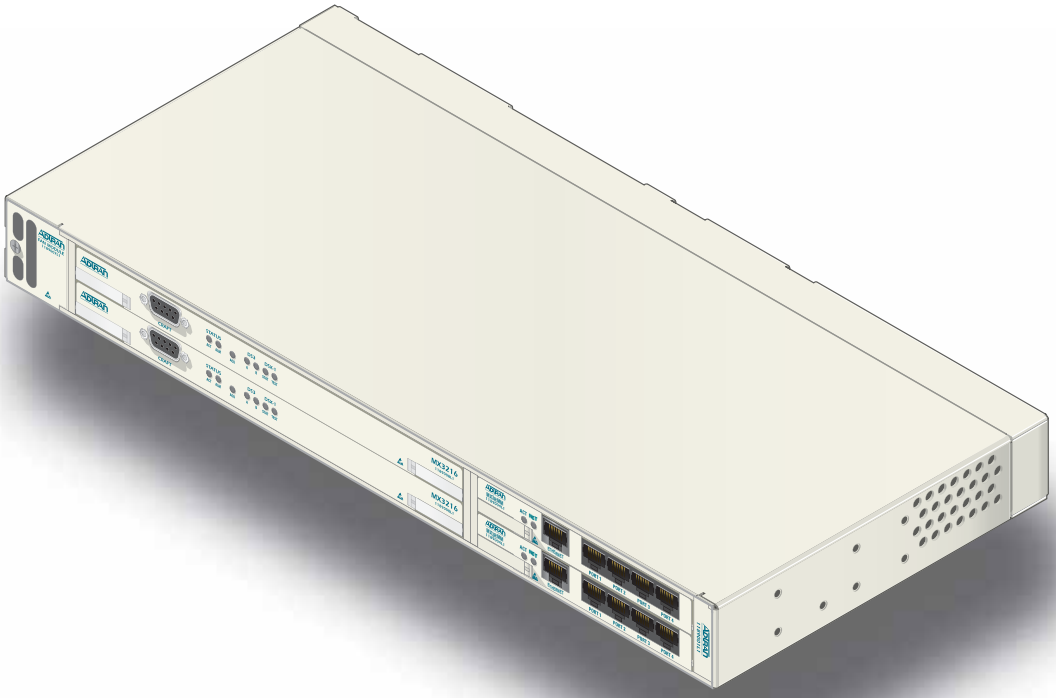

MX3216
System Manual

Part Number: 61189008L1-1B
February 2007

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Revision History

Revision	Date	Description
A	October 2006	Initial release
B	February 2007	Corrected the number of characters for the system ID.

Conventions

The following typographical conventions are used in this document:

This font indicates a cross-reference link.

This font indicates screen menus, fields, and parameters.

THIS FONT indicates keyboard keys (ENTER, ESC, ALT). Keys that are to be pressed simultaneously are shown with a plus sign (ALT+X indicates that the ALT key and X key should be pressed at the same time).

This font indicates references to other documentation and is also used for emphasis.

`This font` indicates on-screen messages and prompts.

`This font` indicates text to be typed exactly as shown.

This font indicates silk-screen labels or other system label items.

This font is used for strong emphasis.

NOTE

Notes inform the user of additional, but essential, information or features.

CAUTION

Cautions inform the user of potential damage, malfunction, or disruption to equipment, software, or environment.

WARNING

Warnings inform the user of potential bodily pain, injury, or death.

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Section 1
Introduction

INTRODUCTION

Drop and insert DS3 networking is practical and efficient with the MX3216 system (see Figure 1-1). The MX3216 system routes DS1s between the two DS3 interfaces with access to 22 DS1s at any node.

The MX3216 interfaces to two coaxial DS3s and provides the ability to drop and insert up to 22 DS1 signals from either DS3 interface on the terminal side. Sixteen of the DS1s are accessible through the amphenol connectors on the back of the MX3 chassis as short haul DSX-1 signals. Six DS1s can be routed to the two expansion slots to allow custom system configuration at each node of the network.

Use an MX3 Remote Management Module (MX3RMM) to add an optional IP router for Ethernet network extension throughout the network and Telnet-based terminal server ports. When using a MX3RMM, up to two DS1 interfaces can be dropped from the controller and used in T1 or FT1 mode. The MX3RMM provides the ability to remotely manage the MX3216 system using a 10Base-T/100Base-TX Ethernet interface.

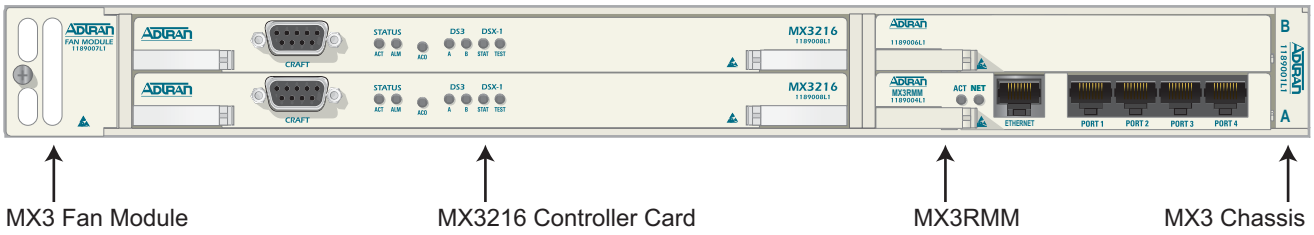

Figure 1-1. MX3216 System Front Panel

Table 1-1 lists the products supported in this document. For detailed specification information on the products listed, refer to "Engineering Guidelines" on page 2-1.

Table 1-1. MX3216 System Part Numbers

Description	Part Number	CLEI
MX3 Chassis	1189001L1	M3M2A00A_ _
MX3 Remote Management Module (MX3RMM)	1189004L1	M3LINT0A_ _
MX3 Controller Blank Plug	1189005L1	N/A
MX3 Module Blank Plug	1189006L1	N/A
MX3 Fan Module	1189007L1	M3CU270B_ _
MX3216 Controller Card	1189008L1	M3CMZTME_ _

FEATURES

The major features of the MX3216 system are as follows:

- Chassis supports dual controller cards and two expansion modules
- Rack-mountable chassis (19-inch or 23-inch racks)
- Compact 1 RU size
- Hot-swappable controller cards provide 1:1 redundancy
- Controller cards provide DS1 drop and insert capability for DS3 networks
- DS1 cross connects between both DS3 interfaces and local DS1 drops
- Controller cards share two DS3 interfaces and eight DS1 drops and provide six DS1s for expansion
- Optional router providing end-to-end Ethernet extension over a single T1 and terminal server functionality - Ideal for IP-based traffic over TDM backhauled network
- Remotely managed through SNMP or Telnet
- DB9 craft interface for access to user-friendly configuration and performance monitoring menus
- Comprehensive test features
- NEBS Level 3 compliant
- Redundant –48VDC or ±24VDC power inputs
- Operates over an extended temperature range of –40°C to +65°C
- Provides 64-pin amphenol connections for DS1s
- Provides 75 ohm BNCs for DS3s
- RJ-45 10Base-T Ethernet connection
- Wire-wrap pins for alarms
- Independent power feeds with separate return paths to all card slots

FRONT PANELS

The MX3216 system has six LEDs and an ACO button on the MX3216 Controller Card and two LEDs on the MX3 remote management module.

MX3216 Controller Card LEDs

The MX3216 Controller Card has six LEDs located on the front of the unit (see Figure 1-2) that display status information. Table 1-2 shows the LED status descriptions for the active MX3216 Controller Card. Table 1-3 shows the status descriptions for the standby controller card.

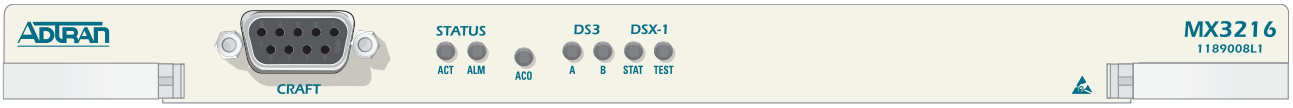

Figure 1-2. MX3216 Controller Card LEDs

Table 1-2. Active MX3216 Controller Card LED Status

Label	Status		Description
ACT	●	Green	Normal (All OK)
	●/●	Green/Amber (Alternating)	Normal and console open
	●	Amber	Software update in progress
	●/●	Amber/Red (Alternating)	Card has failed and console open
	✸	Red (Flashing)	Card has failed
ALM	●	Green	No critical, major, or minor alarms
	●	Red	Major or minor alarm in progress
	✸	Red (Flashing)	Critical alarm in progress
DS3 A/B	●	Green	Normal (DS3 OK)
	●/●	Green/Red (Alternating)	DS2 OOF
	●	Red	AIS, OOF, RAI, or Idle
	✸	Red (Flashing)	DS3 LOS
	✸	Red (Flashing once per event)	Single/Burst DS3 code violations during previous second
	●	Amber	In test (locally originated)
	✸	Amber (Flashing	In test (remotely originated)

Table 1-2. Active MX3216 Controller Card LED Status (Continued)

Label	Status		Description
DSX-1 STAT	○	Off	All DSX-1 drops are disabled
	●	Green	Enabled DSX-1 drops normal (All OK)
	●	Red	Non-critical alarm (AIS) on an enabled DSX-1 drop
	✸	Red (Flashing)	LOS on an enabled drop
	✸	Red (Flashing once per event)	Single/Burst RX DSX-1 code violations during previous second
DSX-1 TEST	○	Off	No DSX-1 tests in progress
	✸	Red (Flashing once per event)	Single/Burst pattern errors on drop in test
	●	Amber	In test (locally originated)
	✸	Amber (Flashing)	In test (remotely originated)

Table 1-3. Standby MX3216 Controller Card LED Status

Label	Status		Description
ACT	●	Green	Normal (All OK)
	●	Amber	Software update in progress
	✸	Amber (Flashing)	Not ready or software mismatch
	✸	Red (Flashing)	Card failure
ALM	○	Off	Permanent state during standby
DS3 A/B	○	Off	Permanent state during standby
DSX-1 STAT	○	Off	Permanent state during standby
DSX-1 TEST	○	Off	Permanent state during standby

MX3216 Controller Card ACO Button

The alarm cut off (ACO) button disables any audible alarms. Any active visual alarms remain active. Press the **ACO** button on the front panel to disable any audible alarms.

MX3 Remote Management Module

The MX3RMM has two LEDs located on the front of the unit (see Figure 1-3) that display status information. The **NET** LED displays status information about both network interfaces. If one of the network interfaces is disabled, the **NET** LED shows only information concerning the enabled network interface. Table 1-4 shows the status descriptions for the MX3RMM.

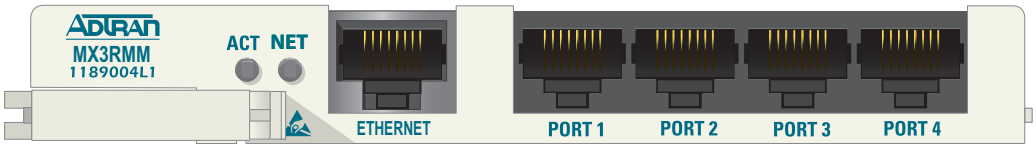

Figure 1-3. MX3RMM LEDs

Table 1-4. MX3RMM LED Status

Label	Status		Description
ACT	●	Green	Operation is normal
	●	Red	Card failure
	●	Amber	Link present on front panel Ethernet jack
	✹	Amber (Flashing)	Console open
NET	●	Green	Network interface is operating and normal
	●	Red	LOS on active network interface
	✹	Amber (Flashing once per event)	Network traffic present on active network interface
	●	Amber	Network interface in test
	○	Off	Network interface not enabled

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Section 2
Engineering Guidelines

INTRODUCTION

This section provides engineering guidelines for network designers who are incorporating an MX3216 system into their network. This section provides the following guidelines:

DIMENSIONS OF EQUIPMENT

Table 2-1 provides the dimensions and weights of the MX3216 equipment.

Table 2-1. MX3216 Equipment Dimensions and Weights

Part Number	Description	Dimensions	Weight
1189001L1	MX3 Chassis	Height: 1.7 inches Width: 17.0 inches Depth: 8.6 inches	5.50 pounds
1189004L1	MX3 Remote Management Module	Height: 0.7 inches Width: 5.2 inches Depth: 7.6 inches	0.375 pounds
1189005L1	MX3 Controller Blank Plug	Height: 0.7 inches Width: 9.4 inches Depth: 7.6 inches	0.375 pounds
1189006L1	MX3 Module Blank Plug	Height: 0.7 inches Width: 5.2 inches Depth: 7.6 inches	0.25 pounds
1189007L1	MX3 Fan Module	Height: 1.7 inches Width: 1.5 inches Depth: 7.6 inches	0.32 pounds
1189008L1	MX3216 Controller Card	Height: 0.7 inches Width: 9.4 inches Depth: 7.6 inches	0.75 pounds

ENVIRONMENTAL REQUIREMENTS

Table 2-2 provides the environmental requirements for the MX3216 system.

Table 2-2. Environmental Requirements

Specification	Description
Operating Temperature	–40°C to +65°C
Storage Temperature	–40°C to +85°C
Relative Humidity	Per GR63

POWER REQUIREMENTS

The following two sections detail the power requirements for the MX3216 Controller Card, the MX3RMM, and the MX3216 system.

Module Configurations

Table 2-3 provides the current draw of each module at –48 VDC (operating range of –42 VDC to –60 VDC) and ±24 VDC (operating range of ±22 VDC to ±27 VDC).

Table 2-3. Maximum Current Draw

Part Number	Equipment	Maximum Current Draw at –48 VDC	Maximum Current Draw at ±24 VDC
1189004L1	MX3RMM	0.07 amps	0.15 amps
1189007L1	MX3 Fan Module	0.05 amps	0.10 amps
1189008L1	MX3216	0.30 amps	0.59 amps
1189008L1	MX3216 (redundant pair)	0.45 amps	0.90 amps

System Configurations

Table 2-4 provides the total current draw at –48 VDC and ±24 VDC for the different MX3216 system configurations.

Table 2-4. Total Current Draw

Part Number	Quantity	Total Current Draw at –48 VDC	Total Current Draw at ±24 VDC
MX3216 (non-redundant) with one MX3RMM			
1189004L1	1		
1189007L1	1	0.34 amps	0.69 amps
1189008L1	1		
MX3216 (redundant) with one MX3RMM			
1189004L1	1		
1189007L1	1	0.50 amps	1.00 amps
1189008L1	2		

POWER DISSIPATION

The following two sections detail the power dissipation requirements for the MX3216 Controller Card, the MX3RMM, and the MX3216 system.

Module Configurations

Table 2-5 provides the heat dissipation data for each module at –48 VDC (operating range of –42 VDC to –60 VDC) and ±24 VDC (operating range of ±22 VDC to ±27 VDC).

Table 2-5. Heat Dissipation

Part Number	Equipment	Heat Dissipation at –48 VDC	Heat Dissipation at ±24 VDC
1189004L1	MX3RMM	3.0 watts	3.0 watts
1189007L1	MX3 Fan Module	2.39 watts	2.28 watts
1189008L1	MX3216	14.4 watts	14.2 watts
1189008L1	MX3216 (redundant pair)	21.6 watts	21.6 watts

System Configurations

Table 2-6 provides the total heat dissipation at –48 VDC and ±24 VDC for the different MX3216 system configurations.

Table 2-6. Total Heat Dissipation

Part Number	Quantity	Total Heat Dissipation at –48 VDC	Total Heat Dissipation at ±24 VDC
MX3216 (non-redundant) with one MX3RMM			
1189004L1	1		
1189007L1	1	16.2 watts	14.1 watts
1189008L1	1		
MX3216 (redundant) with one MX3RMM			
1189004L1	1		
1189007L1	1	24.0 watts	20.3 watts
1189008L1	2		

FUSE RECOMMENDATIONS

Table 2-7 provides data for determining the recommended fuse for the fuse and alarm panel that services the MX3 chassis.

Table 2-7. Fuse Recommendations

System Voltage	Recommended Fuse
–48 VDC	1.5 amps, slow-blow
±24 VDC	3.0 amps, slow-blow

DS3 CONNECTIONS

CAUTION

Do not connect DSX-1, DS3, or Ethernet circuits from the MX3216 directly to outside plant facilities.

Cable Specifications

NOTE

Connect DS3 interfaces using coaxial cables that have shields grounded at both ends.

All coaxial cable for the MX3216 DS3 signals should meet the following minimum specification:

- The coaxial cable should have characteristic impedance of 75 ohms.
- Nominal mutual capacitance should not exceed 20.4 pF/foot.
- The cable should conform to ANSI standard T1.102 (1993) pulse mask definition. The standard reference cable is a “WECO Type 728A” at 450 feet.

Approved cable types include the following:

- WECO 728A
- Lucent 728B
- Lucent 734A
- Lucent 735A (maximum length of 250 feet)
- Belden 9231
- Belden 1809A

DSX-1 CONNECTIONS

WARNING

Do not metallically connect the T/R (DSX-1) interfaces to interfaces which connect to the Outside Plant (OSP) or its wiring. These interfaces are designed for use as intra-building interfaces only. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

Table 2-8 provides the amphenol connector pin assignments for the MX3216 Controller Card.

Table 2-8. Amphenol Connector Pin List

	Function		
Pin	Tip (In)	Ring (Out)	Pin
1	Tip 1	Ring 1	33
2	Tip 2	Ring 2	34
3	Tip 3	Ring 3	35
4	Tip 4	Ring 4	36
5	Tip 5	Ring 5	37
6	Tip 6	Ring 6	38
7	Tip 7	Ring 7	39
8	Tip 8	Ring 8	40
9	Tip 9	Ring 9	41
10	Tip 10	Ring 10	42
11	Tip 11	Ring 11	43
12	Tip 12	Ring 12	44
13	Tip 13	Ring 13	45
14	Tip 14	Ring 14	46
15	Tip 15	Ring 15	47
16	Tip 16	Ring 16	48
32	FGND	FGND	64

COMPLIANCE

The MX3216 system complies with NEBS Level 3 and is NRTL Listed to UL 60950. It is intended to be installed in a restricted access area only.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes and modifications not expressly approved by ADTRAN could void the user's authority to operate this equipment.

CAUTION

Per GR-1089-CORE October 2002, Section 9, this system is designed and intended only for installation in a DC-C (common) Bonding and Grounding system. It is not intended or designed for installation in a DC-I (isolated) Bonding and Grounding system. The ground wire must be of equal or greater ampacity than the wire connected to the VDC return.

CAUTION

The MX3216 Controller Card must be installed in a MX3 chassis (P/N 1189001L1) with a top assembly revision of "B" or later.

Table 2-9, Table 2-10, Table 2-11 and Table 2-12 provide the compliance codes for the different components of the MX3216 system.

Table 2-9. MX3 Chassis (P/N 1189001L1)

Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	–	X
Installation Code (IC)	A	–

Table 2-10. MX3 Remote Management Module (P/N 1189004L1)

Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	–	–
Installation Code (IC)	A	–

Table 2-11. MX3 Fan Module (P/N 1189007L1)

Code	Input	Output
Power Code (PC)	F	–
Telecommunication Code (TC)	–	–
Installation Code (IC)	A	–

Table 2-12. MX3216 Controller Card (P/N 1189008L1)

Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	–	–
Installation Code (IC)	A	–

Section 3
Application Guidelines

INTRODUCTION

The MX3216 system can operate in a variety of applications. A block diagram showing the data path of the MX3216 system components is provided before each set of applications as follows:

For each application, there is a figure illustrating the application, a list of the equipment needed, and an explanation of the basic setup.

MX3216 DATA PATH BLOCK DIAGRAM

The MX3216 contains a 3/1 cross-connect that allows DS1s to be mapped between two DS3s, eight DSX-1 ports, and two expansion slots in the MX3 chassis (see Figure 3-1).

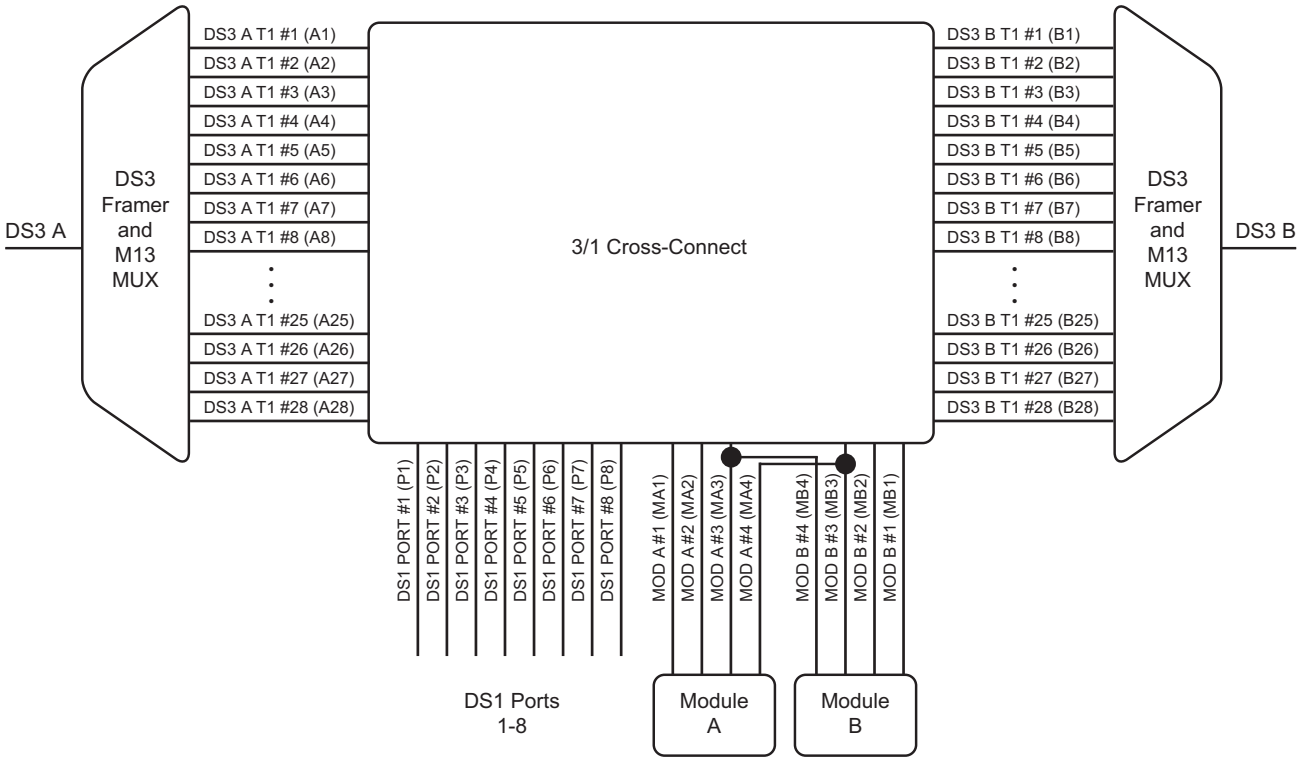

Figure 3-1. MX3216 Data Path Block Diagram

Each expansion slot has four DS1s available. The expansion slots share two of the DS1s (see Figure 3-1). How the DS1s are used depends on the module installed. For example, the MX3RMM only uses two DS1s.

Any DS1 in DS3 A can be mapped to any DS1 in DS3 B, and vice versa. Any DSX-1 port can be mapped to any DS1 in DS3 A or DS3 B. The expansion slot DS1s can be mapped to any DS1 in DS3 A or DS3 B and to any other expansion slot DS1. In addition, any two DSX-1 ports can be mapped to expansion slot DS1s.

Any unmapped DS1 in a DS3 is filled with AIS (unframed All Ones). Any unmapped DSX-1 port is disabled with the transmit drivers tri-stated and no alarms reported.

The default mapping of the 3/1 cross-connect is for all the DS1s to pass straight through from one DS3 to the other. No DS1s are dropped to the DSX-1 ports or the expansion slots. If needed, re-establish the default mapping through selecting the Restore Map to Factory Default option on the “Cross-Connect Menu” on page 6-35.

The following applications relate to the MX3216 data path block diagram:

- “Drop and Continue Application” on page 3-3
- “Drop and Insert Application” on page 3-6

Drop and Continue Application

In the drop and continue application, up to eight DS1s from one DS3 can be dropped out the eight DSX-1 ports with the remaining DS1s continuing through to the other DS3 interface (see Figure 3-2). This allows one DS3 worth of bandwidth to deliver DS1s to several sites using one MX3216 at each site.

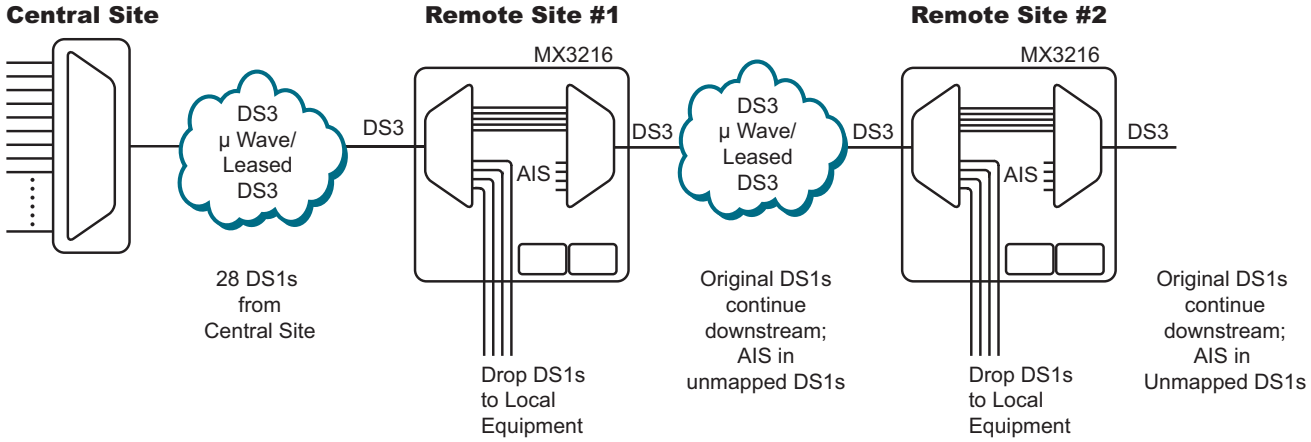

Figure 3-2. Drop and Continue Application Diagram

Table 3-1 shows the equipment needed for a drop and continue application.

Table 3-1. Drop and Continue Application - Required Equipment

Part #	Equipment	Quantity
1189001L1	MX3 Chassis	1
1189007L1	MX3 Fan Module	1
1189008L1	MX3216 Controller Card	1 (2 for redundancy)

Setup

The following steps outline the rear chassis connections (see Figure 3-3).

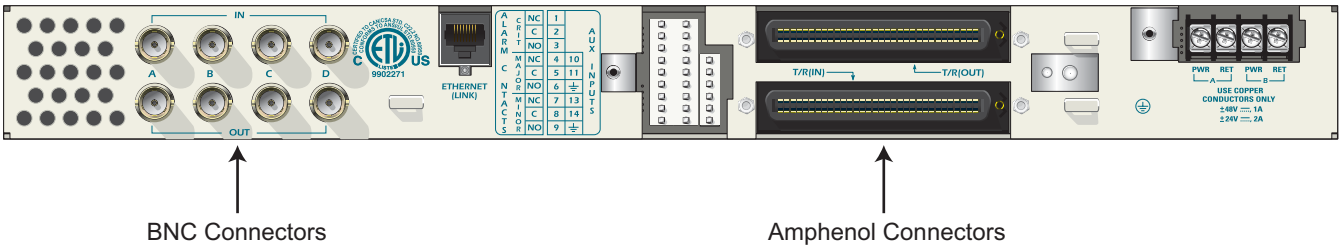

Figure 3-3. Rear Chassis Connections

1. Connect the incoming DS3 (the DS3 from which the DS1s are dropped) to the DS3 A BNCs.
2. Connect the outgoing DS3 to the DS3 B BNCs.
3. Connect the DS1s using the amphenol connectors on the rear panel.

For more information, refer to "Rear Chassis Connections" on page 4-7.

NOTE

The default mapping of the 3/1 cross-connect is for all the DS1s to pass straight through from one DS3 to the other. No DS1s are dropped to the DSX-1 ports or the expansion slots. If needed, re-establish the default mapping through selecting the Restore Map to Factory Default option in the "Cross-Connect Menu" on page 6-35.

Starting from the default mapping, use the Quick Setup menu to drop the DS1s. Select each DS1 port (1–16) to which a DS1 needs to be dropped from the incoming DS3. For each DS1 port, select the DS1 in DS3 A to be dropped to that DS1 port.

Figure 3-4 and Figure 3-5 show an example of setting up a drop and continue application. Figure 3-4 shows the Quick Setup menu before any DS1s have been dropped. Figure 3-5 shows the same menu after DS1s 12–15 have been dropped from DS3 A to DS1 Ports 1–4, respectively. DS1s 1–11 and 16–28 continue through from DS3 A to DS3 B. DS1s 12–15 in DS3 B are now filled with AIS going out DS3 B.

```
Card: Controller A           ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:     Site 1  MX3216

                             MX3216->Quick Setup
                    DS1 Ports                        Module Drops (None Installed)
 1 - # 1 :                9 - # 9 :
 2 - # 2 :               10 - #10 :
 3 - # 3 :               11 - #11 :
 4 - # 4 :               12 - #12 :
 5 - # 5 :               13 - #13 :
 6 - # 6 :               14 - #14 :
 7 - # 7 :               15 - #15 :
 8 - # 8 :               16 - #16 :

System
17 - System ID    : Site 1  MX3216
18 - IP Address   : 0.0.0.0
19 - Subnet Mask  : 255.255.255.0
20 - Gateway      : 0.0.0.0
21 - Date         : 01/01/2005
22 - Time         : 12:00:00

 Selection :                                        '?' - System Help Screen
```

Figure 3-4. Quick Setup Menu Showing Default Mapping

```
Card: Controller A           ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:     Site 1  MX3216

                             MX3216->Quick Setup
                    DS1 Ports                        Module Drops (None Installed)
 1 - # 1 : DS3 A T1 #12   9 - # 9 :
 2 - # 2 : DS3 A T1 #13  10 - #10 :
 3 - # 3 : DS3 A T1 #14  11 - #11 :
 4 - # 4 : DS3 A T1 #15  12 - #12 :
 5 - # 5 :               13 - #13 :
 6 - # 6 :               14 - #14 :
 7 - # 7 :               15 - #15 :
 8 - # 8 :               16 - #16 :

System
17 - System ID    : Site 1  MX3216
18 - IP Address   : 0.0.0.0
19 - Subnet Mask  : 255.255.255.0
20 - Gateway      : 0.0.0.0
21 - Date         : 01/01/2005
22 - Time         : 12:00:00

 Selection :                                        '?' - System Help Screen
```

Figure 3-5. Quick Setup Menu Showing Dropped DS1s

Drop and Insert Application

In the drop and insert application (see Figure 3-6), DS1s from one DS3 can be dropped out the DSX-1 ports. Then, DS1s from the other DSX-1 ports can be inserted into the corresponding DS1s in the other DS3. Any DS1s not dropped continue on from one DS3 to the other. This application allows a DS3 to be used to transport DS1s between several sites.

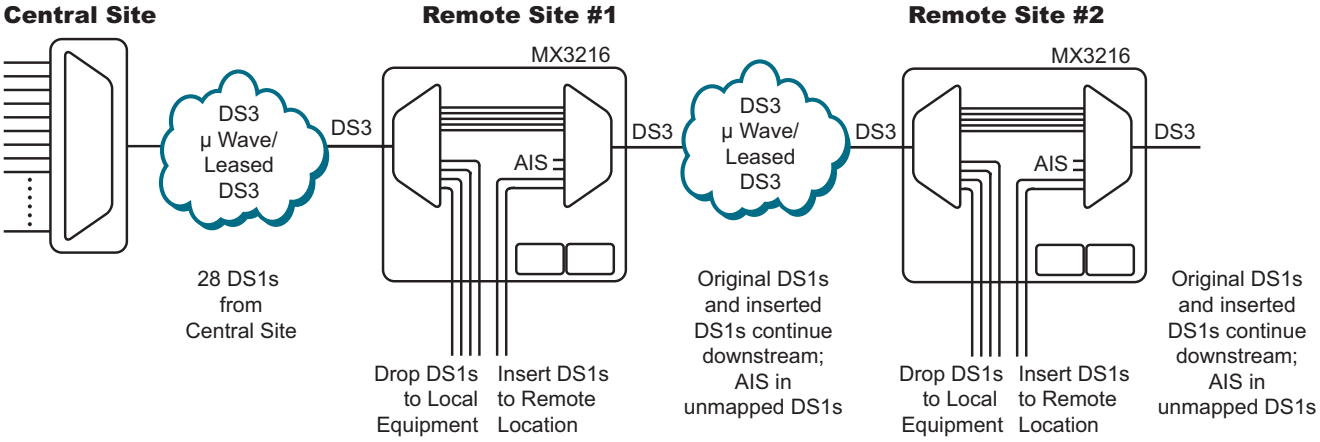

Figure 3-6. Drop and Insert Application Diagram

Table 3-2 shows the equipment needed for a drop and insert application.

Table 3-2. Drop and Insert Application - Required Equipment

Part #	Equipment	Quantity
1189001L1	MX3 Chassis	1
1189007L1	MX3 Fan Module	1
1189008L1	MX3216 Controller Card	1 (2 for redundancy)

Setup

The following steps outline the rear chassis connections (see Figure 3-3 on page 3-4).

1. Connect the DS3 from which the DS1s are dropped to the DS3 A BNCs.
2. Connect the other DS3 to the DS3 B BNCs.
3. Connect the DS1s using the amphenol connector on the rear panel.

For more information, refer to "Rear Chassis Connections" on page 4-7.

