Lucent Technologies

Bell Labs Innovations

DACS II AX 4/11
Release 7.07

User's Guide

Notice
Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

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

Security
In rare instances, unauthorized individuals make connections to the telecommunications network through the use of remote access features. In such event, applicable tariffs require that the customer pay all network charges for traffic. Lucent Technologies cannot be responsible for such charges, and will not make any allowance or give any credit for charges that result from unauthorized access.

Warranty
Lucent Technologies' DACS II AX family of products is fully warranted against defects in material or workmanship to the original owner for one year from the date of customer turnover. If the product fails due to defects in manufacturing, Lucent Technologies will repair it without charge, or replace it, at Lucent's discretion. All products identified as defective during the warranty period shall be handled through Lucent Technologies' Repair Service and Return process (RS&R). Repairs resulting from accidents, improper care or negligence, where Lucent Technologies or an authorized Lucent agent is not at fault will be made at a reasonable charge.

This warranty shall not apply to any system which has been subject to alteration or modification; or used in any manner contrary to written instructions given by Lucent Technologies. This warranty is void if service is performed by a resource other than Lucent Technologies or an authorized Lucent agent. No responsibility is assumed for any incidental or consequential damages.

Warranty will include remote technical support for trouble reporting, diagnosis and/or trouble isolation. After the warranty period expires, it is recommended that the customer purchase a Remote Technical Support contract from their Lucent Sales Representative. If a customer requires assistance with isolating a problem and has not purchased a Support Agreement, support is available at the Standard Time and Materials rates. On-site assistance is not covered under the warranty. If a customer requires on-site support, a Lucent field technician is available at our Standard Time and Materials on-site rates.

Documentation Ordering Information
The ordering number for this document is 365-359-203. To order this document, call the Lucent Technologies Customer Information Center in Indianapolis, Indiana, on 1-888-582-3688. For more ordering information, refer to "How to Order Documents" in the section "About this Guide."

Technical Assistance
Lucent Technologies provides technical assistance 7 days a week, 24 hours a day. For technical assistance phone numbers, refer to "Technical Assistance" in the section "Overview."

How Are We Doing?

Title: DACS II AX 4/11 User's Guide, Release 7.07 _____

_____

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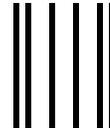
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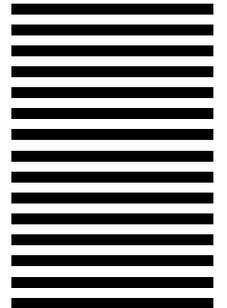
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About This Guide

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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, Release 7.07.

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)

- **Chapter 15: Octal T1/E1 Module** provides information on configuration and diagnostics of an Octal T1/E1 module.

- **Chapter 16: Octal Voice Module** provides information on configuration and diagnostics of an Octal Voice module.

- **Chapter 17: Octal High Speed Data Module** provides information on configuration and diagnostics of an Octal High Speed Data module.

- **Appendix A: Upgrades** provides information on downloading software upgrades using TFTP.

- **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

- From outside the U.S., call 1-303-889-0202

Ordering Documents

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Copies of this document can be ordered through the Lucent Technologies Customer Information Center (CIC). For automatic updates for one year, request that the document be given "standing order" status.

To order documents, you can contact CIC one of the following ways:

— Call 1-888-LUCENT-8 (1-888-582-3688).

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— Go to the Lucent CIC website at:

/http://www.lucentdocs.com/

Click on **Documents** to locate, order, and/or download customer information products.

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.

How to Comment on This Guide

Comment Form

Fill out the comment form located after the title page in front of this document. (Name, company, address, and telephone number are optional).

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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 Audit Trail Identifier. 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 4096 DS0s.

> ⇒ **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 DACS II 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 of the DACS II AX 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 Chassis   There are two types of equipment 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 2.048 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).

■ **Octal T1/E1 Voice Module** supports up to eight T1 or E1 circuits on a
single module. Any port can be configured for either T1 or E1 on the same
module. Standard T1 or E1 modes of operation are supported along with
extensive diagnostic and testing capabilities.

■ **Octal Voice Module** has eight Analog Voice Grade Channels per module.
Three rear interface modules, including E&M, FXO, and FXS are available
for use with the Octal Voice Module. Extensive diagnostics are provided,
including a variable Frequency Tone.

■ **Octal High Speed Data Module** contains 8 high-speed links, supporting
synchronous data rates from 48 Kbps to 2.048 Mbps. It supports a broad
array of interfaces, including ITU-X.21 capability.

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-12 telco port for a terminal connection.

- **Phone Line** - An RJ-12 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.

⇒ **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 2.048 Mbps Number of Ports:16 maximum (DACS II AX 4), 44 maximum (DACS II AX 11) Interfaces: V.35, EIA530/422, EIA232, X.21
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.

Specifications (Continued)

**Power Input
Requirements**

Table 1-2.   Power Input Requirements

DACS II AX 11	DACS II AX 4
DC Power Input: -48Vdc +/-10% (6A max.). **Talk Battery Input:** -48Vdc +/-1Vdc (5A max.). **AC Input:** 100 to 240VAC (3A max.), 47 to 63Hz.	**DC Power Input:** +24Vdc +/-10% (6A max.) or -48Vdc +/-10% (3A max.). **Talk Battery Input:** -48Vdc +/-1Vdc (3A max.). **AC Input:** 100VAC to 240VAC (1.5A max.), 47 to 63Hz.

FCC Information

Equipment Compliance

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. 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 ,Third Edition, CAN/CSA-C22.2 No. 950-95, Third Edition, and EN60950:1992.

Octal T1/E1 Module

The following instructions apply specifically to the Octal T-1/E1 module

Type of interfaces	1.544 Mbps Digital Channel
Facility Interface	04DU9-BN for SF D4 AMI format without line power
	04DU9-DN for SF D4 B8ZS format without line power
	04DU9-IKN for ANSI ESF AMI format without line power
	04DU9-ISN for ANSI ESF B8ZS format without line power
Service Code	6.ON. Does not provide billing and encoded analog protection. DACS II AX units use an integrated CSU. Affidavit to Telco is required.
Jack Arrangement	RJ48M
Ringer Equivalence	N/A

FCC Information (Continued)

Octal T1/E1 Module (Continued)

This information is provided to ensure that you comply with the Federal Communications Commission (FCC) Rules, Part 68: To meet EMI and RFI regulations, a shielded twisted pair cable must be used. The drain wire must be attached to one of the two ground lugs available on the rear bezel. The drain wire connection must be kept as short as possible. In addition, the rear card must be secured to the chassis by means of firmly tightening the card and securing screws on the bezel.

Quad DS-1 Module

The following instructions apply specifically to the Quad DS1 module:

Type of interface	1.544 Mbps Digital Channel
Facility Interface	04DU9-BN for SuperFrame (SF) D4 AMI format without line power 04DU9-IKN for ANSI ESF AMI format without line power 04DU9-ISN for ANSI ESF B8ZS format without line power
Service Code	6.ON. Does not provide billing and encoded analog protection. DACS II AX units use an integrated CSU. Affidavit to Telco is required.
Jack Arrangement	RJ48C
Ringer Equivalence	N/A

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-XX) and service code (6.0N) in order to connect the necessary service.

    b. Inform the telephone company that you wish to use the RJ48C or RJ48M jack arrangement.

    c. After the telephone company has installed the RJ48C or RJ48M jack, you may connect the unit 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 unit has been designed to prevent harm to 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, Lucent Technologies' 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.

Industry Canada

NOTICE: The Industry Canada 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. 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 a representative 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.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Technical Support

Telephone Numbers

Lucent Technologies provides technical assistance 7 days a week, 24 hours a day.

For technical assistance within the United States, call: **Lucent Technologies North American Regional Technical Assistance Center 1-800-225-7822**.

For technical assistance in Europe, call: **Netherlands Technical Support Organization (TSO) 31-35-687-1555**.

For technical assistance in the Far East, call: **Singapore Technical Support Organization (TSO) 65-241-0880**.

For technical assistance in the United Kingdom, call: **UK Technical Support Organization (TSO) 44-1-793-77-6737**.

For technical assistance in Mexico, call: **Lucent Technologies de Mexico Local Field Support Organization at 91-800-LUCENT or 01-800-70-LUCENT**.

Start Up

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Contents (Continued)

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 (only available after installation. See "Configuring the DACS II AX IP Address" in Chapter 3.)

- 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-12 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-12 telco connector labeled PHONE LINE. Insert a phone line in this connector. The AX has a built-in modem.

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


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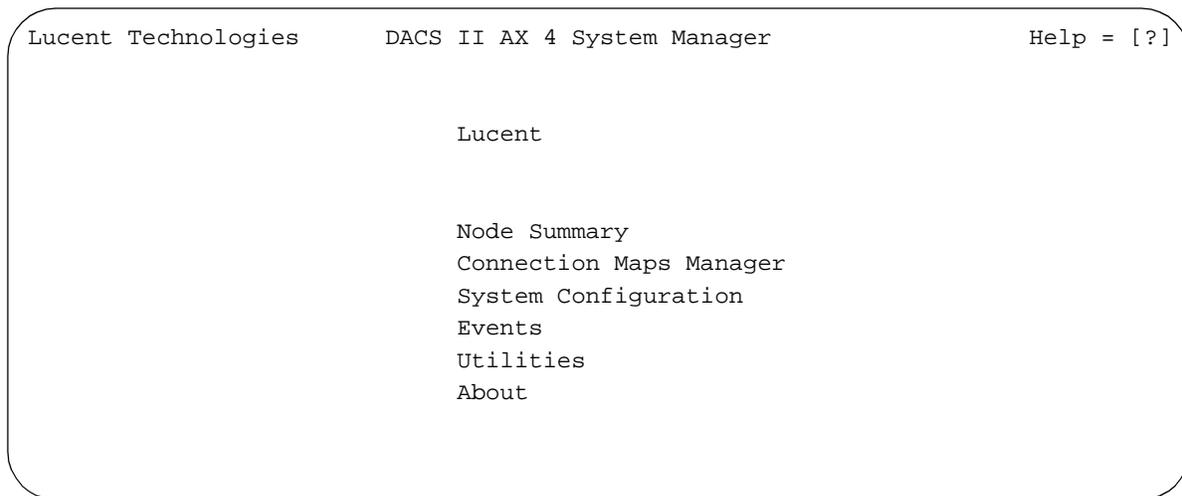
Figure 2-2.   DACS II AX Main Menu

**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 17
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 17
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 ││          ││          ││        │
└───────────┘└───────────────┘└───────────────┘└──────────┘└──────────┘└────────┘
```
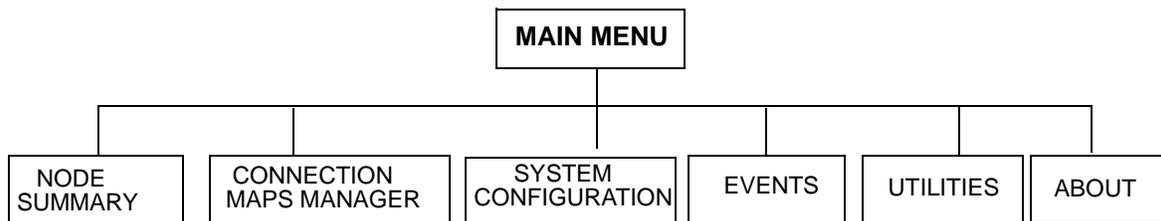
Figure 2-**4.**   **Main Menu Structure**

Node Summary Menu   The **Node Summary Menu** provides access to the modules in your DACS II AX. The submenus provide options for configuration, diagnostics, and utilities for that particular module. A sample menu structure is shown below. For details on the Node Summary Menu, see Chapter 5.

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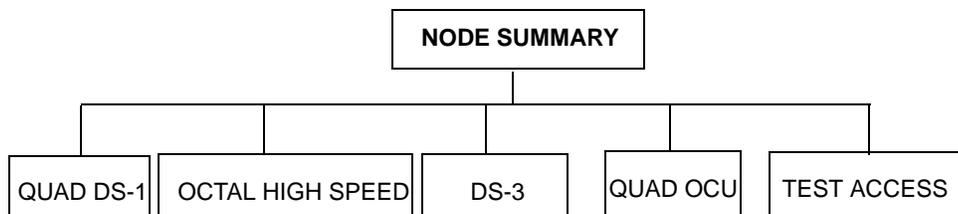
Figure 2-**5.**   **Sample Node Summary Menu Structure**

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 |
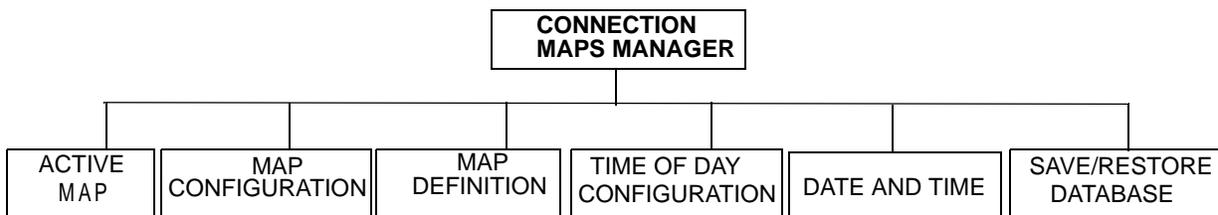
Figure 2-6.   Connections Map Manager Menu Structure

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 |
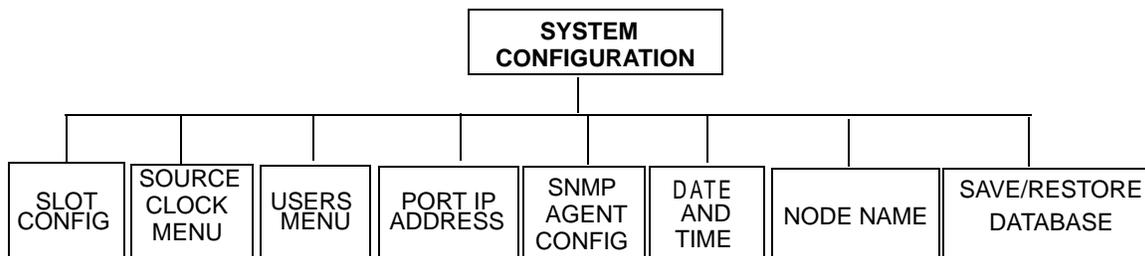
Figure 2-7.   System Configuration Menu Structure

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  │
  └──────────────────┘  └──────────────────┘  └──────────────────┘
```
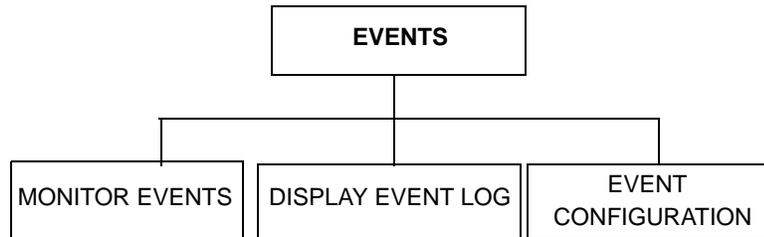
Figure 2-8.   **Events Menu Structure**

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        │
                    └────────────────────────────────────┘
```
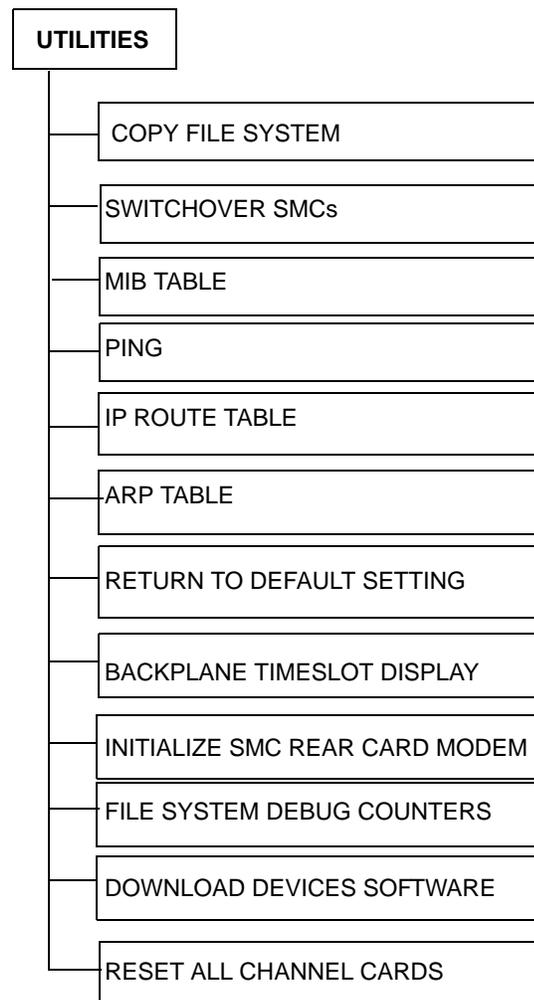
Figure 2-**9.**   **Utilities Menu**

System Configuration

3

Contents

Contents (Continued)

Contents (Continued)

Background

Overview   The System Configuration menu provides access to the AX configuration
                      parameters for the System Manager Cards. 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.
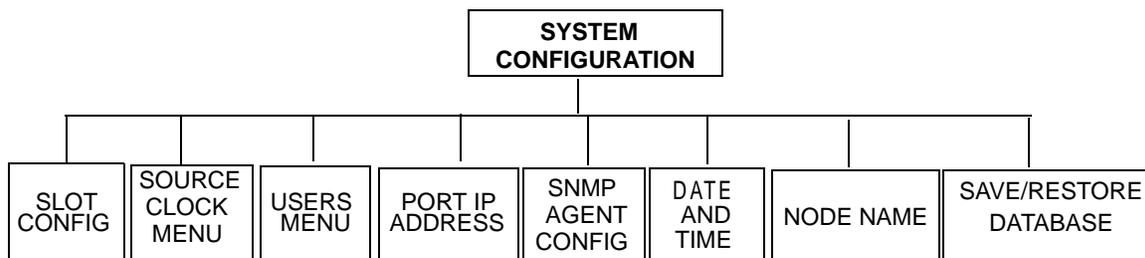
Figure 3-1.   System Configuration Menu Structure

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 11 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
```
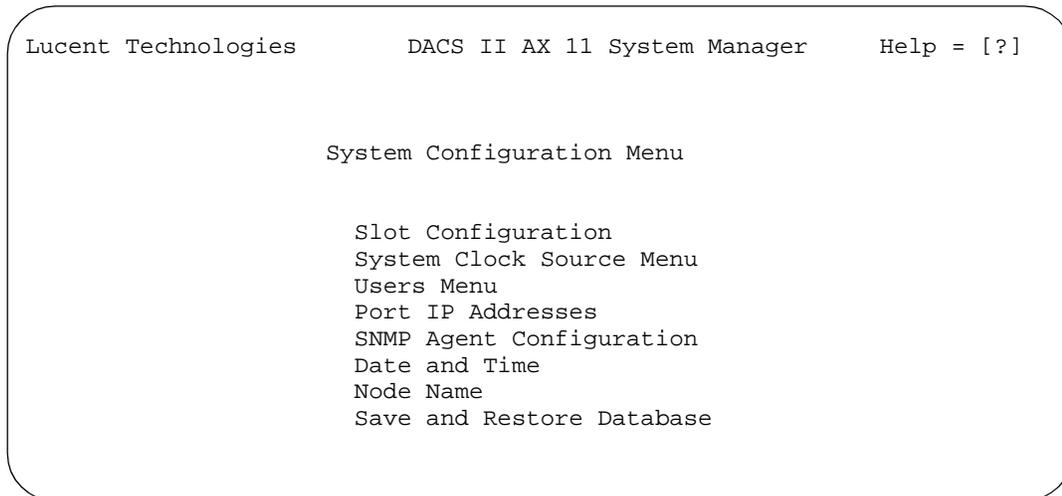
Figure 3-2.   System Configuration Menu

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

```
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, Octal T-1/E-1, Octal High Speed, 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. 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 4 – 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.

■ **Provisioning** - 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.

■ **Administration** - 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 4 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
```

Figure 3-9.   Port Configuration Menu

2. Specify information on the Port Configuration Menu.

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

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.

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 3-10).

```
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 3-10.   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 3-11.   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
```
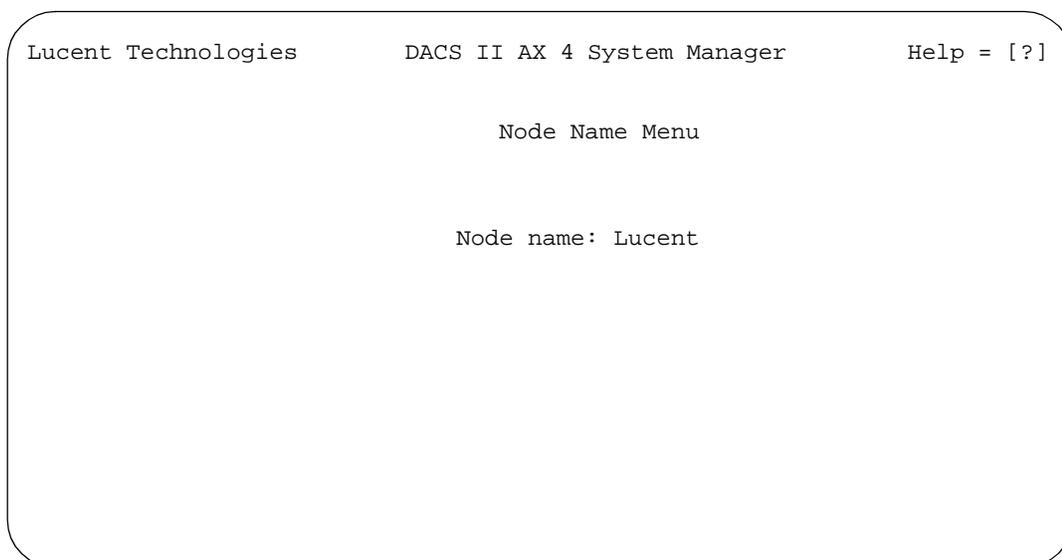
Figure 3-12.   Node Name Menu

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.

$\Longrightarrow$ **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 3-13).

```
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 3-13.   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 3-14).

```
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

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 ($\sqrt{}$) 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	$\sqrt{}^1$	$\sqrt{}^3$	$\sqrt{}$	$\sqrt{}$
Map Config	$\sqrt{}^2$	$\sqrt{}^4$	$\sqrt{}$	$\sqrt{}$
Map Definition	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
Time of Day Configuration	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
Date and Time	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
Save and Restore			$\sqrt{}$	$\sqrt{}$
SYSTEM CONFIGURATION				
Slot Configuration	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
System Clock Source	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
Users Menu				$\sqrt{}$
Port IP Addresses	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
SNMP Agent Configuration	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
Date and Time	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$
Save/Restore Database			$\sqrt{}$	$\sqrt{}$

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 11 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 11 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

Timeslot Numbering for Octal T1/E1 Module   The DACS II AX Timeslot numbering for the T1/E1 module starts with 1 and ends with 32 for both T1 and E1 modes.

Since T1 has 24 timeslots, only timeslots 1 through 24 are usable. Do not use timeslots 25-32 for T1.

For E1, typically E1 timeslots are numbered 0-31. The DACS II AX uses 1-32. Therefore timeslot 1 is used for E1 framing and timeslot 17 is used for channel associated signaling.

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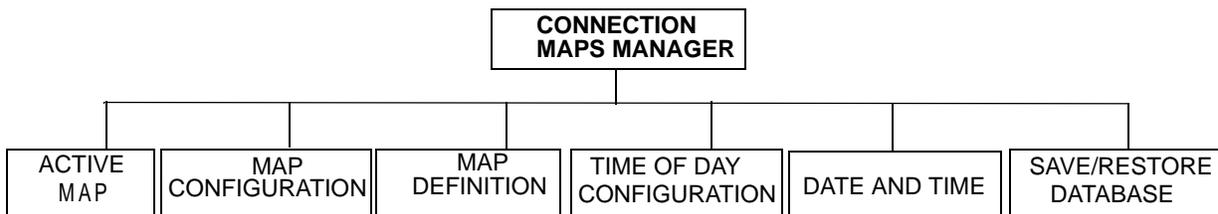
Figure 4-**3.**   **Connections Map Manager Menu Structure**

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 11 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
```
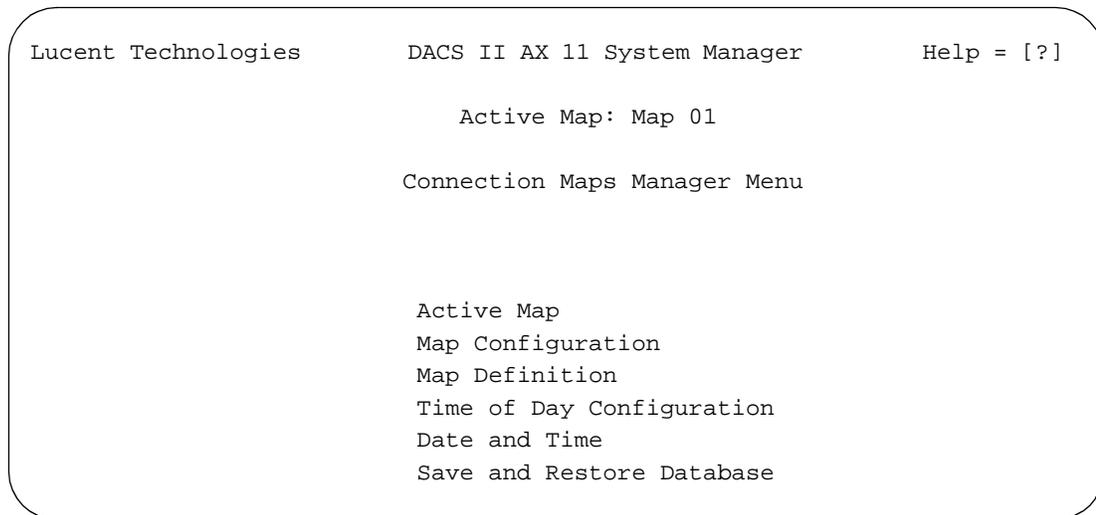
Figure 4-4.   Connection Maps Manager Menu

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 11 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
```
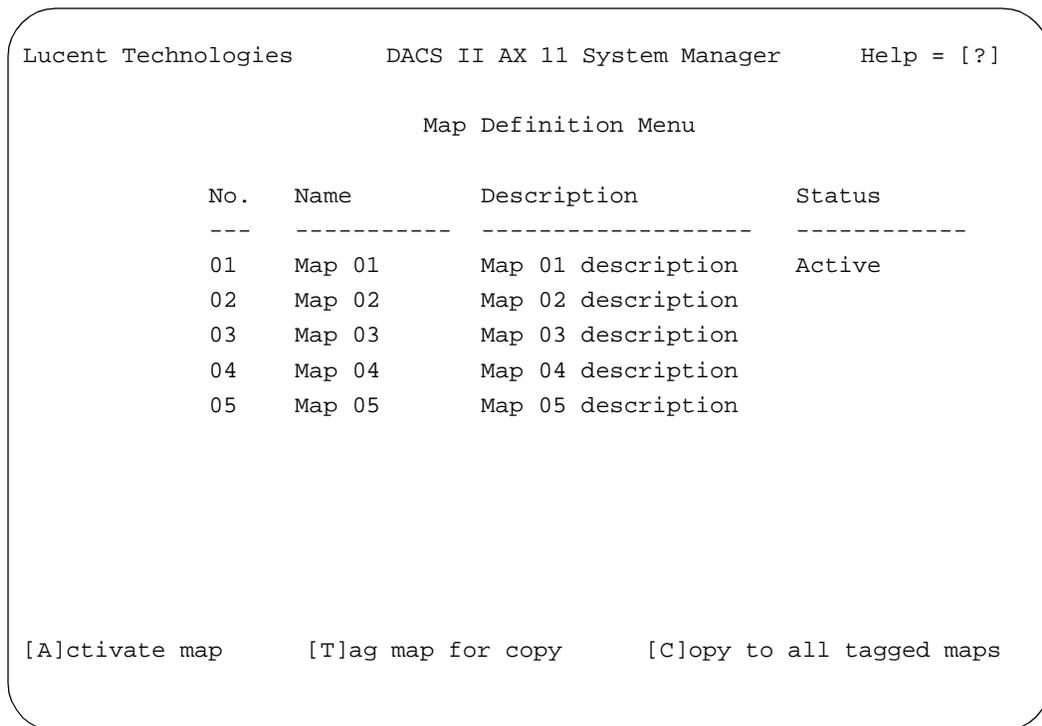
Figure 4-5.   Map Definition Menu

