

***Manageable
Media Conversion
Center***

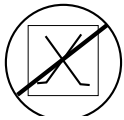
33035.G

E-MCC-1600

For assistance in installing, using, or maintaining the TRANSITION Networks Media Conversion Center, contact TRANSITION Networks Technical Support at:

(800) 260-1312

or contact your local distributor.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

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Compliance Information

UL Listed
C-UL Listed (Canada)
CISPR/EN55022 Class A

FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

European Regulations

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Preface

This user's guide is intended for the network administrator responsible for installing, configuring, using, and maintaining a Transition Networks 16-Slot Media Conversion Center. A working knowledge of local area network (LAN) operations, including familiarity with communications protocols used on interconnected LANs, is assumed.

1. INTRODUCTION

The modular Transition Networks E-MCC-1600 16-Slot Media Conversion Center allows the network administrator to select from among Transition Networks Media Converter Slide-in-Modules, to install the Media Converter Slide-in-Modules in the Media Conversion Center chassis, and then to connect various network media, at a central wiring location, through the Media Converter Slide-in-Modules.

If a Management Module is installed in the Media Conversion Center, the network administrator also can use a remote Network Management Station to monitor the status of the Media Conversion Center and of any installed Media Converter Slide-in-Modules.

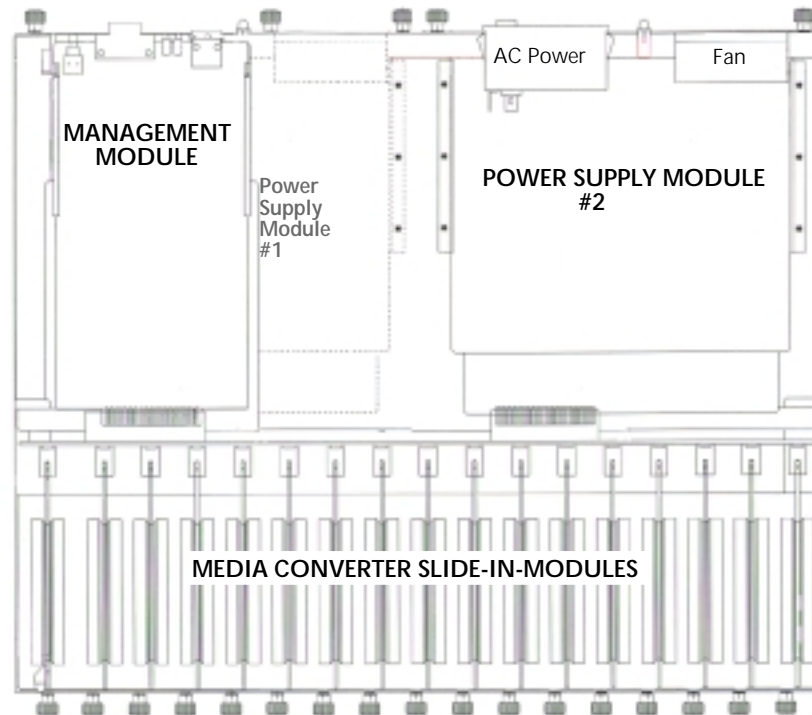
As network conditions change, the network administrator can add or swap Media Converter Slide-in-Modules, install a redundant Power Supply Module (if not originally configured and installed) and/or install the SNMP Management Module (if not originally configured and installed).

This introduction to the 16-Slot Media Conversion Center provides:

1.1	<i>The Media Conversion Center</i>	1.2
	Media Converter Slide-in-Modules	1.3
	Power Supply Module(s)	1.3
	Optional Management Module	1.3
1.2	<i>Connectors, Indicators, and Switches</i>	1.4
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1.1 The Media Conversion Center

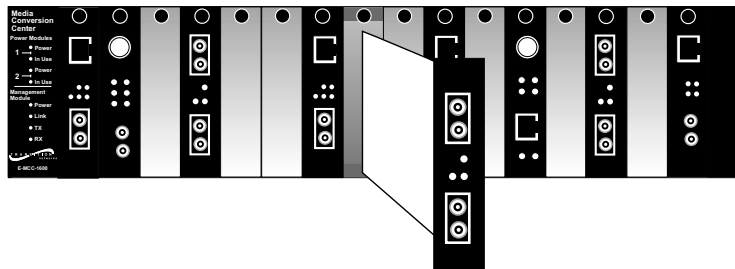
The Transition Networks 16-Slot Media Conversion Center chassis provides installation space for up to sixteen Media Converter Slide-in-Modules, up to two Power Supply Modules, and one SNMP Management Module, as shown in the cut-out top view below:



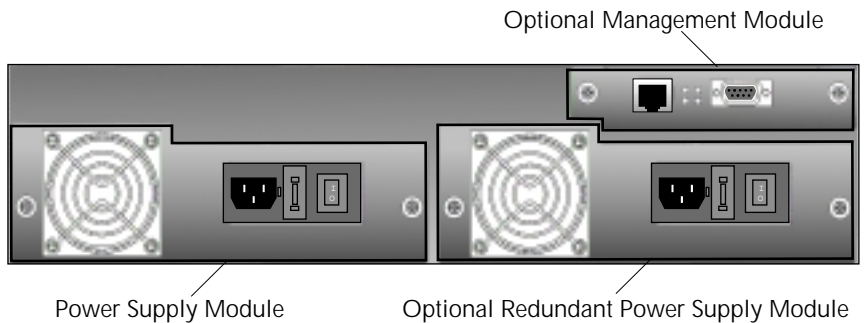
NOTE: Media Converter Slide-in-Modules, Power Supply Modules, and Management Modules are all hot-swappable.

Media Converter Slide-in-Modules

Transition Networks Media Converter Slide-in-Modules installed in slots at the front of the Media Conversion Center allow the network administrator to connect various network media.



NOTE: Refer to the documentation that comes with each Media Converter Slide-in-Module for connector and LED indicator information specific to that Media Converter Slide-in-Module.



Power Supply Module

An AC Power Supply Module, installed at the back of the Media Conversion Center before shipment, supplies power to installed Media Converter Slide-in-Modules and to the optional SNMP Management Module.

Optional Power Supply Module(s)

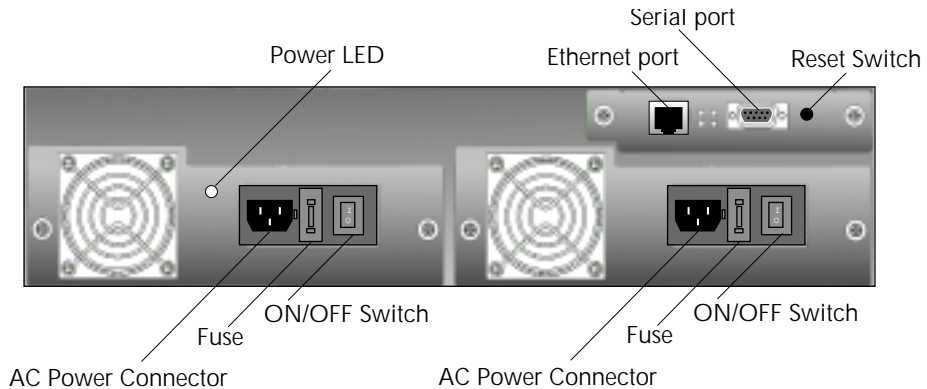
Space is available at the back of the Media Conversion Center for installing an optional redundant AC Power Supply Module.

