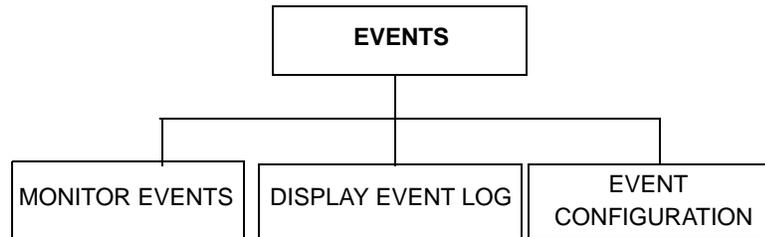
Figure 2-8.   Events Menu Structure

DACS II AX Menu Structure (Continued)

Utilities Menu   The **Utilities Menu** provides the ability to access system routing utilities, copy system files, download software, return to default settings, and view backplane timeslots. For details, see Chapter 7 of this manual.

```
┌──────────────┐
│  UTILITIES   │
└──────┬───────┘
       │
       ├──┌─────────────────────────────┐
       │  │  COPY FILE SYSTEM           │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ SWITCHOVER SMCs             │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ MIB TABLE                   │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ PING                        │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ IP ROUTE TABLE              │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ ARP TABLE                   │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ RETURN TO DEFAULT SETTING   │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ BACKPLANE TIMESLOT DISPLAY  │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ INITIALIZE SMC REAR CARD MODEM │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ FILE SYSTEM DEBUG COUNTERS  │
       │  └─────────────────────────────┘
       │
       ├──┌─────────────────────────────┐
       │  │ DOWNLOAD DEVICES SOFTWARE   │
       │  └─────────────────────────────┘
       │
       └──┌─────────────────────────────┐
          │ RESET ALL CHANNEL CARDS     │
          └─────────────────────────────┘
```
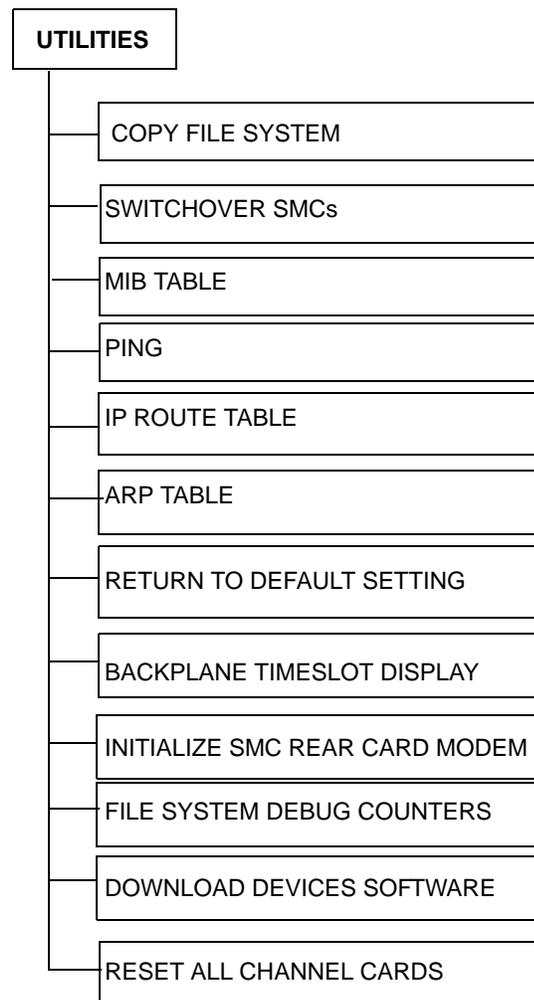
Figure 2-9.   Utilities Menu

System Configuration

3

Contents

Contents (Continued)

Contents (Continued)

Background

Overview   To configure the System Manager Cards, you use the System Configuration
                    Menu. All of the information entered through the System Configuration menu is
                    stored on the System Manager Cards.

Before you begin Make sure you are familiar with the screen navigation commands described in
                      Chapter 2.

                      To list the screen navigation commands, press the **?** key.

                      Reminder: To activate the values that you enter or select on the configuration
                      screens, you must exit the screen. Diagnostic parameters are activated
                      immediately, as soon as you change the value on the screen.

**System
Configuration
Menu Structure**   Figure 3-1 illustrates the System Configuration menu structure.

```
                              ┌──────────────────┐
                              │     SYSTEM       │
                              │  CONFIGURATION   │
                              └──────────────────┘
   ┌──────────┬──────────┬──────────┬──────────┬──────────┬──────────┬──────────┐
┌──────┐ ┌────────┐ ┌────────┐ ┌──────────┐ ┌────────┐ ┌────────┐ ┌──────────┐ ┌──────────────┐
│ SLOT │ │ SOURCE │ │ USERS  │ │ PORT IP  │ │ SNMP   │ │ DATE   │ │  NODE    │ │ SAVE/RESTORE │
│CONFIG│ │ CLOCK  │ │ MENU   │ │ ADDRESS  │ │ AGENT  │ │ AND    │ │  NAME    │ │  DATABASE    │
│      │ │ MENU   │ │        │ │          │ │ CONFIG │ │ TIME   │ │          │ │              │
└──────┘ └────────┘ └────────┘ └──────────┘ └────────┘ └────────┘ └──────────┘ └──────────────┘
```
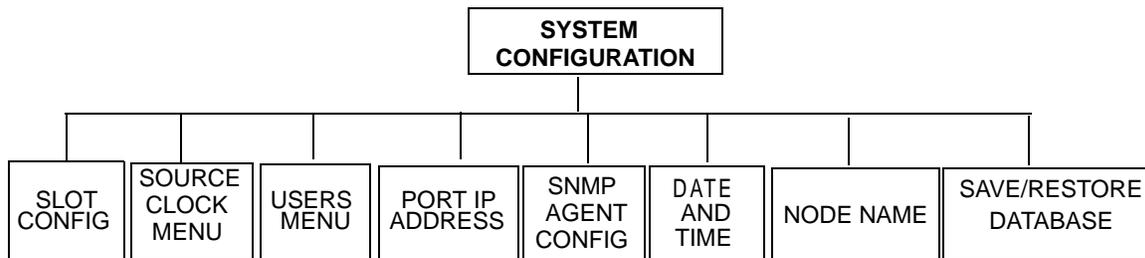
Figure 3-1.   System Configuration Menu Structure

System Configuration Menu

Description   To configure the System Manager Cards (SMCs), you use the options on the
System Configuration Menu. To access the System Configuration Menu, from the
AX Main Menu, select System Configuration. The System Configuration Menu
displays (Figure 3-2).

```
Lucent Technologies        DACS II AX 4 System Manager    Help = [?]



                        System Configuration Menu


                          Slot Configuration
                          System Clock Source Menu
                          Users Menu
                          Port IP Addresses
                          SNMP Agent Configuration
                          Date and Time
                          Node Name
                          Save and Restore Database



```
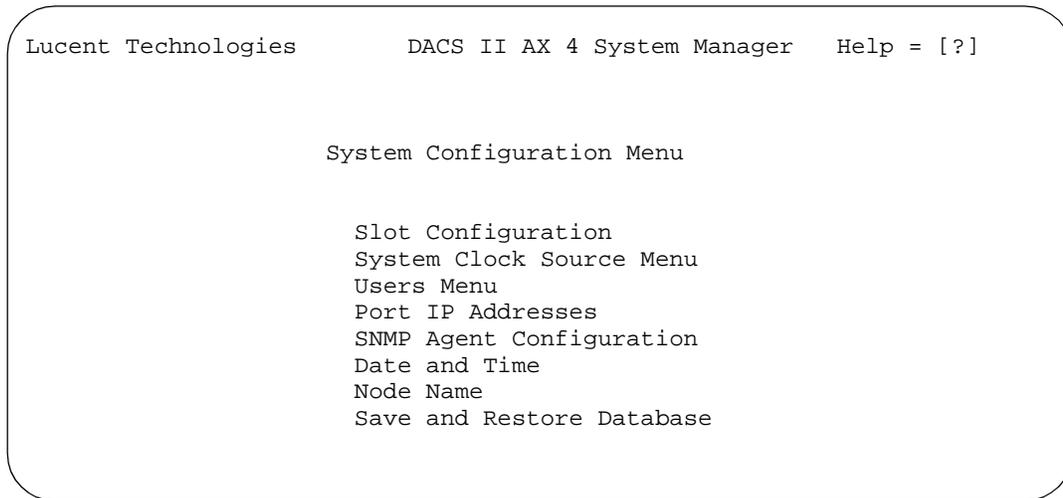
Figure 3-2.   System Configuration Menu

**System
Configuration
Menu Options**

There are eight choices on this menu:

Menu Option	Function
Slot Configuration	Enables you to display or change the Card Type associated with a slot. Also enables you to assign a name to a slot.
System Clock Source Menu	Enables you to define primary, secondary, and tertiary sources for the system clock.
Users Menu	Administer user logins. First login established should have administration security level.
Port IP Addresses	Define IP address of the AX.
SNMP Agent Configuration	Define characteristics of SNMP agent.
Date and Time	Set or verify current date and time.*
Node Name	Assign name to the AX.
Save and Restore Database	Save/restore database from host PC or workstation.*

* Also available from Connections Map Manager Menu.

Slot Configuration

Description   Use this menu option to identify a slot with a **Slot name** and **Card type**.

If	Then
the slots are empty	you can pre-configure the slots by assigning each slot a Slot name and Card type.
the slots contain application modules	the AX has already identified the Card type for each slot. You can use the Slot Configuration Menu to assign Slot names. Verify that the Configured Type and Actual Type match on the Node Summary Menu. See Chapter 5.
the Configured Type and Actual Type differ on the Node Summary Menu	Use the Slot Configuration Menu to change the Card type so that it matches the actual card installed in the slot.

Slot Configuration (Continued)

Procedure   To configure a slot:

1. From the Main Menu, select System Configuration, then select Slot
    Configuration.

    The Slot Configuration Menu displays (Figure 3-3). This menu displays 4
    slots for the DACS II AX 4, or 11 slots for the DACS II AX 11.

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]


                          Slot Configuration Menu

                  Slot#  Card Type                 Slot Name
                  -----  ---------                 ---------
                  1      Quad DS-1
                  2      Quad DS-1
                  3      Quad DS-1
                  4      Quad DS-1




Change Card = [Enter key]      [D]elete Card
```

Figure 3-3.   Slot Configuration Menu

2. Move the cursor to the Slot# where the card is located, then press ⌷Enter⌷.

Slot Configuration (Continued)

**Procedure
(Continued)**

The Card Slot Menu displays (Figure 3-4).

```
Lucent Technologies        DACS II AX 4 System Manager       Help = [?]


                              Slot Configuration



                           Slot name:
                           Card type: Quad DS-1




```
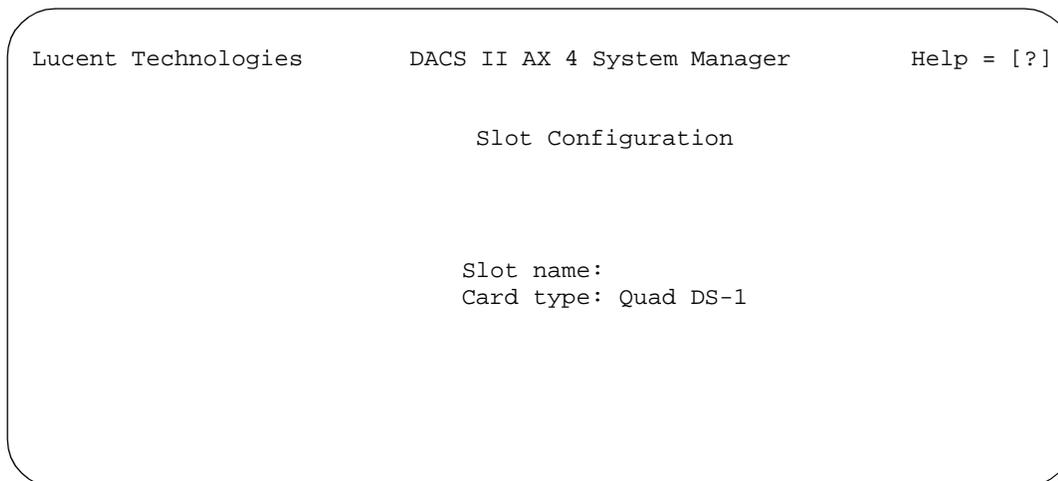
Figure 3-4.   Card Slot Menu

3.   (Optional) Press Enter . Enter a **Slot name.** Press Enter .

4.   Select a **Card type**.

5.   To save changes, type **X**.

6.   When prompted: "Update Configuration? Are you sure (Y/N)?

      Type **Y**.

7.   Type **X** to return to the Slot Configuration Menu.

Slot Configuration (Continued)

Fields   **Slot name:** (Text field). Specify a name for the slot, up to 11 alphanumerics.

Card type: (Option field) Select a card type: Quad DS-1, Quad High Speed, DS-3, Quad OCU, Octal Voice, or Test Access.

Deleting Slot Contents

Before you begin   When a card is physically removed from a slot, you can delete it through the Slot
Configuration Menu.

Procedure   To delete a card from a slot in the AX:

1.   From the Main Menu, select System Configuration, then select Slot
     Configuration.

     The Sot Configuration Menu displays.

2.   Select the Slot# where the card was located, then type **D**.

     You receive this message: All existing connections for this slot will be
     deleted!!! Are you sure (Y/N)?

3.   Type **Y.**

     The command executes and you return to the previous menu.

Configuring the Source Clock

Description   You can identify up to three sources to use as a reference for the system clock.

Procedure   To configure the source clock:

1.   From the Main Menu, select System Configuration, then select System
     Source Clock Menu. The System Clock Source Menu displays (Figure 3-5).

```
Lucent Technologies       DACS II AX 4 System Manager       Help = [?]


                           System Clock Source Menu

Mode.......: Primary
Primary....: 01 -                          Port: 01
Secondary..: Freerun                       Port: NA
Tertiary...: Freerun                       Port: NA


Current Clock Source
-------------------

              Freerun                      Port: NA
```

Figure 3-5.   System Clock Source Menu

2.   Select the Mode. If you are indicating primary, secondary, and tertiary
     sources, specify the slot and port number for each.

3.   To save changes, type **X**.

4.   When prompted: "Update Configuration? Are you sure (Y/N)?

     Type **Y**.

Configuring the Source Clock (Continued)

Source Clock Fields

Mode: (Option field) The options are **Primary**, **Secondary**, **Tertiary** or **Automatic**.

If the mode is set to **Primary**, **Secondary** or **Tertiary**, then only that clock source will be used. If the clock source fails, the system defaults to freerun which is an internal clock source that is always available.

If the node is set to **Automatic**, then the AX System Manager will choose the highest priority clock source that is currently available. If any clock source fails and no other is available, the system defaults to freerun which is an internal clock source that is always available.

$\Longrightarrow$ **NOTE:**
The Automatic Mode is recommended.

Primary/Secondary/Tertiary Clock Sources: (Option field) Choose a slot and port number or select freerun.

On the Quad High Speed card, only port 1 may be used as the source clock.

Administering Users

Description   DACS II AX can support up to 20 different users and up to four simultaneous telnet sessions. The DACS II AX Administrator maintains the user information, including adding, changing, or deleting users.

Individual users can display only information for their own login.

If a user forgets their password, only the Administrator can change their password.

Retrieving Personal Security Information   To retrieve personal security information:

1.   From the AX Main Menu, select About, then select Who Am I.

2.   Provide the password for the current session.

The AX displays Name, Security level, and Security mask of the user.

User Profile Manager Menu

Purpose   The DACS II AX Administrator uses the User Profile Manager Menu to add,
change, or delete user information. To access the User Profile Manager Menu,
from the AX Main Menu, select System Configuration, then select Users Menu.
The Users Profile Manager Menu displays (Figure 3-6).

```
Lucent Technologies   DACS II AX 11 - System Manager      Help = [?]

                         Users Profile Manager Menu

Name      Id    Rights    Status      Name     Id    Rights     Status
-------------------------------------  -------------------------------
-
Alpha     123   Admin









[A]dd user    [D]elete user
```

Figure 3-6.   Users Profile Manager Menu

For each user, the Users Profile Manager Menu displays:

■ Name

■ Audit trail identifier (Id). This appears on events in the Event Log.

■ Assigned rights (Rights). This is the security level assigned to the
user.

■ Login status (Status).

All passwords are encrypted and not shown.

Adding a User

Description   The DACS II AX Administrator can add up to 20 different users; duplicate names are not accepted.

> ⇒ **NOTE:**
>   When the DACS II AX is initially installed, the first user that you add must have an Admin security level.

Procedure   To add a new user:

1.   From the AX Main Menu, select System Configuration, then select Users Menu. The Users Profile Manager Menu displays (Figure 3-6).

2.   Press **A**. The User Configuration Menu displays (Figure 3-7).

```
Lucent Technologies         DACS II AX 4 System Manager       Help = [?]


                            User Configuration Menu



                  Name.......................:
                  Audit trail identifier.....:
                  Password (at least 6 char).:
                  Confirm password...........:
                  Security level.............: View Only
```

Figure 3-**7.**   **User Configuration Menu**

3.   Enter a Name, Audit trail identifier, password, and confirm the password. Select a Security level.

4.   To save changes, type **X**.

5.   When prompted: "Update Configuration? Are you sure (Y/N)? Type **Y**.

Fields on the User Configuration Menu

User Configuration Fields

Name: (Text field) Enter a name of up to 11 alphanumeric characters. This name will appear in the Name field on the Users Profile Manager Menu.

Audit Trail Identifier: (Text field) Enter an ID of up to three alphanumeric characters. This three character identification will appear in the ID field on the Users Profile Manager Menu. The event of adding, deleting or changing any user's configuration is considered to be an audit trail event. An audit trail event message starts with the audit trail identifier and then **>>** to indicate it is an audit trail message. Other user information that includes login or logout is considered a regular event message. Since multiple logins of the same user are allowed, the login and logout event message includes the user name as well as the total number of login sessions for that user.

Password: (Text field) Enter a password of at least six characters or else an error will occur upon exit. The password will not appear on any menu.

Confirm Password: (Text field) Type in the password entered in the password field to confirm your password.

Security Level: (Option field) The level of user rights associated with this user login. The security level will appear in the Rights field on the Users Profile Manager Menu. There are four levels of security:

■ **View Only** - users at this level can view registers, circuit maps, and overall system configurations.

■ **Test** - users at this level have all of the privileges from View Only, plus the ability to initiate and terminate BERT tests and loopbacks as well as clear performance registers.

■ **Provision** - users at this level can access all of the AX features except for the ability to add and remove new users or TFTP new code down to the system.

■ **Admin** - the highest level of access. Users at this level can access all AX functions and can add/remove users from the system. This user is able to delete and add new passwords in the event a user has forgotten his password.

Table 3-1, the SMC User Security Chart lists the menus that can be accessed by each user security level.

Changing User Information

Description   The Administrator can change any information associated with a Login Name, including the password. The Login Name cannot be changed. To change the Name, delete the login and add a new one with a new name.

Procedure   To change user information:

1. From the AX Main Menu, select System Configuration, then select Users Menu. The Users Profile Manager Menu displays (Figure 3-6).

2. Select the user login to be changed using the SPACEBAR, BACKSPACE or arrow keys, then press ⌷Enter⌷.

    The User Configuration Menu displays.

3. Edit the information on the User Configuration Menu. For details, refer to the previous section "User Configuration Fields."

4. To save changes, type **X**.

5. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

Deleting a User

Procedure   To delete a user:

1.   From the Users Profile Manager Menu (Figure 3-6), put the cursor on the Name of the user to be deleted and press **D**.

2.   When prompted: "Update Configuration? Are you sure (Y/N)? Type **Y**.

```
Lucent Technologies       DACS II AX 11 System Manager      Help = [?]

                         Users Profile Manager

Name        Rights         Status     Name       Rights         Status
--------------------- ***********************************         -------------------
alpha1      Administr ***********************************
omega1      Administr *                                    *
bsmith      View Only *              -MESSAGE!-            *
                      *                                    *
                      *                                    *
                      *      Delete user - bsmith?         *
                      *                                    *
                      *                                    *
                      *      Are you sure (Y/N)?           *
                      *                                    *
                      ***********************************




[A]dd user      [D]elete user

```

3.   Press **X** to return to the System Configuration Menu.

Figure 3-8.   Delete User

Configuring the AX IP Address

Procedure   To configure the IP address for the AX:

1. From the Main Menu, select System Configuration, then select Port IP Addresses.

   The Port Configuration Menu displays (Figure 3-9).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]


                        Port Configuration Menu


          IP encapsulation.................: Ethernet II
          LAN IP address...................: 0.0.0.0
          LAN IP mask......................: 255.255.255.0

          Enable RIP.......................: No
          Default gateway (if RIP disabled): 0.0.0.0

          Backplane IP address.............: 200.0.0.0
          Backplane IP mask................: 255.255.255.0

          Backplane IP Address Management
          ------------------------------

          Backplane IP translation.........: Yes
          Configure slot's IP table
```

Figure 3-9.   Port Configuration Menu

2. Specify information on the Port Configuration Menu.

> ⚠️ **WARNING:**
> *Although the backplane settings are adjustable, it is not recommended that you change these settings. If you want to change any of the backplane settings, call Technical Support for guidance.*

3. If you select **Yes** for Backplane IP translation, the Backplane Address Configuration Menu displays (Figure 3-10). Type **S** and set the addresses.

4. Type **X** to save and exit to the previous menu. Confirm action when prompted, by typing **Y**.

Configuring the AX IP Address

**Procedure
(Continued)**

```
Lucent Technologies       DACS II AX 4 System Manager       Help = [?]

                        Backplane address configuration

                             Slot 01: 1.2.2.2
                             Slot 02: 200.0.0.2
                             Slot 03: 200.0.0.3
                             Slot 04: 200.0.0.4




[S]et sequential IP addresses
```

Figure 3-10.   Backplane Address Configuration Menu

Configuring the AX IP Address
(Continued)

Fields

IP Encapsulation: (Option field) Ethernet LANs use two types of IP frame encapsulation. The encapsulation should match that used by other IP workstations and hosts on the LAN. The choices are Ethernet II or 802.3.

LAN IP Address: (Text field) This parameter is used to specify the LAN IP address. IP addresses are 32 bits long and written as four decimal digits separated by a period. Each digit represents 8 bits of the address. The range of each digit is from 0-255.

Enter an IP address in dotted decimal form. If you do not know your IP address, consult your network administrator.

LAN IP Mask: (Text field) The LAN IP mask is a 32-bit number represented in the same way as the IP address. A default mask is automatically generated; however, it can be overridden to support subnetting. Subnetting allows you to allocate bits from the host portion of the IP address as an extension to the address. Depending on the type of IP network you are using (Class A, B or C), the subnet mask may be 24, 16 or 8 bits in length.

Enable RIP/Default Gateway: (Option field) This parameter enables/disables RIP on the LAN port. If RIP is not enabled, you must program a default gateway.

> ⚠ **WARNING:**
> *Although the backplane settings are adjustable, it is not recommended that you change these settings. If you want to change any of the backplane settings, call Technical Support for guidance.*

Backplane IP address: This parameter is used to specify the based backplane IP address. The backplane IP address facilitates the management and control of the application modules.

Each application module uses one IP address. The IP address of an application module is calculated by adding the last digit of the based backplane IP address to the slot number. For example, if the last digit of the based backplane IP address is 6 and the application module is in slot 1, the IP address of the application module would be 200.0.0.7.

The backplane address defaults to 200.0.0.0. The default is recommended unless it conflicts with an existing IP network.

Configuring the AX IP Address (Continued)

Fields (Continued)   **Backplane IP mask:** The backplane mask defaults to 255.255.255.0, and defaults according to class (Class A, B or C).

Backplane IP translation:

■   Select **Yes** to expose card to have an IP address as SMC.

■   Select **No** to key off Backplane IP address.

Configuring the SNMP AGENT

Procedure　　　　　To configure the SNMP agent:

1. From the Main Menu, select System Configuration, then select SNMP Agent Configuration.

   The SNMP Agent Configuration Menu displays (Figure 3-11).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]
                           SNMP Agent Configuration Menu

System Group Parameters
-----------------------
System domain name....:
System description....:
System location.......:
System contact........: enter contact name here

Trap Controls
-------------
Traps.................: Disabled
Authentication traps..: Disabled

Client-manager IP Addresses                Community Profiles
---------------------------                ------------------
(used for trap destinations)      Read-only:          Read-write:
0.0.0.0            0.0.0.0        public              public
0.0.0.0            0.0.0.0        public              public
0.0.0.0            0.0.0.0        public              public
0.0.0.0            0.0.0.0        public              public
```

Figure 3-11.　SNMP Agent Configuration Menu

2. Specify the parameters for the SNMP Agent.

3. Type **X** to save and exit to the previous menu. Confirm action when prompted, by typing **Y**.

Configuring the SNMP AGENT (Continued)

Fields **SYSTEM GROUP PARAMETERS**

System domain name: This field is used to uniquely identify the AX system. (It sets the MIB-II sysName variable.)

System description: This field is a description of the AX system. It includes the full name and version identification of the system's hardware type, software operating system, and networking software. The field is not programmable by the user. (It sets the MIB-II sysDescr variable.)

System location: This field defines the physical location of the AX system (i.e., Utility Room, Ground floor). It can contain up to 48 ASCII characters. (It sets the MIB-II sysLocation variable.)

System contact: This field identifies the contact person for the AX system, and provides information on how to contact this person. It can contain up to 48 ASCII characters. (It sets the MIB-II sysContact variable.)

TRAP CONTROLS

Traps: This parameter enables/disables trap messages.

Trap Authentication: When this parameter is enabled, the AX sends authentication traps when an SNMP request is received with an invalid community string. If the strings do not match, access is denied. If the strings match, read only or read/write access is provided, depending on the community string matched. The traps are prevented when the parameter is disabled.

Client-Manager IP Addresses [Default: 0.0.0.0]: The Client-Manager IP Addresses must be entered in "dotted decimal notation" form. Each of the four numbers in the address can range from 0 to 255. The addresses should match the addresses of the SNMP network management station that should receive the SNMP trap messages generated by the AX. Up to 8 addresses can be entered. If no address is entered, the AX sends its traps to the last manager that sent SNMP messages to the unit.

Configuring the SNMP AGENT (Continued)

Fields (Continued)   **COMMUNITY PROFILES**

Read-Only Community [Default: Public]: This is the community string used for the read-only access to the AX's MIB objects.

Read-Write Community [Default: Public]: This is the community string used for read-write access to the AX's MIB objects. If this parameter is set to the same value as the Read-Only Community profile, write access will be denied.

Setting the Current Date and Time

Description   Make sure the system date and time are set correctly. The date and time is used for scheduling maps and may appear on SNMP statistics.

> ➡ **NOTE:**
>   For convenience, the Date and Time option can be set from either the Connections Map Menu or the System Configuration Menu.

Procedure   To change the date and time settings, follow these steps:

1.   From the Main Menu, select System Configuration, then select Date and Time.

     The Date and Time Menu displays.

```
 Lucent Technologies          DACS II AX 4 System Manager          Help = [?]


                                 Date and Time Menu


                          Month.....: March
                          Day.......: 1
                          Year......: 1999
                          Hour......: 16
                          Minute....: 27
                          Second....: 45
                          Day of Week: Monday
```

Figure 3-12.   Date and Time Menu

Setting the Current Date and Time
(Continued)

Procedure
(Continued)

2. Scroll through the options for each field until the correct values display on the screen.

    Reminder: Press [Enter] to scroll forward through the options or type **B** to scroll back. Press SPACE, BACKSPACE, or use the arrow keys to move between fields.

3. Type **X** and confirm action when prompted, by typing **Y**. Changes are saved and you return to the System Configuration menu.

Fields

All of these fields are option fields.

Month: Options are January through December.

Day: Options are 1 through 31.

Year: Change to current year. The DACS II AX is year 2000 compliant.

Hour: Options are 0-23.

Minute: Options are 0 through 59.

Second: Options are 0 through 59.

Day of Week: Options are Sunday through Saturday.

Assigning a Node Name

Description   You can assign a name to the DACS II AX system. This name appears on the AX Main Menu.

Procedure   To name the DACS II AX system, use the following procedure.

1.   From the Main Menu, select System Configuration, then select Node Name.

The Node Name Menu displays.

```
Lucent Technologies          DACS II AX 4 System Manager          Help = [?]


                              Node Name Menu



                            Node name: Lucent
```
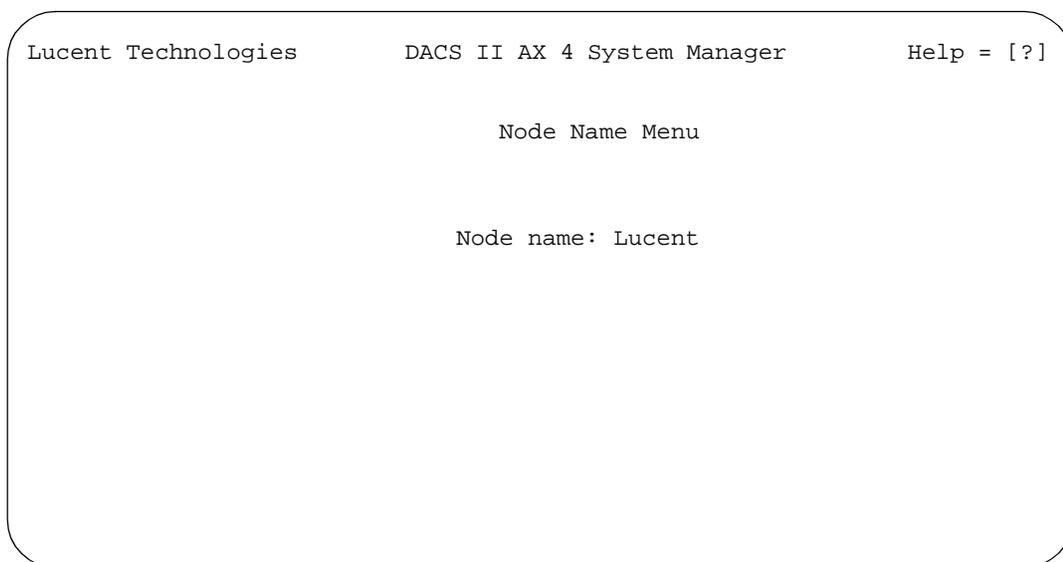
Figure 3-13.   Node Name Menu

2.   Press ⌷Enter⌷. Enter a **Node name** and press ⌷Enter⌷. The **Node name** field accepts a name consisting of up to 19 alphanumerics.

3.   Type **X** and confirm action when prompted, by typing **Y**. Changes are saved and you return to the previous menu.

Save and Restore Database

Description   The AX system provides the capability to save the system configuration database
                                   as a software file and to restore the system configuration from previously saved
                                   software files.

                                   Since the system configuration is software-based, standard protocols like TFTP
                                   can be utilized to transfer the system configuration database to a remote host (PC
                                   or workstation). Conversely, files that have been uploaded to a remote host for
                                   archival purposes can be downloaded to an AX for disaster recovery or to facilitate
                                   system configuration on new installations.

                                   ⟹ **NOTE:**
                                       For convenience, the Save/Restore Database option is also available from
                                       the Connection Maps Menu.

Saving the AX's Configuration Data to a Host

Description

The SAVE operation gathers all of the files that exist on the AX, compresses them, and then sends them to the host.

If you plan to save more than one AX to the host, remember to enter a unique name for each file so that existing files do not get overwritten.

Procedure

To save the AX's configuration to a host, use the following procedure.

1. Create a directory on the host that will store the AX's configuration. Because the configuration consists of several files, a separate directory is required for each AX.

2. Run the host's TFTP server.

3. From the AX Main Menu, select System Configuration, then select Save/Restore Database.

    The Save and Restore Database Menu displays (Figure 3-14).