NOTE

The default mapping of the 3/1 cross-connect is for all the DS1s to pass straight through from one DS3 to the other. No DS1s are dropped to the DSX-1 ports or the expansion slots. If needed, re-establish the default mapping through selecting the Restore Map to Factory Default option in the "Cross-Connect Menu" on page 6-35.

Starting from the default mapping, use the Quick Setup menu to drop and insert the DS1s. Select each DS1 port (1–16) to which a DS1 needs to be dropped from the incoming DS3. For each DS1 port, select the DS1 in DS3 A to be dropped to that DS1 port. Then, select each DS1 port that needs to be inserted into the other DS3. For each DS1 port to be inserted, select the DS1 in DS3 B to insert that DS1 port.

Figure 3-7 and Figure 3-8 show an example of setting up a drop and insert application.

- Figure 3-7 shows the Quick Setup menu before any DS1s have been dropped.
- Figure 3-8 shows the same menu after DS1s 12–15 have been dropped from DS3 A to DS1 Ports 1–4, respectively, and DS1 Ports 5–6 have been inserted into DS1s 12–13 in DS3 B. DS1s 1–11 and 16–28 continue through from DS3 A to DS3 B. DS1s 14–15 in DS3 B are filled with AIS going out DS3 B.

```
Card: Controller A           ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:     Site 1  MX3216

                             MX3216->Quick Setup
                     DS1 Ports                        Module Drops (None Installed)
 1 - # 1 :                9 - # 9 :
 2 - # 2 :               10 - #10 :
 3 - # 3 :               11 - #11 :
 4 - # 4 :               12 - #12 :
 5 - # 5 :               13 - #13 :
 6 - # 6 :               14 - #14 :
 7 - # 7 :               15 - #15 :
 8 - # 8 :               16 - #16 :

 System
 17 - System ID    : Site 1  MX3216
 18 - IP Address   : 0.0.0.0
 19 - Subnet Mask  : 255.255.255.0
 20 - Gateway      : 0.0.0.0
 21 - Date         : 01/01/2005
 22 - Time         : 12:00:00

  Selection :                                        '?' - System Help Screen
```

Figure 3-7. Quick Setup Menu Showing Default Mapping

```
Card: Controller A           ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:     Site 1  MX3216

                             MX3216->Quick Setup
                     DS1 Ports                        Module Drops (None Installed)
 1 - # 1 : DS3 A T1 #12   9 - # 9 :
 2 - # 2 : DS3 A T1 #13  10 - #10 :
 3 - # 3 : DS3 A T1 #14  11 - #11 :
 4 - # 4 : DS3 A T1 #15  12 - #12 :
 5 - # 5 : DS3 B T1 #12  13 - #13 :
 6 - # 6 : DS3 B T1 #13  14 - #14 :
 7 - # 7 :               15 - #15 :
 8 - # 8 :               16 - #16 :

 System
 17 - System ID    : Site 1  MX3216
 18 - IP Address   : 0.0.0.0
 19 - Subnet Mask  : 255.255.255.0
 20 - Gateway      : 0.0.0.0
 21 - Date         : 01/01/2005
 22 - Time         : 12:00:00

  Selection :                                        '?' - System Help Screen
```

Figure 3-8. Quick Setup Menu Showing Dropped and Inserted DS1s

MX3RMM DATA PATH BLOCK DIAGRAM

Figure 3-9 shows that the MX3 Remote Management Module (MX3RMM) contains an Ethernet bridge that bridges between two Ethernet jacks, two T1/FT1 interfaces, and the MX3216 Controller Card. One of the Ethernet jacks is on the front panel of the MX3RMM and the other is on the rear panel of the MX3 chassis. The Ethernet traffic is encapsulated in Point-to-Point Protocol (PPP) for transport over the T1/FT1.

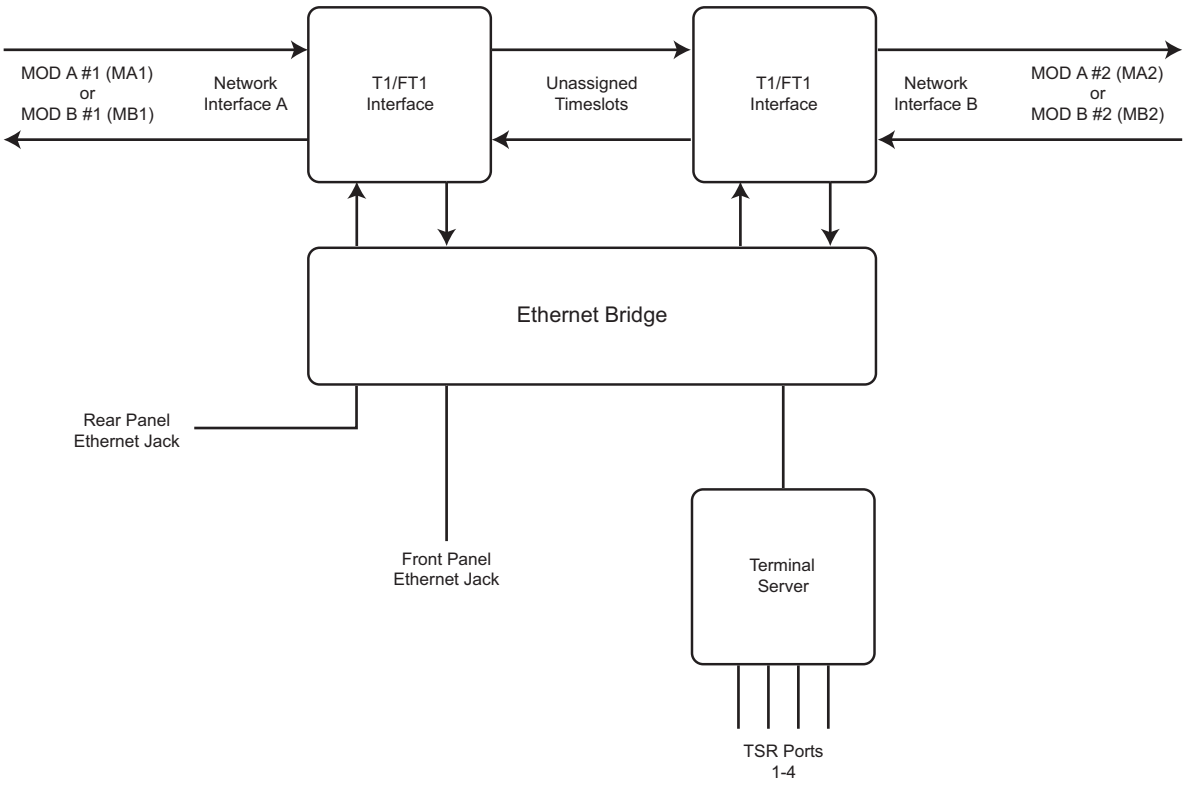

Figure 3-9. MX3RMM Data Path Block Diagram

By mapping these MX3RMM T1/FT1 interfaces to a DS1 in one of the DS3s, the MX3216 can be remotely managed using Telnet. Equipment connected to the Ethernet jacks can also be accessed remotely. The Network (T1/FT1) Interface A is connected through the MX3 chassis to the expansion slot DS1 #1 in the MX3216 3/1 cross-connect (see Figure 3-1 on page 3-2). This is either Module A #1 (MA1) or Module B #1 (MB1), depending on whether the MX3RMM is installed in Expansion Slot A (bottom slot) or Expansion Slot B (top slot), respectively. In like manner, the Network (T1/FT1) Interface B is connected to the expansion slot DS1 #2 in the MX3216 3/1 cross-connect. This is either Module A #2 (MA2) or Module B #2 (MB2), depending on whether the MX3RMM is installed in Expansion Slot A (bottom slot) or Expansion Slot B (top slot), respectively.

The T1/FT1 interfaces can be provisioned for fractional T1 (FT1) operation so that only a portion of the T1 bandwidth is used for Ethernet traffic, and the other timeslots can pass through voice or data traffic.

The MX3RMM also contains a terminal server with four asynchronous RS-232 ports. This allows the co-located equipment with RS-232 management ports to be remotely managed.

The following applications are related to the MX3RMM Data Path Block Diagram:

- "MX3216 with Remote Management Application" on page 3-11
- "Remote Management of Other Systems Using Terminal Server Ports Application" on page 3-15

MX3216 with Remote Management Application

The MX3RMM provides the capability to remotely manage the MX3216 system. The MX3RMM bridges Ethernet traffic between two Point-to-Point Protocol (PPP) over T1/FT1 (Fractional T1) interfaces, a front panel Ethernet jack, and the rear chassis Ethernet jack. The Ethernet traffic is encapsulated in PPP for transport over the T1/FT1. In addition to remote management, this also provides LAN access through both Ethernet jacks giving the ability to remotely manage other systems located on the same network. Figure 3-10 illustrates this application.

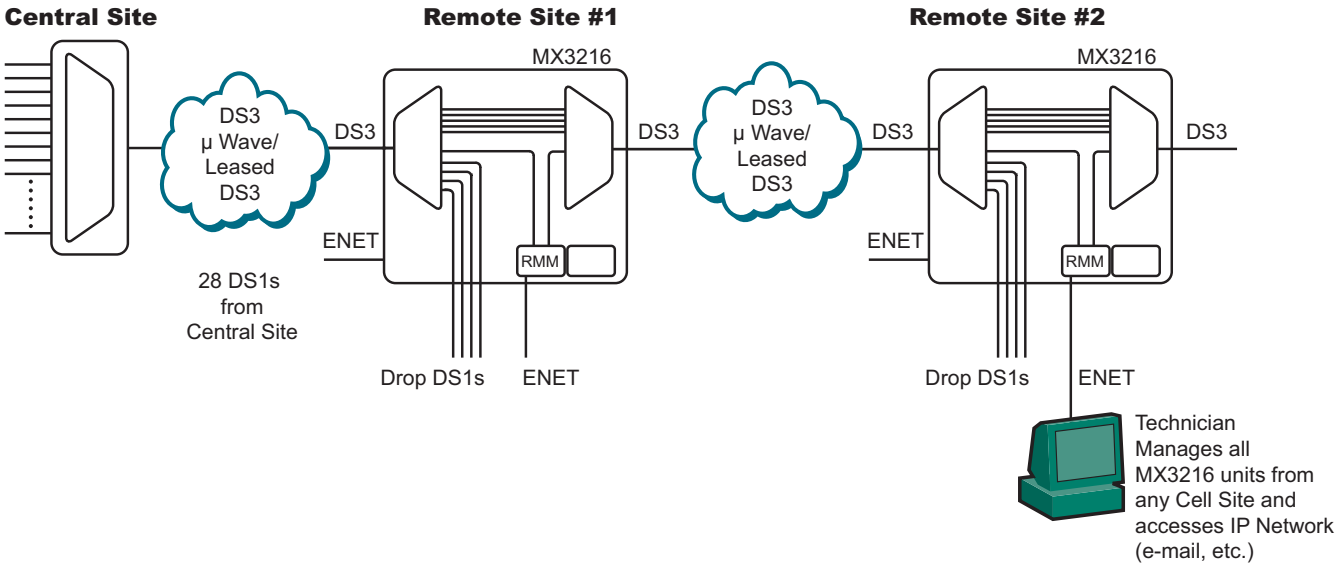

Figure 3-10. MX3216 with Remote Management Application Diagram

Table 3-3 shows the equipment needed for an MX3216 with remote management application.

Table 3-3. MX3216 with Remote Management - Required Equipment

Part #	Equipment	Quantity
1189001L1	MX3 Chassis	1
1189004L1	MX3 Remote Management Module (MX3RMM)	1
1189007L1	MX3 Fan Module	1
1189008L1	MX3216 Controller Card	1 (2 for redundancy)

Setup

The following steps describe the setup for the MX3216 with remote management application.

1. In the Quick Setup menu, set the IP address, subnet mask, and gateway for the MX3216 system. These should be available from the network administrator.
2. There should be one DS1 in the DS3s that carries the PPP traffic (Ethernet traffic) as either a full T1 or fractional T1 (FT1). Map this DS1 to the DS1 interfaces for the MX3RMM. In the Quick Setup menu, select the first DS1 for the MX3RMM module (MA1 or MB1). For this DS1 (MA1 or MB1), select the DS1 in DS3 A that is carrying the PPP traffic. Then, select the second DS1 for the MX3RMM module (MA2 or MB2). For this DS1 (MA2 or MB2), select the DS1 in DS3 B that is carrying the PPP traffic.
3. The MX3RMM defaults the DS1 interfaces to full T1 and ESF framing. If this does not match the application, then select the MX3RMM Quick Setup menu to change these settings.
4. These setup instructions assume that the timing source for the DS1 carrying the PPP traffic is from the direction of DS3 A in this network. If this is not so, then select the MX3RMM Quick Setup menu to change the timing modes for the MX3RMM DS1s. Interface A corresponds to MA1 or MB1. Interface B corresponds to MA2 or MB2.
5. Once all the MX3216 systems in the network have been provisioned, then both the front panel and rear chassis Ethernet jacks (see Figure 3-11 and Figure 3-12) give remote access to any other systems on this network, including other MX3216 systems. For example, by connecting an Ethernet jack from a laptop to the front panel Ethernet jack on the MX3RMM, a Telnet program can be used to Telnet to an MX3216 at another site using its IP address and port 23.

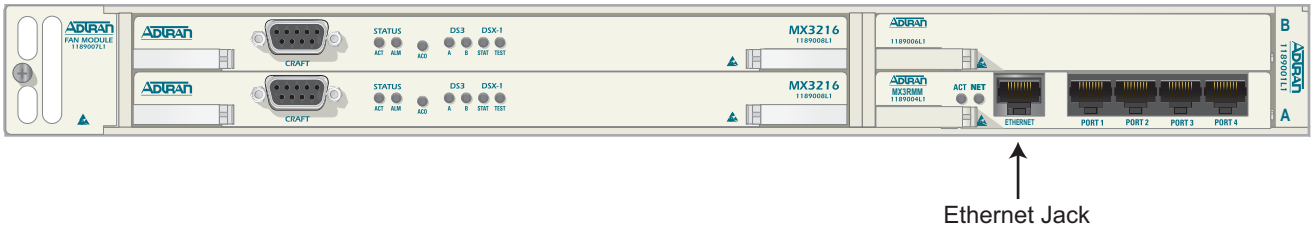

Figure 3-11. Front Panel Ethernet Jack

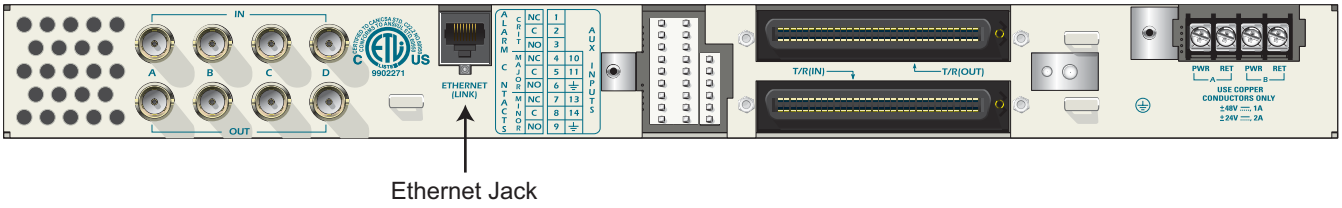

Figure 3-12. Rear Chassis Ethernet Jack

Figure 3-13 through Figure 3-15 show an example of setting up a remote management application. Figure 3-13 shows the Quick Setup menu before any IP settings have been established. It also shows a possible cross-connect mapping where several DS1s are dropped.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:    Site 1  MX3216

                            MX3216->Quick Setup
                    DS1 Ports                        Module Drops (None Installed)
 1 - # 1 : DS3 A T1 #12  9 - # 9 :                     MX3RMM (Module A)
 2 - # 2 : DS3 A T1 #13 10 - #10 :                     23 - MA1 -
 3 - # 3 : DS3 A T1 #14 11 - #11 :                     24 - MA2 -
 4 - # 4 : DS3 A T1 #15 12 - #12 :                     25 - MA3 -
 5 - # 5 :              13 - #13 :                     26 - MA4 -
 6 - # 6 :              14 - #14 :
 7 - # 7 :              15 - #15 :
 8 - # 8 :              16 - #16 :

 System
 17 - System ID    : Site 1  MX3216
 18 - IP Address   : 0.0.0.0
 19 - Subnet Mask  : 255.255.255.0
 20 - Gateway      : 0.0.0.0                    27 - MX3RMM Quick Setup Menu
 21 - Date         : 01/01/2005
 22 - Time         : 12:00:00

  Selection :                                        '?' - System Help Screen
```

Figure 3-13. Quick Setup Menu Showing Default IP Settings

Figure 3-14 shows the same menu after the IP settings have been established. The IP address is 10.200.2.215, the subnet mask is 255.255.0.0, and gateway is 10.200.254.254. These settings should be available from the network administrator.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:    Site 1  MX3216

                            MX3216->Quick Setup
                    DS1 Ports                        Module Drops (None Installed)
 1 - # 1 : DS3 A T1 #12  9 - # 9 :                     MX3RMM (Module A)
 2 - # 2 : DS3 A T1 #13 10 - #10 :                     23 - MA1 -
 3 - # 3 : DS3 A T1 #14 11 - #11 :                     24 - MA2 -
 4 - # 4 : DS3 A T1 #15 12 - #12 :                     25 - MA3 -
 5 - # 5 :              13 - #13 :                     26 - MA4 -
 6 - # 6 :              14 - #14 :
 7 - # 7 :              15 - #15 :
 8 - # 8 :              16 - #16 :

 System
 17 - System ID    : Site 1  MX3216
 18 - IP Address   : 10.200.2.215
 19 - Subnet Mask  : 255.255.0.0
 20 - Gateway      : 10.200.254.254             27 - MX3RMM Quick Setup Menu
 21 - Date         : 01/01/2005
 22 - Time         : 12:00:00

  Selection :                                        '?' - System Help Screen
```

Figure 3-14. Quick Setup Menu Showing Example IP Settings

Figure 3-15 shows the mapping of the MX3RMM T1/FT1 interfaces to the DS1 carrying the Ethernet traffic through the DS3s. DS1 #28 in both DS3s is the DS1 that is carrying the Ethernet traffic to other sites. The MX3RMM is installed in Expansion Slot A (bottom slot). The MX3RMM Network Interface A (MA1) is mapped to DS1 #28 in DS3 A. The MX3RMM Network Interface B (MA2) is mapped to DS1 #28 in DS3 B. If the timing source for DS1 #28 is in the direction of DS3 A, then no changes need to be made to the timing modes for the MX3RMM DS1s.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: None                              ID:    Site 1  MX3216

                            MX3216->Quick Setup
                    DS1 Ports                        Module Drops (None Installed)
 1 - # 1 : DS3 A T1 #12  9 - # 9 :                    MX3RMM (Module A)
 2 - # 2 : DS3 A T1 #13 10 - #10 :                    23 - MA1 - DS3 A T1 #28
 3 - # 3 : DS3 A T1 #14 11 - #11 :                    24 - MA2 - DS3 B T1 #28
 4 - # 4 : DS3 A T1 #15 12 - #12 :                    25 - MA3 -
 5 - # 5 :               13 - #13 :                    26 - MA4 -
 6 - # 6 :               14 - #14 :
 7 - # 7 :               15 - #15 :
 8 - # 8 :               16 - #16 :

 System
 17 - System ID    : Site 1  MX3216
 18 - IP Address   : 10.200.2.215
 19 - Subnet Mask  : 255.255.0.0
 20 - Gateway      : 10.200.254.254            27 - MX3RMM Quick Setup Menu
 21 - Date         : 01/01/2005
 22 - Time         : 12:00:00