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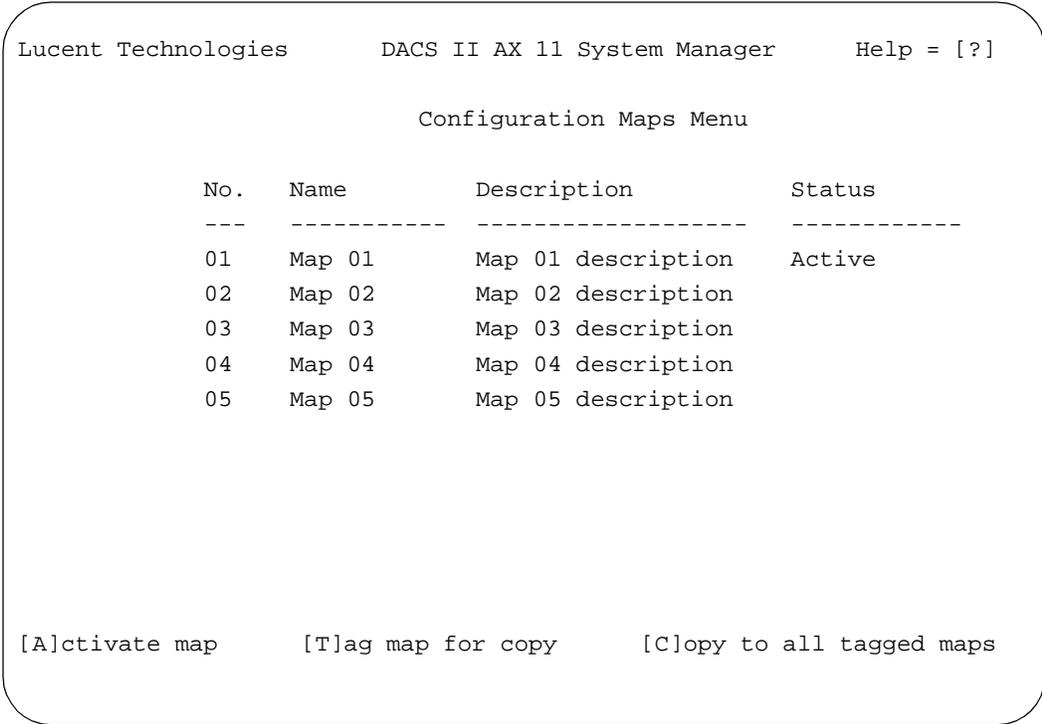
```
Lucent Technologies      DACS II AX 11 System Manager      Help = [?]


                         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 11 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 11 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 11 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 11 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 11 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 11 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 11 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 11 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 11 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
```
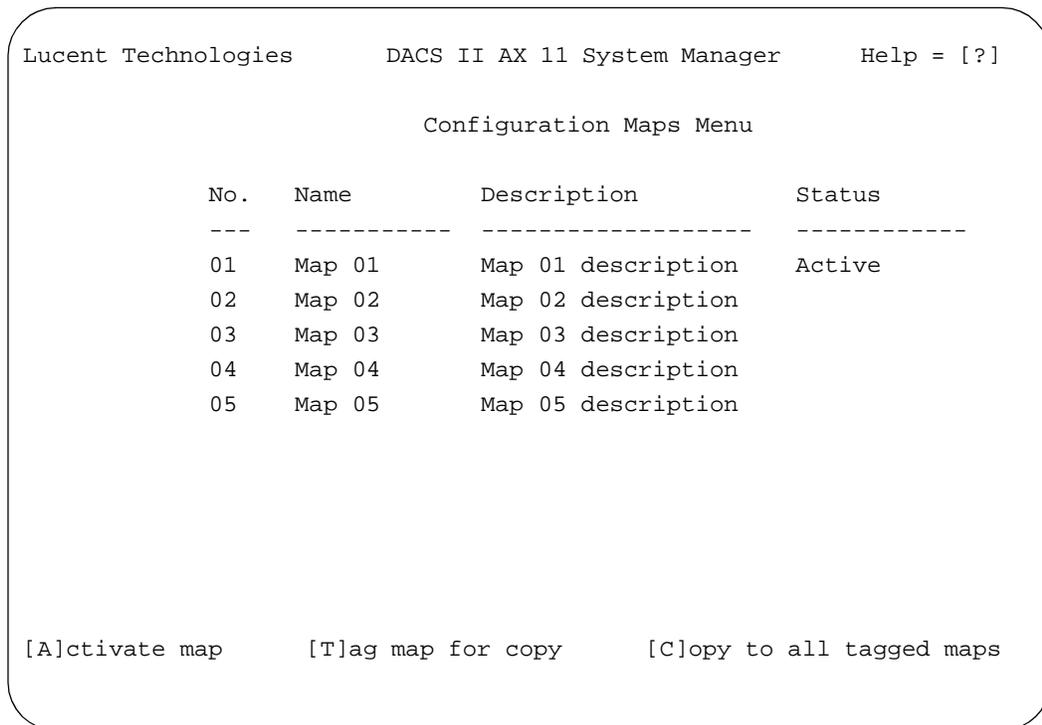
Figure 4-14.   Configuration Maps Menu

Copying a Map (Continued)

**Procedure
(Continued)**

2. Move the cursor to the map that will become the copy and type **T**.   You can
    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 11 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 |
|...    |...    |...    |...    |...    |...    |...    |
|-------|-------|-------|-------|-------|-------|-------|
```
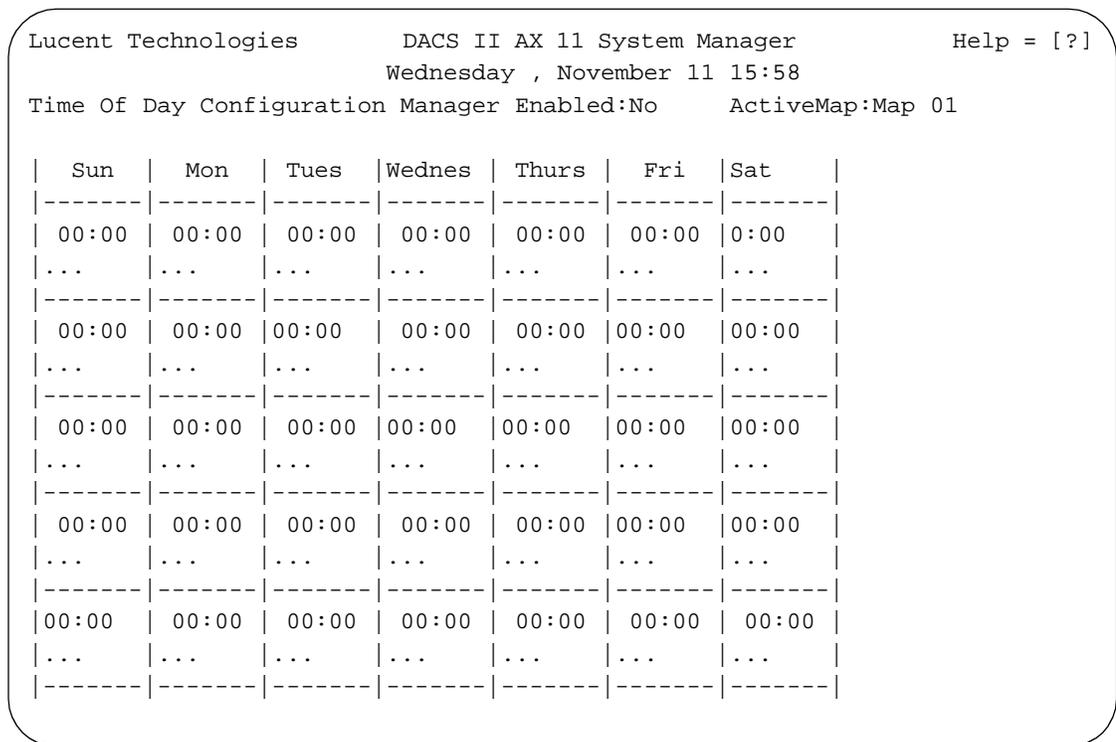
Figure 4-15.   Time and Day Configuration Menu

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 11 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 11 System Manager       Help = [?]


                              Date and Time Menu


                      Month.....: March
                      Day.......: 1
                      Year......: 1999
                      Hour......: 16
                      Minute....: 27
                      Second....: 45
                      Day of Week: Monday
```
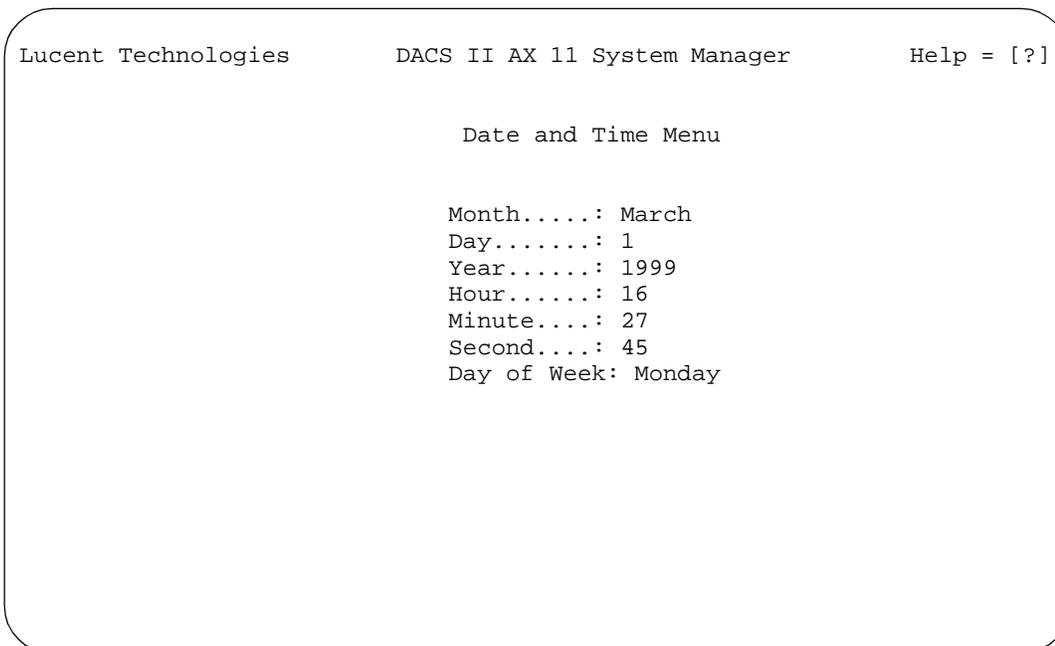
Figure 4-16.   Date and Time Menu

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.

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 11 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 11 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 17.

⇒ **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.

Sample Node Summary Menu Structure

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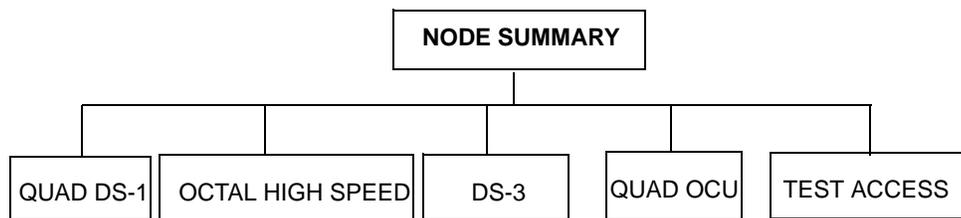
Figure 5-1.   Sample Node Summary Menu Structure

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   A sample 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)    DS-3               DS-3                OK
04)    Quad High Speed    Quad High Speed     OK
05)    Quad OCU           Quad OCU            OK
06)    Octal T1/E1        Octal T1/E1         OK*
07)    Octal Voice        Octal Voice         OK
08)    Octal High Speed   Octal High Speed    OK
09)    Test Access        Test Access         OK
10)    ----               ----                Not Present
11)    ----               ----                Not Present
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

6

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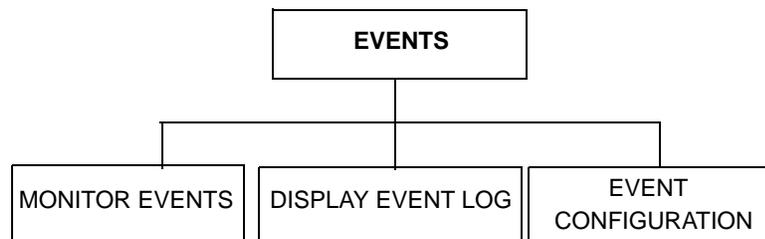
Figure 6-1.   Events Menu Structure

Events Menu Options   The Events Menu has three 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 11 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 $\boxed{\text{Esc}}$.

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 11 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 11 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
```
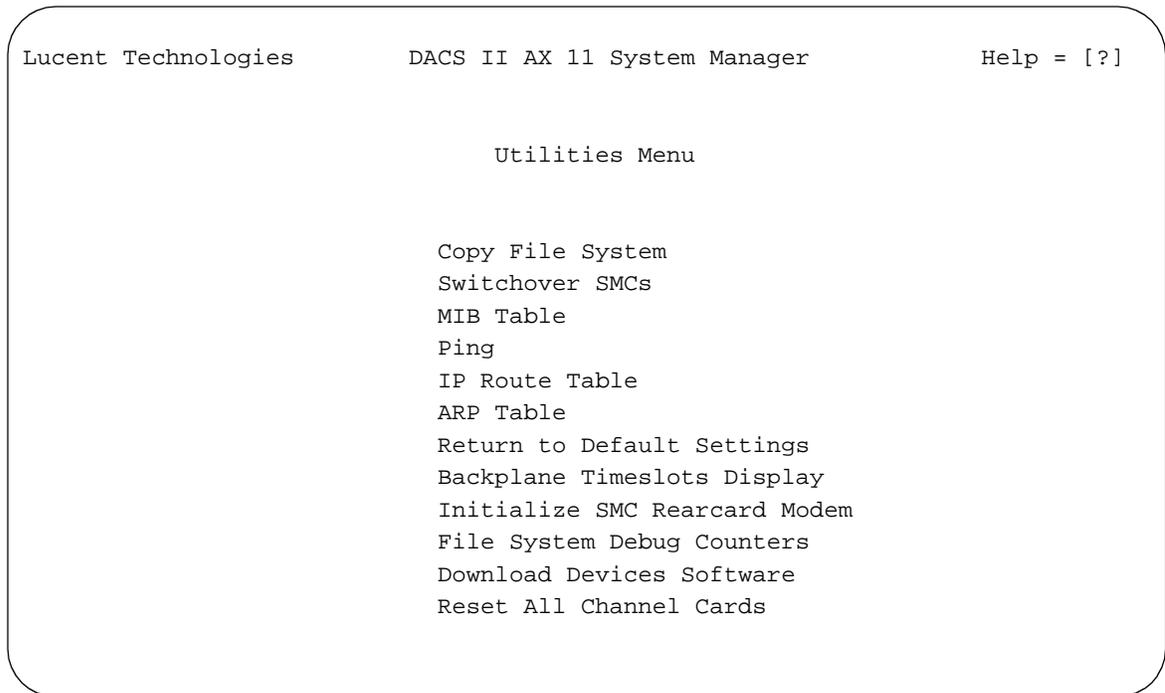
Figure 7-1.   Utilities Menu

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 11 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 11 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 11 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
```
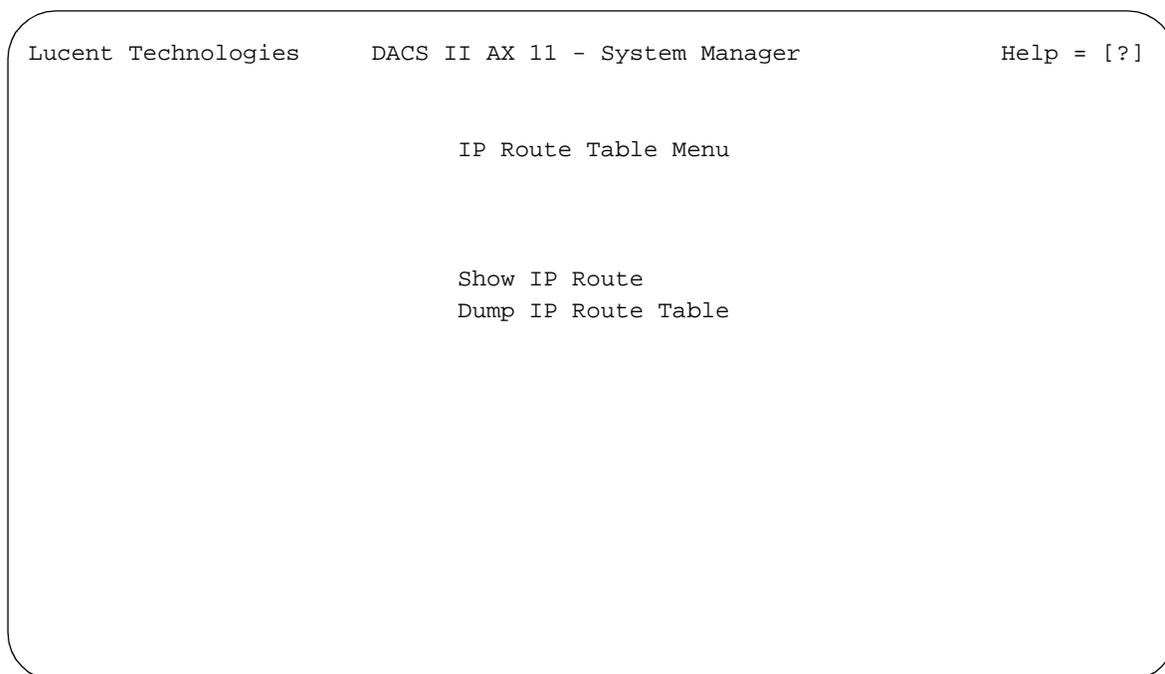
Figure 7-6.   IP Route Table Menu

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 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 11 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 11 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 11 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 11 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 RJ48 modular connection with a standard 10baseT pinout

Table 8-2.   Ethernet 10Base-T

10Base-T (RJ48)	
1 transmit pair	TX+
2 transmit pair	TX-
3 receive pair	RX+
4	not used
5	not used
6 receive pair	RX-
7	not used
8	not used

System Manager Interface (Continued)

Terminal Port   The terminal port allow the user to connect to an external terminal. The port provides an RJ12 modular connector.

Table 8-3.   Terminal (TERM) Port

Term Port (RJ12)	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 RJ12 6-position, 4 pin modular jack. The pin assignments are listed below:

Table 8-4.   RJ12 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 8-5.   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 8-6.   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)

Quad OCU Data Port Interface

The Quad OCU 56/64 Kbps DDS Data Port (DP) Interface uses an 8-pin modular jack in an RJ48 configuration. The table and figure that follow show the pin numbering and the pin assignments of the four DP jacks.

The following are the recommended cables:

- Dual purpose 8-position, 8-pin male/male modular cable (RJ48 configuration). Used for connecting the 56/64 Kbps QOCU port to the 56/64 Kbps DDS network interface. Cable is fifteen feet long.

- Eight-position, 8-pin male/male modular cable (RJ48 configuration with crossover wiring). Normally used for connecting the 58/64 Kbps QOCU Data Port to a 56/64 Kbps DDS port of a netAccess unit. Cable is fifteen feet long.

Table 8-7.   QOCU 56/64 Kbps DDS Port (RJ48)

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

Application Module Interfaces (Continued)

Octal T1/E1 Interface

The cable should use a 50-pin connector (Amp 229912-1 or equivalent) to mate with rear board. The cable should also be shielded and provide drain wire for connection of shield to rear bezel frame ground.

Table 8-8.   Octal T1/E1

Pin	Link #	Signal	To/From AX
26	1	Transmit Tip	From
1	1	Transmit Ring	From
27	1	Receive Tip	To
2	1	Receive Ring	To
29	2	Transmit Tip	From
4	2	Transmit Ring	From
30	2	Receive Tip	To
5	2	Receive Ring	To
32	3	Transmit Tip	From
7	3	Transmit Ring	From
33	3	Receive Tip	To
8	3	Receive Ring	To
35	4	Transmit Tip	From
10	4	Transmit Ring	From
36	4	Receive Tip	To
11	4	Receive Ring	To
38	5	Transmit Tip	From
13	5	Transmit Ring	From
39	5	Receive Tip	To
14	5	Receive Ring	To
41	6	Transmit Tip	From
16	6	Transmit Ring	From
42	6	Receive Tip	To
17	6	Receive Ring	To
44	7	Transmit Tip	From
19	7	Transmit Ring	From
45	7	Receive Tip	To
20	7	Receive Ring	To
47	8	Transmit Tip	From
22	8	Transmit Ring	From
48	8	Receive Tip	To
23	8	Receive Ring	To

Application Module Interfaces (Continued)

Octal Voice Rear Interface Cards - E&M, FXO, and FXS

The cable should use a 50-pin connector (Amp 552726-1 or equivalent) to mate with rear board. The cable should also be shielded and provide drain wire for connection of shield to rear bezel frame ground.

⟹ **NOTE:**
Channels 1 through 6 are located on the P1 connector; channels 7 and 8 are located on the P2 connector.

Table 8-9.   Octal Voice - E&M

Pin	Channel #	Signal	To/From AX
26	1	Transmit Tip	From
1	1	Transmit Ring	From
27	1	Receive Tip 1	To
2	1	Receive Ring 1	To
28	1	E	From
3	1	M	From
29	1	SB	From
4	1	SG	From
30	2	Transmit Tip	From
5	2	Transmit Ring	From
31	2	Receive Tip 1	To
6	2	Receive Ring 1	To
32	2	E	From
7	2	M	From
33	2	SB	From
8	2	SG	From
34	3	Transmit Tip	From
9	3	Transmit Ring	From
35	3	Receive Tip 1	To
10	3	Receive Ring 1	To
36	3	E	From
11	3	M	From
37	3	SB	From
12	3	SG	From
38	4	Transmit Tip	From
13	4	Transmit Ring	From
39	4	Receive Tip 1	To
14	4	Receive Ring 1	To

Table 8-9.   Octal Voice - E&M (Continued)

Pin	Channel #	Signal	To/From AX
40	4	E	From
15	4	M	From
41	4	SB	From
16	4	SG	From
42	5	Transmit Tip	From
17	5	Transmit Ring	From
43	5	Receive Tip 1	To
18	5	Receive Ring 1	To
44	5	E	From
19	5	M	From
45	5	SB	From
20	5	SG	From
46	6	Transmit Tip	From
21	6	Transmit Ring	From
47	6	Receive Tip 1	To
22	6	Receive Ring 1	To
48	6	E	From
23	6	M	From
49	6	SB	From
24	6	SG	From
26	7	Transmit Tip	From
1	7	Transmit Ring	From
27	7	Receive Tip 1	To
2	7	Receive Ring 1	To
28	7	E	From
3	7	M	From
29	7	SB	From
4	7	SG	From
30	8	Transmit Tip	From
5	8	Transmit Ring	From
31	8	Receive Tip 1	To
6	8	Receive Ring 1	To
32	8	E	From
7	8	M	From
33	8	SB	From
8	8	SG	From

Application Module Interfaces (Continued)

Octal Voice Rear Interface Cards - **E&M, FXO, and FXS (Continued)**

⟹ **NOTE:**
Channels 1 through 6 are located on the P1 connector; channels 7 and 8 are located on the P2 connector.

Table 8-**10.   Octal Voice** - **FXO and FXS**

Pin	Channel #	Signal	To/From AX
26	1	Tip	To/From
1	1	Ring	To/From
29	2	Tip	To/From
4	2	Ring	To/From
32	3	Tip	To/From
7	3	Ring	To/From
35	4	Tip	To/From
10	4	Ring	To/From
38	5	Tip	To/From
13	5	Ring	To/From
41	6	Tip	To/From
16	6	Ring	To/From
44	7	Tip	To/From
19	7	Ring	To/From
47	8	Tip	To/From
22	8	Ring	To/From

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 8-11.   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".

Application Module Interfaces (Continued)

Optional Octal High Speed Data Cables

EIA-232-M/M Straight-through Cable. This 15-ft. DB-26 (male) to DB-25 (male) cable assembly is used in conjunction with the OHSD Interface Module for EIA-232 (ISO-2110) DCE-to-DCE applications.
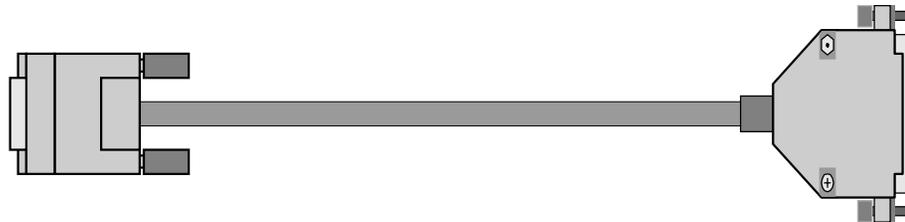
Figure 8-1.   EIA-232 M/M Straight-through Cable

Table 8-12.   EIA-232 M/M Straight-through Cable

PIN (from 26-pin male)	SIGNAL	PIN (to 25-pin male)
4	RTS	4
5	CTS	5
6	DSR	6
20	DTR	20
8	DCD	8
9	TXD	2
11	RXD	3
13	TT	24
22	TXC	15
24	RXC	17
7	SIGNAL GND	7
1	SHIELD	1

EIA-530-M/M Straight-through Cable. This 15-ft. DB-26 (male) to DB-25 (male) cable assembly is used in conjunction with the OHSD Interface Module for EIA-530 (ISO-2110) DCE-to-DTE applications.

Figure 8-2.   EIA-530 M/M Straight-through Cable

Table 8-13.   EIA-530 M/M Straight-through Cable

PIN (from 26-pin male)	SIGNAL	PIN (to 25-pin male)
4	RTS (A)	4
3	RTS (B)	19
5	CTS (A)	5
2	CTS (B)	13
6	DCE READY (A)	6
14	DCE READY (B)	22
20	DTE READY CD (A)	20
15	DTE READY CD (B)	23
8	RX LINE SIGNAL DETECTOR DD (A)	8
16	RX LINE SIGNAL DETECTOR DD (B)	10
9	TRANSMITTED DATA BA (A)	2
10	TRANSMITTED DATA BA (B)	14
11	RECEIVED DATA BB (A)	3
12	RECEIVED DATA BB (B)	16
13	TX SIGNAL ELEMENT TIMING (DTE SOURCE) DA (A)	24
26	TX SIGNAL ELEMENT TIMING (DTE SOURCE) DA (B)	11
22	TX SIGNAL ELEMENT TIMING (DCE SOURCE) DB (A)	15
23	TX SIGNAL ELEMENT TIMING (DCE SOURCE) DB (B)	12
24	RX SIGNAL ELEMENT TIMING (DCE SOURCE) DD (A)	17
25	RX SIGNAL ELEMENT TIMING (DCE SOURCE) DD (B)	9
7	SIGNAL GND AB	7
1	SHIELD	1

EIA-530-A M/M Cross-over Cable. This 15 ft. DB-26 (male) to DB-25 (male)
cable assembly is used in conjunction with the OHSD Interface Module for EIA-
530-A (ISO-2110) DCE-to-DCE applications.
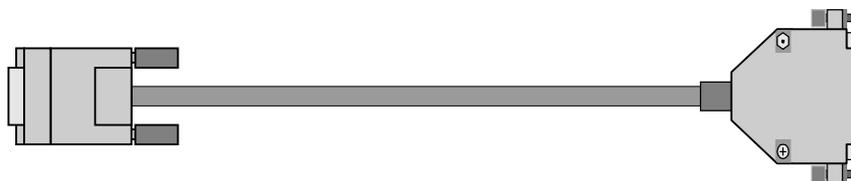
Figure 8-3.   EIA-530-A M/M Straight-through Cable

Table 8-14.   EIA-530-A M/M Straight-through Cable

PIN (from 26-pin male)	SIGNAL	PIN (to 25-pin male)
4	RTS CA (A)	4
3	RTS CA (B)	19
5	CTS CB (A)	5
2	CTS CB (B)	13
6	DCE READY CC	6
20	DTE READY CD	20
8	RX LINE SIGNAL DETECTOR DD (A)	8
16	RX LINE SIGNAL DETECTOR DD (B)	10
9	TXD BA (A)	2
10	TXD DATA BA (B)	14
11	RX DATA BB (A)	3
12	RX DATA BB (B)	16
13	TX SIGNAL ELEMENT TIMING (DTE SOURCE) DA (A)	24
26	TX SIGNAL ELEMENT TIMING (DTE SOURCE) DA (B)	11
22	TX SIGNAL ELEMENT TIMING (DCE SOURCE) DA (A)	15
23	TX SIGNAL ELEMENT TIMING (DCE SOURCE) DA (B)	12
24	RX SIGNAL ELEMENT TIMING (DCE SOURCE) DB (A)	17
25	RX SIGNAL ELEMENT TIMING (DCE SOURCE) DB (B)	9
7	SIGNAL GND AB	7
21	SIGNAL COMMON AC	23
1	SHIELD	1

EIA-422 M/M Straight-through Cable. This 15 ft. DB-26 (male) to DB-37 (male) cable assembly is used in conjunction with the OHSD Interface Module for EIA-422 (EIA-449 & ISO-4902) DCE-to-DTE applications.
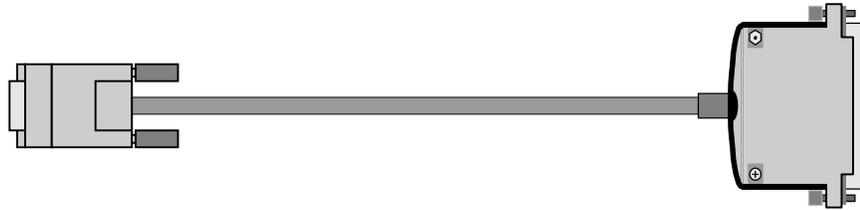
Figure 8-4.   EIA-422 M/M Straight-through Cable

Table 8-15.   EIA-422 M/M Straight-through Cable

PIN (from 26-pin male)	SIGNAL	PIN (to 37- pin male)
4	RTS (A)	7
3	RTS (B)	25
5	CTS (A)	9
2	CTS (B)	27
6	DATA MODE (A)	11
14	DATA MODE (B)	29
20	TERMINAL READY (A)	12
15	TERMINAL READY (B)	30
8	RECEIVER READY (A)	13
16	RECEIVER READY (B)	31
9	SEND DATA (A)	4
10	SEND DATA (B)	22
11	RECEIVED DATA (A)	6
12	RECEIVED DATA (B)	24
13	TERMINAL TIMING (A)	17
26	TERMINAL TIMING (B)	35
22	SEND TIMING (A)	5
23	SEND TIMING (B)	23
24	RECEIVE TIMING (A)	8
25	RECEIVE TIMING (B)	26
7	SIGNAL GND	19
21	RECEIVE COMMON	20
1	SHIELD	1

ITU-V.35 M/M Cross-over Cable. This 15 ft. DB-26 (male) to M-34 (male) cable assembly is used in conjunction with the OHSD Interface Module for ITU-V.35 (ISO-2593) DCE-to-DCE applications.