```
Lucent Technologies     DACS II AX 4 System Manager        Help = [?]


                        Save and Restore Database Menu


Host IP address.: 193.222.333.444
Host directory..: d:\
Host file name..: hostconf










[S]ave Database      [R]estore Database
```

Figure 3-14.   Save and Restore Database Menu

Saving the AX's Configuration Data to a Host (Continued)

Procedure (Continued)

4. Enter the remote host's IP address and the directory on the host where this AX's files are to be saved. Specify the file name for the file on the host. It is recommended that you change this name if you plan to save more than one AX to the host.

5. Type **S** to execute the Save Database command and exit the menu.

6. Type **Y** at the confirmation screen.

    The progress of the transfer will appear on the screen. If there are any errors, correct the problem and perform the save again.

Restoring the AX's Configuration Data from a Host

Description   The RESTORE operation gathers the backup file from the host and restores the files on the AX's System Manager Cards.

When you restore file names, the file name on the host will have a .b extension.

Procedure   To restore the AX's configuration from a host, use the following procedure.

1.   Run the host's TFTP server.

2.   From the AX Main Menu, select System Configuration, then select Save/Restore Database.

The Save and Restore Database Menu displays (Figure 3-15).

```
Lucent Technologies      DACS II AX 4 System Manager        Help = [?]


                         Save and Restore Database Menu


Host IP address.: 193.222.333.444
Host directory..: d:\
Host file name..: hostconf












[S]ave Database      [R]estore Database
```

Figure 3-15.   Save and Restore Database Menu

Restoring the AX's Configuration Data
from a Host (Continued)

**Procedure
(Continued)**

3. The remote host's IP address and directory where this AX's configuration was saved will appear in the proper fields. If incorrect, enter the correct information.

4. Type **R** to execute the Restore Database command and exit the menu.

5. Type **Y** at the confirmation screen.

    The progress of the transfer will appear on the screen. If there are any errors, correct the problem and perform the restore again.

    After the files have been transferred, the system will re-initialize itself with the restored configuration.

Fields for Save and Restore Database

**Save and Restore
Database Fields**

Host IP Address: This field is used to specify the remote host's IP address. IP addresses are 32 bits long and written as four decimal digits separated by a period. Each digit represents 8 bits of the address. The range of each digit is from 0-255.

Enter an IP address in dotted decimal form. If you do not know the remote host's IP address, consult your network administrator.

Host Directory: This field is used to specify the directory on the remote host where the AX's files are to be saved. A maximum of up to eight characters is allowed in this field.

Host File Name: The host file name is the name the file will have on the host. If you plan to save more than one AX to the host, remember to enter a unique name for each file so that existing files do not get overwritten. When you restore file names, the file name will have a .b extension. A maximum of up to eight characters is allowed in this field.

SMC User Security System Summary

SMC User Security Chart

Table 3-1 summarizes the menus that can be accessed by each user security level.

■ Shading indicates that the menu is not accessible by that user security level.

■ Check mark (√) indicates the menu is accessible and the user actions are constrained by the user's assigned security level.

For example, a user with a View Only or Test Level capability can only display the Date and Time, whereas a user with Provision or Admin Level capability can change it.

Table 3-1. SMC User Security Chart

Menu Name	View Only Level	Test Level	Provision Level	Admin Level
CONNECTIONS MAP MANAGER				
Active Map	√[1]	√[3]	√	√
Map Config	√[2]	√[4]	√	√
Map Definition	√	√	√	√
Time of Day Configuration	√	√	√	√
Date and Time	√	√	√	√
Save and Restore			√	√
SYSTEM CONFIGURATION				
Slot Configuration	√	√	√	√
System Clock Source	√	√	√	√
Users Menu				√
Port IP Addresses	√	√	√	√
SNMP Agent Configuration	√	√	√	√
Date and Time	√	√	√	√
Save/Restore Database			√	√

NOTES:

[1] - viewer can filter and use display related keys only.

[2] - viewer can not access any function keys at the Configuration Maps Menu but can filter and use display-related keys at the Map Configuration Screen.

[3] - tester can access all other keys except add/listen/delete connection.

[4] - tester can not access any function keys at the Configuration Maps Menu but can use all keys except add/listen/delete connection at the Map Configuration Screen.

SMC User Security System Summary

SMC User Security Chart (Continued)

Table 3-1.   **SMC User Security Chart (Continued)**

Menu Name	View Only Level	Test Level	Provision Level	Admin Level
EVENTS				
Monitor Events	√	√	√	√
Display Event Log	√	√	√	√
Event Configuration			√	√
UTILITIES				
Copy File System			√	√
Switch Over SMCs			√	√
MIB Table	√	√	√	√
Ping			√	√
IP ROUTE TABLE				
Show IP Route	√	√	√	√
Dump IP Route	√	√	√	√
ARP Table	√	√	√	√
Return to Default Setting				√
Backplane Timeslots Display	√	√	√	√
Initialize SMC Rear Card Modem				√
File System Debug Counters	√	√	√	√
Download Devices Software				√
Reset All Channel Cards			√	√
ABOUT				
System Profile	√	√	√	√
Who Am I	√	√	√	√

Connection Maps

4

Contents

Contents (Continued)

Contents (Continued)

Overview

AX Architecture   The AX utilizes a distributed cross-connect fabric. AX does not have a typical DCS architecture utilizing a cross-connect matrix or matrices to groom DS-0 signals from one WAN link to another. Using AX, each system application module has its own matrix or cross-point switch that provides access and egress to the midplane bus.

Connection Map   An image of each application module's configuration including cross-connections is stored on the individual module, as well as in a software-defined "Map" that is stored on the System Manager Card.

You can have up to five maps on the AX. The **Active Map** is the one in use by the AX. Only one map can be active on the system at any instance. Figure 4-1 shows a sample map.

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]


                   Map Configuration:   Map 01
Note: You must exit this menu in order to update the switch map


Name                    Src      Dest    Speed Type  Active Test Tester Port
----------------------------------------------------------------------
-
QHS 3.1 TO QHS 3.2  03.01.01  03.02.01 0056k D   FDX
QHS 3.3 TO QHS 3.4  03.03.01  03.04.01 0056k D   FDX
QT1 4.1 TO QT1 4.2  04.01.01  04.02.01 0056k D   FDX
QT1 4.3 TO QT1 4.4  04.03.01  04.04.01 0056k D   FDX
--
--
--
--
--
--
--
--


Connection Filter: Not Active
[F]ilter                    [A]dd/[L]isten/[D]elete connection
[T]est set up/[R]estore     [H]ome/[E]nd/[N]ext/[P]rev page
```

Figure 4-1.   Sample Map

Overview (Continued)

Multiple Maps   There are several advantages to have multiple maps:

- Maps provide a flexible tool that help you manage the changing needs of your network.

- A standby map can be activated quickly should problems arise in the active map.

- A map can be used to try out new connections or deletions. For example, you can create a map with new connections and activate it. If problems occur, you can quickly activate another map with a known working configuration, thereby restoring service and minimizing any outages.

- A map can include special features that are needed only occassionally. For example, you can create a map with a video-conference and activate it only when it is needed.

- You might want to have different maps active at specific times of the day, depending on the needs of your network. For example, you could have a daytime map with more voice than data connections and then a nightime map with more data than voice connections.

Overview (Continued)

Activating Maps   Maps can be activated manually or by using the system's Time of Day (TOD)
automatic activation feature. The following figure shows a sample schedule. For
each day, you can schedule up to five maps. Each entry includes the time that the
map will be activated in 24-hour notation and the Map Name.

```
Lucent Technologies       DACS II AX 4 System Manager        Help = [?]
                      Wednesday, November 11 15:58
Time Of Day Configuration Manager Enabled:Yes    ActiveMap:Map 01

|  Sun   |  Mon   |  Tues  |Wednes  | Thurs  |  Fri   |Sat     |
|-------|-------|-------|-------|-------|-------|-------|
| 06:00 | 06:00 | 06:00 | 06:00 | 06:00 | 06:00 |06:00  |
|Daily  |Daily  |Daily  |Daily  |Daily  |Daily  |Daily   |
|-------|-------|-------|-------|-------|-------|-------|
| 20:00 | 20:00 | 10:00 | 20:00 | 20:00 |20:00  |20:00   |
|Night  |Night  |Special|Night  |Night  |Night  |Night   |
|-------|-------|-------|-------|-------|-------|-------|
| 00:00 | 00:00 | 12:00 |00:00  |00:00  |00:00  |00:00   |
|...    |...    |Daily  |...    |...    |...    |...     |
|-------|-------|-------|-------|-------|-------|-------|
| 00:00 | 00:00 | 20:00 | 00:00 | 00:00 |00:00  |00:00   |
|...    |...    |Night  |...    |...    |...    |...     |
|-------|-------|-------|-------|-------|-------|-------|
|00:00  | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 |
|...    |...    |...    |...    |...    |...    |...     |
|-------|-------|-------|-------|-------|-------|-------|
```

Figure 4-2.   Sample Time and Day Configuration Menu

Connection Maps Manager Menu

Before you begin   Make sure you are familiar with the screen navigation commands described in
Chapter 2.

To list the screen navigation commands, press the **?** key.

Reminder: To activate the values that you enter or select on the configuration
screens, you must exit the screen. Diagnostic parameters are activated
immediately, as soon as you change the value on the screen.

Connection Maps   Figure 4-3 illustrates the Connection Maps menu structure.
Manager Menu
Structure
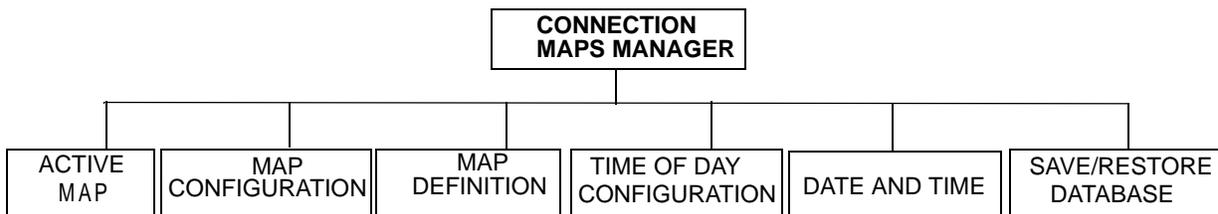
Figure 4-3.   Connections Map Manager Menu Structure

Connection Maps Manager Menu (Continued)

Connection Maps Manager Menu

Figure 4-4 shows the Connection Maps Manager menu. To access the Connection Maps Manager menu, from the AX Main Menu, select Connections Map Configuration.

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]

                              Active Map: Map 01

                         Connection Maps Manager Menu




                          Active Map
                          Map Configuration
                          Map Definition
                          Time of Day Configuration
                          Date and Time
                          Save and Restore Database
```
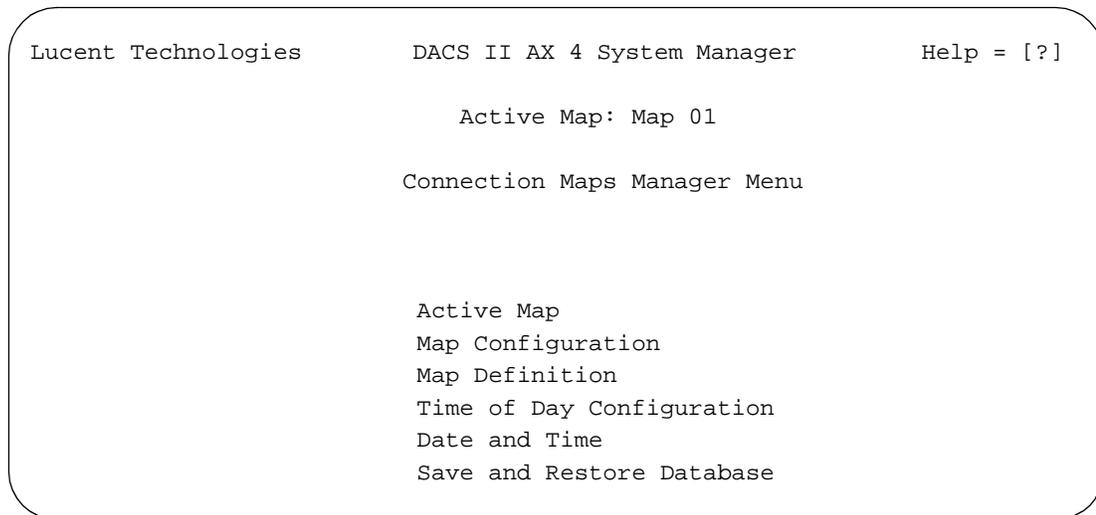
Figure 4-4.   Connection Maps Manager Menu

Connection Maps Manager Menu Options

There are six choices on this menu:

Menu Option	Function
Active Map	Displays active map. From here, you can change the contents of the active map.
Map Configuration	Lists all maps. Provides "Activate Map" and "Copy Map" functions. Select a map to display or change its contents.
Map Definition	Enables you to assign a name and brief description to a map.
Time of Day Configuration	Enables you to schedule maps for activation.
Date and Time	Set or verify current date and time.*
Save and Restore Database	Save/restore database from host PC or workstation.*

* Also available from System Configuration Menu.

Creating and Activating Connection Maps

Map Activities

The following list describes the tasks that you may complete to create and activate a map. You may complete some or all of these activities. These tasks are described in this chapter:

- Assign a name and description to a map.

- Copy an existing map and use as the basis for a new map.

- Add, change, or delete connections in the map.

- Set up and run tests on connections.

- Activate the map immediately or schedule the map to be activated.

- Back up data to host PC or workstation

Assigning a Map Name

Description   You can assign a **Name** and **Description** to each of the five connection maps.
The Status field is read-only.

Procedure   To assign a name and description to a map:

1. From the AX Main Menu, select Connection Maps Manager Menu, then
   select Map Definition. The Map Definition Menu displays (Figure 4-5).

```
Lucent Technologies        DACS II AX 4 System Manager       Help = [?]


                        Map Definition Menu


            No.    Name          Description            Status
            ---    -----------   -------------------    -----------
            01     Map 01        Map 01 description     Active
            02     Map 02        Map 02 description
            03     Map 03        Map 03 description
            04     Map 04        Map 04 description
            05     Map 05        Map 05 description






[A]ctivate map      [T]ag map for copy      [C]opy to all tagged maps
```

Figure 4-5.   Map Definition Menu

2. Select the Map No. and press Enter .

3. Modify the **Map Name** and **Description** fields.

   Reminder: Press Enter before typing.

4. Type **X**. Changes are saved and you return to the Connection Maps
   Manager Menu.

Assigning a Map Name (Continued)

Map Definition Fields

Map Name: (Text field) This is a user-defined field. Any name up to 11 alphanumerics can be entered to identify the map.

Description: (Text field) This is a user-defined field. Any name up to 19 alphanumerics can be entered to identify the map.

Activating a Map

Description   A map can be activated immediately. By default Map 01 is the active map.

Procedure   To activate a map:

1. From the AX Main Menu, select Connection Maps Manager Menu, then
    select Map Configuration.

    The Configuration Maps Menu displays (Figure 4-6).

```
Lucent Technologies      DACS II AX 4 System Manager      Help = [?]


                         Configuration Maps Menu


           No.   Name          Description              Status
           ---   -----------   -------------------      ------------
           01    Map 01        Map 01 description       Active
           02    Map 02        Map 02 description
           03    Map 03        Map 03 description
           04    Map 04        Map 04 description
           05    Map 05        Map 05 description






[A]ctivate map      [T]ag map for copy      [C]opy to all tagged maps

```

Figure 4-6.   Configuration Maps Menu

2. Move the cursor to the map to be activated. Type **A**.

3. Note that the Status entry for the map changes to **Active**. There can only
    be one active map at any time.

Displaying a Map

Description   You can display and work on the Active Map or any of the standby maps.

Displaying the   To display the Active Map: Ffrom the AX Main Menu, select Connection Maps
Active Map   Manager Menu, then select Active Map.

You can also display the Active Map using the following procedure.

Displaying Any   To display any map:
Map
1. From the AX Main Menu, select Connection Maps Manager Menu, then
    select Map Configuration.The Configuration Maps Menu displays
    (Figure 4-7).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]


                        Configuration Maps Menu


        No.    Name            Description              Status
        ---    -----------     -------------------      ------------
        01     Map 01          Map 01 description       Active
        02     Map 02          Map 02 description
        03     Map 03          Map 03 description
        04     Map 04          Map 04 description
        05     Map 05          Map 05 description




[A]ctivate map      [T]ag map for copy      [C]opy to all tagged maps
```

Figure 4-7.   Configuration Maps Menu

Displaying a Map (Continued)

Procedure   2.   Select the Map No. and press ⬚Enter⬚.

The Map Configuration displays (Figure 4-8). The functions available from this screen are described on the following pages.

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]


                    Map Configuration:   Map 01
Note: You must exit this menu in order to update the switch map


Name                   Src      Dest    Speed Type  Active Test Tester Port
-------------------------------------------------------------------------
-
QHS 3.1 TO QHS 3.2  03.01.01  03.02.01 0056k D   FDX
QHS 3.3 TO QHS 3.4  03.03.01  03.04.01 0056k D   FDX
QT1 4.1 TO QT1 4.2  04.01.01  04.02.01 0056k D   FDX
QT1 4.3 TO QT1 4.4  04.03.01  04.04.01 0056k D   FDX
--
--
--
--
--
--
--
--


Connection Filter: Not Active
[F]ilter                    [A]dd/[L]isten/[D]elete connection
[T]est set up/[R]estore     [H]ome/[E]nd/[N]ext/[P]rev page
```

Figure 4-8.   Map Configuration Menu

Fields on the Map Configuration

Name: This field represents the 19-character connection name given by the user on the Add New Connection Screen.

Source (Src): This field represents the source slot, port and starting timeslot of a connection as entered on the Add New Connection Screen.

Destination (Dest): This field represents the destination slot, port and starting timeslot of a connection as entered on the Add New Connection Screen.

Displaying a Map (Continued)

Fields on the Map Configuration (Continued)

Speed: This field represents the transmission speed as selected on the Add New Connection Screen.

Type: This field shows the type of traffic being connected (either data or voice) as well as the type of connection. The connection types are listed below:

- BRC: Broadcast Connection (HDX)
- BRM: Broadcast Master (HDX)
- FDX: Full-Duplex

Active Test: This field identifies the active test as one of the following:

- Monitor-Src
- Monitor-Dest
- Split- Src
- Split-Dest

where: Src = Source and Dest = Destination

Tester Port: This field defines the port (address) where the test will be run. The tester address will be shown as a four digit number separated by a decimal point, i.e., 01.02, where the first two digits represent the slot number and the last two digits represent the port number.

Map Commands

Actions Available   You can use the following commands in a map:

Table 4-1.   Map Commands

Command	Description
F	Filter: Use to create connection filters for the map display. Only connections that match the filter criteria are displayed. To see all connections, make sure **Filter Id** is set to none.
A	Add: Use to add a new cross-connection to a map.
L	Listen: Use to listen to a cross-connection.
D	Delete: Use to delete a cross-connection.
T	Test: Use to set up and run a test.
R	Restore: Use to end a test.
H, E, N, P	Use to navigate through the list of cross-connections in the map.

⇒ **NOTE:**
You must exit a map in order to update a map with your changes.

Connection Filters

Description   You can specify a connection filter so that only connections that match the filter criteria are displayed in the maps. For example, if you specify a slot number, only cross-connections that use that slot number are displayed in the map.

> **NOTE:**
> When you specify a connection filter, the filter is active for all maps and will stay activated until it is turned off.

Procedure   To set up a filter, follow this procedure:

1. Display a map.

2. Type **F**.

    The Connection Filter Configuration Menu displays (Figure 4-9).

```
 Lucent Technologies      DACS II AX 4 System Manager       Help = [?]



                       Connection Filter Configuration
                       -------------------------------
                           Filter Id........: None
                           Connection Name..:
                           Slot Number......: 0
                           Port Number......: 0
                           TimeSlot Number..: 0


```

Figure 4-9.   Connection Filter Configuration Menu

3. Specify one or more filter criteria.

4. To save changes, type **X**.

5. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

Connection Filters (Continued)

Connection Filters Fields

Filter Id: (Option field) Select one of the following: None, By Connection Name, By Slot, By Slot/Port, Starting Slot/Port/Timeslot, By Data, By Voice.

Connection Name:(Text field) Enter up to 19 alphanumerics. Wildcard (*) can be used. For example, to limit the display to all connections that have connection names that begin with src, enter src*.

Slot number: (Option field) Select a slot number.

Port number: (Option field) Select a port number.

Timeslot number:(Option field) Select a timeslot number.

Adding a New Connection

Description   To add a new cross-connection to a map, you specify the source and destination. If the timeslots you specify are already filled, AX will automatically assign available timeslots. You have the option to display the new timeslot allocation and make changes, if necessary.

Procedure   To add a new connection to a map:

1. Display a map.

2. Type **A**.

   The Add New Connection screen displays (Figure 4-10).

```
Lucent Technologies          DACS II AX 4 System Manager          Help = [?]

                             Add New Connection Screen


Connection name:                          Type...........: Full-Duplex

Src slot.......:                          Dest slot.......:
Src port.......: 01                       Dest port.......: 01
Starting Src Ts: 01                       Starting Dest Ts: 01
Speed..........: 56K      (1 DS0)         Voice/Data......: Data

Ts Allocation  : Auto-Consecutive




[S]ave connection
```

Figure 4-10.   Add A New Connection Screen

3. Identify the characteristics of the connection. See "Connection Fields" for details.

4. When done, type **S** or **X** to save the connection information.

Adding a New Connection (Continued)

Procedure (Continued)

5.   You are prompted: "View timeslot allocation? Are you sure (Y/N)?

6.   Type **Y** to display the timeslot allocation. Go on to step 7.

If you type **N**, the timeslot allocation is not displayed, however the new connection is still made. You are done. You remain on the Add New Connection Screen.

7.   The Change Connection screen displays (Figure 4-11).

```
Lucent Technologies        DACS II AX 4 System Manager      Help = [?]


                         Change Connection screen


Connection name: QT1 4.1 TO QT1 4.3      Type..........: Full-Duplex
Src slot.port  : 04.01 Quad DS-1      Dest slot.port: 04.03 Quad DS-1
Speed..........: 56K      (1 DS0)      Data/Voice....: Data
-------------------------------------------------------------------
Src Port Time slot assignments       Dest Port Time slot assignments
01 QT1 4.1  12 .        23 .          01 QT1 4.1  12 .        23 .
02 *        13 .        24 .          02 .        13 *        24 .
03 .        14 .                      03 .        14 .
04 .        15 .                      04 .        15 .
05 .        16 .                      05 .        16 .
06 .        17 .                      06 .        17 .
07 .        18 .                      07 .        18 .
08 .        19 .                      08 .        19 .
09 .        20 .                      09 .        20 .
10 .        21 .                      10 .        21 .
11 .        22 .                      11 .        22 .


[V]iew all connections     [C]lear connection timeslots
```

Figure 4-11.   Change Connection Screen

The new cross-connection is displayed. Timeslots that contain an asterisk (*) are assigned.

Adding a New Connection (Continued)

Procedure (Continued)

From the Change Connection screen, you can do the following:

- To display all connections, type **V**.

- To reassign timeslots to the new connection:

  a. First, clear the new connection by typing **C**. Both sides of the new connection will be cleared from the screen.

  b. Move cursor to the new source timeslot and press Enter .

  c. Move cursor to the new destination timeslot and press Enter .

8. To save changes, type **X**.

9. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

10. Type **X** to return to the Configuration Map Menu.

Connection Fields

Connection Name: (Text field) This field is used to enter a name for the connection you are configuring. Any name up to 19 alphanumerics may be entered.

Type: (Option field) This field is used to select one of three types of connections:

- **Full-Duplex**: In full-duplex connections, data flows in two directions.

- **Broadcast Connection:** This is a half-duplex destination. Broadcast connections declare a source and destination. Data flows from the source to the destination.

- **Broadcast Master:** This is a half-duplex source. The Broadcast Master transmits only; there is no destination.

Source Slot and Port (Src slot, Src port): (Option field) These fields are used to select the source slot and source port for the connection. The port always defaults to 01. You can allocate the slot number.

Starting Source Timeslot (Starting Src Ts): (Option field) This field is used to select the starting source timeslot number (DS0) for automatic timeslot allocation.

Adding a New Connection
(Continued)

Connection Fields (Continued)

Speed: A T1 digital transmission facility carries twenty-four 64 Kbps (DS0) "channels," for a total of 1.536 Mbps (plus 8K overhead to achieve 1.544 Mbps). These DS0s can be assigned to specific connectors on the equipment to transport computer and /or voice information. In some cases, the user has access to the full 64 Kbps per channel while, in other cases, the user is limited to 56 Kbps per channel.

Before entering a value, the user must first determine if each DS0 will carry 56 Kbps or 64 Kbps of user data and then determine the correct quantity of DS0s necessary to achieve the desired data rate.

If the "Density" parameter is "Clear", the 56/64 decision is completely user optional and "64 Kbps" is recommended to obtain maximum data transfer efficiency in the network. If "clear" is not chosen for the "density" parameter, steps must be taken to ensure proper "ones density" in the data presented to the network. If this is not done, the AX may occasionally change the user data in order to satisfy network requirements.

There are three methods that can be used to ensure ones density in the data:

■   Limit the user data to 56 Kbps per DS0. The AX will use the remaining 8 Kbps (in each DS0) to provide the required density.

■   Allow 64 Kbps user data in each DS0 and use alternate DS0s. Keep the intervening DS0s idle to provide the density. This method wastes significant bandwidth and should only be used when absolutely necessary.

■   Allow 64 Kbps user data in each DS0 when the user's protocol provides the required density. When the 56/64 decision has been made, choose the desired data rate. The correct DS0 quantity is displayed on the right side of the selection.

⚠ **CAUTION:**
In some cases, the same data rate can be achieved with two different DS0 quantities, one with 56 Kbps DS0s and the other with 64 Kbps DS0s.

Adding a New Connection
(Continued)

**Connection Fields
(Continued)**

Destination Slot and Port (Dest slot and Dest port): (Option field) These fields are used to select the destination slot and destination port for the connection. The port always defaults to 01. You can allocate the slot number.

Starting Destination Timeslot (Starting Dest Ts): (Option field) This field is used to select the starting destination timeslot number (DS0) for automatic timeslot allocation.

Voice/Data: (Option field) This field is used to select the type of traffic being connected (either voice or data).

Timeslot Allocation (Ts Allocation): (Option field) This field is used to determine how the timeslots will be allocated. The choices are **Auto-Consecutive**, **Alternate** and **Manual.**

When **Auto-Consecutive** is selected, the AX will automatically allocate timeslots in consecutive order, beginning with the starting source/destination timeslot.

When **Alternate** is selected, the AX will allocate timeslots alternately, beginning with the starting source/destination timeslot.

When **Manual** is selected, the operator must select or identify the timeslots that they would like to utilize.

Timeslot Allocation Conflicts: If there are no more timeslots available, the user will be notified by a pop-up window.

Changing an Existing Connection

Description   This screen is used for two purposes: to re-assign timeslots and to change the speed. All other parameters are read-only.

Procedure   To re-assign timeslots or to change the speed for an existing connection:

1. Display a map.

2. Move the cursor to the connection to be changed and press [Enter].

The Change Connection screen displays (Figure 4-12).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]

                          Change Connection screen

Connection name: QT1 4.1 TO QT1 4.3     Type..........: Full-Duplex
Src slot.port  : 04.01 Quad DS-1        Dest slot.port: 04.03 Quad DS-1
Speed..........: 56K      (1 DS0)       Data/Voice....: Data
-------------------------------------------------------------------
Src Port Time slot assignments          Dest Port Time slot assignments
01 QT1 4.1  12 .        23 .            01 QT1 4.1  12 .        23 .
02 .        13 .        24 .            02 .        13 .        24 .
03 .        14 .                        03 .        14 .
04 .        15 .                        04 .        15 .
05 .        16 .                        05 .        16 .
06 .        17 .                        06 .        17 .
07 .        18 .                        07 .        18 .
08 .        19 .                        08 .        19 .
09 .        20 .                        09 .        20 .
10 .        21 .                        10 .        21 .
11 .        22 .                        11 .        22 .

[V]iew all connections     [C]lear connection timeslots
```

Figure 4-12.   Change Connection Screen

Changing an Existing Connection (Continued)

**Procedure
(Continued)**

3. To display all connections, type **V**.

4. If needed, change the Speed for the connection.

5. To reassign a timeslot assignment:

   a. First, clear the connection. Move the cursor to the Src or Dest Port time slot assignment and type **C**. Both sides of the connection will be cleared from the screen.

   b. Move cursor to the new Source Timeslot and press Enter.

   c. Move cursor to the new Destination Timeslot and press Enter.

6. To save changes, type **X**.

7. When prompted: "Update Configuration? Are you sure (Y/N)?

   Type **Y**.

8. Type **X** to return to the Configuration Map Menu.

Testing a Connection

Description   Use this procedure to select a test type and to define the address (slot and port) where the test will be run. All other parameters are read-only.