  Selection :                                          '?' - System Help Screen
```

Figure 3-15. Quick Setup Menu Showing Mapping of MX3RMM DS1s

Remote Management of Other Systems Using Terminal Server Ports Application

This application is an extension of the "MX3216 with Remote Management Application" on page 3-11. In the remote management of other systems using terminal server ports application, the terminal server ports on the MX3RMM provide remote management of other equipment at the same site. This requires connecting the RS-232 craft ports of the other equipment to the terminal server ports of the MX3RMM. Then, establishing a Telnet session to the MX3RMM terminal server ports gives access to the other equipment (see Figure 3-16). Up to four external devices can be accessed in this way.

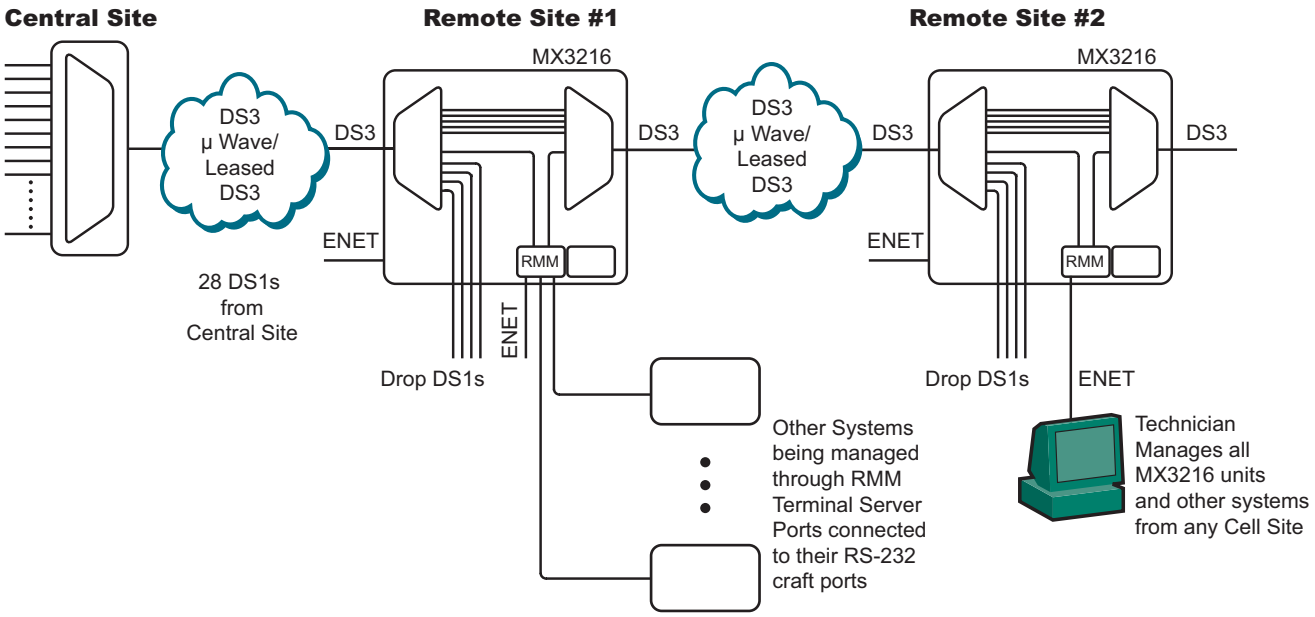

Figure 3-16. Remote Management of Other Systems Using Terminal Server Ports Application Diagram

Table 3-4 shows the equipment needed for a MX3216 with remote management of other systems using terminal server ports application.

Table 3-4. Remote Management of Other Systems Using Terminal Server Ports - Required Equipment

Part #	Equipment	Quantity
1189001L1	MX3 Chassis	1
1189004L1	MX3 Remote Management Module (MX3RMM)	1
1189007L1	MX3 Fan Module	1
1189008L1	MX3216 Controller Card	1 (2 for redundancy)

Setup

The following steps describe the setup for the remote management of other systems using terminal server ports application.

1. Setup remote management for the MX3216 system using the setup for the “MX3216 with Remote Management Application” on page 3-11.
2. Connect the MX3RMM terminal server port to the RS-232 craft port of the other equipment. Table 3-5 shows the pin assignments for each of the RS-232 interfaces.

NOTE

Obtain RJ-45 to DB9 adapters from a third party vendor (i.e., Kycon P/N KLA-ADTR-DB9M).

Table 3-5. PORT 1-4 Terminal Connector Pin List

RJ-45 Pin Port 1-4	DB9 Pin	Signal
1	5	GND
2	NC	NC
3	3	TXD
4	NC	NC
5	2	RXD
6	NC	NC
7	NC	NC
8	NC	NC

3. The default setting for the terminal server ports is 9600 bps with no parity. If this setting does not match the craft port setting of the other equipment, then change the setting on the Terminal Server menu under Provisioning of the MX3RMM.
4. Establish a Telnet session to the MX3216 with the port number for the particular port to access the other equipment. The port numbers default to 2023, 2024, 2025, and 2026, respectively, for each of the four ports. Once the session is established, the default username for each port is “port #” (where # is the number of the port), and the default password is “password”.

Section 4
Installation

INTRODUCTION

CAUTION

Electronic units can be damaged by ESD. When handling units, wear an antistatic discharge wrist strap to prevent damage to electronic components. Place units in antistatic packing material when transporting or storing. When working on units, always place them on an approved antistatic mat that is electrically grounded.

After unpacking the MX3216 system, inspect it for damage. If damage has occurred, file a claim with the carrier and then contact ADTRAN Customer Service. Refer to "Appendix A, Warranty" for further information. If possible, keep the original shipping container to return the MX3216 system for repair or for verification of shipping damage.

Required Components

- MX3 Chassis (P/N 1189001L1)
- MX3216 Controller Card (P/N 1189008L1)
- MX3 Fan Module (P/N 1189007L1)
- Mounting brackets and screws for 19-inch or 23-inch rack installation or for wall installation
- Ground lug with nut and lock washer
- Wire-wrap post cover
- Power cover

Required Tools

- 1/2” open end wrench
- No. 1 phillips-head screwdriver
- No. 2 phillips-head screwdriver
- 3/16” blade screwdriver
- Voltmeter
- Ohmmeter accurate to 0.1 ohm

INSTALLING THE MX3 CHASSIS

The following sections detail the steps needed to install and power up the MX3 chassis.

Installation

The MX3 chassis provides two options for mounting.

- “Rackmount Installation” on page 4-2
- “Wallmount Installation” on page 4-4

Use the appropriate set of instructions for the preferred application.

Rackmount Installation

For a rackmount installation, perform the following steps:

1. Attach the mounting brackets to the side of the MX3 chassis using the two screws provided for each bracket.
   - For 19-inch rack applications, adjust the bracket so that the larger side of the bracket is flush to the chassis (see Figure 4-1). The direction of the bracket and the set of holes used is dependent on the mounting configuration (i.e., flush mount).
   - For 23-inch rack applications, adjust the bracket so that the smaller side of the bracket is flush to the chassis (see Figure 4-2). The direction of the bracket and the set of holes used is dependent on the mounting configuration (i.e., flush mount).
2. Use the appropriate rack-type screws to mount the chassis into the rack.

WARNING

Care should be taken to not upset the stability of the equipment rack after installation is complete.

CAUTION

The unit must be installed in accordance with the requirements of NEC NFPA 70.

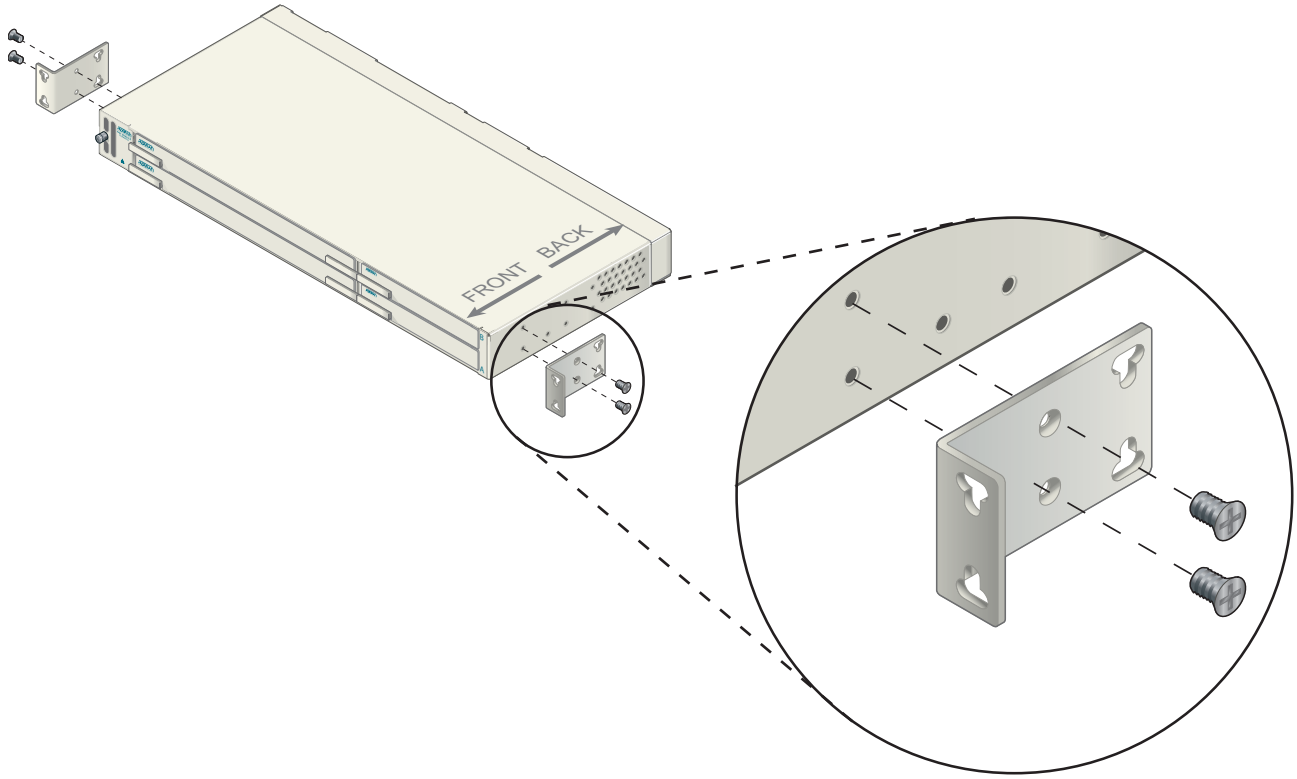

Figure 4-1. 19-inch Rack Applications

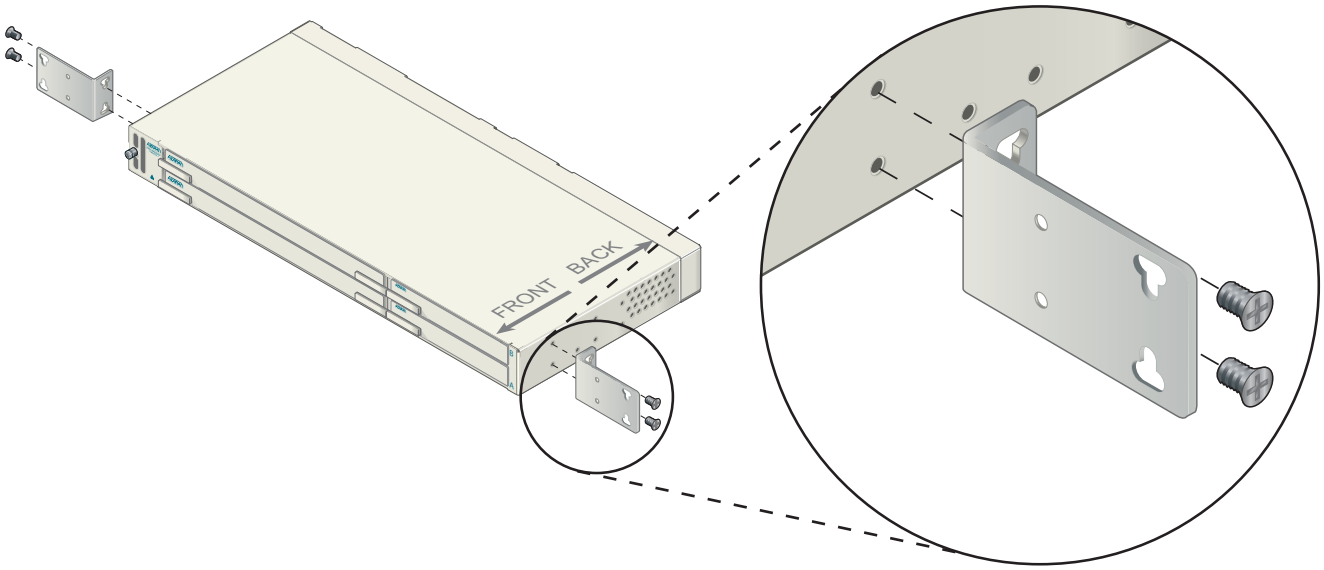

Figure 4-2. 23-inch Rack Applications

Wallmount Installation

For a wallmount installation, perform the following steps:

1. Attach the mounting brackets to the side of the MX3 chassis using the two screws provided for each bracket (see Figure 4-3).
2. Position the assembly on the wall with the MX3216 system front panel facing up.
3. Use the appropriate wallmount screws to mount the chassis to the wall.

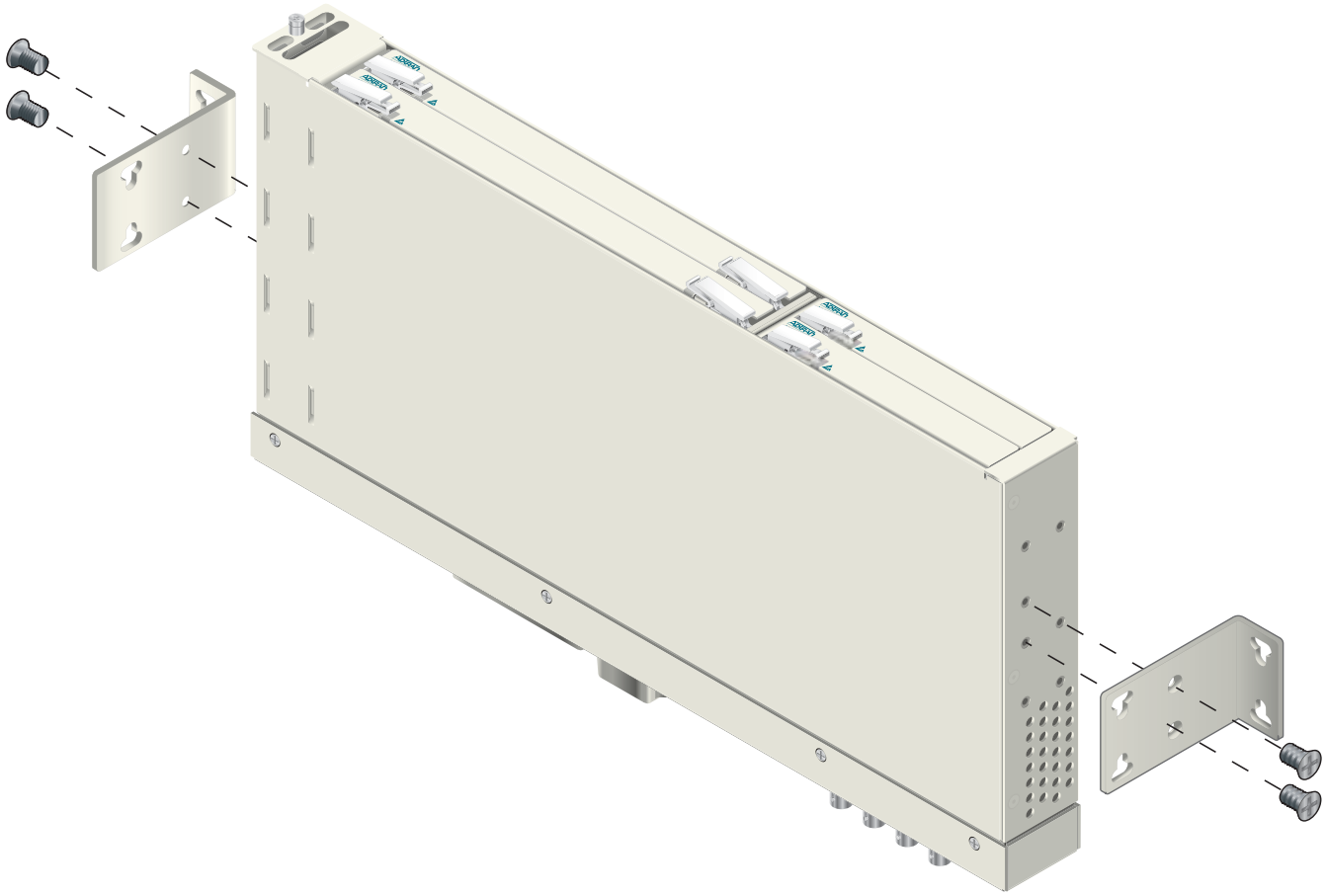

Figure 4-3. Wallmount Applications

Power Connections

To make the power connections for the MX3 chassis, perform the following steps:

1. Connect the frame ground from the frame ground lug on the rear panel of the MX3 chassis to the equipment rack grounding screw using appropriately sized wire that is at least the same gauge as the power wiring.
2. Test the frame ground connection to ensure proper ground. Using a multimeter set to its lowest resistance range, place one lead on the ground strap of the rack and the other on the chassis frame ground terminal. The reading should be less than 0.1 ohm. Readings greater than 0.1 ohm should be further investigated.
3. Make power connections to the MX3 chassis.

NOTE

A readily accessible disconnect device, such as a rackmount fuse and alarm panel that is suitably approved and rated, should be incorporated into the fixed wiring.

Connect to a reliably grounded –48 VDC or ±24 VDC source which is electrically isolated from the AC source.

The branch circuit overcurrent protection should be a fuse or circuit breaker rated –48 VDC, 1.5 amp slow-blow or ±24 VDC, 3 amp slow-blow.

a. Determine which fuse pairs are to supply power to the chassis.

b. Remove the fuses from the A and B slots for the pair.

c. Connect the ends of one wire between the “A” CO VDC supply and the **PWR A** terminal on the MX3 rear panel (see Figure 4-4).

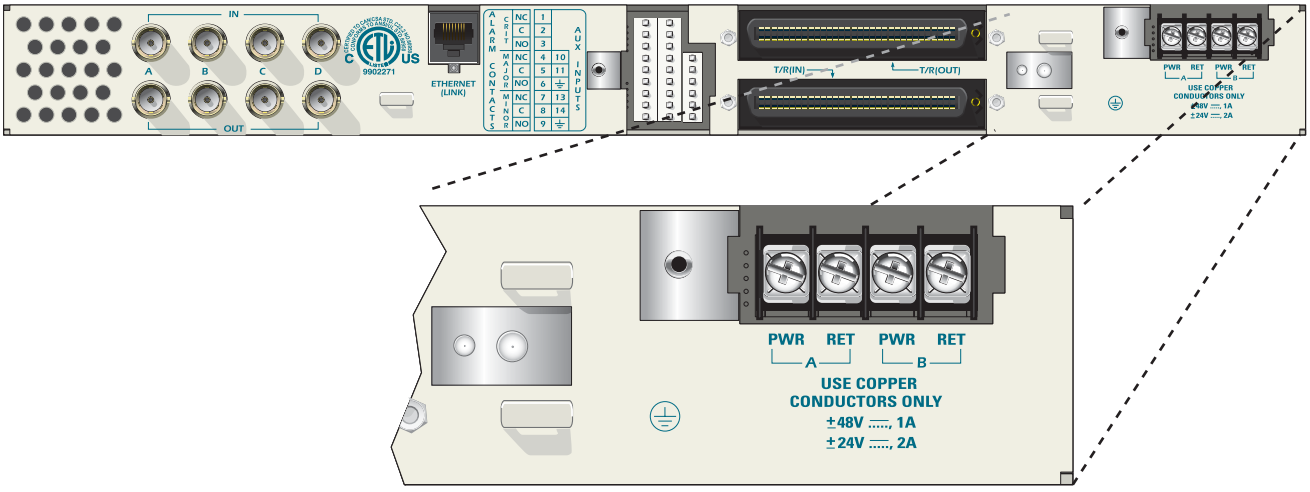

Figure 4-4. Power Connector

d. Connect the three remaining wires in the same manner. Connect the “A” CO VDC return with **RET A**; “B” CO VDC supply with **PWR B**; and “B” CO VDC return with **RET B**.

4. Apply power and check voltages.

WARNING

Installing fuses in the fuse and alarm panel at this stage provides power to the chassis. There is power to pins and connectors on the rear panel and inside the chassis. Exercise caution to avoid electrical shock.

a. Install appropriate fuses in the slots in the fuse and alarm panel that services the MX3 chassis (see Figure 4-5).

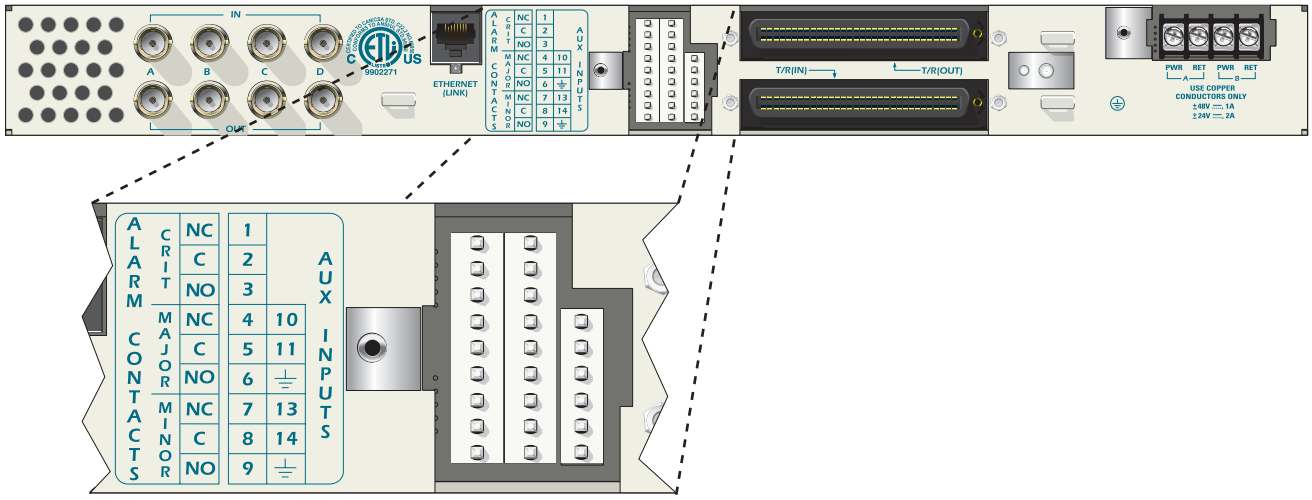

Figure 4-5. Fuse and Alarm Panel

b. Using a voltmeter, place the common (normally black) lead on the **RET A** post of the DC power terminal block and the DC volts (normally red) lead on the **PWR A** post of the DC power terminal block. For a –48 VDC supply, the reading should be in the operating range of –42 VDC to –60 VDC. For a ±24 VDC supply, the reading should be in the range of ±22 VDC to ±27 VDC.

c. Repeat the above step for the **RET/PWR B** connections.

d. Remove the fuses from the fuse and alarm panel servicing the MX3 chassis.

e. Install the protective cover over the power terminal block.

Rear Chassis Connections

Figure 4-6 illustrates the rear panel and identifies the following equipment:

1. Four sets of BNC connectors
2. Ethernet port
3. Wire-wrap pins for alarms (critical, major, and minor)
4. Wire-wrap pins for external auxiliary inputs
5. Two 64-pin female amphenol connectors
6. Ground lug for earth ground connection
7. Terminal strip for DC power feed (A and B)

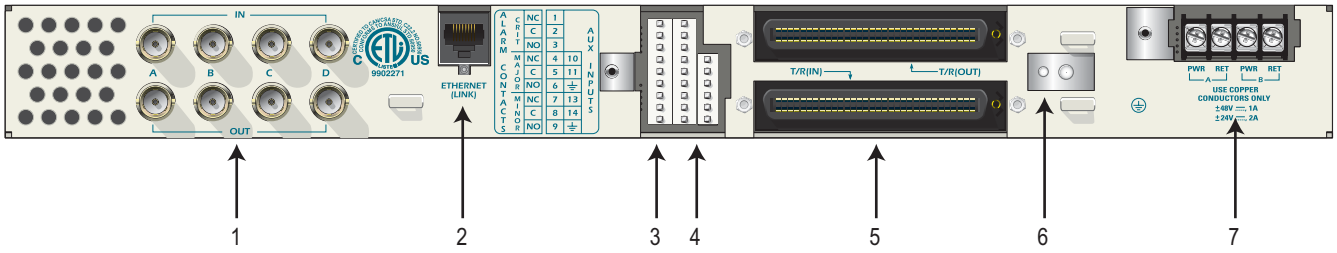

Figure 4-6. MX3 Chassis Rear View

WARNING

Do not metallically connect the DS3 (A-D), T/R (DSX-1), Alarm, AUX, and Ethernet interfaces to interfaces which connect to the Outside Plant (OSP) or its wiring. These interfaces are designed for use as intra-building interfaces only. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

1. The **ETHERNET** port is an 8-pin modular connector that provides a 10/100Base-T Ethernet interface. For system management, use CAT 5 cable to connect from the Ethernet network into the female RJ-45 port labeled **ETHERNET** on the MX3 chassis rear panel.
2. The DSX-3 network interfaces are full-duplex circuits provided by eight BNC coaxial cable connections. Connect the DS3 interfaces to the BNC connector labeled **A** as needed for the MX3216 system. Connect the receive data from the network to the **IN** connectors. Connect the transmit data from the MX3 chassis to the **OUT** connectors.

NOTE

DS3 interfaces must be connected using coaxial cables that have shields grounded at both ends.

3. The DSX-1 interfaces are 64-pin amphenol connectors. These interfaces provide Tx and Rx connections between the unit and equipment, such as wire-wrap patch panels, punch-down panels, or breakout panels. Connect the DSX-1 interfaces to the 64-pin **T/R (IN)** and **T/R (OUT)** amphenol receptacles (female). The MX3216 system uses T/R (IN)/(OUT) amphenol connectors, pins 1–16 and 33–48, for DSX-1 ports 1–16 (see Table 4-1).

Table 4-1. Amphenol Connector Pin List

Pin	Function		Pin
	Ring	Tip	
1	Ring 1	Tip 1	33
2	Ring 2	Tip 2	34
3	Ring 3	Tip 3	35
4	Ring 4	Tip 4	36
5	Ring 5	Tip 5	37
6	Ring 6	Tip 6	38
7	Ring 7	Tip 7	39
8	Ring 8	Tip 8	40
9	Ring 9	Tip 9	41
10	Ring 10	Tip 10	42
11	Ring 11	Tip 11	43
12	Ring 12	Tip 12	44
13	Ring 13	Tip 13	45
14	Ring 14	Tip 14	46
15	Ring 15	Tip 15	47
16	Ring 16	Tip 16	48
32	FGND	FGND	64

NOTE

On the back of the chassis, prepare right exit cables to avoid conflict with the alarm/auxillary connections, the network management port connection, and the DS3 connections.

4. The alarm connectors connect to the three contacts of a relay on the main board of the MX3216 Controller Card. Connect the **CRIT** (critical), **MAJOR**, and **MINOR** alarm leads from the fuse and alarm panel to the Common (**C**), Normally Open (**NO**), and Normally Closed (**NC**) wire-wrap terminals on the MX3 chassis rear panel as required (see Figure 4-5).

5. Connect the AUX INPUTS (1–8) used by the MX3216 system for Auxiliary Alarms 1-4. These pins sense open and closed relay contacts and are not polarity sensitive. Table 4-2 shows the pin assignments for the alarm inputs.

NOTE

Each alarm input defaults to a severity level of major. The severity level can be changed on the "Environmental Alarms Menu". Assign any alarm input to function as an alarm cut-off (ACO).

Table 4-2. AUX Inputs 1 - 8 Pin List

AUX Inputs 1 - 8 Pin List	
AUX Inputs	**Function**
1, 2	Alarm 1
3, 4	Alarm 2
5, 6	Alarm 3
7, 8	Alarm 4

6. After steps 4 and 5 are completed, install the protective cover over the wire-wrap headers.
7. Power can now be applied to the chassis by installing appropriate fuses in the fuse and alarm panel that services the MX3 chassis.

INSTALLING CARDS AND MODULES

The MX3216 system is designed with hot-swappable controller cards and modules. This section provides installation procedures for the different components of the MX3216 system.

Installing the Fan Module

CAUTION

The MX3216 Controller Card requires that the MX3 Fan Module (P/N 1189007L1) be installed in the MX3 chassis in sites where the temperature can exceed 50°C. For applications with ambient temperatures below 50°C, the MX3 Fan Module is not required. The MX3 chassis with the fans installed is not intended to be deployed in Central Offices or similar network facilities where the Telcordia GR-63-CORE or ANSI T1.319-2002 shelf level burn test is required.

The MX3 Fan Module mounts in the MX3 chassis (P/N 1189001L1). Follow the steps listed below to install the MX3 Fan Module. Figure 4-7 illustrates the installation of the MX3 Fan Module.

1. With the screw oriented to the left, insert the MX3 Fan Module into the MX3 chassis until the MX3 Fan Module is properly seated in the backplane.
2. Using a flat or phillips-head screwdriver, tighten the screw to secure the MX3 Fan Module to the MX3 chassis.

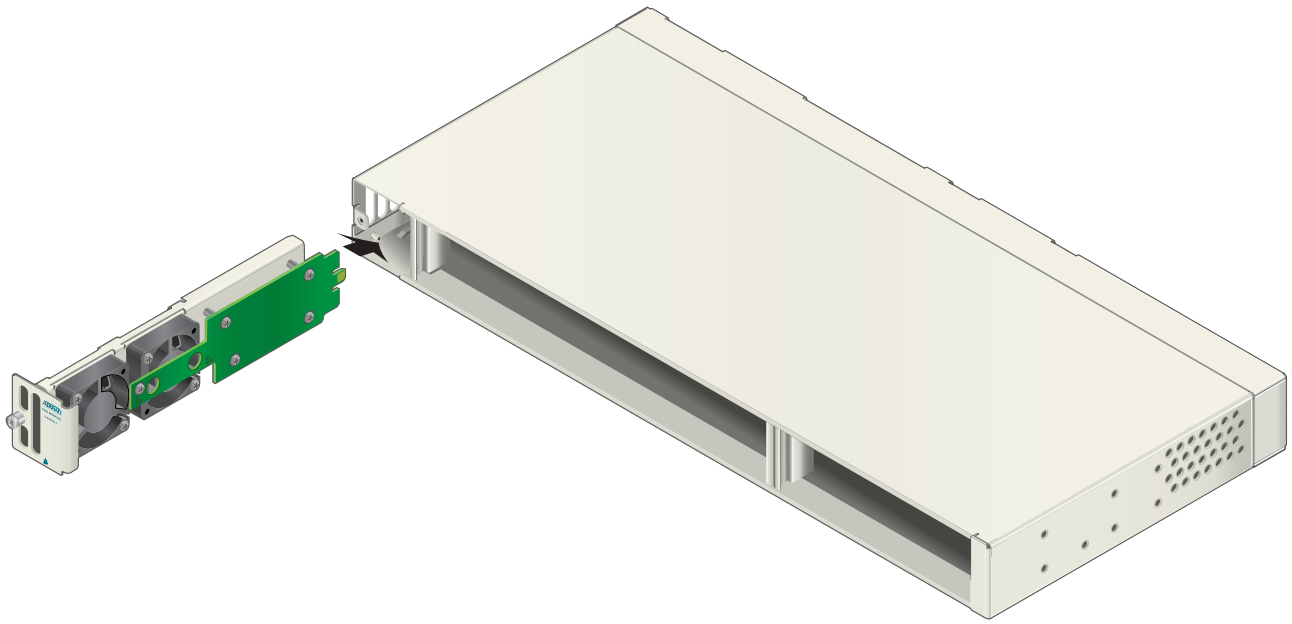

Figure 4-7. MX3 Fan Module Installation

Installing the MX3216 Controller Card

The MX3216 Controller Card occupies a controller slot in the MX3 chassis. Follow the steps listed below to install the MX3216 Controller Card. Figure 4-8 illustrates the installation of the controller card.

1. If present, remove the blank plug (P/N 1189005L1) from the appropriate controller slot.

> **NOTE**
>
> For configurations utilizing a single MX3216 Controller Card, a blank plug must be installed in the empty controller slot.

2. Open the ejector latches on the left and right sides of the front panel of the MX3216 Controller Card.
3. Gently, but firmly, slide the MX3216 Controller Card into the upper (**B**) or lower (**A**) controller slot, taking note of the left and right guide grooves in the chassis. Simultaneously, apply thumb pressure on the left (on the ADTRAN logo) and right (on the part number) of the MX3216 Controller Card to ensure a good seat of the controller card pins into the backplane connector.
4. Push the ejector latches to the left/right against the front panel until they latch.

The MX3216 Controller Card initializes and begins a self-test upon insertion into an active MX3 chassis. When the self-test completes, the LEDs reflect the true state of the MX3216 Controller Card (see Table 1-2).

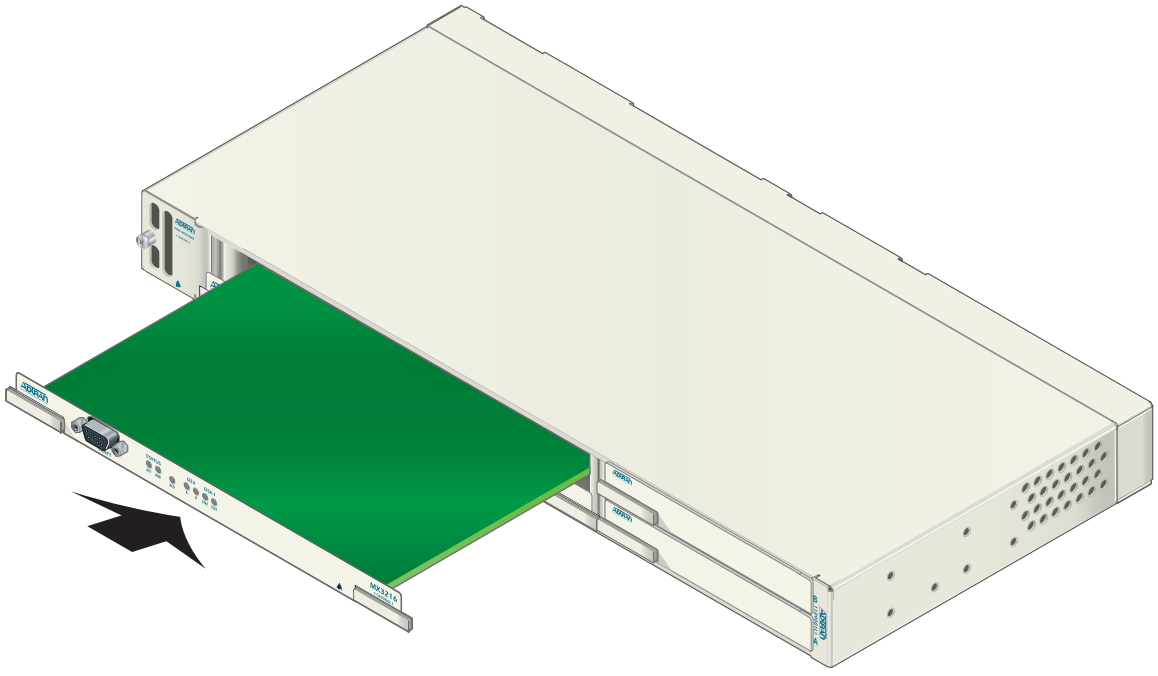

Figure 4-8. MX3216 Controller Card Installation

Installing the MX3RMM

The MX3RMM occupies an expansion slot in the MX3 chassis. Follow the steps listed to install the MX3RMM used with remote management applications. Figure 4-9 illustrates the installation of the MX3RMM.

1. If present, remove the blank plug (P/N 1189006L1) from the appropriate expansion slot.

NOTE

A blank plug must be installed in the empty expansion slot.

2. Open the ejector latch on the left side of the MX3RMM front panel.
3. Gently, but firmly, slide the MX3RMM into the upper (**B**) or lower (**A**) expansion slot, taking note of the left and right guide grooves in the chassis. Simultaneously, apply thumb pressure on the left (on the ADTRAN logo) and right (to the right of **PORT 4**) of the MX3RMM to ensure a good seat of the MX3RMM pins into the backplane connector.
4. Push the ejector latch against the front panel until it latches.

The MX3RMM initializes and begins a self-test upon insertion into an active MX3 chassis. When the self-test completes, the LEDs reflect the true state of the MX3RMM (see Table 1-4).

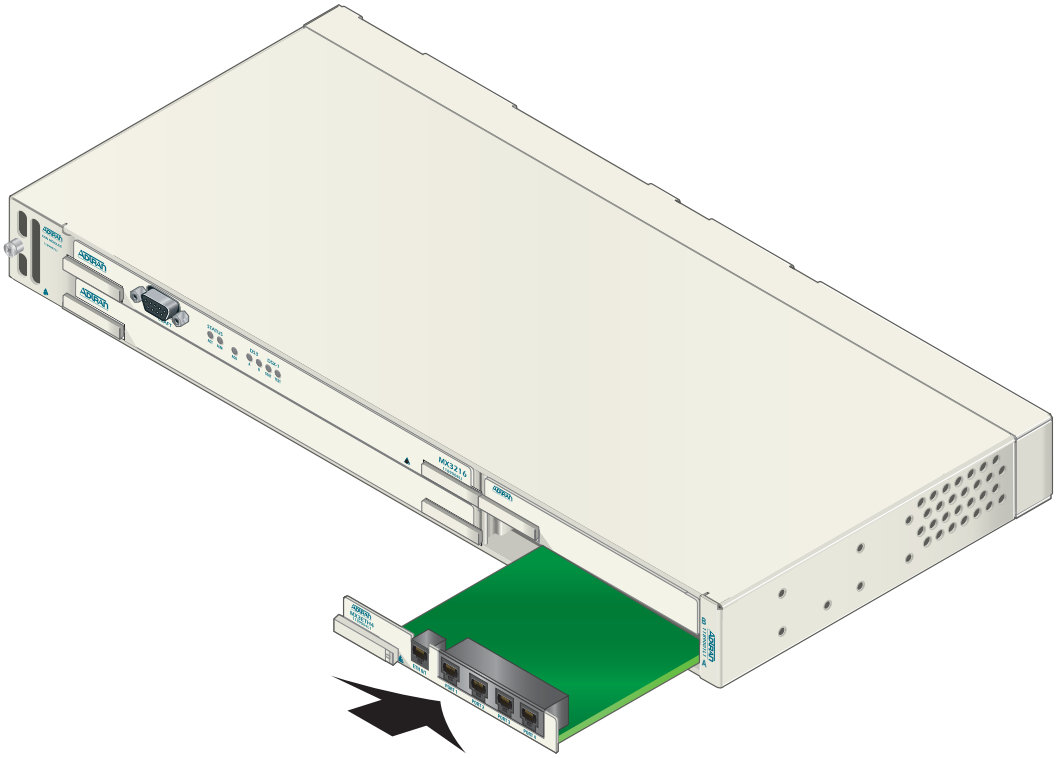

Figure 4-9. MX3RMM Installation

Section 5
Provisioning

INTRODUCTION

This section provides provisioning defaults and provisioning options for the cross connect of the MX3216 system as follows:

PROVISIONING DEFAULTS

Table 5-1 lists the MX3216 system default provisioning options.

For detailed information on the MX3216 menus, refer to "Section 6, User Interface".

Table 5-1. MX3216 Default Provisioning Options

Provisioning Option	Available Options	Default Setting
DS3 Interfaces		
Tx Framing	C-Bit; M23	C-Bit
Tx Clock Source	Local; Loop	Local
Loopback Detection	Disabled; Enabled	Enabled
DS3 Circuit Identifier	User defined	DS3 A
DS1 Port Interfaces		
Line Length (feet)	0-133; 133-266; 266-399; 399-533; 533-655	0-133
Line Coding	AMI; B8ZS	B8ZS
Loopback Detection	Disabled; CSU; NIU	Disabled
Circuit Identifier	User defined	DS1 Port #1

Table 5-1. MX3216 Default Provisioning Options (Continued)

Provisioning Option	Available Options	Default Setting
Cross-Connect Mapping		
Cross-Connect Mapping	Connections can be made between the following: • DS3 B T1 #1 to #28 • DS1 Ports #1 to #16 • Module A #1 to #4 • Module B #1 to #4	DS3 A T1 #1 - #28 = DS3 B T1 #1 - #28, respectively
General		
Craft Port Baud Rate	Auto; Disabled; 9600; 19200; 38400; 57600; 115200	115200
Date	MM/DD/YYYY	N/A
Time	HH:MM:SS (24 hour format)	N/A
Auto-Logoff Inactivity Time	Disabled; 1-Min; 5-Min; 10-Min; 15-Min; 30-Min; 45-Min; 60-Min	15-Min
Scheduled Card Reset	MM/DD/YYYY HH:MM:SS	Disabled
Network Management		
IP Address	0–255.0–255.0–255.0–255	Not configured
Subnet Mask	0–255.0–255.0–255.0–255	Not configured
Gateway	0–255.0–255.0–255.0–255	Not configured
Provisioned Data Rate	10 Mbps; 100 Mbps; Auto	Auto
Cross-Over Mode	MDI; MDI-X; Auto	Auto
Secondary Telnet Port	User defined	2002
TFTP Server	0–255.0–255.0–255.0–255	Not configured
SNMP		
SNMP State	Disabled; Enabled	Disabled
SNMP Traps	Disabled; Enabled	Disabled
Trap Host 1 - 4 Status	Valid; Under Creation; Invalid	Invalid
System ID	User defined	System ID Not Set
System Location	User defined	System Location Not Set
System Contact	User defined	System Contact Not Set
Read Community	User defined	public
Write Community	User defined	private

Table 5-1. MX3216 Default Provisioning Options (Continued)

Provisioning Option	Available Options	Default Setting
Test		
DS1 Ports #1 - #16	Data Mode; Analog Network; Digital Line/ Net; CSU Loopback; CSU LB w/ Pattern; NIU Loopback; NIU LB w/ Pattern; Pattern Test	Data Mode
DS3 A - B	Data Mode; Line Loopback; Digital Loopback; Remote Loopback; Remote ALL T1	Data Mode
DS1s in DS3 A - B #1 - #28	Data Mode; Tributary Loopback; Remote Loopback; CSU Loopback; CSU LB w/ Pattern; NIU Loopback; NIU LB w/ Pattern; Pattern Test	Data Mode
Test Timeout	Disabled; 1 minute; 5 minutes; 10 minutes; 15 minutes; 30 minutes; 45 minutes; 60 minutes	5 minutes
Pattern	QRSS; ALL ONES; ALL ZEROS; 2 IN 8 (2:6); 1 IN 8 (1:7); 2^15-1 INV	QRSS
System Alarms		
Aux #1 - #4 Input Description	User defined	AUX #1 - #4 INPUT, respectively
Aux #1 - #4 Input Level	Disabled; Info; Alert; Minor; Major; Critical; ACO	Major
PWR Bus A - B Input	Disabled; Info; Alert; Minor; Major; Critical	Major
Module A Removed Level	Disabled; Info; Alert; Minor; Major; Critical	Critical
Module B Removed Level	Disabled; Info; Alert; Minor; Major; Critical	Critical
Stand-by Controller Removed Level	Disabled; Info; Alert; Minor; Major; Critical	Minor
Alarm Chronology	Ascending; Descending	Ascending

Table 5-2 shows the MX3RMM default provisioning options.

Table 5-2. MX3RMM Default Provisioning Options

Provisioning Option	Available Options	Default Settings
Network Interface A - B		
Primary Timing Mode	Internal; Line; Through	Through
Secondary TIming Mode	Internal; Line; Through	Line
Interface State	Enabled; Disabled	Enabled
Timeslot Assignment	User defined	01–24
Terminal Server Port 1 - 4		
Terminal State	Enabled; Disabled	Enabled
Baud Rate	9600; 19200; 38400; 57600; 115200	9600
Parity	Even; Odd; None	None
Telnet Port Number	User defined	2023
Security	Enabled; Disabled	Enabled
Username	User defined	port 1–4, respectively
Password	User defined	password
Ethernet Interface		
Ethernet State	Enabled; Disabled	Enabled
Link Speed & Duplex	Auto; 10 Mbps, Half Duplex; 10 Mbps, Full Duplex; 100 Mbps, Half Duplex; 100 Mbps, Full Duplex	Auto
Cross-over Mode	Auto; MDI; MDI-X	Auto
Test		
DS1 A Testing	None; Line; Payload	None
DS1 B Testing	None; Line; Payload	None
Loopback Timeout	120 Minutes; 90 Minutes; 60 Minutes; 30 Minutes; 15 Minutes; Disabled	60 Minutes

CROSS-CONNECT METHODS

The Cross-Connect menu (see Figure 5-1) allows provisioning of the 3/1 cross connect. Establish connections between the DS3s, rear panel DSX-1 drops, and module card DS1s as shown in Figure 3-1 on page 3-2. With some restrictions, any DS1 can be connected to any other DS1. The restrictions are as follows:

- DS1s in the same DS3 cannot be connected.
- DS1 ports cannot be connected to other DS1 ports (DSX-1 drops).
- DS1s on the same module cannot be connected.
- No more than two DS1 ports (DSX-1 drops) can be connected to module DS1s.
- All connections are two-way only. Only two DS1s can be part of any given connection. A third DS1 cannot be added to a connection.

Two methods are available to configure the cross-connect. The first method consists of three views that are accessed by the T hot key. The DS3 A and DS3 B views show DS3 connections (see Figure 5-1). The Drops view shows DS1 port and module connections (see Figure 5-2).

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                          ID:        Site 1  MX3216

                      MX3216->Provisioning->Cross-Connect
     DS3 A
 1 - T1 #1  = DS3 B T1 #1              15 - T1 #15 = DS3 B T1 #15
 2 - T1 #2  = DS3 B T1 #2              16 - T1 #16 = DS3 B T1 #16
 3 - T1 #3  = DS3 B T1 #3              17 - T1 #17 = DS3 B T1 #17
 4 - T1 #4  = DS3 B T1 #4              18 - T1 #18 = DS3 B T1 #18
 5 - T1 #5  = DS3 B T1 #5              19 - T1 #19 = DS3 B T1 #19
 6 - T1 #6  = DS3 B T1 #6              20 - T1 #20 = DS3 B T1 #20
 7 - T1 #7  = DS3 B T1 #7              21 - T1 #21 = DS3 B T1 #21
 8 - T1 #8  = DS3 B T1 #8              22 - T1 #22 = DS3 B T1 #22
 9 - T1 #9  = DS3 B T1 #9              23 - T1 #23 = DS3 B T1 #23
10 - T1 #10 = DS3 B T1 #10             24 - T1 #24 = DS3 B T1 #24
11 - T1 #11 = DS3 B T1 #11             25 - T1 #25 = DS3 B T1 #25
12 - T1 #12 = DS3 B T1 #12             26 - T1 #26 = DS3 B T1 #26
13 - T1 #13 = DS3 B T1 #13             27 - T1 #27 = DS3 B T1 #27
14 - T1 #14 = DS3 B T1 #14             28 - T1 #28 = DS3 B T1 #28

(T)oggle View (DS3 B, Drops)                  (V)iew Map

  Selection :                                       '?' - System Help Screen
```

Figure 5-1. Cross-Connect Menu

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                          ID:        Site 1  MX3216

                    MX3216->Provisioning->Cross-Connect
     DS1 Ports                                  Module Cards
 1 - DS1 #1 =                           17 - Module A #1 =
 2 - DS1 #2 =                           18 - Module A #2 =
 3 - DS1 #3 =                           19 - Module A #3 =
 4 - DS1 #4 =                           20 - Module A #4 =
 5 - DS1 #5 =
 6 - DS1 #6 =                           21 - Module B #1 =
 7 - DS1 #7 =                           22 - Module B #2 =
 8 - DS1 #8 =                           23 - Module B #3 =
 9 - DS1 #9 =                           24 - Module B #4 =
10 - DS1 #10 =
11 - DS1 #11 =
12 - DS1 #12 =
13 - DS1 #13 =
14 - DS1 #14 =
15 - DS1 #15 =                          25 - Restore Map to Factory Default
16 - DS1 #16 =
(T)oggle View (DS3 A, DS3 B)                    (V)iew Map
  Selection :                                         '?' - System Help Screen
```

Figure 5-2. Drops View

The second method condenses all cross-connect information into one menu that can be accessed by the V hot key (see Figure 5-3).

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                          ID:        Site 1  MX3216

               MX3216->Provisioning->Cross-Connect->View Map

 T  DS3   DS3     DS1     MODULE  MODULE          T  DS3   DS3
 1 A(A)  B(B)  PORTS(P)  A (MA)  B (MB)          1 A(A)  B(B)
 1 B1    A1       -        -       -             17 B17   A17
 2 B2    A2       -        -       -             18 B18   A18
 3 B3    A3       -        -       -             19 B19   A19
 4 B4    A4       -        -       -             20 B20   A20
 5 B5    A5       -                              21 B21   A21
 6 B6    A6       -                              22 B22   A22
 7 B7    A7       -                              23 B23   A23
 8 B8    A8       -                              24 B24   A24
 9 B9    A9       -                              25 B25   A25
10 B10   A10      -                              26 B26   A26
11 B11   A11      -                              27 B27   A27
12 B12   A12      -                              28 B28   A28
13 B13   A13      -               To Make/Break a Connection enter the
14 B14   A14      -               DS1 (Example: A28 for DS3 A T1 #28)
15 B15   A15      -
16 B16   A16      -                                    '?' - System Help Screen
SELECT DS1:
```

Figure 5-3. View Map Menu

For additional details, refer to the “Cross-Connect Menu” on page 6-35.