Figure 8-5. ITU-V.35 M/M Straight-through Cable

Table 8-16. ITU-V.35 M/M Straight-through Cable

PIN (from 26-pin male)	SIGNAL	PIN (to 34-pin male)
4	RTS 105	C
5	RTS 106	D
6	DSR 107	E
20	DTR 108	H
8	RECEIVED LINE SIGNAL DETECTOR 109	F
9	TXD 103 (A)	P
10	TXD 103 (B)	S
11	RXD 104 (A)	R
12	RXD 104 (B)	T
13	TX SIGNAL ELEMENT TIMING (DTE SOURCE) 113 (A)	U
26	TX SIGNAL ELEMENT TIMING (DTE SOURCE) 113 (B)	W
22	TX SIGNAL ELEMENT TIMING (DCE SOURCE) 114 (A)	Y
23	TX SIGNAL ELEMENT TIMING (DCE SOURCE) 114 (B)	AA
24	RX SIGNAL ELEMENT TIMING (DCE SOURCE) 115 (A)	V
25	RX SIGNAL ELEMENT TIMING (DCE SOURCE) 115 (B)	X
7	SIGNAL GND 102	B
1	SHIELD	A

ITU-X.21 M/M Straight-through Cable. This 15 ft. DB-26 (male) to DB-15 (male) cable assembly is used in conjunction with the OHSD Interface Module for ITU-X.21 (ITU-X.27 & ISO-4903) DCE-to-DTE applications.
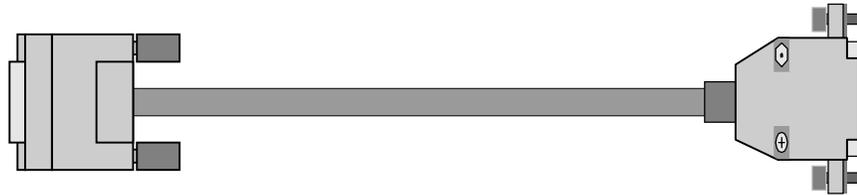
Figure 8-6.   ITU-X.21 M/M Straight-through Cable

Table 8-17.   ITU-X.21 M/M Straight-through Cable

PIN (from 26-pin male)	SIGNAL	PIN (to 15-pin male)
4	CONTROL C (A)	3
3	CONTROL C (B)	10
5	INDICATION I (A)	5
2	INDICATION I (B)	12
9	TRANSMIT T (A)	2
10	TRANSMIT T (B)	9
11	RECEIVE R (A)	4
12	RECEIVE R (B)	11
22	SIGNAL ELEMENT TIMING S (A)	6
23	SIGNAL ELEMENT TIMING S (B)	13
7	SIGNAL GND G	8
1	SHIELD	1

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)    DS-3               DS-3               OK
04)    Quad High Speed    Quad High Speed    OK
05)    Quad OCU           Quad OCU           OK
06)    Octal T1/E1        Octal T1/E1        OK*
07)    Octal Voice        Octal Voice        OK
08)    Octal High Speed   Octal High Speed   OK
09)    Test Access        Test Access        OK
10)    ----               ----               Not Present
11)    ----               ----               Not Present
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: 02     Help = [?]



                              QDS1 Main Menu



                              Configuration
                              Statistics
                              Diagnostics
                              Utilities
                              About
```
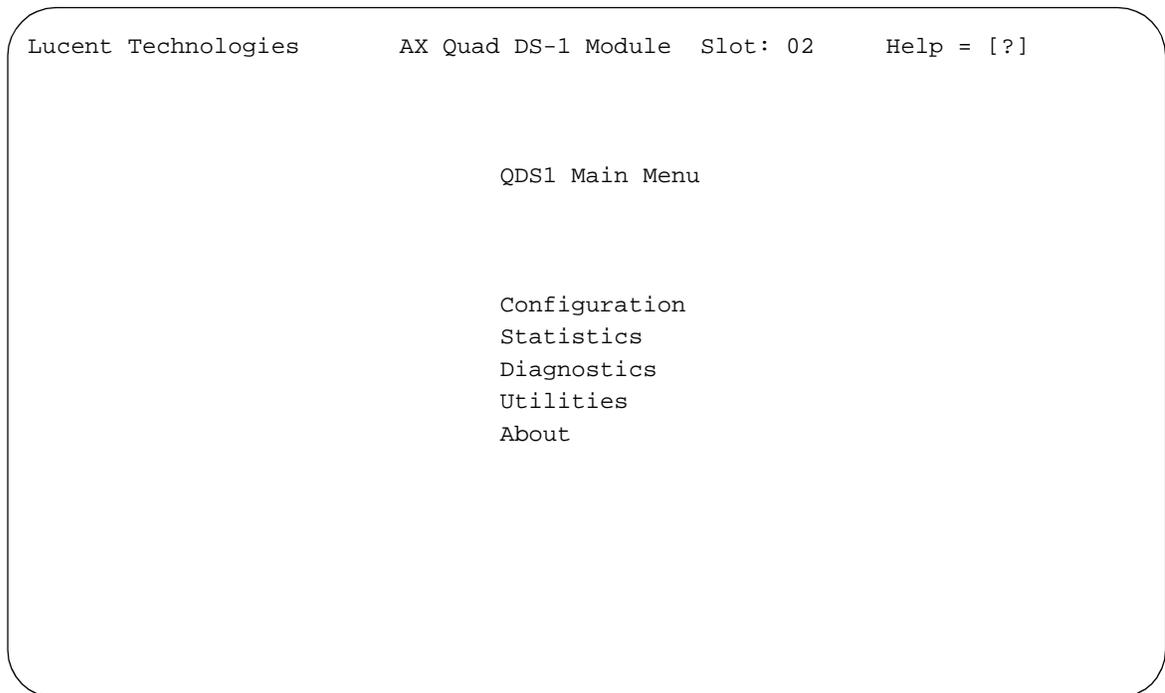
Figure 9-2.   Quad DS-1 Main Menu

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:02            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:02     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: 02     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:02   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:02   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: 02      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
```
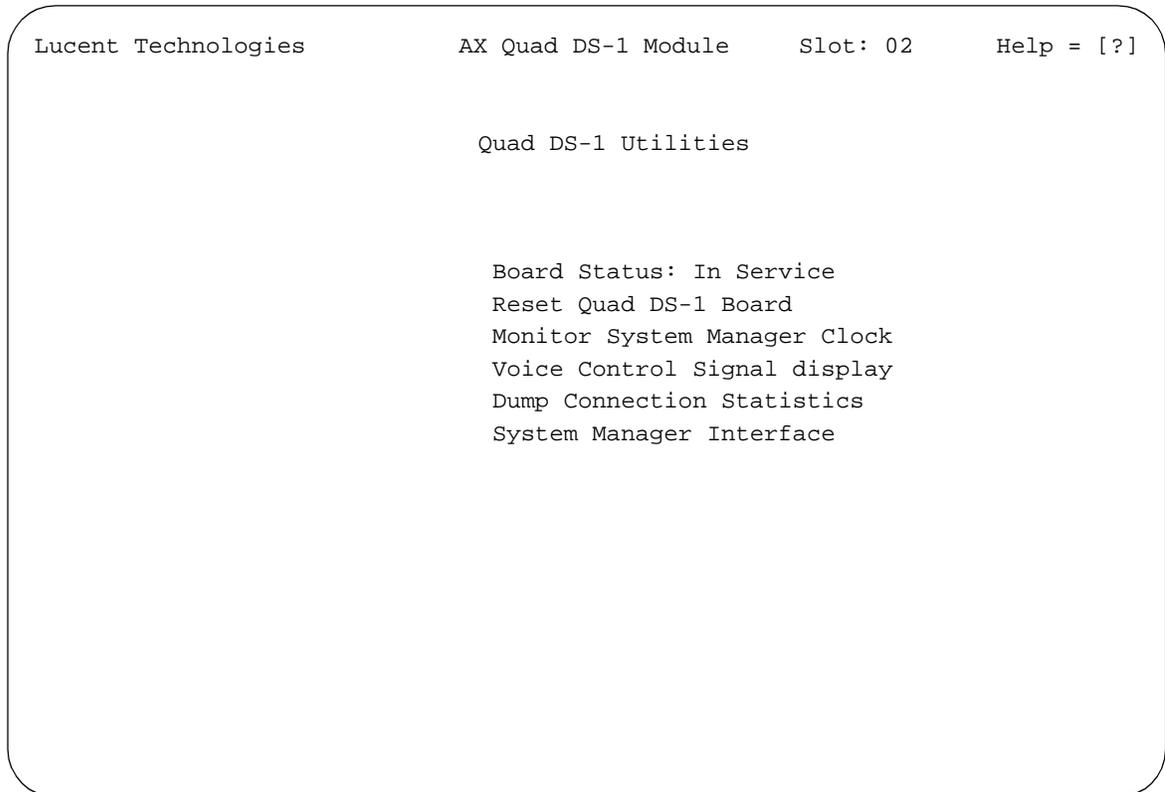
Figure 9-8.   Quad DS-1 Utilities Menu - Admin Security Level

⇒ **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:02              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)    DS-3              DS-3               OK
04)    Quad High Speed   Quad High Speed    OK
05)    Quad OCU          Quad OCU           OK
06)    Octal T1/E1       Octal T1/E1        OK*
07)    Octal Voice       Octal Voice        OK
08)    Octal High Speed  Octal High Speed   OK
09)    Test Access       Test Access        OK
10)    ----              ----               Not Present
11)    ----              ----               Not Present
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:04  Help = [?]




                        QHS Main Menu




                        Configuration
                        Diagnostics
                        Utilities
                        About
```
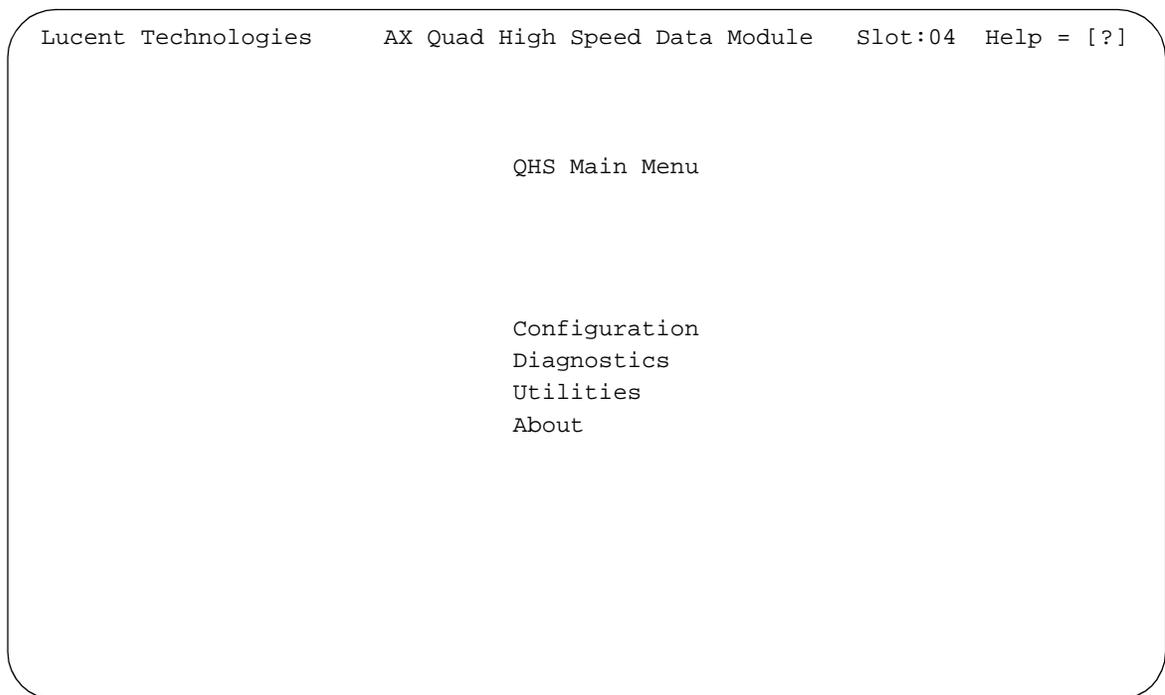
Figure 10-2.   Quad High Speed Main Menu

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:04   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
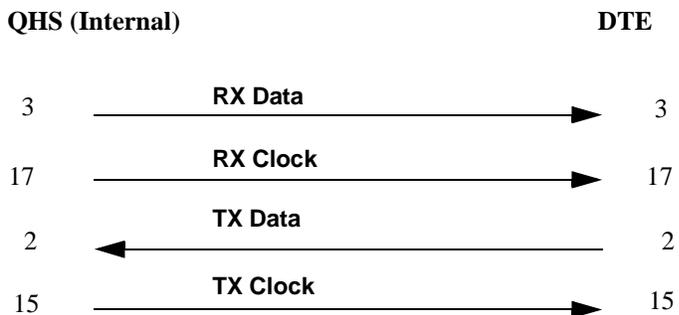
Int/Ext is recommended if the attached user DTE cable exceeds 10 feet in length and the customer data rate exceeds 224 Kbps. This setting may require a special DTE configuration or a modified cable.
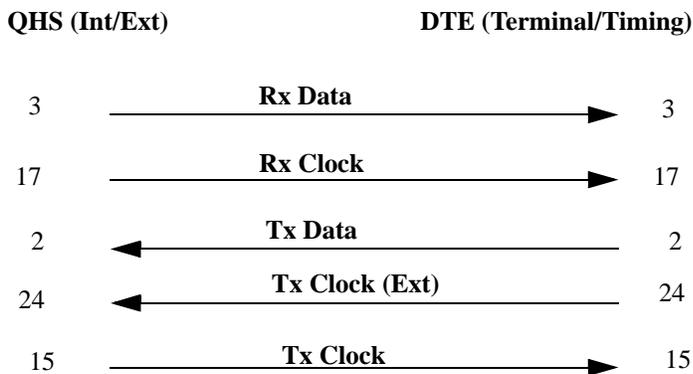
QHS (Int/Ext)		DTE (Terminal/Timing)
3	Rx Data →	3
17	Rx Clock →	17
2	← Tx Data	2
24	← Tx Clock (Ext)	24
15	Tx Clock →	15

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
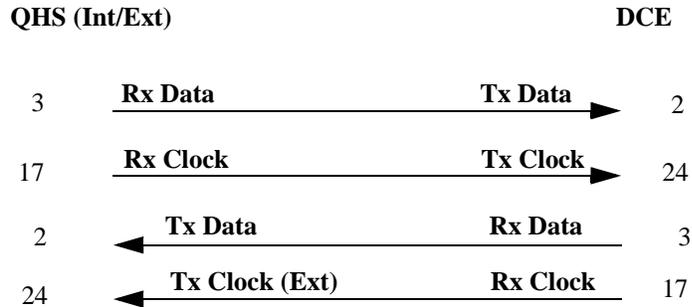
Int/Ext should be used if the attached equipment is DCE. The remote DCE must be loop timed to achieve the required timing lock with the AX system clock.

⇒ **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
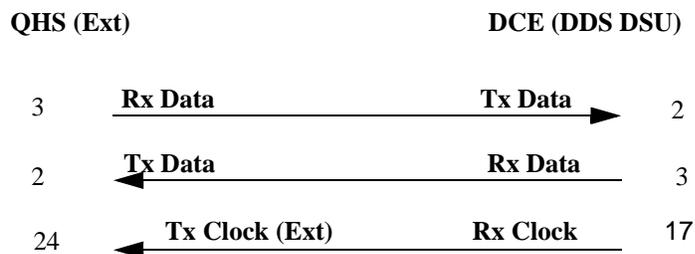
⇒ **NOTE:**
RS232 Pin Numbers are used for reference.

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:04    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 ← Local Loop — TX

TX → Local Loop — RX

RX ← Remote Loop — TX
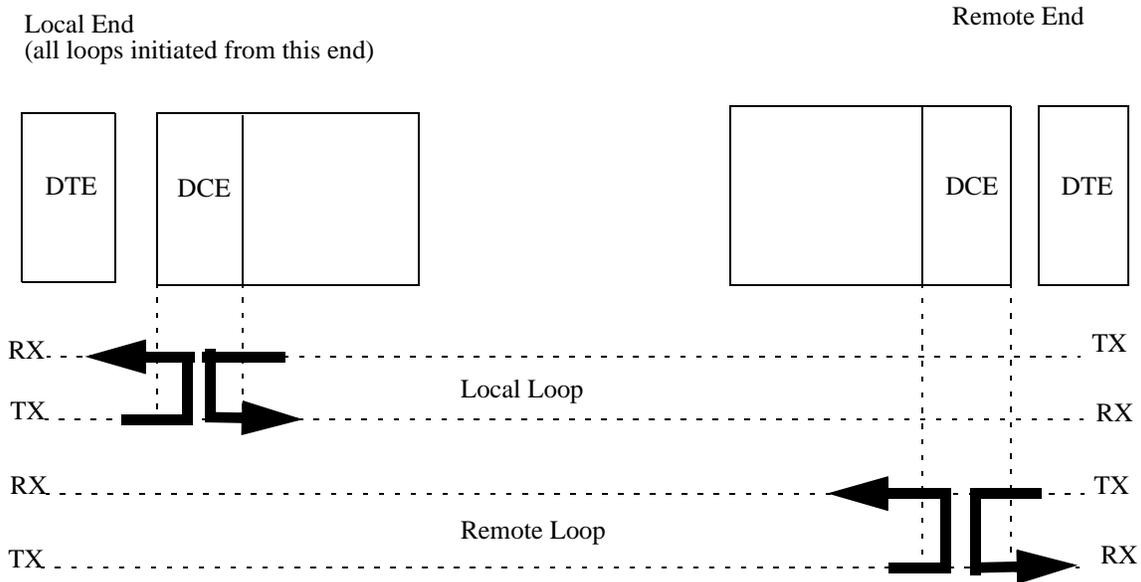
TX — Remote Loop → RX

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 receiving 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 receiving 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:04      Help = [?]



                            Quad High Speed Utilities




                         Board Status: In Service
                         Reset Quad High Speed Board
                         Monitor System Manager Clock
                         System Manager Interface
```
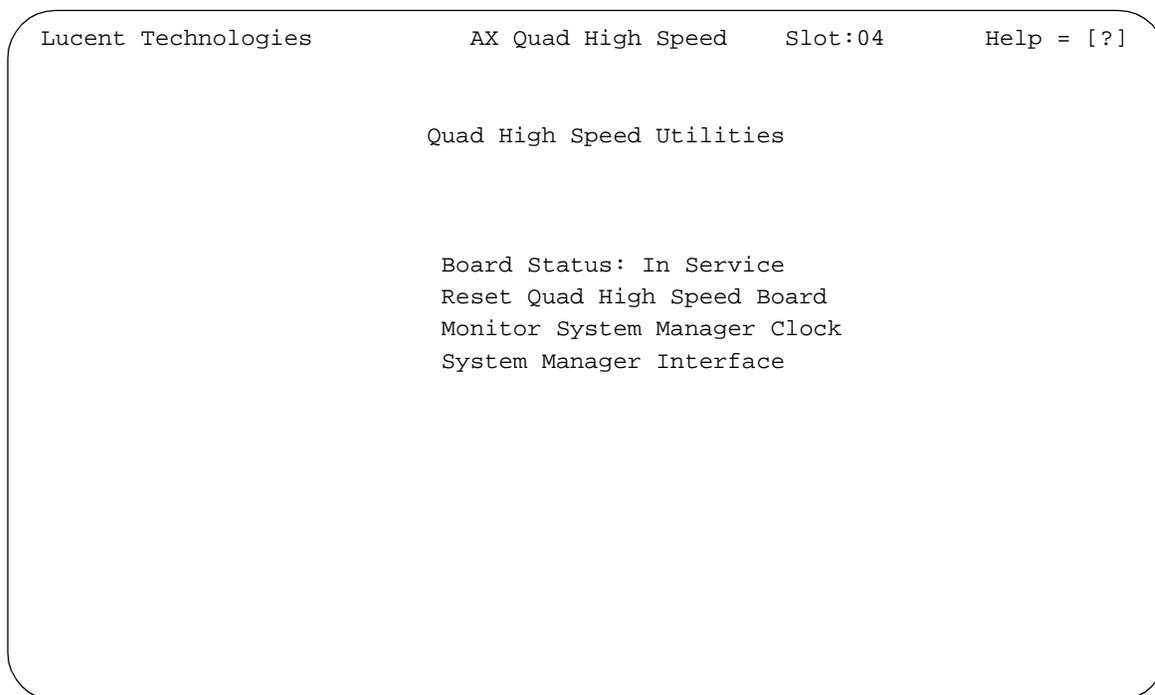
Figure 10-6.   Utilities Menu

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:04              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)    DS-3              DS-3               OK
04)    Quad High Speed   Quad High Speed    OK
05)    Quad OCU          Quad OCU           OK
06)    Octal T1/E1       Octal T1/E1        OK*
07)    Octal Voice       Octal Voice        OK
08)    Octal High Speed  Octal High Speed   OK
09)    Test Access       Test Access        OK
10)    ----              ----               Not Present
11)    ----              ----               Not Present
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:  3



                          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:  3

                        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:  3

                        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:  3

                             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:  3




                         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:  3



                              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:  3



                          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)    DS-3               DS-3               OK
04)    Quad High Speed    Quad High Speed    OK
05)    Quad OCU           Quad OCU           OK
06)    Octal T1/E1        Octal T1/E1        OK*
07)    Octal Voice        Octal Voice        OK
08)    Octal High Speed   Octal High Speed   OK
09)    Test Access        Test Access        OK
10)    ----               ----               Not Present
11)    ----               ----               Not Present
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: 5          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: 5      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: 5  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: 5              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: 5          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:05       Help = [?]


                         Quad OCU Utilities



                    Board Status: In Service
                    Reset OCU Board
                    Monitor System Clocks
                    Backplane Integrity:
                    System Manager Interface
```
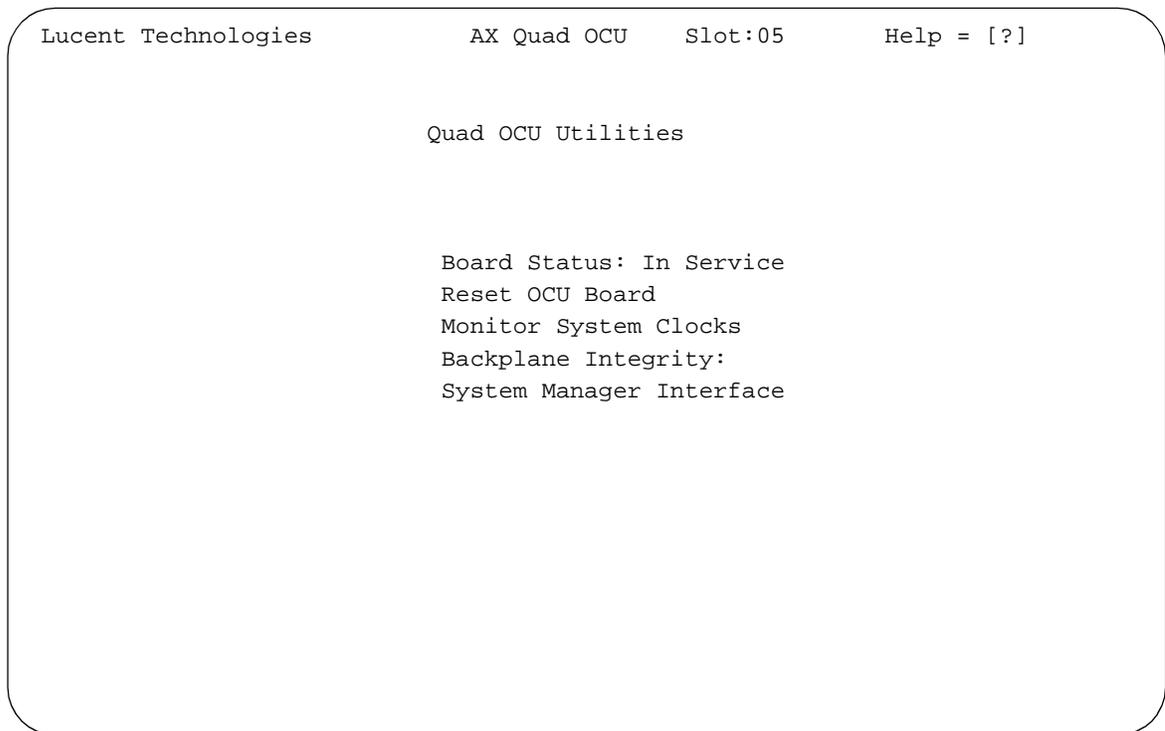
Figure 12-**7.   Utilities Menu**

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: 5            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)    DS-3              DS-3               OK
04)    Quad High Speed   Quad High Speed    OK
05)    Quad OCU          Quad OCU           OK
06)    Octal T1/E1       Octal T1/E1        OK*
07)    Octal Voice       Octal Voice        OK
08)    Octal High Speed  Octal High Speed   OK
09)    Test Access       Test Access        OK
10)    ----              ----               Not Present
11)    ----              ----               Not Present
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).
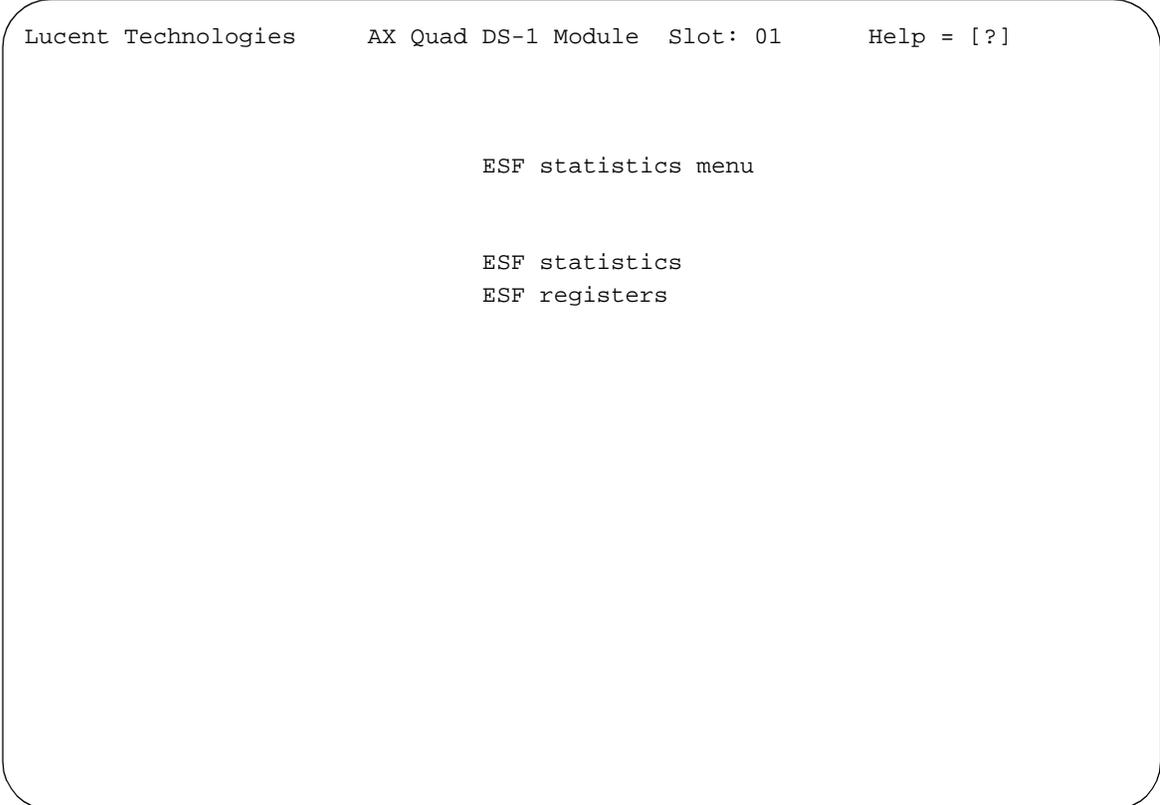
```
Lucent Technologies     AX Quad DS-1 Module  Slot: 01      Help = [?]