Procedure   To test a connection, follow this procedure:

1.   Display a map.

2.   To test a connection, move the cursor to the Name where the connection is located and press **T**.

The Test Connection screen displays (Figure 4-13).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]

                    **** Test Connection screen ******

Connection name: QT1 4.1 TO QT1 4.3      Type..........: Full-Duplex
Src slot.port  : 04.01 Quad DS-1         Dest slot.port: 04.03 Quad DS-1
Speed..........: 56K      (1 DS0)        Data/Voice....: Data
===== Test id..: None                    TESTER slot.port:    .
Src Port Time slot assignments           Dest Port Time slot assignments
01 QT1 4.1  12 .          23 .           01 QT1 4.1  12 .          23 .
02 .        13 .          24 .           02 .        13 .          24 .
03 .        14 .                         03 .        14 .
04 .        15 .                         04 .        15 .
05 .        16 .                         05 .        16 .
06 .        17 .                         06 .        17 .
07 .        18 .                         07 .        18 .
08 .        19 .                         08 .        19 .
09 .        20 .                         09 .        20 .
10 .        21 .                         10 .        21 .
11 .        22 .                         11 .        22 .
```

Figure 4-13.   Test Connection Screen

Testing a Connection (Continued)

**Procedure
(Continued)**

3. Specify the type of test in the **Test Id** field.

4. Specify where the test will be run in the **TESTER slot port field**.

5. To save changes and exit to the Active Map menu, type **X** and confirm action when prompted by typing **Y**.

6. To restore a connection that has been put under test, on the Map Configuration screen, move the cursor to the Name where the connection is located and press **R**.

**Test Connection
Fields**

Test Id: This field is used to select one of four possible tests:

- Monitor-Src

- Monitor-Dest

- Split- Src

- Split-Dest

where: *Src = Source and Dest = Destination*

TESTER slot port: This field is used to define the address (slot and port) where the test will be run. The tester address is written as a four digit number separated by a decimal point, i.e., 01.02, where the first two digits represent the slot number and the last two digits represent the port number.

Listening to a Connection

Description   Use this procedure to establish destinations that listen to a source that is a
Broadcast Master.

Before you begin   Build a source connection as a Broadcast Master. Refer to "Adding a Connection."

Procedure   To establish destinations that listen to a Broadcast Master:

1. Display a map.

2. Locate the cursor on a Broadcast Master connection and type **L**.

    The Add New Connection Screen displays.

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]


                         Add New Connection Screen


Connection name:                        Type...........: Listen-only
Src Connection: BrdMaster-1
Src slot.......: 03                      Dest slot.......:
Src port.......: 02                      Dest port.......:
Starting Src Ts: 01                      Starting Dest Ts:
Speed..........: 56K      (1 DS0)        Voice/Data......:


Ts Allocation  : Auto-Consecutive




[S]ave connection
```

3. Identify the destination. See "Connection Fields" for details.

4. When done, type **S** or **X** to save the connection information.

5. View the timeslot allocation. Make changes and save, if needed. See
    "Changing a Connection" for details.

Listening to a Connection (Continued)

**Procedure
(Continued)**

6. Type **X** to return to the Map Configuration Menu.

7. To add more destinations that listen to a Broadcast Master, repeat steps 2 through 6.

Copying a Map

Description   You can create one or more copies of a map. You may want to copy a map and use it as a basis for a new map.

> ⟹ **NOTE:**
>   You cannot copy a map into the Active Map.

Procedure   To copy a map, follow this procedure:

1.   From the AX Main Menu, select Connection Maps Manager, then select Map Configuration.

     The Configuration Maps Menu displays (Figure 4-14).

```
Lucent Technologies      DACS II AX 4 System Manager      Help = [?]


                          Configuration Maps Menu


          No.    Name          Description             Status
          ---    ----------    -------------------     -----------
          01     Map 01        Map 01 description      Active
          02     Map 02        Map 02 description
          03     Map 03        Map 03 description
          04     Map 04        Map 04 description
          05     Map 05        Map 05 description






[A]ctivate map      [T]ag map for copy       [C]opy to all tagged maps
```
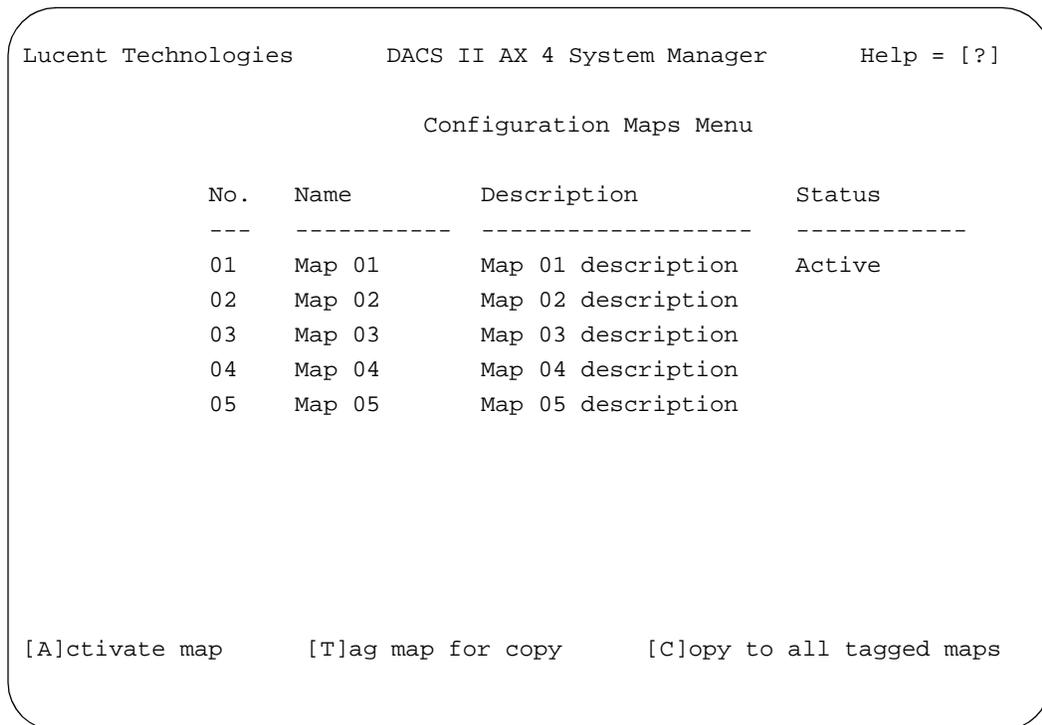
Figure 4-14.   Configuration Maps Menu

Copying a Map (Continued)

Procedure   2. Move the cursor to the map that will become the copy and type **T**. You can
(Continued)   tag one or more maps to become copies.

An asterisk (*) appears next to the maps that have been tagged.

Reminder: Use the SPACEBAR, BACKSPACE or arrow keys to move up
and down the list of maps.

3. Move the cursor to the map that will be used as the source and type **C**.

4. Confirm the copy action. The DACS II AX displays:

```
Copy map X to the tagged maps?
Are you sure (Y/N)?
```

If you are sure, press **Y**.

When the copy completes, the message "Map file copy completed"
appears. Press any key to continue.

5. If you want to make changes to one of the copies, move the cursor to that
map and press Enter .

⇒ **NOTE:**
Only one map can be active at any time.

Scheduling Maps

Description   You can create a schedule for maps that includes:

- when a map is to be activated

- the Map Name

Each day can include up to five entries.

Related Tasks   To activate a map manually, refer to the section "Activating a Map."

Procedure   To configure the time of day manager, follow this procedure:

    1. From the AX Main Menu, select Connection Maps Manager, then select
        Time of Day Configuration.

        The Time of Day Configuration Manager menu displays (Figure 4-15).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]
                        Wednesday , November 11 15:58
Time Of Day Configuration Manager Enabled:No    ActiveMap:Map 01

| Sun   | Mon   | Tues  |Wednes | Thurs | Fri   |Sat    |
|-------|-------|-------|-------|-------|-------|-------|
| 00:00 | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 |0:00   |
|...    |...    |...    |...    |...    |...    |...    |
|-------|-------|-------|-------|-------|-------|-------|
| 00:00 | 00:00 |00:00  | 00:00 | 00:00 |00:00  |00:00  |
|...    |...    |...    |...    |...    |...    |...    |
|-------|-------|-------|-------|-------|-------|-------|
| 00:00 | 00:00 | 00:00 |00:00  |00:00  |00:00  |00:00  |
|...    |...    |...    |...    |...    |...    |...    |
|-------|-------|-------|-------|-------|-------|-------|
| 00:00 | 00:00 | 00:00 | 00:00 | 00:00 |00:00  |00:00  |
|...    |...    |...    |...    |...    |...    |...    |
|-------|-------|-------|-------|-------|-------|-------|
|00:00  | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 |
|...    |...    |...    |...    |...    |...    |...    |
|-------|-------|-------|-------|-------|-------|-------|
```
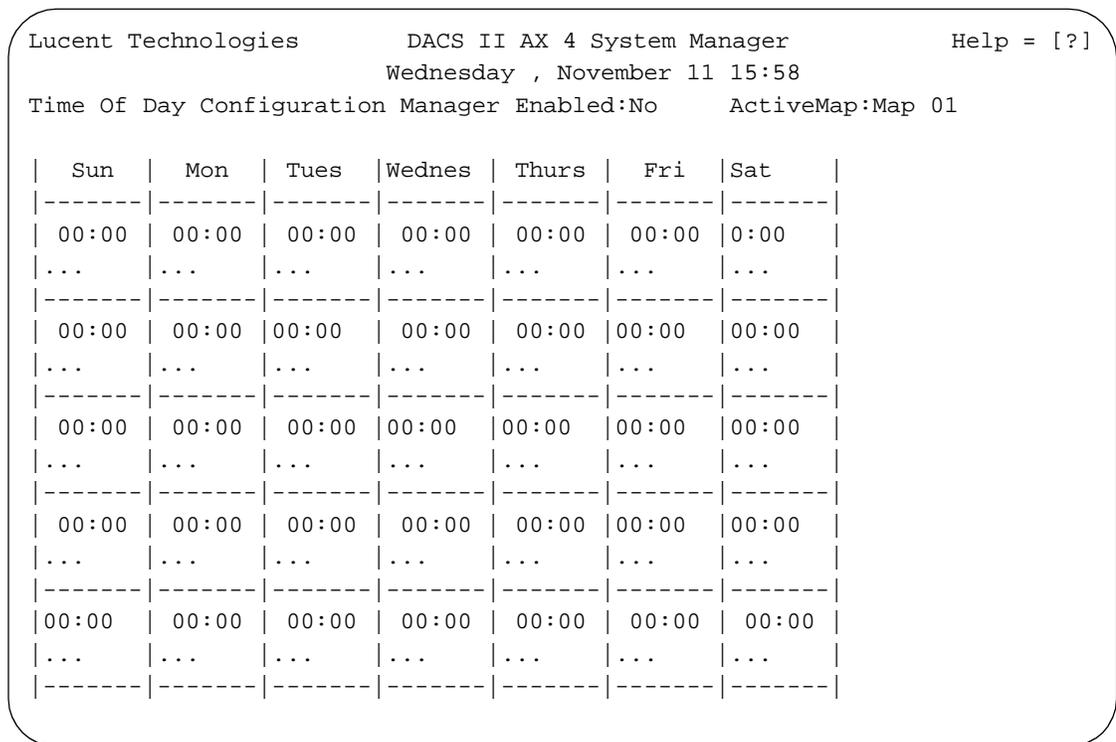
Figure 4-15.   Time and Day Configuration Menu

Scheduling Maps (Continued)

Procedure (Continued)

2. Check the day, date and time appearing at the top of this screen. If it does not match the current day, date and time, go to the Date and Time Menu and correct it immediately. Otherwise, your maps may be activated at the wrong times. See "Setting the Date and Time" for details.

3. For each day, there are five blocks. To schedule a map for activation, enter the time using 24-hour notation and the Map Name.

4. To save changes, type **X**.

5. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

Fields

Active Map: This is a read-only field. It shows which map, if any, is currently active.

Enabled: Indicates if the time of day configuration feature has been enabled. If "yes," the connection maps will be activated at the pre-set times. If "no," the schedule is blank. If the Time of Day feature is enabled, the new configuration will take effect as soon as this configuration is completed.

Day Entries (00:00): (Option field) Select the time that the map is to be activated. Select hours and minutes. Use 24-hour notation.

Map Name (...): (Option field) Select the name of the map to be activated.

Scheduling Maps (Continued)

Sample Schedule

```
/ Lucent Technologies        DACS II AX 4 System Manager        Help = [?] \
                           Wednesday , November 11 15:58
  Time Of Day Configuration Manager Enabled:Yes    ActiveMap:Map 01

  |  Sun  |  Mon  |  Tues |Wednes | Thurs |  Fri  |Sat    |
  |-------|-------|-------|-------|-------|-------|-------|
  | 06:00 | 06:00 | 06:00 | 06:00 | 06:00 | 06:00 |06:00  |
  |Daily  |Daily  |Daily  |Daily  |Daily  |Daily  |Daily  |
  |-------|-------|-------|-------|-------|-------|-------|
  | 20:00 | 20:00 |10:00  | 20:00 | 20:00 |20:00  |20:00  |
  |Night  |Night  |Special|Night  |Night  |Night  |Night  |
  |-------|-------|-------|-------|-------|-------|-------|
  | 00:00 | 00:00 | 12:00 |00:00  |00:00  |00:00  |00:00  |
  |...    |...    |Daily  |...    |...    |...    |...    |
  |-------|-------|-------|-------|-------|-------|-------|
  | 00:00 | 00:00 | 20:00 | 00:00 | 00:00 |00:00  |00:00  |
  |...    |...    |Night  |...    |...    |...    |...    |
  |-------|-------|-------|-------|-------|-------|-------|
  |00:00  | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 |
  |...    |...    |...    |...    |...    |...    |...    |
  |-------|-------|-------|-------|-------|-------|-------|
\                                                                          /
```

Setting the Current Date and Time

Description   Make sure the system date and time are set correctly to ensure that scheduled maps execute at the correct times.

> **NOTE:**
> For convenience, the Date and Time option can be set from either the Connections Map Menu or the System Configuration Menu.

Procedure   To change the date and time settings, follow these steps:

1. From the Main Menu, select Connection Maps Manager, then select Date and Time.

   The Date and Time Menu displays (Figure 4-16).

```
Lucent Technologies          DACS II AX 4 System Manager        Help = [?]


                              Date and Time Menu


                         Month.....: March
                         Day.......: 1
                         Year......: 1999
                         Hour......: 16
                         Minute....: 27
                         Second....: 45
                         Day of Week: Monday
```

Figure 4-16.   Date and Time Menu

Setting the Current Date and Time (Continued)

**Procedure
(Continued)**

2. Scroll through the options for each field until the correct values display on the screen.

    Reminder: Press Enter to scroll forward through the options or type **B** to scroll back. Press SPACE, BACKSPACE, or use the arrow keys to move between fields.

3. Type **X** and confirm action when prompted, by typing **Y**. Changes are saved and you return to the previous menu.

Fields

Month: Options are January through December.

Day: Options are 1 through 31.

Year: Change to current year. The DACS II AX is year 2000 compliant.

Hour: Options are 0-23.

Minute: Options are 0 through 59.

Second: Options are 0 through 59.

Day of Week: Options are Sunday through Saturday.

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Save and Restore Database

Description   The AX system provides the capability to save the system configuration database as a software file and to restore the system configuration from previously saved software files.

Since the system configuration is software-based, standard protocols like TFTP can be utilized to transfer the system configuration database to a remote host (PC or workstation). Conversely, files that have been uploaded to a remote host for archival purposes can be downloaded to an AX for disaster recovery or to facilitate system configuration on new installations.

⟹ **NOTE:**
The Save/Restore Database function is also available from the System Manager Configuration Menu for convenience.

Saving the AX's Configuration Data to a Host

Description   The SAVE operation gathers all of the files that exist on the AX, compresses them, and then sends them to the host.

If you plan to save more than one AX to the host, remember to enter a unique name for each file so that existing files do not get overwritten.

Procedure   To save the AX's configuration to a host, use the following procedure.

1. Create a directory on the host that will be used to store the AX's configuration. Because the configuration consists of several files, a separate directory is required for each AX.

2. Run the host's TFTP server.

3. From the AX Main Menu, select System Configuration, then select Save/Restore Database.

    The Save and Restore Database Menu displays (Figure 4-17).

```
Lucent Technologies      DACS II AX 4 System Manager        Help = [?]


                        Save and Restore Database Menu


Host IP address.: 193.222.333.444
Host directory..: d:\
Host file name..: hostconf












[S]ave Database      [R]estore Database
```

Figure 4-17.   Save and Restore Database Menu

Saving the AX's Configuration Data to a Host (Continued)

Procedure (Continued)

4. Enter the remote host's IP address and the directory on the host where this AX's files are to be saved. Specify the file name for the file on the host. It is recommended that you change this name if you plan to save more than one AX to the host.

5. Type **S** to execute the Save Database command and exit the menu.

6. Type **Y** at the confirmation screen.

    The progress of the transfer will appear on the screen. If there are any errors, correct the problem and perform the save again.

Restoring the AX's Configuration Data from a Host

Description   The RESTORE operation gathers the backup file from the host and restores the files on the AX's System Manager Cards.

When you restore file names, the file name on the host will have a .b extension.

Procedure   To restore the AX's configuration from a host, use the following procedure.

1. Run the host's TFTP server.

2. From the AX Main Menu, select System Configuration, then select Save/Restore Database.

    The Save and Restore Database Menu displays (Figure 4-18).

```
Lucent Technologies      DACS II AX 4 System Manager        Help = [?]


                         Save and Restore Database Menu


Host IP address.: 193.222.333.444
Host directory..: d:\
Host file name..: upper











[S]ave Database        [R]estore Database
```

Figure 4-18.   Save and Restore Database Menu

Restoring the AX's Configuration Data
from a Host (Continued)

Procedure (Continued)

3. The remote host's IP address and directory where this AX's configuration was saved will appear in the proper fields. If incorrect, enter the correct information.

4. Type **R** to execute the Restore Database command and exit the menu.

5. Type **Y** at the confirmation screen.

    The progress of the transfer will appear on the screen. If there are any errors, correct the problem and perform the restore again.

    After the files have been transferred, the system will re-initialize itself with the restored configuration.

Save and Restore Database Fields

Host IP Address: This field is used to specify the remote host's IP address. IP addresses are 32 bits long and written as four decimal digits separated by a period. Each digit represents 8 bits of the address. The range of each digit is from 0-255.

Enter an IP address in dotted decimal form. If you do not know the remote host's IP address, consult your network administrator.

Host Directory: This field is used to specify the directory on the remote host where the AX's files are to be saved. A maximum of up to eight characters is allowed in this field.

Host File Name: The host file name is the name the file will have on the host. If you plan to save more than one AX to the host, remember to enter a unique name for each file so that existing files do not get overwritten. When you restore file names, the file name will have a .b extension. A maximum of up to eight characters is allowed in this field.

Node Summary Menu

5

Contents

Background

Introduction   The Node Summary Menu provides access to all of the application modules that
are installed in the DACS II AX 4/11. Select this option when you want to change
or display information about an individual application module installed in the AX
chassis.

Each of the application modules are further described in Chapters 9 through 14.

⇒ **NOTE:**
If an application module is not present in the equipment chassis, you can
not access the individual screens associated with it. The menus for each
application module are derived from the actual application module.

**Node Summary
Menu Structure**

```
                          ┌─────────────────────┐
                          │    NODE SUMMARY     │
                          └─────────────────────┘
                                     │
        ┌────────────┬───────────────┼──────────────┬──────────────┐
   ┌──────────┐ ┌──────────────────┐ ┌────────┐ ┌──────────┐ ┌──────────────┐
   │QUAD DS-1 │ │ QUAD HIGH SPEED  │ │  DS-3  │ │QUAD OCU  │ │ TEST ACCESS  │
   └──────────┘ └──────────────────┘ └────────┘ └──────────┘ └──────────────┘
```
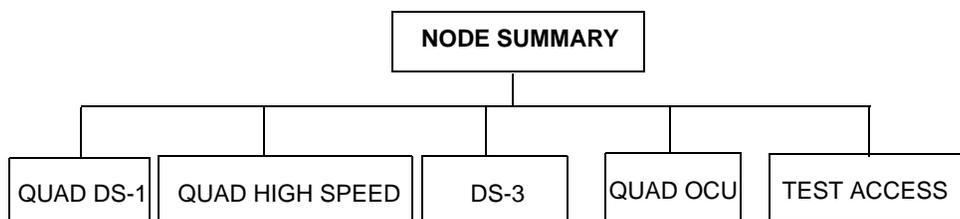
Figure 5-1.   Node Summary Menu Structure

Application Module Configuration

Configuring Application Modules

To initially configure, change, or delete any of the application modules installed in the DACS II AX, select Node Summary from the AX Main Menu. The Node Summary Menu displays a summary of the modules physically located in each of the slots in the chassis.

Node Summary Menu

The Node Summary Menu is shown in Figure 5-2.

```
 Lucent Technologies          DACS II AX 11 - System Manager      Help = [?]
 Standby SMC not present


                             Node Summary Menu

 Slot#  Configured Type     Actual Type         Status
 -----  --------------      ----------          ------
 01)    Quad DS-1           Quad DS-1           OK
 02)    Quad DS-1           Quad DS-1           OK
 03)    ----                ----                Not Present
 04)    ----                ----                Not Present
 05)    ----                ----                Not Present
 06)    Quad DS-3           Quad DS-3           OK*
 07)    Quad DS-3           Quad DS-3           Alarm*
 08)    ----                ----                Not Present
 09)    Test Access         Test Access         OK
 10)    Quad High Speed     Quad High Speed     OK
 11)    Quad OCU            Quad OCU            OK
 SMCA)  System Manager                          On Line
 SMCB)  System Manager                          Not Present


 [C]hange slot configuration     [D]elete slot configuration
```

Figure 5-2.   Node Summary Menu

Application Module Configuration (Continued)

Node Summary Menu (Continued)

The Node Summary Menu shows a listing of 4 slots for the DACS II AX 4, or 11 slots for the DACS II AX 11. For each slot, the Node Summary Menu lists:

- **Slot#**: the number of the slot.

- **Configured Type**: the type of module that has been defined for the slot.

- **Actual Type**: the actual module physically located in the slot.

- **Status**: the current status of each module in the chassis, including the System Manager Cards (SMCA and SMCB).

  An asterisk (*) indicates that an alarm has occurred for that module. To find out more about the alarm, refer to the Event Log. For the Quad DS-1 and Quad DS-1 with xDSL modules, you can also refer to the Statistics menus. The asterisk remains on the Node Summary Menu until you reset counts from the Diagnostics menu for that module.

> **NOTE:**
> If Configured Type and Actual Type differ, move cursor to Slot# and type **C**. Change the Card type.

SMCA/SMCB

The AX supports optional redundant System Manager Cards (SMCs).

The DACS II AX 11 equipment chassis has two half-height slots positioned vertically on the left front side for the SMCs. The SMCA is located in the top slot and the SMCB is located in the bottom slot.

The DACS II AX 4 equipment chassis has two half-height slots positioned horizontally on the top for the SMCs. The SMCA is located in the slot on the right side and SMCB is located in the slot on the left side.

If the system is used in a non-redundant mode, either slot can be populated. The **Status** field of the Node Summary Menu displays which slot is populated and which slot is not.

Application Module Configuration (Continued)

**Actions Available
from the Node
Summary Menu**

Table 5-1 lists the actions available from the Node Summary Menu.

Table 5-1.   Node Summary Menu Actions

Action	Key
Define the type of application module in a slot.	Move cursor to Slot# and type **C**. The Card Slot Menu (Figure 3-4) appears. The Card Slot Menu, as shown and explained in Chapter 3, allows you to define the type of application module in the slot and to optionally name the slot.
Delete a slot configuration	Move cursor to Slot# and type **D**.
Access the application module for configuration, diagnostics, or utilities options	Move cursor to Slot# and press Enter. **⊟▷ NOTE:** The Main Menu for the slot/application module you select will appear only if that module is physically located in the slot.

System Events

<div style="text-align: right; font-size: 3em;">**6**</div>

Contents

Background

Overview   The AX constantly monitors for the occurrence of "events" such as alarms, test
                      commands, and system resets. When an event occurs, it is given a sequence
                      number and is time and date stamped. The slot associated with the event as well
                      as a description of the event is recorded.

Events Menu   Figure 6-1 illustrates the Events menu structure.
Structure
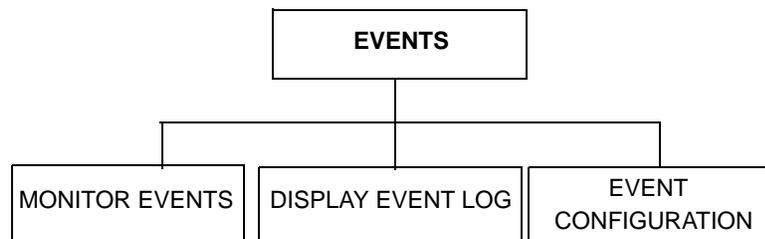
Figure 6-1.   Events Menu Structure

Events Menu   The Events Menu has three options:
Options
                      ■   **Monitor Events** enables you to see events as they take place. You also
                          select this option to clear the Event Log.

                      ■   **Display Event Log** shows the most recent events, up and until the moment
                          you requested to view the log. It will not "add" any events that may be
                          occurring as you view the log. You *cannot* clear the log from this screen.

                      ■   **Event Configuration** enables you to dump the AX's Event Log to a PC or
                          workstation. You must have the syslog program running on your PC or
                          workstation to perform this function.

Monitoring Events

Description   You can monitor events as they take place on the DACS II AX. Up to one screen of
                          events can be displayed. Events are added to the top of the list as they occur.

Procedure   Use this procedure to monitor events on the DACS II AX:

1. From the AX Main Menu, select Events, then select Monitor Events.

    The System Events screen displays (Figure 6-2).

```
 Lucent Technologies          DACS II AX 4 System Manager          Help = [?]


                                System Events

 Seq  Time  Date  Slot  Event
 ---  ----  ----  ----  ----------------------------------------------
 0048 17:02 11/11 SMCA  def >> Added user - one
 0047 17:01 11/11 0003  Port 4 is In Service
 0046 17:01 11/11 0003  Port 3 is In Service
 0045 17:01 11/11 0003  Port 2 is In Service
 0044 17:01 11/11 0003  Port 1 is In Service
 0043 17:01 11/11 0003  QHS Reset
 0042 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
 0041 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
 0040 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
 0039 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
 0038 17:01 11/11 SMCA  LOGIN user - DefaultUser (login total: 2)
 0037 17:01 11/11 SMCA  LOGOUT user - DefaultUser (login remains: 1)
 0036 17:00 11/11 SMCA  LOGIN user - DefaultUser (login total: 2)
 0035 15:46 11/11 SMCA  LOGOUT user - DefaultUser (login remains: 1)
 0034 15:36 11/11 SMCA  Card in slot 0004 present

 [C]lear event log                 >> indicates Audit Trail Event
```

Figure 6-2.   System Events Menu

2. To clear the Event Log, type **C** and confirm.

3. To exit the screen and return to the previous menu, press Esc .

Displaying the Event Log

Description   Display the Event Log to show the most recent events that have occurred on the DACS II AX. Events will not be added to the Event Log while it is displayed.

Related Tasks   To clear the contents from the Event Log, select the Monitor Events option from the Events Menu. See "Monitoring Events" for more information.

To send events to syslog on a remote host, see "Sending Events to a Remote Host."

Procedure   Use this procedure to display the Event Log:

1.   From the Main Menu, select Events, then select Event Log.

    The Event Log displays (Figure 6-3).

```
Seq  Time  Date  Slot  Event
---  ----  ----  ----  -----------------------------------------------
0048 17:02 11/11 SMCA  def >> Added user - one
0047 17:01 11/11 0003  Port 4 is In Service
0046 17:01 11/11 0003  Port 3 is In Service
0045 17:01 11/11 0003  Port 2 is In Service
0044 17:01 11/11 0003  Port 1 is In Service
0043 17:01 11/11 0003  QHS Reset
0042 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
0041 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
0040 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
0039 17:01 11/11 SMCA  StatusServer: Frame Sync Pulse Failure - 1 Devices
0038 17:01 11/11 SMCA  LOGIN user - DefaultUser (login total: 2)
0037 17:01 11/11 SMCA  LOGOUT user - DefaultUser (login remains: 1)
0036 17:00 11/11 SMCA  LOGIN user - DefaultUser (login total: 2)
0035 15:46 11/11 SMCA  LOGOUT user - DefaultUser (login remains: 1)
0034 15:36 11/11 SMCA  Card in slot 0004 present
0033 15:36 11/11 SMCA  Card in slot 0003 present
0032 15:36 11/11 0003  Port 4 is In Service
0031 15:36 11/11 0003  Port 3 is In Service
0030 15:36 11/11 0004  Port 4 is In Service
```

Figure 6-3.   Event Log

Displaying the Event Log

**Procedure
(Continued)**

2. To exit the screen and return to the previous menu, press ⃞Esc⃞ .

Displaying the Event Log

Sending Events to a Host PC or Workstation

Description   You can log events to syslog on a host PC or workstation so that you do not need to be logged into the DACS II AX to receive event information. If you choose to log events to syslog, events will also be recorded in the DACS AX Event Log.

Before you begin   You must have syslog installed on your PC or workstation.

Procedure   Use this procedure to send events to syslog on a remote host.

1.   From the Main Menu, select Events, then select Event Configuration.

    The Event Configuration Menu displays (Figure 6-4).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]



                        Event Configuration Menu




              Log events to syslog....: No
              Syslog server IP address: 0.0.0.0
              Identifier.............:
```

Figure 6-4.   Event Configuration Menu

Sending Events to a Remote Host (Continued)

Procedure (Continued)

2. To send log events to a remote host, select **Yes** in the **Log events to syslog** field. Specify the Syslog server IP address in dot notation and the identifier for the DACS II AX.

3. Type **X** and confirm action when prompted, by typing **Y**. Changes are saved and you return to the previous menu.

Fields

Log events to syslog: Select yes or no to send the event data to a host PC or workstation.

Syslog server IP Address: This is the host address in dot notation where you want to send the event data.

Identifier: A filename that will identify the specific DACS II AX unit from which the information is being sent.

Utilities

7

Contents

Contents (Continued)

Background

Overview

> ⚠️ **WARNING:**
> *Use caution when initiating Utilities Menu commands. Some of these commands may be service-affecting and should only be performed by knowledgeable personnel.*

The Utilities Menu provides options that enable you to:

- run diagnostic utilities for debugging purposes

- manually copy the file system to the standby SMC

- switchover System Manager Cards (SMCs)

- download software

- return the system to default settings

Before you begin

Reminder: To activate the values that you enter or select on the configuration screens, you must exit the screen. Diagnostic parameters are activated immediately, as soon as you change the value on the screen.