Alternatively, an optional 48-VDC Power Supply Module can be installed in either space.

Optional Management Module

An optional Management Module that can be installed at the back of the Media Conversion Center allows the network administrator to use SNMP network management to monitor the Media Conversion Center and installed Slide-In-Modules status.

1.2 Connectors, Indicators, and Switches



Power and Network Connectors

POWER connectors are located on the Power Supply Module(s) at the back of the Media Conversion Center.

A **SERIAL PORT** for accessing the command-line interface and an **ETHERNET PORT**, through which the Management Module communicates with a remote Network Management Station (NMS), are available at the Management Module installed at the back of the Media Conversion Center.

NOTE: Connectors to network media are located on each Media Converter Slide-In-Module installed at Media Conversion Center front.

Power and Reset Switches

POWER ON/OFF switches are located on each Power Supply Module installed at the Media Conversion Center back.

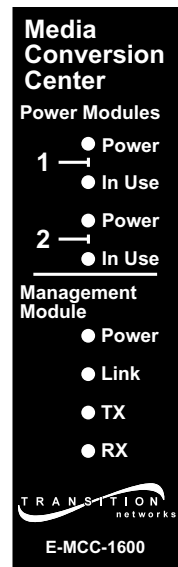
A **RESET** switch is located on the Management Module installed at the back of the Media Conversion Center.

NOTE: The reset switch resets **ONLY** the Management Module.

Power and Management Module Indicators

POWER and **IN USE** Power Supply Module LED indicators are located at the front of the Media Conversion Center. NOTE: A Power LED indicator also is located on each Power Supply Module installed at the back of the Media Conversion Center.

POWER, LINK, RX (*receive*) and **TX** (*transmit*) Management Module LED indicators are located at the front of the Media Conversion Center. NOTE: LEDs located on the Management Module installed at the back of the Media Conversion Center loosely mirror the LEDs located on the front of the Media Conversion Center.



1.3 The Media Conversion Center in the Network

Using Media Converter Slide-in-Modules installed in the 16-Slot Media Conversion Center, the network administrator can connect various network media at a central wiring location

As new media are added to the network, the network administrator can install new Media Converter Slide-in-Modules to support the changed network requirements.

1.4 Optional Network Management

The optional E-MCC-MM Management Module, which can be installed in the back of the Media Conversion Center, has the following key features:

- SNMP Management Agent
- Command Line Interface

1.4.1 SNMP Management Agent

The SNMP Management Agent feature permits the network administrator to monitor the state of the LEDs on the front of the Conversion Center (and thus the condition of the network resources supported by the cards installed in the the Conversion Center) from a remote location.

SNMP Management requires the use of any SNMP-compliant NMS (Network Management System) software product, such as Hewlett-Packard's OpenView™, installed on a computer at a remote location. The Management Module must be attached to a network that is accessible (via IP) from the the NMS computer.

1.4.2 Command Line Interface (CLI)

The CLI is analogous to a Unix shell prompt. It has the following features:

- Allows the network configuration of the Management Module (such as its IP address) to be configured and saved.
- Can be used as an alternative to an SNMP NMS: The CLI Allows all management data that is available via SNMP to be viewed and (where applicable) altered. A quick summary of the Conversion Center's status is available, or any individual SNMP MIB variable supported by the Management Module can be viewed or changed on command.
- Diagnostic commands are available from the CLI. These commands facilitate troubleshooting of the Management Module and even of other stations on the network.
- Allows maintenance of the Management Module. (e.g. firmware upgrade)

The CLI is accessible through two different physical interfaces: The Management Module's Serial Port, and its embedded Telnet Server. The same interface is presented by these two methods, aside from a few restrictions placed on Telnet access. The benefits and shortcomings of each are discussed in the following sections.

1.4 Optional Network Management (continued)

CLI Access via Serial Port

The Management Module's CLI can be reached through Telnet or through the module's serial port.

The choice of the serial port path recommended or required in the following circumstances:

- When the IP configuration of the Management Module needs to be set up or changed. Initial IP configuration is most commonly performed through the CLI via the serial port. Subsequent IP configuration changes via Telnet are supported, but strongly discouraged (for reasons discussed elsewhere).
- When a firmware upgrade needs to be performed – Firmware upgrade via the network is not supported.
- When best possible performance is desired, as during a troubleshooting session.

To access the CLI via serial port, a serial terminal (or a computer with a terminal emulator) must be attached to the the Management Module's serial port via a null modem cable. (See **Section 4. OPERATION.**)

CLI Access via Telnet

CLI Access via Telnet is useful when CLI access is desired from a physical location other than the wiring closet where the E-MCC-1600 is installed. Any standard Telnet client (such as the one that is included with Windows 95) can be used from any location on the network.

The following notes apply to CLI access via Telnet:

CAUTION: IP configuration changes take effect immediately when commands are received. Therefore, these changes should not be made via Telnet unless the user is confident that the implications of this are fully understood and have been compensated for. (NOTE: The same warning applies to any attempt to make IP configuration changes via SNMP.)

CLI messages specifically related to Telnet or its underlying protocols are filtered out by the Telnet server to prevent storms of messages. Therefore, Telnet troubleshooting should always include inspection of the CLI at the serial port interface.

Firmware upgrades cannot be performed via Telnet; serial port CLI access is required.

Telnet Security:

The Telnet password is the same as the private community name. This is so because the authority granted to the Telnet CLI is not significantly more than that provided by the "private" (i.e. most privileged) MIB view. Note that network traffic carried by the devices installed at the front of the Conversion Center can not be disturbed even through the most privileged access to the Management Module. The worst-case scenario is that remote access to the Management Module itself can be interrupted.

By default, the Telnet server will accept a connection from any client that provides the correct password. However, through the use of the CLI commands "TNTRIP" and "TNTRIPMASK," the server can be configured to restrict access to clients on a particular subnet or a single specific station, or it can be disabled altogether.

The Telnet server only supports a single connection at any given time. Additional concurrent connections attempts are rejected.

A character mode Telnet client is preferred, but not required.

2 SITE PLANNING

The site for the 16-Slot Media Conversion Center must provide the following:

- Power outlet for each Power Supply Module in the 16-Slot Media Conversion Center
- Adequate ventilation
- Standard environmental conditions
- Isolation from electrical noise, including radio transmitters and broadband amplifiers, motors, high power electrical lines, or fluorescent light fixtures.