                           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 ⌑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
```
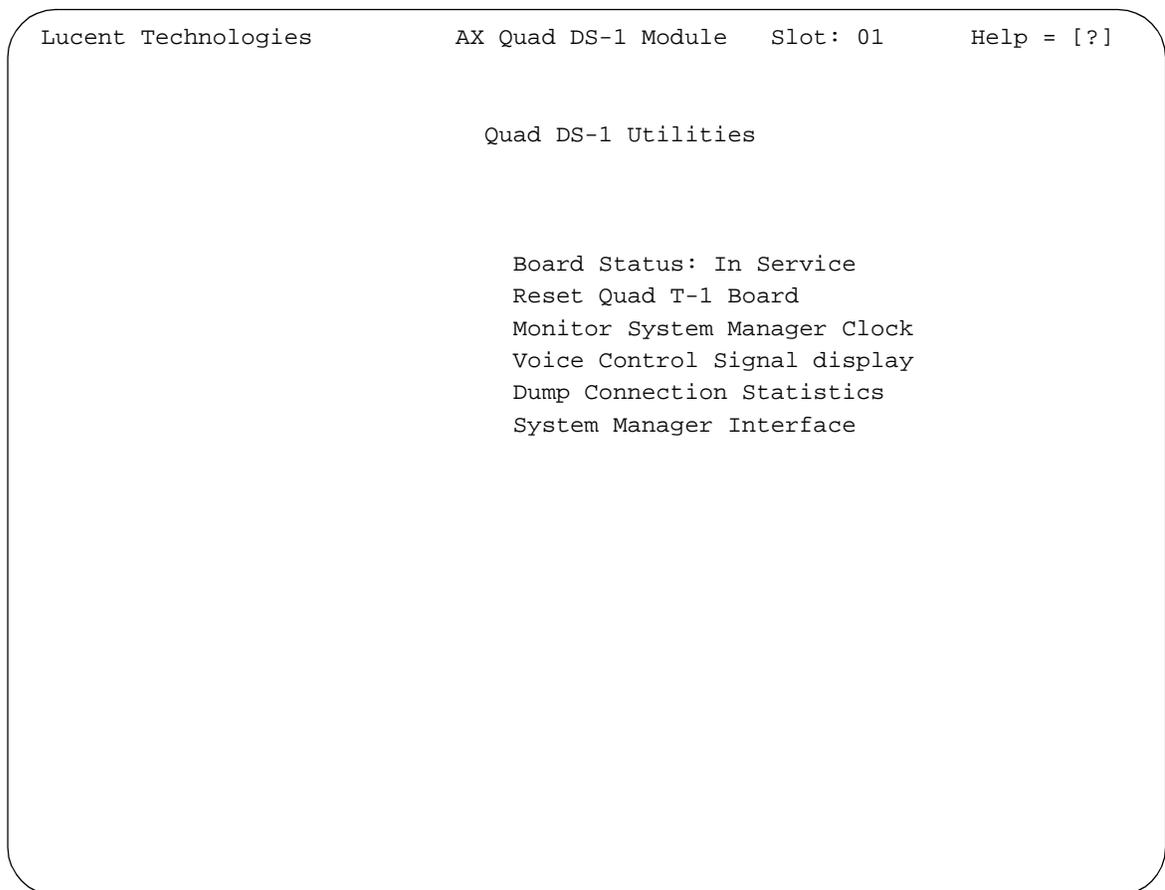
Figure 13-17. Quad DS-1 Utilities Menu

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.)
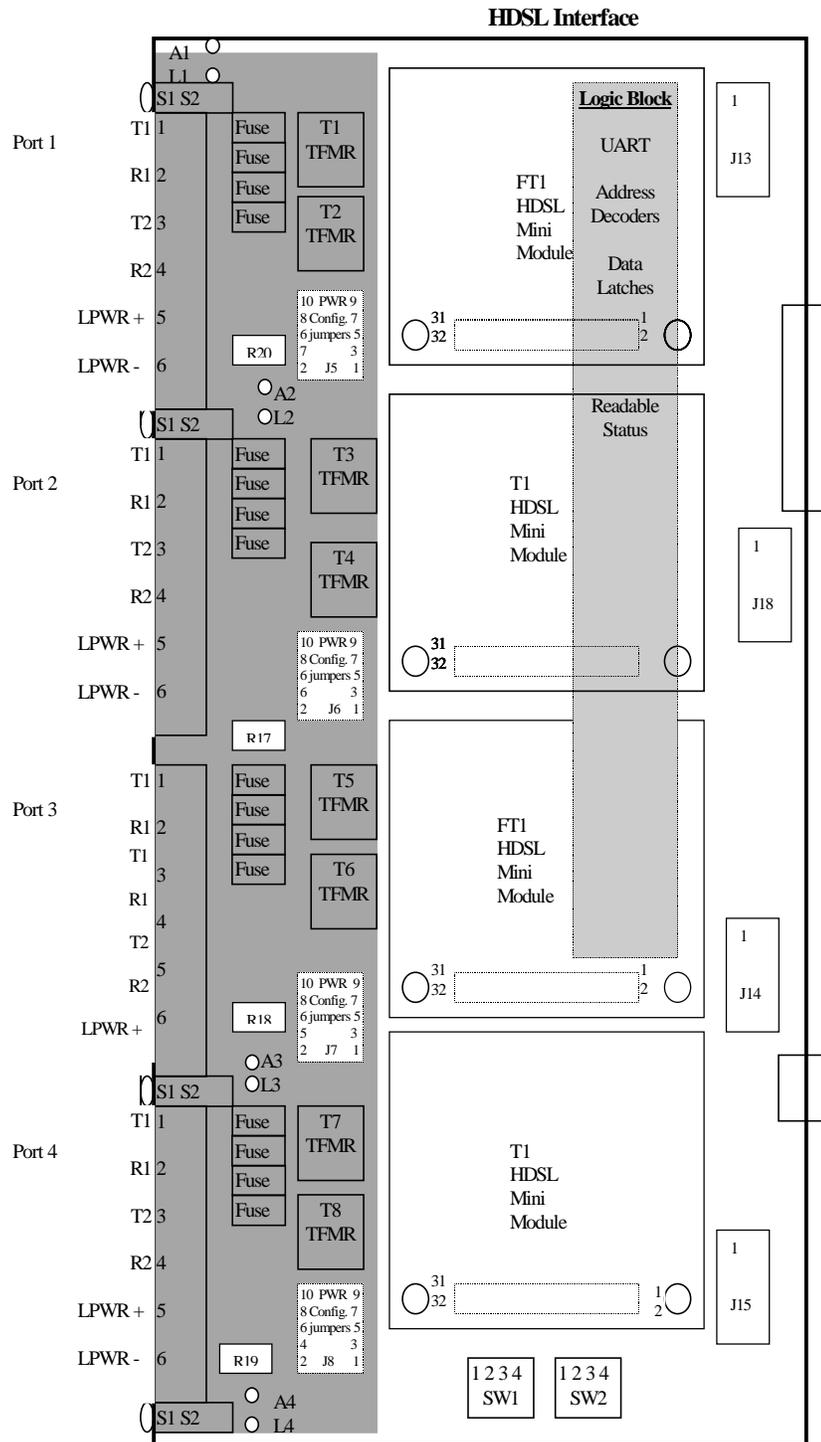
HDSL Interface

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)    DS-3              DS-3                 OK
04)    Quad High Speed   Quad High Speed     OK
05)    Quad OCU          Quad OCU            OK
06)    Octal T1/E1       Octal T1/E1         OK*
07)    Octal Voice       Octal Voice         OK
08)    Octal High Speed  Octal High Speed    OK
09)    Test Access       Test Access         OK
10)    ----              ----                 Not Present
11)    ----              ----                 Not Present
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: 09


                                     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:09

                              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: 09

                              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   Remote End
(all loops initiated from this end)

DTE   DCE   DCE   DTE

RX   TX
                                    Local Loop (Data only)
TX   RX

RX   TX
                                    Remote Loop
TX   RX
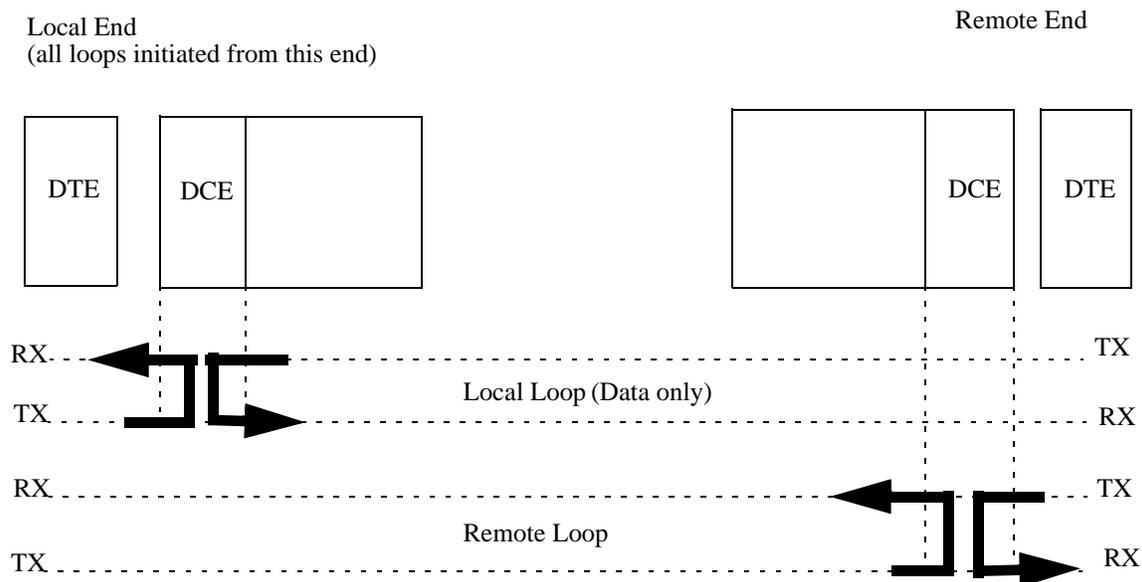
Figure 14-5.   Local and Remote Loops

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: 09


                               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
Lucent Technologies Technical Support.*

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 DISPLAY  │   │ READ FROM BACKPLANE DISPLAY │
     └─────────────────────────────┘   └─────────────────────────────┘

                     ┌──────────────────────────────┐
                     │  SYSTEM MANAGER INTERFACE    │
                     └──────────────────────────────┘

                     ┌──────────────────────────────┐
                     │   MONITOR SYSTEM CLOCKS      │
                     └──────────────────────────────┘

                     ┌──────────────────────────────┐
                     │        RESET BOARD           │
                     └──────────────────────────────┘
```
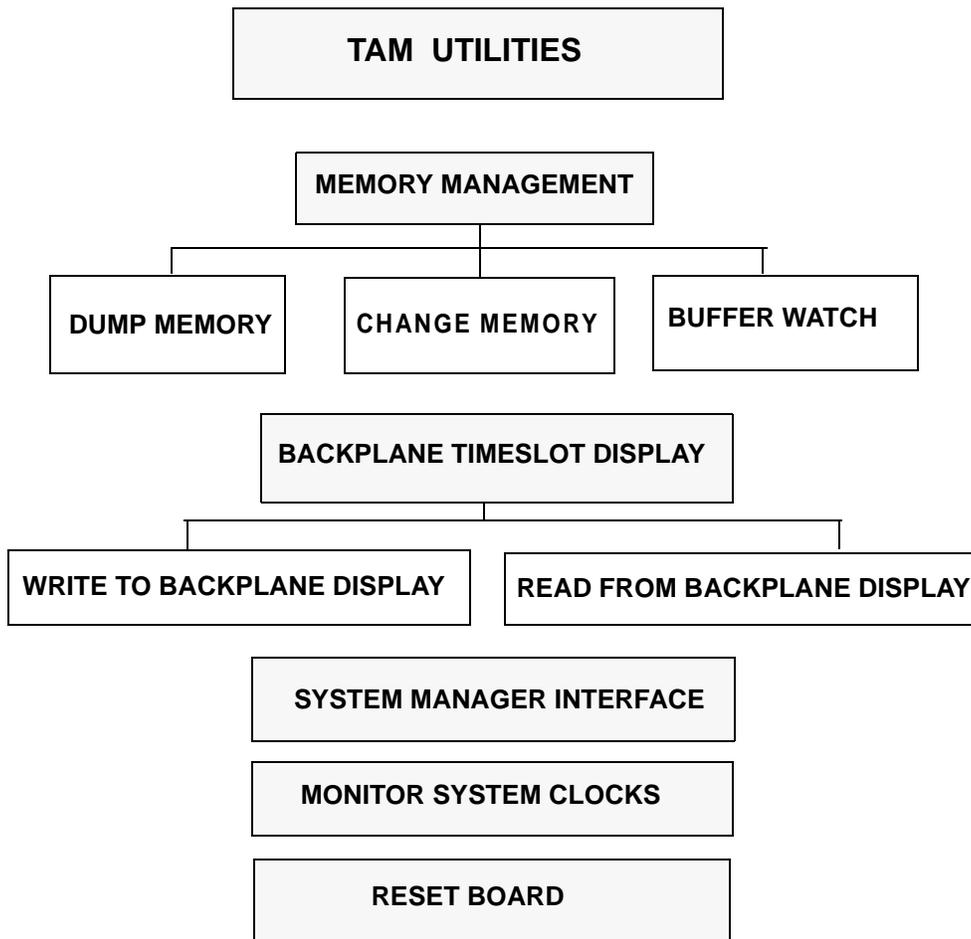
Figure 14-7.   TAM Utilities Menu Structure

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: 09




                         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.

Octal T1/E1 Module

15

Contents

Contents (Continued)

Octal T1/E1 Overview

Before you begin   In order to display the Octal T1/E1 menus, you must have the following cards
installed in the equipment chassis:

- The Octal T1/E1 card must be installed in a slot in the equipment chassis

- The slot must be configured for module type: Octal T1/E1

The **Configured Type** and **Actual Type** noted on the Node Summary Menu must
match (Figure 15-1).

```
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)    DS-3              DS-3               OK
04)    Quad High Speed   Quad High Speed    OK
05)    Quad OCU          Quad OCU           OK
06)    Octal T1/E1       Octal T1/E1        OK*
07)    Octal Voice       Octal Voice        OK
08)    Octal High Speed  Octal High Speed   OK
09)    Test Access       Test Access        OK
10)    ----              ----               Not Present
11)    ----              ----               Not Present
SMCA)  System Manager                       On Line
SMCB)  System Manager                       Not Present


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

Figure 15-1.   Node Summary Menu

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

Octal T1/E1 Overview (Continued)

Octal T1/E1 Main Menu The Octal T1/E1 Main Menu (Figure 15-2) provides options that enable you to configure the Octal T1/E1, perform diagnostics, access utilities, and display version and release information for the Octal T1/E1.

```
Lucent Technologies          AX  - Octal T1/E1        Slot: 06    Help = [?]



                              Main Menu
                              ---------

                              Configuration
                              Diagnostics
                              Utilities
                              About











Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 15-2.   Octal T1/E1 Main Menu

Configuring Octal T1/E1 Parameters

Procedure   To configure the Octal T1/E1 module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select Configuration. Place your cursor on the Configuration field and press **<Enter>**. The Links Configuration Menu appears.

```
Lucent Technologies          AX  - Octal T1/E1       Slot: 06     Help = [?]


                             Links Configuration
                             --------------------
                                              Network  Yel    Idle
    Link Name           Framing        FDL   LH/LBO   Loop    Alarm  Code
 -- -------------------------- ------ ------- -------  -----  ----
 01 08                  E1                    S-Haul   Enable  No     Idle
 02 Circuit Number      Out Of Service
 03 windsor             E1-CRC               S-Haul   Enable  No     Idle
 04 Circuit Number      Out Of Service
 05 Circuit Number      Out Of Service
 06 Circuit Number      Out Of Service
 07 Circuit Number      Out Of Service
 08 Circuit Number      Out Of Service


 LH - long haul[E1]   LBO - line build out[T1]   FDL - facility data link
```

Figure 15-3.   Links Configuration Menu

4. To configure all parameters for a link, place your cursor on a link number field and press **<Enter>**. The following submenu appears.

Configuring Octal T1/E1 Parameters (Continued)

**Procedure
(Continued)**

```
Lucent Technologies        AX - T1/E1        Slot:06    Help = [?]



                          Link Configuration
                          -------------------


                   Link Nbr.....: 1
                   Name.........: Circuit No. 1
                   Status.......: In Service
                   LineType.....: E1
                   Network Loop.: Enabled
                   Yellow alarm.: No
                   Unused DSO's.: Idle
                   Long Haul....: S-Haul
```

Figure 15-4.   Link Configuration Submenu

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

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

Configuring Octal T1/E1 Parameters (Continued)

**Link
Configuration
Field Descriptions**

Link Number: Displays the link number selected from the Link Configuration menu.

Name: (text field) This is a user-defined field. Any name up to 20 characters in length can be entered to identify each port on the Octal T1/E1. Some users find it beneficial to use circuit numbers to name the ports.

Status: (option field) This field determines the status of the port. The status will either be "in service" or "out of service".

- *In Service -* an operational link that shows a valid configuration has been set up. When the port is *Active* or *In Service* you can run Diagnostics.
- *Out of Service -* a mechanism to avoid getting alarms. *Out of Service* also causes the port to be *Inactive* and you cannot run Diagnostics.

Line Type: (option field) This field determines the type of framing used on the line. The line types are as follows:

Short Haul and Long Haul line interface options are available with E1 line types (i.e., how long the line is coming from your facility).

- ■ E1
- ■ E1-CRC
- ■ E1-CAS
- ■ E1-CAS- CRC
- ■ E1-Unframed

An LBO option field is available with T1 line types.

- ■ T1-ESF AMI 62411
- ■ T1-ESF B8ZS Clear
- ■ T1 D4 B8ZS Clear
- ■ T1 D4 AMI 62411
- ■ T1overE1

Configuring Octal T1/E1 Parameters
(Continued)

**Link
Configuration
Field Descriptions
(Continued)**

Network Loop: (option field) This entry determines the module's ability to respond to loop diagnostic commands received from the network supplier.

Yellow Alarm: (option field) "Yes" causes the module to discard data and send a "yellow alarm" if it is in a "red alarm" condition after a three second period. "Yes" must be chosen if the network supplier is a common carrier, such as a telephone company.

Unused DS0s: (option field) This selection determines whether the data that will be transmitted over the unused DS0s will be "IDLE" or "BUSY."

ESF Format: (option field) This entry describes the types of ESF network commands that the T1 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.

Short Haul: Physical interface selection for co-located E1 equipment.

Long Haul: Physical interface selection for long connection to E1 equipment.

LBO: (T1 option field) 0.0db through 22.5db = long haul; 0-133 Ft. through 655 Ft. = short haul.

- 0.0db <> Long Haul
- 7.5db <> Long Haul
- 15.0db <> Long Haul
- 22.5db <> Long Haul
- 0-133 Ft. <> Short Haul
- 133-266 Ft. <> Short Haul
- 266-399 Ft. <> Short Haul
- 399-533 Ft. <> Short Haul
- 533-655 Ft. <> Short Haul

⇒ **NOTE:**
Long haul/short haul designation for E1 is defined by authentication of signal presented to the receiving circuitry, not by cable length. Short haul is defined as 0 to -6db, long haul as 0 to -34db. This loss is related to cable type and cable length.

Octal T1/E1 Diagnostics

Procedure   To run Diagnostics on the Octal T1/E1 module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1Main Menu, select Diagnostics.

4. From the Diagnostics menu, select Line Diagnostics Center. Place your cursor on the Diagnostics field and press **<Enter>**.

```
Lucent Technologies     DACS II AX 11 - T1/E1    Slot:06    Help = [?]



                              Diagnostic Menu
                              -----------------


                              Line Diagnostics Center
                              Backplane Check
                              System Status
```

Figure 15-5.   Diagnostics Menu

Upon selecting the Line Diagnostics Center, the following menu appears.

Octal T1/E1 Diagnostics (Continued)

**Procedure
(Continued)**

```
Lucent Technologies    DACS II AX 11 - T1/E1      Slot:06   Help = [?]



                         Diagnostics Manager
                         -------------------
                    Errored Link    Bkpln              Test     Local
   Link Name   State  Seconds Loop    Loop  Bert     Duration  Errors
 ----------- -------- ------- ------- ----- -------- --------- ------
Circuit No.  *ERROR*   501    Off     Off   Off       0         0
Circuit Num  Inactive  0      Off     Off   Off       0         0
windsor      *ERROR*   18421  Off     Off   Off       0         0
Circuit Num  Inactive  0      Off     Off   Off       0         0
Circuit Num  Inactive  0      Off     Off   Off       0         0
Circuit Num  Inactive  0      Off     Off   Off       0         0
Circuit Num  Inactive  0      Off     Off   Off       0         0
Circuit Num  OK        57     Local   Off   Off       0         0

[B]ert   [L]oop  [E]xpose  [C]lear Error Counters
ESF [S]tatistics ESF [R]egisters    [G].826

------------ Hit key 1 thru 9 to insert an error ---------------------
[1]CAS Multiframe   [2]Multiframe         [3]PRBS      [4]FBit
[5]Frame Alignment  [6]Line Code Violation  [7]Bit Slip [8]CRC [9] All
```

Figure 15-6.   Diagnostics Manager Menu

The field entry descriptions and how to access Bert, Loop, Expose, Statistics, and Register screens are described on the following pages.

Octal T1/E1 Diagnostics (Continued)

Diagnostics Manager Field Descriptions

Link Name: The name given by the user at the Configuration screen.

State: Active (in service) - displays an *OK* or **ERROR** state; Inactive (out of service).

Errored Seconds: This is an indication of the number of seconds with errors (i.e., something went wrong on the line).

Link Loop: Reflects the status of all the loopbacks associated with the link.

Backplane Loop: Loops a data connection from the link back to the link via the backplane. Since this incorporates most of the card's hardware and software, this is a useful test to check card integrity. Note that a user connection must already be in place prior to invoking this loopback.

Bert: When ON, indicates the selected pseudo random pattern.

Test Duration: Once the BERT test is started, the length of the test is measured.

Local Errors: Displays the number of errors that occurred during the test.

The following hot keys invoke additional screens and/or functions. They are described on the following pages.

- **[B]**ert - pseudo random test patterns.
- **[L]**oop - allows you to set different loopbacks
- **[E]**xpose - displays the status of the line.
- **[C]**lear Error Counters - clears all errored seconds and BERT indicators
- ESF **[S]**tatistics - The ESF Statistics Menu
- ESF **[R]**egisters - 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.
- **[G]**.826 - a status screen that displays the statistics of the performance of the link for the duration or set interval of time the link is up and running.

Keys 1 through 9: use keys 1 through 9 to insert errors from the NI side, which is then shown on the remote side. If the remote side is line looped, the inserted errors will be seen on the local side.

[B]ert

Overview   The BERT Select screen has a list of several test patterns.

Procedure   To access the BERT Select menu and run a test pattern:

1. Place your cursor on an *Active* link in the Diagnostics Manager Menu and
    type **B**. The Diagnostics BERT Select Menu displays.

```
Lucent Technologies    DACS II AX 11 - Octal T1/E1    Slot:06   Help = [?]

                              BERT Select
                            ------------
                  Link Number..: 3
                  Link Name....: windsor
                  Current BERT.: Off
                  New BERT.....: Off

Available Bit Error Tests (BERTs)
---------------------------------
[O]ff                                [0] All-zeros (0x00)
[1] All-Ones (0xFF)
[2] Unframed 2047                    [B] Framed 2047
[3] Unframed 2^15                    [C] Framed 2^15
[4] Unframed 2^20                    [D] Framed 2^20
[5] Unframed 2^23                    [E] Framed 2^23
[6] Unframed 2^11 - 7 0's limits     [F] Framed 2^11 - 7 0's limits
[7] Unframed 2^15 - 7 0's limits     [G] Framed 2^15 - 7 0's limits
[8] Unframed QRSS                    [H] Framed QRSS
[9] Unframed 2^23 - 14 0's limits    [I] Framed 2^23 - 14 0's limits
```

Figure 15-7.   Diagnostics BERT Select Menu

2. Next, place your cursor in the *New BERT* field and press **<Enter>**. The avail-
    able Bit Error Tests are displayed on the screen above.