Utilities Menu

Accessing the   To access the Utilities menu, select Utilities from the AX Main Menu. The Utilities
Utilities Menu   Menu displays (Figure 7-1).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]



                            Utilities Menu


                      Copy File System
                      Switchover SMCs
                      MIB Table
                      Ping
                      IP Route Table
                      ARP Table
                      Return to Default Settings
                      Backplane Timeslots Display
                      Initialize SMC Rearcard Modem
                      File System Debug Counters
                      Download Devices Software
                      Reset All Channel Cards
```
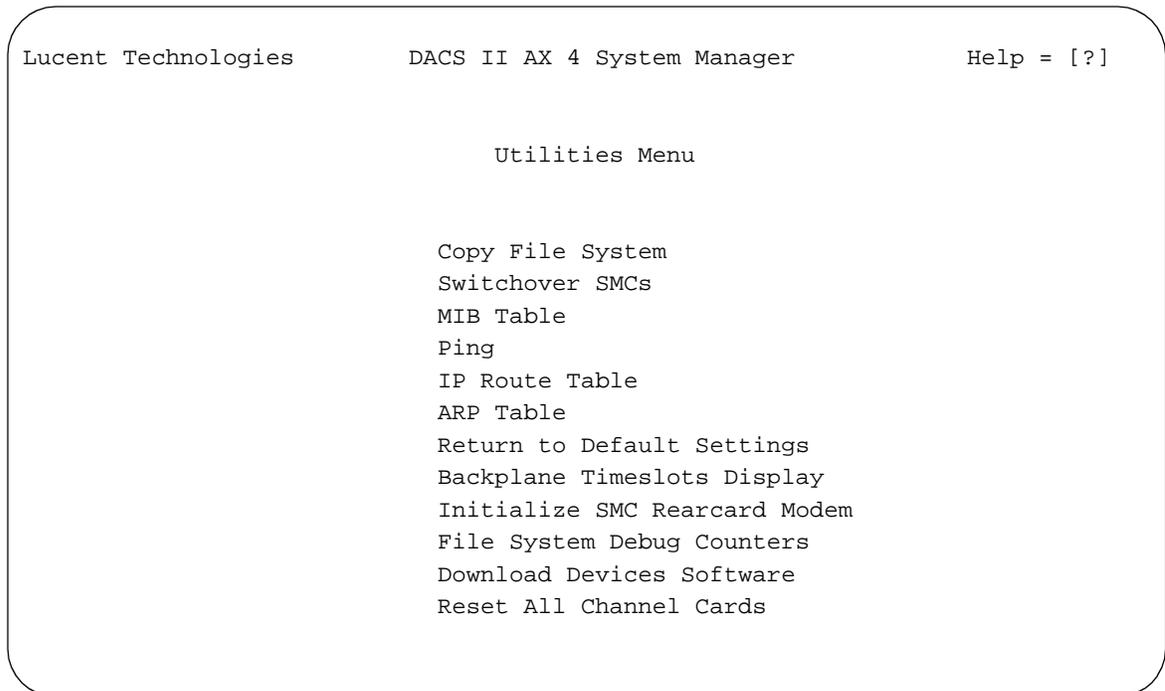
Figure 7-1.   Utilities Menu

Copy Files to Standby SMC

Description   If you have two System Manager Cards, the DACS II AX automatically copies files from the online SMC to the standby SMC periodically, so that the two file systems are identical.

You can also manually copy the file system from the online SMC to the standby SMC. For example, you may want to copy the file system when you have made many changes and you want to update the standby SMC immediately.

By copying the configuration files from the online SMC to the standby SMC, you can help ensure that the AX stays online. The standby SMC is automatically switched in should the "online" unit fail, thereby restoring service and minimizing any outages.

Related tasks   To switch manually to the Standby System Manager Card, choose the Swithover SMCs option from the Utilities menu.

Copy Files to Standby SMC
(Continued)

Procedure   To copy the configuration files from the on-line SMC to the standby SMC:

      1.   From the AX Main Menu, select Utilities, then select Copy File System. This
         message displays: `Copy files to offline SMC?`

```
Lucent Technologies        DACS II AX 4 System Manager       Help = [?]



                          Utilities Menu


              ************************************
              *                                  *
              *            -MESSAGE!-            *
              *                                  *
              *                                  *
              *     Copy files to offline SMC?   *
              *                                  *
              *                                  *
              *        Are you sure (Y/N)?        *
              *                                  *
              ************************************
```

Figure 7-2.   Copy File System Menu

      2.   Type **Y**.

         All configuration files are copied to the Standby System Manager Card.
         When the configuration files have been copied, the Standby System
         Manager Card resets.

Switchover SMCs

Description   This procedure applies only if you have two SMCs in the DACS II AX system.

The standby SMC is automatically switched in should the "online" unit fail. You can also switch manually to the standby SMC by choosing the Swithover SMCs option from the Utilities menu.

Procedure   To manually switch to the Standby SMC:

1. From the AX Main Menu, select Utilities, then select Swithover SMCs. This message displays: `Switchover SMCs?`

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]



                            Utilities Menu


                 ***********************************
                 *                                 *
                 *            -MESSAGE!-            *
                 *                                 *
                 *                                 *
                 *          Switchover SMCs?       *
                 *                                 *
                 *                                 *
                 *         Are you sure (Y/N)?     *
                 *                                 *
                 ***********************************
```

Figure 7-3.   **Switchover SMC Menu**

2. Type **Y**.

    The standby SMC goes "on-line" (*becomes active*), and the on-line System Manger Card goes "off-line" (*becomes inactive*).

MIB Table

Description   Use the MIB Table diagnostic utility to display read-only diagnostics of network
activity. The MIB display is significant for those running IP traffic. The table
displays the MIB-II parameters as defined in RFC1213.

Procedure   To access the MIB Table diagnostic utility:

1.   From the AX Main Menu, select Utilities, then select MIB Table.

The MIB Display is shown (Figure 7-4).

```
MIB II display...
***** IP variables *****
ipInReceives...:     984439 ipInHdrError:          0 ipInAddrErrors:         0
ipForwDatagrams:          0 ipInDiscards:          0 ipInDelivers:      966199
ipUnknownProtos:          0 ipOutRequest:     216902 ipOutDiscard:           0
ipOutNoRoutes..:      36522 ipReasmOKs  :          0 ipReasmFails:           0
***** ICMP variables *****
icmpInMsgs.....:         13 icmpInErrors:          0 icmpInDestUnreac:      13
icmpInTimeExcds:          0 icmpInParmPr:          0 icmpInSrcQuenchs:       0
icmpInEchos....:          0 icmpInEchoRp:          0 icmpInTimestamps:       0
icmpInTstampRep:          0 icmpInAddrMa:          0 icmpInAddrMaskRe:       0
icmpOutMsgs....:      18261 icmpOutError:          0 icmpOutDestUnrea:   18261
icmpOutTimeExcd:          0 icmpOutParmP:          0 icmpOutSrcQuench:       0
icmpOutRedirect:          0 icmpOutEchos:          0 icmpOutEchoReps :       0
icmpOutTimestam:          0 icmpTimesRep:          0 icmpOutAddrMasks:       0
icmpOutAddrMaRe:          0
***** UDP variables *****
udpInDatagrams.:     965512 udpNoPorts  :          0 udpInErrors    :        0
udpOutDatagrams:     197949
Press any key to continue...
```

Figure 7-4.   MIB Display

2.   Press any key to display more of the MIB display.

Ping

Description
The ping command enables you to see if a remote system is up and accessible by your host. The ping command sends a datagram to the remote system and waits for a response.

Procedure
To access the Ping utility:

1. From the AX Main Menu, select Utilities, then select Ping.

    The Ping Menu displays (Figure 7-5).

```
Lucent Technologies      DACS II AX 4 System Manager        Help = [?]

                            Ping Menu

                     Ping Setup
                     ----------
                     Node IP address....: 0.0.0.0
                     Ping count.........: 1
                     Number of bytes....: 64


                     Ping Statistics
                     ---------------
                     Pings sent.........: 0
                     Pings received.....: 0
                     Bytes received.....: 0
                     Roundtrip delay(ms): 0
                     Percent loss.......: 0.0 %




[S]tart/Stop pinging
```

Figure 7-5.   Ping Menu Display

Ping (Continued)

**Procedure
(Continued)**

2. Enter the Node address, Ping count, and Number of bytes, then type **S**.

    The unit responds with ping statistics. The screen will show the number of pings sent and received (echoed back) from the IP address, and the length of time, in milliseconds, that it took for the echo request message to be sent to the IP address and the echo reply message to be returned to the AX System Manager. If the count is 0, the trip was accomplished in less than 10 ms.

3. Type **S** to stop ping.

4. Press ⬚Esc to return to the previous menu.

Ping Fields

Node IP address: The IP address you want to ping. The address is entered in dotted decimal notation.

Ping count: The number of times you want to ping the defined address.

Number of bytes: The optional length (in bytes) of the ping message you plan to send. This is used to verify that the receiving end can receive a packet of the defined size.

IP Route Table

Description   The IP Route Table is used to route a datagram to the AX and send it to its next hop. Select Show IP route to show a specific route for an individual destination. Select Dump IP route table for a listing of every destination address and the route each takes.

Procedure   To access the IP Route Table diagnostic utility:

1.   From the AX Main Menu, select Utilities, then select IP Route Table.

The IP Route Table Menu displays (Figure 7-6).
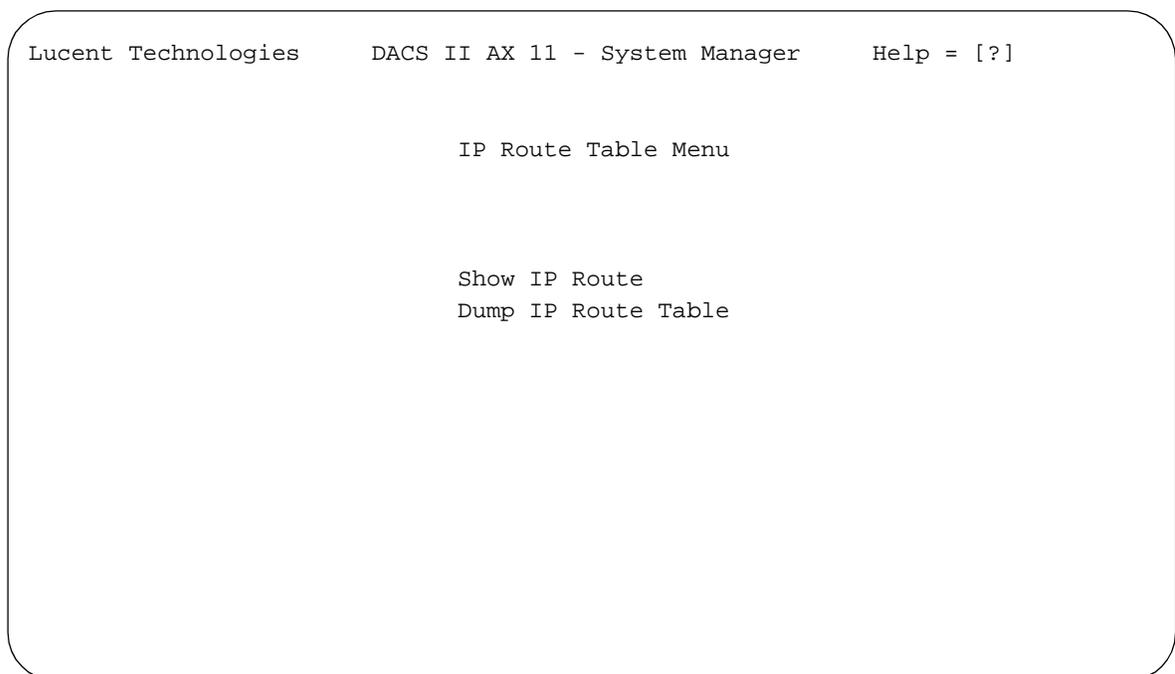
```
Lucent Technologies     DACS II AX 11 - System Manager     Help = [?]



                           IP Route Table Menu




                           Show IP Route
                           Dump IP Route Table
```

Figure 7-6.   IP Route Table Menu

IP Route Table (Continued)

**Procedure
(Continued)**

2. If you select Show IP Route, enter the Requested route.

    Requested route: This field allows you to request routing information for a specific destination network address or a specific host address. Enter the requested route address in dotted decimal notation (Figure 7-7).

```
Lucent Technologies   DACS II AX 11 – System Manager      Help = [?]



                              Show IP Route Menu


Requested route.: 0.0.0.0
Route...........:                       Port............:
Mask............:                       Hops............: 0
Next hop........:                       TimeToLive......:
```

Figure 7-7.   Show IP Route Menu

IP Route Table (Continued)

Procedure (Continued)   3.   If you select Dump IP Route (Figure 7-8), enter the Route/Address.

Route/Address: This address is the destination network address or a specific host address. It is represented in "dotted decimal notation." Each digit represents 8 bits of the address. The range of each digit is from 0-255.

```
IP route table display...

Address          Mask             Next Hop        Port      Hops TimeToLive
-------          ----             --------        ----      ---- ----------
200.0.0.128      255.255.255.255  Direct          Internal  0    Forever
200.0.0.252      255.255.255.255  Direct          Internal  0    Forever
200.0.0.253      255.255.255.255  Direct          Internal  0    Forever
200.0.0.122      255.255.255.255  Direct          Internal  0    Forever
200.0.0.0        255.255.255.0    Direct          1         0    180
207.124.164.37   255.255.255.255  Direct          Internal  0    Forever
207.124.164.0    255.255.255.0    Direct          0         0    180

Press any key to continue...
```

Figure 7-8.   Dump IP Route

4.   Press $\boxed{\text{Esc}}$ to return to the previous menu.

IP Route Table (Continued)

IP Route Fields **Mask:** This address is generated automatically and is represented in "dotted decimal notation."

Next Hop: This is the IP address to which an IP frame is to be forwarded. The network portion matches the network portion of the AX port. The next hop is represented in "dotted decimal notation."

Port: This field identifies the port from which the datagram is sent. If it is set to 0, the port is a logical port. If it is set to "internal," it represents the AX address.

Hops: This field represents the number of hops required to reach the remote IP network. The range is from 0-15.

Time To Live: This count represents the amount of time (in seconds) that an address can remain inactive before it is deleted. If the field is set to "Forever," the address will not be deleted; it has been entered manually and will not age.

ARP Table

Description   ARP stands for Address Resolution Protocol as defined by RFC826. ARP is used to obtain the physical layer address associated with the IP address. Mapping is created between the physical and IP addresses. The physical addresses are dynamically discovered.

Procedure   To access the ARP table diagnostic utility:

1.   From the AX Main Menu, select Utilities, then select ARP Table.

The ARP Table Menu displays (Figure 7-9).

```
ARP table display...
Protocol Address     Hardware Address      State      TimeToLive
-------- ----------  ----------------      ---------  ----------
192.168.210.5        00:20:54:30:01:35     Resolved    600
192.168.210.120      52:54:00:da:2e:57     Resolved    521
192.168.210.100      00:a0:24:a9:55:24     Resolved    593

Press any key to continue...
```

Figure 7-9.   ARP Table Utility Display

2.   Press any key to continue.

ARP Table (Continued)

ARP Table Fields

Protocol Address: This is the IP address.

Hardware Address: This is the physical address associated with the IP address.

State: The State is either "pending" or "resolved". If the AX is in a "pending" state, the address has not been resolved; the AX is waiting for an ARP reply message.

Time To Live: This count represents the amount of time (in seconds) that the address can remain inactive before it will be deleted. The maximum count is 10 minutes (600 seconds).

Return to Default Settings

Description   This option resets the system configuration. It erases the flash system, reformats and initializes the flash, and creates default configuration files. Any system configurations that may have been entered will be erased.

> ⚠️ **CAUTION:**
> *This command may be service-affecting and should only be performed by knowledgeable personnel.*

Procedure   To reset the system configuration to default settings:

1. From the AX Main Menu, select Utilities, then select Return to Default Settings.

   This message displays: `Reset configuration?`

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]



                              Utilities Menu


            ***********************************
            *                                 *
            *              -MESSAGE!-          *
            *                                 *
            *                                 *
            *         Reset configuration?    *
            *                                 *
            *                                 *
            *         Are you sure (Y/N)?     *
            *                                 *
            ***********************************
```

Figure 7-10.   Default Settings Display

2. Type **Y**. The system returns to the default settings.

Backplane Timeslots Display

Description   The Backplane Timeslots Display is a read-only diagnostic utility which provides a detailed list of all of the configured connections in the system. Each connection is defined by its backplane timeslot number (BTS), connection ID number (Cid), physical slot (Sl), port (Po) and time slot assignment (Ts), and connection name. In addition, each connection is also given a "flag" which further defines the connection as a "write to" or "read-from" connection, as a "destination" or "source" connection, and as a "data" or "voice" connection. The flag also provides the tester slot and port as well as the bus associated with each connection.

The flag is defined as follows:

WDda#(00.00) where:
the first character is a capital W or R and: W = Write to Backplane   R = Read from Backplane;
the second character is a capital D or S and: D = Destination   S = Source;
the third character is a lower-case d or v and: d = data   v = voice;
the fourth character is a lower-case a or b and: a = bus a   b = bus b;
the fifth character is the number of bits (7 or 8);
the last characters (in parentheses) represent the tested slot and port numbers.

Backplane Timeslots Display
(Continued)

Procedure   To see the Backplane Timeslots Display:

1. From the AX Main Menu, select Utilities, then select Backplane Timeslots
    Display

    The Backplane Timeslots Display is shown (Figure 7-11).

```
-----  DNX Backplane Timeslot Map Id = 3 Version =50 .---------
   ---- Bus A Bts Writers and Readers  Groups ----
 BTS  Cid   Sl Po Ts Flags           Connection Name
 0087 0002  01.03.01 WSda7(00.00)    QT1-1.3 TO QT1-1.1V
 0087 0002  01.01.01 RDda7(00.00)    QT1-1.3 TO QT1-1.1V
-----
 0088 0002  01.01.01 WDda7(00.00)    QT1-1.3 TO QT1-1.1V
 0088 0002  01.03.01 RSda7(00.00)    QT1-1.3 TO QT1-1.1V
-----
 0089 0002  01.03.03 WSda7(00.00)    QT1-1.3 TO QT1-1.1V
 0089 0002  01.01.03 RDda7(00.00)    QT1-1.3 TO QT1-1.1V
-----
 0090 0002  01.01.03 WDda7(00.00)    QT1-1.3 TO QT1-1.1V
 0090 0002  01.03.03 RSda7(00.00)    QT1-1.3 TO QT1-1.1V
-----
 0091 0002  01.03.05 WSda7(00.00)    QT1-1.3 TO QT1-1.1V
 0091 0002  01.01.05 RDda7(00.00)    QT1-1.3 TO QT1-1.1V
-----
 0092 0002  01.01.05 WDda7(00.00)    QT1-1.3 TO QT1-1.1V
 0092 0002  01.03.05 RSda7(00.00)    QT1-1.3 TO QT1-1.1V
-----

press <CR> to continue - any other key to exit.
```

Figure 7-11.   Backplane Timeslots Display

2. Press Enter to continue displaying backplane timeslots or press any other
    key to exit.

Initialize SMC Rear Card Modem

Description   The SMC has a built-in modem which can be used for remote configuration or for technical support. You may want to initialize the modem when it is hung up and not responding.

Procedure   To initialize the SMC rear card modem:

1. From the AX Main Menu, select Utilities, then select Initialize SMC Rear Card Modem.

    The command executes immediately and then displays the message:
    `Modem initialization complete.`

```
 Lucent Technologies      DACS II AX 4 System Manager      Help = [?]



                          Utilities Menu


             ***********************************
             *                                 *
             *      -Hit any key to continue-   *
             *                                 *
             *                                 *
             *  Modem initialization completed! *
             *                                 *
             *                                 *
             *                                 *
             *                                 *
             ***********************************
```

Figure 7-12.   Initialize SMC Rear Card Modem

File System Debug Counters

Description   The File System Debug Counters is a read-only screen which describes the file
system on the SMC, keeps track of deleted files, and shows how much space is
left.

Procedure   To display the System Debug Counters:

1. From the AX Main Menu, select Utilities, then select File System Debug
    Counters.

```
    X2 File System Statistics and Debug Counters Menu


Invalid Volume.............: 0      FDISK executed.............: 0
Garbage Collection.........: 0      Wipe Files.................: 0
Wipe Disk..................: 0      Open Files.................: 0
Number of Readers..........: 0      Number of Writers..........: 0
nDisk information
----------------
Volume Name..........: [AX-SMC]     Chip Type..: AMD AM29F040.
Total disk space.....: 483328       Remaining disk space.: 466048
Total FAUs...........: 3776         Available FAUs.......: 3641
Total dir entries....: 1024         Free dir entries.....: 974
Used dir entries.....: 31           Deleted dir entries..: 19
File System Checksum.: 295379       File System Errors...: 0

              - Press any key to exit -
```

Figure 7-13.   File System Debug Counters

2. Press any key to exit this screen and return to the previous menu.

Download Devices Software

Description   The Download Devices Software option allows you to easily download program
files from the SMC to any or all of the application modules.

Procedure   To download a program file, follow these steps:

1. First, download the new program file from a host computer to the DACS II
    AX System Manager Card, following the procedure in Appendix A. The new
    program file is put in the SMC's memory.

2. From the AX Main Menu, select Utilities, then select Download Devices
    Software.

    The Program Load Menu displays (Figure 7-14).

```
Lucent Technologies        DACS II AX 4 System Manager        Help = [?]

                           Program Load Menu

            Current Program File: ??? None ???

Slot#   Type                   Program Version      Status
-----   ---------              ---------------      ------
01)     ----                                        Not Present
02)     ----                                        Not Present
03)     Quad High Speed        Qhs_4.04H            OK     Clock Source
04)     Quad DS-1              QT1_5.02K            OK *




[L]oad device       Load [A]ll devices      [D]elete Program File
```

Figure 7-14.   Download Devices Software

Download Devices Software
(Continued)

**Procedure
(Continued)**

3. The entry in the Current Program field is the program currently in the SMC's memory. Verify that the entry in the Current Program File field is the program that you want to download to the application module.

    ■   If `??? None ???` is listed, then a program has not been downloaded to the SMC. Go back to step 1.

    ■   If the wrong Program File is listed, delete the program from the SMC by typing **D**, then go back to step 1.

4. Choose one of these two ways to download the program file:

    ■   To download the program file to a specific slot, move the cursor to the Slot# and type **L**.

    ■   To download the program file to all modules with that Card type, type **A**.

        For example, if the Current Program File is a new program version for the Quad High Speed Module and you type **A**, then all of the Quad High Speed Modules in the DACS II AX will be updated. The software will not be downloaded to modules of any other type.

5. When you have downloaded the new program file, delete the program file from the SMC by typing **D**.

6. If there are more programs to download, go back to step 1.

Reset All Channel Cards

Description   This option resets all of the application modules resident in the AX system.

> ⚠ **CAUTION:**
> *This command may be service-affecting and should only be performed by knowledgeable personnel.*

Before you begin   Before resetting all channel cards, return the system to its default settings.

Procedure   To reset all of the application modules in the AX:

1. From the AX Main Menu, select Utilities, then select Reset All Channel Cards. This message displays: `Reset all AX channel cards?`

```
 Lucent Technologies      DACS II AX 4 System Manager        Help = [?]


                          Utilities Menu


            ***********************************
            *                                 *
            *            -MESSAGE!-            *
            *                                 *
            *                                 *
            *    Reset all AX channel cards?  *
            *                                 *
            *                                 *
            *        Are you sure (Y/N)?      *
            *                                 *
            ***********************************


```

Figure 7-15.   Reset All Channel Cards

2. Type **Y**. The system resets all channel cards.

Interfaces and Cables

8

Contents

Background

Before you begin   You will need cables and connectors to attach devices to the ports on the AX system. The type of connectors and cables that are required is determined by the type of interface to which you are connecting the device.

System Manager Interface

Description   The System Manager Interface provides an AUI port, a 10baseT port, two terminal
ports, and a phone port for modem connection.

Ethernet AUI Port   The AUI port provides a DB-15 pin receptacle for connection using thick Ethernet
cabling.

Table 8-1.   Ethernet Port AUI (DB-15)

1	chassis
2	CI+
3	DO+
4	chassis
5	DI+
6	signal ground
7	not used
8	not used
9	CI-
10	DO-
11	chassis
12	DI-
13	+12V @ .25 A (max)
14	chassis
15	not used

10baseT Port   The 10baseT port provides an RJ45 modular connection with a standard 10baseT
pinout.

1	Transmit pair	TX+
2		TX-
3	Receive pair	RX+
4		RX-

System Manager Interface (Continued)

Terminal Ports   The terminal port allow the user to connect to an external terminal. The port provides an RJ11 modular connector.

Table 8-2.   Terminal (TERM) Port

Term Port (RJ11)	DCE
1	signal ground
2	CTS (output)
3	RTS (input)
4	RXD (output)
5	TXD (input)
6	chassis ground

Phone Line   The phone line provides an RJ11 6-position, 4 pin modular jack. The pin assignments are listed below:

Table 8-3.   RJ11 Pin Assignments

1	vacant
2	NC
3	RING
4	TIP
5	NC
6	vacant

Application Module Interfaces

**Quad High Speed
Interfaces**

The standard serial port interface provides (4) DB-25 pin receptacles and
supports RS232, RS530 or V.35 interfaces.

Table 8-4.   Serial Port Interfaces

Pin	RS232	RS530	V.35
1	chassis	chassis	chassis
2	TXD in	TXD-	TXD-
3	RXD out	RXD-	RXD-
4	RTS in	RTS-	RTS
5	CTS out	CTS-	CTS
6	DSR out	DSR-	DSR
7	signal gnd	signal gnd	signal gnd
8	DCD out	DCD-	DCD
9	(voltage+)	RXC+	RXC+
10	(voltage-)	DCD+	not used
11	not used	EXT TXC+	EXT TXC+
12	not used	TXC+	TXC+
13	not used	CTS+	not used
14	not used	TXD+	TXD+
15	TXC out	TXC-	TXC-
16	not used	RXD+	RXD+
17	RXC out	RXC-	RXC-
18	not used	not used	not used
19	not used	RTS+	not used
20	DTR in	DTR-	DTR
21	not used	not used	not used
22	(RI) not used	DSR+	not used
23	not used	DTR+	not used
24	EXT TXC in	EXT TXC-	EXT TXC-
25	not used	not used	not used

Application Module Interfaces (Continued)

Quad Port DS-1 Interface

The Quad Port DS-1 interface provides (4) RJ48C modular connectors. The pin assignments are listed below:

Table 8-5.   Quad Port DS-1 Interface Pin Assignments

Pin	Signal	To/From AX
1	Receive (R1)	To
2	Receive (T1)	To
3	Not Used	--
4	Transmit (R)	From
5	Transmit (T)	From
6	Not Used	--
7	Optional Shield Ground	--
8	Optional Shield Ground	--

Application Module Interfaces (Continued)

DB-25 to V.35 Cable Adapters (Optional)

For V.35 interface applications, you may need to use a DB-25 to V.35 cable adapter. You may purchase these optional cable adapters:

- Male DB-25 to Male V.35

- Male DB-25 to Female V.35

The pin assignments for the DB-25 to V.35 cable adapters are listed below:

Table 8-6.   DB-25 to V.35 Cable Adapters

Signal	Male DB-25	Winchester V.35
Shield	1	A
TXD in A	2	P
RXD out A	3	R
RTS in	4	C
CTS out	5	D
DSR out	6	E
Signal Ground	7	B
DCD out	8	F
RXC out B	9	X
EXT CLK in	10	-
TXC out B	11	W
-	12	a*
-	13	-
TXD in B	14	S
TXC out A	15	Y
RXD out B	16	T
RXC out A	17	V
-	18	-
-	19	-
DTR in	20	H
-	21	-
-	22	-
-	23	-
EXT CLK in A	24	U
-	25	-

*On AMP connectors, this pin is designated as "AA".

Quad DS-1 Module

9

Contents

Contents (Continued)

Quad DS-1 Module Overview

Before you begin   In order to display the DS-1 module menus, the following must be done:

■   The Quad DS-1 card must be in a slot in the equipment chassis

■   That slot must be configured for module type: Quad DS-1

The **Configured Type** and **Actual Type** noted on the Node Summary Menu (Figure 9-1) must be Quad DS-1.

```
Lucent Technologies           DACS II AX 11 - System Manager      Help = [?]
Standby SMC not present


                              Node Summary Menu

Slot#  Configured Type    Actual Type         Status
-----  ---------------    -----------         ------
01)    Quad DS-1          Quad DS-1           OK
02)    Quad DS-1          Quad DS-1           OK
03)    ----               ----                Not Present
04)    ----               ----                Not Present
05)    ----               ----                Not Present
06)    Quad DS-3          Quad DS-3           OK*
07)    Quad DS-3          Quad DS-3           Alarm*
08)    ----               ----                Not Present
09)    Test Access        Test Access         OK
10)    Quad High Speed    Quad High Speed     OK
11)    Quad OCU           Quad OCU            OK
SMCA)  System Manager                         On Line
SMCB)  System Manager                         Not Present



[C]hange slot configuration     [D]elete slot configuration
```

Figure 9-1.   Node Summary Menu

If the slot does not show a **Configured Type**, refer to "Slot Configuration" in Chapter 3.

Quad DS-1 Module Overview (Continued)

Quad DS-1 Main Menu

The Quad DS-1 Main Menu provides options that enable you to configure the Quad DS-1 module, perform diagnostics, access utilities, and display module identification.

```
Lucent Technologies      AX Quad DS-1 Module  Slot: 01     Help = [?]




                            QDS1 Main Menu



                            Configuration
                            Statistics
                            Diagnostics
                            Utilities
                            About



```

Figure 9-2.   Quad DS-1 Main Menu

Configuring Quad DS-1 Module Parameters

Before you begin   The Quad DS-1 configuration files are stored on the System Manager Card. When a Quad DS-1 card is replaced, the old configuration is preserved.

Procedure   To configure the Quad DS-1 module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Configuration.

    The Quad DS-1 Card Port Configuration menu displays.

```
Lucent Technologies          AX Quad DS-1 Module   Slot:01          Help = [?]

                      Quad DS-1 Card Port Configuration


             Port #1          Port #2          Port #3          Port #4
Name........:
Framing.....: ESF              ESF              ESF              ESF
Line code...: B8ZS             B8ZS             B8ZS             B8ZS
LBO.........: 0 db             0 db             0 db             0 db
Density.....: Clear            Clear            Clear            Clear
Ntwk loops..: Enable           Enable           Enable           Enable
Yellow alarm: Yes              Yes              Yes              Yes
ESF format..: 54016            54016            54016            54016
Unused DSO's: Busy             Busy             Busy             Busy
Port Status : In Service       In Service       In Service       In Service

Cascade Leds when Idle: Yes
```

Figure 9-3.   Quad DS-1 Card Port Configuration Menu

Configuring Quad DS-1 Module
Parameters (Continued)

**Procedure
(Continued)**

4. Configure all parameters for each port. For field descriptions, see below.

5. To save changes, type **X**.

6. When prompted: "Update Configuration? Are you sure (Y/N)?

   Type **Y**.

**Configuration
Fields**

Name: (Text field) This is a user-defined field. Any name up to 14 alphanumerics can be entered to identify each port on the Quad DS-1. Some users find it beneficial to use circuit numbers to name the ports.

Framing: (Option field) This information must be obtained from the network supplier. Choose either D4 or ESF.

D4 (SuperFrame) consists of 12 frames of 193 bits each for a total of 2316 bits. Each 193 bit frame consists of 192 bits preceded by one framing bit (the F bit).

ESF (Extended SuperFrame) includes provisions for continuous monitoring by both the user and the telephone company central office. ESF provides a 4 Kbps link control channel (transparent to user data) which allows the telephone company to monitor the local loop, transmit and receive test messages and retrieve performance data, all without interrupting normal operations.

Line Code: (Option field) This information must be obtained from the network supplier. Choose between AMI (Alternate Mark Inversion) and B8ZS (Bipolar with 8 Zero Substitution).

LBO (Line Build Out): (Option field) This parameter should be set to 0 dB unless the network supplier specifically requests otherwise. The options are 0, 7.5, 15 or 22 dB.

Density: (Option field) This information must be obtained from the network supplier. Choose Clear or 62411. A "Clear" network imposes no "ones density" requirements on the user. A "62411" network complies with AT&T Technical Reference #62411 and limits the AX Quad DS-1 module transmission to no more than fifteen consecutive zeroes. If the Line Code entry is "B8ZS", choose "Clear". If the Line Code entry is "AMI", choose 62411.

Configuring Quad DS-1 Module
Parameters (Continued)

**Configuration
Fields (Continued)**

Network Loops: (Option field) This entry determines the DS-1 module's ability to respond to diagnostic commands received from the network supplier. Select "enable" unless the commands are to be passed to another DS-1 device that will respond.

Yellow Alarm: (Option field) "Yes" causes the DS-1 module to discard data and send a "yellow alarm" if it is in a "red alarm" condition for three seconds. "Yes" must be chosen if the network supplier is a common carrier, such as a telephone company.

ESF Format: (Option field) This entry describes the types of ESF network commands that the DS-1 module will respond to. It has no meaning for D4 networks. With ESF networks, this information must be obtained from the network supplier. Choose between AT&T Technical Reference 54016 and ANSI specification T1.403.

Unused DS0s: (Option field) This selection determines whether the data that will be transmitted over the unused DS0s will be "IDLE" or "BUSY."

Port Status: (Option field) This field determines the status of the port. The status will either be "in service" or "out of service".

Viewing ESF Statistics for the Quad DS-1 Module

Overview
The DACS II AX ESF Statistics screen, displays both current and 24-hour ESF statistics. The "Current Statistics" column displays the counts for the current time interval (maximum fifteen minutes). The "24-Hour Statistics" column displays the counts for the preceding 24-hour period.

Procedure
To display ESF Statistics for the Quad DS-1 module:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Statistics.

4. From the Statistics Menu, select ESF Statistics.

   The Quad DS-1 ESF Statistics Menu displays (Figure 9-4).