Additionally:

- Twisted pair cables should not run in the same conduit with power line cables
- Phone lines should be separated from data cables
- Flat or “silver satin” wires should not be used.

3 INSTALLATION

Direction for installing the 16-Slot Media Conversion Center is provided in the pages that follow:

3.1	<i>Unpacking E-MCC-1600 Equipment</i>	3.2
3.2	<i>Installing Optional AC Power Supply Module in Media Conversion Center Chassis</i>	3.3
3.3	<i>Installing Optional 48 VDC Power Supply Module in Media Conversion Center Chassis</i>	3.6
3.4	<i>Installing Optional Management Module in Media Conversion Center Chassis</i>	3.9
3.5	<i>Installing Media Converter Slide-in-Module(s) in Media Conversion Center Chassis</i>	3.10
3.6	<i>Installing Media Conversion Center at Site</i>	3.11
3.7	<i>Connecting Media Converter Slide-In-Modules to Network</i>	3.12
3.8	<i>Optionally Connecting Management Module to Terminal or Terminal Emulator</i>	3.12
3.9	<i>Powering the Media Conversion Center</i>	3.13
3.10	<i>Optionally Using Attached Terminal Interface to Set IP Parameters</i>	3.14
3.11	<i>Optionally Configuring Telnet and Telnet Security</i>	3.15
3.12	<i>Optionally Configuring SNMP Traps</i>	3.16

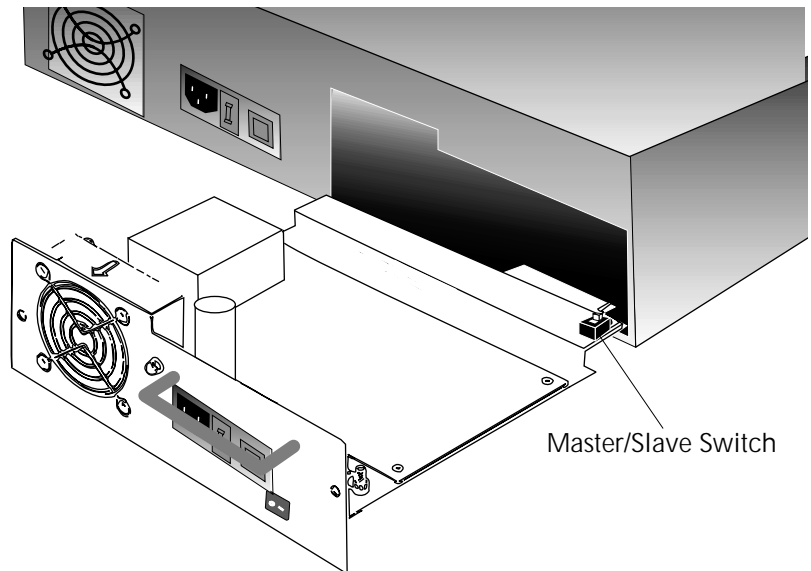
3.1 Unpacking E-MCC-1600 Equipment

Use the following list to verify the shipment:

Item	Part Number
16-Slot Media Conversion Center:	E-MCC-1600
Power Cord	3344 (OR 3347, 3348, or 3349, depending upon country where installed)
User's Guide	33035
48 VDC Power Supply Module	E-MCC-PS48 (optional)
Redundant AC Power Supply Module	E-MCC-PS (optional)
Management Module	E-MCC-MM (optional)
Transition Networks TN-View SNMP software	MCC16-GUI
One or more selectable Media Converter Slide-in-Modules	C/x-xxx-xxx

3.2 Installing Optional AC Power Supply Module in Media Conversion Center Chassis

NOTE: Power Supply Modules can be “hot swapped”.



The E-MCC-PS MAY or MAY NOT be shipped with the Master/Slave switch shown installed on the circuit board.

If present, the Master/Slave switch allows the Power Supply Module to be configured as the primary (master) Power Supply Module OR as the secondary (slave) Power Supply Module.

If any Power Supply Module without a Master/Slave switch is installed in the E-MCC-1600 chassis, by default that Power Supply Module is secondary (slave).

If neither Power Supply Module has a Master/Slave switch, primary/secondary status is automatic and non-configurable.

If both Power Supply Modules have Master/Slave switches and both are configured as the primary (master) Power Supply Module, each Power Supply Module contributes a portion of the power to the chassis (“load sharing”).

CAUTION: When installing a Power Supply Module that has a Master/Slave switch in a chassis with a Power Supply Module that does not have a Master/Slave switch, the Power Supply Module with the Master/Slave switch must be configured as primary (master).

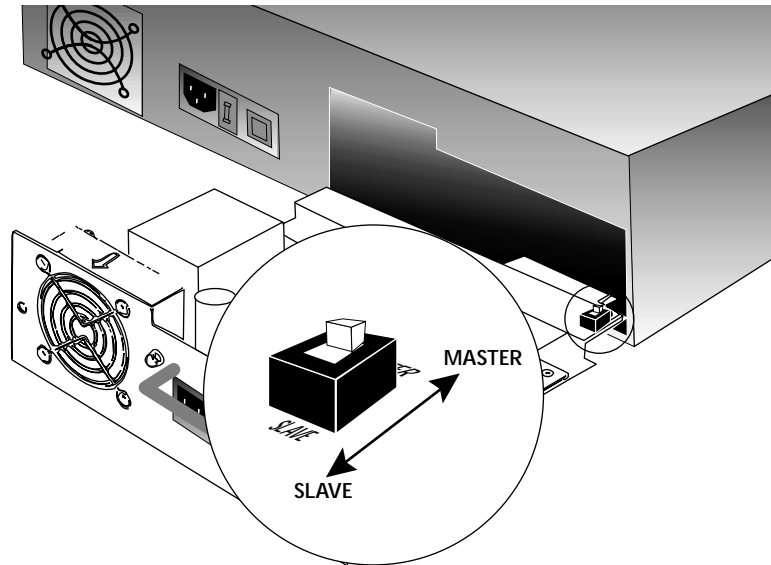
When installing two Power Supply Modules that have Master/Slave switches, at least one Power Supply Module must be configured as primary (master). Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module(s).

WARNING: Do NOT connect Power Supply Module to AC power before installing in Media Conversion Center. Failure to observe this caution could result in equipment damage and/or personal injury or death.

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting Master/Slave configuration switch and when installing Power Supply Module in Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module.

Set Master/Slave Switch, if Applicable

1. Determine if Master/Slave switch is installed on Power Supply Module.



NOTE: If Master/Slave switch is installed on ANY Power Supply Module installed in chassis, ensure that at least one Power Supply Module in the E-MCC-1600 chassis is configured as the primary (master) Power Supply Module.

2. Set Master/Slave switch, if necessary.

To configure the Power Supply Module as the primary (master) Power Supply Module, set Master/Slave switch to position labeled "MASTER".