3. Upon selecting the test pattern, type **X**. A new message appears: "Start new
    test? Are you sure (Y/N)?".

[L]oop

Overview   The Loop Select screen has a list of several loopback options, including *Local, Line, Analog*, *Remote, and Payload.*

Procedure   To access the Loop Select menu and run an NI loop:

1. Place your cursor on any *Active* link in the Diagnostics Manager Menu and type **L**. The Loop Select screen displays.

```
Lucent Technologies        AX - T1/E1        Slot:06            Help = [?]



                              Link: 1


                          Loop Select Screen
                          ------------------
                           NI Loop Type..: Local
                           Backplane Loop: On





NI Loop Type  :  [O]ff   [L]ocal  Li[n]e  [A]nalog  [R]emote  [P]ayload
Backplane Loop:  [T]oggle


```

Figure 15-8.   Loop Select Screen

[L]oop (Continued)

Procedure (Continued)

2. Type one of the corresponding letters below to run a specific NI loop.

   ■ **[L]** - for a local loop

   ■ **[n]** - for a line loop

   ■ **[A]** - for an analog loop

   ■ **[R]** - for a remote loop (not applicable for E1)

   ■ **[P]** - for a payload loop

3. Designed to check the integrity of the Backplane, toggle the *Backplane Loop* On or Off.

[L]oop (Continued)

Octal T1/E1 Loops

Local End
(all loops initiated from this end)

Remote End

DTE
DCE
Framer
NI

NI
Framer
DCE
DTE

RX
TX
Local Loop
TX
RX

RX
TX
Framing is not regenerated,
entire frame is looped.
Line Loop
TX
RX

RX
TX
Framing is regenerated,
only payload data is looped.
Payload Loop
TX
RX

RX
TX
Remote Line Loop
TX
RX

RX
TX
Analog (LIU) Loop
TX
RX
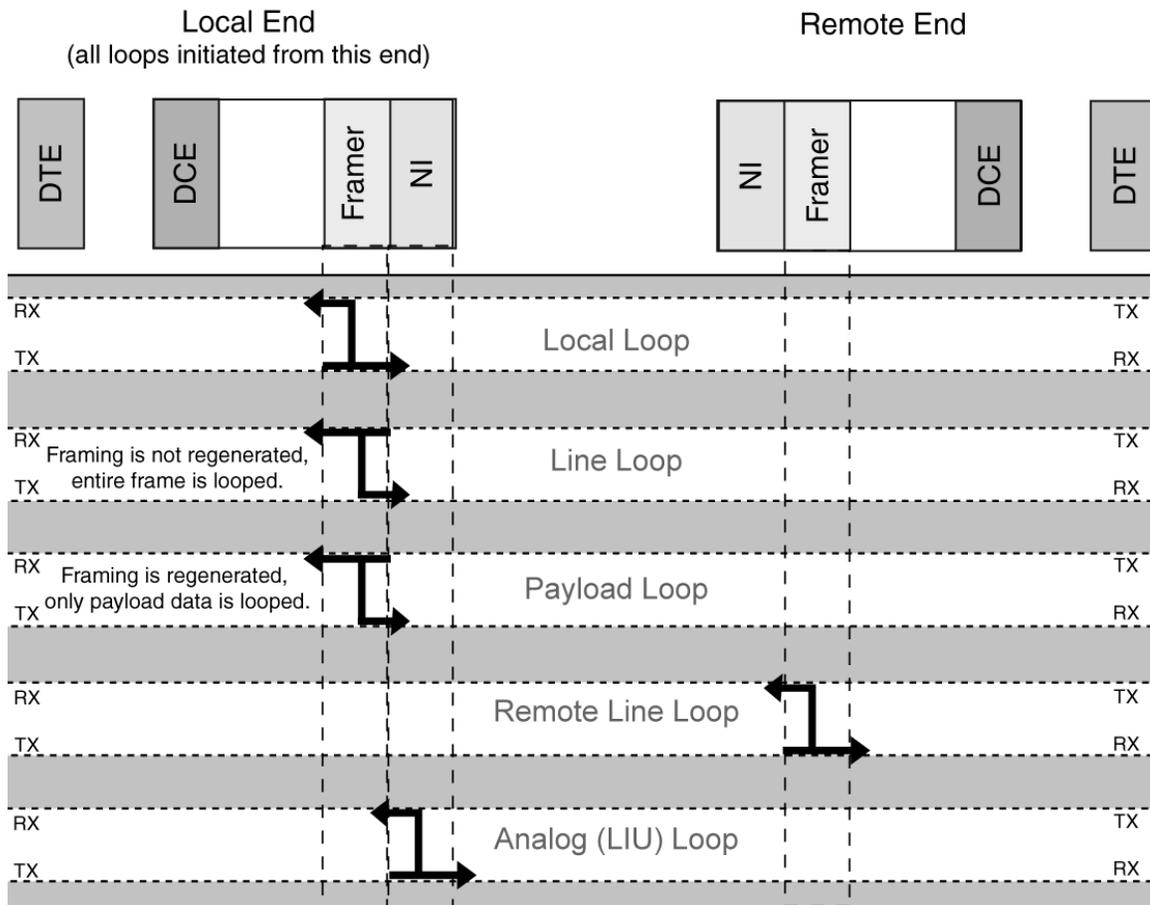
Figure 15-9.   Octal T1/E1 Loops

The Payload Loop is different than Line Loop in that it only loops the data (payload), and the framing is regenerated.

[L]oop (Continued)
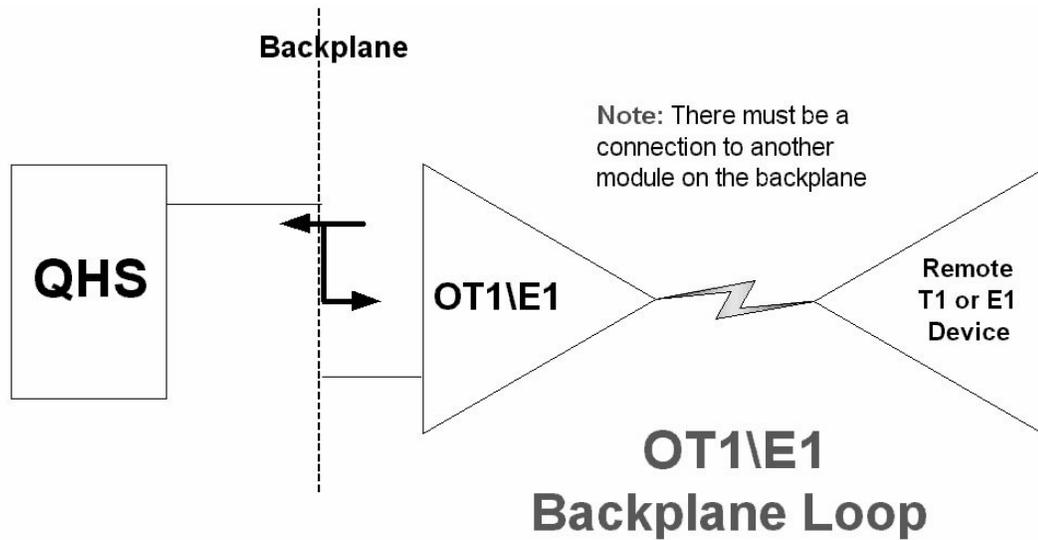
Figure 15-10. Octal T1/E1 Backplane Loop

There must be a connection to another module or to itself mapped on the backplane.

[E]xpose

Description   The Expose screen displays the real-time or current status of the T1/E1 link.

Procedure   To access the Expose screen and view the status of the T1/E1 link:

1. Place your cursor on any *Active* link in the Diagnostics Manager Menu and type **E**. The Expose - T1/E1 Link Status screen displays.

```
Lucent Technologies        AX - T1/E1        Slot:06            Help = [?]

                              T1/E1 Link Status
                              -----------------
Link#: 8    Name: Circuit Number
-------------- State  ErroredSec
Yellow Alarm  : Off     0          Crc  Errors........: 0
MFYellow Alarm: Off     0          Bpv  Errors........: 0
Loss Of Signal: Off     0          Frame Bit Errors...: 4
AIS Indication: Off     0
Out Of Frame  : Off     0
SEF Indication: Off     2
Transmit Slip : Off     0
Receive Slip  : Off     0


[C]lear Counters  [G].826
------------  Hit key 1 thru 9 to insert an error  ----------------------
[1]CAS Multiframe   [2]Multiframe           [3]PRBS      [4]FBit
[5]Frame Alignment  [6]Line Code Violation  [7]Bit Slip  [8]CRC  [9] All
```

Figure 15-11. Expose - **T1/E1 Link Status Screen**

Some of the fields are context sensitive, (e.g., the CRC errors only appear for links that support CRC such as T1 ESF, E1-CRC, or E1-CRC-CAS).

An error free link will display zeroes in all fields.

Keys 1 through 9: use keys 1 through 9 to insert errors from the NI side, which is then shown on the remote side. If the remote side is line looped, the inserted errors will be seen on the local side.

ESF [S]tatistics

Overview   The ESF Statistics Menu enables you to access 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 access the ESF Statistics screen:

1. Place your cursor on any *Active* link in the Diagnostics Manager Menu and type **S**. The ESF Statistics screen displays.

```
Lucent Technologies          AX - T1/E1        Slot:06                Help = [?]



                    ESF Statistics For Port#: 1


                    Register                  Curr   24 Hr
                    ----------------------------------
                    Errored seconds.........: 0       0
                    Failed seconds (UAS)....: 0       0
                    Severely errored seconds: 0       0
                    Bursty errored seconds..: 0       0
                    Loss of frame count.....: 0       0
                    Time in interval........: 0
                    # Valid intervals.......: 0
                    ESF status..............: F00000L0
```

Figure 15-12. ESF Statistics Screen

ESF [S]tatistics (Continued)

ESF Statistics Field Descriptions

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.

Severely 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.

ESF [R]egisters

Description   The ESF Registers Menu gives the same information as the ESF Statistics but it is broken down by port for each of the ninety-six 15-minute intervals in the preceding 24-hour period.

Procedure   To access the ESF Registers screen:

1. Place your cursor on any *Active* link in the Diagnostics Manager Menu and type **R**. The ESF Registers screen displays.

```
Lucent Technologies          AX - T1/E1        Slot:06            Help = [?]


                        ESF registers For Port#: 1
  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. 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

                                   [N]ext Page
```

Figure 15-13. ESF Registers Screen

ESF [R]egisters (Continued)

ESF Register Field Descriptions

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 Seconds (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 Seconds (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.

[G].826

Description   This status screen displays the statistics of the performance of the link for the
                       duration of time the link is up and running.

Procedure   To access the G.826 Statistics screen:

                       Place your cursor on any *Active* link in the Diagnostics Manager Menu and type
                       G. The G.826 Statistics screen displays

```
 Lucent Technologies        AX - T1/E1         Slot:06            Help = [?]


                            G.826 Statistics
                            ----------------


                  Link#: 1
                  Total Time..........................: 56513
                  Errored Seconds.....................: 0
                  Errored Free Seconds................: 56513
                  Severely Errored Seconds............: 0
                  Consecutive Severely Errored Seconds: 0
                  Consecutive Errored FreeSeconds.....: 56513
                  Background Errored Seconds..........: 0
                  Errored Seconds Ratio...............: 0.0000
                  Severely Errored Seconds Ratio......: 0.0000
                  Background Errored Seconds Ratio....: 0.0000



 [C]lear Counters
```

Figure 15-14. G.826 Statistics Screen

[G].826 (Continued)

G.826 Statistics   Refer to the *ITU-T Standardized Specifications*, dated 08/96, for a more detailed
Field Descriptions   description of the G.826 statistics.

Total Time: the duration of time the link is up and running.

Errored Seconds: a one second period with one or more errored blocks or at
least one defect.

Errored Free Seconds: a one second period of time the link was error free.

Severely Errored Seconds: a subset of ES, SES is a one second period which
contains $\geq$30% errored blocks or at least one defect.

Consecutive Severely Errored Seconds: a continuous occurrence of SES, in a
one second intervals, which contains $\geq$30% errored blocks or at least one defect.

Consecutive Errored Free Seconds: a display of consecutive one second period
intervals that did not have defects or errors on the link.

Background Errored Seconds: a one second period with one or more errored
blocks or at least one defect not occurring as part of the ES.

Errored Seconds Ratio: the ratio of ES to total seconds in available time during
a fixed measurement interval.

Severely Errored Seconds Ratio: the ratio of SES to total seconds in available
time during a fixed measurement interval.

Background Errored Seconds Ratio: the ratio of background block errors to
total blocks in available time during a fixed measurement interval. The count of
total blocks excludes all blocks during SES.

Monitor Backplane Integrity

Overview   This screen is intended as a diagnostic tool for Lucent Technologies.

> ⚠️ **WARNING:**
> *It is strongly suggested that you do not change the settings on this screen, unless you are prompted to do so by Lucent Technologies Technical Support.*

Procedure   To monitor the integrity of the backplane on the Octal T1/E1 module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E.

3. From the Octal T1/E1Main Menu, select Diagnostics. Place your cursor on Diagnostics and press **<Enter>**.

4. From the Diagnostics menu, select Backplane Check. Place your cursor on the Backplane Check field and press **<Enter>**. The following screen appears.

```
Lucent Technologies  AX - Octal T1/E1        Slot:06              Help = [?]

                        Monitor Backplane Integrity

       Slot#         Slot#         Pattern       Pattern    Status            Slot#
Address      Received      Address      Received  (Ignore for QHS)
-------------------------------------------------------------------------
01     0x00E02807    01        0x00E02808    0F       ... OK ...
02     0x00E02809    02        0x00E0280A    0F       ... OK ...
03     0x00E0280B    03        0x00E0280C    04       ... OK ...
04     0x00E0280D    05        0x00E0280E    05
05     0x00E0280F    01        0x00E02810    01
06     0x00E02811    01        0x00E02812    01
07     0x00E02813    01        0x00E02814    01
08     0x00E02815    01        0x00E02816    01
09     0x00E02817    01        0x00E02818    01
10     0x00E02819    01        0x00E0281A    01
11     0x00E0281B    01        0x00E0281C    01
```

Figure 15-15. Monitor Backplane Integrity Menu

Monitor Backplane Integrity (Continued)

Procedure   To check the System Status on the Octal T1/E1 module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1Main Menu, select Diagnostics. Place your cursor on Diagnostics and press **<Enter>**.

4. From the Diagnostics menu, select System Status. Place your cursor on the Monitor Backplane Status field and press **<Enter>**. The following screen appears.

```
Lucent Technologies      AX – Octal T1/E1   Slot:06           Help = [?]



                         Monitor Backplane Status
Description                                              Transitions
----------------------------------------------------------------------
Current Backplane Status..................: On the Bus

Card Service Status.......................: In Service
System Ready To Go In Service.............: Yes                3
System Clock Status.......................: Present            0
Frame SYNC Signal Status..................: Present            0
Too Many Backplane Time Slots ON..........: No                 0
Receive TSFM Map..........................: Yes                3
Hardware Access to Memory.................: Enable



Card In Service = [I]
Card Out Of Service = [O]
Reset Counters = [R]
```

Figure 15-16. Monitor Backplane Status Menu (Default Settings Shown)

⚠ **WARNING:**
  Do not change the settings on the Monitor Backplane Status Menu, unless prompted to do so by Lucent Technologies Technical Support.

Monitor Backplane Integrity (Continued)

Monitor Backplane Status Field Descriptions

Current Backplane Status: On-line/Off-line status that enables the card to communicate with the DACS II AX Backplane.

Card Service Status: Shows the status of the board.

System Ready To Go In Service: Shows whether the card is good or bad.

System Clock Status: A watchdog timer that monitors the integrity of the backplane clock. This clock is critical to backplane operation.

Frame SYNC Signal Status: A watchdog timer that monitors the integrity of the sync signal that coordinates data flow on the backplane. Critical to backplane operation.

Too Many Backplane Time Slots ON: A watchdog timer that monitors access to the backplane by this card. Protects the system from a faulty card corrupting data on the backplane.

Receive TSFM Map: Signals the hardware when to use the backplane.

Hardware Access to Memory: A way for the software to disable the memory for testing purposes.

The following hot keys invoke additional screens and/or functions:

■   Card In Service = **[I]**

■   Card Out Of Service = **[O]**

■   Reset Counters = **[R]**

Octal T1/E1 Utilities

Procedure   To access the Octal T1/E1 Utilities, follow these steps:

1. From the DACS II AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select Utilities. Place your cursor on the Utilities field and press **<Enter>**. The following screen appears.

```
Lucent Technologies          AX - T1/E1        Slot:06           Help = [?]


                           Utilities Menu
                           ----------------


                    System Manager Interface
                    Reset Device
                    Board Status: In Service
```

Figure 15-17. Utilities Menu

Octal T1/E1 Utilities - System Manager Interface Statistics

Overview   The System Manager Interface Status is a view-only screen that basically shows the communications between the SMC board and all of the loaded application modules.

Procedure   To view System Manager Interface Statistics, such as map checksum or byte count, follow these steps:

1. From the DACS II AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select Utilities. Place your cursor on the Utilities field and press **<Enter>**.

4. From the Utilities menu, select System Manager Interface Status. Place your cursor on the System Manager Interface Status field and press **<Enter>**. The following screen appears.

```
Lucent Technologies    AX - Octal T1/E1    Slot:06            Help = [?]



                       System Manager Interface Status


 --------------------------------------------------------------------------
                 Configuration Map sequence number.......: 16
                 Downloaded Config Map sequence number...: 16
                 Configuration Map Checksum..............: 0
                 Configuration Map Byte Count............: 0
                 Number of Configuration Map changes.....: 3
                 Number of Configuration Maps downloads..: 2
                 System Manager Level Identifier.........: 600
                 System Manager Id.......................: 128
                 System Files sequence number............: 1


```

Figure 15-18. System Manager Interface Status

Octal T1/E1 Utilities - Reset Device

Overview   *Reset Device* causes the card to initialize in the same manner as power up. During this boot up cycle, no user data will flow. Since the configuration resides on the SMC, connections will be restored.

Procedure   To reset the device, follow these steps:

1. From the DACS II AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select Utilities.   Place your cursor on the Utilities field and press **<Enter>**.

4. From the Utilities menu, select Reset Device. Place your cursor on the Reset Device field and press **<Enter>**. The following screen appears.

```
 Lucent Technologies      AX - T1/E1         Slot:06          Help = [?]



                            Utilities Menu
                            ---------------


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


```

Figure 15-19. Reset Device Screen

5. Select **Y** to reset device or **N** to return to the Utilities menu.

Octal T1/E1 Utilities - Reset Device
(Continued)

6. If you are setting the device, you will be asked again to confirm the request. Select **Y** to reset device or **N** to return to the Utilities menu.

⇒ **NOTE:**
   If **Y** is selected, the card will reset and the LEDs will cascade down the bezel. After the card resets, the Node Summary Menu appears. Wait for the Configuration Status to display OK before you proceed.

Octal T1/E1 Utilities - Board Status

Overview   *Board Status* enables you to change the board status to In Service or Out of
                      Service.

**Procedure - Reset   To reset the device to Out of Service:
to Out of Service**

1. From the DACS II AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select Utilities.

4. Put the cursor on the Board Status field and press **<Enter>**.

    The message Set device to Out of Service displays (Figure 15-20).

```
Lucent Technologies      AX - T1/E1        Slot:06         Help = [?]



                        Utilities Menu
                        ---------------


           ************************************
           *                                  *
           *            -MESSAGE!-            *
           *                                  *
           *                                  *
           *   Set device to Out of Service?  *
           *                                  *
           *                                  *
           *         Are you sure (Y/N)?      *
           *                                  *
           ************************************
```

Figure 15-20. Board Status: Change to Out of Service Screen

5. Select **Y** to change the board status to Out Of Sevice or select **N** to return
    to the Utilities menu.

    If **Y** is selected, the board status will read Out of Service in the Utilities
    menu. All LEDs will blink yellow.

Octal T1/E1 Utilities - Board Status (Continued)

Procedure - Reset to In Service

To reset the device to In Service:

1. From the DACS II AX Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select Utilities.

4. Put the cursor on the Board Status field and press **<Enter>**.

   The message Set device to In Service displays (Figure 15-21).

```
Lucent Technologies              AX - T1/E1      Slot:06      Help = [?]


                         Utilities Menu
                         ---------------


      ****************************************************
      *                                                  *
      *                    -MESSAGE!-                     *
      *                                                  *
      *                                                  *
      * Set device to In Service?  **Device Will Reset** *
      *                                                  *
      *                                                  *
      *               Are you sure (Y/N)?                *
      *                                                  *
      ****************************************************
```

Figure 15-21. Board Status: Change to In Service Screen

Octal T1/E1 Utilities - Board Status (Continued)

Procedure - Reset to In Service (Continued)

5.   Select **Y** to change the board status to In Service or select **N** to return to the Utilities menu.

⟹ **NOTE:**
It takes approximately 20 seconds for the Board Status to change to In Service. When the status changes to In Serice, the Node Summary menu appears. It will then take approximately 10-20 seconds for the card to change to In Service. The LEDs will cascade down the bezel as the Board Status is being set to In Service.

6.   Select **X** to return to the Main Menu.

Octal T1/E1 About Menu

Procedure   To display identification information for the Octal T1/E1 module:

1. From the Main Menu, select Node Summary.

2. Select a Slot that has been configured for Octal T1/E1.

3. From the Octal T1/E1 Main Menu, select About. Place your cursor on the About field and press **<Enter>**. The following screen appears.

```
 Lucent Technologies      AX – Octal T1/E1    Slot:06            Help = [?]


                              About
                              -------



                       Version..........: 01.00
                       Release Date.....: March 8, 1999
                       Checksum.........: 3413
                       Xilinx Version...: wb_xlx11
                       Front Card Type..: Octal T1/E1
                       Front Card Rev...: 0
                       Rear Card Type...: Octal E1 120 OHM
                       Rear Card Rev....: 0



```

Figure 15-22. Sample About Menu

Octal T1/E1 About Menu

About Field Descriptions

Version: This is the software version current in the Octal T1/E1's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the Octal T1/E1 card'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.

Octal Voice Module

16

Contents

Contents (Continued)

Octal Voice Overview

**Rear Card
Interface Modules**

Three rear card interface modules are available for use with the Octal Voice Module. **A -48V must be supplied to the DACS II AX chassis for any voice application to function.**

- **Octal 4 Wire E&M** - provides eight 4 wire interfaces via two 50-pin Telco type connectors. Leads supported include Tip, Ring, Tip1, Ring1, E, M, SB, and SG. Applications include 2/4 Wire T0 analog data applications, and 2/4 Wire E&M voice trunks.

- **Octal 2 Wire FXO/DPT** - provides eight Foreign Exchange Office (FXO) or Dial Pulse Temination (DPT) voice interfaces via a 50-pin Telco type connector. The Octal 2W/FXO/DPT can sink and detect ringing or sink and detect forward or reverse battery current dependent on configuration. The 2W/FXO/DPT can be employed to extend dial tone to a remote PBX or for support of Direct Inward Dialing (DID).

- **Octal 2 Wire FXS** - provides eight Foreign Exchange Station (FXS) voice interfaces via a 50-pin Telco type connector. The Octal 2W/FXS supports distinctive ringing, and can utilize loop start, private line auto ring (PLAR) or ground start connections to conventional analog telephone devices. Ring generation is integral to the 2W/FXS.

LED Display
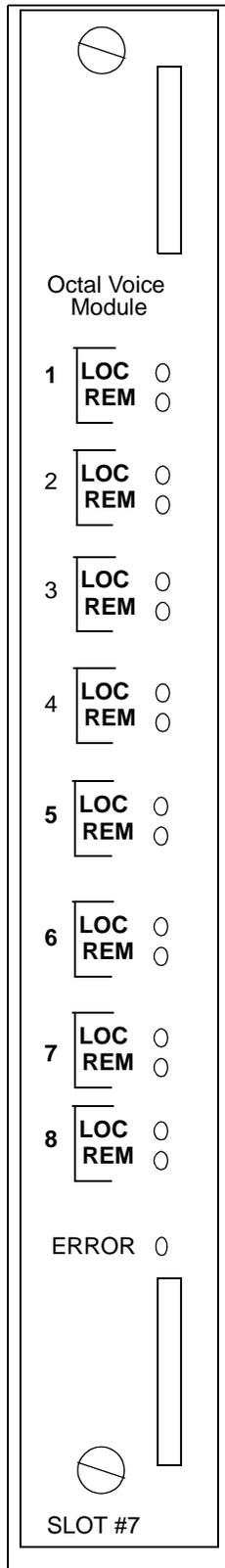
During initialization, Port 1's LOC(ation) and REM(ote) LEDs should toggle ON and OFF to indicate Xilink load in progress. Once the files are loaded, LOC and REM LEDs should turn OFF.

There are two LEDs per port for signalling information. One LED is referred to as *LOC* to indicate hook status received from the backplane; the other LED is labeled as *REM* to indicate hook status received from the trunk. These LEDs are turned ON when an Off-hook condition is detected.

The LOC and REM LEDs of all 8 ports flash to indicate system software download in progress.

If there is only one SMC card in the system, and it is removed and then plugged back in, all of the boards will reset.

A single Error LED indicates the voice card status. The Error LED blinks when there is a missing or invalid rear card in the system.

If the system is Off-line or Off the Buss, the Error LED flashes.

The system is Off-line when the following conditions occur:

- Card Out of Service (All LEDs flash to indicate a *Card Out of Service* condition)
- No Connection Map received
- Invalid Rear Card present
- SMC Clock Failure
- Missing Frame SYNC signal
- too many Time Slots Active
- Hardware write to Backplane Memory inhibited

Octal Voice Module

1 LOC REM
2 LOC REM
3 LOC REM
4 LOC REM
5 LOC REM
6 LOC REM
7 LOC REM
8 LOC REM

ERROR

SLOT #7

Before you begin   In order to display the Octal Voice menus, you must have the following must be done:

- The Octal Voice card must be installed in a slot in the equipment chassis

- The slot must be configured for module type: Octal Voice

The **Configured Type** and **Actual Type** noted on the Node Summary Menu must match (Figure 16-1).

```
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)    DS-3              DS-3                OK
04)    Quad High Speed   Quad High Speed     OK
05)    Quad OCU          Quad OCU            OK
06)    Octal T1/E1       Octal T1/E1         OK*
07)    Octal Voice       Octal Voice         OK
08)    Octal High Speed  Octal High Speed    OK
09)    Test Access       Test Access         OK
10)    ----              ----                Not Present
11)    ----              ----                Not Present
SMCA)  System Manager                        On Line
SMCB)  System Manager                        Not Present


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

Figure 16-1.   Node Summary Menu

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

Octal Voice Overview (Continued)

Octal Voice Main Menu   The Octal Voice Main Menu (Figure 16-2) provides options that enable you to configure, perform diagnostics, access utilities, and display version and release information for the Octal Voice module.

```
Lucent Technologies          AX  - Octal Voice        Slot: 07    Help = [?]



                                Main Menu
                                ---------

                                Configuration
                                Diagnostics
                                Utilities
                                About











Navigate menu    = [Space/Backspace]
Change parameter = [Return/'B']
Exit/abort edits = ['X'/Esc]
```

Figure 16-2.   Octal Voice Main Menu

Configuring the Octal Voice
Rear Card - E&M

Overview   When a rear card is first plugged into the DACS II AX, the Octal board resets and an **Invalid Rear Card** message appears on the screen of the Voice Card Main Menu (see next screen). All menus are inaccessible until reset is complete. This takes approximately 45 seconds.

Procedure   To configure a rear card type:

1.   Select Configuration from the Voice Card Main Menu.

```
Lucent Technologies      AX – Octal Voice      Slot: 07   Help = [?]




                        Voice Card Main Menu

                           Configuration
                           Diagnostics
                           Utilities
                           About
```
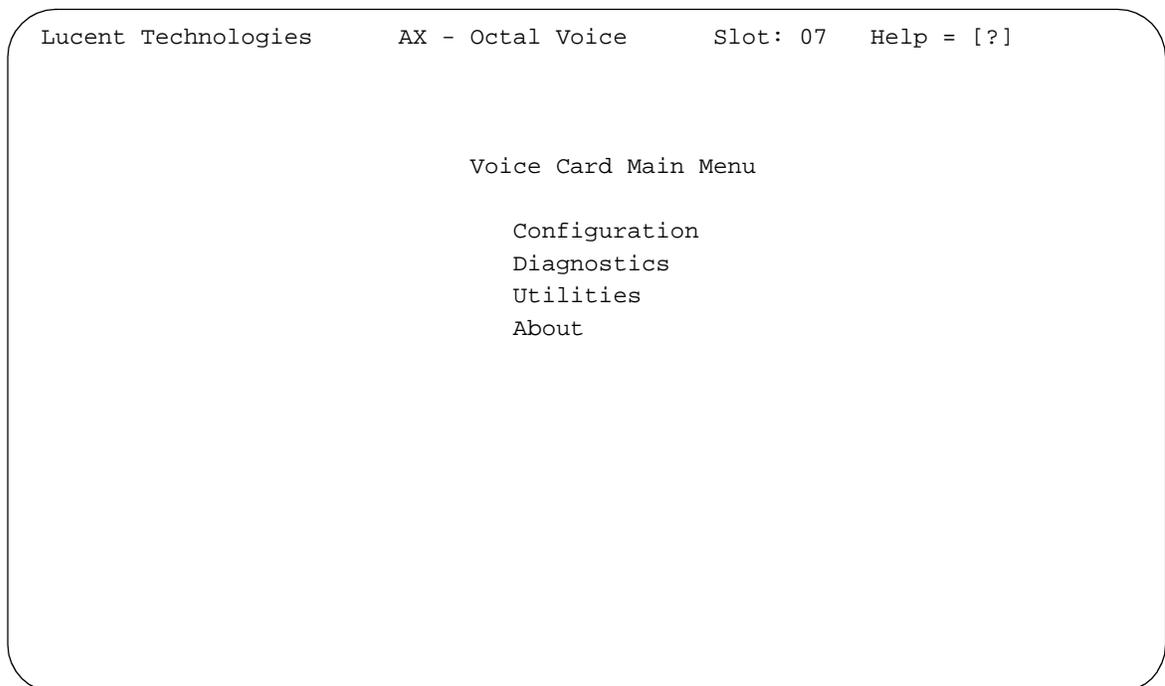
Figure 16-3.   Voice Card Main Menu

Configuring the Octal Voice
Rear Card - E&M (Continued)

Procedure   The Octal Voice Card Configuration Menu displays.
(Continued)

```
Lucent Technologies    AX - Octal Voice     Slot: 07   Help = [?]