```
Lucent Technologies       AX Quad DS-11 Module     Slot:01    Help = [?]

                         Quad DS-1 ESF Statistics


Register           Curr 24Hr    Curr  24Hr      Curr  24Hr      Curr 24Hr

Errored secs.....:0    0         0      0        0      0        0      0
Failed secs(UAS).:0    0         0      0        0      0        0      0
Severe error secs:0    0         0      0        0      0        0      0
Bursty error secs:0    0         0      0        0      0        0      0
Loss of frame cnt:0    0         0      0        0      0        0      0
Time in interval.:0              0               0               0
# Valid intervals:0              0               0               0
ESF status.......:F00000L0       F00000L0        F00000L0        F00000L0
```

Figure 9-4.   ESF Statistics screen

Viewing ESF Statistics for the Quad DS-1 Module (Continued)

ESF Statistics Fields

Errored secs: The occurrence of a Loss of Frame or a CRC6 error in a one-second period is known as an errored second. This field represents the number of errored seconds that have occurred.

Failed secs (UAS): Each second period during the occurrence of a Failed Signal State (ten consecutive errored seconds) is known as a failed second. This field represents the number of failed seconds that have occurred.

Severe error secs: A one-second period in which three hundred twenty (320) or more CRC6 errors have occurred is known as a severely errored second. This field represents the number of severely errored seconds that have occurred.

Bursty error secs: A one-second period in which more than one but less than 320 CRC6 errors has occurred is known as a bursty errored second. This field represents the number of bursty errored seconds that have occurred.

Loss of frame cnt: A loss of frame occurs when either Network equipment or the DTE senses errors in the framing pattern. Depending upon the equipment, this occurs when any 2 of 4, 2 of 5, or 3 of 5 consecutive terminal framing bits received contain bit errors in the framing pattern.

Time in interval: A timer that tracks the number of seconds in one 15-minute interval.

# of Valid intervals: A counter that tracks the total number of 15 minute intervals in a 24 hour period (up to 96).

ESF status: This field defines the status of the T1 line. The status is defined by an eight digit number that is described below:

> FU0000L0
>
> Digit #1 - "F" or "0" where "F" indicates Failed Signal State (FSS) if "U" or "L" is true.
>
> Digit #2 - "U" or "0" where "U" indicates an unavailable signal state.
>
> Digit #3 through #6 and #8 are always "0."
>
> Digit #7 - "L" or "0" where "L" indicates that the T1 line is in loop.

Viewing ESF Registers for the Quad DS-1 Module

Overview   The ESF Registers Menu gives the same information as the ESF Statistics Menu but it is broken down by port for each of the ninety-six 15-minute intervals in the preceding 24-hour period.

Procedure   To display ESF Registers for the Quad DS-1 module, follow these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Statistics.

4. From the ESF Statistics menu, select ESF Registers.

5. From the ESF Registers Summary menu (Figure 9-5), select a port.

```
 Lucent Technologies          AX Quad DS-1 Module    Slot: 01      Help = [?]



                        Quad DS1 ESF register summary menu
                        ----------------------------------

                             Port 1 - Port #1
                             Port 2 - Port #2
                             Port 3 - Port #3
                             Port 4 - Port #4









 E[x]it menu
```

Figure 9-5.   ESF Registers Summary screen

Viewing ESF Registers for the Quad DS-1 Module (Continued)

Procedure (Continued)   The ESF Registers screen for the selected port displays (Figure 9-6).

```
Lucent Technologies          AX Quad DS-1 Module      Slot:01   Help = [?]

                              ESF Registers

INT ES   FS  SES BES    INT ES  FS   SES BES    INT ES  FS   SES BES
01. 000 000 000 000     17. 000 000 000 000     33. 000 000 000 000
02. 000 000 000 000     18. 000 000 000 000     34. 000 000 000 000
03. 000 000 000 000     19. 000 000 000 000     35. 000 000 000 000
04. 000 000 000 000     20. 001 000 001 000     36. 000 000 000 000
05. 000 000 000 000     21. 000 000 000 000     37. 000 000 000 000
06. 000 000 000 000     22. 000 000 000 000     38. 000 000 000 000
07. 000 000 000 000     23. 000 000 000 000     39. 000 000 000 000
08. 000 000 000 000     24. 000 000 000 000     40. 000 000 000 000
09. 000 000 000 000     25. 000 000 000 000     41. 000 000 000 000
10. 000 000 000 000     26. 000 000 000 000     42. 000 000 000 000
11. 000 000 000 000     27. 000 000 000 000     43. 000 000 000 000
12. 000 000 000 000     28. 000 000 000 000     44. 000 000 000 000
13. 000 000 000 000     29. 000 000 000 000     45. 000 000 000 000
14. 000 000 000 000     30. 000 000 000 000     46. 000 000 000 000
15. 000 000 000 000     31. 000 000 000 000     47. 000 000 000 000
16. 000 000 000 000     32. 000 000 000 000     48. 000 000 000 000


Next/previous page = [Return/Space]
```

Figure 9-6.   ESF Registers

Viewing ESF Registers for the Quad
DS-1 Module (Continued)

ESF Register
Definitions

Errored Seconds (ES): The occurrence of a Loss of Frame or a CRC6 error in a one-second period is known as an errored second. This field represents the number of errored seconds that have occurred.

Failed Second (FS): Each second period during the occurrence of a Failed Signal State (ten consecutive errored seconds) is known as a failed second. This field represents the number of severely errored seconds that have occurred.

Severely Errored Second (SES): A one-second period in which three hundred twenty (320) or more CRC6 errors have occurred is known as a severely errored second. This field represents the number of severely errored seconds that have occurred.

Bursty Errored Seconds (BES): A one-second period in which more than one but less than 320 CRC6 errors has occurred is known as a bursty errored second. This field represents the number of bursty errored seconds that have occurred.

Quad DS-1 Module Diagnostics

Procedure   To view and perform diagnostics on the Quad DS-1 module:

1.   From the AX Main Menu, select Node Summary.

2.   Select a Slot that has been configured for Quad DS-1.

3.   From the Quad DS-1 menu, select Diagnostics.

The Diagnostic Menu displays (Figure 9-7).

```
Lucent Technologies          AX Quad DS1 Module    Slot:01    Help = [?]


                           Diagnostic Menu
Name...........:
Port Status....: In Service   In Service     In Service      In Service


Loop selection.: Off          Off            Off             Off


NI BERT........: Off          Off            Off             Off
Error seconds..: 0            0              0               0
Seconds in test: 0            0              0               0


                State ErrSec  State ErrSec  State ErrSec   State ErrSec
AIS............: No    0       No    0       No    0        No    0
RED............: No    0       No    0       No    0        No    0
YEL............: No    0       No    1       No    1        No    1
Ferr...........: No    1       No    1       No    1        No    1
CRC6...........: No    1       No    1       No    1        No    1
BPV............: No    1       No    1       No    1        No    1
LOS............: No    0       No    0       No    0        No    0


[R]eset counts    Insert Bert [E]rrors
```

Figure 9-7.   Quad DS-1 Diagnostics Menu

Quad DS-1 Module Diagnostics (Continued)

Diagnostics Fields   **Name:** This is a user-defined field. Any name up to 14 alphanumerics can be entered to identify each port on the Quad DS-1. Some users find it beneficial to use circuit numbers to name the ports.

Port Status: This field determines the status of the port. The status will either be "in service" or "out of service".

Loop selection: If you turn the local loop "ON," the front panel "LP" LED will illuminate and local testing can be performed by external DTE equipment or by the AX's internal BERT.

Loop selections	Description
Local	Loops DS-1 back to card.
Line loop	Loops DS-1 to network.
Payload loop	Loops DS-1 to network. Signal is disassembled and reassembled through the card's framer.
CSU Line Loop	Loops remote CSU toward AX
CSU Loop Unframed	Loops remote CSU toward AX, DS-1 is unframed
Smart Jack 5B-U	Loops remote Smart Jack towards AX
User Defined	User must set all loopback parameters
Off	No loops.

NI BERT: This is useful for testing the bit error rate of the communication circuit via the NI. The device checks for errors by comparing a received data pattern with a known transmitted data pattern to determine line quality.

The choices for data patterns are: 2047, 3 of 24, All 1's, All 0's, Quasi-Random Signal Source (QRSS), and off.

Error seconds: This read-only count represents the number of errored seconds that occurred in a one second period while the Quad DS-1 module was in test.

Seconds in test: This read-only count represents the number of seconds the Quad DS-1 module was in test.

State: This field shows whether the alarm is active or not.

Quad DS-1 Module Diagnostics (Continued)

Diagnostics Fields (Continued)

ErrSec: This read-only count represents the number of errored seconds that occurred in a one second period while the DS-1 module was in test.

AIS: An unframed "all ones" condition has been detected.

RED: A "loss of frame alignment" has occurred and synchronization has been lost.

YEL: A Yellow Alarm is generated by the network and sent to the customer premises. It usually means that the network is not receiving the AX signalling correctly (i.e., the network is not in sync or a red alarm has occurred).

Ferr (framing errors): One or more frame alignment bit errors have been detected. This does not mean, however, that synchronization has been lost.

CRC6: One or more CRC6 block errors have been detected. The D4 framing does not include CRC6; the DS-1 Quad module replaces that parameter.

BPV: Bipolar violations have been detected. This usually indicates that a very weak or excessively strong signal is being received from the network.

LOS: This indicates a loss of signal detection. No signal is present on the RX pair to the AX DS-1 module (DS-1 loop).

COMMANDS

[R]eset counts: This command allows you to clear the counters.

Insert Bert [E]rrors: For test purposes, you can insert BERT errors.

Quad DS-1 Module Utilities

Procedure

To access the Quad DS-1 Utilities:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Utilities.

   The Quad DS-1 Utilities menu displays (Figure 9-8).

```
Lucent Technologies          AX Quad DS-1 Module     Slot: 01      Help = [?]



                                 Quad DS-1 Utilities




                             Board Status: In Service
                             Reset Quad DS-1 Board
                             Monitor System Manager Clock
                             Voice Control Signal display
                             Dump Connection Statistics
                             System Manager Interface
```

Figure 9-8.   Quad DS-1 Utilities Menu - Admin Security Level

➡ **NOTE:**
If you have a login with a View Only Security level, only the Dump
Connection Statistics and System Manager Interface options appear on the
Utilities menu.

Quad DS-1 Module Utilities
(Continued)

Quad DS-1
Utilities Menu
Options

⚠ **WARNING:**
The following menus are for debugging purposes only. It is strongly advised
that you do not use these menus unless prompted to do so by a Lucent
Technologies Technical Support Representative.

The following options appear on the Quad DS-1 Utilities menu:

■ **Board Status** - shows whether the board is in service or out of service.

■ **Reset Quad DS-1 Board** - resets or re-initializes the Quad DS-1 board.

■ **Monitor System Manager Clock** - gives the status of vital system timing.

■ **Voice Control Signal Display** - A diagnostic used to determine the status of voice signaling.

■ **Dump Connection Statistics** - A diagnostic tool used to determine the status of the connection.

■ **System Manager Interface** - provides system manager statistics, such as map checksum and byte count.

Quad DS-1 About Menu

Procedure   To display identification information for the Quad DS-1 module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the DS-1 Main Menu, select About.

   The About Menu displays (Figure 9-9).

```
 Lucent Technologies    AX Quad DS-1 Module      Slot:09           Help = [?]




                      Version.................: QT1_5.02K
                      Release Date............: October 27, 1998
                      Checksum................: 8294
                      Xilinx Version..........: 1510_16.
                      Voice Signalling Version: 1
                      Ram Access..............: 16 bits wide


```

Figure 9-9.   Quad DS-1 About Menu

Quad DS-1 About Menu (Continued)

**About Menu
Fields**

Version: This is the software version current in the DS-1's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the DS-1's flash memory at power up.

XILINX Version: The hardware version of downloadable, programmable devices.

Voice Signaling Version: The revision level of software used in the commands bits for voice signaling.

Ram Access: The size of the memory bus.

Quad High Speed Module

10

Contents

Quad High Speed Module Overview

Before you begin   In order to display the Quad High Speed (QHS) module menus, the following must be done:

■   The QHS card must be in a slot in the equipment chassis

■   Slot must be configured for module type: Quad High Speed

The **Configured Type** and **Actual Type** noted on the Node Summary Menu (Figure 10-1) must be Quad High Speed..

```
Lucent Technologies          DACS II AX 11 - System Manager      Help = [?]
Standby SMC not present


                             Node Summary Menu

Slot#  Configured Type    Actual Type        Status
-----  ---------------    -----------        ------
01)    Quad DS-1          Quad DS-1          OK
02)    Quad DS-1          Quad DS-1          OK
03)    ----               ----               Not Present
04)    ----               ----               Not Present
05)    ----               ----               Not Present
06)    Quad DS-3          Quad DS-3          OK*
07)    Quad DS-3          Quad DS-3          Alarm*
08)    ----               ----               Not Present
09)    Test Access        Test Access        OK
10)    Quad High Speed    Quad High Speed    OK
11)    Quad OCU           Quad OCU           OK
SMCA)  System Manager                        On Line
SMCB)  System Manager                        Not Present



[C]hange slot configuration    [D]elete slot configuration
```

Figure 10-1.   Node Summary Menu

If the slot does not show a **Configured Type**, refer to "Slot Configuration" in Chapter 3.

Quad High Speed Module Overview
(Continued)

Quad High Speed Module Main Menu

The Quad High Speed Main Menu (Figure 10-2) provides options that enable you to configure the Quad High Speed module, perform diagnostics, access utilties, and display version and release information.

```
Lucent Technologies     AX Quad High Speed Data Module   Slot:10  Help = [?]




                        QHS Main Menu




                        Configuration
                        Diagnostics
                        Utilities
                        About




```
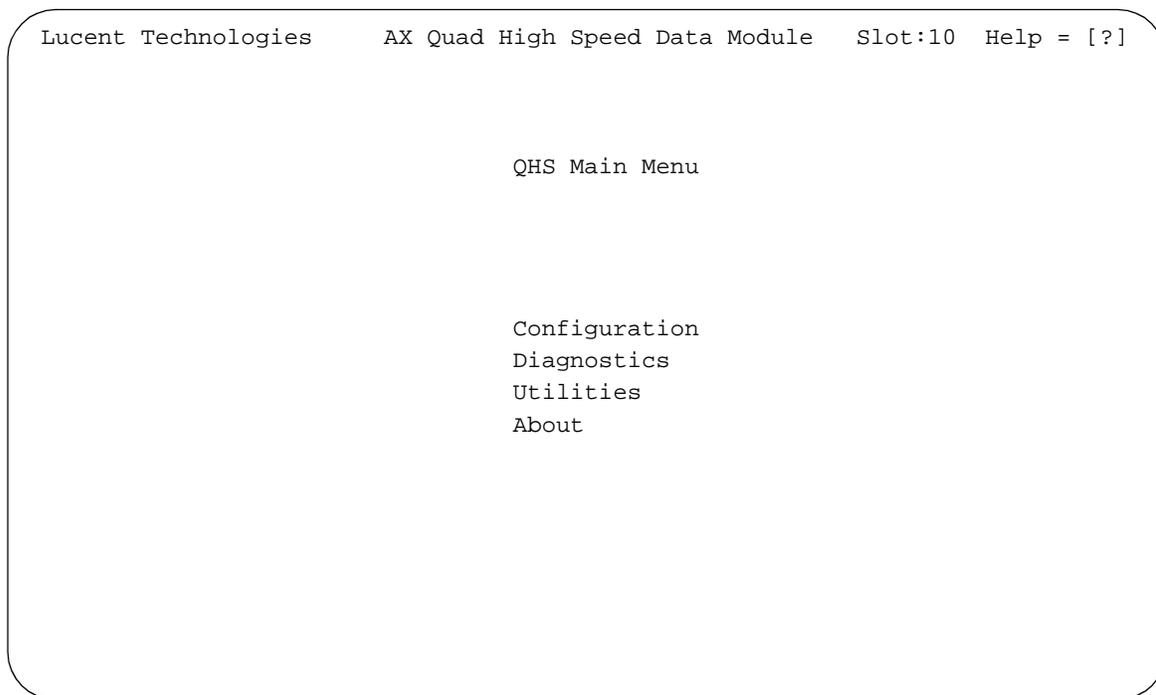
Figure 10-2.   Quad High Speed Main Menu

Configuring Quad High Speed
Module Parameters

Procedure   To configure the Quad High Speed module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad High Speed.

3. From the QHS main menu, select Configuration.

    The Configuration Menu displays (Figure 10-3).

```
Lucent Technologies   AX Quad High Speed Data Module   Slot:10   Help = [?]

                        Configuration Menu

            Port 1              Port 2              Port 3              Port 4

Name.........:x             port name           port name           port name
Speed........:1536000       1536000             1536000             1536000
Timing.......:Internal      Internal            Internal            Internal
DCD out......:Forced On     Forced On           Forced On           Forced On
DSR out......:Forced Off    Forced On           Forced On           Forced On
Data.........:Normal        Normal              Normal              Normal
Clock........:Normal        Normal              Normal              Normal
Interface....:V.35          V.35                V.35                V.35
V.54 loop....:Disabled      Enabled             Disabled            Disabled
Connect Event:Disabled      Disabled            Disabled            Disabled
Port Status..:In Service    In Service          In Service          In Service

Cascade Leds when Idle: Yes
```

Figure 10-3.   Quad High Speed Configuration Menu

4. Configure all parameters for each port. For field descriptions, see the following page.

5. To save changes, type **X**.

6. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

Configuring Quad High Speed Module Parameters (Continued)

Configuration Fields

Name: (Text field) This is a user-defined field. Any name up to 14 characters in length can be entered to identify each port on the Quad High Speed Module

Speed: (Option field) The Quad High Speed module operates at speeds from 48 Kbps to 2.048 Mbps (Nx56/64 Kbps).

Timing: (Option field) The timing options are Internal, Int/Ext, or External. Internal is the normal setting and should always be chosen unless there is a specific reason to do otherwise. The Quad High Speed module will provide both TX clock and RX clock to the DTE.

QHS (Internal)   **DTE**

3	——— RX Data ———▶	3
17	——— RX Clock ———▶	17
2	◀——— TX Data ———	2
15	——— TX Clock ———▶	15
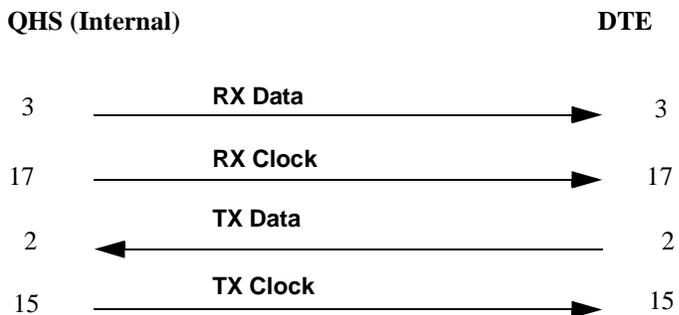
Int/Ext is recommended if the attached user DTE cable exceeds 10 feet in length and the customer data rate exceeds 224 Kbps. This setting may require a special DTE configuration or a modified cable.

QHS (Int/Ext)   **DTE (Terminal/Timing)**

3	——— Rx Data ———▶	3
17	——— Rx Clock ———▶	17
2	◀——— Tx Data ———	2
24	◀——— Tx Clock (Ext) ———	24
15	——— Tx Clock ———▶	15

Configuring Quad High Speed Module Parameters (Continued)

Configuration Fields (Continued)

QHS (Int/Ext)   DCE

3	Rx Data → Tx Data	2
17	Rx Clock → Tx Clock	24
2	← Tx Data Rx Data	3
24	← Tx Clock (Ext) Rx Clock	17
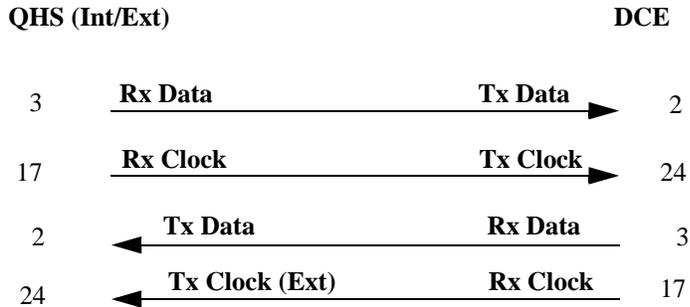
Int/Ext should be used if the attached equipment is DCE. The remote DCE must be loop timed to achieve the required timing lock with the AX system clock.

> **NOTE:**
> When a QHS port is connected to a DCE a crossover needs to be used.

External should be used if the attached equipment is DCE that does not accept a clock such as a digital data system (DDS) DSU. The DSU and the AX system must be locked to the same timing source (usually network clock).

The DSU can provide timing to the AX system when it is attached to port 1 and the port is configured as source clock.

QHS (Ext)   DCE (DDS DSU)

3	Rx Data → Tx Data	2
2	← Tx Data Rx Data	3
24	← Tx Clock (Ext) Rx Clock	17
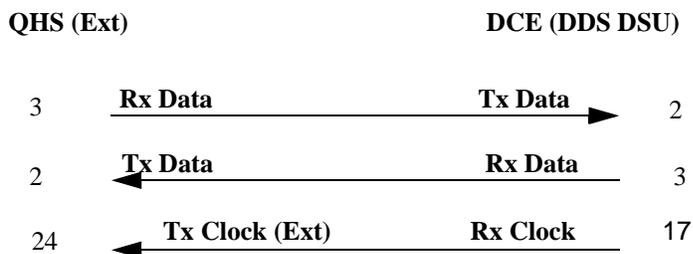
> **NOTE:**
> RS232 Pin Numbers are used for reference.

Configuring Quad High Speed
Module Parameters (Continued)

Configuration Fields (Continued)

DCD Out: (Option field) The quad high speed module presents a DCE interface to the attached customer equipment. Carrier detect can be forced off, forced on, track RTS, or switched. "Switched" is normally on and turns off upon network carrier failure.

DSR Out: (Option field) Data Set Ready can be forced off, forced on, or track DTR.

Data: (Option field) The options are normal or inverted.

Clock: (Option field) Initially choose "Normal." If frequent errors occur at the port, try "Inverted" and check performance.

Normally, the down-going clock edge is in the middle of each bit. On lengthy cables when a clock is sent from one device to clock data from the other device, the data arrives skewed from the originating clock due to the round trip cable delay. When the delay is such that the originating clock down-going edge is on the edge of the bit returned, "Inv" will correct this condition inside the QHS module.

Interface: (Option field) The interface options are V.35, RS530/422, and RS232.

V.54 Loop: (Option field) When enabled, this port will respond to receipt of a remote digital loop command arriving from the port of the mated quad high speed module. When disabled, it will not respond to a remote digital loop command.

Connect event: (Option field) This field determines if a port connection or disconnection is recorded in the System Event menu. Enable to turn this feature on. Disable to turn this feature off.

Port status: (Option field) This field determines the status of the port. The status will either be "in service" or "out of service." If the port is out of service it can still run data; only the diagnostics will be affected.

Cascade LEDs when idle: (Option field) Blinking LEDs indicate the board is working. Options are yes or no.

Quad High Speed Data Module
Diagnostics

Procedure   To view and perform diagnostics on the Quad High Speed Data module, follow
                       these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad High Speed.

3. From the QHS main menu, select Diagnostics.

   The Diagnostic Menu displays (Figure 10-4).

```
Lucent Technologies    AX Quad High Speed Data Module  Slot:10    Help = [?]


                                Diagnostic Menu
Name...........: x              port name       port name       port name


Status.........: In Service     In Service      In Service      In Service
Local Loop.....: Off            Off             Off             Off
Remote Loop....: Off            Off             Off             Off


BERT...........: 2047           Off             Off             Off
Seconds in test: 15837          0               0               0
Local Errors...: 159            0               0               0
Remote Errors..: 175            0               0               0


                                Indicators:
                                -----------
TX/RX Data.....: On /On         On /On          On /On          On /On
RTS/DCD........: Off/On         Off/On          Off/On          Off/On
DTR/DSR........: Off/Off        Off/On          Off/On          Off/On


[R]eset counts      Insert [e]rrors
```

Figure 10-4.   QHS Diagnostics Menu

Quad High Speed Data Module
Diagnostics (Continued)

Fields   **CONTROLS**

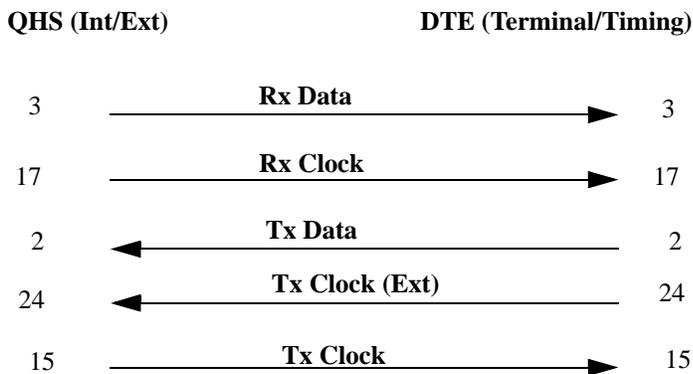**Name:** This is a user-defined field. Any name up to 14 alphanumerics can be entered to identify each port on the Quad High Speed Module.

Status: The unit's status is either in service or out of service.

Local Loop: When set to ON, this parameter causes a bi-directional local loop at the High Speed Data Module where the command was entered. If you turn the local loop "ON," the front panel "LOOP" LED will illuminate and local testing can be performed by external DTE equipment or by AX's internal BERT. Only data is looped back. Clocks and control signals are not looped back.

Remote Loop (V.54): Remote Loop causes a remote line loop at the distant end of a point-to-point circuit.

The following diagram illustrates local and remote loops.

Local End
(all loops initiated from this end)

Remote End

DTE   DCE

DCE   DTE

RX

TX   Local Loop

RX

TX   Remote Loop

TX

RX

TX

RX
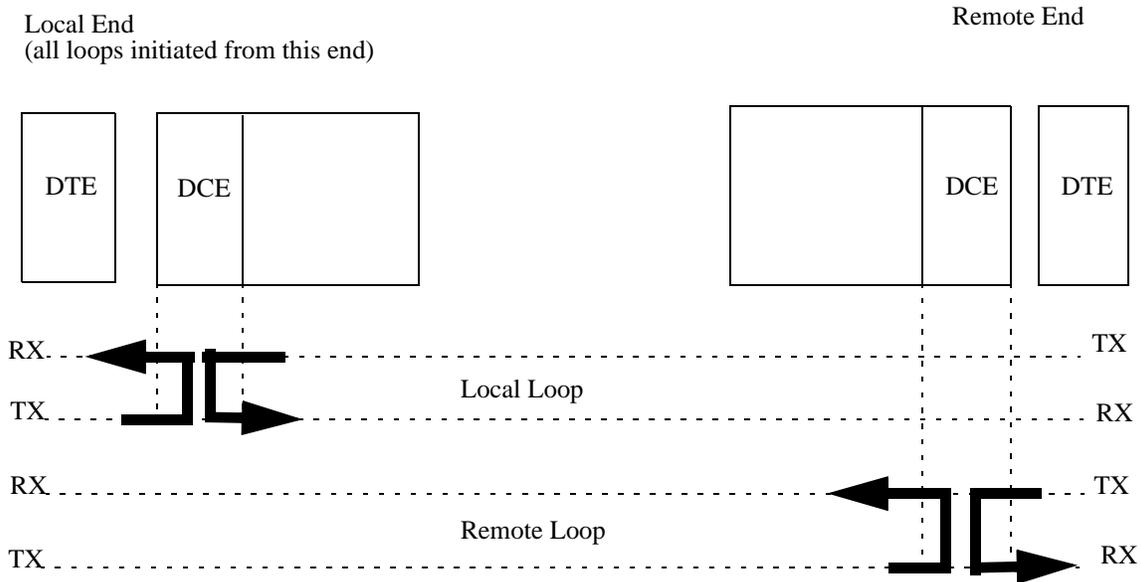
Figure 10-5.   Local and Remote Loops

Quad High Speed Data Module
Diagnostics (Continued)

Fields (Continued) **BERT:** This is useful for testing for errors on the communication circuit. The device checks for errors by comparing a received data pattern with a known transmitted data pattern to determine line quality. Options are: 2047, all ones, all zeroes, and off.

> **NOTE:**
> The remote loop and data test patterns depend on interface clocks to operate. If Int/Ext or External timing options are selected, ensure the External Clock is present and locked to the AX system clock.

Seconds in Test: This read-only count represents the number of seconds the data module was in test.

Local Errors: This read-only count represents the number of local errored seconds that occurred in a one second period while the data module was in test.

Remote Errors: This read-only count represents the number of remote errored seconds that occurred in a one second period while the data module was in test.

INDICATORS

TX/RX Data: If this indicator is ON, your high speed data module is transmitting/ receiving data over its serial port interface.

RTS/DCD: If RTS is ON, your high speed data module is sending a "Request-to-Send" signal over its serial port interface. If DCD is ON, your high speed data module is sending a "Data Carrier Detect" signal over its serial port interface.

DTR/DSR: If DTR is ON, your high speed data module is sending a "Data Terminal Ready" signal over its serial port interface. If DSR is ON, your high speed data module is sending a "Data Set Ready" signal over its serial port interface.

COMMANDS

[R]eset counts: This command allows you to clear your counters.

Insert [e]rrors: For test purposes, you can insert BERT errors.

Quad High Speed Utilities

Procedure   To access the Quad High Speed Utilities, follow these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad High Speed.

3. From the QHS main menu, select Utilities.

4. The Quad High Speed Utilities Menu displays (Figure 10-6).

   Depending upon your level of security, you may or may not be allowed to access all of the fields shown on the Quad High Speed Utilities menu. The Administrator level of security permits access to all fields.