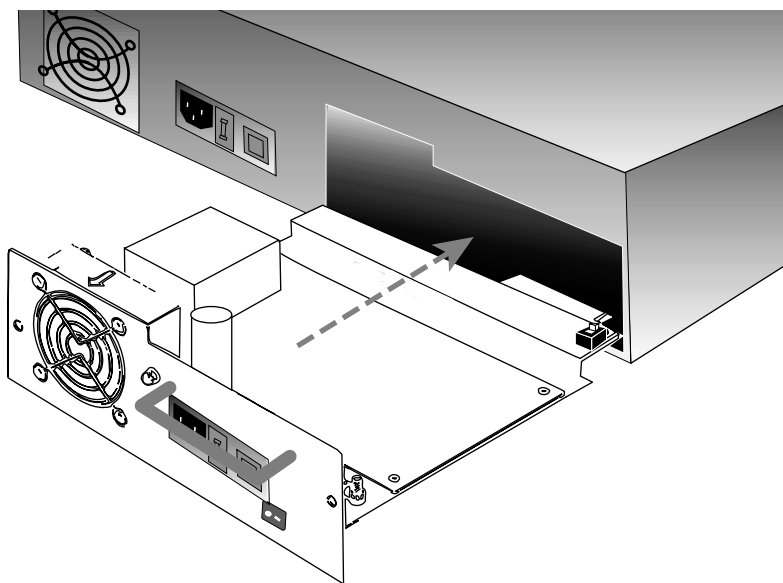
To configure the Power Supply Module as the secondary (slave) Power Supply Module, set Master/Slave switch to position labeled "SLAVE".

Install Power Supply Module in Chassis

1. Locate Power Supply Module installation slot on Media Conversion Center chassis back.
2. Remove Power Supply Module protective plate from installation slot by removing and retaining two (2) screws that secure protective plate to back of Media Conversion Center chassis.
3. Carefully slide Power Supply Module into Media Conversion

3 INSTALLATION

Center installation slot, aligning Power Supply Module with installation guides.

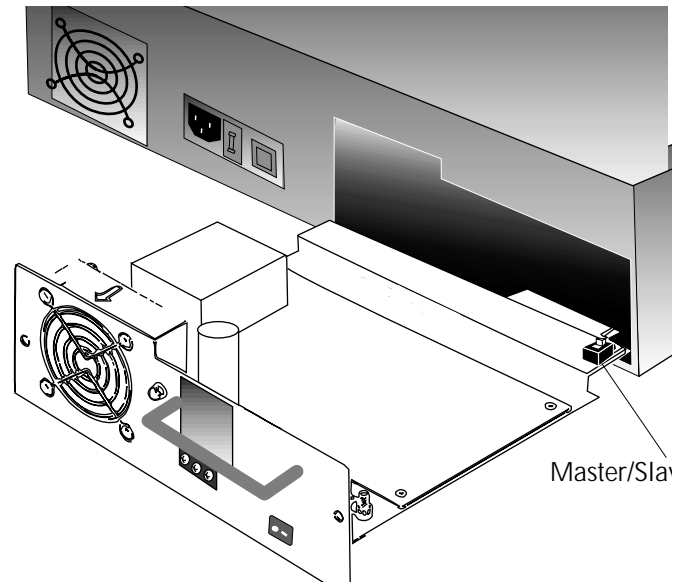


NOTE: Ensure that the Power Supply Module is firmly seated against the chassis backplane.

4. Carefully install two (2) screws (retained in Step 2) through Power Supply Module into Media Conversion Center, rotating clockwise to secure.

3.3 Installing Optional 48 VDC Power Supply Module in Media Conversion Center Chassis

NOTE: Power Supply Modules can be “hot swapped”.



The E-MCC-PS48 MAY or MAY NOT be shipped with the Master/Slave switch shown installed on the circuit board.

If present, the Master/Slave switch allows the Power Supply Module to be configured as the primary (master) Power Supply Module or as the secondary (slave) Power Supply Module.

If any Power Supply Module without a Master/Slave switch is installed in the E-MCC-1600 chassis, by default that Power Supply Module is secondary (slave).

If neither Power Supply Module has a Master/Slave switch, primary/secondary status is automatic and non-configurable.

If both Power Supply Modules have Master/Slave switches and both are configured as the primary (master) Power Supply Module, each Power Supply Module contributes a portion of the power to the chassis (“load sharing”).

CAUTION: When installing a Power Supply Module that has a Master/Slave switch in a chassis with a Power Supply Module that does not have a Master/Slave switch, the Power Supply Module with the Master/Slave switch must be configured as primary (master).

When installing two Power Supply Modules that have Master/Slave switches, at least one Power Supply Module must be configured as primary (master). Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module(s).

For installation in a restricted access location only. Reference Articles 110-8 and 110-18 of the NEC and Section 12 of the CEC.

WARNING: Do NOT connect Power Supply Module to DC power before installing in Media Conversion Center. Failure to observe this warning could result in equipment damage and/or personal injury or death.

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting Master/Slave configuration switch and when installing Power Supply Module in Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module.

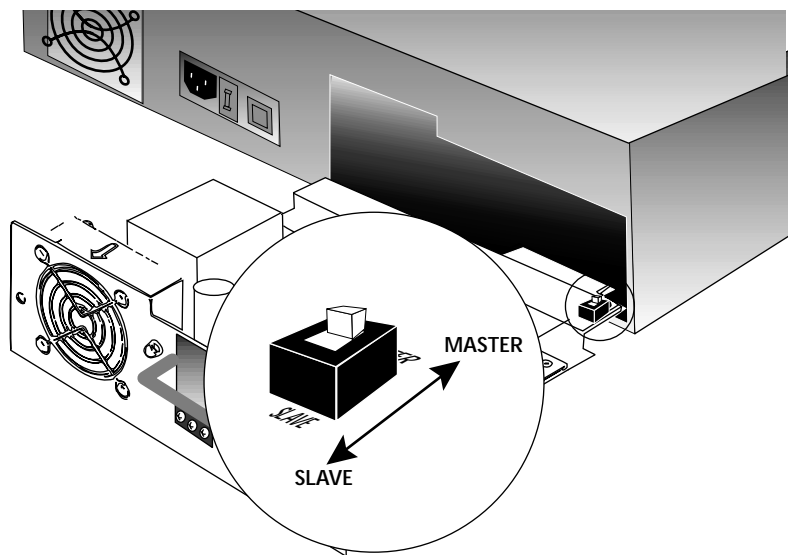
NOTE: A 15A maximum circuit breaker must be provided as part of the building installation.

Set Master/Slave Switch, if Applicable

1. Determine if Master/Slave switch is installed on Power Supply Module.

NOTE: If Master/Slave switch is installed on any Power Supply Module installed in chassis, ensure that at least one Power Supply Module in the E-MCC-1600 chassis is configured as the primary (master) Power Supply Module.