                   Octal Voice Card Configuration

Port# Name     Port Status      Port Type   Codec Mode  Rx Gain  Tx Gain
------------------------------------------------------------------------
01    Port01  Out of Service   Loop Start  mu-Law       0 dB      0 dB
02    Port02  Out of Service   Loop Start  mu-Law       0 dB      0 dB
03    Port03  Out of Service   Loop Start  mu-Law       0 dB      0 dB
04    Port04  Out of Service   Loop Start  mu-Law       0 dB      0 dB
05    Port05  Out of Service   Loop Start  mu-Law       0 dB      0 dB
06    Port06  Out of Service   Loop Start  mu-Law       0 dB      0 dB
07    Port07  Out of Service   Loop Start  mu-Law       0 dB      0 dB
08    Port08  Out of Service   Loop Start  mu-Law       0 dB      0 dB

Configured Rear Card Type: Octal Voice FXO/DPT Operation Mode: PCM64Kbps
Actual Rear Card Type....: Invalid     Backplane Status: Off the Bus
```

Figure 16-4.   Voice Card Configuration Menu

2. At the Configured Rear Card Type field press **<Enter>**.

3. Press **<Enter>** again, to scroll through the available options, which are:

■ E&M

■ FXO

■ FXS

4. Type **X** to save your selection. A screen message appears: "Alert   Please
    wait while the card prepares to reset!   Press any key to continue".

5. Upon pressing any key, the system returns to the Node Summary Menu.
    Place your cursor on Octal Voice and press **<Enter>**.

Configuring the Octal Voice
Rear Card - E&M (Continued)

**Procedure
(Continued)**

$\Rightarrow$ **NOTE:**
The Octal Voice configuration files are stored on the System Manager Card.
When an Octal Voice card is replaced, the old configuration is preserved.

Configuring the Octal Voice Module
Parameters - E&M (Continued)

Procedure   To configure the Octal Voice module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a slot that has been configured for Octal Voice.

3. From the Voice Card Main Menu, select Configuration. The following
   screen appears.

```
Lucent Technologies    AX - Octal Voice       Slot: 07      Help = [?]


                     Octal Voice Card Configuration


Port# Name     Port Status   Type     Mode       Codec Mode  Rx Gain Tx Gain
---------------------------------------------------------------------------
01    Port01   In Service    E&M II   Switching mu-Law         0 dB    0 dB
02    Port02   In Service    E&M II   Switching mu-Law         0 dB    0 dB
03    Port03   In Service    E&M II   Signaling mu-Law         0 dB    0 dB
04    Port04   In Service    E&M II   Signaling mu-Law         0 dB    0 dB
05    Port05   In Service    E&M II   Signaling mu-Law         0 dB    0 dB
06    Port06   In Service    E&M II   Signaling mu-Law         0 dB    0 dB
07    Port07   In Service    E&M II   Signaling mu-Law         0 dB    0 dB
08    Port08   In Service    E&M II   Signaling mu-Law         0 dB    0 dB


Configured Rear Card Type: Octal Voice E&M  Operation Mode..: PCM 64Kbps
Actual Rear Card Type....: Octal Voice E&M  Backplane Status: On the B
```

Figure 16-5.   E&M Configuration Screen

4. Place your cursor on the port you want to configure and press **<Enter>**.
   The following submenu appears.

Configuring the Octal Voice Module Parameters - E&M (Continued)

**Procedure
(Continued)**

```
Lucent Technologies      AX - Octal Voice      Slot: 07        Help = [?]

                      Octal Voice Card Configuration
  ----------------------------------------------------------------------

Port# Selected....: 1
Name..............: Port01
Port Status.......: In Service
Codec Mode........: mu-Law
Rx Gain...........:  0 dB
Tx Gain...........:  0 dB




Use Default Settings  = [D]
```

Figure 16-6.   E&M Port Configuration Submenu

Configuring the Octal Voice Module
Parameters - E&M (Continued)

Configuration   **Port #:** The port to be configured.
Field Descriptions

Name: (text field) This is a user-defined field. Any name up to 11 characters in length can be entered to identify each port on the Octal Voice. Some users find it beneficial to use circuit numbers to name the ports.

Port Status: (option field) This field determines the status of the port. The status will either be *"In Service"* or *"Out Of Service"*.

Port Type: (option field) Depending upon the rear card type, the following port types are available under **E&M**:

■ *E&M Rear Card* - the trunk type and trunk mode settings for the ports are selected by setting the appropriate jumper blocks in the rear card; it is not soft-configurable. There are four possible settings that include E&M type I in switching mode; E&M type II in switching mode; E&M type I in signalling mode; and E&M type II in signalling mode. The default setting is E&M type in signalling mode (refer to the following diagram).

⇒ **NOTE:**
Care should be taken when removing or installing jumpers.

Configuring the Octal Voice Module Parameters - E&M (Continued)

Information on the E & M Rear Interface Card

The top connector P1 controls channels 1 to 6, connector P2 controls channels 7 and 8. Each of the channels use a total of 4 pairs, (8 pins) per connection.

Channel	1	2	3	4	5	6	7	8
Tx Tip	P1-26	P1-30	P1-34	P1-38	P1-42	P1-46	P2-26	P2-30
Tx Ring	P1- 1	P1- 5	P1-13	P1-17	P1-17	P1-21	P2- 1	P2- 5
Rcv Tip	P1-27	P1-31	P1-35	P1-39	P1-43	P1-47	P2-27	P2-31
Rcv Ring	P1- 2	P1- 6	P1-10	P1-14	P1-18	P1-22	P2- 2	P2- 6
E	P1-28	P1-32	P1-36	P1-40	P1-44	P1-48	P2-28	P2-32
M	P1- 3	P1- 7	P1-11	P1-15	P1-19	P1-23	P2- 3	P2- 7
SB	P1-29	P1-33	P1-37	P1-41	P1-45	P1-49	P2-29	P2-33
SG	P1- 4	P1-8	P1-12	P1-16	P1-20	P1-24	P2- 4	P2- 8

Table for Jumper setting

	A J #	B J #	C J #	D J #	E J #	F J #
Type 1 Signaling						
Type 1 Switching						
Type II Signaling						
Type II Switching						

Jumper shorts horizontally across the entire row

Figure 16-7.   Jumper Settings for E&M Interface Card

Configuring the Octal Voice Module
Parameters - E&M (Continued)

**Configuration
Field Descriptions
(Continued)**

Codec Mode: (option field) a coding algorithm. Select mu-law (default) for North American and Japan; A-Law for the rest of the world.

Rx Gain: (option field) adjusts the PCM receive signal gain from -6dB to +8dB.

Tx Gain: (option field) adjusts the PCM transmit signal gain from -6dB to +8dB.

Use Default Settings = [D] : (option field) press **D** to return your selections to the default settings.

Configured Rear Card Type and Actual Rear Card Type: Select and configure the rear card type to E&M, FXO, or FXS. If the configured type is different from the actual rear card type detected by the system, then *only* change the rear card type setting.

⇒ **NOTE:**
If the configuration file is not present, the default setting for the rear card is FXO.

Operation Mode: The operation mode is PCM, 64Kbps.

Backplane Status: A status that enables the card to communicate with the DACS II AX Backplane.

Configuring the Octal Voice
Rear Card - FXO

Procedure   To configure the *FXO* rear interface card:

1. Physically remove the current rear card (in this case, the E&M interface card) from the DACS II AX chassis and replace it with another (in this case, the FXO interface card).

2. At the Node Summary Menu, place your cursor on Octal Voice and press **<Enter>.** The Voice Card Main Menu displays.

3. Select Configuration.

```
Lucent Technologies      AX - Octal Voice      Slot: 07        Help = [?]




                              Voice Card Main Menu

                                  Configuration
                                  Diagnostics
                                  Utilities
                                  About
```
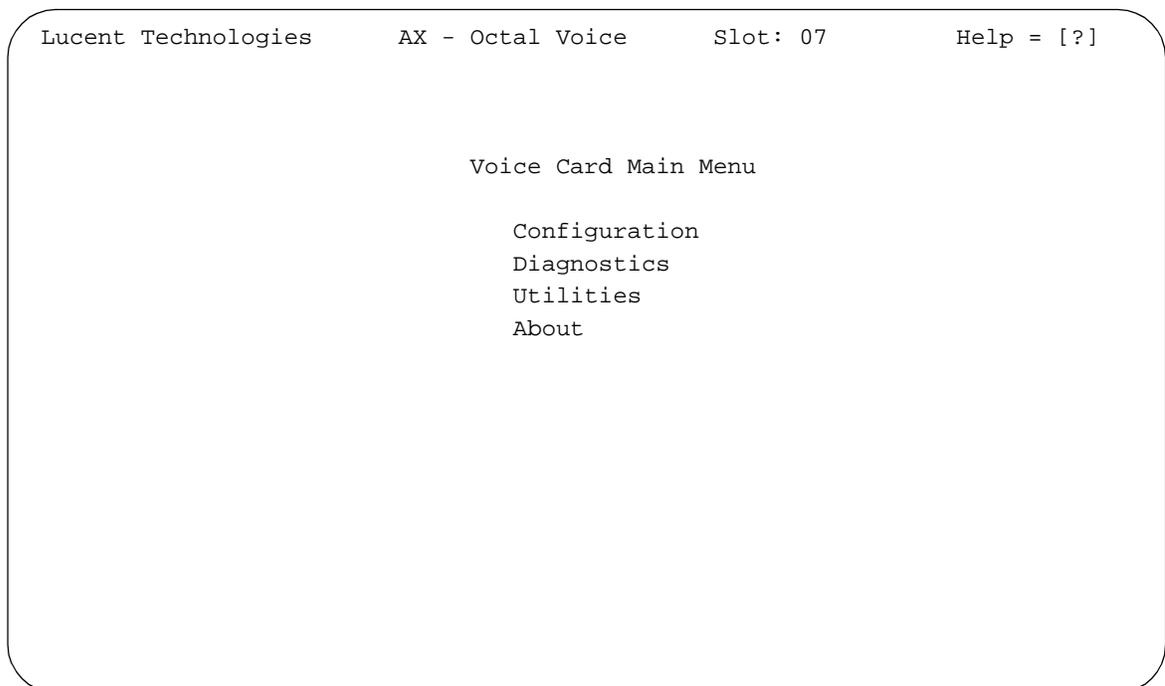
Figure 16-8.   Voice Card Main Menu

Configuring the Octal Voice
Rear Card - FXO (Continued)

**Procedure
(Continued)**   The Voice Card Configuration Menu displays.

```
Lucent Technologies    AX - Octal Voice     Slot: 07          Help = [?]

                    Octal Voice Card Configuration

Port# Name     Port Status     Port Type   Codec Mode  Rx Gain  Tx Gain
-----------------------------------------------------------------------
01    Port01  Out of Service  Loop Start  mu-Law       0 dB     0 dB
02    Port02  Out of Service  Loop Start  mu-Law       0 dB     0 dB
03    Port03  Out of Service  Loop Start  mu-Law       0 dB     0 dB
04    Port04  Out of Service  Loop Start  mu-Law       0 dB     0 dB
05    Port05  Out of Service  Loop Start  mu-Law       0 dB     0 dB
06    Port06  Out of Service  Loop Start  mu-Law       0 dB     0 dB
07    Port07  Out of Service  Loop Start  mu-Law       0 dB     0 dB
08    Port08  Out of Service  Loop Start  mu-Law       0 dB     0 dB


Configured Rear Card Type: Octal Voice FXO/DPT Operation Mode: PCM64Kbps
Actual Rear Card Type....: Invalid     Backplane Status: Off the Bus
```

Figure 16-9.   Voice Card Configuration Menu

4. At the Configured Rear Card Type field press **<Enter>**.

5. Press **<Enter>** again, to scroll through the available options, which are:

   ■ E&M

   ■ FXO (selected)

   ■ FXS

6. Type **X** to save your selection. A screen message appears: "MESSAGE!
   Rear Card Type changed, RESET the card? Are you sure? (Y/N)?" Upon
   selecting **Y**es, another message appears: "ALERT! Please wait while the
   card prepares to reset!   Press any key to continue".

7. Upon pressing any key, the system returns to the Node Summary Menu.
   Place your cursor on Octal Voice and press **<Enter>**.

Configuring the Octal Voice
Rear Card - FXO (Continued)

**Procedure
(Continued)**

> **NOTE:**
> The Octal Voice configuration files are stored on the System Manager Card.
> When an Octal Voice card is replaced, the old configuration is preserved.

Configuring the Octal Voice Module Parameters - FXO

Procedure   To configure the Octal Voice module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a slot that has been configured for Octal Voice.

3. From the Voice Card Main Menu, select Configuration. The Octal Voice Card Configuration Menu displays.

```
Lucent Technologies    AX - Octal Voice      Slot: 07           Help = [?]

                     Octal Voice Card Configuration

Port# Name    Port Status      Port Type    Codec Mode  Rx Gain  Tx Gain
----------------------------------------------------------------------01
Port01 In Service     Loop Start   mu-Law      0 dB     0 dB
02     Port02 Out of Service  Loop Start   mu-Law      0 dB     0 dB
03     Port03 Out of Service  Loop Start   mu-Law      0 dB     0 dB
04     Port04 Out of Service  Loop Start   mu-Law      0 dB     0 dB
05     Port05 Out of Service  Loop Start   mu-Law      0 dB     0 dB
06     Port06 Out of Service  Loop Start   mu-Law      0 dB     0 dB
07     Port07 Out of Service  Loop Start   mu-Law      0 dB     0 dB
08     Port08 Out of Service  Loop Start   mu-Law      0 dB     0 dB


Configured Rear Card Type:Octal Voice FXO/DPT Operation Mode..:PCM64Kbps
Actual Rear Card Type...:Octal Voice FXO/DPT Backplane Status:On the Bus
```

Figure 16-10. FXO Configuration Screen

4. Place your cursor on the port you want to configure and press **<Enter>**. The following submenu appears.

Configuring the Octal Voice Module Parameters - FXO (Continued)

**Procedure
(Continued)**

```
Lucent Technologies    AX - Octal Voice     Slot: 07          Help = [?]

                      Octal Voice Card Configuration
   -------------------------------------------------------------------------


Port# Selected....: 1
Name.............: Port01
Port Status.......: In Service
Port Type........: Loop Start
Codec Mode........: mu-Law
Rx Gain...........:  0 dB
Tx Gain...........:  0 dB





Use Default Settings  = [D]
```

Figure 16-11. FXO Configuration Submenu

Configuring the Octal Voice Module
Parameters - FXO (Continued)

Configuration
Field Descriptions

Port #: The port to be configured.

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 Octal Voice. Some users find it beneficial to use circuit numbers to name the ports.

Port Status: (option field) This field determines the status of the port. The status will either be *"In Service"* or *"Out Of Service"*.

Port Type: (option field) Depending upon the rear card type, the following port types are available under **FXO**:

■ *FXO Rear Card* - the port type setting should be under the software control. Select from Loop Start and Ground Start type port configurations. The default port type setting should be the Loop Start.

Codec Mode: (option field) a coding algorithm. Select mu-law (default) for North American and Japan; A-Law for the rest of the world.

Rx Gain: (option field) adjusts the PCM receive signal gain from -6dB to +8dB.

Tx Gain: (option field) adjusts the PCM transmit signal gain from -6dB to +8dB.

Use Default Settings = [D] : (option field) press **D** to return your selections to the default settings.

Configured Rear Card Type and Actual Rear Card Type: Select and configure the rear card type to E&M, FXO, or FXS. If the configured type is different from the actual rear card type detected by the system, then *only* change the rear card type setting.

$\Longrightarrow$ **NOTE:**
    If the configuration file is not present, the default setting for the rear card is FXO.

Operation Mode: The operation mode is PCM, 64Kbps.

Backplane Status: A status that enables the card to communicate with the DACS II AX Backplane.

Configuring the Octal Voice
Rear Card - FXS

Procedure   To configure the *FXS* rear interface card:

1. Physically remove the current rear card (in this case, the FXO interface card) from the DACS II AX chassis and replace it with another (in this case, the FXS interface card).

2. At the Node Summary Menu, place your cursor on Octal Voice and press **<Enter>.** The Voice Card Main Menu appears.

```
Lucent Technologies      AX – Octal Voice      Slot: 07         Help = [?]



                           Voice Card Main Menu

                              Configuration
                              Diagnostics
                              Utilities
                              About
```
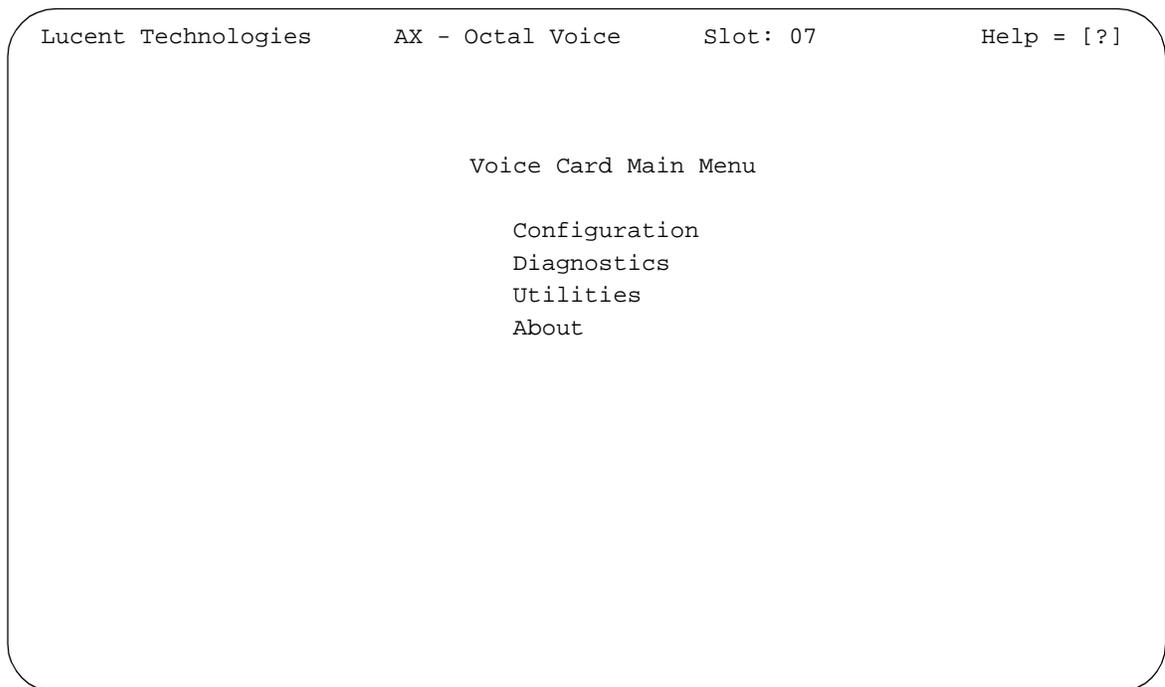
Figure 16-12. Voice Card Main Menu

3. Select Configuration. The Voice Card Configuration Menu displays.

Configuring the Octal Voice
Rear Card - FXS (Continued)

**Procedure
(Continued)**

```
Lucent Technologies    AX - Octal Voice     Slot: 07            Help = [?]

                        Octal Voice Card Configuration

Port# Name     Port Status    Port Type    Codec Mode  Rx Gain  Tx Gain
--------------------------------------------------------------------------01
Port01  In Service    Loop Start   mu-Law      0 dB      0 dB
02     Port02  Out of Service Loop Start   mu-Law      0 dB      0 dB
03     Port03  Out of Service Loop Start   mu-Law      0 dB      0 dB
04     Port04  Out of Service Loop Start   mu-Law      0 dB      0 dB
05     Port05  Out of Service Loop Start   mu-Law      0 dB      0 dB
06     Port06  Out of Service Loop Start   mu-Law      0 dB      0 dB
07     Port07  Out of Service Loop Start   mu-Law      0 dB      0 dB
08     Port08  Out of Service Loop Start   mu-Law      0 dB      0 dB


Configured Rear Card Type:Octal Voice FXS/PLAR Operation Mode:PCM 64Kbps
Actual Rear Card Type....:Invalid      Backplane Status: Off the Bus
```

Figure 16-13. Voice Card Configuration Menu

4. At the Configured Rear Card Type field press **<Enter>**.

5. Press **<Enter>** again, to scroll through the available options, which are:

   ■ E&M

   ■ FXO

   ■ FXS (selected)

6. Type **X** to save your selection. A screen message appears: "MESSAGE! Rear Card Type changed, RESET the card? Are you sure? (Y/N)?" Upon selecting **Y**es, another message appears: "ALERT! Please wait while the card prepares to reset! Press any key to continue".

Configuring the Octal Voice
Rear Card - FXS (Continued)

Procedure
(Continued)

7. Upon pressing any key, the system returns to the Node Summary Menu.
   Place your cursor on Octal Voice and press **<Enter>**.

⇒ **NOTE:**
   The Octal Voice configuration files are stored on the System Manager Card.
   When an Octal Voice card is replaced, the old configuration is preserved.

Configuring the Octal Voice Module Parameters - FXS

Procedure   To configure the Octal Voice module's parameters:

1. From the Main Menu, select Node Summary.

2. Select a slot that has been configured for Octal Voice.

3. From the Voice Card Main Menu, select Configuration. Place your cursor on the Configuration field and press **<Enter>**. The following screen displays.

```
Lucent Technologies    AX - Octal Voice    Slot: 07           Help = [?]

                    Octal Voice Card Configuration

Port# Name    Port Status       Port Type    Codec Mode  Rx Gain  Tx Gain
----------------------------------------------------------------------01
Port01  In Service      Loop Start    mu-Law       0 dB     0 dB
02    Port02  Out of Service   Loop Start    mu-Law       0 dB     0 dB
03    Port03  Out of Service   Loop Start    mu-Law       0 dB     0 dB
04    Port04  Out of Service   Loop Start    mu-Law       0 dB     0 dB
05    Port05  Out of Service   Loop Start    mu-Law       0 dB     0 dB
06    Port06  Out of Service   Loop Start    mu-Law       0 dB     0 dB
07    Port07  Out of Service   Loop Start    mu-Law       0 dB     0 dB
08    Port08  Out of Service   Loop Start    mu-Law       0 dB     0 dB


Configured Rear Card Type:Octal Voice FXS/PLAR Operation Mode:PCM 64Kbps
Actual Rear Card Type:Octal Voice FXS/PLAR  Backplane Status: On the Bus
```

Figure 16-14. FXS Configuration Screen

4. Place your cursor on the port you want to configure and press **<Enter>**. The following submenu displays.

Configuring the Octal Voice Module Parameters - FXS (Continued)

**Procedure
(Continued)**

```
Lucent Technologies     AX - Octal Voice      Slot: 07           Help = [?]

                        Octal Voice Card Configuration
    -------------------------------------------------------------------------
    Port# Selected....: 1
    Name..............: Port01
    Port Status.......: In Service
    Port Type.........: PLAR
    Codec Mode........: mu-Law
    Rx Gain...........:  0 dB
    Tx Gain...........:  0 dB




    Use Default Settings  = [D]
```

Figure 16-15. FXS Configuration Submenu

Configuring the Octal Voice Module
Parameters - FXS (Continued)

**Configuration
Field Descriptions**

Port #: The port to be configured.

Name: (text field) This is a user-defined field. Any name up to 11 characters in length can be entered to identify each port on the Octal Voice. Some users find it beneficial to use circuit numbers to name the ports.

Port Status: (option field) This field determines the status of the port. The status will either be *"In Service"* or *"Out Of Service"*.

Port Type: (option field) Depending upon the rear card type, the following port types are available under **FXS**:

- *FXS Rear Card* - the port type setting should be under the software control. Select from Loop Start, Ground Start, and PLAR type port configurations. The default port type setting should be the Loop Start. If the Rear Card Type is changed from FXS to FXO, all Port Types configured as PLAR should be changed to Loop Start considering FXO does not have a corresponding third port type selection.

Codec Mode: (option field) a coding algorithm. Select mu-law (default) for North American and Japan; A-Law for the rest of the world.

Rx Gain: (option field) adjusts the PCM receive signal gain from -6dB to +8dB.

Tx Gain: (option field) adjusts the PCM transmit signal gain from -6dB to +8dB.

Use Default Settings = [D] : (option field) press **D** to return your selections to the default settings.

Configured Rear Card Type and Actual Rear Card Type: Select and configure the rear card type to E&M, FXO, or FXS. If the configured type is different from the actual rear card type detected by the system, then *only* change the rear card type setting.

⇛ **NOTE:**
   If the configuration file is not present, the default setting for the rear card is FXO.

Operation Mode: The operation mode is PCM.

Backplane Status: A status that enables the card to communicate with the DACS II AX Backplane.

Octal Voice Diagnostics

Overview   The Octal Voice Diagnostics enable you to perform various diagnostics on a
selected port out of eight available ports.

⇒ **NOTE:**
The E&M, FXO, and FXS interface cards have the same diagnostics
functionality.   The following steps are applicable for all three interface
cards.

Procedure   To run Diagnostics on the Octal Voice module:

1.   From the Main Menu, select Node Summary.

2.   Select a slot that has been configured for Octal Voice.

3.   From the Voice Card Main Menu, select Diagnostics. The following screen
displays.

```
Lucent Technologies    AX - Octal Voice     Slot: 07       Help = [?]


                    Octal Voice Card Diagnostics


Port#  Name    Test Type                  Port Status    Run Time
------------------------------------------------------------------------
01     Port01  Normal Operation           In Service     471515
02     Port02  Normal Operation           In Service     471515
03     Port03  Normal Operation           In Service     471515
04     Port04  Normal Operation           In Service     471515
05     Port05  Normal Operation           In Service     471515
06     Port06  Normal Operation           In Service     471515
07     Port07  Normal Operation           In Service     471515
08     Port08  Normal Operation           In Service     471515



Current Backplane Status.................: On the Bus

Clear Run Time    = [R]
Clear All Counters = [A]
```

Figure 16-16. Diagnostics Menu

Octal Voice Diagnostics (Continued)

**Procedure
(Continued)**

4. Place your cursor on a port number and press **<Enter>**. The following
   screen displays.

⇒ **NOTE:**
   Only the ports that are "In Service" are accessible for diagnostics.

```
Lucent Technologies    AX - Octal Voice    Slot: 07         Help = [?]

                       Octal Voice Card Diagnostics


    ------------------------------------------------------------------------
    Port# Selected....: 1
    Name..............: Port01
    Select Test Type..: Normal Operation




    Tone Generator Setup = [S]
```

Figure 16-17. Diagnostics Submenu

Octal Voice Diagnostics (Continued)

Octal Voice Diagnostics Field Descriptions

Port #: The port number selected from the Diagnostics menu.

Name: The name given by the user at the Diagnostics menu.

Test Type: A host of tests can be run on a selected port; however, there should only be one Digital Loopback test active per voice card at a time. When the test type is set to Normal Operation, no other tests can run on that particular port.

To select a *Test Type*, place your cursor on the Test Type field and press **<Enter>** to scroll through the following available options:

- ■ *Normal Operation* - 8 maximum configured tests per card. When the port is set to Normal Operation, no other tests should run on that port. This should be the default setting, at power up, for all ports.

- ■ *Digital Loopback* - 1 configured test on any of the 8 channels. The channel mapping should be done before running this test. The test should be performed on the channel according to the channel mapping. The elapsed time since the test is enabled should be displayed and updated every one second.

- ■ *Analog Loopback* - 8 maximum configured tests per card. The channel mapping should be done before performing this test. The test should be performed on the channel according to the channel mapping. The elapsed time since the test is enabled should be displayed and updated every one second.

- ■ *Backplane Loopback* - 8 maximum configured tests per card. Put the channel in the backplane loopback by forcing the destination time slot to be the same as the source time slot.

- ■ *Backplane Loopback with Tx idle* - 8 maximum configured tests per card.

- ■ *Transmit Idle Pattern* - 8 maximum configured tests per card. There are no extra settings to do this test. However, you must enable the test. The elapsed time since the test is enabled should be displayed and updated every one second.

- ■ *Receive Idle Pattern* - 8 maximum configured tests per card. There are no extra settings to do this test. However, you must enable the test. The elapsed time since the test is enabled should be displayed and updated every one second.

Octal Voice Diagnostics (Continued)

Octal Voice Diagnostics Field Descriptions (Continued)

■ **Tone Generator** - 8 maximum configured tests per card. When you select Tone Generator, this allows an adjustment of the receive gain control from -36dB to -6dB. You can select either DTMF tone or other tones. The DTMF tone frequency ranges from (697 Hz + 1209 Hz) to (941 hz + 1633 Hz). The other tone frequency ranges from (1k, 16 Hz mod) to (2100 Hz, single tone). Select from these tone frequencies during testing. The elapsed time since the test is enabled should be displayed and updated every one second.

⟹ **NOTE:**
To setup or select Tone Generator, place your cursor on the Test Type field and scroll through the options until you reach Tone Generator. Press "S" and the following screen displays.