Method 1

1. To make a new connection, toggle through the menus to find the first DS1 in the connection (see Figure 5-1).
   - If the first DS1 is part of an existing connection, a prompt appears to confirm the removal of the existing connection.
   - If a connection was destroyed, the first DS1 has to be selected again to create a new connection.
2. Once the DS1 is selected, choose the second DS1 in the connection by specifying the group and the DS1. If the second DS1 is part of an existing connection, a prompt appears to confirm the removal of the existing connection and the creation of the new connection.

Method 2

1. From the Cross-Connect menu (see Figure 5-1), select V to access the View Map menu (see Figure 5-3).
2. To make a new connection, enter one of the DS1s in the new connection, and press ENTER.
   a. Enter the type of DS1.
      - **A** for DS3 A
      - **B** for DS3 B
      - **P** for DS1 Port (DSX-1 Drop)
      - **MA** for Module A
      - **MB** for Module B

   b. Enter the number for the DS1.

      Input examples are as follows:
      - **A1** identifies the first tributary DS1 in DS3 A.
      - **B28** identifies the last tributary DS1 in DS3 B.
      - **P1** identifies the first DS1 port (DSX-1 drop).
      - **MA1** identifies the first DS1 available to Module A.
      - **MB4** identifies the last DS1 available to Module B (assuming Module B supports four DS1s).
3. A screen or prompt appears to signify whether the selection is currently mapped or unmapped. Follow the instructions below for the applicable connection.
   - If the selection is currently mapped to a T1, the Confirm Unmap/Map screen appears to select yes to unmap the selected cross-connect or no to leave the connection as is. Once the cross connect is broken, re-enter the first DS1 and follow the instructions below for an unmapped DS1.
   - If the selection is currently unmapped, the “MAP <selection> TO DS1:” appears at the bottom of the View Map menu allowing another selection to be made to complete the connection. If the second selection is currently unmapped, the connection is complete. If the second selection is currently mapped to a T1, the Confirm Unmap/Map screen provides a yes/no option to unmap the current cross connect and map the newly selected cross connect.

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Section 6
User Interface

INTRODUCTION

This section provides detailed information on the following:

SYSTEM MANAGEMENT

MX3216 system management and provisioning is facilitated by a series of intuitive menus that are accessible on a computer screen. The MX3216 provides three methods for management access.

Craft Interface

Connect to the MX3216 system menus through the DB-9 connector, labeled **CRAFT**, on the front of the MX3216 Controller Card (see Figure 6-1). A DB-9 straight-through cable is required.

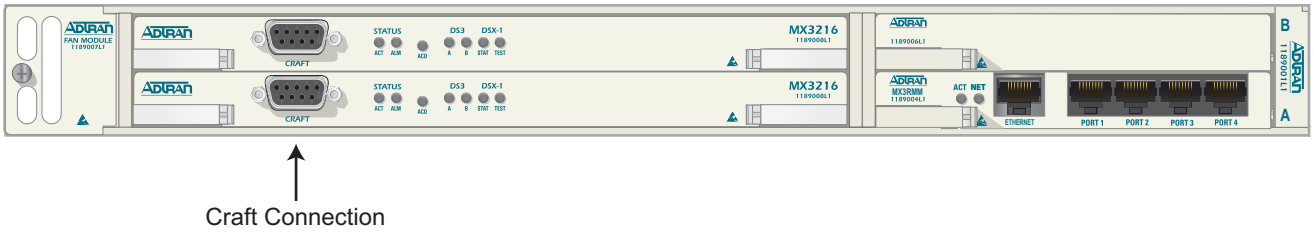

Figure 6-1. Craft Connection

Most personal computers or laptops can run communications software that emulates a VT100 terminal. Windows programs such as Terminal or HyperTerminal are two such examples in the Windows format, but there are many other adequate, commercially available software packages, virtually all of which allow the PC or laptop to emulate a VT100 terminal. Certain configuration items must be set on a PC or laptop to act as a VT100 terminal for the MX3216 system.

1. Set the parameters of the communications software to the following settings:
   - 115200 baud rate or less
   - 8 data bits
   - No parity
   - 1 stop bit
   - No flow control
2. Set the PC for direct connect on the appropriate communications port (as opposed to dial-up connection).
3. Plug the male end of the data cable into the MX3216 Controller Card. Make connection to the PC or laptop as appropriate for the equipment.

Ethernet Interface

Connection to the MX3216 system can be made through a rear panel Ethernet port or a front panel Ethernet port if the optional MX3RMM is installed.

1. Connect the local Ethernet port to another 10/100 Mbps Ethernet port using either a straight-through or cross-over cable.

NOTE

The IP address, subnet mask, and default gateway must be set through the front panel craft port initially before an Ethernet port can be used.

2. To log on using a Telnet application, set the IP address to the appropriate address, and set either the default port to 23 or use the secondary port, which is user-defined.

Remote Interface

Connection to the MX3216 system can be made through a remote logon by a T1/FT1 when using the MX3RMM.

1. To enable remote Telnet access, configure the built-in 3-to-1 cross connect so that the MX3RMM has access to the DS1s that are transporting the PPP data. Also, configure the MX3RMM to properly terminate the DS1 and enable the appropriate DS0s. The IP address, subnet mask, and default gateway must be configured as well.
2. To log on using a Telnet application, set the IP address to the appropriate address, and set either the default port to 23 or use the secondary port, which is user-defined.

LOGGING ON TO THE MX3216

To log on to the MX3216 system, perform the following steps:

1. Establish the physical connection to the MX3216 system using one of the three options discussed in "System Management" on page 6-1.
2. If a craft port session is being used, proceed to step 3. If using a Telnet session, proceed to step 4.
3. Press ENTER until the logon prompt appears.

NOTE

The MX3216 system requires the user ID and associated password.

4. Enter the default user ID, "ADMIN" (or the configured logon name with System Administrator privileges), and press ENTER.
5. Enter the default password, "PASSWORD" (or the configured password), and press ENTER.

NOTE

Logon name and password fields are case sensitive. The default values are all uppercase.

NOTE

If your username and/or password are forgotten, Adtran Tech Support can assist with logon.

MENU STRUCTURE

The MX3216 Controller Card provides a menu system for the entire MX3216 system. All system-related menus are controlled by the Controller Card. This subsection explains the methods used to navigate the MX3216 system menus.

NOTE

To view the MX3216 system menu trees, refer to "Menu Trees" on page 6-5.

The menu structure for the MX3216 system is a layered menu tree. Each layer of the menu tree is displayed as a menu or a screen.

Menu

A menu is a display that provides numbered selections that are used to navigate to related menus, modify provisioning information, or display information screens. A menu can contain the following objects:

- Menu Option: A menu option is indicated by a number, which when selected navigates the display to another menu layer or is used to change the option setting.
- Read-only Field: A read-only field displays information that cannot be changed. The information displayed in a read-only field can be static or can be automatically updated by the MX3216.
- Read-write Field: A read-write field displays information that when selected can be modified.
- Keyboard Commands: A hot key is a key or combination of keys that are assigned to a function (see Table 6-1). Hot keys are indicated by the required key(s) and a brief description (i.e., CTRL+A - acknowledge all alarms).

Screen

A screen is a display that usually indicates the end of a menu tree path. A screen can contain the following objects:

- Read-only Field: A read-only field displays information that cannot be changed. The information displayed in a read-only field can be static or can be automatically updated by the MX3216.
- Read-write Field: A read-write field displays information that when selected can be modified.
- Keyboard Commands: A hot key is a key or combination of keys that are assigned to a function (see Table 6-1). Hot keys are indicated by the required key(s) and a brief description (i.e., CTRL+A - acknowledge all alarms).

MENU NAVIGATION

Basic menu navigation is accomplished by selecting the desired option number and then pressing ENTER. To work backward through the menus press the ESC (escape) key. To access the System Help screen, press the question mark (?) key, and press ENTER.

Quickly identify the location of each menu and screen in the MX3216 system by referencing the underlined menu title shown on every menu and screen (see Figure 6-2). Each menu title shows the current path.

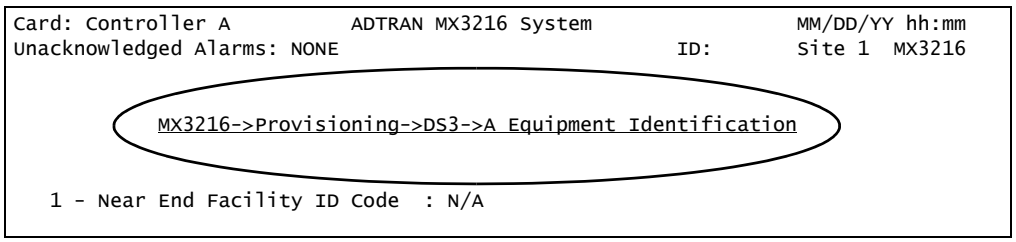

Figure 6-2. Menu Title

Table 6-1 displays the general keyboard commands for the MX3216 system. The System Help screen can be accessed from any MX3216 screen or menu by pressing "?".

Table 6-1. MX3216 Keyboard Commands

Keyboard Command	Description
BACKSPACE	This keyboard command is used to delete the character to left of the cursor during keyboard input.
ENTER (or Return)	This keyboard command is used to terminate input.
ESC (Escape)	This keyboard command is used to back up to the previous menu.
CTRL+A (Control and a)	This keyboard command is used to acknowledge all alarms
CTRL+C/D (Control and c or d)	This keyboard command is used to log out and disconnect.
CTRL+R (Control and r)	This keyboard command is used to refresh the display.
CTRL+Z (Control and z)	This keyboard command is used to force an exit of the terminal menus.

MENU TREES

This subsection provides a detailed set of menu trees for the MX3216 system. The menu trees are maps that can be used to locate provisioning options with ease. Some of the menu trees span multiple pages, signified by the "(Continued)" at the end of the illustration title. The following menu trees are provided:

- "MX3216 Main Menu Tree" on page 6-6
- "MX3RMM Main Menu Tree" on page 6-15

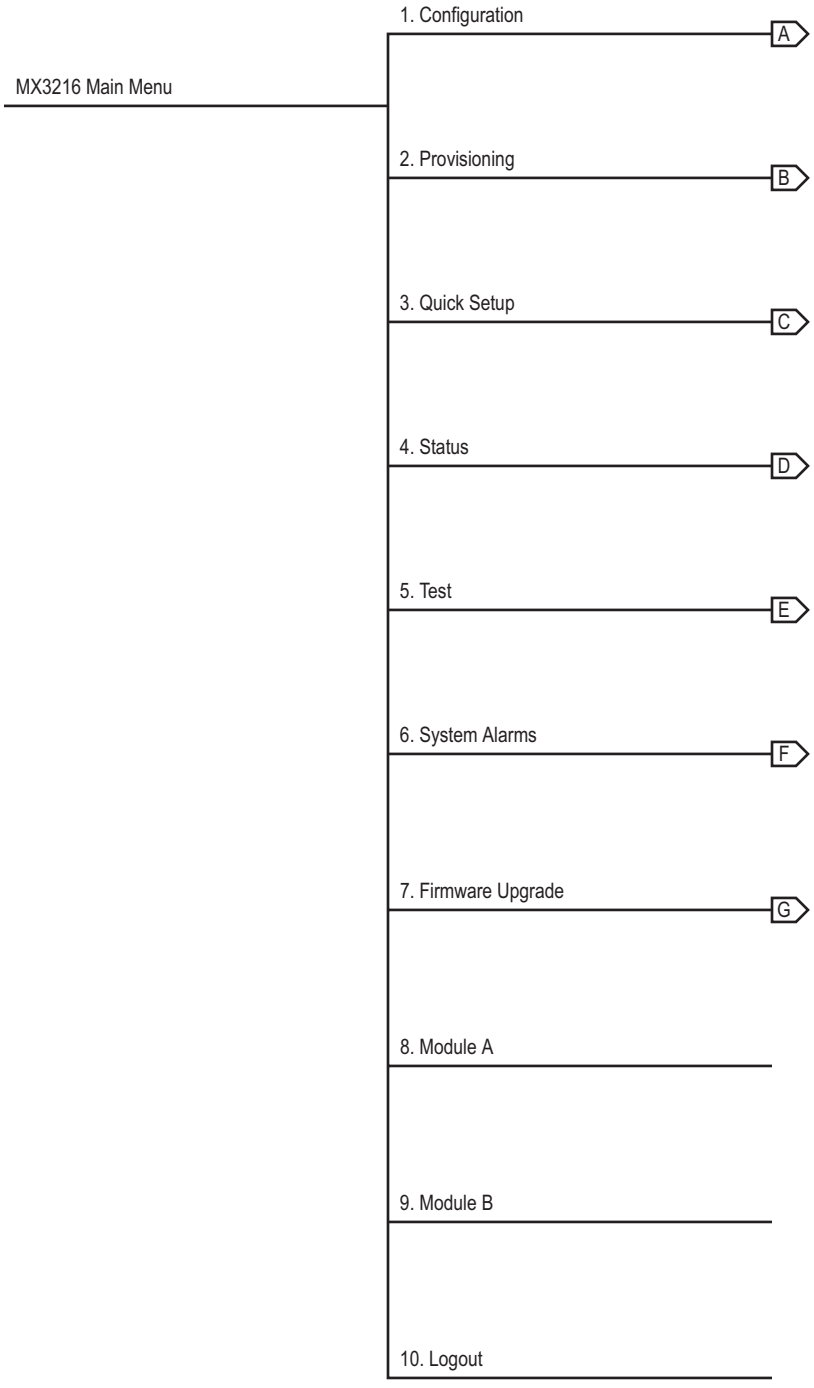

Figure 6-3. MX3216 Main Menu Tree

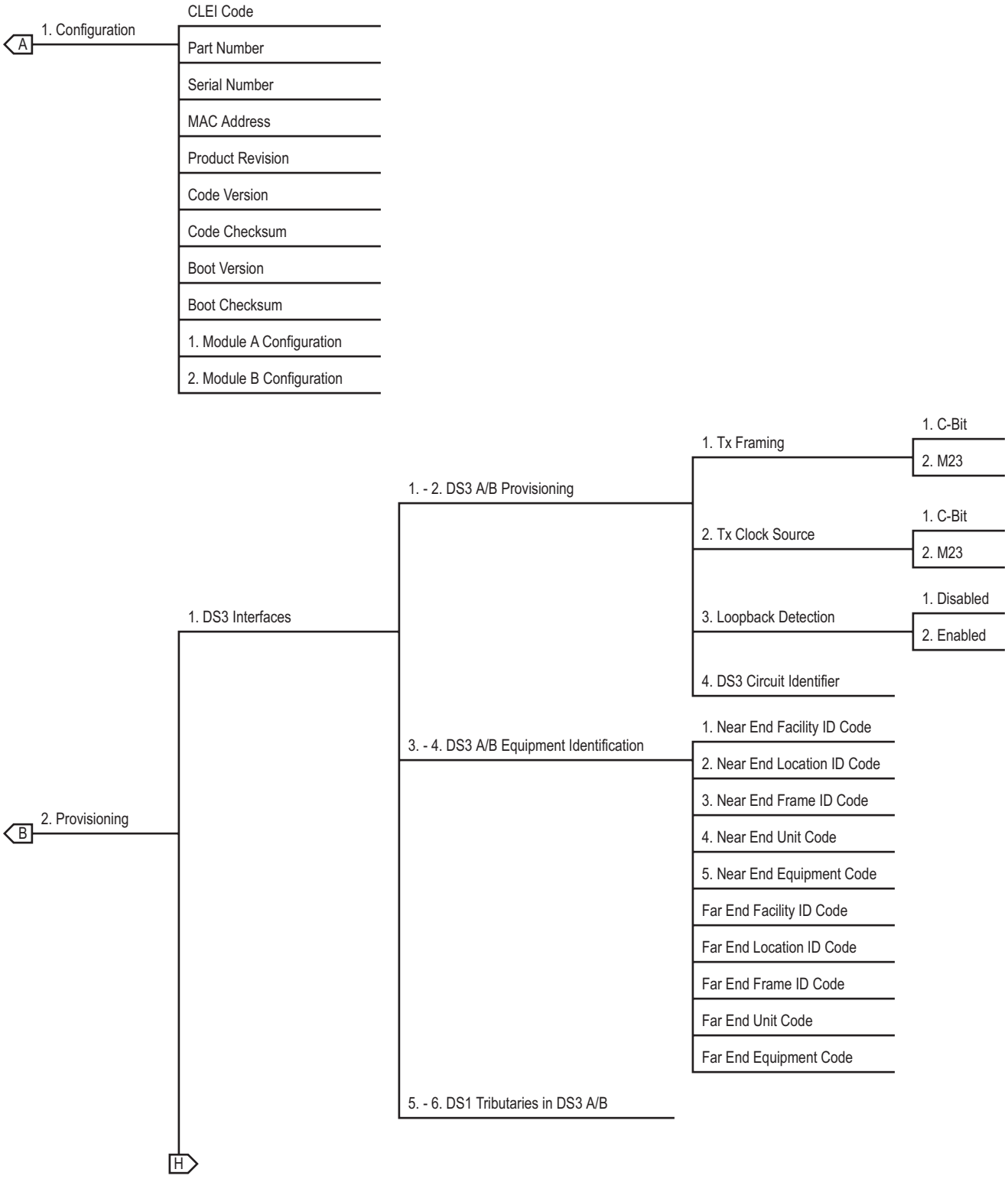

Figure 6-4. Configuration and Provisioning Menu Trees

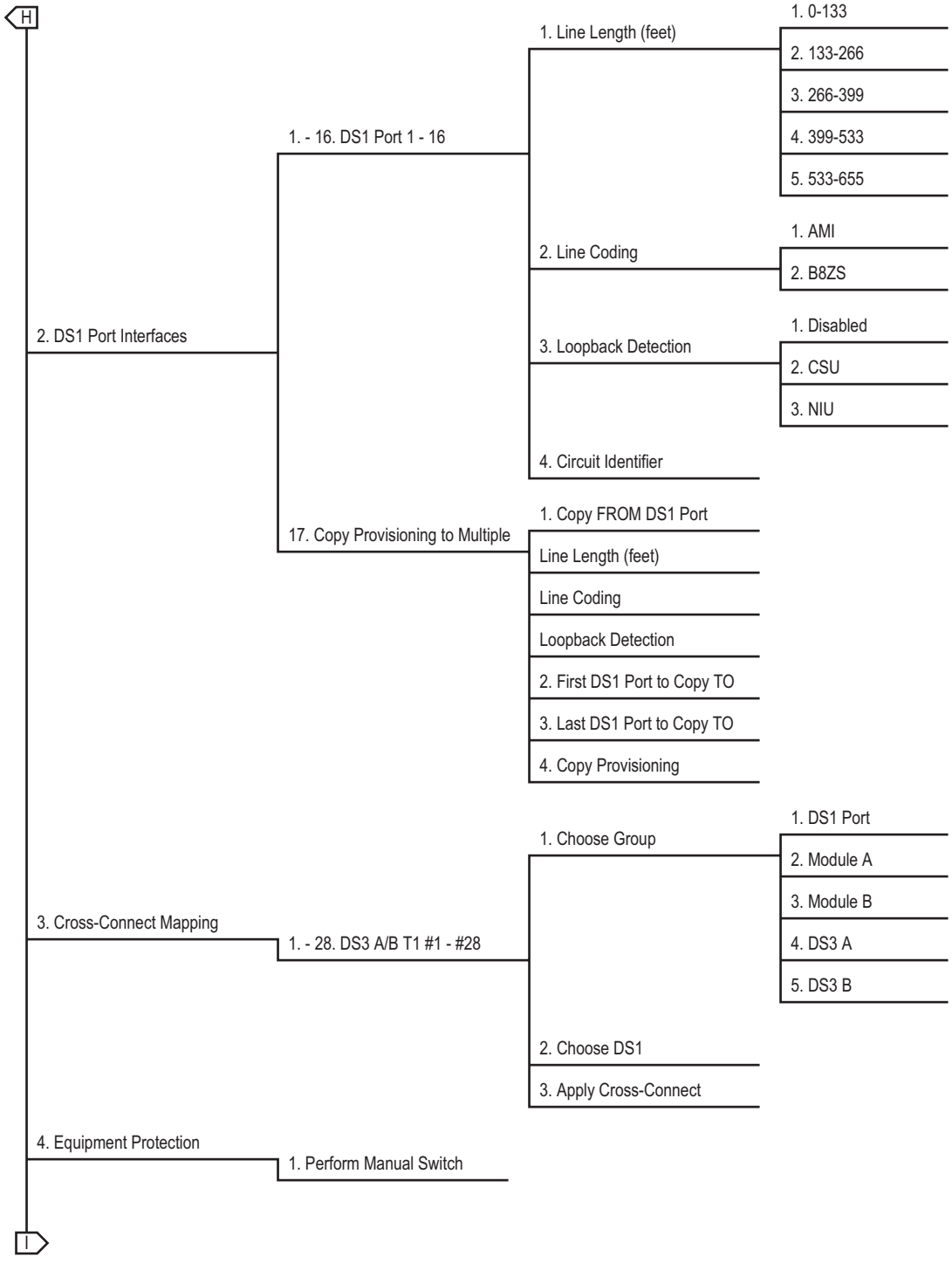

Figure 6-4. Configuration and Provisioning Menu Trees (Continued)

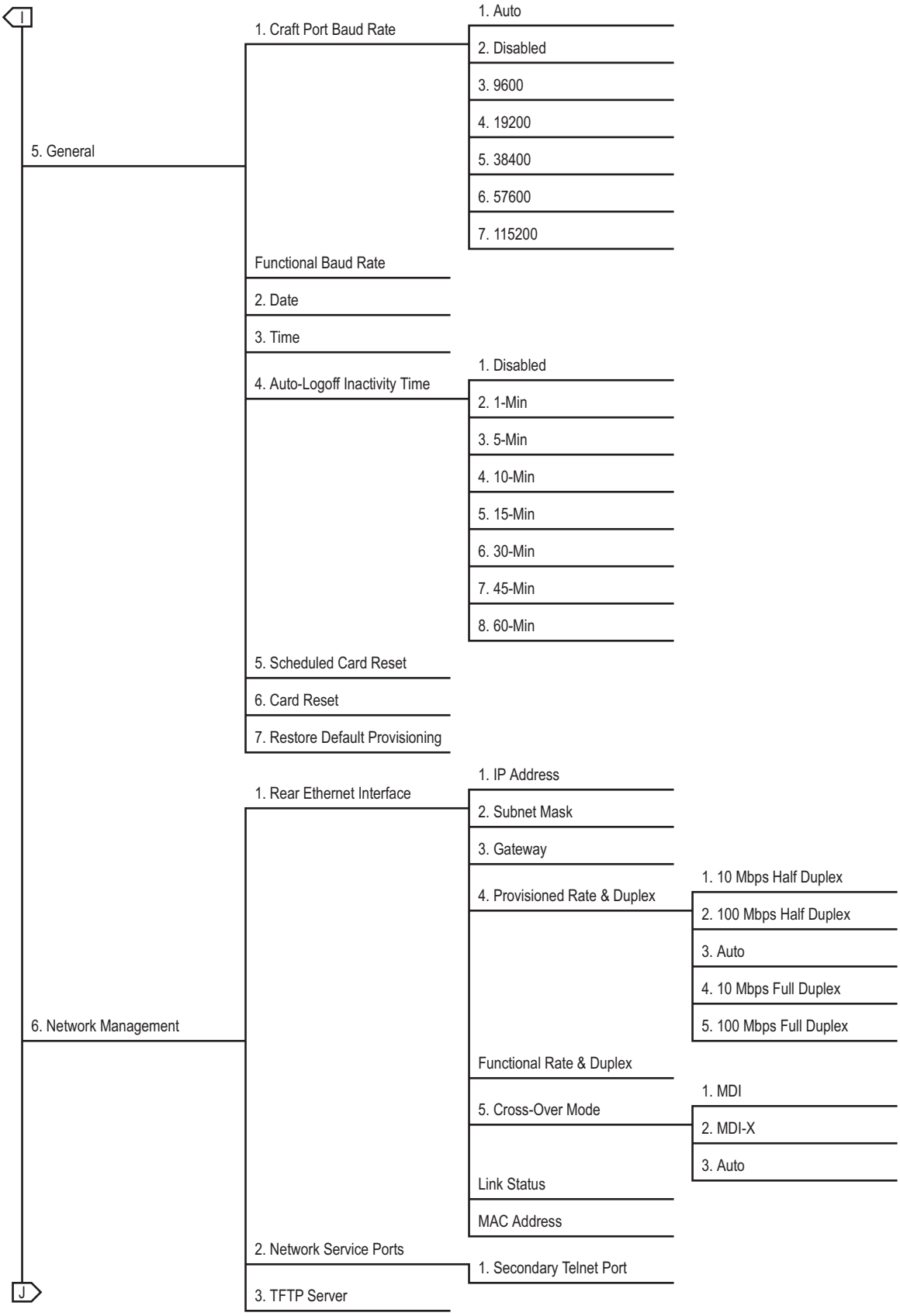

Figure 6-4. Configuration and Provisioning Menu Trees (Continued)

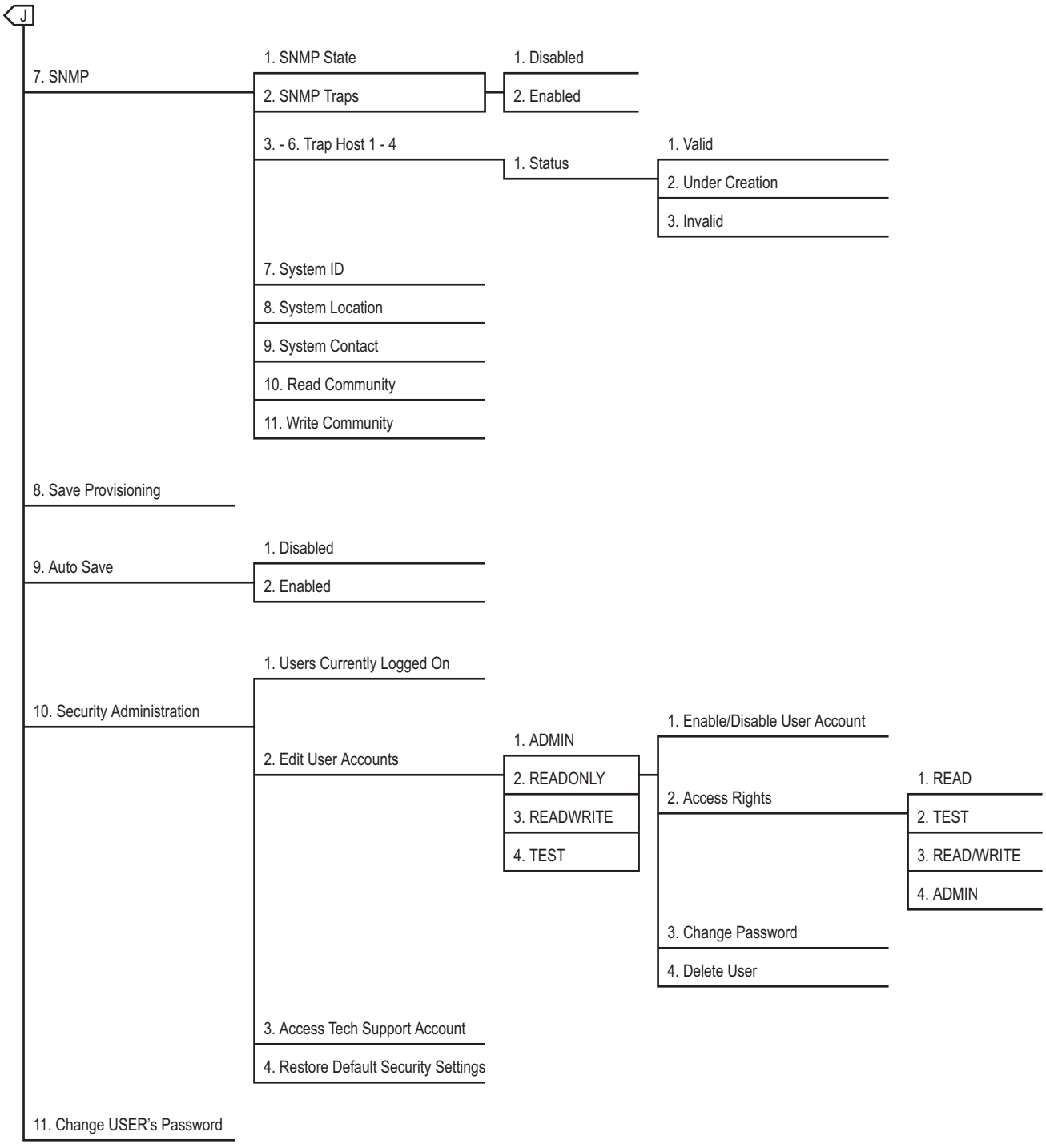

Figure 6-4. Configuration and Provisioning Menu Trees (Continued)