2. Set Master/Slave switch, if necessary.



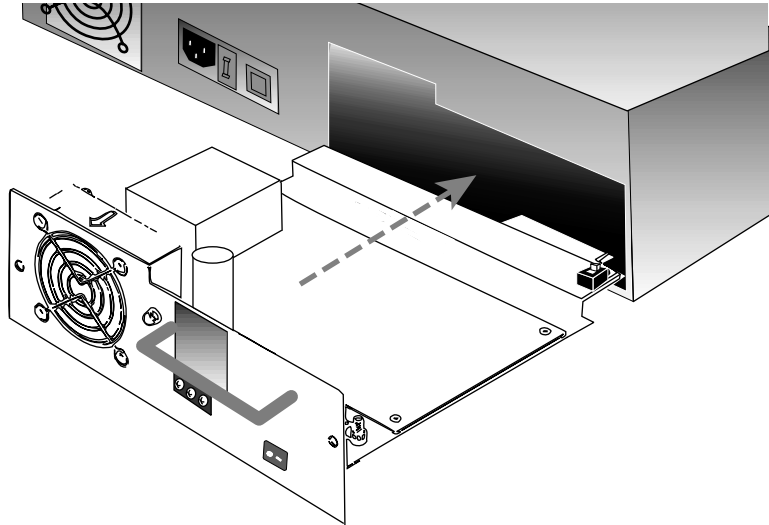
To configure the Power Supply Module as the primary (master) Power Supply Module, set Master/Slave switch to position labeled "MASTER".

To configure the Power Supply Module as the secondary (slave) Power Supply Module, set Master/Slave switch to position labeled "SLAVE".

Install 48V Power Supply Module in Chassis

1. Locate Power Supply Module installation slot on Media Conversion Center chassis back.

-
2. Remove Power Supply Module protective plate from installation slot by removing and retaining two (2) screws that secure protective plate to back of Media Conversion Center chassis.
 3. Carefully slide 48V Power Supply Module into Media Conversion Center installation slot, aligning Power Supply Module with installation guides.



NOTE: Ensure that the 48V Power Supply Module is firmly seated against the chassis backplane.

4. Carefully install two (2) screws (retained in Step 2) through Power Supply Module into Media Conversion Center, rotating clockwise to secure.

3.4 Installing Optional Management Module in Media Conversion Center Chassis

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Management Module in the 16-Slot Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Management Module.

To install the Management Module in the E-MCC-1600 chassis:

1. Carefully place E-MCC-1600 on table or other flat, stable surface.
2. Locate Management Module installation slot on back of E-MCC-1600.



3. Remove Management Module protective plate from installation slot by removing two screws that secure plate to back of E-MCC-1600.
4. Carefully slide Management Module into installation slot, aligning the Management Module with the installation guides.

NOTE: Ensure that the Management Module is firmly seated against the backplane.

5. Carefully rotate panel fastener screws clockwise to secure.

3.5 Installing Media Converter Slide-in-Module(s) in Media Conversion Center Chassis

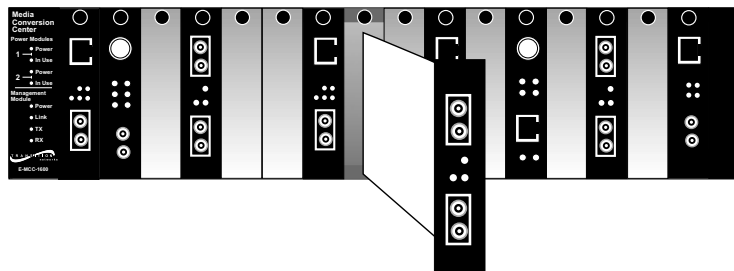
CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Media Converter Slide-in-Module(s) in the 16-Slot Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter Slide-in-Module(s).

To install the Media Converter Slide-in-Module in the E-MCC-1600 chassis:

1. Carefully place the E-MCC-1600 on table or other flat, stable surface.
2. Locate sixteen (16) Media Converter Slide-in-Module installation slots at the front of the E-MCC-1600.

NOTE: Media Converter Slide-in-Modules can be installed in any installation slot, in any order.

3. Remove Media Converter Slide-in-Module protective plate from selected installation slot by removing two (2) screws that secure plate to front of E-MCC-1600.
4. Carefully slide Media Converter Slide-in-Module into installation slot.



NOTE: Ensure that the Media Converter Slide-in-Module is firmly seated against the backplane.

5. Install one (1) panel fastener screw (PROVIDED WITH SLIDE-IN-MODULE) and carefully rotate clockwise to secure.
6. Repeat steps 3 through 5 for additional Slide-In Media-Converter Modules.

3.6 Installing Media Conversion Center at Site

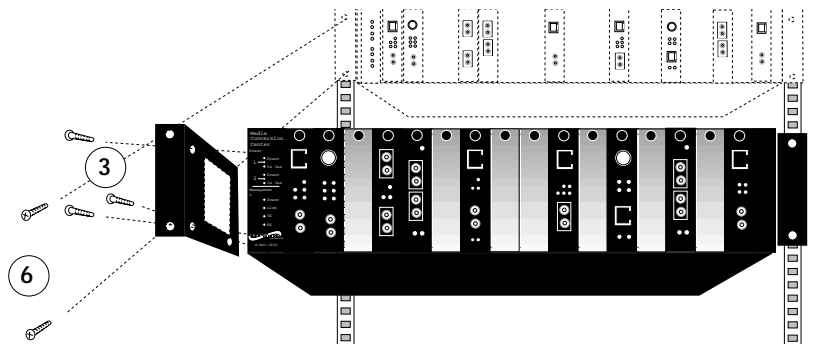
CAUTION: Do not allow air intake vents at bottom of Media Conversion Center to become blocked. Failure to observe this caution could result in equipment damage or failure.

3.6.1 Standard 19-Inch Rack Installation

WARNING: Mount Media Conversion Center chassis evenly and securely in rack. Failure to observe this caution could allow the Media Conversion Center to fall, resulting in equipment damage and possible injury to personnel.

NOTE: Installation bracket mounting screws are provided. Rackmount screws and clip nuts are NOT provided.

To install the 16-Slot Media Conversion Center in a standard 19-inch rack:



1. Locate six (6) installation bracket screws (PROVIDED) for each 16-Slot Media Conversion Center to be installed.
2. Align universal mounting bracket against side of Media Conversion Center chassis so that three (3) chassis installation holes are visible through four (4) universal mounting bracket installation holes and so that bracket surface to be attached to 19-inch site rack is flush with front of chassis. Using Phillips screwdriver, install three (3) screws through mounting bracket into side of 16-Slot Media Conversion Center.
3. Repeat step 2 for second mounting bracket.
4. Locate four (4) screws and optional clip-nuts (NOT PROVIDED) for each 16-Slot Media Conversion Center to be installed.
5. Carefully align 16-Slot Media Conversion Center at secure and level position between the 19-inch site rack mounting rails.
6. Install two (2) screws through right front bracket into right mounting rail and two (2) screws through left front bracket into left mounting rail, using clip nuts to secure if necessary.