```
Lucent Technologies           AX Quad High Speed    Slot:02        Help = [?]


                              Quad High Speed Utilities



                              Board Status: In Service
                              Reset Quad High Speed Board
                              Monitor System Manager Clock
                              System Manager Interface
```
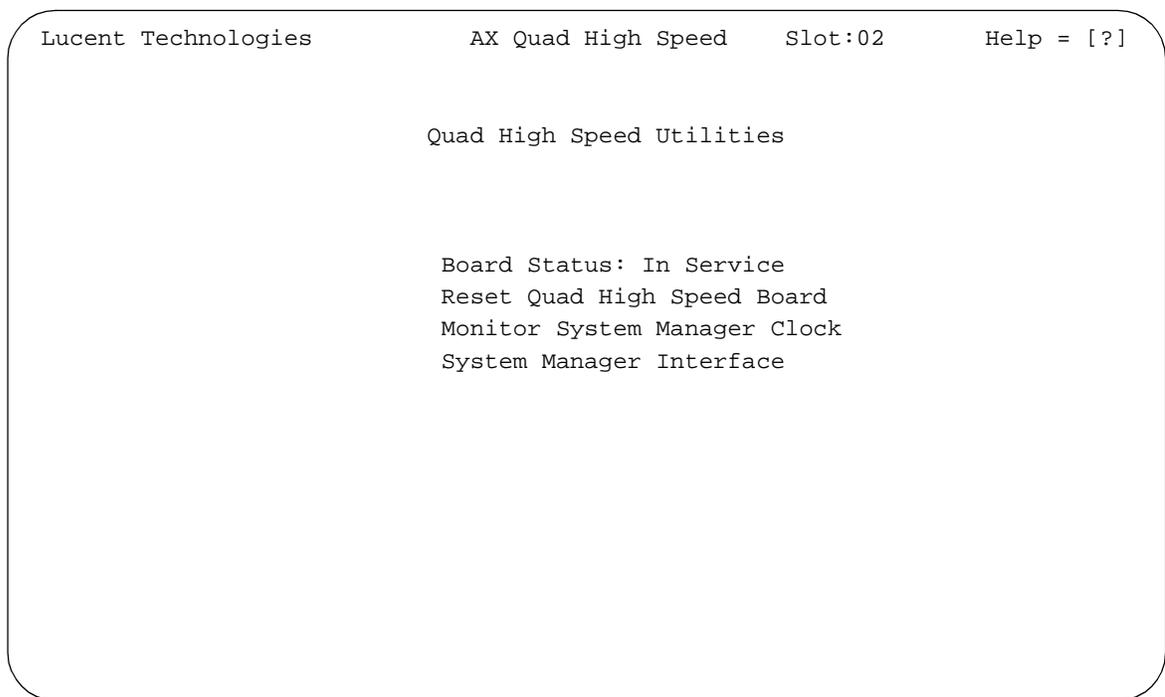
Figure 10-6.   Utilities Menu

Quad High Speed Utilities
(Continued)

**Utilities Menu
Options**

⚠ **WARNING:**
The following menus are for debugging purposes only. It is strongly advised that you do not use these menus unless prompted to do so by a Lucent Technologies Technical Support Representative.

The Utilities Menu options are:

■   **Board Status** - shows whether the board is in service or out of service.

■   **Reset Quad High Speed Board** - resets or re-initializes the QHS card.

■   **Monitor System Manager Clock** - gives the status of vital system timing.

■   **System Manager Interface** - provides system manager statistics, such as map checksum and byte count.

Quad High Speed About Menu

Procedure   To display identification information for the Quad High Speed module:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for Quad High Speed.

3.   From the QHS Main Menu, select About.

     The Quad High Speed About Menu displays (Figure 10-7).

```
  Lucent Technologies      AX Quad High Speed  Slot:02         Help = [?]




                        Version..........: Qhs_4.04L
                        Release Date.....: November 18, 1998
                        Checksum.........: 85A6
                        Xilinx Version...: 08141g34


```

Figure 10-7.   About Menu

Quad High Speed About Menu (Continued)

Fields

Version: This is the software version current in the QHS's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the QHS's flash memory at power up.

XILINX Version: The hardware version of downloadable, programmable devices.

DS-3 Module

11

Contents

Contents (Continued)

DS-3 Module Overview

Before you begin   In order to display the DS-3 module menus, the following must be done:

■   The DS-3 card must be in a slot in the equipment chassis

■   Slot must be configured for module type: DS-3

The **Configured Type** and **Actual Type** noted on the Node Summary Menu (Figure 11-1) must be DS-3.

```
Lucent Technologies          DACS II AX 11 - System Manager      Help = [?]
Standby SMC not present


                          Node Summary Menu

Slot#  Configured Type    Actual Type        Status
-----  ---------------    -----------        ------
01)    Quad DS-1          Quad DS-1          OK
02)    Quad DS-1          Quad DS-1          OK
03)    ----               ----               Not Present
04)    ----               ----               Not Present
05)    ----               ----               Not Present
06)    Quad DS-3          Quad DS-3          OK*
07)    Quad DS-3          Quad DS-3          Alarm*
08)    ----               ----               Not Present
09)    Test Access        Test Access        OK
10)    Quad High Speed    Quad High Speed    OK
11)    Quad OCU           Quad OCU           OK
SMCA)  System Manager                        On Line
SMCB)  System Manager                        Not Present



[C]hange slot configuration      [D]elete slot configuration
```

Figure 11-1.   Node Summary Menu

If the slot does not show a **Configured Type**, refer to "Slot Configuration" in Chapter 3.

DS-3 Module Overview (Continued)

DS-3 Main Menu   The DS-3 provides options that enable you to configure the DS-3 module, perform
                       diagnostics, access utilties, and display version and release information.

Configuring DS-3 Module Parameters

Procedure   To configure the DS-3 module's parameters:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for DS-3.

3.   From the DS-3 Main Menu, select Configuration.

        The DS-3 Configuration Menu displays (Figure 11-2).

```
Lucent Technologies          AX DS3 Module - Slot:  1



                        Configuration Menu
                        ------------------

                        DS1 Configuration
                        DS3 Configuration
                        Options







Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 11-2.   Configuration Menu

Configuration   The DS-3 Configuration Menu has three options:
Menu Options

■   Select **DS-1 Configuration** to configure the DS-1 link of the DS-3 line.

■   Select **DS-3 Configuration** to configure the DS-3 line.

■   Select **Options** to select options for the DS-1 links and the DS-3 line.

DS-1 Configuration

Procedure   To configure the DS-1 link of the DS-3 line, follow these steps:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for DS-3.

3.   From the DS-3 Main Menu, select Configuration.

4.   Select DS1 Configuration from the Configuration menu (Figure 11-2).

     The DS1 Configuration Manager menu displays (Figure 11-3).

```
Lucent Technologies          AX DS3 Module - Slot:  1

                        DS1 Configuration Manager

Chl  Name              Status        Frm Density NetLp Yalarm Format ICode
---------------------------------------------------------------------
01 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
02 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
03 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
04 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
05 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
06 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
07 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
08 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
09 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
10 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
11 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
12 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
13 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy
14 Circuit Number     In Service    ESF Clear   Yes   Yes    54016  Busy

Navigate menu   = [Space/Backspace] Change parameter = [Return/'B']
[N]ext Page   [C]opy Cfg To All   Exit/abort edits = ['X'/Esc]
```

Figure 11-3.   DS-1 Configuration Manager Menu

5.   To change a parameter for an individual channel, move the cursor to the channel to be changed and press ⌐Enter⌐. The DS-1 Channel Configuration displays (Figure 11-4).

6.   To copy an existing configuration for a channel to all other channels, move the cursor to the row to be copied and type **C**.

DS-1 Configuration (Continued)

Procedure (Continued)

7. To save changes, type **X**.

8. When prompted: "Update Configuration? Are you sure (Y/N)?

   Type **Y**.

DS-1 Configuration Fields

Ch1 (Channel): This is the channel number of the port. To access the DS-1 Channel Configuration submenu, select a channel from the 14 channels shown, or type **N** to go to the next page, then select any of the channels 15-28.

Name: This is a user-defined field. Any name up to 14 alphanumerics can be entered to identify each port on the DS-3. You may find it beneficial to use circuit numbers to name the ports.

Status: This field refers to the state of the DS-1 circuits. You can put the DS-1 circuit(s) in or out of service or alert you to a DS-1 circuit(s) in or out of service.

Frm (Framing): This information must be obtained from the network supplier. Choose either D4 or ESF.

- D4 (*SuperFrame*) consists of 12 frames of 193 bits each for a total of 2316 bits. Each 193 bit frame consists of 192 bits preceded by one framing bit (the F bit).

- ESF (*Extended SuperFrame*) includes provisions for continuous monitoring by both the user and the telephone company central office. ESF provides a 4 Kbps link control channel (transparent to user data) which allows the telephone company to monitor the local loop, transmit and receive test messages and retrieve performance data, all without interrupting normal operations.

Density: This information must be obtained from the network supplier. Choose Clear or 62411. A "Clear" network imposes no "ones density" requirements on the user. A "62411" network complies with AT&T Technical Reference #62411 and limits the DS-1 channel transmission to no more than fifteen consecutive zeroes. If the Line Code entry is "B8ZS", choose "Clear". If the Line Code entry is "AMI", choose 62411.

Ntwk loops: This parameter determines the DS-3 module's ability to respond to diagnostic commands received from the network supplier. Select "yes" unless the commands are to be passed to another DS-3 device.

DS-1 Configuration (Continued)

**DS-1
Configuration
Fields**

Yellow alarm: "Yes" causes the DS-1 module to discard data and send a "yellow alarm" if it is in a "red alarm" condition for three seconds. "Yes" must be chosen if the network supplier is a common carrier, such as a telephone company.

Format: This entry describes the types of ESF network commands that the DS-1 module will respond to. It has no meaning for D4 networks. With ESF networks, this information must be obtained from the network supplier. Choose between AT&T Technical Reference 54016 and ANSI specification T1.403.

ICode: Idle Code displays whether the link is working or not. It will appear as busy (All Ones) or Idle (0).

DS-1 Configuration (Continued)

**DS-1 Channel
Configuration**

```
Lucent Technologies          AX DS3 Module - Slot:  1

                         DS-1 Channel Configuration


                             Channel Nbr.: 1
                             Name........: Circuit Number
                             Framing.....: ESF
                             Status......: In Service
                             Density.....: Clear
                             Ntwk loops..: Yes
                             Yellow alarm: Yes
                             ESF format..: 54016
                             Unused DSO's: Busy




Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 11-4.   DS-1 Channel Configuration Menu

The above screen appears when you select a port. Each of the fields shown on the menu in Figure 11-4, are described in the previous pages. ESF format and Unused DS0's are described below.

■ **ESF format** - This entry describes the types of ESF network commands that the DS-1 module will respond to. It has no meaning for D4 networks. With ESF networks this information must be obtained from the network supplier. Choose between AT&T Technical Reference 54016 and ANSI specification T1.403.

■ **Unused DS0's** - This selection determines whether the data that will be transmitted over the unused DS0s will be "IDLE" or "BUSY".

DS-3 Port Configuration

Procedure   To configure the DS-3 line, follow these steps:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for DS-3.

3.   From the DS-3 Main Menu, select Configuration.

4.   Select DS3 Configuration from the Configuration menu (Figure 11-2).

     The DS-3 port configuration menu displays (Figure 11-5).

```
Lucent Technologies          AX DS3 Module - Slot:  1

                          DS-3 port configuration

Name...................: Circuit Number
Unit...................: DefU
Facility Id............: Def - Facility Id
Port Number............: Def - Port No.
Generator #............: Def - Generator No.
Equipment Id...........: Def - EID
Location Id............: Def - LID
Frame Id...............: Def - FID

M13 Operating Mode......: C-Bit Parity
Rcv Loop Timing........: Disabled
Short Cable < 50'.......: Yes
M13 Remote Loopback Type: 3rd C-Bit Inverted
Rcv AIS Selection.......: Framed 1010, C & X Bits disregarded
Xmit AIS Selection......: ANSI


Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 11-5.   DS-3 Port Configuration Menu

DS-3 Port Configuration (Continued)

Procedure (Continued)

5. Set up the DS-3 multiplexing parameters from here. Refer to the field descriptions on the following page.

6. To save changes, type **X**.

7. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

DS-3 Port Configuration Fields

Name: circuit identifier

Unit: a device identifier

Facility Id: identifies the facility where the equipment is located

Port Number: number of the port

Generator #: number generated

Equipment Id: identifies the equipment in use

Location Id: identifies where the equipment is located

Frame Id: identifies the frame

M13 Operating Mode: the framing selection for the DS1 to DS3 multiplexing. This can be either C-Bit or Bellcore M13.

Rcv Loop Timing: Options are Enabled or Disabled. Enabled = loop timing. Disabled = internal timing.

Short Cable < 50': Options are Yes or No. If the length of the coaxial cable to the next active component is less than 50 feet, select Yes.

Rcv AIS Selection: the received bit pattern that will cause an error.

Xmit AIS Selection: the transmitted bit pattern that will cause an error.

Selecting DS-3 and DS-1 Options

⚠️ **WARNING:**

The fields shown in the Options menu are default settings and should not be accessed or configured. They are for debugging purposes only. It is strongly suggested that you do not tamper with these fields unless prompted to do so by a Lucent Technologies Technical Support Representative.

Procedure

To set options for the DS-3 line and the DS-1 link, follow these steps:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for DS-3.

3. From the DS-3 Main Menu, select Configuration.

   Select Options from the Configuration menu (Figure 11-2).

   The Options Menu displays (Figure 11-6).

```
Lucent Technologies          AX DS3 Module - Slot:  1




                         Options menu
                         -----------
                T1 FDL Management.............: Enabled
                T1 Reset T1 Framer On Error...: Enabled
                T1 One Seconds Mainatainace...: Enabled
                T1 Ignore Rx/Tx Slips.........: No
                T1 Link Loop Down duration....: 8
                T3 One Seconds Mainatainace...: Enabled
                T3 Ignore DS1 Loop Request....: No
                Post Debug Events.............: Disabled
                Buffer watch..................: Disabled

Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 11-6.   Options Menu

DS-3 Module Diagnostics

Procedure   To view and perform diagnostics on the DS-3 module, follow these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for DS-3.

3. From the DS-3 main menu, select Diagnostics.

    The Diagnostic Menu displays (Figure 11-7).

```
Lucent Technologies         AX DS3 Module - Slot:  1



                          Diagnostic Menu
                          --------------------


                          Line Diagnostics Center
                          Link Timeslot Profile Display
                          Active TSFM Display
                          TSFM Statistics Display
                          Debug Backplane Connection
                          Complete TSFM Display
                          Expose Line Interface Unit
                          Registers Dump


Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B'
```

Figure 11-7.   Diagnostics Menu

DS-3 Module Diagnostics (Continued)

Diagnostics Menu Options

Depending upon your security level, several submenus can be invoked. However, only the Line Diagnostics Center menu should be invoked for configuration purposes.

- **Line Diagnostics Center** - see next page for menu and description.
- **Link Timeslot Profile Display** - displays a profile of the application card connections.
- **Active TSFM Display** - shows which timeslots are currently in use.
- **TSFM Statistics Display** - shows how many timeslots are not available or in use, and which links are in use.
- **Debug Backplane Connection** - allows you to make loop connections on the backplane.
- **Complete TSFM Display** - displays all of the information gathered from the previous screens and displays them here for a full view.
- **Expose Line Interface Unit** - a diagnostic tool used to view register values associated with the rear board.
- **Registers Dump** - a diagnostic tool that allows you to access registers within the Motorola processor.

DS-3 Module Diagnostics (Continued)

**Line Diagnostics
Center**

```
                        Diagnostics Manager
                        Back
T1  Name              Loop     Plane Status        Red   Yel   Crc   Total
------------------------------------------------------------------------------
--
 01 Circuit Numbe      Off      Off  OK              0     0     0     0
 02 Circuit Numbe      Off      Off  OK              0     0     0     0
 03 Circuit Numbe      Off      Off  OK              0     0     0     0
 04 Circuit Numbe      Off      Off  OK              0     0     0     0
 05 Circuit Numbe      Off      Off  OK              0     0     0     0
 06 Circuit Numbe      Off      Off  OK              0     0     0     0
 07 Circuit Numbe      Off      Off  OK              0     0     0     0
    ------------------------------------------------------------------------------
T3  Circuit Number   Loop: Off
     LOS: Off    OOF: Off  AIS: Off  IDL: Off  RCKF: Off  TCKF: Off
     PBitErr:0    CBitErr:0    FebErr:0     SesErr :0
------------------------------------------------------------------------------
--
BERT: Off     Local Errs:0       Remote Errs:0         Duration:0



Navigate menu   = [Space/Backspace]   [T]1-Bert  [L]iu-Bert  [O]ff Bert
Change parameter = [Return/'B']        ESF [S]tatistics    ESF [R]egisters
Exit/abort edits = ['X'/Esc]           [N]ext [E]xpose [C]lear [I]n Service
```

Figure 11-8.   Line Diagnostics Center

From the Line Diagnostics Center, a submenu may be viewed or invoked to perform additional diagnostic actions, such as loopbacks, and additional statistics.

DS-3 Module Utilities

Procedure   To access the DS-3 Utilities, follow these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for DS-3.

3. From the DS-3 main menu, select Utilities.

   The Utilities Menu displays (Figure 11-9).

```
Lucent Technologies          AX DS3 Module - Slot:  1



                             Utilities Menu
                             -----------------


                             System Manager Interface
                             Buffer watch
                             Dump Memory
                             Change Memory
                             Display Queues
                             Reset Board

Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 11-9.   Utilities Menu

DS-3 Module Utilities (Continued)

**Utilities Menu
Options**

⚠ **WARNING:**
*The following menus are for debugging purposes only. It is strongly advised
that you do not use these menus unless prompted to do so by a Lucent
Technologies Technical Support Representative.*

Depending upon your security level, several submenus can be invoked.

■ **System Manager Interface** - provides system manager statistics, such as
map checksum and byte count.

■ **Buffer Watch** - a way to monitor the buffers of the communications pass on
the DS-3 card.

■ **Dump Memory** - a utility that can display a block of memory on the DS-3
card.

■ **Change Memory** - allows you to select and modify the contents of an
address on the DS-3 card.

■ **Display Queues** - displays the operating system queues.

■ **Reset Board** - re-initializes the board to the start.

DS-3 About Menu

Procedure   To display identification information for the DS-3 module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for DS-3.

3. From the DS-3 Main Menu, select About.

    The DS-3 About Menu displays (Figure 11-10).

```
Lucent Technologies
101 Crawfords Corner Road
Holmdel, NJ 08057
Tel - 800.555.1212
FAX - 800.555.1210
                        AX - System Manager Controller
                        ------------------------------

                             Version..........: T3-01.03a
                             Release Date.....: July 9, 1998 1:00pm
                             Checksum.........: 1

                             Xilinx Version...: t3_xlx11
                             Front Card Type..: T3
                             Front Card Rev...: 0
                             Rear Card Type...: T3
                             Rear Card Rev....: 0



Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 11-10. About Menu

DS-3 About Menu (Continued)

Fields

Version: This is the software version current in the DS-3's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the DS-3's flash memory at power up.

XILINX Version: The hardware version of downloadable, programmable devices.

Front Card Type: Displays the type of board in the system.

Front Card Rev: Displays the board's revision level.

Rear Card Type: Displays the type of board in the system.

Rear Card Rev: Displays the board's revision level.

Quad OCU Module

12

Contents

Quad OCU Module Overview

Before you begin   In order to display the Quad OCU module menus, the following must be done:

- The Quad OCU card must be in a slot in the equipment chassis

- Slot must be configured for module type: Quad OCU

The **Configured Type** and **Actual Type** noted on the Node Summary Menu (Figure 12-1) must be Quad OCU.

```
Lucent Technologies            DACS II AX 11 - System Manager     Help = [?]
Standby SMC not present


                              Node Summary Menu

Slot#  Configured Type    Actual Type        Status
-----  ---------------    -----------        ------
01)    Quad DS-1          Quad DS-1          OK
02)    Quad DS-1          Quad DS-1          OK
03)    ----               ----               Not Present
04)    ----               ----               Not Present
05)    ----               ----               Not Present
06)    Quad DS-3          Quad DS-3          OK*
07)    Quad DS-3          Quad DS-3          Alarm*
08)    ----               ----               Not Present
09)    Test Access        Test Access        OK
10)    Quad High Speed    Quad High Speed    OK
11)    Quad OCU           Quad OCU           OK
SMCA)  System Manager                        On Line
SMCB)  System Manager                        Not Present



[C]hange slot configuration      [D]elete slot configuration
```

Figure 12-1.   Node Summary Menu

If the slot does not show a **Configured Type**, refer to "Slot Configuration" in Chapter 3.

Quad OCU Module Overview (Continued)

Quad OCU Module Main Menu

The Quad OCU (Figure 12-2) provides options that enable you to configure the Quad OCU module, perform diagnostics, access utilities, and display version and release information.

```
Lucent Technologies          AX Quad OCU       Slot: 3         Help = [?]


                             OCU Main Menu



                             Configuration
                             Diagnostics
                             Utilities
                             About
```

Figure 12-2.   Quad OCU Main Menu

Configuring Quad OCU Module Parameters

Procedure

To configure the Quad OCU module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad OCU.

3. From the OCU Main Menu, select Configuration.

   The Configuration Manager menu displays (Figure 12-3).
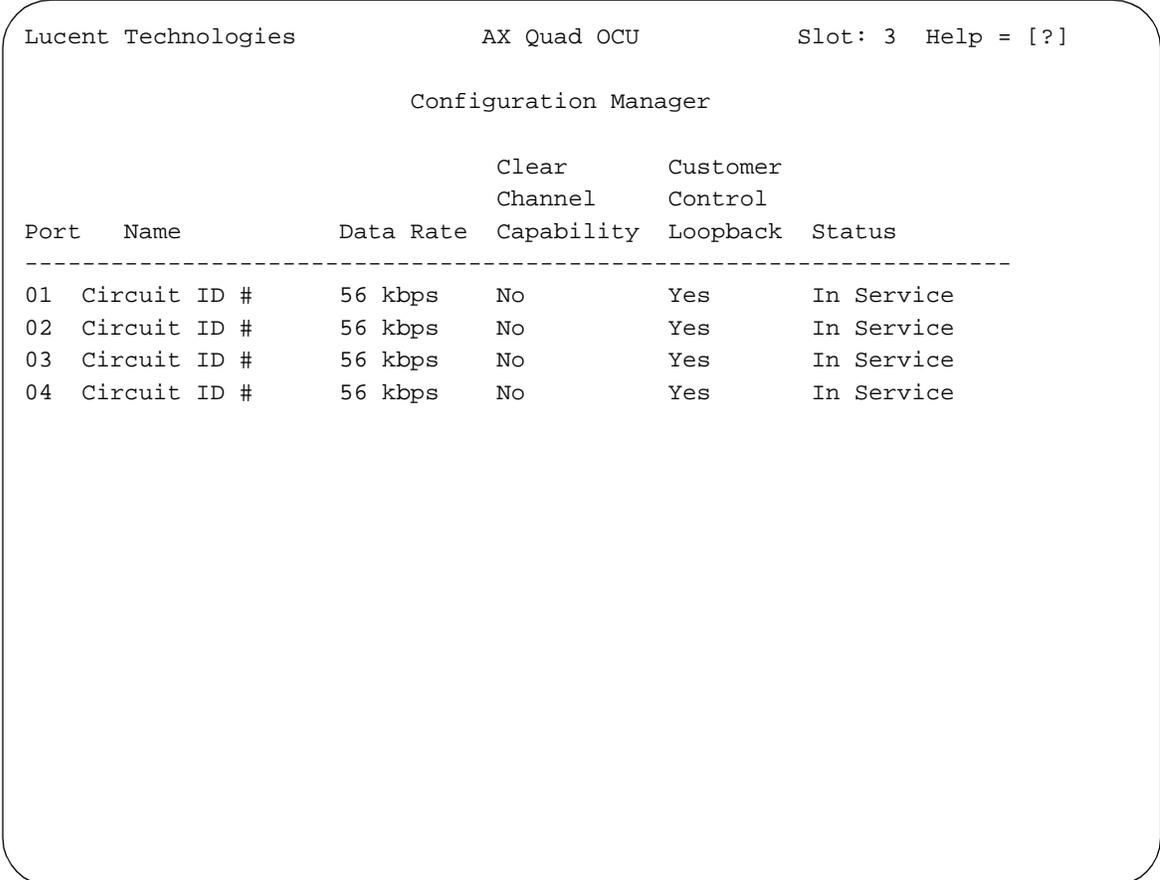
```
Lucent Technologies            AX Quad OCU          Slot: 3  Help = [?]

                         Configuration Manager

                               Clear      Customer
                               Channel    Control
Port   Name            Data Rate Capability Loopback  Status
-------------------------------------------------------------------
01  Circuit ID #       56 kbps   No         Yes       In Service
02  Circuit ID #       56 kbps   No         Yes       In Service
03  Circuit ID #       56 kbps   No         Yes       In Service
04  Circuit ID #       56 kbps   No         Yes       In Service
```

Figure 12-3.   Configuration Manager Menu

The Configuration Manager menu displays the port number, circuit id name, data rate, channel capability, customer control loopback, and unit status.

Configuring Quad OCU Module
Parameters (Continued)

**Procedure
(Continued)**

4. To configure each of the parameters displayed in the Configuration
    Manager screen, place your cursor on the desired port number, and press
    Enter . The Configuration submenu displays (Figure 12-4).

```
Lucent Technologies            AX Quad OCU          Slot: 3  Help = [?]


                               Configuration


Port..........: 1
Name..........: Circuit ID #
Data Rate.....: 56 kbps
Clear Channel Capability [valid only for 64 kbps]..: No
Customer Control Loopback[valid only for 56 kbps]..: Yes
Status........: In Service
```

Figure 12-**4. Configuration submenu**

5. Modify the field data using the field descriptions that follow.

6. To save changes, type **X**.

7. When prompted: "Update Configuration? Are you sure (Y/N)?

    Type **Y**.

Configuring Quad OCU Module Parameters (Continued)

Fields

Port #: The port number.

Name: The Circuit ID # is a user-defined field. Any name up to 15 characters in length can be entered to identify each port on the Quad OCU module.

Data Rate: 64/56Kbps

Clear Channel Capability [valid only for 64 Kbps]: Select yes or no to run clear channel.

Customer Control Loopback [valid only for 56 Kbps]: Select yes, the unit will pass to the customer's loopback request or else it is converted to Control Mode Idle (CMI).

Status: The unit's status is either in service or out of service.

Quad OCU Module Diagnostics

Procedure To view and perform diagnostics on the Quad OCU module, follow these steps:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad OCU.

3. From the OCU Main Menu, select Diagnostics.

    The Diagnostic Menu displays (Figure 12-5).

```
Lucent Technologies          AX Quad OCU      Slot: 3              Help = [?]



                             Diagnostic Menu
                             ---------------------


                         Line Diagnostics Center
```

Figure 12-5.   Diagnostics Menu

4. Select Line Diagnostics Center to display the Diagnostics Monitor
    (Figure 12-6). This submenu allows you to display or perform diagnostic
    actions, such as loopbacks and BERT tests.

Quad OCU Module Diagnostics (Continued)

Procedure
(Continued)

```
Lucent Technologies        AX Quad OCU          Slot: 3         Help = [?]

                            Diagnostic Monitor

Port..........: #1              #2              #3              #4
Name..........:Circuit ID #    Circuit ID #    Circuit ID #    Circuit ID #
Port Loop.....:Off             Off             Off             Off
Backplane Loop:Off             Off             Off             Off


Bert..........:Off             Off             Off             Off
Secs.In Test..:0               0               0               0
Local Errors..:0               0               0               0
Remote Error..:0               0               0               0


State.........:LostDDS Carrier Level Detection LostDDS Carrier LostDDS Carrier
Bipolar Error.:Yes- 32553      Yes- 33218      Yes- 32179      Yes- 31876
Loss of Frame.:No - 0          Yes- 33218      No - 0          No - 0
LineLoss db/km:50.5/8.5        32.3/5.3        50.5/8.5        50.5/8.5


Loop: Local [A]nalog     Local [D]igital    [L]ine     [R]emote   [B]ackplane
      Loop [O]ff          [C]lear Counters    Insert [E]rror
BERT: [2]047     [5]11     [6]3     All [1]'s     All [0]'s     Of[f]
```

Figure 12-6.   Diagnostics Monitor Submenu

5.   Select the type of loopback or BERT test by the appropriate letter as indicated in the brackets, located at the bottom of the Diagnostics Monitor submenu.

Quad OCU Module Diagnostics
(Continued)

Loopbacks

- Local [A]nalog
- Local [D]igital
- [L]ine
- [R]emote - useful for looping back any testing initiated by the other end.
- [B]ackplane - breaks the current data path and establishes a connection back to itself via the backplane.
- Loop [O]ff - normal operation has been restored.
- Clear [C]ounters - resets the counters
- Insert [E]rror

BERT test patterns

- [2]047
- [5]11
- [6]3
- All [1]'s
- All [0]'s
- Of[f]

Quad OCU Module Utilities

Procedure   To use the Quad OCU module utilities, follow these steps:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad OCU.

3. From the OCU Main Menu, select Utilities.

   The Utilities Menu displays (Figure 12-7).

```
Lucent Technologies          AX Quad OCU    Slot:02      Help = [?]