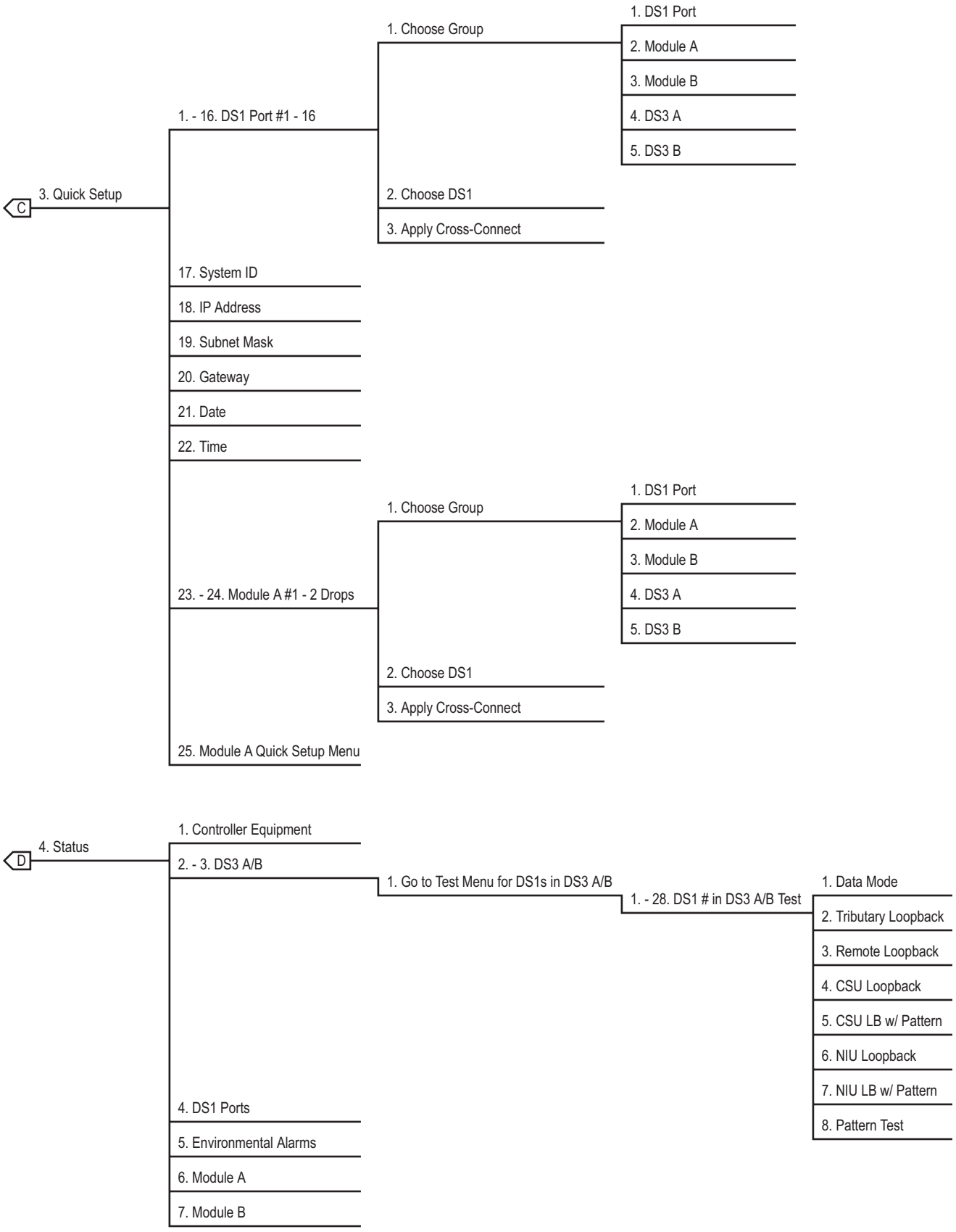

Figure 6-5. Quick Setup and Status Menu Trees

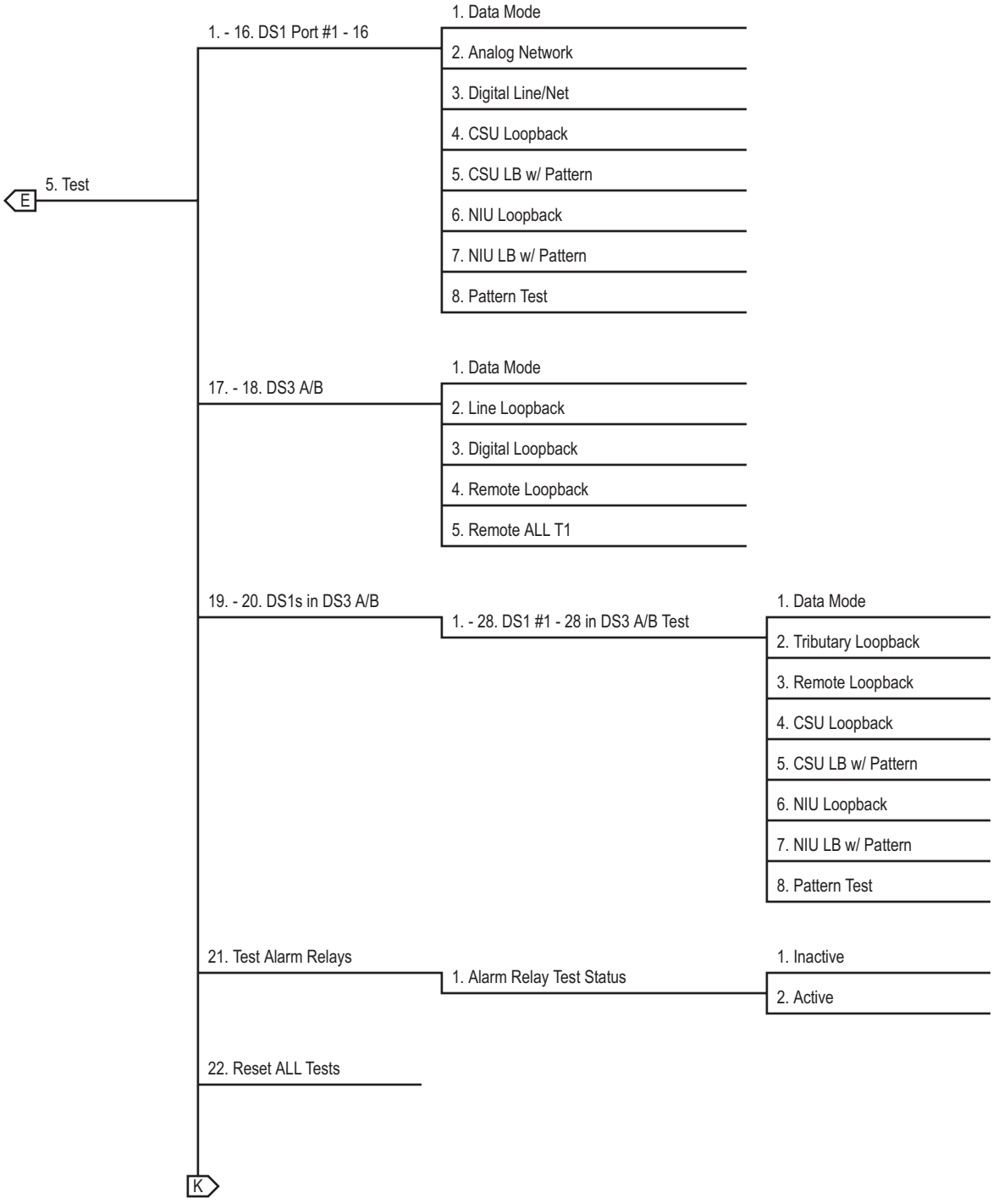

Figure 6-6. Test Menu Tree

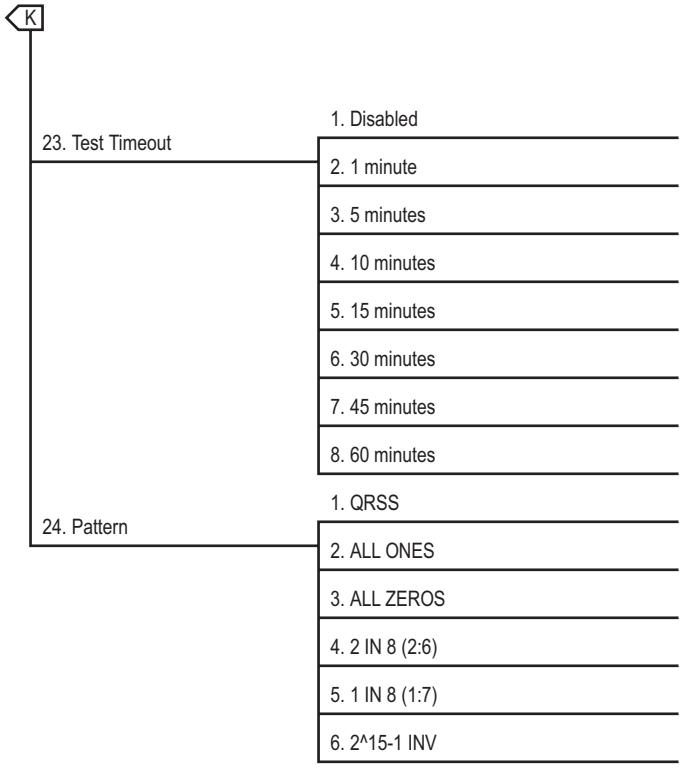

Figure 6-6. Test Menu Tree (Continued)

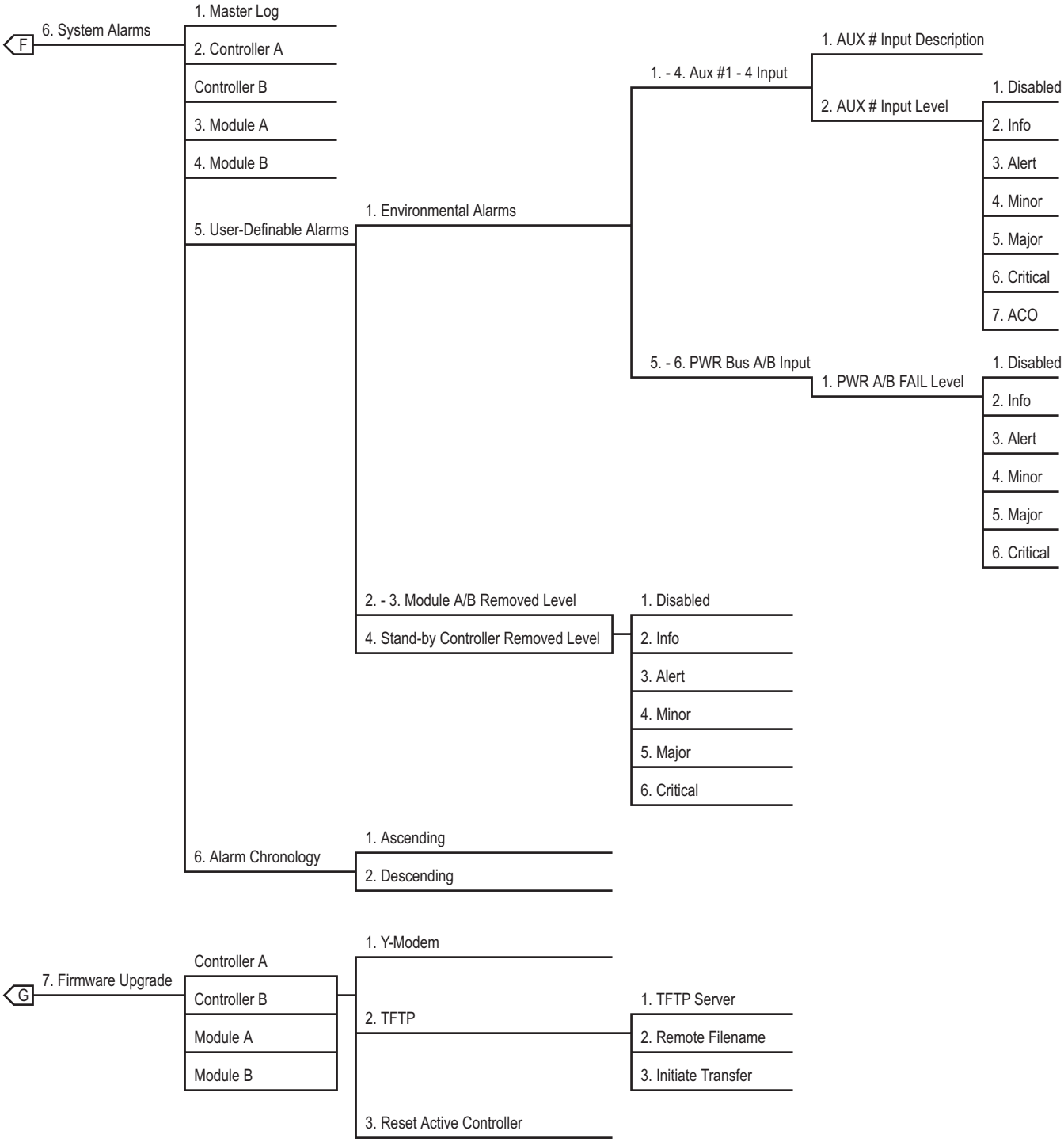

Figure 6-7. System Alarms and Firmware Upgrade Menu Trees

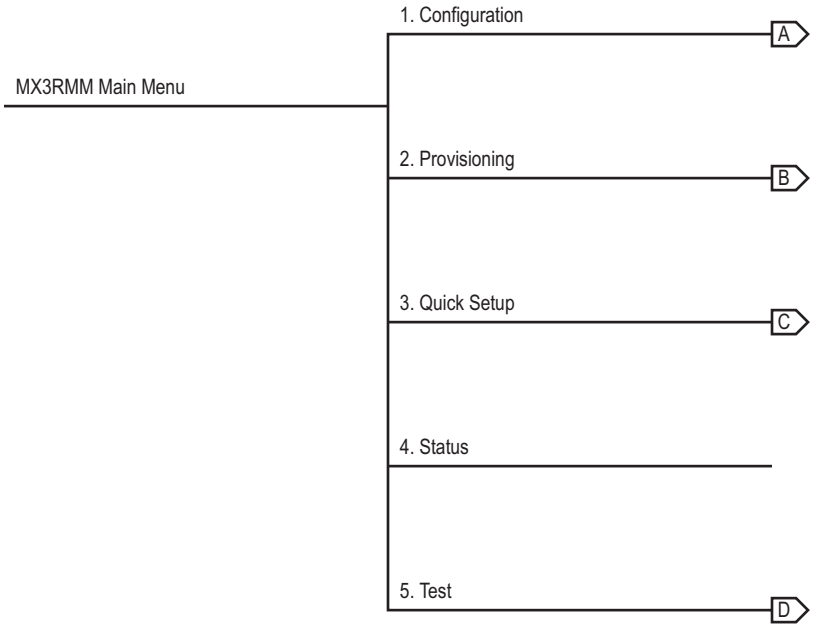

Figure 6-8. MX3RMM Main Menu Tree

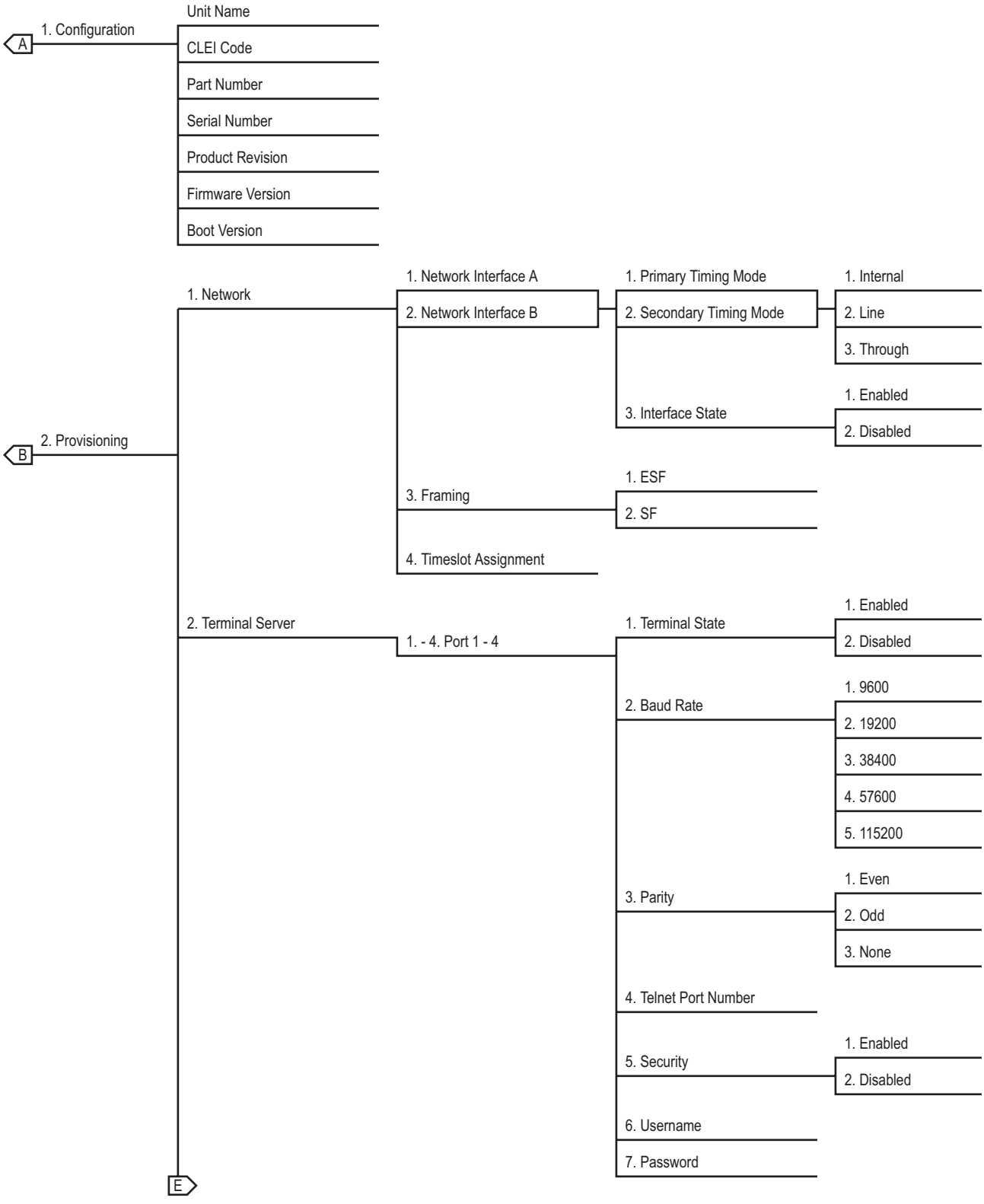

Figure 6-9. Configuration, Provisioning, and Quick Setup Menu Trees

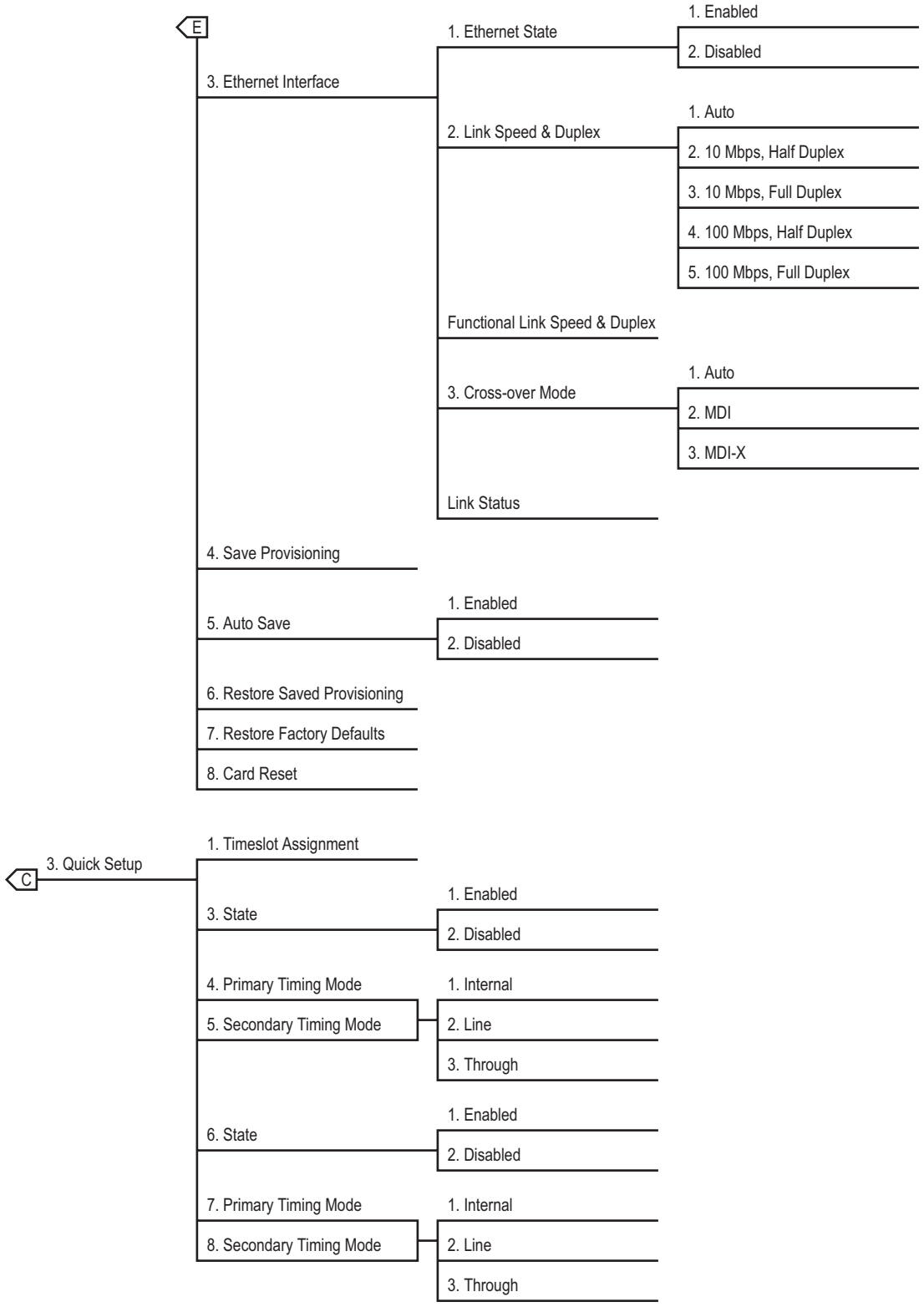

Figure 6-9. Configuration, Provisioning, and Quick Setup Menu Trees (Continued)

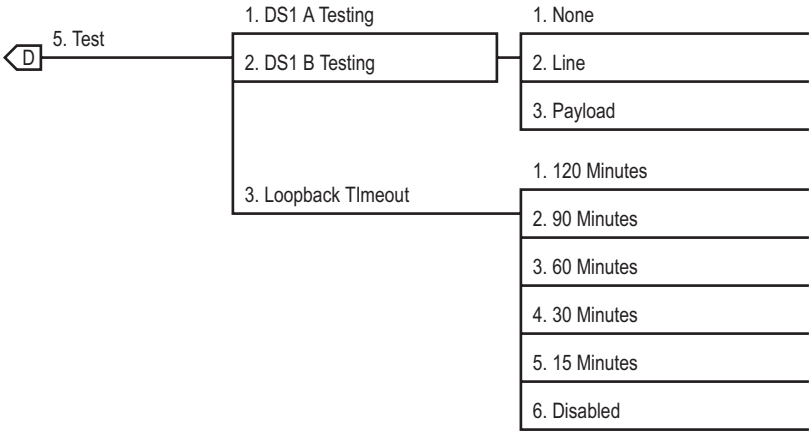

Figure 6-10. Test Menu Tree

MENU DESCRIPTIONS

This section describes the individual menus and screens of the MX3216 system as follows:

NOTE

For basic provisioning, refer to the "Quick Setup Menu" on page 6-57. For more detailed provisioning, refer to the "Provisioning Menu" on page 6-23.

MX3216 Main Menu

The MX3216 Main menu (see Figure 6-11) is the access point to all other operations. Each Main menu item has several functions and submenus that identify and provide access to specific operations and parameters.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                                    MX3216

                              1 - Configuration
                              2 - Provisioning
                              3 - Quick Setup
                              4 - Status
                              5 - Test
                              6 - System Alarms

                              7 - Firmware Upgrade

                              8 - MX3RMM
                                  Module B

                              9 - Logout



 Selection :                                          '?' - System Help Screen
```

Figure 6-11. MX3216 Main Menu

The MX3216 Main menu options are shown in Table 6-2.

Table 6-2. MX3216 Main Menu Options

Option	Description	Function
1	Configuration	This option displays the "Configuration Screen" on page 6-21. The Configuration screen provides inventory information such as the CLEI, part number, serial number, and revisions.
2	Provisioning	This option displays the "Provisioning Menu" on page 6-23. The Provisioning menu provides all user-configurable options.
3	Quick Setup	This option displays the "Quick Setup Menu" on page 6-57. The Quick Setup menu provides the most common provisioning options required to configure the system.
4	Status	This option displays the "Status Menu" on page 6-60. The Status menu provides the current status of the MX3216 system.
5	Test	This option displays the "Test Menu" on page 6-72. The Test menu provides access points to all test features in the MX3216 system.
6	System Alarms	This option displays the "System Alarms Menu" on page 6-83. The System Alarms menu provides the MX3216 system alarm logs and allows the definition of user-definable alarms.
7	Firmware Upgrade	This option displays the "Firmware Upgrade Menu" on page 6-97. The Firmware Upgrade menu provides firmware upgrade options for the MX3216 system. Any card installed in the MX3 chassis can be upgraded from this menu.
8	Module A (MX3RMM)	This option displays the Module A Main menu if a card is installed. In these menu descriptions, the MX3RMM is installed in Expansion Slot A and represents Module A. See the "MX3RMM Main Menu" on page 6-102.
	Module B	This option displays the Module B Main menu if a card is installed.
9	Logout	This option displays the "Logout" on page 6-121.

Configuration Screen

The Configuration screen (see Figure 6-12) displays information about the MX3216 system. Information such as Code Version changes as upgrades are performed. The CLEI Code and Part Number can be used to search for related information on the ADTRAN web site or to order additional parts. Some information from this menu may be required when calling the ADTRAN Technical Support.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216

                            MX3216->Configuration

  Controller A
  CLEI Code     :                                  Product Revision :
  Part Number   :                                  Code Version     : A05.14
  Serial Number :                                  Code Checksum    : 02FC6D42
  MAC Address   : 00:00:18:28:28:24                Boot Version     : A00.06
                                                   Boot Checksum    : 02730500

  Controller B(Not Present)
  CLEI Code     : N/A                              Product Revision : N/A
  Part Number   : N/A                              Code Version     : N/A
  Serial Number : N/A                              Code Checksum    : N/A
  MAC Address   : N/A                              Boot Version     : N/A
                                                   Boot Checksum    : N/A

  1 - MX3RMM Configuration
    Module B Configuration

  Selection :                                          '?' - System Help Screen
```

Figure 6-12. Configuration Screen

The Configuration screen fields for Controller A and Controller B are shown in Table 6-3.

Table 6-3. Configuration Screen Fields

Field	Description
CLEI Code	This field displays the Common Language Equipment Identifier (CLEI) code of the MX3216.
Part Number	This field displays the part number of the MX3216.
Serial Number	This field displays the serial number of the MX3216.
MAC Address	This field displays the factory programmed Media Access Control (MAC) or physical layer address for the MX3216.
Product Revision	This field displays the hardware product assembly revision of the MX3216.
Code Version	This field displays the current application firmware revision level of the MX3216.

Table 6-3. Configuration Screen Fields (Continued)

Field	Description
Code Checksum	This field displays the checksum of the current application firmware revision level of the MX3216.
Boot Version	This field displays the boot firmware revision code.
Boot Checksum	This field displays the checksum of the boot firmware revision code.

The Configuration screen options are shown in Table 6-4.

Table 6-4. Configuration Screen Options

Option	Description	Function
1	Module A (MX3RMM) Configuration	This option displays the Module A Configuration screen if a card is installed. In these menu descriptions, the MX3RMM is installed in Expansion Slot A and represents Module A. See the MX3RMM "Configuration Screen" on page 6-104.
2	Module B Configuration	This option displays the Module B Configuration screen if a card is installed.

Provisioning Menu

The Provisioning menu (see Figure 6-13) provides options to define all user configurable settings.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216


                              MX3216->Provisioning

                         1 - DS3 Interfaces
                         2 - DS1 Port Interfaces
                         3 - Cross-Connect Mapping
                         4 - Equipment Protection

                         5 - General
                         6 - Network Management
                         7 - SNMP
                         8 - Save Provisioning
                         9 - Auto Save            : Enabled

                        10 - Security Administration
                        11 - Change ADMIN's Password



  Selection :                                          '?' - System Help Screen
```

Figure 6-13. Provisioning Menu

The Provisioning menu options are shown in Table 6-5.

Table 6-5. Provisioning Menu Options

Option	Description	Function
1	DS3 Interfaces	This option displays the "DS3 Menu" on page 6-25. The DS3 menu provides provisioning options for the DS3 interface.
2	DS1 Port Interfaces	This option displays the "DS1 Port Menu" on page 6-31. The DS1 Port menu provides provisioning options for the DS1 port interfaces.
3	Cross-Connect Mapping	This option displays the "Cross-Connect Menu" on page 6-35. The Cross-Connect menu provides provisioning options for the 3/1 cross-connect.
4	Equipment Protection	This option displays the "Equipment Protection Menu" on page 6-40. The Equipment Protection menu provides switching options for the redundant controller card.
5	General	This option displays the "General Provisioning Menu" on page 6-41. The General Provisioning menu provides system-level provisioning options such as date, time, and card reset.

Table 6-5. Provisioning Menu Options (Continued)

Option	Description	Function
6	Network Management	This option displays the "Network Management Menu" on page 6-43. The Network Management menu provides system-level IP provisioning options, as well as options specific to the rear Ethernet jack.
7	SNMP	This option displays the "SNMP Menu" on page 6-47. The SNMP menu provides provisioning options for the SNMP.
8	Save Provisioning	This option saves the current network settings.
9	Auto Save	This option displays the "Auto Save Menu" on page 6-50. The Auto Save menu provides options to enable or disable the periodic storage of all provisioning settings.
10	Security Administration	This option displays the "Security Administration Menu" on page 6-51. The Security Administration menu provides access to security administration features such as user accounts, tech support, and default settings.
11	Change Current User's Password	This option allows the current user to change their password.

DS3 Menu

The DS3 menu (see Figure 6-14) provides provisioning options for the DS3 interfaces.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216

                          MX3216->Provisioning->DS3

            Tx      Tx Clock  Loopback
     DS3  Framing   Source    Detect     Circuit ID
 1 -  A    C-Bit     Local    Enabled   DS3 A
 2 -  B    C-Bit     Local    Enabled   DS3 B




 DS3 Equipment Identification          DS1 Tributary Circuit ID
 3 - DS3 A                             5 - DS1 Tributaries in DS3 A
 4 - DS3 B                             6 - DS1 Tributaries in DS3 B



  Selection :                                        '?' - System Help Screen
```

Figure 6-14. DS3 Menu

The DS3 menu options are shown in Table 6-6.

Table 6-6. DS3 Menu Options

Option	Description	Function
1–2	DS3 A - B	This option displays the "DS3 Provisioning Menu" on page 6-26. The DS3 Provisioning menu allows the Tx Framing, Tx Clock Source, Loopback Detection, and DS3 Circuit Identifier to be provisioned for DS3 A and B.
3–4	DS3 A - B	This option displays the "Equipment Identification Menu" on page 6-28. The Equipment Identification menu provides options to enter equipment ID codes and copy the codes from the near end to far end.
4–5	DS1 Tributaries in DS3 A - B	This option displays the "DS1s in DS3 Menu" on page 6-30. The DS1s in DS3 menu allows access to enter the circuit identifier for all twenty-eight DS1 tributaries.

DS3 Provisioning Menu

The DS3 Provisioning menu (see Figure 6-15) provides options to provision the Tx framing, Tx clock source, loopback detection, and DS3 circuit identifier for DS3 A and B.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


                        MX3216->Provisioning->DS3->A


             1 - Tx Framing                : C-Bit
             2 - Tx Clock Source           : Local
             3 - Loopback Detection        : Enabled
             4 - DS3 Circuit Identifier    : DS3 A









  Selection :                                          '?' - System Help Screen
```

Figure 6-15. DS3 Provisioning Menu

The DS3 Provisioning menu options are shown in Table 6-7.

Table 6-7. DS3 Provisioning Menu Options

Option	Description	Function
1	Tx Framing	This option is used to provision the framing. Options are as follows: • C-Bit • M23 (also called “M13”)
2	Tx Clock Source	This option is used to provision the timing. Options are as follows: • Loop: When this option is selected, timing is received from the DS3 network. • Local: When this option is selected, timing is 44.736 Mbps ± 20 ppm (ANSI T1.102-1993).

Table 6-7. DS3 Provisioning Menu Options (Continued)

Option	Description	Function
3	Loopback Detection	This option is used to disable or enable the FEAC and CBIT loopbacks. Options are as follows: • Disabled • Enabled
4	DS3 Circuit Identifier	This option is used to enter a DS3 circuit identifier. The circuit ID is a user-configurable text string field used to name the individual ports. This field accepts up to 32 alphanumeric characters, including spaces and special characters.

Equipment Identification Menu

The Equipment Identification menu (see Figure 6-16) is used to enter ID codes for the near and far end facility, location, frame, unit, and equipment. These fields provide user-configurable text strings to identify the MX3216 system over the network.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


           MX3216->Provisioning->DS3->A Equipment Identification


  1 - Near End Facility ID Code  : N/A
  2 - Near End Location ID Code  : N/A
  3 - Near End Frame ID Code     : N/A
  4 - Near End Unit Code         : N/A
  5 - Near End Equipment Code    : N/A

      Far End Facility ID Code   : N/A
      Far End Location ID Code   : N/A
      Far End Frame ID Code      : N/A
      Far End Unit Code          : N/A
      Far End Equipment Code     : N/A

  6 - Copy Near End data from DS3 B Near End Data


 Selection :                                          '?' - System Help Screen
```

Figure 6-16. Equipment Identification Menu

The Equipment Identification menu options are shown in Table 6-8.

Table 6-8. Equipment Identification Menu Options

Option	Description	Function
1	Near End Facility ID Code	This option is used to enter a near end facility ID code. When using C-bit framing, this is transmitted in the DS3 overhead to the next device. The code is a user-configurable text string. This field accepts up to 38 alphanumeric characters, including spaces and special characters.
2	Near End Location ID Code	This option is used to enter a near end location ID code. When using C-bit framing, this is transmitted in the DS3 overhead to the next device. The code is a user-configurable text string. This field accepts up to 11 alphanumeric characters, including spaces and special characters.

Table 6-8. Equipment Identification Menu Options (Continued)

Option	Description	Function
3	Near End Frame ID Code	This option is used to enter a near end frame ID code. When using C-bit framing, this is transmitted in the DS3 overhead to the next device. The code is a user-configurable text string. This field accepts up to 10 alphanumeric characters, including spaces and special characters.
4	Near End Unit Code	This option is used to enter a near end unit code. When using C-bit framing, this is transmitted in the DS3 overhead to the next device. The code is a user-configurable text string. This field accepts up to six alphanumeric characters, including spaces and special characters.
5	Near End Equipment Code	This option is used to enter a near end equipment code. When using C-bit framing, this is transmitted in the DS3 overhead to the next device. The code is a user-configurable text string. This field accepts up to 10 alphanumeric characters, including spaces and special characters.
N/A	Far End Facility ID Code	When using C-bit framing, this field displays the facility ID code that is received in the DS3 overhead from the device at the far end of the DS3.
N/A	Far End Location ID Code	When using C-bit framing, this field displays the location ID code that is received in the DS3 overhead from the device at the far end of the DS3.
N/A	Far End Frame ID Code	When using C-bit framing, this field displays the frame ID code that is received in the DS3 overhead from the device at the far end of the DS3.
N/A	Far End Unit Code	When using C-bit framing, this field displays the unit code that is received in the DS3 overhead from the device at the far end of the DS3.
N/A	Far End Equipment Code	When using C-bit framing, this field displays the equipment code that is received in the DS3 overhead from the device at the far end of the DS3.
6	Copy Near End data from DS3 A/B Near End Data	This option is used to overwrite the near end data for the selected DS3 (either A or B) with the near end data from the other DS3.