```
Lucent Technologies    AX - Octal Voice      Slot: 07        Help = [?]

                      Octal Voice Card Diagnostics


  -----------------------------------------------------------------------
  Port# Selected....: 1
  Name..............: Port01
  Select Test Type..: Tone Generator
  Tone Type.........: Other
  Tone Frequency....: 1k/1333 Hz, 16 Hz mod
  Tone Gain.........: -36 dB
```

Figure 16-18. Tone Generator Submenu

Upon entering the Tone Generator setup screen, all of the configurable fields display default values.

Octal Voice Diagnostics (Continued)

Octal Voice Diagnostics Field Descriptions (Continued)

Port Status: (option field) This field determines the status of the port. The status will either be *"In Service"* or *"Out of Service".*

Run Time: Displays a running time of the currently active port.

Current Backplane Status: An On-line/Off-line status that enables the card to communicate with the DACS II AX Backplane.

Clear Run Time: Resets the run time of the currently active port back to zero.

Clear All Counters: Resets the values of all ports back to zero.

Octal Voice Utilities

Before you begin   The E&M, FXO, and FXS interface cards have the same utilities functionality.   The following steps are applicable for all three interface cards.

Procedure   To access the Octal Voice Utilities, follow these steps:

1. From the Main Menu, select Node Summary.

2. Select a slot that has been configured for Octal Voice.

3. From the Voice Card Main Menu, select Utilities. Place your cursor on the Utilities field and press **<Enter>**. The following screen displays.

```
Lucent Technologies    AX - Octal Voice    Slot: 07        Help = [?]



                       Octal Voice Card Utilities


------------------------------------------------------------------------
                       Display Voice Signaling Status
                       Display Backplane Time Slots
                       Link Time Slot Profile Display
                       Monitor Backplane Status
                       Backplane Integrity
                       System Manager Interface
                       Reset Board
```

Figure 16-19. Utilities Menu

Octal Voice Utilities (Continued)

Procedure -
Display Voice
Signaling Status

To access the Display Voice Signaling Status:

1. From the Octal Voice Utilities menu, select *Display Voice Signaling Status*. The following menu displays.

```
Lucent Technologies   AX - Octal Voice      Slot: 07        Help = [?]

                     Display Voice Signaling Status


                         'A' Status              'A' Transitions
 Port#    Port Status    LOC        REM          LOC        REM
 ----------------------------------------------------------------------
 01       In Service     On Hook    On Hook      0          0
 02       In Service     On Hook    On Hook      0          0
 03       In Service     On Hook    On Hook      0          0
 04       In Service     On Hook    On Hook      0          0
 05       In Service     On Hook    On Hook      0          0
 06       In Service     On Hook    On Hook      0          0
 07       In Service     On Hook    On Hook      0          0
 08       In Service     On Hook    On Hook      0          0




 Backplane Status.......: On the Bus
```

Figure 16-20. Display Voice Signalling Status Menu

The Display Voice Signalling Status screen shows the status of the **LOC**al and **REM**ote ends either *on hook* or *off hook.*   The status should be displayed and refreshed in one second intervals.

To reset the on/off hook transition counts press **R**.

Octal Voice Utilities (Continued)

**Procedure -
Display Backplane
Time Slots**

To access the Display Backplane Time Slots:

    1.   From the Octal Voice Utilities menu, select *Display Backplane Time Slots*. The following menu displays.

```
Lucent Technologies   AX - Octal Voice     Slot: 07        Help = [?]

                       Display Backplane Time Slots

 Port#    To Bkpl TS   From Bkpl TS   DEN Status   DEN Verify   CEN Status
 ------------------------------------------------------------------------
 01       00000        00000          Disabled     Disabled     Disabled
 02       00000        00000          Disabled     Disabled     Disabled
 03       00000        00000          Disabled     Disabled     Disabled
 04       00000        00000          Disabled     Disabled     Disabled
 05       00000        00000          Disabled     Disabled     Disabled
 06       00000        00000          Disabled     Disabled     Disabled
 07       00000        00000          Disabled     Disabled     Disabled
 08       00000        00000          Disabled     Disabled     Disabled
```

Figure 16-21. Display Backplane Time Slots Menu

The Display Backplane Time Slots information for all eight voice ports are displayed.

Octal Voice Utilities (Continued)

Display Backplane Time Slots Field Descriptions

Port #: The port number selected.

To Bkpl TS: Each port requires a single timeslot to communicate with the SMC. The number that appears in the *To Bkpl TS* column displays the actual timeslot if a connection was made. If a connection was not made then the timeslot will display all zeroes.

From Bkpl TS: Each port requires a single timeslot to communicate to the SMC. The number that appears in the *From Bkpl TS* column displays the actual timeslot if a connection was made. If a connection was not made then the timeslot will display all zeroes.

DEN Status: Data Enable Status

DEN Verify: Data Enable Verification

CEN Status: Control Enable Status

Octal Voice Utilities (Continued)

Procedure - Access the Link Time Slot Profile Display

To access the Link Time Slot Profile Display:

1. From the Octal Voice Utilities menu, select *Link Time Slot Profile Display.*
   The following menu appears.

```
Lucent Technologies    AX - Octal Voice      Slot: 07        Help = [?]

                        Link Timeslot Profile Manager
                           To      From
 Link Ts ConnectionType     LinkBts  LinkBts  Bus   Voice    TestId
 ----------------------------------------------------------------------
Number of Active Connections........: 0












Next Page = [N]
```

Figure 16-22. Link Time Slot Profile Manager Menu

This menu displays the number of active connections on the link. Press **N** to view additional connections.

Octal Voice Utilities (Continued)

Procedure -
Monitor
Backplane Status

To access the Monitor Backplane Status:

1. From the Octal Voice Utilities menu, select *Monitor Backplane Status*. The
    following menu displays.

```
Lucent Technologies     AX - Octal Voice    Slot: 07         Help = [?]



                      Monitor Backplane Status
Description                                          Transitions
---------------------------------------------------------------------
Current Backplane Status.................: On the Bus

Card Service Status......................: In Service
System Ready To Go In Service............: Yes              1
System Clock Status......................: Present          0
Frame SYNC Signal Status.................: Present          0
Too Many Backplane Time Slots ON.........: No               0
Receive TSFM Map.........................: Yes              2
Hardware Access to Memory................: No



Card In Service = [I]
Card Out Of Service = [O]
Reset Counters = [R]
```

Figure 16-23. Monitor Backplane Status Screen

Octal Voice Utilities (Continued)

**Monitor
Backplane Status
Field Descriptions**

Current Backplane Status: On-line/Off-line status that enables the card to communicate with the DACS II AX Backplane.

Card Service Status: Shows the status of the board.

System Ready To Go In Service: Shows whether the card is good or bad.

System Clock Status: A watchdog timer that monitors the integrity of the backplane clock. This clock is critical to backplane operation.

Frame SYNC Signal Status: A watchdog timer that monitors the integrity of the sync signal that coordinates data flow on the backplane. Critical to backplane operation.

NOTE: **Watch Dog Timer must be ON.**
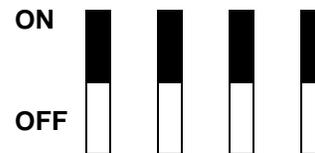
ON

OFF

Too Many Backplane Time Slots ON: A watchdog timer that monitors access to the backplane by this card. Protects the system from a faulty card corrupting data on the backplane.

Receive TSFM Map: Signals the hardware when to use the backplane.

Hardware Access to Memory: A way for the software to disable the memory for testing purposes.

The following hot keys invoke additional screens and/or functions:

- Card In Service = **[I]**
- Card Out Of Service = **[O]**
- Reset Counters = **[R]**

Octal Voice Utilities (Continued)

Procedure -
Monitor
Backplane
Integrity

To access the Monitor Backplane Integrity:

1. From the Octal Voice Utilities menu, select *Monitor Backplane Integrity*.
    The following menu displays.

```
Lucent Technologies    AX - Octal Voice    Slot: 07        Help = [?]

                       Monitor Backplane Integrity

          Slot #         Slot #    Pattern      Pattern       Status
   Slot#  Address        Received  Address      Received (Ignore for QHS)
   --------------------------------------------------------------------------
   01     0x00202807     01        0x00202808   07          ... OK ...
   02     0x00202809     02        0x0020280A   0A          ... OK ...
   03     0x0020280B     03        0x0020280C   0E          ... OK ...
   04     0x0020280D     04        0x0020280E   09          ... OK ...
   05     0x0020280F     08        0x00202810   08
   06     0x00202811     08        0x00202812   08
   07     0x00202813     08        0x00202814   08
   08     0x00202815     08        0x00202816   08          ... OK ...
   09     0x00202817     08        0x00202818   08
   10     0x00202819     08        0x0020281A   08
   11     0x0020281B     08        0x0020281C   08
```

Figure 16-24. Monitor Backplane Integrity Screen

This screen displays the backplane integrity of all slots to indicate if the card is on
the buss or not.

Octal Voice Utilities (Continued)

Procedure - Access System Manager Interface Status

To access the System Manager Interface Status:

1. From the Octal Voice Utilities menu, select *System Manager Interface Status*. The following menu displays.

```
Lucent Technologies     AX - Octal Voice    Slot: 07        Help = [?]



                       System Manager Interface Status


---------------------------------------------------------------------------
                  Configuration Map sequence number.......: 16
                  Downloaded Config Map sequence number...: 16
                  Configuration Map Checksum..............: 0
                  Configuration Map Byte Count............: 0
                  Number of Configuration Map changes.....: 4
                  Number of Configuration Maps downloads..: 2
                  System Manager Level Identifier.........: 600
                  System Manager Id.......................: 160
                  System Files sequence number............: 1
```

Figure 16-25. System Manager Interface Status Screen

This screen allows you to view System Manager Interface Statistics, such as map checksum or byte count.

Octal Voice Utilities (Continued)

Procedure - Reset Board

To access Reset Board:

1. From the Octal Voice Card Utilities menu, select Reset Board. The following menu displays.

```
Lucent Technologies    AX - Octal Voice    Slot: 07        Help = [?]


                     Octal Voice Card Utilities

  --------------------------------------------------------------------
                   ***********************************
                   *                                 *
                   *            -MESSAGE!-            *
                   *                                 *
                   *                                 *
                   *    Reset This Octal Voice Card? *
                   *                                 *
                   *                                 *
                   *        Are you sure (Y/N)?      *
                   *                                 *
                   ***********************************
```

Figure 16-26. Reset Board Screen

Reset Board causes the card to initialize in the same manner as power up. During this boot up cycle, no user data will flow. Since the configuration resides on the SMC, connections will be restored.

2. A new message appears: "Reset This Octal Voice Card? Are you sure (Y/N)?" Press **Y** to reset, or **N** if you do not want to reset the device.

Octal Voice About Menu

**The E&M, FXO, and FXS interface cards have similar identification informa-
tion. The only difference is the Rear Card Type field displays the current
installed interface card.**

Procedure   To display identification information for the Octal Voice module:

1.   From the Main Menu, select Node Summary.

2.   Select a slot that has been configured for Octal Voice.

3.   From the Voice Card Main Menu, select About. Place your cursor on the
     About field and press **<Enter>**. The following screen displays.

```
Lucent Technologies     AX - Octal Voice     Slot: 07          Help = [?]



                            Octal Voice Card About


-------------------------------------------------------------------------
Software Version.........: Voice 1.00
Software Release Date....: January 26, 1999
Software Checksum........: EE62
Front Xilinx Version.....: voice133
E&M Xilinx Version.......: EM133
FXO-FXS Xilinx Version...: TW1_9
Front Card Type..........: Octal Voice
Front Card Revision......: 0
Rear Card Type...........: Octal Voice E&M
Rear Card Revision.......: 0
```

Figure 16-27. Sample About Menu

Octal Voice About Menu (Continued)

**About Field
Descriptions**

Version: This is the software version current in the Octal Voice's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the Octal Voice card'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.

Octal High Speed Data Module

17

Contents

Contents (Continued)

Contents (Continued)

Octal High Speed Data Module
Overview

Description

The Octal High Speed Data Module has 8 high-speed links supporting synchronous data rates from 48 kbps to 1.920 Mbps. It offers:

- Digital transmission rates of N x 56k bps and N x 64 kbps, up to 2.048 Mbps

- Software configurable interface supports EIA-232, EIA-422, EIA-530, EIA-530A, EIA-449/422, ITU-V.35 or ITU-X.21/27 electrical interfaces

- Bidirectional integral loops and BERTs on all ports

- Independent in/out of service

- Internal and external timing modes

Octal High Speed Data Module
Overview (Continued)

**Physical
Description**

Figure 17-1 shows the front view of the Octal High Speed Data application module and the rear interface.

*Octal HSD
Module*

*Octal HSD
Module*

1	STATUS ●	
	TEST ●	
2	STATUS ●	
	TEST ●	
3	STATUS ●	
	TEST ●	
4	STATUS ●	
	TEST ●	
5	STATUS ●	
	TEST ●	
6	STATUS ●	
	TEST ●	
7	STATUS ●	
	TEST ●	
8	STATUS ●	
	TEST ●	

READY ●

*Application Module   Interface Module
(front view)   (rear view)*
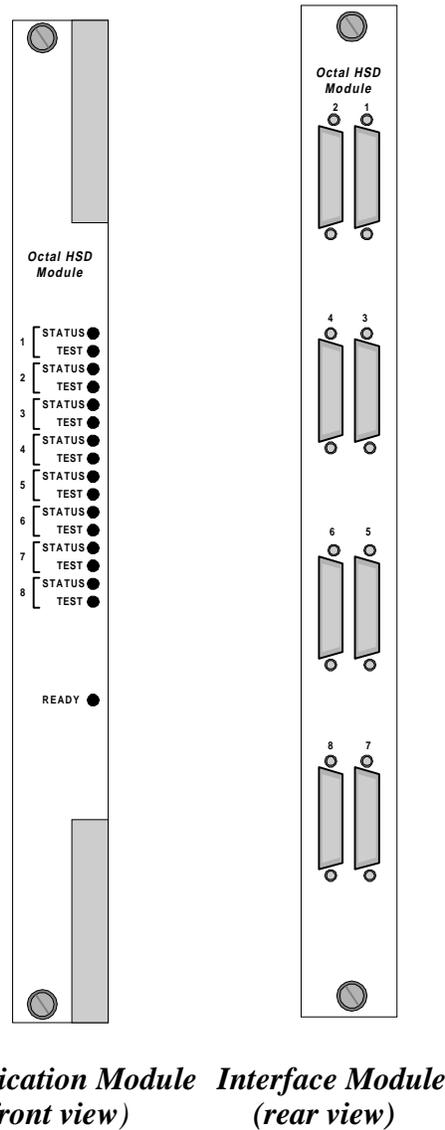
Figure 17-1.   Octal High Speed Data Module

Octal High Speed Data Module
Overview (Continued)

LEDs and Indicators

There are eight sets of LEDs, one set for each port, and a READY LED.

For	Indicator	Color	Meaning
Ports 1 -8	STATUS	Green	Port in-service. There are no errors.
		Red	Indicates that this port has an error of one or more of the following: TX FIFO overflow/underflow, RX FIFO overflow/underflow, RX CLK wrong edge of incoming clock is being used.
		Off	Port is out-of-service or the port is in-service but there is no connection.
	TEST	Solid Yellow	A loopback or BERT is active. There are no errors.
		Flashing Yellow	There is a BERT error.
Module	READY	Solid Green	Card in-service and operational.
		Flashing Green	Card is waiting for configuration information from the SMC.
		Red	Indicates that the module has lost communications with the SMC.

Port Timing

Description   There are three synchronous timing mode options: Internal, External, and
Internal/External. In addition, an option to invert the clock signal, regardless of
selected timing mode, can facilitate installations and troubleshooting efforts.
Furthermore, if an external clock source is utilized on any OHSD port, that port-
level timing can be selected to be the DACS II AX system-wide reference.

Internal Timing   When the Internal timing mode is selected, the OHSD module provides the DTE
Mode   with both the transmit and receive timing information necessary to clock the data
in and out at both ends. The only timing reference for this application comes from
the DACS II AX system level timing, which is managed by the SMC.

**Figure 17-2.   Internal Timing mode clock and data relationship for a typical
DTE application**

Port Timing (Continued)

External Timing Mode

When the External timing mode is selected, the DTE provides the OHSD with the terminal timing information necessary to clock both the transmit and receive data at both ends. The only timing reference for this application is derived from the CPE source and is independent of the SMC source unless this port has been selected as a timing reference. However, because the OHSD can only accommodate synchronous data, the CPE and SMC clocks must be frequency-locked by some external means (e.g., another port or a station clock connection).
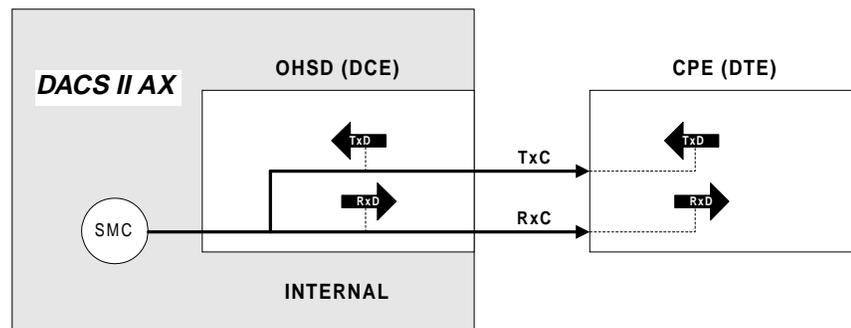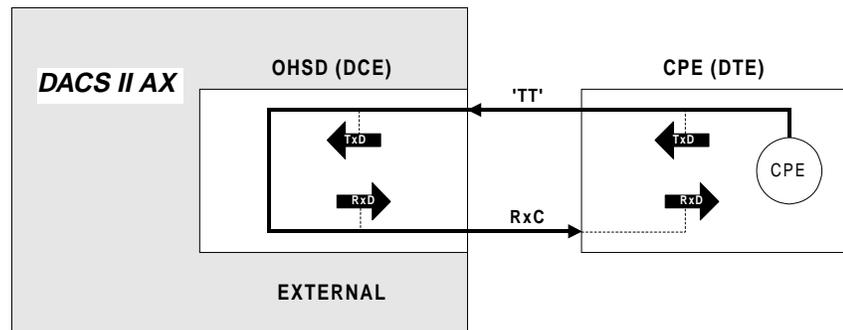

Figure 17-3. **External Timing mode clock and data relationship for a typical DTE application**

Port Timing (Continued)

Internal/External Timing Mode   When the Internal/External timing mode is selected, the OHSD provides the DTE with receive timing information necessary to clock the receive data to the DTE and accepts a clock for transmit data to the OHSD. Since there are separate timing sources for this application, both the SMC and CPE sources need to be referenced back to the same clock (e.g., Stratum-level reference) or slips will occur.
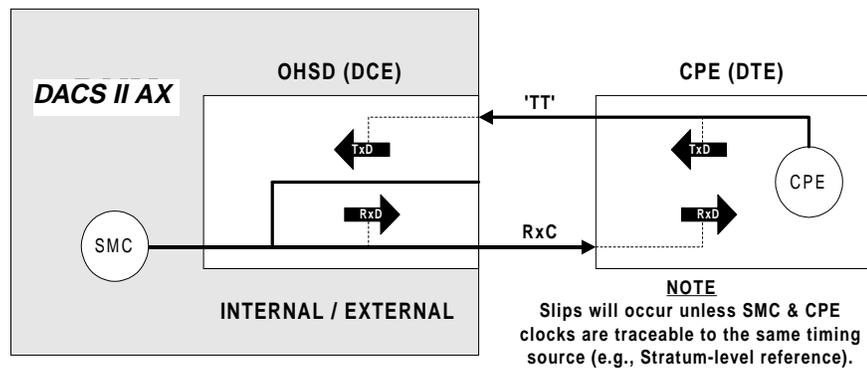

Figure 17-4.   Internal/External Timing mode clock and data relationship for a typical DTE application

Software-Selectable Interfaces

Supported Electrical Interfaces

The Octal High Speed Data module allows the DACS II AX to connect up to eight synchronous DCE ports, each of which can be configured from the console.

Table 17-1.   Interfaces and Signals for Octal High Speed Data Module

ITU/EIA Signal Description	Octal HSD		EIA232	EIA 530	EIA 530A	EIA449 /422	ITU V.35	ITU X.21/27
Chassis Ground	1	•	1	1	1	1	A	1
CTS (B)	2	→	---	13	13	27	---	12
RTS (B)	3	←	---	19	19	25	---	10
RTS (A)	4	←	4	4	4	7	C	3
CTS (A)	5	→	5	5	5	9	D	5
DSR (A)	6	→	6	6	6	11	E	---
Signal Ground	7	•	7	7	7	19	B	8
DCD (A)	8	→	8	8	8	13	F	---
Tx Data (A)	9	←	2	2	2	4	P	2
Tx Data (B)	10	←	---	14	14	22	S	9
Rx Data (A)	11	→	3	3	3	6	R	4
Rx Data (B)	12	→	---	16	16	24	T	11
Ext Tx Clock (A)	13	←	24	24	24	17	U	---
DSR (B)	14	→	---	22	---	29	---	---
DTR (B)	15	←	---	23	---	30	---	---
DCD (B)	16	→	---	10	10	31	---	---
--- --- ---	17	---	---	---	---	---	---	---
--- --- ---	18	---	---	---	---	---	---	---
--- --- ---	19	---	---	---	---	---	---	---
DTR (A)	20	←	20	20	20	12	H	---
Signal Ground	21	•	---	---	23	20	---	---
Tx Clock (A)	22	→	15	15	15	5	Y	6
Tx Clock (B)	23	→	---	12	12	23	AA	13
Rx Clock (A)	24	→	17	17	17	8	V	---
Rx Clock (B)	25	→	---	9	9	26	X	---
Ext Tx Clock (B)	26	←	---	11	11	35	W	---

Data Rates

Supported Data Rates

The OHSD module supports digital transmission rates from 48 Kbps up to 2.048 Mbps (see data rates in table below). Each port has three programmable timing options identical to the existing Quad High-Speed (QHS) module (i.e., internal, external, and internal/external).

Based on the chart below, the **N** multiple represents the number of DS0s or time slots allocated for a given circuit with the maximum per port value supported being 32. This figure will ultimately be limited by the type of facility utilized.

N	Nx56kbps	Nx64kbps	N	Nx56kbps	Nx64kbps
1	56	64	17	952	1088
2	112	128	18	1008	1152
3	168	192	19	1064	1216
4	224	256	20	1120	1280
5	280	320	21	1176	**1344**
6	336	384	22	1232	1408
7	392	**448**	23	1288	1472
8	**448**	512	24	**1344**	1536
9	504	576	25	1400	1600
10	560	640	26	1456	1664
11	616	704	27	1512	1728
12	672	768	28	1568	**1792**
13	728	832	29	1624	1856
14	784	**896**	30	1680	1920
15	840	960	31	1736	1984
16	**896**	1024	32	**1792**	2048

Data rates displayed in bold face are common multiples.
Data rates of 48Kbps are also supported.

Diagnostics

Description   Additionally, the design can check for V.54 loop-up/loop-down codes from the backplane and generate V.54 codes to the backplane. The rear card provides 2047, All-ones and All-zeros pattern generation and checking per port. This configuration provides flexibility in testing the link and the path through the front card, or both.

Local Loopback   The local loopback is performed bi-directionally as close to the DTE interface module as practical. Once such a loopback is initiated, via the SMC, it will stay in place until it is commanded to terminate this loop and restore user traffic flow. This loopback can be utilized to confirm faults and isolate the source of a problem using BERTs.
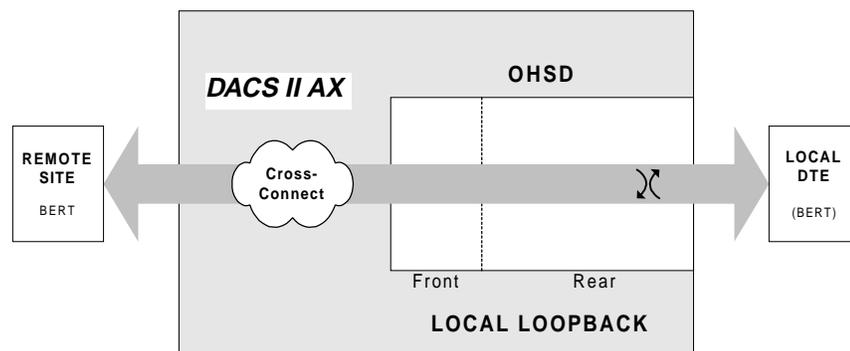

Figure 17-**5.   External testing using a Local Loopback**

Diagnostics (Continued)

V.54 Loopback   Once the appropriate loop-up procedures are completed, you can perform testing
and issue the remote necessary loop down pattern and perform a test. Due to the
bi-directional nature of the resultant loopback, BERT testing can be performed
from the local DTE as well; however, only the remote site can issue the loop-down
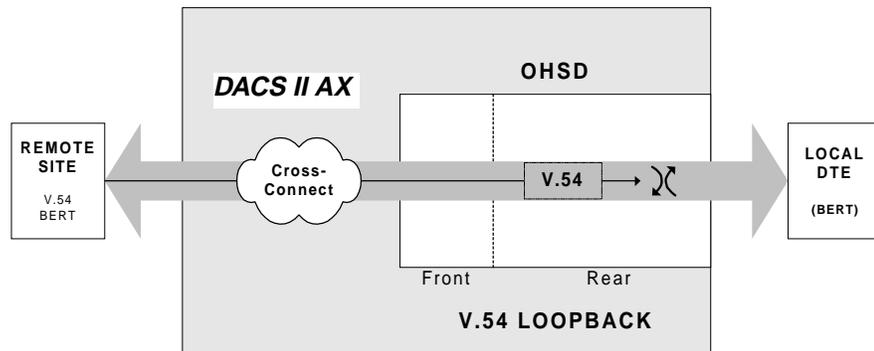codes.

Figure 17-6.   External testing using a V.54 Loopback

Remote Loopback   An OHSD V.54 pattern generator is provided to loop traffic at the remote site
(away from the local DTE). Once the remote loopback is established, the on-
board BERT is available to troubleshoot the circuit, if desired.
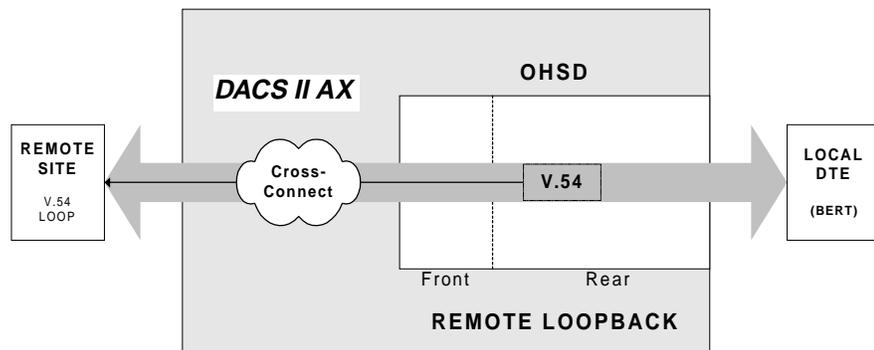
Figure 17-7.   External testing using a Remote Loopback

Diagnostics (Continued)

Backplane Loopback

A Backplane Loopback is a useful diagnostic to fully test the operation of the port integrity of the OHSD module as a whole.
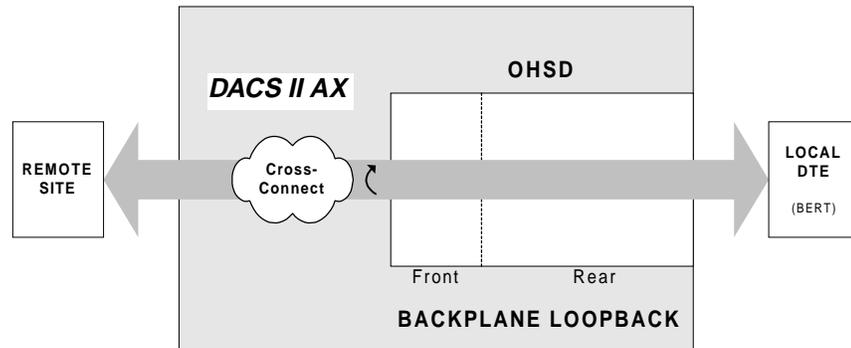
Figure 17-8.   External testing using a Backplane Loopback

BERT Tests

Independent BERTs provide support to circuit-level diagnostics. Each BERT will simultaneously support bi-directional analysis using operator selectable "All Ones," "All Zeros," and a "pseudorandom 2047" pattern. Bit errors may be inserted to confirm the establishment of loopbacks.
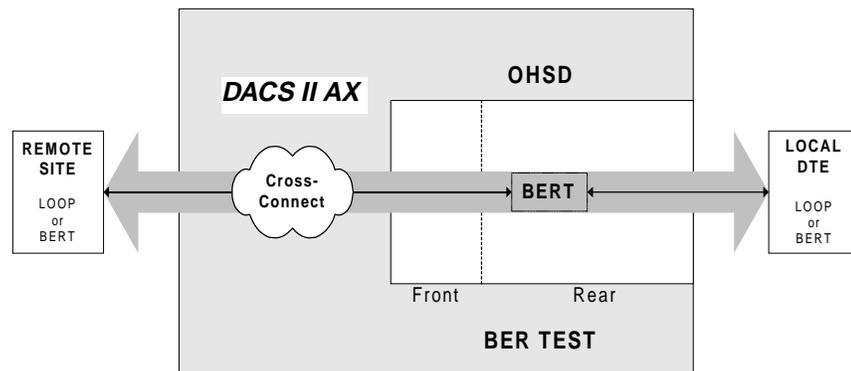
Figure 17-9.   External testing using a Bit Error Rate Test

Before You Begin

**Displaying the
OHSD Menus**

In order to display the Octal High Speed Data (OHSD) module menus, the
following must be done:

■ The OHSD card must be in a slot in the equipment chassis

■ Slot must be configured for module type: Octal High Speed

The Node Summary Menu should display *Octal High Speed* for the **Configured
Type** and **Actual Type** and the **Status** must display *OK*. See the entry for Slot #8
in Figure 17-10.