                          Quad OCU Utilities



                   Board Status: In Service
                   Reset OCU Board
                   Monitor System Clocks
                   Backplane Integrity:
                   System Manager Interface
```
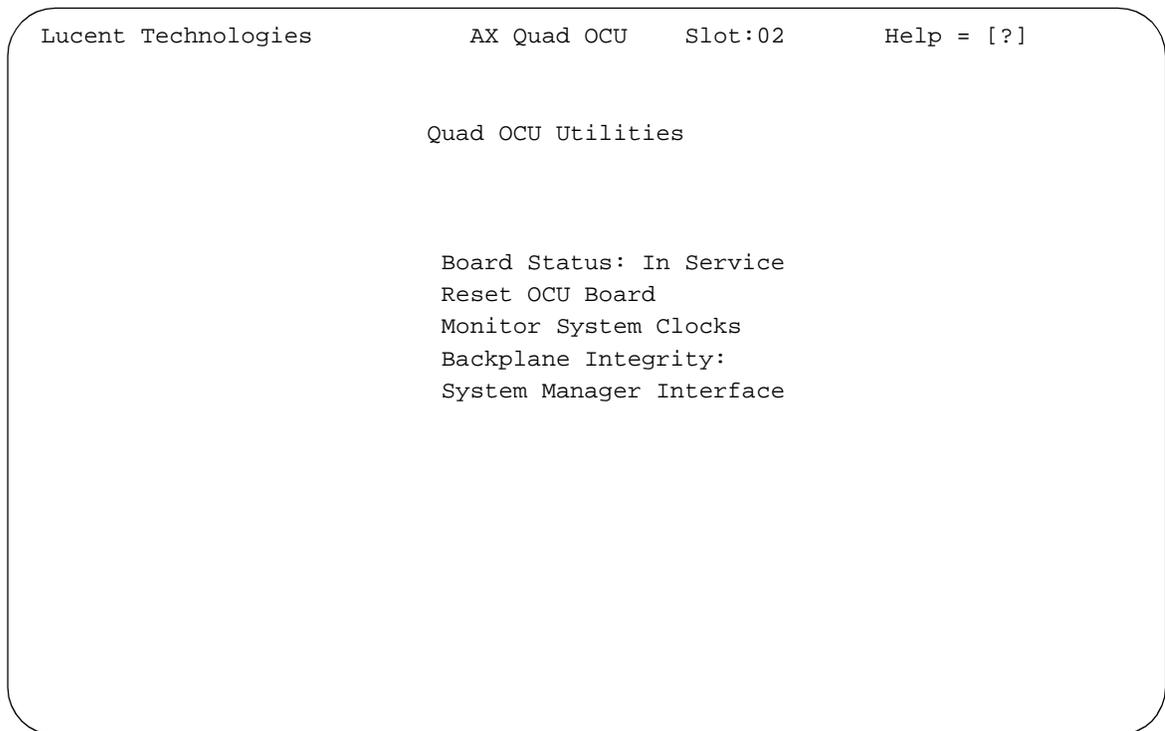
Figure 12-**7.   Utilities Menu**

Quad OCU Module Utilities (Continued)

**Utilities Menu
Options**

⚠ **WARNING:**
*The following menus are for debugging purposes only. It is strongly advised
that you do not use these menus unless prompted to do so by a Lucent
Technologies Technical Support Representative.*

The Utilities menu has these options:

- **Board Status**: In Service - select yes to force Quad OCU out of service.

- **Monitor System Clocks** - shows a status of the Bus, lost system clock
  count, and lost frame sync count. Counter can also be reset from here.

- **Backplane Integrity** - a status of the backplane's integrity.

- **Reset OCU Board** - select yes to re-initialize the board.

- **System Manager Interface** - displays a status of the SMC.

Quad OCU About Screen

Procedure   To display identification information for the Quad OCU module:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for Quad OCU.

3.   From the Quad OCU Main Menu, select About.

    The About Screen displays (Figure 12-8).

```
Lucent Technologies       AX Quad OCU          Slot: 3          Help = [?]




                        About Screen
                        ------------


                Version..................: 01.02
                Release Date.............: October 14, 1998
                Checksum.................: 686B
                Front Card Xilinx Version: front04

                Rear Card Type...........: Quad OCU
                Rear Card Revision.......: 0
                Rear Card Xilinx Version.: rear3413
                Ram Access...............: 16 bits wide



```

Figure 12-8.   About Screen

Quad OCU About Screen (Continued)

Fields
Version: This is the software version current in the Quad OCU's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the Quad OCU's flash memory at power up.

Front Card Xilinx Version: The hardware version of downloadable, programmable devices.

Rear Card Type: Displays the type of board in the system.

Rear Card Revision: Displays the board's revision level.

Rear Card Xilinx Version: The hardware version of downloadable, programmable devices.

RAM Access: The size of the memory bus.

Quad DS-1 with xDSL Module

13

Contents

Contents (Continued)

Quad DS-1 with xDSL Module
Overview

Background

The HDSL or High-bit-rate Digital Subscriber Line enables the transport of DS-1 or Fractional DS-1 data over one or two pairs of unconditioned copper. The xDSL module has the same form factor as the Quad DS-1 rear card and can be implemented without any changes to the AX system or Quad DS-1 card. The xDSL module can contain up to four mini modules in any combination of Full DS-1 or Fractional DS-1. When used with a DS-1 module, the xDSL card fits into the rear of the DS-1 module, via the AX, to extend the length of the DS-1 line.

Before you begin

In order to display the Quad xDSL module menus, the following must be done:

■   The Quad DS-1 card must be in a slot in the equipment chassis

■   The slot must be configured for module type: Quad DS-1

The **Configured Type** and **Actual Type** noted on the Node Summary Menu must be Quad DS-1 (Figure 13-1).

Quad DS-1 with xDSL Module
Overview (Continued)

**Before you begin
(Continued)**

```
Lucent Technologies          DACS II AX 11 - System Manager    Help = [?]
Standby SMC not present


                              Node Summary Menu

Slot#  Configured Type    Actual Type         Status
-----  ---------------    -----------         ------
01)    Quad DS-1          Quad DS-1           OK
02)    Quad DS-1          Quad DS-1           OK
03)    ----               ----                Not Present
04)    ----               ----                Not Present
05)    ----               ----                Not Present
06)    Quad DS-3          Quad DS-3           OK*
07)    Quad DS-3          Quad DS-3           Alarm*
08)    ----               ----                Not Present
09)    Test Access        Test Access         OK
10)    Quad High Speed    Quad High Speed     OK
11)    Quad OCU           Quad OCU            OK
SMCA)  System Manager                         On Line
SMCB)  System Manager                         Not Present



[C]hange slot configuration     [D]elete slot configuration
```

Figure 13-1.   Node Summary Menu

If the slot does not show a **Configured Type**, refer to "Slot Configuration" in
Chapter 3.

Quad DS-1 with xDSL Module
Overview (Continued)

Quad DS-1 Main Menu

The Quad DS-1 Main Menu (Figure 13-2) provides options that enable you to configure the Quad DS-1 module, retrieve statistics, perform diagnostics, manage DSL ports, access utilities, and display version and release information.

```
Lucent Technologies          AX Quad DS-1 Module    Slot: 01    Help = [?]



                             QDS1 Main Menu



                             Configuration
                             Statistics
                             Diagnostics
                             DSL Port Management
                             Utilities
                             About
```
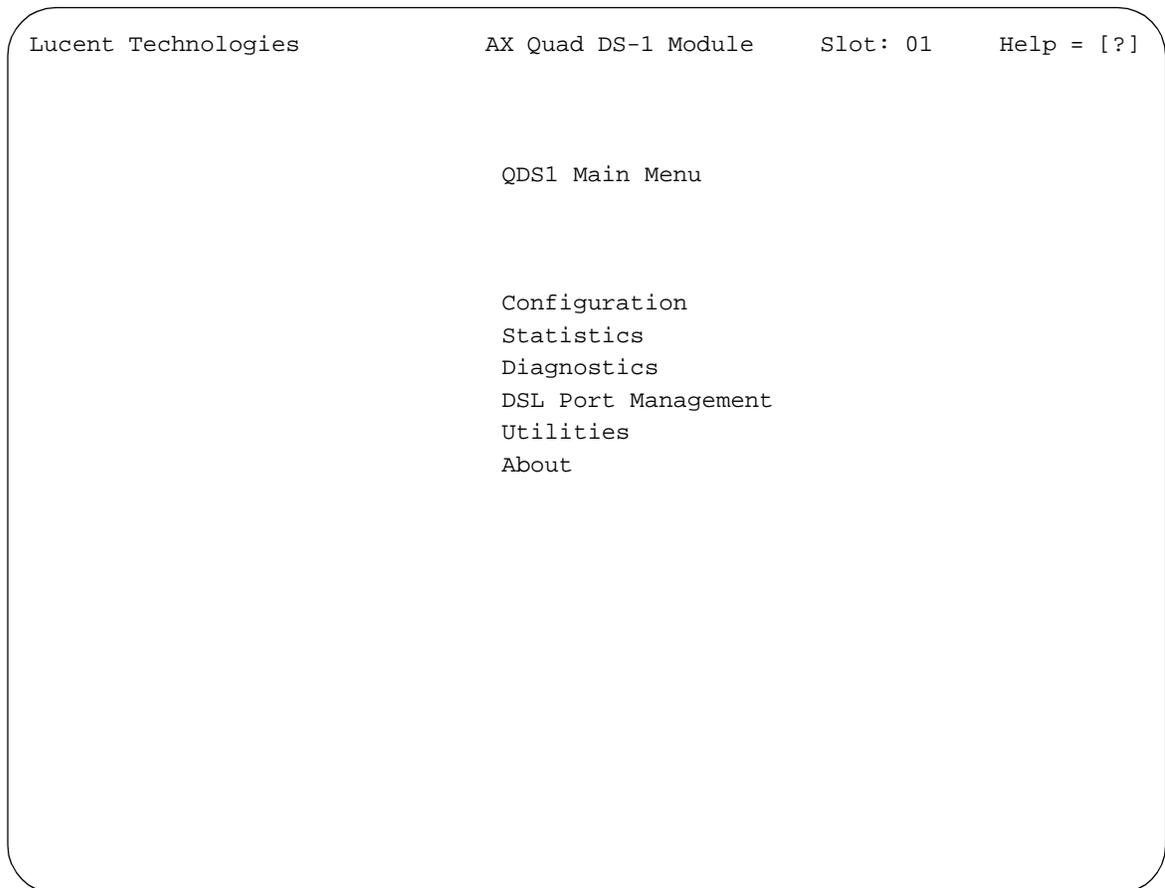
Figure 13-2.   Quad DS-1 Main Menu with DSL Port Management

Quad DS-1 with xDSL Module Configuration

Before you begin   The Quad xDSL configuration files are stored on the System Controller. Thus, when replacing a Quad DS-1 card, the old configuration will be preserved.

Procedure   To configure parameters for the Quad DS-1 with xDSL module:

1. From the Main Menu, select Node Summary.

2. Select a slot that haas been configured for Quad DS-1 with xDSL.

3. From the QDS1 Main Menu, select Configuration.

    The Quad DS-1 card port configuration menu displays (Figure 13-3).

```
Lucent Technologies     AX Quad DS-1 Module    Slot: 01      Help = [?]

                    Quad DS-1 card port configuration


              Port #1          Port #2          Port #3          Port #4
Name........: Port #1          Port #2          Port #3          Port #4
Framing.....: ESF              ESF              ESF              ESF
Line code...: B8ZS             B8ZS             B8ZS             B8ZS
LBO.........: 0 db             0 db             0 db             0 db
Density.....: Clear            Clear            Clear            Clear
Ntwk loops..: Enable           Enable           Enable           Enable
Yellow alarm: Yes              Yes              Yes              Yes
ESF format..: 54016            54016            54016            54016
Unused DSO's: Busy             Busy             Busy             Busy
Port Status : In Service       In Service       In Service       In Service
HDSL Unit...: Master           Master           Master           Master
Cascade Leds when Idle: Yes
```

Figure 13-3.   Quad DS-1 Card Port Configuration Menu

Quad DS-1 with xDSL Module
Configuration (Continued)

**Procedure
(Continued)**

4. Configure all parameters for each port. For field descriptions, see the following page.

5. To save changes, type **X**.

6. When prompted: "Update Configuration? Are you sure (Y/N)?

   Type **Y**.

Fields

Name: This is a user-defined field. Any name up to 14 alphanumerics can be entered to identify each port on the Quad DS-1. Some users find it beneficial to use circuit numbers to name the ports.

Framing: This information must be obtained from the network supplier. Choose either D4 or ESF.

   D4 (Super Frame): D4 (SuperFrame) consists of 12 frames of 193 bits each for a total of 2316 bits. Each 193 bit frame consists of 192 bits preceded by one framing bit (the F bit).

   ESF (Extended Super Frame): ESF (Extended SuperFrame) includes provisions for continuous monitoring by both the user and the telephone company central office. ESF provides a 4 Kbps link control channel (transparent to user data) which allows the telephone company to monitor the local loop, transmit and receive test messages and retrieve performance data, all without interrupting normal operations.

Line Code: This information must be obtained from the network supplier. Choose between AMI (Alternate Mark Inversion) and B8ZS (Bipolar with 8 Zero Substitution).

LBO (Line Build Out): This parameter should be set to 0 dB unless the network supplier specifically requests otherwise. The options are 0, 7.5, 15 or 22 dB.

Density: This information must be obtained from the network supplier. Choose Clear or 62411. A "Clear" network imposes no "ones density" requirements on the user. A "62411" network complies with AT&T Technical Reference #62411 and limits the AX Quad DS-1 module transmission to no more than fifteen consecutive zeroes. If the Line Code entry is "B8ZS", choose "Clear". If the Line Code entry is "AMI", choose 62411.

Quad DS-1 with xDSL Module
Configuration (Continued)

Fields (Continued)   **Network Loops:** This entry determines the DS-1 module's ability to respond to diagnostic commands received from the network supplier. Select "no" so that the commands are passed to another DS-1 device that will respond. This will prevent the local DS-1 from detecting the command during xDSL initialization and thus turn on the LOOP LED.

Yellow Alarm: "Yes" causes the DS-1 module to discard data and send a "yellow alarm" if it is in a "red alarm" condition for three seconds. "Yes" must be chosen if the network supplier is a common carrier, such as a telephone company.

ESF Format: This entry describes the types of ESF network commands that the DS-1 module will respond to. It has no meaning for D4 networks. With ESF networks, this information must be obtained from the network supplier. Choose between AT&T Technical Reference 54016 and ANSI specification T1.403.

Unused DS0s: This selection determines whether the data that will be transmitted over the unused DS0s will be "IDLE" or "BUSY."

Port Status: This field determines the status of the port. The status will either be "in service" or "out of service".

HDSL Unit: Master and slave are the two options for an xDSL span. As a master it provides clock to the far end slave unit. As a slave unit it accepts clock from the far end master unit. System clocking must be set to this port.

Cascade LEDs when idle: Blinking LEDs that indicate the board is working but it is in idle mode.

Displaying ESF Statistics

Overview   The ESF Statistics menu (Figure 13-4), displays both current and 24-hour ESF statistics. The "Current Statistics" column displays the counts for the current time interval (maximum fifteen minutes). The "24-Hour Statistics" column displays the counts for the preceding 24-hour period.

Procedure   To view the ESF Statistics for the Quad DS-1 module:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Statistics.

    The ESF Statistics menu displays (Figure 13-4).

```
Lucent Technologies     AX Quad DS-1 Module  Slot: 01      Help = [?]




                            ESF statistics menu


                            ESF statistics
                            ESF registers
```
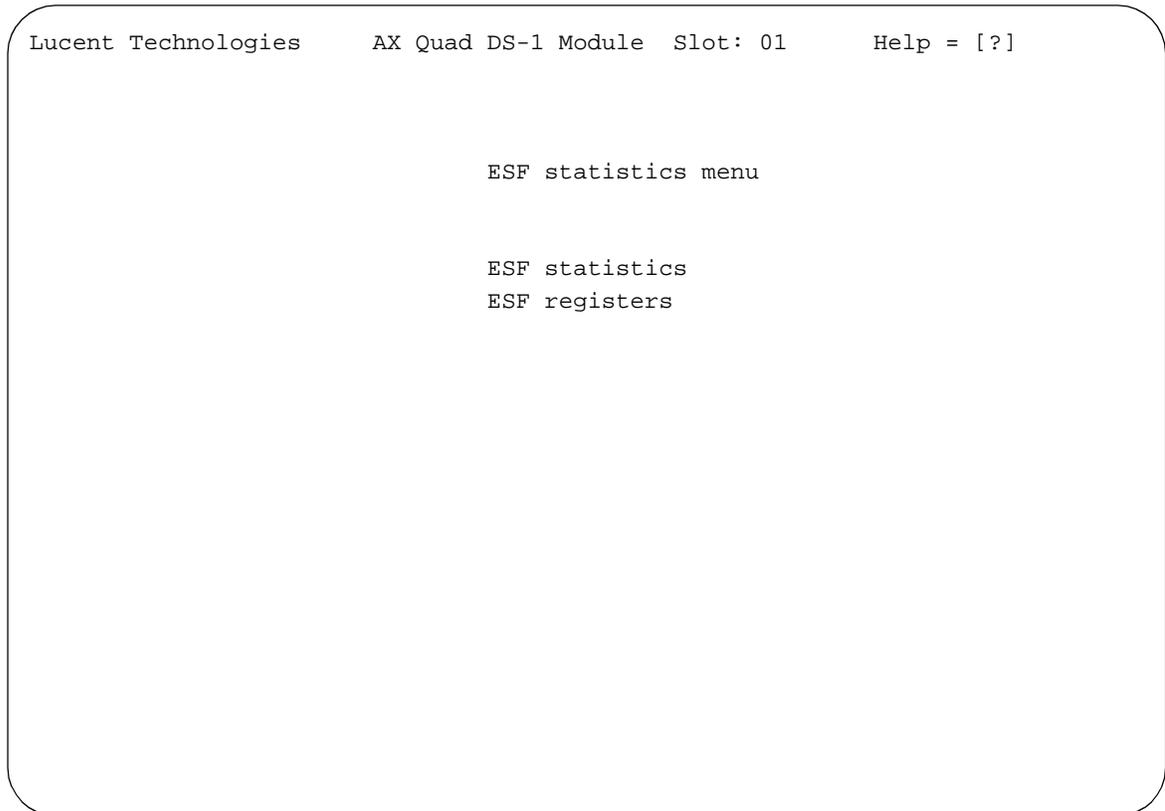
Figure 13-4.   ESF Statistics Menu

Displaying ESF Statistics (Continued)

Procedure   4. From the ESF Statistics Menu, select ESF Statistics.
(Continued)
The Quad DS-1 ESF statistics menu displays (Figure 13-5).

```
Lucent Technologies   AX Quad DS-1 Module   Slot: 01     Help = [?]

                     Quad DS-1 ESF statistics

                Port #1          Port #2          Port #3          Port #4
Register        Curr 24Hr       Curr  24Hr       Curr  24Hr       Curr  24Hr

Errored secs.....:0    1          0     0          0     0          0     0
Failed secs(UAS).:420  63889      0     0          0     0          0     0
Severe error secs:0    1          0     0          0     0          0     0
Bursty error secs:0    0          0     0          0     0          0     0
Loss of frame cnt:0    1          0     0          0     0          0     0
Time in interval.:420             420              420              420
# Valid intervals:71              71               71               71
ESF status.......:FU0000L0        F00000L0         F00000L0         FU00000L0
```

Figure 13-5.   ESF Statistics Menu

The fields that appear on the ESF Statistics screen are described in the following section.

5. To exit to the previous menu, type **X** or press Esc .

Displaying ESF Statistics (Continued)

Fields

Errored Second (ES): The occurrence of a Loss of Frame or a CRC6 error in a one-second period is known as an errored second. This field represents the number of errored seconds that have occurred.

Failed Second (FS): Each second period during the occurrence of a Failed Signal State (ten consecutive errored seconds) is known as a failed second. This field represents the number of failed seconds that have occurred.

Severely Errored Second (SES): A one-second period in which three hundred twenty (320) or more CRC6 errors have occurred is known as a severely errored second. This field represents the number of severely errored seconds that have occurred.

Bursty Errored Second (BES): A one-second period in which more than one but less than 320 CRC6 errors has occurred is known as a bursty errored second. This field represents the number of bursty errored seconds that have occurred.

Loss of Frame Count: A loss of frame occurs when either Network equipment or the DTE senses errors in the framing pattern. Depending upon the equipment, this occurs when any 2 of 4, 2 of 5, or 3 of 5 consecutive terminal framing bits received contain bit errors in the framing pattern.

Time In Interval: A timer that tracks the number of seconds in one 15-minute interval.

# of Valid Intervals: A counter that tracks the total number of 15 minute intervals in a 24 hour period (up to 96).

ESF Status: This field defines the status of the DS-1 line. The status is defined by an eight digit number that is described below:

FU0000L0

Digit #1 - "F" or "0" where "F" indicates Failed Signal State (FSS) if "U" or "L" is true.

Digit #2 - "U" or "0" where "U" indicates an unavailable signal state.

Digit #3 through #6 and #8 are always "0."

Digit #7 - "L" or "0" where "L" indicates that the DS-1 line is in loop.

Displaying ESF Registers

Description   The ESF Registers screen (Figure 13-7) supplies the same information as the ESF Statistics Menu (Figure 13-5) but it is broken down by port for each of the ninety-six 15-minute intervals in the preceding 24-hour period.

Procedure   To display ESF Registers for the Quad DS-1 module, follow these steps:

1.   From the AX Main Menu, select Node Summary.

2.   Select a Slot that has been configured for Quad DS-1.

3.   From the Quad DS-1 menu, select Statistics.

4.   From the ESF Statistics menu, select ESF Registers.

5.   From the ESF Registers Summary menu (Figure 13-6), select a port.

```
Lucent Technologies          AX Quad DS-1 Module    Slot: 01      Help = [?]




                        Quad T1 ESF register summary menu
                        ---------------------------------

                             Port 1 - Port #1
                             Port 2 - Port #2
                             Port 3 - Port #3
                             Port 4 - Port #4










    E[x]it menu
```

Figure 13-6.   ESF Registers Summary Menu

Displaying ESF Registers (Continued)

Procedure
(Continued)
The ESF registers for the selected port are displayed (Figure 13-7).

```
Lucent Technologies      AX Quad DS-1 Module     Slot: 01      Help = [?]

                                ESF registers
                                  Port #1
 INT ES   FS   SES BES     INT ES   FS   SES BES     INT ES   FS   SES BES
 01. 000 900 000 000       17. 000 000 000 000       33. 000 000 000 000
 02. 002 889 003 000       18. 000 000 000 000       34. 000 000 000 000
 03. 000 000 000 000       19. 000 000 000 000       35. 000 000 000 000
 04. 000 000 000 000       20. 000 000 000 000       36. 000 000 000 000
 05. 000 000 000 000       21. 000 000 000 000       37. 000 000 000 000
 06. 000 000 000 000       22. 000 000 000 000       38. 000 000 000 000
 07. 000 000 000 000       23. 000 000 000 000       39. 000 000 000 000
 08. 000 000 000 000       24. 000 000 000 000       40. 000 000 000 000
 09. 000 000 000 000       25. 000 000 000 000       41. 000 000 000 000
 10. 000 000 000 000       26. 000 000 000 000       42. 000 000 000 000
 11. 000 000 000 000       27. 000 000 000 000       43. 000 000 000 000
 12. 000 000 000 000       28. 000 000 000 000       44. 000 000 000 000
 13. 000 000 000 000       29. 000 000 000 000       45. 000 000 000 000
 14. 000 000 000 000       30. 000 000 000 000       46. 000 000 000 000
 15. 000 000 000 000       31. 000 000 000 000       47. 000 000 000 000
 16. 000 000 000 000       32. 000 000 000 000       48. 000 000 000 000

Next/previous page = [Return/Space]
```

Figure 13-7.   ESF Registers

The fields that appear on the ESF Registers screen are described in the
following section.

Displaying ESF Registers (Continued)

**ESF Register
Definitions**

Errored Seconds (ES): The occurrence of a Loss of Frame or a CRC6 error in a one-second period is known as an errored second. This field represents the number of errored seconds that have occurred.

Failed Second (FS): Each second period during the occurrence of a Failed Signal State (ten consecutive errored seconds) is known as a failed second. This field represents the number of severely errored seconds that have occurred.

Severely Errored Second (SES): A one-second period in which three hundred twenty (320) or more CRC6 errors have occurred is known as a severely errored second. This field represents the number of severely errored seconds that have occurred.

Bursty Errored Seconds (BES): A one-second period in which more than one but less than 320 CRC6 errors has occurred is known as a bursty errored second. This field represents the number of bursty errored seconds that have occurred.

Quad DS-1 Module Diagnostics

Procedure   To view and perform diagnostics on the Quad DS-1 module, follow these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Diagnostics.

    The Quad DS-1 Diagnostics menu displays (Figure 13-8).

```
Lucent Technologies          AX Quad T-1 Module    Slot: 01      Help = [?]


                             Quad DS-1 diagnostics



NI BERT........: Off              Off            Off            Off
Error seconds..: 0               0              0              0
Seconds in test: 0               0              0              0


              State ErrSec   State ErrSec   State ErrSec   State ErrSec
AIS............: Yes  2602     No   0         No   0         No   0
RED............: Yes  2605     No   0         No   0         No   0
YEL............: No   0        Yes  2605      Yes  2605      Yes  2605
Ferr...........: Yes  2604     No   0         No   0         No   0
CRC6...........: Yes  2604     No   0         No   0         No   0
BPV............: No   6        Yes  2605      No   0         No   0
LOS............: No   4        Yes  2605      Yes  2605      Yes  2605

***Access the DSL Port Menu for all Loopback Commands!




[R]eset counts     Insert Bert [E]rrors
```

Figure 13-8.   Quad DS-1 Diagnostics Menu

Quad DS-1 Module Diagnostics

**Procedure
(Continued)**

4. For ports 1 through 4, select one of the following test patterns:

■ **NI BERT** - This is useful for testing the bit error rate of the communication circuit via the NI. The device checks for errors by comparing a received data pattern with a known transmitted data pattern to determine line quality. The test patterns include 2047, 3 of 24, All Ones, All 0's, QRSS.

■ **Error seconds** - This read-only count represents the number of seconds in which errors occurred in a one second period while the Quad DS-1 module was in test.

■ **Seconds in test** - This read-only count represents the number of seconds the Quad DS-1 module was in test.

AIS: An unframed "all ones" condition has been detected.

Red Alarm (RED): A "loss of frame alignment" has occurred and synchronization has been lost.

Yellow Alarm (YEL): A Yellow Alarm is generated by the network and sent to the customer premises. It usually means that the network is not receiving the AX signaling correctly. (The network is not in sync or a red alarm has occurred.)

Framing Errors (Ferr): One or more frame alignment bit errors have been detected. This does not mean that synchronization has been lost.

CRC6 Alarm: One or more CRC6 block errors have been detected. The D4 framing does not include CRC6; the AX DS-1 Quad module replaces that parameter by counting the number of framing bit errors. The result is a useful picture over time regarding D4 link performance.

BPV: Bipolar Violations have been detected. This usually indicates that a very weak or excessively strong signal is being received from the network.

LOS: This indicates a loss of signal detection. No signal is present on the RX pair to the AX DS-1 module. (DS-1 loop).

5. Choose one of the following actions:

■ To reset counts, type **R**.

■ To insert BERT errors, type **E**.

■ To save changes and exit to the previous menu, type **X**.

6. When done, go to the DSL Port Management Menu to set up loopback commands.

DSL Port Management for the Quad DS-1 with xDSL Module

Description   The DACS II AX enables you to view or configure parameters on the xDSL mini module.

Procedure   To configure or view parameters for the xDSL mini module:

1. From the Main Menu, select Node Summary.

2. Select a slot that has been configured for Quad DS-1 with xDSL .

3. From the QDS1 Main Menu, select DSL Port Management.

    The DSL Port Management Menu displays (Figure 13-9).

```
Lucent Technologies          AX Quad DS-1 Module     Slot: 01      Help = [?]



                         DSL Port Management Menu


                                 Port 1
                                 Port 2
                                 Port 3
                                 Port 4

















                            Exit menu = [X]

```

Figure 13-9.   DSL Port Management Menu

4. At the DSL Port Management menu, select one of the four ports.

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

5. Press the SPACE BAR twice to access the next menu, which is the
   Maintenance Terminal Main Menu (Figure 13-10).

   There are eight lettered submenus (A-H) on the Maintenance Terminal
   Main Menu that allow you to view or configure various parameters on the
   xDSL mini module.

   The submenus are described on the following pages.

```
   HI-GAIN m/OEM-FT1    MAINTENANCE TERMINAL MAIN MENU    (ver V1.2 -0004)
                          CIRCUIT ID#:


                      A. VIEW SPAN STATUS
                      B. SET CLOCK
                      C. SYSTEM SETTINGS
                      D. LOOPBACK MODE:   NONE
                      E. VIEW PERFORMANCE DATA
                      F. VIEW PERFORMANCE HISTORY
                      G. VIEW ALARM HISTORY
                      H. ENTER CIRCUIT ID #












   HIT SPACE BARS
```

Figure 13-10. Maintenance Terminal Main Menu

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

Command Keys When you select one of the submenus (A-H) from the Maintenance Terminal Main Menu, a list of commands appears near the bottom of the screen. The most common commands are listed in Table 13-1. Additional commands are listed on the submenus.

Table 13-1. Menu Actions for Maintenance Terminal Submenus

Action	Key
Exit screen	**E**
Clear the read-only error counters	**C**
Update the screen	**U**
Return to the DSL Port Management Menu	**Ctrl Z**
Return to the Node Summary Menu	**Ctrl C**

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

View Span Status Screen

Select **A** from the Maintenance Terminal Main Menu (Figure 13-10) and the View Span Status screen appears (Figure 13-11). From here, you can observe the condition or status of the copper pair that goes from the local unit to the remote unit. These conditions may be observed over a 24-hour period.

```
                        SPAN STATUS
                ( HLU/ver1.2-0004: HRU/ver0.0-0000)
TIME: 00:50:17
DATE: 02/13/99                    CIRCUIT ID#:


ALARMS:   LAIS LOSW
LOOPBACK: OFF
                          HLU                  HRU
                          HDSL                 HDSL
                       cur/min/max          cur/min/max
MARGIN:                   N/A                  N/A    dB
PULSE ATTN:               N/A                  N/A    dB
PPM OFFSET:               N/A                  N/A    ppm
24 HOUR ES:              00000               00000    seconds
24 HOUR UAS:             03017               00000    seconds


                        DS1 STATUS
                          HLU                  HRU
24 HOUR BPV Seconds:     00001               00000
24 HOUR UAS Count:       00000               00000
Frame type:               ESF                 N/A
Code type:                AMI                 N/A

                (E)xit (C)lear (U)pdate
```

Figure 13-11. Maintenance Terminal Main Menu Option A: View Span Status Screen

Margin: causes an Alarm Event and causes Front Bezel Alarm LED to flash if below the default threshold of 4DB.

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

Set Clock Menu   Select **B** from the Maintenance Terminal Main Menu (Figure 13-10) and the Set
Clock menu appears. From here, you can set the time and date. Enter the hour
and minutes; seconds are optional. Press $\boxed{\text{Enter}}$ to confirm the time and date
selections.

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

System Settings Menu

Select **C** from the Maintenance Terminal Main Menu (Figure 13-10) and the System Settings menu appears.

To change a setting, type the letter shown in parentheses. This action will cause the screen to refresh and then reflect the new information.

After all parameters have been set, press **E** to exit, and **C** to confirm your entries. The new parameters are now activated.

> **NOTE:**
> If the port is set for Slave in the DS-1 configuration menu, the System Settings menu will not be configurable and letters will not appear in parenthesis.

```
                         SYSTEM SETTINGS


TIME: 00:52:12
DATE: 02/13/99                    CIRCUIT ID#:



SMART-JACK (L)B:     ENABLE
(S)PECIAL LPBK:      GNLB
(Z)BTSI:             OFF
ES ALARM TH(R)ES:    NONE
LOOPBACK (T)IMEOUT:  60
(A)LARM:             ENABLE
(D)S1 LINE CODE:     AUTO
(F)RAMING:           AUTO
AIS ON (H)DSL ALRM:  ENABLE
AIS ON S(M)JK/NREM:  ENABLE
MAR(G)IN ALM THRES:  4
DSO (B)LOCKING: xx - Blocked Channels
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
                                   xx xx xx xx xx xx xx xx xx xx xx xx


                         (E)xit
     Enter the letter in parenthesis (X) to change any setting
```

Figure 13-12. Maintenance Terminal Main Menu Option C: System Settings Screen

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

Loopback Menu   Select **D** from the Maintenance Terminal Main Menu (Figure 13-10) and the
Loopback Mode menu appears. From here you can enable/disable loopbacks;
set the network loop for the local or remote site; or set the customer loop for the
local or remote locations.