DS1s in DS3 Menu

The DS1s in DS3 menu (see Figure 6-17) is used to enter circuit identifiers for the 28 DS1 tributaries in DS3 A and B.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216

                    MX3216->Provisioning->DS3->DS1s in DS3 A


  1 - DS1 Tributary #1 in DS3 A          15 - DS1 Tributary #15 in DS3 A
  2 - DS1 Tributary #2 in DS3 A          16 - DS1 Tributary #16 in DS3 A
  3 - DS1 Tributary #3 in DS3 A          17 - DS1 Tributary #17 in DS3 A
  4 - DS1 Tributary #4 in DS3 A          18 - DS1 Tributary #18 in DS3 A
  5 - DS1 Tributary #5 in DS3 A          19 - DS1 Tributary #19 in DS3 A
  6 - DS1 Tributary #6 in DS3 A          20 - DS1 Tributary #20 in DS3 A
  7 - DS1 Tributary #7 in DS3 A          21 - DS1 Tributary #21 in DS3 A
  8 - DS1 Tributary #8 in DS3 A          22 - DS1 Tributary #22 in DS3 A
  9 - DS1 Tributary #9 in DS3 A          23 - DS1 Tributary #23 in DS3 A
 10 - DS1 Tributary #10 in DS3 A         24 - DS1 Tributary #24 in DS3 A
 11 - DS1 Tributary #11 in DS3 A         25 - DS1 Tributary #25 in DS3 A
 12 - DS1 Tributary #12 in DS3 A         26 - DS1 Tributary #26 in DS3 A
 13 - DS1 Tributary #13 in DS3 A         27 - DS1 Tributary #27 in DS3 A
 14 - DS1 Tributary #14 in DS3 A         28 - DS1 Tributary #28 in DS3 A


  Selection :                                        '?' - System Help Screen
```

Figure 6-17. DS1s in DS3 Menu

The DS1s in DS3 menu options are shown in Table 6-9.

Table 6-9. DS1s in DS3 Menu Options

Option	Description	Function
1–28	Circuit Identifier	This option is used to enter a circuit identifier. The circuit ID is a user-configurable text string field used to name the DS1 tributaries (DS1s transported in a DS3). This field accepts up to 32 alphanumeric characters, including spaces and special characters.

DS1 Port Menu

The DS1 Port menu (see Figure 6-18) is used to provision line length, line coding, loopback detection, and circuit ID.

NOTE

Save time by using the Copy Provisioning to Multiple option. Configure one DS1 to the necessary settings, then copy that information to other DS1s with the same provisioning.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                        MX3216->Provisioning->DS1 Ports
      Line        Line    Loopback
    Length(ft)  Coding    Detect     Circuit ID
 1 -  0-133       B8ZS    Disabled   DS1 Port #1
 2 -  0-133       B8ZS    Disabled   DS1 Port #2
 3 -  0-133       B8ZS    Disabled   DS1 Port #3
 4 -  0-133       B8ZS    Disabled   DS1 Port #4
 5 -  0-133       B8ZS    Disabled   DS1 Port #5
 6 -  0-133       B8ZS    Disabled   DS1 Port #6
 7 -  0-133       B8ZS    Disabled   DS1 Port #7
 8 -  0-133       B8ZS    Disabled   DS1 Port #8
 9 -  0-133       B8ZS    Disabled   DS1 Port #9
10 -  0-133       B8ZS    Disabled   DS1 Port #10
11 -  0-133       B8ZS    Disabled   DS1 Port #11
12 -  0-133       B8ZS    Disabled   DS1 Port #12
13 -  0-133       B8ZS    Disabled   DS1 Port #13
14 -  0-133       B8ZS    Disabled   DS1 Port #14
15 -  0-133       B8ZS    Disabled   DS1 Port #15
16 -  0-133       B8ZS    Disabled   DS1 Port #16
17 - Copy Provisioning to Multiple                  '?' - System Help Screen
  Selection :
```

Figure 6-18. DS1 Port Menu

The DS1 Port menu options are shown in Table 6-10.

Table 6-10. DS1 Port Menu Options

Option	Description	Function
1–16	DS1 Port 1–16	This option displays the "DS1 Port 1–16 Menu" on page 6-32. The DS1 Port 1–16 menu provides provisioning options for DS1 ports 1–16.
17	Copy Provisioning to Multiple	This option displays the "Copy Provisioning to Multiple DS1 Ports Menu" on page 6-34. The Copy Provisioning to Multiple DS1 Ports menu is used to copy the provisioning settings for a selected DS1 to multiple DS1s.

DS1 Port 1–16 Menu

The DS1 Port 1–16 menu (see Figure 6-19) is used to provision the line length, line coding, loopback detection, and circuit identifier for the DS1 ports.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


                  MX3216->Provisioning->DS1 Ports->Port #1


            1 - Line Length (feet)        : 0-133
            2 - Line Coding               : B8ZS
            3 - Loopback Detection        : Disabled
            4 - Circuit Identifier        : DS1 Port #1









  Selection :                                          '?' - System Help Screen
```

Figure 6-19. DS1 Port 1–16 Menu

The DS1 Port 1–16 menu options are shown in Table 6-11.

Table 6-11. DS1 Port 1–16 Menu Options

Option	Description	Function
1	Line Length (feet)	This option is used to set the line length (line build out) for each port interface according to the distance from the MX3216 system to the DTE device. Options are as follows: • 0–133 • 133–266 • 266–399 • 399–533 • 533–655
2	Line Coding	This option is used to select the line coding state. Options are as follows: • AMI • B8ZS

Table 6-11. DS1 Port 1–16 Menu Options (Continued)

Option	Description	Function
3	Loopback Detection	This option is used to select the loopback detect state. Options are as follows: • Disabled • CSU • NIU
4	Circuit Identifier	This option is used to enter a circuit identifier. The circuit ID is a user-configurable text string field used to name the individual ports. This field accepts up to 32-alphanumeric characters, including spaces and special characters.

Copy Provisioning to Multiple DS1 Ports Menu

The Copy Provisioning to Multiple DS1 Ports menu (see Figure 6-20) provides a quick way to provision multiple ports at once.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


   MX3216->Provisioning->DS1 Ports->Copy Provisioning to Multiple DS1 Ports

   1 - Copy FROM DS1 Port          : 1

       Line Length (feet)          : 0-133
       Line Coding                 : B8ZS
       Loopback Detection          : Disabled


   2 - First DS1 Port to Copy TO   : 2
   3 - Last DS1 Port to Copy TO    : 16

   4 - Copy Provisioning




  Selection :                                          '?' - System Help Screen
```

Figure 6-20. Copy Provisioning to Multiple DS1 Ports Menu

The Copy Provisioning to Multiple DS1 Ports menu options are shown in Table 6-12.

Table 6-12. Copy Provisioning to Multiple DS1 Ports Menu Options

Option	Description	Function
1	Copy FROM DS1 Port	This option is used to enter the DS1 Port # from which the settings are copied.
N/A	Line Length (feet)	This field displays the line length setting that is to be copied.
N/A	Line Coding	This field displays the line coding setting that is to be copied.
N/A	Loopback Detection	This field displays the loopback detection setting that is to be copied.
2	First DS1 Port to Copy TO	This option is used to enter the first DS1 Port # to which the settings are to be copied.
3	Last DS1 Port to Copy TO	This option is used to enter the last DS1 Port # to which the settings are to be copied.
4	Copy Provisioning	This option copies the settings to the selected DS1 ports.

Cross-Connect Menu

The Cross-Connect menu (see Figure 6-21) allows provisioning of the 3-to-1 cross-connect. The Cross-Connect menu displays the cross-connect assignment, if any, for each tributary DS1.

Establish connections between the DS3s, rear panel DSX-1 drops, and module card DS1s as shown in Figure 3-1 on page 3-2. With some restrictions, any DS1 can be connected to any other DS1. The restrictions are as follows:

- DS1s in the same DS3 cannot be connected.
- DS1 ports cannot be connected to other DS1 ports (DSX-1 drops).
- DS1s on the same module cannot be connected.
- No more than two DS1 ports (DSX-1 drops) can be connected to module DS1s.
- All connections are two-way only. Only two DS1s can be part of any given connection. A third DS1 cannot be added to a connection.

Refer to "Cross-Connect Methods" on page 5-5 for provisioning details.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                        MX3216->Provisioning->Cross-Connect
     DS3 A
 1 - T1 #1  = DS3 B T1 #1              15 - T1 #15 = DS3 B T1 #15
 2 - T1 #2  = DS3 B T1 #2              16 - T1 #16 = DS3 B T1 #16
 3 - T1 #3  = DS3 B T1 #3              17 - T1 #17 = DS3 B T1 #17
 4 - T1 #4  = DS3 B T1 #4              18 - T1 #18 = DS3 B T1 #18
 5 - T1 #5  = DS3 B T1 #5              19 - T1 #19 = DS3 B T1 #19
 6 - T1 #6  = DS3 B T1 #6              20 - T1 #20 = DS3 B T1 #20
 7 - T1 #7  = DS3 B T1 #7              21 - T1 #21 = DS3 B T1 #21
 8 - T1 #8  = DS3 B T1 #8              22 - T1 #22 = DS3 B T1 #22
 9 - T1 #9  = DS3 B T1 #9              23 - T1 #23 = DS3 B T1 #23
10 - T1 #10 = DS3 B T1 #10             24 - T1 #24 = DS3 B T1 #24
11 - T1 #11 = DS3 B T1 #11             25 - T1 #25 = DS3 B T1 #25
12 - T1 #12 = DS3 B T1 #12             26 - T1 #26 = DS3 B T1 #26
13 - T1 #13 = DS3 B T1 #13             27 - T1 #27 = DS3 B T1 #27
14 - T1 #14 = DS3 B T1 #14             28 - T1 #28 = DS3 B T1 #28

(T)oggle View (DS3 B, Drops)                  (V)iew Map

  Selection :                                       '?' - System Help Screen
```

Figure 6-21. Cross-Connect Menu

The Cross-Connect menu options are shown in Table 6-13.

Table 6-13. Cross-Connect Menu Options

Option	Description	Function
1–28	DS3 A T1 1–28	If currently mapped, this option displays the Confirm Unmap/Map screen that provides a yes/no option to unmap the selected cross connect. If currently unmapped, this option displays the "Cross-Connect Change Menu" on page 6-38.

The Cross-Connect menu hot keys are shown in Table 6-14.

Table 6-14. Cross-Connect Menu Hot Keys

Hot Keys	Description	Function
T	Toggle View	This hot key is used to toggle through the DS3 A view, DS3 B view, and Drops view (see Figure 6-22).
V	View Map	This hot key is used to display the "View Map Menu" on page 6-39.

The Drops view of the Cross-Connect menu is shown in Figure 6-22. In the Drops view, the menu displays the cross-connect assignment, if any, for each DSX-1 drop port and for the each module DS1.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                     MX3216->Provisioning->Cross-Connect
     DS1 Ports                                   Module Cards
 1 - DS1 #1 =                              17 - Module A #1 =
 2 - DS1 #2 =                              18 - Module A #2 =
 3 - DS1 #3 =                              19 - Module A #3 =
 4 - DS1 #4 =                              20 - Module A #4 =
 5 - DS1 #5 =
 6 - DS1 #6 =                              21 - Module B #1 =
 7 - DS1 #7 =                              22 - Module B #2 =
 8 - DS1 #8 =                              23 - Module B #3 =
 9 - DS1 #9 =                              24 - Module B #4 =
10 - DS1 #10 =
11 - DS1 #11 =
12 - DS1 #12 =
13 - DS1 #13 =
14 - DS1 #14 =
15 - DS1 #15 =                             25 - Restore Map to Factory Default
16 - DS1 #16 =
(T)oggle View (DS3 A, DS3 B)                        (V)iew Map
  Selection :                                            '?' - System Help Screen
```

Figure 6-22. Drops View

The Drops view options are shown in Table 6-15.

Table 6-15. Drops View Options

Option	Description	Function
1–16	DS1 1–16	If currently mapped, this option displays the Confirm Unmap/Map screen that provides a yes/no option to unmap the selected cross-connect. If currently unmapped, this option displays the "Cross-Connect Change Menu" on page 6-38.
17–20	Module A 1–4	These options appear for the DS1 ports used by a module installed in slot **A**. If currently mapped, this option displays the Confirm Unmap/Map screen that provides a yes/no option to unmap the selected cross-connect. If currently unmapped, this option displays the "Cross-Connect Change Menu" on page 6-38.
21–24	Module B 1–4	These options appear for the DS1 ports used by a module installed in slot **B**. If currently mapped, this option displays the Confirm Unmap/Map screen that provides a yes/no option to unmap the selected cross-connect. If currently unmapped, this option displays the "Cross-Connect Change Menu" on page 6-38.
25	Restore Map to Factory Defaults	This option is used to restore the cross-connect map to the factory defaults (i.e., DS3 A mapped to DS3 B, no DS1 drops).

Cross-Connect Change Menu

The Cross-Connect Change menu (see Figure 6-23) is used to map connections for unmapped DS1s.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


                  MX3216->Provisioning->Cross-Connect->Change

                              CONNECT DS3 A T1 #1 TO

                          1 - Choose Group :
                              (DS3 A ... )
                          2 - Choose DS1   :









  Selection :                                          '?' - System Help Screen
```

Figure 6-23. Cross-Connect Change Menu

The Cross-Connect Change menu options are shown in Table 6-16.

Table 6-16. Cross-Connect Change Menu Options

Option	Description	Function
1	Choose Group	This option is used to select the group for the cross-connect. Options are as follows: • DS1 Port • Module A • Module B • DS3 A • DS3 B
2	Choose DS1	This option is used to enter the number for the DS1 that is to be connected.
3	Apply Cross-Connect	This option appears once options 1 and 2 have been defined. Selecting this option applies the cross-connect.

View Map Menu

The View Map menu (see Figure 6-24) provides a view of the cross-connect on one screen and allows connection mapping.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                          ID:        Site 1  MX3216

                MX3216->Provisioning->Cross-Connect->View Map

 T  DS3   DS3     DS1     MODULE  MODULE          T  DS3   DS3
 1 A(A)  B(B)  PORTS(P)  A (MA)  B (MB)          1 A(A)  B(B)
 1 B1    A1       -        -       -             17 B17   A17
 2 B2    A2       -        -       -             18 B18   A18
 3 B3    A3       -        -       -             19 B19   A19
 4 B4    A4       -        -       -             20 B20   A20
 5 B5    A5       -                              21 B21   A21
 6 B6    A6       -                              22 B22   A22
 7 B7    A7       -                              23 B23   A23
 8 B8    A8       -                              24 B24   A24
 9 B9    A9       -                              25 B25   A25
10 B10   A10      -                              26 B26   A26
11 B11   A11      -                              27 B27   A27
12 B12   A12      -                              28 B28   A28
13 B13   A13      -               To Make/Break a Connection enter the
14 B14   A14      -               DS1 (Example: A28 for DS3 A T1 #28)
15 B15   A15      -
16 B16   A16      -                                    '?' - System Help Screen
SELECT DS1:
```

Figure 6-24. View Map Menu

The View Map menu options are shown in Table 6-17.

Table 6-17. View Map Menu Options

Option	Description	Function
A1–A28 B1–B28 P1–P16 MA1–MA4 MB1–MB4	DS3 A 1–28 DS3 B 1–28 DS1 Ports 1–16 Module A DS1s 1–4 Module B DS1s 1–4	To make a selection, enter the letter or letters followed directly by the number and then press ENTER. If selection is currently mapped to a T1, the Confirm Unmap/Map screen provides a yes/no option to unmap the selected cross-connect. If selection is currently unmapped, the “MAP <selection> TO DS1:” prompt appears at the bottom of the menu allowing another selection to be made to complete the connection. If the second selection is currently mapped to a T1, the Confirm Unmap/Map screen provides a yes/no option to unmap the current cross-connect and map the newly selected cross-connect.

Equipment Protection Menu

The Equipment Protection menu (see Figure 6-25) is used to perform a manual switch from the active card to the standby card.

CAUTION

Performing a manual switch briefly interrupts customer data.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216

                  MX3216->Provisioning->Equipment Protection


                       Active  (Card A)  : Normal
                       Standby (Card B)  : Not Installed

                        1 - Perform Manual Switch

 Selection :                                          '?' - System Help Screen
```

Figure 6-25. Equipment Protection Menu

The Equipment Protection menu option is shown in Table 6-18.

Table 6-18. Equipment Protection Menu Option

Option	Description	Function
1	Perform Manual Switch	This option is used to perform a manual switch from the active controller card to the standby controller card.

General Provisioning Menu

The General Provisioning menu (see Figure 6-26) is used to provision the craft port baud rate, the date, time, auto-logoff inactivity time, to reset the MX3216, and to restore default settings.

CAUTION

If the baud rate is changed, the rate changes immediately, and the terminal emulation software must be updated to reflect the change.

CAUTION

Resetting this card disrupts traffic and causes a switch to the standby card if it is installed.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                        MX3216->Provisioning->General


              1 - Craft Port Baud Rate               : 115200
                  Functional Baud Rate               : 115200
              2 - Date                               : 01/01/2005
              3 - Time                               : 12:00:00
              4 - Auto-Logoff Inactivity Time        : 15-Min

              5 - Scheduled Card Reset               : Disabled
              6 - Card Reset

              7 - Restore Default Provisioning




  Selection :                                        '?' - System Help Screen
```

Figure 6-26. General Provisioning Menu

The General Provisioning menu options are shown in Table 6-19.

Table 6-19. General Provisioning Menu Options

Option	Description	Function
1	Craft Port Baud Rate	This option is used to select the craft port baud rate. Options are as follows: • Auto: This option allows the craft port baud rate to be set automatically. While in this mode, press ENTER until the logon prompt appears when logging on. • Disabled: This option disables the local craft port interface. This allows a Telnet session to disable the craft port. • 9600 • 19200 • 38400 • 57600 • 115200
N/A	Functional Baud Rate	This field displays the actual craft port baud rate.
2	Date	This option is used to enter the date.
3	Time	This option is used to enter the time.
4	Auto-Logoff Inactivity Time	This option is used to select the auto-logoff inactivity time. Options are as follows: • Disabled • 1-Min • 5-Min • 10-Min • 15-Min • 30-Min • 45-Min • 60-Min
5	Scheduled Card Reset	This option is used to enter the scheduled card reset date and time. This option is disabled if the scheduled date and time are passed.
6	Card Reset	This option is used to perform a manual card reset.
7	Restore Default Provisioning	This option is used to restore all provisioning options to the default settings.

Network Management Menu

The Network Management menu (see Figure 6-27) is used to provision Ethernet information.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216



                    MX3216->Provisioning->Network Management


                    1 - Rear Ethernet Interface
                    2 - Network Service Ports
                    3 - TFTP Server            : 0.0.0.0









  Selection :                                          '?' - System Help Scree
```

Figure 6-27. Network Management Menu

The Network Management menu options are shown in Table 6-20.

Table 6-20. Network Management Menu Options

Option	Description	Function
1	Rear Ethernet Interface	This option displays the "Rear Ethernet Interface Menu" on page 6-44.
2	Network Service Ports	This option displays the "Network Service Ports Menu" on page 6-46. The Network Service Ports menu provides the option to enter the secondary port number.
3	TFTP Server	This option is used to enter the address for the remote TFTP server that is used to download code. Contact the network administrator for this address.

Rear Ethernet Interface Menu

The Rear Ethernet Interface menu (see Figure 6-28) is used to provision the IP address, subnet mask, gateway, provisioned data rate, and cross-over mode for the rear Ethernet interface.

CAUTION

Changing IP settings terminates all active Telnet sessions.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                            ID:      Site 1  MX3216


     MX3216->Provisioning->Network Management->Rear Ethernet Interface


             1 - IP Address                : 10.100.51.29
             2 - Subnet Mask               : 255.255.255.0
             3 - Gateway                   : 10.100.51.254
             4 - Provisioned Data Rate     : Auto
                 Functional Data Rate      : 100 Mbps Full Duplex
             5 - Cross-Over Mode           : Auto
                 Link Status               : Up
                 MAC Address               : 00:00:18:28:28:24




 Selection :                                        '?' - System Help Screen
```

Figure 6-28. Rear Ethernet Interface Menu

The Rear Ethernet Interface menu options are shown in Table 6-21.

Table 6-21. Rear Ethernet Interface Menu Options

Option	Description	Function
1	IP Address	This option is used to enter the IP address. The IP address is written in the format XXX.XXX.XXX.XXX, where each 3-digit field has a value between 000 and 255.
2	Subnet Mask	This option is used to enter the subnet mask. A subnet mask is used to reduce the traffic on each subnetwork by confining traffic to only the subnetwork for which it was intended. A subnet mask makes the entire network more manageable. In effect, each subnet functions as though it were an independent network, keeping local traffic local and forwarding traffic to another subnet only if the address of the data is external to the subnet. The Subnet Mask is written in the format XXX.XXX.XXX.XXX, where each 3-digit field has a value between 000 and 255.
3	Gateway	This option is used to enter the default gateway/ router between the internal network and the external network. The Gateway address is written in the format XXX.XXX.XXX.XXX, where each 3-digit field has a value between 000 and 255.
4	Provisioned Data Rate	This option is used to select the link speed. Options are as follows: • 10 Mbps Half Duplex • 100 Mbps Half Duplex • Auto: This option allows auto negotiation of the Ethernet line speed and duplex. • 10 Mbps Full Duplex • 100 Mbps Full Duplex
N/A	Functional Data Rate	This field displays the actual data rate of the Ethernet port.
5	Cross-over Mode	This option is used to select the cross-over mode for the rear panel Ethernet port. Options are as follows: • MDI • MDI-X • Auto
N/A	Link Status	This field displays the status of the network as being either Up or Down.
N/A	MAC Address	This read-only field displays the Medium Access Control (MAC) Address. MAC Addresses are location-independent (being programmed into the card at manufacture, they relocate when the card does). MAC Addresses are contained in the headers of packets and are used to filter and forward packets.

Network Service Ports Menu

The Network Service Ports menu (see Figure 6-29) provides the option to enter a secondary port number.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216



      MX3216->Provisioning->Network Management->Network Service Ports


                    1 - Secondary Telnet Port      : 2002









 Selection :                                          '?' - System Help Scree
```

Figure 6-29. Network Service Ports Menu

The Network Service Ports menu options are shown in Table 6-22.

Table 6-22. Network Service Ports Menu Options

Option	Description	Function
1	Secondary Telnet Port	This option is used to enter an additional port to which a Telnet connection can be established. This port is currently no different than the primary port 23.

SNMP Menu

The Simple Network Management Protocol (SNMP) menu (see Figure 6-30) is used to provision trap hosts, contact information, and community names.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


                          MX3216->Provisioning->SNMP

  1 - SNMP State      : Disabled

  2 - SNMP Traps      : Disabled
  3 - Trap Host 1
  4 - Trap Host 2
  5 - Trap Host 3
  6 - Trap Host 4

  7 - System ID       : System ID Not Set
  8 - System Location :
  9 - System Contact  :
 10 - Read Community  : public
 11 - Write Community : private



  Selection :                                          '?' - System Help Screen
```

Figure 6-30. SNMP Menu

The SNMP menu options are shown in Table 6-23.

Table 6-23. SNMP Menu Options

Option	Description	Function
1	SNMP State	This option is used to enable or disable the SNMP state. Options are as follows: • Disabled • Enabled
2	SNMP Traps	This option is used to enable or disable the SNMP traps. Options are as follows: • Disabled • Enabled
3–6	Trap Host 1–4	This option displays the “Trap Host Menu” on page 6-49.
7	System ID	This option provides a user-configurable text string for the name of the MX3216. This name helps distinguish the MX3216 among different installations. Up to 20 alphanumeric characters can be entered in this field, including spaces and special characters (such as an underscore).

Table 6-23. SNMP Menu Options (Continued)

Option	Description	Function
8	System Location	This option provides a user-configurable text string for the location of the MX3216. This field is used to identify the physical location of the unit. Up to 55-alphanumeric characters can be entered in this field, including spaces and special characters (such as an underscore).
9	System Contact	This option provides a user-configurable text string for a SNMP contact name. This field can be used to enter the name, phone number, or e-mail address of a person responsible for the SNMP. Up to 55-alphanumeric characters can be entered in this field, including spaces and special characters (such as an underscore).
10	Read Community	This option provides a user-configurable text string for a read community name. Up to 55-alphanumeric characters can be entered in this field, including spaces and special characters (such as an underscore).
11	Write Community	This option provides a user-configurable text string for a write community name. Up to 55-alphanumeric characters can be entered in this field, including spaces and special characters (such as an underscore).

Trap Host Menu

The Trap Host menu (see Figure 6-31) is used to set the status for each trap host.

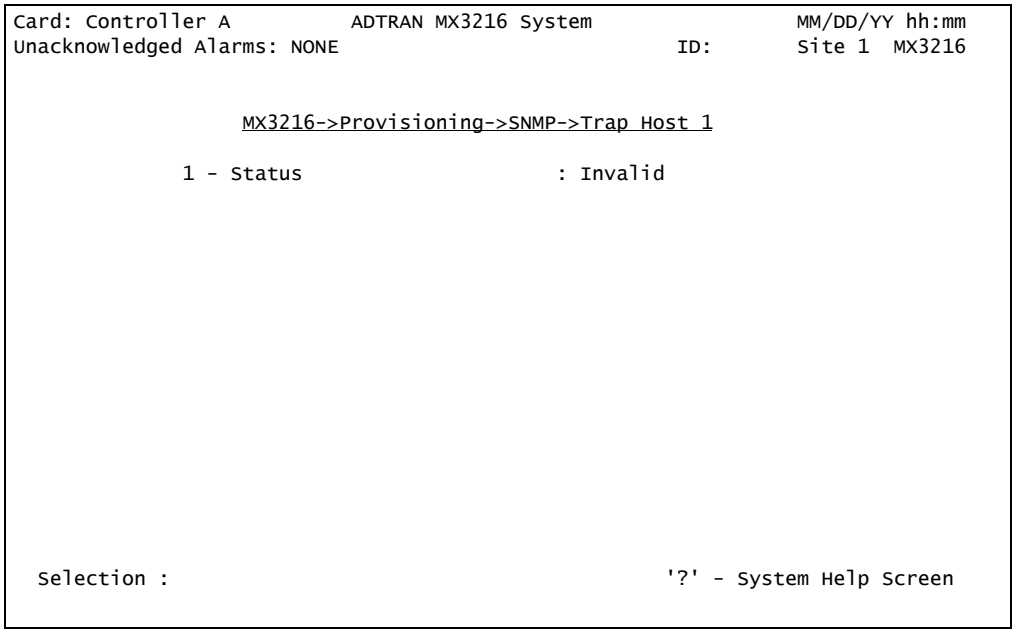

Figure 6-31. Trap Host Menu

The Trap Host menu options are shown in Table 6-24.

Table 6-24. Trap Host Menu Options

Option	Description	Function
1	Status	This option is used to set the SNMP trap host status. Options are as follows: • Valid • Under Creation • Invalid

Auto Save Menu

The Auto Save menu (see Figure 6-32) provides the option to save provisioning settings each minute if enabled.

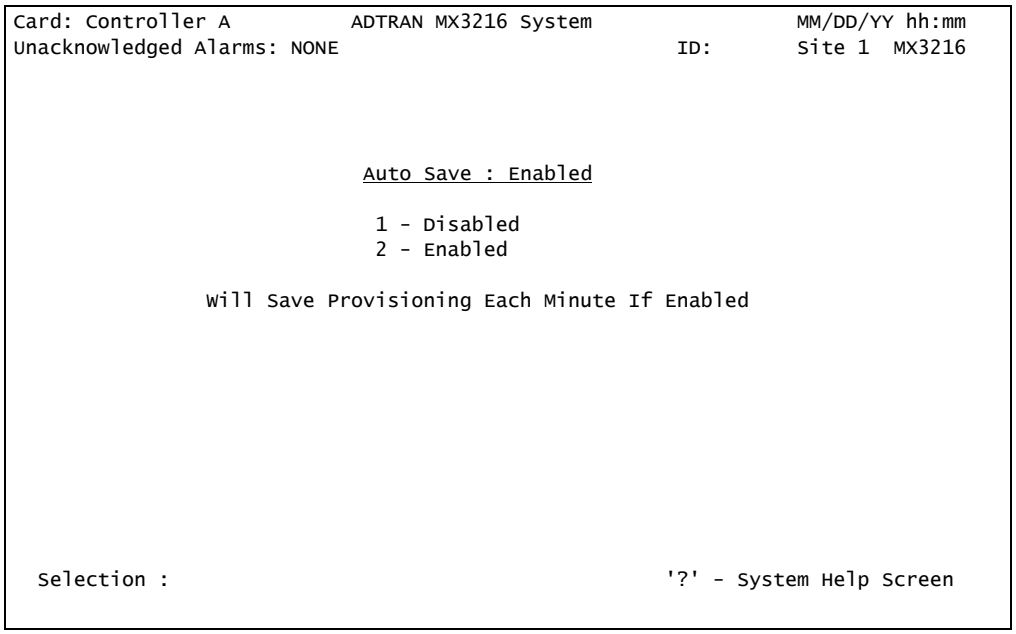

Figure 6-32. Auto Save Menu

The Auto Save menu options are shown in Table 6-25.

Table 6-25. Auto Save Menu Options

Option	Description	Function
1	Disabled	This option is used to disable the auto save option.
2	Enabled	This option automatically saves current provisioning settings at one minute intervals if any changes have been made.

Security Administration Menu

The Security Administration menu (see Figure 6-33) provides access to user accounts.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                MX3216->Provisioning->Security Administration


                        1 - Users Currently Logged On
                        2 - Edit User Accounts
                        3 - Access Tech Support Account
                        4 - Restore Default Security Settings









  Selection :                                          '?' - System Help Screen
```

Figure 6-33. Security Administration Menu

The Security Administration menu options are shown in Table 6-26.

Table 6-26. Security Administration Menu Options

Option	Description	Function
1	Users Currently Logged On	This option displays the "Users Currently Logged On Screen" on page 6-52. This screen lists all users currently logged on to the system.
2	Edit User Accounts	This option displays the "Edit Accounts Menu" on page 6-53. This menu allows for the management of all user accounts.
3	Access Tech Support Account	This option displays the "Access Tech Support Account Screen" on page 6-56. A technical support account can be accessed from this screen with appropriate authorization from ADTRAN.
4	Restore Default Security Settings	This option is used to restore all security options to the default settings.

Users Currently Logged On Screen

The Users Currently Logged On screen (see Figure 6-34) displays all users currently logged in to the MX3216 system.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216

Users Currently Logged On  -   1
USER                 ACCESS   TYPE     FROM                TIME
ADMIN                IP       Menu     172.22.117.239      10/17/00 01:56:11

                                                          '?' - System Help Screen
```

Figure 6-34. Users Currently Logged On Screen

The Users Currently Logged On screen fields are shown in Table 6-27.

Table 6-27. Users Currently Logged On Screen Fields

Field	Description
Users Currently Logged On	This field displays the number of users currently logged on.
USER	This field displays the account name.
ACCESS	This field displays the access as one of the following: • Craft: User is logged on through the front panel craft port of the MX3216 controller. • IP: User is logged on through a Telnet connection through the primary (23) or secondary Telnet port.
TYPE	This field displays the type as: • Menu
FROM	This field displays the IP address if access is IP.
TIME	This field displays the logon time.

Edit Accounts Menu

The Edit Accounts menu (see Figure 6-35) allows access to manage all user accounts.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216

         MX3216->Provisioning->Security Administration->Edit Accounts
Num  USER                 STATUS     NUM LOGINS ACCESS RIGHTS
  1. ADMIN                ENABLED    1          ADMIN
  2. READONLY             ENABLED    0          READ
  3. READWRITE            ENABLED    0          READ/WRITE
  4. TEST                 ENABLED    0          TEST









  Selection :                                          '?' - System Help Screen
  (N)ew Account
```

Figure 6-35. Edit Accounts Menu

The Edit Accounts menu options are shown in Table 6-28.

Table 6-28. Edit Accounts Menu Options

Option	Description	Function
1–4	USER	This option is used to select the user account that is configured.

The Edit Accounts menu hot key is shown in Table 6-29.

Table 6-29. Edit Accounts Menu Hot Key

Hot Key	Description	Function
N	New Account	This hot key is used to create a new user account. Pressing the hot key displays a screen where the new user name can be entered. The new user account can then be selected from the Edit Accounts menu.

Table 6-30 provides the default account names and passwords for the MX3216 system.

Table 6-30. Edit User Accounts Menu Options

Account Level	Account Name	Account Password
READ ONLY	READONLY	PASSWORD
READ/WRITE	READWRITE	PASSWORD
TEST	TEST	PASSWORD
ADMIN	ADMIN	PASSWORD
TECH SUPPORT*	Challenge Key	Response Key

* The Tech Support Account Level is established and accessed as directed by ADTRAN Technical Support during troubleshooting and analysis.

Edit Menu

The Edit menu (see Figure 6-36) is used to edit or delete user accounts.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216




     MX3216->Provisioning->Security Administration->Edit Accounts->Edit

                  User: ADMIN

                  1 - Enable/Disable User Account  : ENABLED
                  2 - Access Rights                : ADMIN
                  3 - Change Password
                  4 - Delete User









  Selection :                                          '?' - System Help Screen
```

Figure 6-36. Edit Menu

The Edit menu options are shown in Table 6-31.

Table 6-31. Edit Menu Options

Option	Description	Function
1	Enable/Disable User Account	This option is used to enable or disable a user account. Options are as follows: • Disabled • Enabled The ADMIN account can not be disabled.
2	Access Rights	This option sets the access rights level for the selected account. Options are as follows: • READ: This level allows the user to see, but not change the current system configuration. • TEST: This level allows system testing. • READ/WRITE: This level allows the user to both see and change system configuration parameters. • ADMIN: This level is reserved for system or network administrators.
3	Change Password	This option is used to enter a new password.
4	Delete User	This option is used to delete a user account.

Access Tech Support Account Screen

The Access Tech Support Account screen (see Figure 6-37) provides access to a technical support account.