```
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)    DS-3              DS-3               OK
04)    Quad High Speed   Quad High Speed    OK
05)    Quad OCU          Quad OCU           OK
06)    Octal T1/E1       Octal T1/E1        OK*
07)    Octal Voice       Octal Voice        OK
08)    Octal High Speed  Octal High Speed   OK
09)    Test Access       Test Access        OK
10)    ----              ----               Not Present
11)    ----              ----               Not Present
SMCA)  System Manager                       On Line
SMCB)  System Manager                       Not Present



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

Figure 17-10. Node Summary Menu

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

Before You Begin (Continued)

Octal High Speed Data Main Menu

To access the OHSD Main Menu, from the Node Summary menu, move the cursor to the slot that contains an OHSD card and press **<Enter>**. From the OHSD Main Menu you can configure the module, run diagnostic tests, access utilities, and display module identification (software revision levels).

```
Lucent Technologies  DACS II AX - Octal High Speed  Slot:08  Help = [?]




                              Main Menu
                              -----------
                           Configuration
                           Diagnostics
                           Utilities
                           About
```

Figure 17-11. Octal High Speed Data Module Main Menu

Security Level

The procedures included in this chapter can be performed by a user with an Administration security level. For information on adding users and assigning security levels, refer to Chapter 3.

Configuring Ports on the Octal High Speed Data Module

Procedure   To configure the ports on the Octal High Speed Data module:

1. From the Octal High Speed main menu, select *Configuration*.

    The Configuration Menu displays (Figure 17-12).

```
Lucent Technologies  DACS II AX - Octal High Speed   Slot:08  Help = [?]



                        Ports Configuration
                        --------------------


   Name      Type Rate xN  Timing  Data   Clock  DSR  CTS/I DCD V54 Loop
----------  ---- -------  ------  -----  ------ ---- ----- --- -------
1 Port Name 232  NoConn   Int     Normal Normal F-On F-Off F-On Enable
2 Port Name 232  NoConn   Int/Ext Normal Normal F-On F-Off F-On Disable
3 Port Name 232  NoConn   Int     Normal Normal F-On F-Off F-On Disable
4 Port Name  Out Of Service
5 Port Name  Out Of Service
6 Port Name  Out Of Service
7 Port Name  Out Of Service
8 Port Name  Out Of Service
```

Figure 17-12. Octal High Speed Ports Configuration Menu

2. Place the cursor on any port # and press **<Enter>**.

Configuring Ports on the Octal High Speed Data Module (Continued)

The following submenu appears:.

```
Lucent Technologies  DACS II AX - Octal High Speed   Slot:08  Help = [?]



                         Port Configuration
                         -------------------


              Port Number.........: 1
              Name................: Port Name
              Status..............: In Service
              Type................: EIA-232
              Timing..............: Int
              Data................: Normal
              Clock...............: Normal
              DCD (N/A For X.21)..: Force On
              DSR (N/A For X.21)..: Force On
              CTS/Indication......: Force Off
              V.54 Network Loop...: Enable
```

Figure 17-13. Octal High Speed Port Configuration Submenu

3. To establish a port name press **<Enter>**. Use the arrow keys to move up or down; press **<Enter>** to scroll through the available options.

4. Configure all parameters for each port. For details on the parameters, refer to the following page.

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

6. When prompted: *Update Configuration? Are you sure (Y/N)?*
   Type **Y**(es) to save your changes or press **N**(o) to cancel screen.

Configuring Ports on the Octal High Speed Data Module (Continued)

Fields

Port #: The port to be configured.

Name: *(text field)* This is a user-defined field. Any name up to 20 alphanumeric characters in length can be entered to identify each port on the OHSD module. Some users find it beneficial to use circuit numbers to name the ports.

Port Status: *(option field)* This field determines the status of the port. The status will either be *In Service, Out Of Service,* or *NoConn* (no connection). If there is no connection on the port you will need to define a map. Refer to Chapter 4 for specifics on configuring a map connection.

Port Type: *(option field)* EIA-232, EIA-422, ITU-X.21, EIA-530, EIA-530A, or ITU-V.35.

Timing: *(option field)* This field determines the timing of the port. The option will either be *Internal*, *External* or *Internal/External*.

Data: *(option field)* This field determines the data polarity of the port. The option will either be *Normal* or *Invert*.

Clock: *(option field)* The option will either be *Normal* or *Invert*.

DCD: *(option field)* The option will either be *Force On, Track RTS* or *Force Off*.

DSR: *(option field)* The option will either be *Force On*, *Track DTR* or *Force Off*.

CTS: *(option field)* The option will either be *Force Off, Force On* or *Track RTS*.

Network Loop: *(option field)* Enables the port to respond to V.54 loop codes. The option will either be *Disable* or *Enable*.

Diagnostics Menu

Description   The Diagnostic Menu for the Octal High Speed Data module (Figure 17-14) has three options:

- *Port Diagnostics Center* provides access to the individual ports so that you can perform port-level diagnostics. This option provides access to loop selections, BERT patterns, and error counters.

- *Backplane Check* is a diagnostic tool for the manufacturer.

- *System Status* is a debugging tool for Lucent Technologies technical support personnel. It is not recommended for general use.

```
Lucent Technologies  DACS II AX - Octal High Speed  Slot:08   Help = [?]



                           Diagnostic Menu

                           ----------------


                           Port Diagnostics Center
                           Backplane Check
                           System Status
```

Figure 17-14. Octal High Speed Data Module Diagnostic Menu

Octal High Speed Data Module Diagnostics

Procedure   To perform diagnostics on the Octal High Speed Data module:

1.   From the OHSD Main Menu, select *Diagnostics*.

2.   Select *Port Diagnostics Center*. The following submenu appears:.

```
Lucent Technologies  DACS II AX - Octal High Speed   Slot:08  Help = [?]



                         Diagnostics Manager
                         -------------------
                    Local Remote Bkpln       Test      Local    Remote
Port Name   State   Loop  Loop   Loop  Bert  Duration  Errors   Errors
---------   ------  ----- ------ ----- ----- --------  -------  -------
123         TxFifoE On    On     On    Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0
Port Name   Inactive Off  Off    Off   Off   0         0        0




[B]ert   [L]oop  [E]xpose  [C]lear Error Counters [I]nsert Error
```

Figure 17-15. OHSD Diagnostics Manager Menu

Octal High Speed Data Module
Diagnostics (Continued)

Procedure
(Continued)

From the Diagnostics Manager Menu, you can perform any of these actions:

Type	Purpose
B	To turn a BERT pattern on or off for a selected port.
L	To select a loop or turn off a loop for a selected port.
E	To display port status or clear error counters for a selected port.
C	To clear all error counters for all ports on the OHSD module.
I	To insert an error into the bit stream for a selected port.

[B]ert

Overview   This action allows you to select a BERT pattern to use on a port. It also allows
you to turn off a BERT pattern.

Procedure - Turn   To select a BERT pattern:
On BERT pattern

1.   Place your cursor on an active port in the *Diagnostic Manager* menu and
press **B** to select [**B**]ert. The following submenu appears:.

```
Lucent Technologies DACS II AX - Octal High Speed  Slot:08  Help = [?]


                              BERT Select

                             ------------

                   Port Number..: 1
                   Port Name....: 123
                   Current BERT.: All ones
                   New BERT.....: All ones


Available Bit Error Tests (BERTs)
-------------------------------
[O]ff
[1] All-Ones (0xFF)
[2] 2047
[0] All- Zeros (0x00)
```

Figure 17-16. BERT Select Submenu

The Bert Select screen has a list of several test patterns.

[B]ert

Procedure - **Turn On BERT Pattern (Continued)**

2. Place the cursor on the *New BERT* field and press **<Enter>**. The following options appear: *Off, 2047, All ones, or All zeros*. These options can be set by either pressing **<Enter>** or by pressing the individual numeric keys (**1**, **2**, **0**).

3. Press **X** to save.

4. When prompted, *Start New Test? Are you sure (Y/N)?* type **Y** to start a new test, or **N** to cancel.

Procedure - **Turn Off BERT Pattern**

To turn off the BERT pattern:

1. Press **B**(ert) and the Bert Select menu appears.

2. Press the letter **O** to turn the test *OFF*.

3. Press **X** to save.

    The message, *"Stop Bit Error Test? Are you sure (Y/N)?"* appears.

4. Press **Y** and the Bert test ends.

[L]oop

Overview   This action allows you to turn on or off a local loop, a remote V.54 loop, or a
                      backplane loop.

> **NOTE:**
> If you do not have an active map configured, a "no connection" error
> message will appear on the screen. To establish a map connection, refer to
> Chapter 4 of this manual for specific instructions.

Procedure   To turn on or off a loop:

1.   Place your cursor on an active port in the *Diagnostic Manager* menu and
     press **L** to select [**L**]oop. The Loop Select Screen (Figure 17-17) appears.

```
Lucent Technologies  DACS II AX - Octal High Speed  Slot:08   Help = [?]




                              Port: 1


                        Loop Select Screen
                        ------------------
                         Local.........: On
                         Remote(V.54)..: On
                         Backplane Loop: On







Loop Type: [L]ocal   Local [O]ff    V.54_[R]emote    V.54_Remote O[f]f
[B]ackplane Loop On      B[a]ckplane Loop Off
```

Figure 17-17. Loop Select Screen

[L]oop (Continued)

Procedure
(Continued)

2. Choose one of these actions:

Type	Purpose
L	To turn on a local loop.
O	To turn off a local loop.
R	To turn on a Remote V.54 loop.
F	to turn off a Remote V.54 loop.
B	To turn on a backplane loop. (This loopback will only occur if there is an existing backplane connection.)
A	To turn off a backplane loop.

3. Press **X** to save and return to the *Diagnostics Manager* menu.

[E]xpose

Overview   This action allows you to see real-time or current status information for a port. Select this action to display port status information, clear errored seconds counter for a port, or insert an error on a port.

Procedure   To display an individual port's status:

1. Place your cursor on an active port in the *Diagnostic Manager* menu and press **E** to select [**E**]xpose. The Port Status Screen (Figure 17-18) appears.

```
Lucent Technologies DACS II AX - Octal High Speed   Slot:08   Help = [?]


                            Port Status
                            -------------
Port#: 1    Name: Port Name                   Type: EIA-232
                                    State   Errored Seconds
CTS..: Off              RX FIFO....:  OK         1
RTS..: Off              TX FIFO....:  OK         1
DCD..: Force On         CLOCK EDGE.:  OK         0
DSR..: Force On         Total......:            1
DTR..: Off






[C]lear Counters [I]nsert Error
```

Figure 17-18. Port Status Screen

[E]xpose (Continued)

**Procedure
(Continued)**
Once the *Port Status* menu appears, errored seconds are automatically recorded. An error-free port will display zeros in all fields.

2. To clear all errored seconds and BERT indicators, press [**C**]. The errored seconds column will reset to zero. The counter will automatically start again, recording the errors in 5 second intervals.

3. To insert an error, press [**I**]. Continuously select [**I**]nsert Error and the counter will record the errors in a 1 second interval.

4. Press **X** to return to the *Diagnostics* menu.

Monitor Backplane Integrity

Overview   This screen is intended as a diagnostic tool for Lucent Technologies.

Procedure   To monitor the integrity of the backplane on the OHSD module:

1.   From the Octal High Speed Main Menu, select *Diagnostics*.

2.   From the Diagnostics menu, select *Backplane Check*. The Monitor
      Backplane Integrity menu displays (Figure 17-19)

```
Lucent Technologies  DACS II AX - Octal High Speed  Slot:08   Help = [?]


                      Monitor Backplane Integrity


       Slot #      Slot #      Pattern      Pattern       Status
Slot#  Address     Received    Address      Received   (Ignore for QHS)
----------------------------------------------------------------------
-
01     0x00E02807  01          0x00E02808   01              ... OK ...
02     0x00E02809  01          0x00E0280A   01
03     0x00E0280B  03          0x00E0280C   07              ... OK ...
04     0x00E0280D  07          0x00E0280E   07
05     0x00E0280F  07          0x00E02810   07
06     0x00E02811  07          0x00E02812   07
07     0x00E02813  07          0x00E02814   07              ... OK ...
08     0x00E02815  07          0x00E02816   07
09     0x00E02817  07          0x00E02818   07
10     0x00E02819  07          0x00E0281A   07
11     0x00E0281B  07          0x00E0281C   07
```

Figure 17-19. Monitor Backplane Integrity Menu

Monitor Backplane Status

⚠️ **WARNING:**
> *It is strongly suggested that you do not change the settings on this screen, unless you are prompted to do so by Lucent Technologies Technical Support.*

Procedure

To check the DACS II AX backplane status:

1. From the Octal High Speed Main Menu, select *Diagnostics*. From the Diagnostics menu, select *System Status*. The Monitor Backplane Status Menu appears (Figure 17-20).

```
Lucent Technologies   DACS II AX – Octal High Speed  Slot:08  Help = [?]



                      Monitor Backplane Status
Description                                        Transitions
------------------------------------------------------------------------
-
Current Backplane Status..............: On the Bus


Card Service Status...................: In Service
System Ready To Go In Service.........: Yes         1
System Clock Status...................: Present     0
Frame SYNC Signal Status..............: Present     0
Too Many Backplane Time Slots ON......: No          0
Receive TSFM Map......................: Yes         1
Hardware Access to Memory.............: Enable


Card In Service = [I]
Card Out Of Service = [O]
Reset Counters = [R]
```

Figure 17-20. Monitor Backplane Status Menu (Default Settings Shown)

Monitor Backplane Status (Continued)

⚠️ **WARNING:**
Do not change the settings on the Monitor Backplane Status Menu, unless prompted to do so by Lucent Technologies Technical Support.

Fields

Current Backplane Status: On-line/Off-line status that enables the card to communicate with the DACS II AX Backplane.

Card Service Status: Shows the status of the board (see the hotkey description below to put the card in service or out of service).

System Ready To Go In Service: Shows whether the card is good or bad.

System Clock Status: A watchdog timer that monitors the integrity of the backplane clock. This clock is critical to backplane operation.

Frame SYNC Signal Status: A watchdog timer that monitors the integrity of the sync signal that coordinates data flow on the backplane. Critical to backplane operation.

Too Many Backplane Time Slots On: A watchdog timer that monitors access to the backplane by this card. Protects the system from a faulty card corrupting data on the backplane.

Receive TSFM Map: Signals the hardware when to use the backplane.

Hardware Access to Memory: A way for the software to disable memory for testing purposes.

Transitions: The Transitions column records how may times the Card Status was changed between *In Service* and *Out of Service*.

The following hot keys invoke additional screens and/or functions:

[**I**] = Card In Service

[**O**] = Card Out Of Service

[**R**] = Reset Counters

Monitor Backplane Status (Continued)

⚠ **WARNING:**
> *Do not change the settings on the Monitor Backplane Status Menu, unless prompted to do so by Lucent Technologies Technical Support.*

Procedure - Put Card Out of Service

To put the Octal High Speed Data card out of service:

1. From the *Monitor Backplane Status Menu*, type **O** to put the card out of service.

2. When prompted, *Set device to Out of Service? Are you sure (Y/N)?* type **Y** to change Card Status to *Out Of Service*, or type **N** to cancel the action.

Procedure - Put Card Back In Service

To put the Octal High Speed Data card in service:

1. From the *Monitor Backplane Status Menu*, type **I** to put the card back in service.

2. When prompted:
   *Set device to In Service? ** Board Will Reset ** Are you sure (Y/N)?* type **Y** to change Card Status to *In Service*, or type **N** to cancel the action.

➡ **NOTE:**
There may be a 20 second delay for the Card Status to change to In Service. When the status changes to In Service, the Node Summary Menu appears. It will take another 10-20 seconds for the card to change to In Service. The front LEDs will cascade in sequence as the Card Status is being changed to In Service.

Procedure - Reset Transitions Column Back to Zero

The Transitions column records how may times the Card Status was changed between *In Service* and *Out of Service*.

To reset the Transitions column back to zeros:

1. From the *Monitor Backplane Status Menu*, type **R** to reset counters. The column will automatically change.

2. Type **X** to return to the *Diagnostic* menu.

Octal High Speed Data Utilities -
System Manager Interface Status

Overview   The System Manager Interface Status is a view-only screen that shows the communications between the SMC board and all of the application modules.

Procedure   To access the System Manager Interface Status screen:

1. From the Octal High Speed Main Menu, select *Utilities*. From the Utilities menu, select *System Manager Interface*. The System Manager Interface Status screen appears (Figure 17-21).

```
Lucent Technologies  DACS II AX - Octal High Speed   Slot:08  Help = [?]



                      System Manager Interface Status


Number of device status msgs received.: 598
System Manager Id.....................: 98
System Files sequence number..........: 0
Configuration Map sequence number.....: 50
Downloaded Config Map sequence number.: 50
Configuration Map Checksum............: D527
Configuration Map Byte Count..........: 8
Number of Configuration Map changes...: 1
Number of Configuration Maps downloads: 1
System Manager Level Identifier.......: 700
```

Figure 17-21. System Manager Interface Status Screen

Octal High Speed Data Utilities - Reset Device

Overview   This utility causes the card to initialize to its power-up configuration. During this boot-up cycle, no user data will flow. Since the configuration resides on the SMC, connections will be restored.

Procedure   To reset the device:

1. From the OHSD Main Menu, select *Utilities*. Select *Reset Device.*

2. When prompted:

    Reset Device? Are you sure (Y/N)?

    Type **Y** to reset device. Type **N** to return to the Utilities menu.

3. If you typed **Y**, this prompt appears:

    Reset Device -- Are you really, really, really sure?!!!!!*
    Are you sure (Y/N)?

    Type **Y** to reset device. Type **N** to return to the Utilities menu.

$\Longrightarrow$ **NOTE:**
If **Y** is selected, the card will reset and the front panel LEDs will cascade in sequence. After the card resets, the Node Summary Menu appears. Wait for the Configuration Status on the menu to display "OK" before you proceed.

Octal High Speed Data Utilities - Board Status: In Service

Procedure - Put Board Out of Service

To put the Octal High Speed Data card out of service:

1. From the OHSD Main Menu, select *Utilities*. Select *Board Status: In Service*.

2. When prompted, *Set device to Out of Service? Are you sure (Y/N)?* type **Y** to change Card Status to *Out Of Service*, or type **N** to return to the *Utilities* menu.

⇒ **NOTE:**
If you typed **Y**, the Board Status will read *Out of Service* on the *Utilities* Menu. All of the front panel LEDs on the module will be blinking yellow.

Procedure - Put Board Back In Service

To put the Octal High Speed Data card in service:

1. From the OHSD Main Menu, select *Utilities*. Select *Board Status: Out of Service*.

2. When prompted:
*Set device to In Service? ** Device Will Reset ** Are you sure (Y/N)?* type **Y** to change Board Status to *In Service*, or type **N** to return to the *Utilities* menu.

⇒ **NOTE:**
There may be a 20 second delay for the Board Status to change to In Service. When the status changes to In Service, the Node Summary Menu appears. It will take another 10-20 seconds for the card to change to In Service. The front LEDs will cascade in sequence as the Board Status is being changed to In Service.

3. Select **X** to return to the Main Menu.

Octal High Speed Data About Menu

Procedure   To display identification information for the Octal High Speed Data module:

1. From the OHSD Main Menu, select A*bout.* The About Menu displays (Figure 17-22).
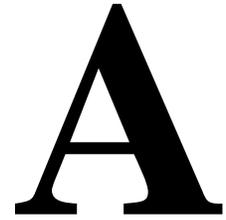
```
Lucent Technologies DACS II AX - Octal High Speed   Slot:08   Help = [?]



                               About
                               -------




                    Version..........: 01.00c
                    Release Date.....: Sept 22, 99 12:39:00
                    Checksum.........: 86CE
                    Xilinx Version...: hs_rev
                    Front Card Type..: Octal High Speed
                    Front Card Rev...: 0
                    Rear Card Type...: Octal High Speed
                    Rear Card Rev....: 0
```

Figure 17-22. Sample About Menu

Octal High Speed Data About Menu (Continued)

Field Descriptions   **Version:** This is the software version current in the OHSD's flash memory.

Release Date: The engineering release to production.

Checksum: The sum of all bytes in the OHSD'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.

Upgrades

A

Contents

Upgrading the SMC

Overview

Software upgrades to the DACS II AX System Manager Card and application modules can be achieved by using TFTP (Trivial File Transfer Protocol).

To upgrade the SMC, you complete the following:

- Copy the upgrade software to a host PC

- TFTP the upgrade software to the active SMC.

- When the upgrade is complete, the active SMC will reset. If there is a redundant SMC, the standby SMC becomes active.

- If there is a redundant SMC, repeat the upgrade procedure on the second SMC.

Before you begin

Before you begin a software upgrade, verify the following:

- The TFTP client application is installed on the host PC.

- The host PC is connected to the DACS II AX by a local LAN connection or remotely through a routed LAN environment.

- If there are redundant System Managers on the DACS II AX, verify that the databases are In Sync. Log in to the DACS II AX and look at the top left corner of the Main Menu, verify that the message "DataBases are InSync" displays. If the databases are not in sync, select Utilities, then select Copy File System.

Displaying the Current SMC Software Version

To display the current SMC Software Version on the DACS II AX, from the DACS II AX Main Menu, select About, then select System Profile.

Upgrading the SMC (Continued)

Procedure   To upgrade the SMC:

1. Start the TFTP client application on the host PC.

2. Type in the IP address of the DACS II AX. (Depending on the TFTP
    software being used, this field may be labeled Destination, Host, or Target).

3. Enter or select the path on the PC for SMCxxx.bin.

    DO NOT alter the file name. The remote path does not have to match the
    local path.

4. Start the transfer. (Depending on the TFTP software being used, you may
    need to click OK, or SEND, or press ENTER.

5. When the code transfer is complete, the online SMC will reset and burn the
    upgrade code into flash memory.

6. If the DACS II AX is equipped with redundant SMCs, at the completion of
    the first SMC upgrade, the upgraded SMC will reset and the off-line SNC
    will take over and become the online SMC.

7. Repeat this procedure to upgrade the second SMC.

Upgrading an Application Module

Overview

To upgrade an application module, you complete the following:

- Copy the new program file to a host PC

- Download the new program file from the host PC to the SMC

- Download the new program file from the SMC to the application module

- Delete the new program file from the SMC

Before you begin

Before you begin a software upgrade, verify the following:

- The TFTP client application is installed on the host PC.

- The host PC is connected to the DACS II AX by a local LAN connection or remotely through a routed LAN environment.

- If there are redundant System Managers on the DACS II AX, verify that the databases are in sync. Log in to the DACS II AX and look at the top left corner of the Main Menu, verify that the message "DataBases are InSync" displays. If the databases are not in sync, select Utilities, then select Copy File System.

Displaying the Application Module's Current Software Version

To display the current Software Version for the application modules, from the DACS II AX Main Menu, select Utilities, then select Download Devices Software. The Program Load Menu displays (Figure A-1). This menu lists the Type, and Program Version for each installed module.

Upgrading an Application Module
(Continued)

```
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 A-1.   Program Load Menu

Upgrading an Application Module (Continued)

Procedure   To upgrade an Application Module with a new program file:

1. Start the TFTP client application on the host PC.

2. Type in the IP address of the SMC. (Depending on the TFTP software being used, this field may be labeled Destination, Host, or Target).

3. Enter or select the path on the PC for the new program file.

    DO NOT alter the file name. The remote path does not have to match the local path.

4. Start the transfer. (Depending on the TFTP software being used, you may need to click OK, or SEND, or press ENTER.)

    When the code transfer is complete, the new program file is put in the SMC's memory.

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

    The Program Load Menu displays (Figure A-1).

6. Check the entry in the Current Program field at the top of the screen. Verify that the entry in the Current Program File field is the program that you want to download to the application module. The entry in the Current Program field is the program currently in the SMC's memory.

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

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

7. Choose one of these two ways to download the program file to an application module:

    ■   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 Octal High Speed Module and you type **A**, then all of the Octal High Speed Modules in the DACS II AX will be updated. The software will not be downloaded to modules of any other type.

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

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.

Glossary

Numerics

10Base-T
A 10 Mb/s Ethernet specification defined by the IEEE 802.3 committee that utilizes twisted pair wiring.

A

ASCII Character
Letters, digits, and symbols used in the American Standard Code for Information Interchange

ARP
Address Resolution Protocol

ATM
Asynchronous Transfer Mode

AX
Access Cross-Connect

B

B8ZS
Bipolar Eight Zero Substitution.

BERT
Bit Error Rate Test

bps
bits per second

C

C-Bit
A DS3 line code in which parity checks on blocks of data are used to detect bits in error.

CCITT
The International Telegraph and Telephone Consultative Committee

CPE
   Customer Premises Equipment

CSU
   Channel Service Unit

D

DACS
   Digital Access and Cross-Connect System

DDS
   Digital Data System

DS-1
   Digital Signal Level 1 (1.544 Mbps)

DS-3
   Digital Signal Level 3 (44.7 Mbps)

DSL
   Digital Subscriber Line

DTE
   Data Terminating Equipment

E

E&M
   Ear and Mouth

E1
   A rate of 2.048 Mb/s in the European digital transmission hierarchy. Consists of thirty 64 Kb/s digital channels for voice and data connections, plus 64 Kb/s channels for signaling (Time Slot 17), and for framing and maintenance (Time Slot 1).

F

FXO
Foreign Exchange Office

FXS
Foreign Exchange Subscriber

H

HDSL
High-Bit-Rate Digital Subscriber Line

Hot Standby
An entity ready for fast, automatic placement into operation to replace an active entity.

I

IEEE
Institute of Electrical and Electronics Engineers

IP
Internet Protocol

K

kbps
Kilobits per second

L

LAN
Local Area Network

LEC
Local Exchange Carrier

LED
Light Emitting Diode

Loopback
A circuit arrangement that causes a received signal to be returned to its source.

M

Mbps
Megabits per second

MIB
Management Information Base. The DACS II AX displays MIB-II parameters as defined in RFC1213.

N

NI
Network Interface

O

OCU-DP
Office Channel Unit Data Port

P

PSTN
Public Switched Telephone Network

S

SMC
System Manager Card

SNMP
Simple Network Management Protocol

T

T1
24-channel digital carrier. Digital transmission link with 1.544 Mbps capacity.

TAM
Test Access Module

TCP ⁄ IP
Transmission Control Protocol/Internet Protocol. A suite of communications protocols used by host computers to exchange information between application processes over local or wide area networks.

TDM
Time Division Multiplex

W

WAN
Wide Area Network