```
                         LOOPBACK MENU


 TIME: 04:47:22
 DATE: 02/28/99
 CIRCUIT ID#:



                 A. DISABLE LOOPBACKS
                 B. NETWORK LOOP HLU          (NLOC)
                 C. NETWORK LOOP HRU          (NREM)
                 G. CUSTOMER LOOP HLU         (CREM)
                 H. CUSTOMER LOOP HRU         (CLOC)







                        (E)xit


```

Figure 13-13. Maintenance Terminal Main Menu Option D: Loopback Menu

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

View Performance Data Menu

Select **E** from the Maintenance Terminal Main Menu (Figure 13-10) and the View Performance Data menu appears. This screen shows the errored and unavailable seconds for both HDSL loops and each DS-1 input over a specified period of time.

```
Date: 02/28/99              PERFORMANCE DATA
CIRCUIT ID#:
                   ERRORED SECONDS/UNAVAILABLE SECONDS


                DS1                HDSL
           HLU       HRU       HLU       HRU
 19:30   000/000   000/000   000/900   000/000
 19:45   000/000   000/000   000/900   000/000
 20:00   000/000   000/000   000/900   000/000
 20:15   000/000   000/000   000/900   000/000
 20:30   000/000   000/000   000/900   000/000
 20:45   000/000   000/000   000/900   000/000
 21:00   000/000   000/000   000/900   000/000
 21:15   000/000   000/000   000/900   000/000
 21:30   000/000   000/000   000/900   000/000
 21:45   000/000   000/000   000/900   000/000
 22:00   000/000   000/000   000/900   000/000
 22:15   000/000   000/000   000/900   000/000
 22:30   000/000   000/000   000/900   000/000
 22:45   000/000   000/000   000/900   000/000
 23:00   000/000   000/000   000/900   000/000
 23:15   000/000   000/000   000/900   000/000



                (E)xit (P)revious (N)ext
```

Figure 13-14. Maintenance Terminal Main Menu Option E: View Performance Data Menu

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

**Performance
History Menu**

Select **F** from the Maintenance Terminal Main Menu and the View Performance History menu appears. This screen shows the errored and unavailable seconds for both HDSL loops and each DS-1 input are listed for the current and previous seven days.

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

**Alarm History
Menu**

Select **G** from the Maintenance Terminal Main Menu (Figure 13-10) and the View Alarm History menu appears. This screen contains the time and date stamp of the first and last occurrence of each alarm. The maximum nonoverflowing count on this screen is 999.

Press **C** to clear the counts.

```
                            ALARM HISTORY


    TIME: 01:09:31

    DATE: 02/13/99

    CIRCUIT ID#:


    Type              First              Last            Current      Count

    LOS, DS1-HLU                                         OK           000

    LOS, DS1-HRU                                         OK           000

    LOSW, HDSL     02/13/99-01:11    02/13/99-01:11     ALARM        001

    ES, HDSL                                            OK           000

    MARGIN LP                                           OK           000



    LAST CLEARED:  02/13/99-01:11




                    (E)xit (C)lear (U)pdate
```

Figure 13-15. Maintenance Terminal Main Menu Option G: View Alarm History Menu

DSL Port Management for the Quad
DS-1 with xDSL Module (Continued)

Circuit ID# screen   Select **H** from the Maintenance Terminal Main Menu (Figure 13-10) to assign a
Circuit ID# . A Circuit ID# is an identifier of up to 24 alphanumeric characters.
This entry is stored in NVRAM and remains even after a loss of power. The
Circuit ID# is not available at the remote location of the maintenance port.

```
                    MAINTENANCE TERMINAL MAIN MENU
                         CIRCUIT ID#: 123456789

                    A. VIEW SPAN STATUS
                    B. SET CLOCK
                    C. SYSTEM SETTINGS
                    D. LOOPBACK MODE:  NONE
                    E. VIEW PERFORMANCE DATA
                    F. VIEW PERFORMANCE HISTORY
                    G. VIEW ALARM HISTORY
                    H. ENTER CIRCUIT ID #

















    enter circuit ID # (24 characters max):
```

Figure 13-16. Maintenance Terminal Main Menu Option H: Enter Circuit ID #

Quad DS-1 Module Utilities

Overview

⚠️ **WARNING:**
The following menus are for debugging purposes only. It is strongly advised that you do not use these menus unless prompted to do so by a Lucent Technologies Technical Support Representative.

The following options appear on the Quad DS-1 Utilities menu:

- **Board Status** - shows whether the board is in service or out of service.

- **Reset Quad DS-1 Board** - resets or re-initializes the Quad DS-1 board.

- **Monitor System Manager Clock** - gives the status of vital system timing.

- **Voice Control Signal Display** - A diagnostic used to determine the status of voice signaling.

- **Dump Connection Statistics** - A diagnostic tool used to determine the status of the connection.

- **System Manager Interface** - provides system manager statistics, such as map checksum and byte count.

Quad DS-1 Module Utilities (Continued)

Procedure

To access the Quad DS-1 Utilities, follow these steps:

1. From the AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the Quad DS-1 menu, select Utilities.

   The Quad DS-1 Utilities menu displays (Figure 13-17).

```
Lucent Technologies        AX Quad DS-1 Module   Slot: 01      Help = [?]


                             Quad DS-1 Utilities



                        Board Status: In Service
                        Reset Quad T-1 Board
                        Monitor System Manager Clock
                        Voice Control Signal display
                        Dump Connection Statistics
                        System Manager Interface
```

Figure 13-17. Quad DS-1 Utilities Menu

Quad DS-1 with xDSL Module
About Menu

Procedure   To display identification information for the Quad DS-1 with xDSL module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Quad DS-1.

3. From the DS-1 Main Menu, select About.

    The DS-1 About Menu displays (Figure 13-18). The fields are described on the following page.

```
Lucent Technologies   AX Quad DS-1 Module    Slot: 01     Help = [?]




                        Version.................: QT1_5.02K
                        Release Date............: October 27, 1998
                        Checksum................: DF47
                        Xilinx Version..........: 1510_16.
                        Voice Signalling Version: 0
                        Ram Access..............: 16 bits wide




```

Figure 13-18. Quad DS-1 About Menu

Quad DS-1 with xDSL Module
About Menu (Continued)

Fields

Version: This is the software version current in the Quad DS-1's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the Quad DS-1's flash memory at power up.

XILINX Version: The hardware version of downloadable, programmable devices.

Voice Signalling Version: The revision level of software used in the commands bits for voice signaling.

Ram Access: The size of the memory bus.

Quad DS-1 with xDSL Module Specifications

Table 13-2.   Quad DS-1 with xDSL Module Specifications

Loop Technology	Modulation type: 2B1Q Mode: Full duplex, echo cancellation Number of Pairs: 2 for DS-1; 1 for FDS-1
HDSL Bit Rate	DS-1: 784 kbps/pair FDS-1: 784 kbps (1 pair)
Status Indicators	Loop 1 & 2 synchronization HDSL alarm Loopback Data Interface: DS-1/FDS-1 (1.544 Mbps) Host Processor Communications Interface: Asynchronous 2-wire serial Input/Output Levels: CMOS levels
Environment	Operating temp: -40^0 C to $+85^0$ C (-140^0 F to $+185^0$ F)
Physical Dimensions	2.5" W x 2.0" L x 0.38" H 6.35 cm W x 5.08 cm L x 0.95 cm H 32-pin connector to host board
ERI Part #	CON-049-78027 (Plug, Cable, 6-pos.)

HDSL Interface

Figure 13-19.   HDSL Module

Quad DS-1 with xDSL Module
Specifications (Continued)

HDSL Interface

Table 13-3.   Pin Assignments

Pin 1	Data path to the HDSL Mini-Module
Pin 2	CPU Data from On-Board UART that is going to HDSL
Pin 3	+5V
Pin 4	Data from HDSL Mini Module to UART
Pin 5	Ground
Pin 6	Not Used
Pin 7	Not Used

**Line-Powered
HDSL
Configuration**

➡ **NOTE:**
Remote units can not be line-powered by the DACS II AX. Remote units
can only be locally-powered.

Quad DS-1 with xDSL Module
Specifications (Continued)

Locally-Powered HDSL Configuration

If the remote is locally powered, configure the port as shown below:

- Port 1 = J5
- Port 2 = J6
- Port 3 = J7
- Port 4 = J8

Table 13-4.   Locally-Powered HDSL Configuration

Mini Module	1 & 2 (bottom position)	3 & 4	5 & 6	7 & 8	Not Used (top position)
DS-1				X	
FDS-1				X	

Since the local end is powered by the network's HDSL base card, make sure you remove all jumpers if the remote master is powering the line. Otherwise, install jumper 7 & 8.

Line Grounding

For on board lightning protection via on-board solid state surge suppressors, be sure to attach bezel screws and insure the Zero Ohm resistor is intact at the following HDSL location:

Table 13-5.   Line Grounding

Port #	Short 1 & 2
1	R20
2	R17
3	R18
4	R19

Quad DS-1 with xDSL Module
Specifications (Continued)

**PCB Rev. 0
Resistor Jumper**

The following table should be used if the hardware undergoes a major change.

Table 13-6.   PCB Rev. 0 Ohm Resistor Jumper

PCB Rev	R33	R32	R31
0 (released rev)			
1			X
2		X	

Indicators

Table 13-7.   Indicators

DS1	Module 1 Alarm
DS2	Module 1 Loop
DS3 (rear bezel left side)	Module 1 Sync 1
DS3 (rear bezel right side)	Module 1 Sync 2
DS8	Module 2 Alarm
DS7	Module 2 Loop
DS4 (rear bezel left side)	Module 2 Sync 1
DS4 (rear bezel right side)	Module 2 Sync 2
DS10	Module 3 Alarm
DS9	Module 3 Loop
DS5 (rear bezel left side)	Module 3 Sync 1
DS5 (rear bezel right side)	Module 3 Sync 2
DS12	Module 4 Alarm
DS11	Module 4 Loop
DS6 (rear bezel left side)	Module 4 Sync 1
DS6 (rear bezel right side)	Module 4 Sync 2

Quad DS-1 with xDSL Module
Specifications (Continued)

**Dip Switch
Settings**

Table 13-8. Dip Switch Settings

SW1-1	SW1-2	Module 1 type at J9 for Port 1
ON	ON	**Module not installed**
ON	OFF	**FDS-1**
OFF	ON	**DS-1**
OFF	OFF	**Undefined**
SW1-3	**SW1-4**	**Module 2 type at J10 for Port 2**
ON	ON	**Module not installed**
ON	OFF	**FDS-1**
OFF	ON	**DS-1**
OFF	OFF	**Undefined**
SW2-1	**SW2-2**	**Module 3 type at J11 for Port 3**
ON	ON	**Module not installed**
ON	OFF	**FDS-1**
OFF	ON	**DS-1**
OFF	OFF	**Undefined**
SW2-3	**SW2-4**	**Module 4 type at J12 for Port 4**
ON	ON	**Module not installed**
ON	OFF	**FDS-1**
OFF	ON	**DS-1**
OFF	OFF	**Undefined**

Test Access Module (TAM)

14

Contents

TAM Overview

Before you begin   In order to display the Test Access Module (TAM) menus, you must have the following cards installed in the equipment chassis:

- ■ The TAM card must be installed in a front slot and the slot must be configured for module type: TAM

- ■ A Quad High Speed Interface card must be installed in a rear slot and the slot must be configured for module type: Quad High Speed

The **Configured Type** and **Actual Type** noted on the Node Summary Menu must match (Figure 14-1).

```
Lucent Technologies          DACS II AX 11 - System Manager      Help = [?]
Standby SMC not present


                          Node Summary Menu

Slot#   Configured Type    Actual Type        Status
-----   ---------------    -----------        ------
01)     Quad DS-1          Quad DS-1          OK
02)     Quad DS-1          Quad DS-1          OK
03)     ----               ----               Not Present
04)     ----               ----               Not Present
05)     ----               ----               Not Present
06)     Quad DS-3          Quad DS-3          OK*
07)     Quad DS-3          Quad DS-3          Alarm*
08)     ----               ----               Not Present
09)     Test Access        Test Access        OK
10)     Quad High Speed    Quad High Speed    OK
11)     Quad OCU           Quad OCU           OK
SMCA)   System Manager                        On Line
SMCB)   System Manager                        Not Present



[C]hange slot configuration     [D]elete slot configuration
```

Figure 14-1.   Node Summary Menu

If the slot does not show a **Configured Type**, refer to "Slot Configuration" in Chapter 3.

TAM Overview (Continued)

TAM Main Menu   The TAM Main Menu (Figure 14-2) provides options that enable you to configure
the TAM, perform diagnostics, access utilties, and display version and release
information for the TAM.

```
Lucent Technologies              Test Access Module(TAM)        Slot: 01



                                    Main menu
                                    ---------

                                 Configuration
                                 Diagnostics
                                 Utilities
                                 About











Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 14-2.   TAM Main Menu

Configuring TAM Parameters

Procedure   To configure TAM parameters:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for TAM.

3.   From the TAM Main Menu, select Configuration.

      The Test Access Configuration Menu displays (Figure 14-3).

```
Lucent Technologies              Test Access                    Slot:01

                          Configuration menu

           Port 1            Port 2            Port 3            Port 4

Name.....: Beta             port name         port name         port name
Speed....: 0                0                 56000             56000
Timing...: Internal         Internal          Internal          Internal
DCD out..: Forced On        Forced On         Forced On         Forced On
DSR out..: Forced On        Forced On         Forced On         Forced On
Data.....: Normal           Normal            Normal            Normal
Clock....: Normal           Normal            Normal            Normal
Interface: RS232            RS232             V.35              V.35
V.54 loop: Enabled          Disabled          Enabled           Enabled




Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 14-3.   Test Access Configuration Menu

4.   Configure all parameters for each port. For details on the parameters, refer to the following page.

5.   To save changes, type **X**.

Configuring TAM Parameters
(Continued)

6. When prompted: "Update Configuration? Are you sure (Y/N)?
   Type **Y**.

Configuring TAM Parameters (Continued)

Fields

Name: This is a user-defined field. Any name up to 14 characters in length can be entered to identify each port on the Test Access Module.

Speed: The Test Access Module operates at speeds from 48 Kbps to 2.048 Mbps, and any multiple of 56/64 Kbps.

⇒ **NOTE:**
  Latching loopback sequences can be performed only at 56/64 Kbps.

Timing: The tester interface timing is set to Internal and can not be changed. Test equipment attached to the TAM I/O port must accept clocks from the TAM.

DCD Out: The TAM card presents a DCE interface to the attached test equipment. Carrier detect can be forced off, forced on, track RTS but this is not relevant for test equipment.

DSR Out: Data Set Ready can be forced off, forced on, or track DTR but this is not relevant for test equipment.

Data: The options are normal or inverted.

Clock: Initially choose "Normal." If frequent errors occur at the port, try "Inverted" and check performance.

Normally, the down-going clock edge is in the middle of each bit. On lengthy cables when a clock is sent from one device to clock data from the other device, the data arrives skewed from the originating clock due to the round trip cable delay. When the delay is such that the originating clock down-going edge is on the edge of the bit returned, "Inv" will correct this condition inside the module.

Interface: The interface options are V.35, RS530/422 and RS232.

V.54 Loop: The TAM card does not respond to the V.54 loop.

TAM Diagnostics

Procedure   To view and perform diagnostics on the TAM:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for TAM.

3.   From the TAM Main Menu, select Diagnostics.

The Diagnostics menu displays (Figure 14-4).

```
Lucent Technologies          Test Access Module(TAM)          Slot: 01

                                 Diagnostic menu
Name:           port name       port name       port name      port name

Local Loop.....: Off            Off             Off            Off
Remote Loop....: Off            Off             Off            Off

BERT...........: Off            Off             Off            Off
Seconds in test: 0              0               0              0
Local err-secs.: 0              0               0              0
Remote err-secs: 0              0               0              0

RTS/DCD........: Off/On         Off/On          Off/On         Off/On
DTR/DSR........: Off/On         Off/On          Off/On         Off/On




Navigate menu    = [Space/Backspace]    [C]lear counts   Insert [E]rrors
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 14-4.   Diagnostics Menu

4.   For details on the fields displayed, refer to the following sections: *Controls* and *Indicators*.

TAM Diagnostics (Continued)

Controls

Local Loop: When set to ON, this parameter causes a bi-directional local loop at the Test Access Module where the command was entered. If you turn the local loop "ON," the front panel yellow "LOOP" LED will illuminate and local testing can be performed by external test equipment or by the DACS II AX's internal BERT. Only data is looped. Clocks and control signals are not looped.

Remote Loop: Remote Loop causes a remote line loop at the distant end of a point-to-point circuit. There are several options you can choose from when you select remote loop. They are as follows:

- Off - turns off the previously entered device in latching loopback

- Latching loop off - turns off any device in latching loopback

- V.54 loop off - turns off any device in V.54 Loopback

- V.54 - places V.54 responsive device in loopback

- Latching CSU - punches through repeaters if present and places the CSU in latching loopback

- Latching OCU - places the OCU in latching loopback

- Latching DSU - places the DSU in latching loopback

- Latching Smartjack NEI - places smartjack in latching loopback

- Latching Repeater #1 - latches the first repeater on the loop

- Latching Repeater #2 - latches the second repeater after punching through the first

- Latching DS0 Dataport Drop side - latches DSO dataport drop side in latching loopback

- Latching DS0 Dataport Line side - latches DSO dataport line side in latching loopback

- Latching Loop side interface - places the latching loopback interface in latching loopback

- Execute Punch through sequence - punches through repeaters without checking returned codes

- Identical Dataports - number of DSO dataport proceeding the DS0 dataport to be placed in latching loopback

- Verbose Display - detailed latching confirmation information

- Check Return Codes - confirms latching loopback by verifying returned codes

TAM Diagnostics (Continued)

**Controls
(Continued)**   Local and Remote Loops are shown in Figure 14-5.

Local End
(all loops initiated from this end)   Remote End

```
  DTE     DCE                                                          DCE     DTE
```

RX .... TX

Local Loop (Data only)

TX .... RX

RX .... TX

Remote Loop

TX .... RX
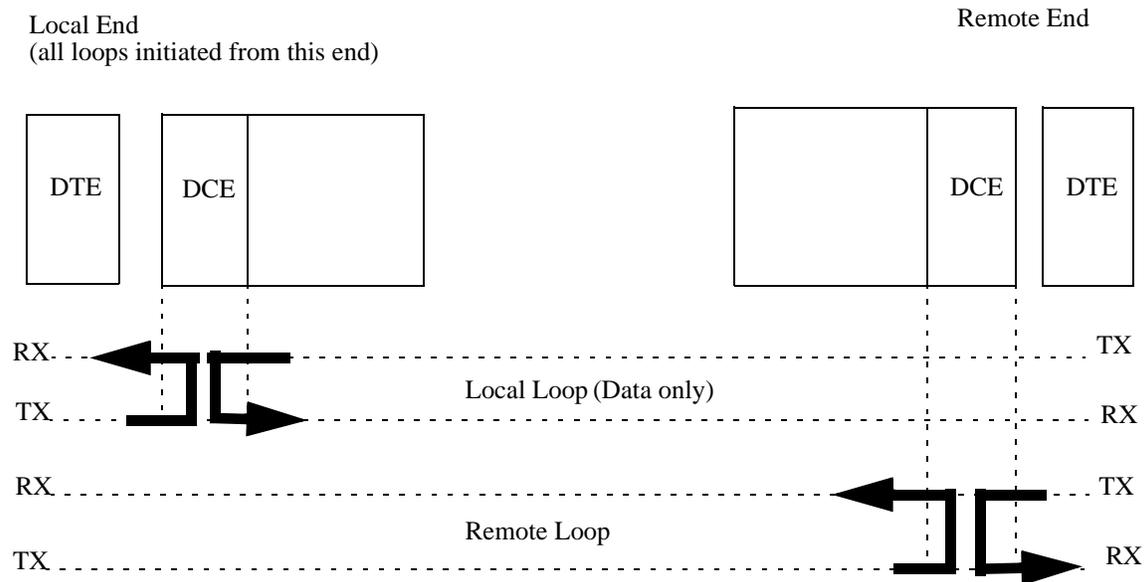
Figure 14-5.   Local and Remote Loops

BERT: This is useful for testing for errors on the communication circuit. The device checks for errors by comparing a received data pattern with a known transmitted data pattern to determine line quality.

Seconds in Test: This read-only count represents the number of seconds the data module was in test.

Local Error Seconds: This read-only count represents the number of local errored seconds that occurred while the data module was in test.

Remote Error Seconds: This read-only count represents the number of remote errored seconds that occurred while the data module was in test.

TAM Diagnostics (Continued)

Controls (Continued)

Clear Count: The "C" command will zero all local and remote errored seconds.

Insert Errors: The "E" will generate 1 or 2 errored seconds for either 2047, ones, or zeros BERT pattern.

Indicators

DCD: If this indicator is ON, your Test Access Module is sending a "Data Carrier Detect" signal over its serial port interface.

DTR: If this indicator is ON, your Test Access Module is sending a "Data Terminal Ready" signal over its serial port interface.

DSR: If this indicator is ON, your Test Access Module is sending a "Data Set Ready" signal over its serial port interface.

TAM Utilities

Overview

> ⚠ **WARNING:**
> *The following menus are for debugging purposes only. It is strongly advised*
> *that you do not use these menus unless prompted to do so by a Lucent*
> *Technologies Technical Support Representative.*

The DACS II AX provides access to these TAM utilities:

■ **Memory Management** - allows you to view or change memory on the card.

■ **Backplane Time Slot Display** - allows you to write to or read from the
backplane time slots display.

■ **System Manager Interface** - provides system manager statistics, such as
map checksum and byte count.

■ **Monitor System Clocks** - gives the status of vital system timing.

■ **Reset Board** - resets the TAM card.

TAM Utilities (Continued)

Procedure   To use the TAM utilities:

1.   From the Main Menu, select Node Summary.

2.   Select a Slot that has been configured for TAM.

3.   From the TAM Main Menu, select Utilities.

     The TAM Utilities Menu displays, as shown in Figure 14-6.

```
Lucent Technologies          Test Access Module(TAM)          Slot: 01


                             Utilities
                             ---------


                             Memory Management
                             Backplane Timeslot Display
                             System Manager Interface
                             Monitor System Clocks
                             Reset Board








Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 14-6.   TAM Utilities Menu

⚠ **WARNING:**
The following menus are for debugging purposes only. It is strongly advised that you do not tamper with these menus unless prompted to do so by a Lucent Technologies Technical Support Representative.

TAM Utilities (Continued)

Submenus   Figure 14-7 illustrates the menu structure for the TAM Utilities menu. From this illustration, you can see what types of actions are available from the TAM Utilities menu.
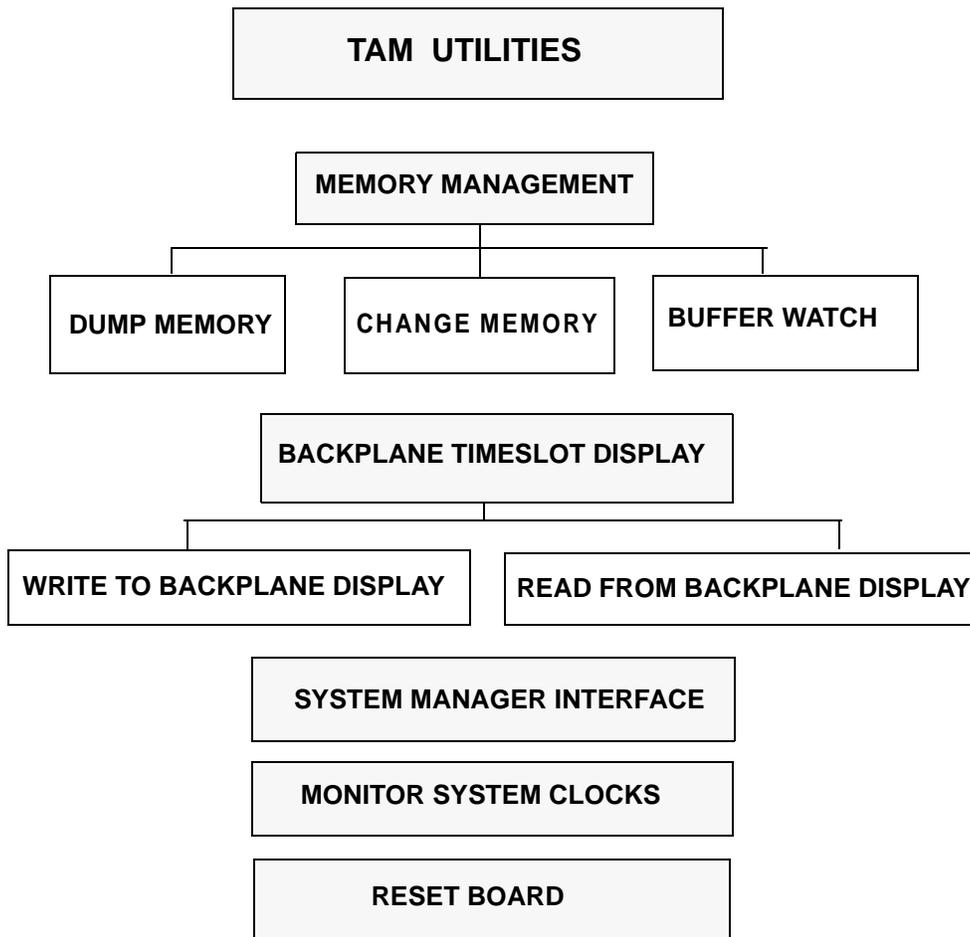
```
                        ┌──────────────────────────┐
                        │      TAM  UTILITIES       │
                        └──────────────────────────┘

                        ┌──────────────────────────┐
                        │    MEMORY MANAGEMENT      │
                        └──────────────────────────┘
          ┌───────────────────┬──────────────────────┐
   ┌───────────────┐  ┌───────────────┐  ┌───────────────┐
   │ DUMP MEMORY   │  │ CHANGE MEMORY │  │ BUFFER WATCH  │
   └───────────────┘  └───────────────┘  └───────────────┘

              ┌──────────────────────────────────┐
              │   BACKPLANE TIMESLOT DISPLAY      │
              └──────────────────────────────────┘
          ┌────────────────────┬───────────────────────┐
   ┌──────────────────────┐       ┌──────────────────────────┐
   │ WRITE TO BACKPLANE    │      │ READ FROM BACKPLANE        │
   │       DISPLAY         │      │        DISPLAY             │
   └──────────────────────┘       └──────────────────────────┘

              ┌──────────────────────────────────┐
              │   SYSTEM MANAGER INTERFACE        │
              └──────────────────────────────────┘

              ┌──────────────────────────────────┐
              │    MONITOR SYSTEM CLOCKS          │
              └──────────────────────────────────┘

              ┌──────────────────────────────────┐
              │         RESET BOARD               │
              └──────────────────────────────────┘
```

Figure 14-7.   TAM Utilities Menu Structure

About Menu

Procedure   To display identification information for the TAM:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for TAM.

3. From the TAM Main Menu, select About.

   The TAM About Menu displays, as shown in Figure 14-8. For details on the information displayed, refer to the following page.

```
Lucent Technologies          Test Access Module(TAM)          Slot: 03




                    TAM - Test Access Module
                    -----------------------

                        Version..........: TAM 0200d
                        Release Date.....: Sept. 28,1998
                        Checksum.........: 634E
                        Xilinx Version...: tam2658.






Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]

```

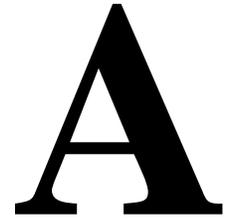**Figure 14-8.   Sample TAM About Menu**

About Menu (Continued)

Fields

Version: This is the software version current in the TAM's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the TAM's flash memory at power up.

XILINX Version: The hardware version of downloadable, programmable devices.

Software Downloading

A

Contents

Background

Description   This appendix contains procedures for downloading software using TFTP (Trivial File Transfer Protocol) or Xmodem.

The details of downloading software vary from one operating system to the next. Refer to the documentation for your host computer when downloading DACS II AX software.

TFTP Application

Procedure   The DACS II AX system supports TFTP (Trivial File Transfer Protocol). To download software using TFTP, use the following procedure.

1. On your host computer, find the file containing the new DACS II AX software version. (The files will be in Motorola S-Record format.)

2. Call up TFTP on your host.

3. Type in the DACS II AX's host name under the target node field. (This will vary depending on the software package used on the host.)

4. Type in the file name and select "ASCII" or "text" under the file type field.

5. Select "OK" to start the software download.

   All DACS II AX files will have the extension *.bin. If the DACS II AX is on the local LAN, it will take approximately 30-40 seconds to download the software to the LAN port. The LAN port LEDs will flash while the software is being downloaded. There will be a 15-20 second delay before the new code is burned into FLASH memory. All LEDs will flash when the router has completed the update process. The unit will then re-boot itself; all LEDs will go out momentarily and then come back on as the unit cycles up. The entire software downloading process takes approximately one minute.

   In order to download software to a remotely located DACS II AX system, IP routing must be enabled throughout your network. This also allows the use of SNMP, Telnet and PING to those remote DACS II AX units.

Xmodem

Procedure   You can also download software using Xmodem. Xmodem is a file transfer protocol for use with modems that allows two devices to exchange data reliably by means of dialup access. Xmodem employs CRC error checking. This method takes considerably longer than TFTP since it downloads the software through the supervisor console port. At 9600 bps, this process will take approximately 45 minutes.

To download software using Xmodem, use the following procedure.

1. Navigate to the Utilities Menu on your DACS II AX terminal and select Download software (Xmodem). The DACS II AX will ask you if you are sure that you want to enter Xmodem. Select "yes."

2. Go to your host computer and call up Xmodem. Configure your host to send a binary file with CRC.

3. Find the file containing the new DACS II AX software version. (The files will be in Motorola S-Record format.)

4. Download the new software version.

Telnet Application

B

Contents

Using Telnet

Description   The DACS II AX system supports Telnet. Telnet is a protocol that allows users to log on to remote hosts. It creates a Network Virtual Terminal (NVT) across the internetwork so that it appears as if the user is logged into the supervisory port directly.

Procedure   You must program your DACS II AX system through the supervisory port before you can control it through Telnet. The IP address and encapsulation scheme must be configured first.

1. Log in to the DACS II AX system and navigate to the Port IP Addresses (Port Configuration) Menu. Configure the IP encapsulation.

2. Enter an IP address for the LAN port (even if you are not running IP). This will enable you to successfully obtain a TCP connection.

3. Start Telnet (connect to Telnet using the software on your host). Enter the host name of the DACS II AX that you wish to connect to, and the IP address for the LAN port.