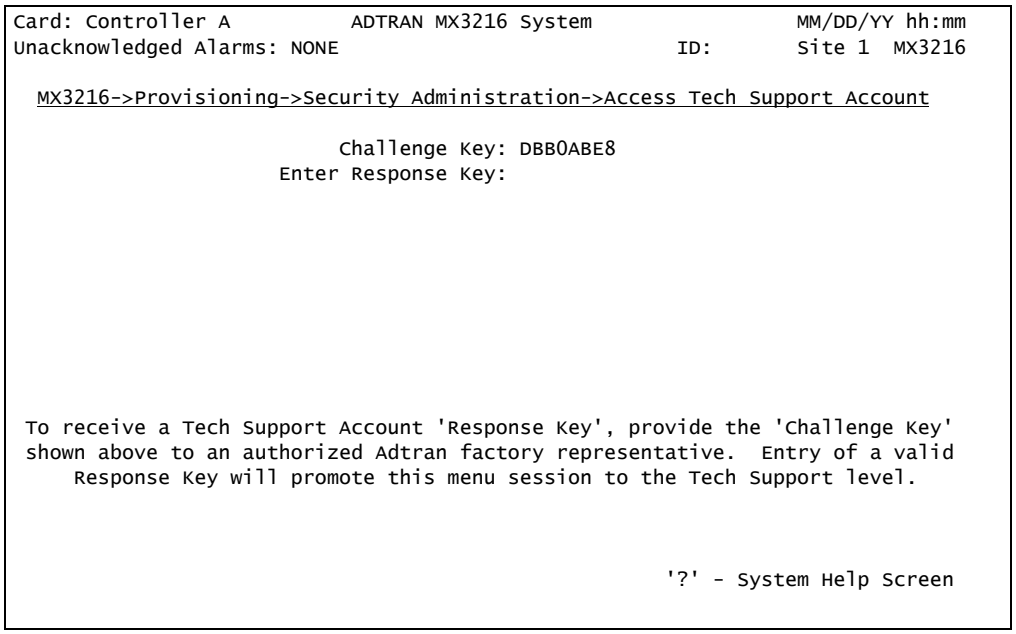

Figure 6-37. Access Tech Support Account Screen

To receive a technical support response key, provide the challenge key that appears on the screen to an authorized Adtran factory representative. Refer to "ADTRAN Technical Support" on page A-1 for contact information. Entry of a valid response key promotes this menu session to the technical support level.

Quick Setup Menu

To simplify the installation process, all of the basic configuration options necessary to get the MX3216 running are grouped together on the Quick Setup menu (see Figure 6-38). The Quick Setup menu allows configuration of such items as application mode and Ethernet client ports, as well as system date, time, and IP address information.

WARNING

Changing IP settings terminates all active Telnet sessions.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                               ID:       Site 1  MX3216

                            MX3216->Quick Setup
                    DS1 Ports                         Module Drops (None Installed)
 1 - # 1 :                9 - # 9 :                     MX3RMM (Module A)
 2 - # 2 :               10 - #10 :                     23 - MA1 -
 3 - # 3 :               11 - #11 :                     24 - MA2 -
 4 - # 4 :               12 - #12 :                     25 - MA3 -
 5 - # 5 :               13 - #13 :                     26 - MA4 -
 6 - # 6 :               14 - #14 :
 7 - # 7 :               15 - #15 :
 8 - # 8 :               16 - #16 :

System
17 - System ID    : Site 1  MX3216
18 - IP Address   : 0.0.0.0
19 - Subnet Mask  : 255.255.255.0
20 - Gateway      : 0.0.0.0                   27 - MX3RMM Quick Setup Menu
21 - Date         : 01/01/2005
22 - Time         : 12:00:00

 Selection :                                         '?' - System Help Screen
```

Figure 6-38. Quick Setup Menu

The Quick Setup menu options are shown in Table 6-32.

Table 6-32. Quick Setup Menu Options

Option	Description	Function
1–16	DS1 Ports 1–16	This option displays the "Change Menu" on page 6-59. This menu is used to connect the DSX-1 drops through the 3-to-1 cross-connect.
17	System ID	This option is used to enter a 20-character system identification for the unit. The System ID is a user-friendly identification for the MX3216.
18	IP Address	This option is used to enter the IP address. The IP address is written in the format XXX.XXX.XXX.XXX, where each 3-digit field has a value between 000 and 255.

Table 6-32. Quick Setup Menu Options (Continued)

Option	Description	Function
19	Subnet Mask	This option is used to enter the subnet mask. A subnet mask is used to reduce the traffic on each subnetwork by confining traffic to only the subnetwork for which it was intended. A subnet mask makes the entire network more manageable. In effect, each subnet functions as though it were an independent network, keeping local traffic local and forwarding traffic to another subnet only if the address of the data is external to the subnet. The Subnet Mask is written in the format XXX.XXX.XXX.XXX, where each 3-digit field has a value between 000 and 255.
20	Gateway	This option is used to enter the default gateway/router between the internal network and the external network. The Gateway address is written in the format XXX.XXX.XXX.XXX, where each 3-digit field has a value between 000 and 255.
21	Date	This option is used to enter the date (MM/DD/YYYY).
22	Time	This option is used to enter the time (HH:MM:SS).
23–26	Module Drops	This option displays the "Change Menu" on page 6-59. This menu is used to connect the module DS1s through the 3-to-1 cross-connect. All DS1s for modules A and B appear here. In Figure 6-38, a single MX3RMM, which has two DS1s, is installed.
27–28	Module A/B Quick Setup Menu	This option displays the "Quick Setup Menu" on page 6-115 for the modules installed in slot **A** and **B**. In Figure 6-38, the MX3RMM is installed in slot **A** and is shown as option 27. If another module is installed in slot **B**, it appears as option 28.

Change Menu

The Change menu (see Figure 6-39) is used to map connections for unmapped DS1s.

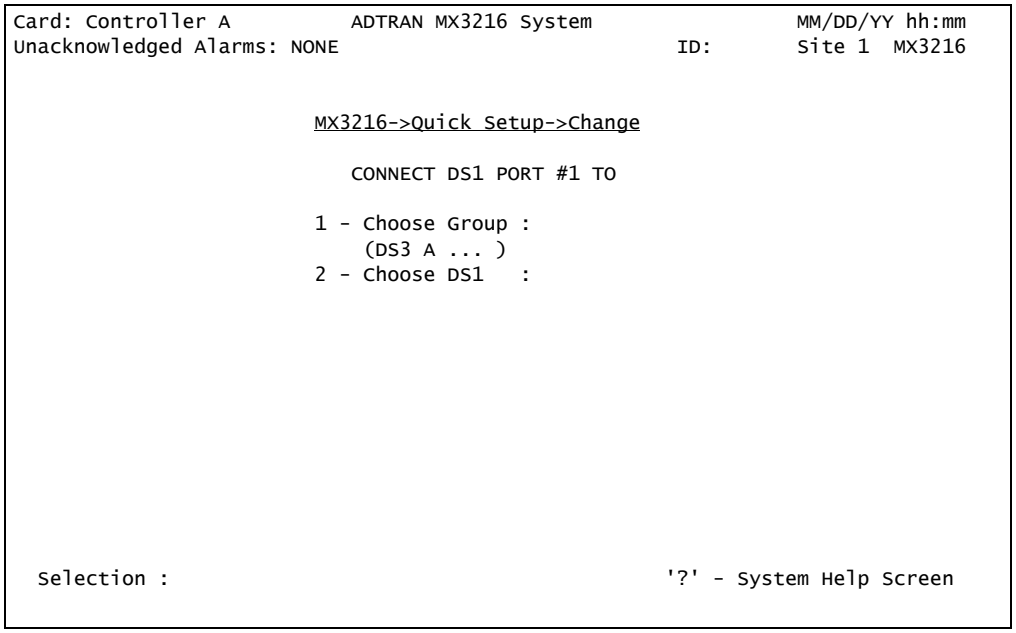

Figure 6-39. Change Menu

The Change menu options are shown in Table 6-33.

Table 6-33. Change Menu Options

Option	Description	Function
1	Choose Group	This option is used to select a group of DS1s to connect the selected DS1. Options are as follows: • DS1 Port • Module A • Module B • DS3 A • DS3 B
2	Choose DS1	This option is used to enter the number for the DS1 from the chosen group.
3	Apply Cross-Connect	This option appears once options 1 and 2 have been set and is used to apply the selections from options 1 and 2.

For example, to connect the DS1 Port #1 (DSX-1 #1) to the fourth DS1 in DS3 B, select DS3 B from option 1 and enter **4** for option 2, then apply the cross-connect. Additionally, to connect the DS1 Port #7 (DSX-1 #7) to the second DS1 in module A, select DS1 Port from option 1 and enter **7** for option 2, then apply the cross-connect.

Status Menu

The Status menu (see Figure 6-40) presents a condensed version of the system status for the MX3216. More detailed information is available through the options.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                                  MX3216->Status
 1 - Controller Equipment                          4 - DS1 Ports
 Active  (Card A) : Normal                         <1-4>   : OFF  OFF  OFF  OFF
 Standby (Card B) : Not Installed                  <5-8>   : OFF  OFF  OFF  OFF
                                                   <9-12>  : OFF  OFF  OFF  OFF
 2 - DS3 A (DS3 A)                                 <13-16> : OFF  OFF  OFF  OFF
 State  : Normal
 Status : OK                                       5 - Environmental Alarms
                                                   State : Major
 3 - DS3 B (DS3 B)
 State  : DS3-ALARM                                6 - MX3RMM
 Status : LOS OOF DS2-OOF                          State : Normal

                                                   Module B
                                                   State : Not Installed

                                                   Fan Module
                                                   State : Normal

  Selection :                                            '?' - System Help Screen
```

Figure 6-40. Status Menu

The Status menu Options are shown in Table 6-34.

Table 6-34. Status Menu Options

Option	Description	Function
1	Controller Equipment	This option displays the "Controller Equipment Screen" on page 6-62. The Controller Equipment screen provides the controller card status and alarm conditions.
2–3	DS3 A/B	This option displays the "DS3 Status Menu" on page 6-64. The DS3 A/B Status screen provides the DS3 status, test, alarm, and mapping information.
4	DS1 Ports	This option displays the "DS1 Ports Screen" on page 6-68. The DS1 Ports screen displays status and test information for the DSX-1 ports.
5	Environmental Alarms	This option displays the "Environmental Alarms Screen" on page 6-70. The Environmental Alarms screen displays the environmental alarms and ACO status.

Table 6-34. Status Menu Options (Continued)

Option	Description	Function
6	Module A	This option displays the "Status Screen" on page 6-117. The Status screen displays the status information for module A. Figure 6-40 shows the MX3RMM installed as module A.
7	Module B	If module B is installed, this option displays the status screen for the card installed in slot **B**.
N/A	Fan Module	This field displays the status for the fan module.

Controller Equipment Screen

The Controller Equipment screen (see Figure 6-41) displays the status of the active card, standby card, and alarms.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                          ID:        Site 1  MX3216

                     MX3216->Status->Controller Equipment

                        Active  (Card A)  : Normal
                        Standby (Card B)  : Not Installed

                        Alarms            : None

                                                        '?' - System Help Screen
```

Figure 6-41. Controller Equipment Screen

The Controller Equipment screen fields are shown in Table 6-35.

Table 6-35. Controller Equipment Screen Fields

Field	Description
Active	This field displays the status of the active card. Table 6-36 describes the possible active card states.
Standby	This field displays the status of the standby card. Table 6-37 describes the possible standby card states.
Alarms	This field displays the condition of the alarms. Table 6-38 describes the possible alarm conditions.

Table 6-36. Active Card Status

Status	Description
Normal	This state indicates normal operating mode.
Software Update	This state indicates a software update in progress.
Card Failure	This state indicates a card failure has occurred.

Table 6-37. Standby Card Status

Status	Description
Ready	This state indicates a card is ready and acting as a backup module.
Not Installed	This state indicates a card is not installed in the designated slot.
Software Update	This state indicates a software update is in progress.
Not Ready	This state indicates a card configuration is in progress.
Not Ready - Code Mismatch	This state indicates an active card should be reset to run new code.
Comm Failure	This state indicates modules are not able to communicate with each other.
Card Failure	This state indicates a card has failed and should be replaced.

Table 6-38. Alarm Conditions

Condition	Description
None	This condition indicates no alarms.
Card Failure - Active Card	This condition indicates an active card has failed.
Card Failure - Standby Card	This condition indicates a standby card has failed.
Switch to Protect	This condition indicates a controller card switch has occurred.
Comm Failure	This condition indicates the active and standby controllers are not able to communicate with each other.
Code Mismatch	This condition indicates code versions on active and standby cards do not match. Reset the active card to run new code.

DS3 Status Menu

The DS3 Status menu (see Figure 6-42) displays the status for DS3 A and B.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216

                        MX3216->Status->DS3 A (DS3 A)
 DS3
 Alarm      : None                      Tx Clock Source        : Local
 Rx Status  : OK                        Tx Framing             : C-Bit

 Rx Framing : C-Bit                     Test Status : Data Mode
 Rx FEAC    : Normal

 DS2s
 <1-7>    OK  OK  OK  OK  OK  OK  OK

 DS1 Tributaries in DS3 A
                           1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8
 Mapped     X X X X X X X X X X X X X X X X X X X X X X X X X X
 AIS      X X
 TEST
  1 - Go to Test Menu for DS1s in DS3 A

  Selection :                                          '?' - System Help Screen
```

Figure 6-42. DS3 Status Menu

The DS3 Status menu fields are shown in Table 6-39.

Table 6-39. DS3 Status Menu Fields

Field	Description
Alarm	This field displays the conditions of the alarms as shown in Table 6-40.
Rx Status	This field displays the current status of the network. Possible states are as follows: • OK • LOS • OOF • AIS • RAI • IDLE
Rx Framing	This field displays the network framing type. Types are as follows: • C-bit • M23 • Unknown
Rx FEAC	This field displays the conditions of the remote system shown in Table 6-41.

Table 6-39. DS3 Status Menu Fields (Continued)

Field	Description
Tx Clock Source	This field displays the network clock source. Types are as follows: • Loop • Local
Tx Framing	This field displays the network framing type. Types are as follows: • C-bit • M23
Test Status	This field displays the current test status of the network. Possible states are as follows: • No Test • Line Loopback • Digital Loopback • Remote Loopback • Remote ALL T1 • Far Requested Line
DS2s 1-7	This field displays the conditions of the seven DS2s as shown in Table 6-42.

Table 6-40. Alarm Conditions

Condition	Description
None	Indicates no alarms are currently being received.
RAI	Indicates the MX3216 system is receiving a Remote Alarm Indication (RAI) (yellow) alarm from the network. This alarm is a signal sent back toward the source of a failed transmit circuit. The X-bits (X1 and X2) are set to zero.
LOS	Indicates the MX3216 system has lost the Rx signal.
AIS	Indicates the MX3216 system is receiving an Alarm Indication Signal (AIS) (blue) alarm from the network. AIS alarms occur when consecutive 1010s are received in the information bits. This indicates there is a transmission fault located either at the transmitting terminal or upstream from the transmitting terminal.
OOF	Indicates the MX3216 system detects a framing loss from the network.
XCV	Indicates the MX3216 system is receiving excessive code violations from the network, which are exceeding the threshold set by the XCV Threshold parameter.
IDLE	Indicates the MX3216 system detects an idle sequence from the network. Service is immediately available for use.
FEAC	Indicates the MX3216 system is receiving an alarm from the far end DS3 system.

Table 6-41. Remote System Conditions

Condition	Description
Normal	Indicates the far end MX3216 system is not reporting any conditions.
DS3 RAI	Indicates the far end unit is receiving a Remote Alarm Indication (RAI) (yellow) alarm from the network. This alarm is a signal sent back toward the source of a failed transmit circuit. The X-bits (X1 and X2) are set to zero.
DS3 LOS	Indicates the far end unit has lost the Rx signal.
DS3 AIS	Indicates the far end unit is receiving an Alarm Indication Signal (AIS) (blue) alarm condition from the network. AIS alarms occur when consecutive 1010s are received in the information bits. This indicates there is a transmission fault located either at the transmitting terminal or upstream from the transmitting terminal.
DS3 LOF	Indicates the far end unit detects a framing loss, Loss of Frame (LOF), from the network.
DS3 Idle	Indicates the far end unit detects an idle sequence from the network.
DS3 Eqpt Fail (SA)	Indicates the far end unit or network is reporting a service-affecting (SA) DS3 equipment failure.
DS3 Eqpt Fail (NSA)	Indicates the far end unit or network is reporting a non-service-affecting (NSA) DS3 equipment failure.
Common Eqpt Fail	Indicates the far end unit or network is reporting a non-service-affecting common equipment failure.
Multiple DS1 LOS	Indicates the far end unit is experiencing a loss of signal on multiple DS1s.
Single DS1 LOS	Indicates the far end unit is experiencing a loss of signal on a single DS1.
DS1 Eqpt Fail (SA)	Indicates the far end unit is experiencing a service-affecting DS1 equipment failure.
DS1 Eqpt Fail (NSA)	Indicates the far end unit is experiencing a non-service-affecting DS1 equipment failure.
Unknown	Indicates the unit is unable to discern the status of the far end unit. (Normal state for M13 framing.)

Table 6-42. DS2 Conditions

Condition	Description
OK	Indicates the DS2 is not receiving alarms.
OOF	Indicates the unit detects a framing loss across the DS2.
RAI	Indicates the unit is receiving a RAI (yellow) alarm from the network across a DS2. This alarm is a signal sent back toward the source of a failed transmit circuit. The X-bit is set to zero.
AIS	Indicates the unit is receiving an AIS (blue) alarm condition from the network across the DS2. AIS alarms occur when the unit receives unframed all ones.

The DS3 Status menu option is shown in Table 6-43.

Table 6-43. DS3 Status Menu Option

Option	Description	Function
1	Go to Test Menu for DS1s in DS3 A/B	This option displays the "DS1s in DS3 Menu" on page 6-78. This menu provides access to all the test options available on the tributary DS1s.

DS1 Ports Screen

The DS1 Ports screen (see Figure 6-43) displays the status of the DS1 ports.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                          MX3216->Status->DS1 Ports

  Status           Test
  1  OFF  Data Mode
  2  OFF  Data Mode
  3  OFF  Data Mode
  4  OFF  Data Mode
  5  OFF  Data Mode
  6  OFF  Data Mode
  7  OFF  Data Mode
  8  OFF  Data Mode
  9  OFF  Data Mode
 10  OFF  Data Mode
 11  OFF  Data Mode
 12  OFF  Data Mode
 13  OFF  Data Mode
 14  OFF  Data Mode
 15  OFF  Data Mode
 16  OFF  Data Mode
                                                      '?' - System Help Screen
```

Figure 6-43. DS1 Ports Screen

The DS1 Ports screen fields are shown in Table 6-44.

Table 6-44. DS1 Ports Screen Fields

Field	Description
Status	This field displays the current line status of the DSX-1 ports. The possible states are as follows: • OK • TEST: Indicates the DS1 is in test mode. • CV (Code Violation) • ERR: Indicates there is a test pattern error. • AIS (Alarm Indication Signal) • LOS (Loss of Signal) • OFF: Indicates the port is not mapped through the 3/1 cross-connect and the transmitter is in a high-impedance mode.
Test	This field displays the active test for the DSX-1 ports. Table 6-45 describes the available tests.

Table 6-45. DSX-1 Port Tests

Test	Description
No Test	This state indicates no tests are active.
Analog Network	This test loops towards the 3-to-1 cross connect and includes the analog portion of the AFE.
Digital Line/Net	This test loops towards the DSX-1 line and includes the digital portion of the AFE. Additionally, a loop is established towards the DS3 after the M12 block.
CSU Loopback	This test sends CSU loop up commands towards the DSX-1 line.
CSU LB w/ Pattern	This test sends CSU loop up commands towards the DSX-1 line and sends a test pattern using the internal BERT.
NIU Loopback	This test sends NIU loop up commands towards the DSX-1 line.
NIU LB w/ Pattern	This test sends NIU loop up commands towards the DSX-1 line and sends a test pattern using the internal BERT.
Pattern Test	This test sends a test pattern using the internal BERT.

Environmental Alarms Screen

The Environmental Alarms screen (see Figure 6-44) displays the status of the auxiliary inputs, power feeds, and ACO inputs.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                     MX3216->Status->Environmental Alarms

     External Inputs        Alarm Status      Level
     AUX #1 Input           Inactive          Major
     AUX #2 Input           Inactive          Major
     AUX #3 Input           Inactive          Major
     AUX #4 Input           Inactive          Major
     PWR BUS A              Inactive          Major
     PWR BUS B              Active            Major

     ACO Status             Inactive          N/A









  Selection :                                          '?' - System Help Screen
```

Figure 6-44. Environmental Alarms Screen

The Environmental Alarms screen fields are shown in Table 6-46.

Table 6-46. Environmental Alarms Screen Fields

Field	Description
External Inputs	This field displays the external inputs. Table 6-47 describes the possible external inputs.
Alarm Status	This field displays the alarm status as one of the following: • Active • Inactive
Level	This field displays the alarm level as one of the following: • Disabled • Info • Alert • Minor • Major • Critical • N/A (ACO Only)

Table 6-47. Environmental Alarm External Inputs

External Input	Description
AUX #1 Input	This input indicates open or closed relay contacts for AUX #1.
AUX #2 Input	This input indicates open or closed relay contacts for AUX #2.
AUX #3 Input	This input indicates open or closed relay contacts for AUX #3.
AUX #4 Input	This input indicates open or closed relay contacts for AUX #4.
PWR BUS A–B	This input generates an alarm signal when one of the power feeds fail. When both power feeds fail, a critical alarm is not generated. A complete power failure at the MX3216 is detected by communication loss at attached devices.
ACO Status	This field displays the current status of the ACO inputs. This includes the front panel ACO switch and any auxiliary inputs configured as ACO.

Test Menu

The Test menu (see Figure 6-45) provides options for testing the DS1 ports.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                                  MX3216->Test
 DS1 Ports                                17 - DS3 A          : Data Mode
  1 - # 1 : Data Mode                     18 - DS3 B          : Data Mode
  2 - # 2 : Data Mode
  3 - # 3 : Data Mode                     19 - DS1s in DS3 A : Data Mode
  4 - # 4 : Data Mode                     20 - DS1s in DS3 B : Data Mode
  5 - # 5 : Data Mode
  6 - # 6 : Data Mode                     21 - Test Alarm Relays
  7 - # 7 : Data Mode                     22 - Reset ALL Tests
  8 - # 8 : Data Mode                     23 - Test Timeout       : 5 minutes
  9 - # 9 : Data Mode                     24 - Pattern            : QRSS
 10 - #10 : Data Mode
 11 - #11 : Data Mode
 12 - #12 : Data Mode
 13 - #13 : Data Mode
 14 - #14 : Data Mode
 15 - #15 : Data Mode
 16 - #16 : Data Mode

  Selection :                                          '?' - System Help Screen
```

Figure 6-45. Test Menu

The Test menu options are shown in Table 6-48

Table 6-48. Test Menu Options

Option	Description	Function
1–16	DS1 Ports 1–16	This option displays the "DS1 Port Test Menu" on page 6-74. This menu provides access to all the test options available on the DSX-1 ports.
17–18	DS3 A–B	This option displays the "DS3 Test Menu" on page 6-76. This menu provides access to all the test options available on the DS3 ports.
19–20	DS1s in DS3 A–B	This option displays the "DS1s in DS3 Menu" on page 6-78. This menu provides access to all the test options available on the tributary DS1s.
21	Test Alarm Relays	This option displays the "Test Alarm Relays Menu" on page 6-81. This menu allows for testing to be performed on the alarm relays.
22	Reset ALL Tests	This option is used to cancel all tests and return all tests to data mode.

Table 6-48. Test Menu Options (Continued)

Option	Description	Function
23	Test Timeout	This option is used to select the test timeout. Options are as follows: • Disabled • 1 minute • 5 minutes • 10 minutes • 15 minutes • 30 minutes • 45 minutes • 60 minutes
24	Pattern	This option is used to select the test pattern used by the internal BERT. Options are as follows: • QRSS • ALL ONES • ALL ZEROS • 2 IN 8 (2:6) • 1 IN 8 (1:7) • 2^15-1 INV

DS1 Port Test Menu

The DS1 Port Test menu (see Figure 6-46) provides testing options that can be run on the DS1 ports.

CAUTION

Enabling a test interrupts customer payload on the selected DS1 port.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                          DS1 Port #1 Test : Data Mode

                               1 - Data Mode
                               2 - Analog Network
                               3 - Digital Line/Net
                               4 - CSU Loopback
                               5 - CSU LB w/ Pattern
                               6 - NIU Loopback
                               7 - NIU LB w/ Pattern
                               8 - Pattern Test




 Selection :                                          '?' - System Help Screen
```

Figure 6-46. DS1 Port Test Menu

The DS1 Port Test menu options are shown in Table 6-49.

Table 6-49. DS1 Port Test Menu Options

Option	Description	Function
1	Data Mode	When this mode is selected, no tests are active and the customer payload is uninterrupted.
2	Analog Network	This test loops towards the 3/1 cross-connect and includes the analog portion of the AFE.
3	Digital Line/Net	This test loops towards the DSX-1 line and includes the digital portion of the AFE. Additionally, a loop is established towards the DS3 after the M12 block.
4	CSU Loopback	This test sends CSU loop up commands towards the DSX-1 line.

Table 6-49. DS1 Port Test Menu Options (Continued)

Option	Description	Function
5	CSU LB w/ Pattern	This test sends CSU loop up commands towards the DSX-1 line and sends a test pattern using the internal BERT.
6	NIU Loopback	This test sends NIU loop up commands towards the DSX-1 line.
7	NIU LB w/ Pattern	This test sends NIU loop up commands towards the DSX-1 line and sends a test pattern using the internal BERT.
8	Pattern Test	This test sends a test pattern using the internal BERT.

DS3 Test Menu

The DS3 Test menu (see Figure 6-47) provides testing options that can be run on DS3 A and B.

CAUTION

Enabling a test on a DS3 interrupts customer payload on all DS1s transported over the selected DS3.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                              DS3 A Test : Data Mode

                                1 - Data Mode
                                2 - Line Loopback
                                3 - Digital Loopback
                                4 - Remote Loopback
                                5 - Remote ALL T1









 Selection :                                          '?' - System Help Screen
```

Figure 6-47. DS3 Test Menu

The DS3 Test menu options are shown in Table 6-50.

Table 6-50. DS3 Test Menu Options

Option	Description	Function
1	Data Mode	When this mode is selected, no tests are active and the customer payload is uninterrupted.
2	Line Loopback	This test loops towards the DS3 line but excludes the DS3 framer.

Table 6-50. DS3 Test Menu Options (Continued)

Option	Description	Function
3	Digital Loopback	This test loops towards the 3/1 cross-connect and includes the DS3 framer.
4	Remote Loopback (C-Bit Only)	This test performs a line loopback at the equipment on the other end of the selected DS3.
5	Remote ALL T1 (C-Bit Only)	This test performs a tributary loopback on all DS1s in the DS3 at the equipment on the other end of the selected DS3.

DS1s in DS3 Menu

The DS1s in DS3 menu (see Figure 6-48) displays the test that is selected for each of the tributaries.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                          MX3216->Test->DS1s in DS3 A


  1 - Data Mode                          15 - Data Mode
  2 - Data Mode                          16 - Data Mode
  3 - Data Mode                          17 - Data Mode
  4 - Data Mode                          18 - Data Mode
  5 - Data Mode                          19 - Data Mode
  6 - Data Mode                          20 - Data Mode
  7 - Data Mode                          21 - Data Mode
  8 - Data Mode                          22 - Data Mode
  9 - Data Mode                          23 - Data Mode
 10 - Data Mode                          24 - Data Mode
 11 - Data Mode                          25 - Data Mode
 12 - Data Mode                          26 - Data Mode
 13 - Data Mode                          27 - Data Mode
 14 - Data Mode                          28 - Data Mode


  Selection :                                        '?' - System Help Screen
```

Figure 6-48. DS1s in DS3 Menu

The DS1s in DS3 menu options are shown in Table 6-51.

Table 6-51. DS1s in DS3 Menu Options

Option	Description	Function
1–28	Tributary DS1s 1–28	This option displays the "DS1 in DS3 Test Menu" on page 6-79. This menu is used to select the test to be performed on a specific tributary DS1.

DS1 in DS3 Test Menu

The DS1 in DS3 Test menu (see Figure 6-49) provides testing options that can be run on the tributaries.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216




                        DS1 #1 in DS3 A Test : Data Mode

                               1 - Data Mode
                               2 - Tributary Loopback
                               3 - Remote Loopback
                               4 - CSU Loopback
                               5 - CSU LB w/ Pattern
                               6 - NIU Loopback
                               7 - NIU LB w/ Pattern
                               8 - Pattern Test









  Selection :                                          '?' - System Help Screen
```

Figure 6-49. DS1 in DS3 Test Menu

The DS1 in DS3 Test menu options are shown in Table 6-52.

Table 6-52. DS1 in DS3 Test Menu Options

Option	Description	Function
1	Data Mode	When this mode is selected, no tests are active and the customer payload is uninterrupted.
2	Tributary Loopback	This test loops towards the DS3 after the M12 block but excludes the 3/1 cross-connect.
3	Remote Loopback	This test performs a tributary loopback on the selected DS1 in the DS3 terminated at the connecting equipment.
4	CSU Loopback	This test sends CSU loop up commands towards the DSX-1 line.
5	CSU LB w/ Pattern	This test sends CSU loop up commands towards the DSX-1 line and sends a test pattern using the internal BERT.

Table 6-52. DS1 in DS3 Test Menu Options (Continued)

Option	Description	Function
6	NIU Loopback	This test sends NIU loop up commands towards the DSX-1 line.
7	NIU LB w/ Pattern	This test sends NIU loop up commands towards the DSX-1 line and sends a test pattern using the internal BERT.
8	Pattern Test	This test sends a test pattern using the internal BERT.

Test Alarm Relays Menu

The Test Alarm Relays menu with the Alarm Relay Test Status option set to Inactive is shown in Figure 6-50. Figure 6-51 shows the Test Alarm Relays menu with the Alarm Relay Test Status option set to Active.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                             ID:     Site 1  MX3216


                      MX3216->Test->Test Alarm Relays

                 1 - Alarm Relay Test Status    : Inactive









  Selection :                                          '?' - System Help Screen
```

Figure 6-50. Test Alarm Relays Menu with Inactive Alarm Relay Test Status

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                             ID:     Site 1  MX3216


                      MX3216->Test->Test Alarm Relays

                 1 - Alarm Relay Test Status    : Active

                 2 - Toggle Critical Relay      : Inactive
                 3 - Toggle Major Relay         : Inactive
                 4 - Toggle Minor Relay         : Inactive

                 5 - Toggle All Relays









  Selection :                                          '?' - System Help Screen
```

Figure 6-51. Test Alarm Relays Menu with Active Alarm Relay Test Status

The Test Alarm Relays menu fields are shown in Table 6-53.

Table 6-53. Test Alarm Relays Menu Fields

Option	Field	Description
1	Alarm Relay Test Status	This option is used to select the alarm relay test status. Options are as follows: • Inactive • Active: Options 2–5 are visible when this option is selected.
2	Toggle Critical Relay	This option is a toggle key to change between Inactive and Active status.
3	Toggle Major Relay	This option is a toggle key to change between Inactive and Active status.
4	Toggle Minor Relay	This option is a toggle key to change between Inactive and Active status.
5	Toggle All Relays	This option is a toggle key to change between Inactive and Active status for options 2–4.

System Alarms Menu

The System Alarms menu (see Figure 6-52) provides options for viewing all alarms affecting MX3216 system operations. Alarms can be viewed within the Master Log screen. The Environmental Alarms menu contains user-provisionable options. The Alarm Chronology menu offers the viewing of alarms in either ascending or descending order.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                              MX3216->System Alarms

                         1 - Master Log

                         2 - Controller A
                             Controller B

                         3 - MX3RMM
                         4 - Module B

                         5 - User-Definable Alarms
                         6 - Alarm Chronology : Ascending









  Selection :                                          '?' - System Help Screen
```

Figure 6-52. System Alarms Menu

The System Alarms menu options are shown in Table 6-54.

Table 6-54. System Alarms Menu Options

Option	Description	Function
1	Master Log	This option displays the "Master Alarms Log Screen" on page 6-85. This screen displays the alarms for all cards installed in the system.
2	Controller A/B	This option displays the "Controller Alarms Log Screen" on page 6-87. This screen displays the alarms for the controller card.
3–4	Module A/B	This option displays the "Controller Alarms Log Screen" on page 6-87. This screen displays the alarms for module A/B, if installed.