3.6.2 Table-Top Installation

The 16-Slot Media Conversion Center can be placed on a table, shelf or other flat, secure surface in a well-ventilated environment.

3.7 Connecting Media Converter Slide-In-Modules to Network

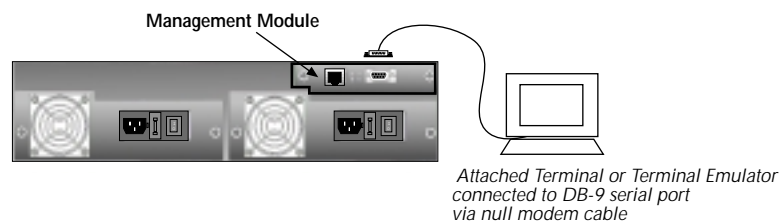
Refer to User's Guides that come with the Slide-In-Modules for cabling specifications and direction.

NOTE: Connect network cables ONLY to Media Converter Slide-In-Module connectors within the same protocol (such as Ethernet-to-Ethernet, Fast Ethernet-to-Fast Ethernet, ATM-to-ATM). Failure to observe this caution will cause data transfer to fail.

3.8 Optionally Connecting Management Module to Terminal or Terminal Emulator

NOTE: Network management can be configured ONLY if an optional Management Module has been installed in the Media Conversion Center.

NOTE: The serial port cable is attached directly to a DTE device through a null modem cable. Refer to the Appendix for the null modem cable configuration.



To access the Management Module Command-Line Interface:

1. Locate the correct DB9 serial port cable with female DB9 connector.
2. Attach the DB9 serial port female cable connector to the male DB9 serial port connector on the Media Conversion Center.
3. Attach the other end of the DB9 serial port cable to an ASCII terminal or terminal emulator.

NOTE: The 16-Slot Media Conversion Center uses the following serial port parameter values:

baud	9600
stop bits	1
data bits	8
parity	NONE

Using methods appropriate to the attached terminal, verify that the serial port parameters of the attached terminal match the 16-Slot Media Conversion Center port parameter values. If necessary, modify the attached terminal port parameter values.

3.9 Powering the Media Conversion Center

Connecting to AC Power Supply Module

To power the 16-Slot Media Conversion Center through the AC Power Supply Module:

1. Connect female end of power cord to power receptacle on Power Supply Module.
2. Plug male end of power cord into correct voltage AC rack or wall socket.
3. Set Power Supply Module power switch to "I".
4. Verify that Media Conversion Center is powered by observing illuminated Power LED and fan operation.

Connecting to 48 VDC Power Supply Module

CAUTION: Ensure that power source is NOT powered and that 48 VDC power ON/OFF switch is set to "O" when connecting to Power Supply Module. Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module.

To power the 16-Slot Media Conversion Center through the 48 VDC Power Supply Module:

1. Connect +48 VDC terminal to Media Conversion Center terminal block control marked "+". Turn terminal screw clockwise to secure.
2. Connect -48 VDC terminal to Media Conversion Center terminal block control marked "-". Turn terminal screw clockwise to secure.
3. Connect ground terminal to Media Conversion Center terminal block control marked "chassis ground". Turn terminal screw clockwise to secure.
4. Set 48 VDC Power Supply Module power switch to "I".
5. Verify that Media Conversion Center is powered by observing illuminated Power LED and fan operation.

3.10 Optionally Using Attached Terminal Interface to Set IP Parameters

NOTE: Internet protocol (IP) network parameters MUST be set if the 16-Slot Media Conversion Center is to be managed using SNMP or ICMP.

After the terminal or terminal emulator has been attached to the Media Conversion Center and the Media Conversion Center has been powered (or reset), a command-line prompt comes up at the attached terminal or terminal emulator:

```
E-MCC-1600> _
```

NOTE: The console prompt string is determined by the MIB variable **mib2.system.sysName.0**. The default value for this MIB variable is **E-MCC-1600**, as shown here. Changing the value of **mib2.system.sysName.0** will change the appearance of the console prompt.

Set the IP, netmask, and gateway addresses.

NOTE: If the private community name has been changed from "private", use the correct name when entering the **su** command.

At the command line prompt, type and enter:

```
E-MCC-1600> su=private
```

NOTE:When any of the following three (3) IP configuration command is entered, the Media Conversion Center validates ALL IP parameters and reports any problems found. It is normal for problems to be reported until ALL THREE of the following IP configuration commands have been entered successfully.

```
[su]E-MCC-1600> set ip=<ip address (in format:  
nnn.nnn.nnn.nnn)>
```

```
[su]E-MCC-1600> set netmask=<mask (in format:  
nnn.nnn.nnn.nnn)>
```

```
[su]E-MCC-1600> set gateway=<gateway address (in  
format: nnn.nnn.nnn.nnn)>
```

Optionally change the community names.

At the command line prompt, type and enter:

```
[su]E-MCC-1600> set public=<public community name>
```

```
[su]E-MCC-1600> set private=<private community  
name>
```

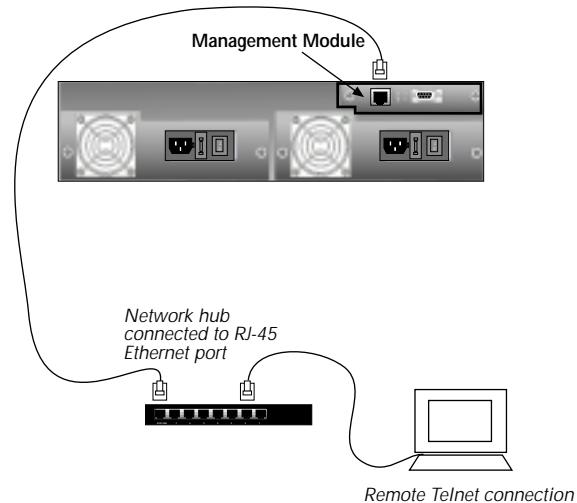
Save the network configuration.

To save the network configuration, type and enter:

```
[su]E-MCC-1600> save
```

3.11 Optionally Configuring Telnet and Telnet Security

The MCC-1600 management module's command line interface can be accessed through a Telnet server. Any standard character-mode (preferred) or line-mode Telnet client can be used to access the command line interface from any station not blocked by network security.