Table 6-54. System Alarms Menu Options (Continued)

Option	Description	Function
5	User-Definable Alarms	This option displays the "User-Definable Alarms Menu" on page 6-92. This menu displays environmental and card removed alarms which have user-definable severity levels.
6	Alarm Chronology	This option is used to select the alarm chronology. Options are as follows: • Ascending • Descending

Master Alarms Log Screen

The Master Alarms Log screen (see Figure 6-53) is used to review and acknowledge all system alarms.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216

Alarm Log - Master Alarms            Alarms    1 to   14 of  155 Page   1 of  12

Date     Time     Pos Type       Port          Level    Description       Status
10/10/00 00:00:00 CA  Controller ENV           Major    PWR B FAIL        *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #1   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #2   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #3   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #4   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #5   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #6   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #7   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #8   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #9   Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #10  Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #11  Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #12  Alert    DS1 AIS           *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #13  Alert    DS1 AIS           *Active
----------------------------------->>> MORE <<<-----------------------------------

Inverse = Active      * = Unacknowledged      Chronology = Ascending
(N)ext (P)rev (F)irst (L)ast (C)lear (A)cknowledge (S)elect Log
```

Figure 6-53. Master Alarms Log Screen

The Master Alarms Log screen fields are shown in Table 6-55.

Table 6-55. Master Alarms Log Screen Fields

Field	Description
Date	This field displays the date that the alarm was initiated.
Time	This field displays the time that the alarm was initiated.
Pos	This field displays the position (source) of the alarm. Possible sources are as follows: • CA = Controller A • CB = Controller B • MA = Module A • MB = Module B
Type	This field displays the type of the card that originates the alarm. Possible types are as follows: • Controller • Module
Port	This field displays the port/interface associated with the alarm.

Table 6-55. Master Alarms Log Screen Fields (Continued)

Field	Description
Level	This field displays the severity level of the alarm. Possible states are as follows: • Info • Alert • Minor • Major • Critical
Description	This field displays a brief description of the alarm.
Status	This field displays the status of the alarm. Possible states are as follows: • Active • Clear • Event An asterisk (*) is displayed beside the status if the alarm is unacknowledged.

The Master Alarms Log screen hot keys are shown in Table 6-56.

Table 6-56. Master Alarms Log Hot Keys

Hot Keys	Description	Function
N	Next	This hot key is used to display the next page of alarms.
P	Previous	This hot key is used to display the previous page of alarms.
F	First	This hot key is used to display the first page of alarms.
L	Last	This hot key is used to display the last page of alarms.
C	Clear	This hot key is used to clear all acknowledged alarms.
A	Acknowledge	This hot key is used to acknowledge all alarms.
S	Select Log	This hot key is used to access a specific alarm log. Options are as follows: • M = Master • C = Controller • A = Module A • B = Module B

Controller Alarms Log Screen

The Controller Alarms Log screen (see Figure 6-54) is used to review and acknowledge controller card alarms.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216

Alarm Log - Controller Alarms        Alarms    1 to   14 of  155 Page   1 of  12

Date     Time     Pos Type       Port          Level    Description       Status
10/10/00 00:00:00 CA  Controller ENV           Major    PWR B FAIL       *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #1   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #2   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #3   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #4   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #5   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #6   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #7   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #8   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #9   Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #10  Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #11  Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #12  Alert    DS1 AIS          *Active
10/10/00 00:48:28 CA  Controller DS3 A T1 #13  Alert    DS1 AIS          *Active
----------------------------------->>> MORE <<<-----------------------------------

Inverse = Active      * = Unacknowledged      Chronology = Ascending
(N)ext (P)rev (F)irst (L)ast (C)lear (A)cknowledge (S)elect Log
```

Figure 6-54. Controller Alarms Log Screen

The Controller Alarms Log screen fields are shown in Table 6-57.

Table 6-57. Controller Alarms Log Screen Fields

Field	Description
Date	This field displays the date that the alarm was initiated.
Time	This field displays the time that the alarm was initiated.
Pos	This field displays the position (source) of the alarm. Possible sources are as follows: • CA = Controller A • CB = Controller B • MA = Module A • MB = Module B
Type	This field displays the type of the card that originates the alarm. Possible types are as follows: • Controller • Module
Port	This field displays the port/interface associated with the alarm.

Table 6-57. Controller Alarms Log Screen Fields (Continued)

Field	Description
Level	This field displays the severity level of the alarm. Possible states are as follows: • Info • Alert • Minor • Major • Critical
Description	This field displays a brief description of the alarm.
Status	This field displays the status of the alarm. Possible states are as follows: • Active • Clear • Event An asterisk (*) is displayed beside the status if the alarm is unacknowledged.

The Controller Alarms Log hot keys are shown in Table 6-58.

Table 6-58. Controller Alarms Log Hot Keys

Hot Keys	Description	Function
N	Next	This hot key is used to display the next page of alarms.
P	Previous	This hot key is used to display the previous page of alarms.
F	First	This hot key is used to display the first page of alarms.
L	Last	This hot key is used to display the last page of alarms.
C	Clear	This hot key is used to clear all acknowledged alarms.
A	Acknowledge	This hot key is used to acknowledge all alarms.
S	Select Log	This hot key is used to access a specific alarm log. Options are as follows: • M = Master • C = Controller • A = Module A • B = Module B

Module A/B Alarms Log Screen

The Module A/B Alarms Log screen (see Figure 6-55) is used to review and acknowledge alarms.

```
Card: Controller A          ADTRAN MX3216 System                  MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216

Alarm Log - Module A Alarms          Alarms    0 to    0 of    0 Page   1 of   1

Date     Time     Pos Type        Port          Level    Description       Status
----------------------------->>> END OF ALARM LOG <<<-----------------------------









Inverse = Active      * = Unacknowledged      Chronology = Descending
(N)ext (P)rev (F)irst (L)ast (C)lear (A)cknowledge (S)elect Log
```

Figure 6-55. Module A/B Alarms Log Screen

The Module A/B Alarms Log screen fields are shown in Table 6-59.

Table 6-59. Module A/B Alarms Log Screen Fields

Field	Description
Date	This field displays the date that the alarm was initiated.
Time	This field displays the time that the alarm was initiated.
Pos	This field displays the position (source) of the alarm. Possible sources are as follows: • CA = Controller A • CB = Controller B • MA = Module A • MB = Module B
Type	This field displays the type of the card that originates the alarm. Possible types are as follows: • Controller • Module
Port	This field displays the port/interface associated with the alarm.

Table 6-59. Module A/B Alarms Log Screen Fields

Field	Description
Level	This field displays the severity level of the alarm. Possible states are as follows: • Info • Alert • Minor • Major • Critical
Description	This field displays a brief description of the alarm.
Status	This field displays the status of the alarm. Possible states are as follows: • Active • Clear • Event An asterisk (*) is displayed beside the status if the alarm is unacknowledged.

The Module A/B Alarms Log hot keys are shown in Table 6-60.

Table 6-60. Module A/B Alarms Log Hot Keys

Hot Keys	Description	Function
N	Next	This hot key is used to display the next page of alarms.
P	Previous	This hot key is used to display the previous page of alarms.
F	First	This hot key is used to display the first page of alarms.
L	Last	This hot key is used to display the last page of alarms.
C	Clear	This hot key is used to clear all acknowledged alarms.
A	Acknowledge	This hot key is used to acknowledge all alarms.
S	Select Log	This hot key is used to access a specific alarm log. Options are as follows: • M = Master • C = Controller • A = Module A • B = Module B

User-Definable Alarms Menu

The User-Definable Alarms menu (see Figure 6-56) allows access to environmental, module A, module B, and stand-by controller alarms.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                             ID:       Site 1  MX3216


                MX3216->System Alarms->User-Definable Alarms

                1 - Environmental Alarms
                2 - Module A Removed Level             : Critical
                3 - Module B Removed Level             : Critical
                4 - Stand-by Controller Removed Level  : Minor









  Selection :                                          '?' - System Help Screen
```

Figure 6-56. User-Definable Alarms Menu

The User-Definable Alarms menu options are shown in Table 6-61.

Table 6-61. User-Definable Alarms Menu Options

Option	Description	Function
1	Environmental Alarms	This option displays the "Environmental Alarms Menu" on page 6-94. This menu displays the environmental alarms including auxiliary input and power bus related alarms.
2–3	Module A–B Removed Level	This option displays the types of alarms that can be generated if the card in slot **A**/**B** is removed. Options are as follows: • Disabled • Info • Alert • Minor • Major • Critical
4	Stand-by Controller Removed Level	This option displays the types of alarms that can be generated if the stand-by controller card is removed. Options are as follows: • Disabled • Info • Alert • Minor • Major • Critical

Environmental Alarms Menu

The Environmental Alarms menu (see Figure 6-57) provides access to the auxiliary input and power feed alarms.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


      MX3216->System Alarms->User-Definable Alarms->Environmental Alarms

                  Source           Description       Level
            1 - Aux #1 Input     AUX #1 INPUT      Major
            2 - Aux #2 Input     AUX #2 INPUT      Major
            3 - Aux #3 Input     AUX #3 INPUT      Major
            4 - Aux #4 Input     AUX #4 INPUT      Major
            5 - PWR Bus A Input  PWR A FAIL        Major
            6 - PWR Bus B Input  PWR B FAIL        Major









  Selection :                                      '?' - System Help Screen
```

Figure 6-57. Environmental Alarms Menu

The Environmental Alarms menu options are shown in Table 6-62.

Table 6-62. Environmental Alarms Menu Options

Option	Description	Function
1–4	Aux 1–4 Input	This option displays the "Auxiliary Menu" on page 6-95. The Auxiliary menu is used to enter a description and set the alarm severity level for the selected auxiliary input.
5–6	PWR Bus A–B Input	This option displays the "Power Menu" on page 6-96. The Power menu is used to enter a description and set the alarm severity level for the selected power bus input.

Auxiliary Menu

The Auxiliary menu (see Figure 6-58) is used to input the description of the selected auxiliary input and set the alarm severity level.

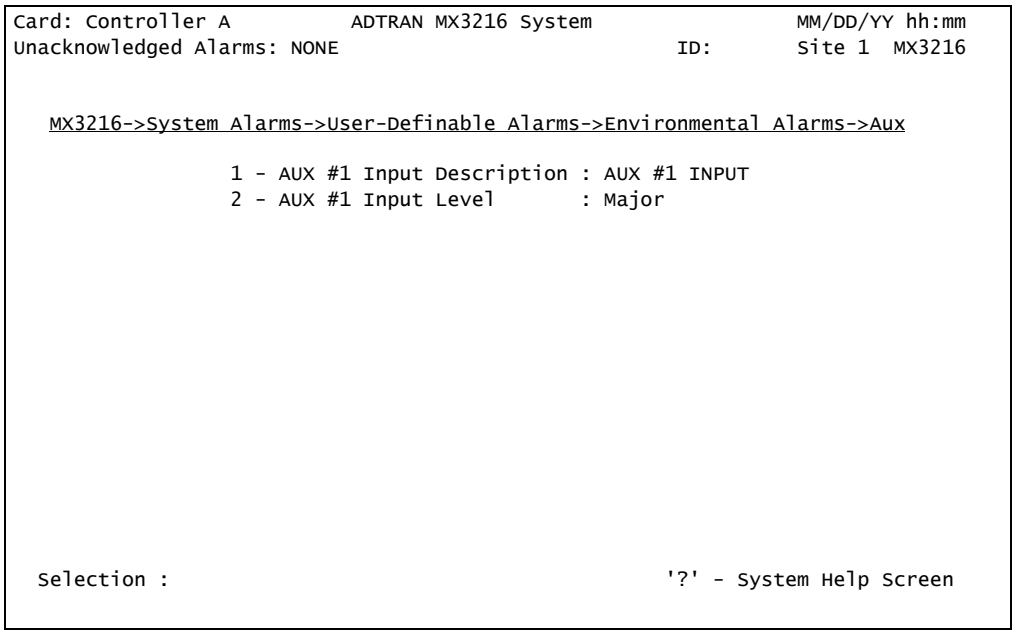

Figure 6-58. Auxiliary Menu

The Auxiliary menu options are shown in Table 6-63.

Table 6-63. Auxiliary Menu Options

Option	Description	Function
1	AUX Input Description	This option is used to enter a 16-character, auxiliary input description.
2	AUX Input Level	This option is used to set the alarm severity level of the selected auxiliary input. Options are as follows: • Disabled • Info • Alert • Minor • Major • Critical • ACO

Power Menu

The Power menu (see Figure 6-59) is used to set the alarm severity level for the selected power bus input.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216


  MX3216->System Alarms->User-Definable Alarms->Environmental Alarms->Power

                  1 - PWR A FAIL Level  : Major









  Selection :                                          '?' - System Help Screen
```

Figure 6-59. Power Menu

The Power menu options are shown in Table 6-64.

Table 6-64. Power Menu Options

Option	Description	Function
1	PWR A FAIL Level	This option is used to set the alarm severity level of the selected power bus input. Options are as follows: • Disabled • Info • Alert • Minor • Major • Critical

Firmware Upgrade Menu

The Firmware Upgrade menu (see Figure 6-60) provides access to upgrade the firmware for both controllers and both expansion modules.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216


                          MX3216->Firmware Upgrade

                      C    MX3216........ - A [A01]
                           ............... - B []

                      A    MX3RMM........     [A03.SNMP4]
                           ...............    []









  Selection :                                          '?' - System Help Screen
```

Figure 6-60. Firmware Upgrade Menu

The Firmware Upgrade menu options are shown in Table 6-65.

Table 6-65. Firmware Upgrade Menu Options

Option	Description	Function
C	MX3216	This option displays the "Method Menu" on page 6-98. This menu is used to upgrade the controller card application software. In a redundant system, both cards are upgraded.
A	Module A	This option displays the "Method Menu" on page 6-98. This menu is used to upgrade module A application software. In Figure 6-60, the MX3RMM is installed in module slot **A**.
B	Module B	This option appears when a card is installed in module slot **B** and displays the "Method Menu" on page 6-98. This menu is used to upgrade module B application software.

Method Menu

The Method menu (see Figure 6-61) provides options for upgrading the firmware.

CAUTION

Resetting the active controller disrupts traffic and cause a switch to the standby card if it is installed.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216



                        MX3216->Firmware Upgrade->Method

     1 - Y-Modem
     2 - TFTP

     3 - Reset Active Controller (A)



     Controller A status: Ready for transfer
     Controller B status: Not available



  Selection :                                            '?' - System Help Screen
```

Figure 6-61. Method Menu

The Method menu options are shown in Table 6-66.

Table 6-66. Method Menu Options

Option	Description	Function
1	Y-Modem	This option is used to transfer the new application software to the unit by Y-Modem.
2	TFTP	This option displays the "TFTP Menu" on page 6-99. This menu is used to transfer the new application software to the unit by TFTP.
3	Reset Active Controller	This option resets the active controller card. Resetting the active controller card switches operation to the standby card. In a redundant system, the standby card updates and automatically resets.

The Method menu fields are shown in Table 6-67.

Table 6-67. Method Menu Fields

Field	Description
Controller A–B status	This field displays the progress of the TFTP download for the controller. Progress messages are as follows: • Ready for transfer • Not available • Transfer in progress

TFTP Menu

The TFTP menu (see Figure 6-62) is used to transfer the new firmware by TFTP.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216



                MX3216->Firmware Upgrade->Method->TFTP Update

 1 - TFTP Server      : 0.0.0.0
 2 - Remote Filename  :
 3 - Initiate Transfer









  Selection :                                          '?' - System Help Screen
```

Figure 6-62. TFTP Menu

The TFTP menu options are shown in Table 6-68.

Table 6-68. TFTP Menu Options

Option	Description	Function
1	TFTP Server	This option is used to enter the IP address of the TFTP server hosting the application software file.
2	Remote Filename	This option is used to enter the path and filename of the application software file on the TFTP server.
3	Initiate Transfer	This option is used to begin downloading the application software file.

TFTP Update Status Screen

The TFTP Update Status screen (see Figure 6-63) displays the status of the TFTP connection.

```
Card: Controller A          ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:       Site 1  MX3216



            MX3216->Firmware Upgrade->Method->TFTP Update->Status

     TFTP Server      : 0.0.0.0
     Remote Filename  :
     TFTP Status      : Contacting Server -







     Controller A status: Transfer in progress
     Controller B status: Not available



                                                        '?' - System Help Screen
  (C)ancel TFTP Transfer
```

Figure 6-63. TFTP Update Status Screen

The TFTP Update Status screen fields are shown in Table 6-69.

Table 6-69. TFTP Update Status Screen Fields

Field	Description
TFTP Server	This field displays the IP address of the TFTP server. The TFTP IP address must be configured prior to attempting a TFTP download.
Remote Filename	This field displays the TFTP filename that is used to upgrade the controller.
TFTP Status	This field displays the progress of the TFTP download. Table 6-70 describes the TFTP download progress messages.
Controller A–B status	This field displays the progress of the TFTP download for the controller. Progress messages are as follows: • Ready for transfer • Not available • Transfer in progress

Table 6-70. TFTP Download Progress Messages

Progress Message	Description
Contacting Server	This message indicates that an attempt to establish communication with the TFTP network server specified by the server address in the TFTP Server IP Address field is in progress.
Timed Out	This message indicates that communication with the TFTP network server has been lost.
Beginning TFTP Transfer	This message indicates that communication with the TFTP network server has been established and the update file is being transferred between the TFTP network server and the MX3216.
Completed	This message indicates that the MX3216 successfully received the update file.
File Not Found	This message indicates that the TFTP network server was unable to locate the specified file name or path in the Remote Filename field.
Access Violation	This status indicates that the TFTP network server denied the MX3216 access to the given update filename and path. Please verify that appropriate user rights are selected for the specified path.

The TFTP Update Status screen hot key is shown in Table 6-71.

Table 6-71. TFTP Update Status Screen Hot Key

Option	Description	Function
C	Cancel TFTP Transfer	This hot key is used to cancel the TFTP transfer.

MX3RMM Main Menu

The MX3RMM Main menu (see Figure 6-64) is the main access point to all MX3RMM functions.

NOTE

For basic provisioning, refer to the "Quick Setup Menu" on page 6-115. For more detailed provisioning, refer to the "Provisioning Menu" on page 6-105.

```
Card: Module A              ADTRAN MX3216 System                  MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                               ID:       Site 1  MX3216

                                  MX3RMM

                             1 - Configuration
                             2 - Provisioning
                             3 - Quick Setup
                             4 - Status
                             5 - Test

  Selection :                                            '?' - System Help Screen
```

Figure 6-64. MX3RMM Main Menu

The MX3RMM Main menu options are shown in Table 6-72.

Table 6-72. MX3RMM Main Menu Options

Option	Description	Function
1	Configuration	This option displays the "Configuration Screen" on page 6-104. The Configuration screen displays inventory information such as CLEI, part number, serial number, and revisions.
2	Provisioning	This option displays the "Provisioning Menu" on page 6-105. The Provisioning menu provides provisioning options for the MX3RMM.

Table 6-72. MX3RMM Main Menu Options (Continued)

Option	Description	Function
3	Quick Setup	This option displays the "Quick Setup Menu" on page 6-115. The Quick Setup menu provides the most common provisioning options required to configure the MX3RMM.
4	Status	This option displays the "Status Screen" on page 6-117. The Status screen displays the current status of the MX3RMM.
5	Test	This option displays the "Test Menu" on page 6-120. THe Test menu provides all test features for the MX3RMM.

Configuration Screen

The Configuration screen (see Figure 6-65) displays information about the MX3RMM. Information, such as Firmware Version, changes as upgrades are performed. The CLEI Code and Part Number can be used to search for related information on the ADTRAN web site or to order additional parts. Some information from this menu can be required when calling the ADTRAN Technical Support.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                                  Configuration

                          Unit Name          : MX3RMM
                          CLEI Code          : M3LINT0AAA
                          Part Number        : 1189004L1
                          Serial Number      : SOC2506GAA
                          Product Revision   : A01
                          Firmware Version   : A01
                          Boot Version       : A01

                                                        '?' - System Help Screen
```

Figure 6-65. Configuration Screen

The Configuration screen fields are shown in Table 6-73.

Table 6-73. Configuration Screen Fields

Field	Description
Unit Name	This field displays the unit name.
CLEI Code	This field displays the Common Language Equipment Identifier (CLEI) code of the MX3RMM.
Part Number	This field displays the part number of the MX3RMM.
Serial Number	This field displays the serial number of the MX3RMM.
Product Revision	This field displays the hardware product assembly revision of the MX3RMM.
Firmware Version	This field displays the current application firmware revision level of the MX3RMM.
Boot Version	This field displays the current boot firmware revision code.

Provisioning Menu

The Provisioning menu (see Figure 6-66) provides access to all provisioning options for the MX3RMM.

NOTE

The MX3RMM uses the system level IP address, subnet, and gateway settings from the MX3216. These can be configured from the "Provisioning Menu" on page 6-23 or "Quick Setup Menu" on page 6-57.

CAUTION

Restoring provisioning settings or resetting this card can disrupt service.

```
Card: Module A              ADTRAN MX3216 System                   MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                            ID:       Site 1  MX3216


                                  Provisioning


                         1 - Network
                         2 - Terminal Server
                         3 - Ethernet Interface
                         4 - Save Provisioning
                         5 - Auto Save                : Enabled
                         6 - Restore Saved Provisioning
                         7 - Restore Factory Defaults
                         8 - Card Reset






  Selection :                                         '?' - System Help Screen
```

Figure 6-66. Provisioning Menu

The Provisioning menu options are shown in Table 6-74.

Table 6-74. Provisioning Menu Options

Option	Description	Function
1	Network	This option displays the "Network Menu" on page 6-107. The Network menu provides provisioning options for the DS1 network interfaces of the MX3RMM.
2	Terminal Server	This option displays the "Terminal Server Menu" on page 6-110. The Terminal Server menu is used to provision the four front panel RS-232 terminal server ports. Each port is independently provisioned.
3	Ethernet Interface	This option displays the "Ethernet Interface Menu" on page 6-113. The Ethernet Interface menu is used to provision the front panel Ethernet interface on the MX3RMM.
4	Save Provisioning	This option saves the current MX3RMM provisioning.
5	Auto Save	This option displays the Auto Save menu that provides options to enable or disable the periodic storage of all provisioning settings. Options are as follows: • Enabled • Disabled
6	Restore Saved Provisioning	This option is used to restore the previously saved provisioning settings.
7	Restore Factory Defaults	This option is used to restore the factory default provisioning settings.
8	Card Reset	This option is used to reset the MX3RMM.

Network Menu

The Network menu (see Figure 6-67) is used to configure the DS1 interface A and B.

```
Card: Module A              ADTRAN MX3216 System                 MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                               ID:       Site 1  MX3216

                                    Network

                       1 - Network Interface A
                       2 - Network Interface B
                       3 - Framing Mode
                       4 - Timeslot Assignment     : 01-24









  Selection :                                         '?' - System Help Screen
```

Figure 6-67. Network Menu

The Network menu options are shown in Table 6-75.

Table 6-75. Network Menu Options

Option	Description	Function
1	Network Interface A	This option displays the "Network Interface Menu" on page 6-108. This menu is used to configure the DS1 interface A.
2	Network Interface B	This option displays the "Network Interface Menu" on page 6-108. This menu is used to configure the DS1 interface B.
3	Framing Mode	This option is used to set the framing mode for both DS1 network interfaces. Options are as follows: • ESF: This option sets the DS1 network interface framing mode to Extended Super Frame. • SF: This option sets the DS1 network interface framing mode to Super Frame.
4	Timeslot Assignment	This option is used to enter the DS0 timeslots for the network interfaces. Both network interfaces use the same number of DS0s. Any number of DS0s can be assigned from one to twenty-four, but they must be in a contiguous block.

Network Interface Menu

The Network Interface menu (see Figure 6-68) is used to set the timing and state for network interface A and B.

NOTE

In order to use a network interface, a DS1 must be mapped from the controller through the 3/1 cross-connect to the appropriate module slot and DS1. Refer to the "Provisioning Menu" on page 6-105 or "Quick Setup Menu" on page 6-115 for more details.

```
Card: Module A              ADTRAN MX3216 System                 MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                               ID:      Site 1  MX3216

                               Network Interface A

                      1 - Primary Timing Mode       : Through
                      2 - Secondary Timing Mode     : Through
                      3 - Interface State           : Enabled

  Selection :                                            '?' - System Help Screen
```

Figure 6-68. Network Interface Menu

The Network Interface menu options are shown in Table 6-76.

Table 6-76. Network Interface Menu Options

Option	Description	Function
1	Primary Timing Mode	This option sets the primary timing mode. Options are as follows: • Internal • Line • Through
2	Secondary Timing Mode	This option sets the secondary timing mode that is to be used in the event of a failure of the primary timing mode. Options are as follows: • Internal • Line • Through
3	Interface State	This option is used to enable or disable the DS1. Options are as follows: • Enabled • Disabled

Terminal Server Menu

The Terminal Server menu (see Figure 6-69) is used to select the port to provision.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216


                                Terminal Server


                                   1 - Port 1
                                   2 - Port 2
                                   3 - Port 3
                                   4 - Port 4









  Selection :                                          '?' - System Help Screen
```

Figure 6-69. Terminal Server Menu

The Terminal Server menu options are shown in Table 6-77.

Table 6-77. Terminal Server Menu Options

Option	Description	Function
1–4	Port 1–4	This option displays the “Network Interface Menu” on page 6-108.

Terminal Server Port Provisioning Menu

The Terminal Server Port Provisioning menu (see Figure 6-70) is used to provision the selected terminal server port.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                            Terminal Server Port 1

                       1 - Terminal State          : Enabled
                       2 - Baud Rate               : 9600
                       3 - Parity                  : None
                       4 - Telnet Port Number      : 2023
                       5 - Security                : Enabled
                       6 - Username                : port 1
                       7 - Password                : ********









 Selection :                                        '?' - System Help Screen
```

Figure 6-70. Terminal Server Port Provisioning Menu

The Terminal Server Port Provisioning menu options are shown in Table 6-78.

Table 6-78. Terminal Server Port Provisioning Menu Options

Option	Description	Function
1	Terminal State	This option is used to enable or disable the terminal server port. Options are as follows: • Enabled • Disabled
2	Baud Rate	This option is used to select the terminal server port baud rate. Options are as follows: • 9600 • 19200 • 38400 • 57600 • 115200
3	Parity	This option is used to select the terminal server port parity. Options are as follows: • Even • Odd • None

Table 6-78. Terminal Server Port Provisioning Menu Options (Continued)

Option	Description	Function
4	Telnet Port Number	This option is used to enter the Telnet port number associated with the selected terminal server port.
5	Security	This option is used to enable or disable password protection on the selected terminal server port. Options are as follows: • Enabled • Disabled
6	Username	This option is used to enter a username if security is enabled.
7	Password	This option is used to enter a password if security is enabled.

Ethernet Interface Menu

The Ethernet Interface menu (see Figure 6-71) is used to set the Ethernet state, link speed and duplex, and cross-over mode for the Ethernet connection on the MX3RMM.

NOTE

The MX3RMM bridges traffic to the rear panel Ethernet jack on the MX3 chassis. To configure that interface, refer to the "Rear Ethernet Interface Menu" on page 6-44.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:    Site 1  MX3216


                                  Ethernet


                1 - Ethernet State                 : Enabled
                2 - Link Speed & Duplex            : Auto
                    Functional Link Speed & Duplex : Unknown
                3 - Cross-over Mode                : Auto
                    Link Status                    : Down









 Selection :                                        '?' - System Help Screen
```

Figure 6-71. Ethernet Interface Menu

The Ethernet Interface menu options are shown in Table 6-79.

Table 6-79. Ethernet Interface Menu Options

Option	Description	Function
1	Ethernet State	This option is used to enable or disable the front panel Ethernet jack. Options are as follows: • Enabled • Disabled
2	Link Speed & Duplex	This option is used to set the link speed and duplex. Options are as follows: • Auto. This option allows auto negotiation of the Ethernet line speed and duplex. • 10 Mbps, Half Duplex • 10 Mbps, Full Duplex • 100 Mbps, Half Duplex • 100 Mbps, Full Duplex
N/A	Functional Link Speed & Duplex	This field displays the actual data rate and duplex setting of the Ethernet port.
3	Cross-over Mode	This option is used to select the cross-over mode for the front panel Ethernet port. Options are as follows: • Auto • MDI • MDI-X
N/A	Link Status	This field displays the status of the network. Possible states are as follows: • Up • Down

Quick Setup Menu

The Quick Setup menu (see Figure 6-72) provides all of the basic configuration options necessary to get the MX3RMM running.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                            ID:      Site 1  MX3216


                                  Quick Setup

          Network
           1 - Timeslot Assignment    : 01-24


          Interface A
           3 - State                  : Enabled
           4 - Primary Timing Mode    : Through
           5 - Secondary Timing Mode  : Line

          Interface B
           6 - State                  : Enabled
           7 - Primary Timing Mode    : Through
           8 - Secondary Timing Mode  : Internal



  Selection :                                          '?' - System Help Screen
```

Figure 6-72. Quick Setup Menu

The Quick Setup menu options are shown in Table 6-80.

Table 6-80. Quick Setup Menu Options

Option	Description	Function
1	Timeslot Assignment	This option is used to enter the DS0 timeslots for the network interfaces. Both network interfaces use the same number of DS0s. Any number of DS0s can be assigned from one to twenty-four, but they must be in a contiguous block.
3	State	This option is used to enable or disable the DS1 for network interface A. Options are as follows: • Enabled • Disabled
4	Primary Timing Mode	This option sets the primary timing mode for network interface A. Options are as follows: • Internal • Line • Through

Table 6-80. Quick Setup Menu Options (Continued)

Option	Description	Function
5	Secondary Timing Mode	This option sets the secondary timing mode that is used in the event of a failure of the primary timing mode. Options are as follows: • Internal • Line • Through
6	State	This option is used to enable or disable the DS1 for network interface B. Options are as follows: • Enabled • Disabled
7	Primary Timing Mode	This option sets the primary timing mode for network interface B. Options are as follows: • Internal • Line • Through
8	Secondary Timing Mode	This option sets the secondary timing mode that is used in the event of a failure of the primary timing mode. Options are as follows: • Internal • Line • Through

Status Screen

The Status screen (see Figure 6-73) displays the status of the DS1 interfaces and the Ethernet connection.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216

                                      Status
 DS1 Interface
  DS0 Assignment : 01-24
  Framing        : ESF

 DS1 A : Enabled                        DS1 B : Enabled
  Timing Mode : Line                     Timing Mode : Internal
  Line Status : Normal                   Line Status : Normal
  Loopback    : None                     Loopback    : None
  TDM         : DOWN                     TDM         : IN LOOPBACK
  PPP         : DOWN                     PPP         : IN TESTING
  Bridging    : DOWN                     Bridging    : UP

 Ethernet
  Link Speed  : Unknown
  Link Status : Down
  Rx Octets   : 0
  Tx Octets   : 0

                                                      '?' - System Help Screen
```

Figure 6-73. Status Screen

The Status screen fields are shown in Table 6-81.

Table 6-81. Status Screen Fields

Field	Description
DS1 Interface	
DS0 Assignment	This field displays the currently assigned DS0s for the enabled DS1 interfaces.
Framing	This field displays the current DS1 framing format. Possible formats are as follows: • SF • ESF
DS1 A/B	
Timing Mode	This field displays the current DS1 timing. Possible timing modes are as follows: • Internal • Line • Through
Line Status	This field displays the current DS1 line status. Table 6-82 on page 6-119 describes the possible line states.

Table 6-81. Status Screen Fields (Continued)

Field	Description
Loopback	This field displays the state of any loopback tests. Table 6-83 on page 6-119 describes the possible loopback test states.
TDM	This field displays the status of the HDLC link on the DS1. Possible states are as follows: • Up • Down: This state can indicate a problem with the DS1 or with the DS0 assignment. • In Loopback
PPP	This field displays the state of the PPP link. The PPP link status depends on the TDM status being up. Possible states are as follows: • Up • Down • Test
Bridging	This field displays the state of the BCP link across the PPP. The bridging status depends on the PPP status being up. Possible states are as follows: • Up • Down • Test
Ethernet	
Link Speed	This field displays the current link speed. Possible speeds are as follows: • 10 Mbps, Half Duplex • 10 Mbps, Full Duplex • 100 Mbps, Half Duplex • 100 Mbps, Full Duplex
Link Status	This field displays the state of the link. Possible states are as follows: • Up • Down
Rx Octets	This field displays the number of bytes received on the Ethernet interface.
Tx Octets	This field displays the number of bytes transmitted on the Ethernet interface.

Table 6-82 describes the current DS1 line states that are possible.

Table 6-82. Line Status Descriptions

State	Description
LOS	This state indicates the DS1 is in loss of signal.
LOF	This state indicates the DS1 is in loss of frame.
RX AIS	This state indicates the DS1 is receiving AIS.
TX AIS	This state indicates the DS1 is transmitting AIS.
RX RAI	This state indicates the DS1 is receiving RAI.
TX RAI	This state indicates the DS1 is transmitting RAI.
Normal	This state indicates no error conditions.

Table 6-83 describes the loopback test states that are possible.

Table 6-83. Loopback Test Status Descriptions

State	Description
None	This state indicates no active loopbacks.
Line	This state indicates an active loopback on the line interface.
Payload	This state indicates an active loopback on the DS1 data.

Test Menu

The Test menu (see Figure 6-74) provides testing options for the DS1 interfaces.

```
Card: Module A              ADTRAN MX3216 System                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE                              ID:      Site 1  MX3216


                                DS1 X Testing


                        1 - DS1 A Testing      : None
                        2 - DS1 B Testing      : None
                        3 - Loopback Timeout   : 120 Minutes









  Selection :                                          '?' - System Help Screen
```

Figure 6-74. Test Menu

The Test menu options are shown in Table 6-84.

Table 6-84. Test Menu Options

Option	Description	Function
1	DS1 A Testing	This option selects the loopback for the DS1 A interface. Options are as follows: • None • Line • Payload
2	DS1 B Testing	This option selects the loopback for the DS1 B interface. Options are as follows: • None • Line • Payload
3	Loopback Timeout	This option sets the amount of time any given loopback is maintained before automatically being disabled. Options are as follows: • 120 Minutes • 90 Minutes • 60 Minutes • 30 Minutes • 15 Minutes • Disabled

Logout

Selection of the Logout menu option results in an immediate exit from the program, no further menus, screens, or confirmation dialog boxes are presented.

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Section 7
Maintenance

INTRODUCTION

The MX3216 does not require routine maintenance for normal operation.

Do not attempt to make repairs in the field. Repair services can be obtained by returning the defective unit to ADTRAN. For warranty information, refer to “Appendix A, Warranty”.

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Appendix A
Warranty

WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found at www.adtran.com/warranty.

Refer to the following subsections for sales, support, Customer and Product Service (CAPS) requests, or further information.

ADTRAN Sales

Pricing/Availability:

800-827-0807

ADTRAN Technical Support

Pre-Sales Applications/Post-Sales Technical Assistance:

800-726-8663

Standard hours: Monday - Friday, 7 a.m. - 7 p.m. CST
Emergency hours: 7 days/week, 24 hours/day

ADTRAN Repair/CAPS

Return for Repair/Upgrade:

(256) 963-8722

Repair and Return Address

Contact CAPS prior to returning equipment to ADTRAN.

ADTRAN, Inc.
CAPS Department
901 Explorer Boulevard
Huntsville, Alabama 35806-2807

Carrier Networks Division
901 Explorer Blvd.
Huntsville, AL 35806