The Management Module's TCP uses the Telnet Remote IP address and the Telnet Remote IP address mask to validate incoming connection requests:

To permit Telnet connections from only a single location on the network (in this example, from IP address 206.5.22.11), type and enter:

```
SU=PRIVATE
SET TNTRIP=206.5.22.11
SET TNTRIPMASK=255.255.255.255
SAVE
```

To permit Telnet connections from any station on the 206.5.22.0 subnet (if the subnet mask for this network is 255.255.255.0), type and enter:

```
SU=PRIVATE
SET TNTRIP=206.5.22.0
SET TNTRIPMASK=255.255.255.0
SAVE
```

To permit Telnet connections from any station on any network, restore the default values:

```
SU=PRIVATE
SET TNTRIP=0.0.0.0
SET TNTRIPMASK=0.0.0.0
SAVE
```

3.11 Optionally Configuring Telnet and Telnet Security (continued)

To disable the Telnet server), type and enter:

```
SU=PRIVATE
SET TNTRIP=255.255.255.255
SET TNTRIPMASK=255.255.255.255
SAVE
```

NOTE: The TNTRIP and TNTRIPMASK may designate an authorized station or subnet anywhere on the Internet without regard for the Management Module's local IP and subnet mask. Also, the TNTRIPMASK need not correspond to any actual subnet.

3.12 Optionally Configuring SNMP Traps

Configure traps at the command-line interface.

1. Use the **SET TRAPMGR** command to specify the IP address of the station to which traps should be sent. If this address is 0.0.0.0, no polling will be performed and no traps will be sent. If this address is 255.255.255.255, traps will be sent to all stations on the network (not recommended).
2. Use the **TRAPPOLL** command to specify the polling interval, in 0.1second increments. If the polling interval is set to zero, no polling will be performed and no traps will be sent. NOTE: The default value is 1.0 seconds.
3. Use the **TM=** (TRACE MASK) command to cause trap conditions to be reported to the command-line interface by setting the appropriate bit in the system trace mask.

NOTE: Using trace masks (other than the default) is not recommended except on the specific advice of Transition Networks Technical Support.

4. OPERATION

Daily operation of the Transition Networks E-MCC-1600 16-Slot Media Conversion Center requires no network administrator activity except occasionally monitoring physical status LED indicators on the 16-Slot Media Conversion Center and on installed Media Converter Slide-In-Modules to monitor an *unmanaged* 16-Slot Media Conversion Center.

Optionally, the 16-Slot Media Conversion Center can be managed at an attached terminal or terminal emulator OR at a remote Telnet connection, using status and trace messages available at a command-line interface.

Also optionally, an SNMP application at a remote Network Management Station (NMS) can be used to monitor status LED indicators on the managed 16-Slot Media Conversion Center AND status LED indicators on all Media Converter Slide-In-Modules installed in the managed E-MCC-1600.

NOTE: Management can be configured ONLY if a Management Module has been installed in the 16-Slot Media Conversion Center.

Direction is provided in the pages that follow for monitoring the 16-Slot Media Conversion Center:

4.1	<i>Using Status LEDs</i>	4.2
4.2	<i>Using Management Module Command-line Interface</i>	4.3
	At an Attached Terminal	4.3
	At a Telnet Connection	4.4
	Command-line Interface Commands	4.5
	Command-line Interface Messages	4.10
	Command-line Interface Trace Masks	4.34
	Traps	4.35
4.3	<i>Using Remote SNMP</i>	4.36

4.1 Using Status LEDs

4.1.1 Media Conversion Center LED Indicators

Power Module Indicators

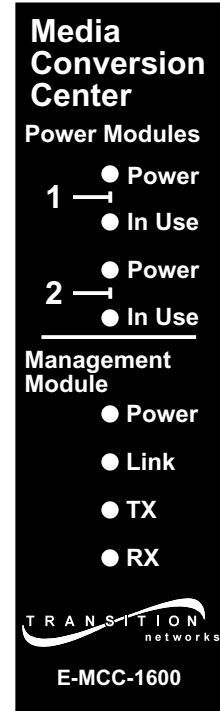
Power and **In Use** Power Supply Module LED indicators located at the front of the Media Conversion Center indicate that Power Supply #1 and/or Power Supply #2 is/are installed in the Media Conversion Center and also indicate which power supply is powering the Media Conversion Center.

NOTE: A Power LED indicator also is located on each Power Supply Module installed at the back of the Media Conversion Center.

Management Module Indicators

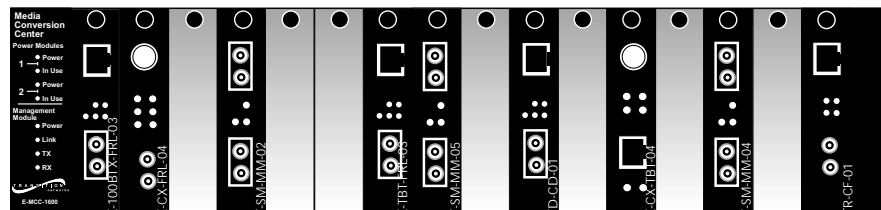
Power, **Link**, **RX (receive)** and **TX (transmit)** Management Module LED indicators located at the front of the Media Conversion Center indicate that the Media Conversion Center Management Module is powered, that a network link is established, and that the Media Conversion Center Management Module is either receiving or transmitting network data.

NOTE: Network management indicators located on the Management Module installed at the back of the Media Conversion Center loosely mirror the network management indicators located on the front of the Media Conversion Center.



4.1.2 Media Converter Slide-In-Module LED Indicators

Refer to the Transition Networks User's Guides that come with each Media Converter Slide-In-Module to interpret the LED indicators for that module.



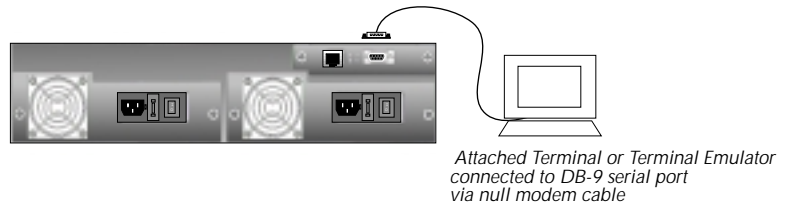
4.2 Using Management Module Command-line Interface (CLI)

The Media Conversion Center Management Module command-line interface (CLI), analogous to a Unix shell and accessed from an attached terminal or from a remote Telnet location, permits the network administrator to display status messages and to display and to alter various network settings.

4.2.1 At an Attached Terminal

The Media Conversion Center command-line interface is accessible using a terminal or terminal emulator attached to the RS-232 serial port on the Media Conversion Center Management Module.

IP PARAMETERS SHOULD BE SET AND/OR CHANGED ONLY AT THE TERMINAL CLI.



NOTE: The serial port cable is attached directly to a DTE device through a null modem cable. Refer to the Appendix for the null modem cable configuration.

1. Locate the correct DB9 serial port cable with female DB9 connector.
2. Attach the DB9 serial port female cable connector to the male DB9 serial port connector on the Media Conversion Center.
3. Attach the other end of the DB9 serial port cable to an ASCII terminal or terminal emulator.

NOTE: The 16-Slot Media Conversion Center uses the following serial port parameter values:

baud	9600
stop bits	1
data bits	8
parity	NONE

Using methods appropriate to the attached terminal, verify that the serial port parameters of the attached terminal match the 16-Slot Media Conversion Center port parameter values. If necessary, modify the attached terminal port parameter values.

4.2.2 At a Telnet Connection

The Media Conversion Center command-line interface is accessible using a remote Telnet connection to the Ethernet network attached to the RJ-45 port on the Media Conversion Center Management Module. Any standard character-mode (preferred) or line-mode Telnet client can be used to access the command line interface from any station not blocked by network security.

When the client connects, a banner is displayed and the user must enter a password to gain access. NOTE: The password is the same as the private community name. If an incorrect password is entered, the server immediately aborts the client's connection.

```
Transition Networks Telnet Server
System name: E-MCC-1600
Press CTRL-D to disconnect.
Enter password:
Remote console connected to nnn.nnn.nnn.nnn.
00:23:02:00 [su] E-MCC-1600>
```

After the correct password is entered, the Telnet client is attached to the same console session that is available through the serial port. Users at the Telnet client and the serial terminal will see the same messages and they will even see commands typed by the other user.

NOTE: The Telnet server supports only one session at a time. Additional concurrent connection attempts are refused.

The Telnet client can be disconnected from the Management Module server by sending a CTRL-D, a Telnet EOF, or a Telnet ABORT command, by killing the Telnet client process, or by entering the LOGOFF command.

4.2.3 Command-line Interface Commands

The Media Conversion Center Management Module command-line interface (CLI) is analogous to a UNIX shell.

NOTE: In most cases, a "brief" Internet Protocol (IP) address format is supported: If only the last octet of an IP address is specified, the other three octets are filled in automatically (based on the assumption that the new address is on the same subnet as the local IP address).

CAUTION: The behavior of this function may be non-intuitive when the subnet mask is not 255.255.255.0.

The following commands set the gateway IP to: 1.2.3.5

```
set ip=1.2.3.4
set netmask=255.255.255.0
set gateway=5
```

Commands available at the command-line interface include:

? or h[elp]	<i>Displays the list of currently available commands. When in super-user mode (see the su= command) privileged commands are available.</i>
?command	<i>Displays help for console command.</i>
?=string	<i>Searches MIB for variable names or OIDs containing 'string'</i> <i>Example: "?=smmm05" searches for MIB variables containing "smmm05" which would yield all of the variables supported for the C/F-SM-MM-05 media converter.</i>
~	<i>If this character is typed at a command prompt, the previous command is executed again. (If you are connected via a line mode Telnet client, you will need to press ENTER.) Typing any other character (even if removed via the backspace key) clears the previous command so that it cannot be recalled using '~'.</i>
arp	<i>This command displays the current contents of the Address Resolution Protocol table. The left column contains the age of the entry in seconds, and the center and right columns respectively contain an Ethernet address and an IP address that are associated with each other.</i>
clear or cls	<i>Clears the screen.</i>

Using Management Module Command-line Interface (CLI)

get[=oid]	<p>Performs an SNMP GET operation on the local MIB database, using the given object ID (OID). The OID is expressed numerically or symbolically and, in either case, must be fully specified. If '=oid' is omitted, the ending OID of the last successful GET/GETNEXT/SET command is used. Examples: "GET=1.3.6.1.2.1.1.3.0" Get current sysUptime value. "GET" Get sysUptime value again.</p>
getnext[=oid]	<p>Performs an SNMP GETNEXT operation on the local MIB database, using the given object ID (OID). GET/GETNEXT/SET command is used. This command behaves in a way similar to the GET command, except that the OID need not be fully specified, since it displays the data associated with the "next higher" OID, rather than an exact OID.</p>
gn	<p>A shorthand command equivalent to "GETNEXT". No OID parameter is accepted, i.e. "GN=1.3.6" is not valid.</p>
memtest	<p>Executes a thorough DRAM diagnostic, as contrasted with the spot-check that is executed at system start</p>
ping[=nnn.nnn.nnn.nnn]	<p>Sends an ICMP ECHO message to the specified IP address. If no IP address is specified, the last valid IP address specified on a 'ping' command is used. The system transmits the ECHO message and acknowledges the command to the console. Note the sequence number and message ID contained in the console acknowledgement. These values are also displayed when incoming ECHO REPLY messages are reported, allowing the user to match ECHO REPLY messages with transmitted ECHO messages. The IP address specified with this command will be saved when a save command is issued.</p>
rping[=seconds]	<p>Toggles repetitive ping. The rping command transmits an ICMP echo message once per second until the rping command is issued again. Prior to issuing this command, a destination IP address must be supplied by issuing a ping command with a legal IP destination. The state of this command will be saved when a save command is issued.</p> <p>If an interval (in seconds) is specified, that interval is used instead of the default (1 second). Specifying an interval of 0 seconds cancels rping.</p>
save	<p>This command saves many of the parameters set by the other commands in this section to FLASH memory. Once saved, the settings persist</p>

- through rebooting and power cycling. Saved settings can be overwritten at any time by issuing another save command.
- set=oid,type,value** Performs an SNMP SET operation on the local MIB database, using the given OID, type and value. The OID is expressed numerically and must be fully specified. If an asterisk (*) is specified in the place of the OID, the ending OID of the last successful GET/GETNEXT/SET command is used. Type = data type associated with variable being set, using: "INTEGER", "STRING", "IP". Value = the data to be assigned to the SNMP MIB variable.
- set gateway=nnn.nnn.nnn.nnn** Sets the gateway IP address, the address of the station to which the Management Module transmits all datagrams with destinations that are not on the local subnet. This setting will be lost at the next reboot or power cycle unless the save command is issued.
- set ip=nnn.nnn.nnn.nnn** Sets the IP address of this Management Module. This setting will be lost at the next reboot or power cycle unless the save command is issued.
- set netmask=nnn.nnn.nnn.nnn** Sets the subnet mask that the Management Module will use when transmitting datagrams. This setting will be lost at the next reboot or power cycle unless the save command is issued.
- set private=private community name** Sets the private community name. This community name must be used in all SNMP SET requests transmitted to the management card, and is also the password used to initiate super-user mode at the command line interface (see the su= command) and also is the Telnet password. The default private community name is "private". This setting will be lost at the next reboot or power cycle unless the save command is issued.
- set public=public community name** Sets the public community name. This community name must be used in all SNMP GET and GETNEXT requests transmitted to the management card. The default public community name is "public". This setting will be lost at the next reboot or power cycle unless the save command is issued.
- set tntrip=nnn.nnn.nnn.nnn** Sets the TELNET Remote IP address.
- set tntripmask=nnn.nnn.nnn.nnn** Sets the TELNET Remote IP mask.
- Together, these two commands allow the network administrator to control which stations are permitted to access the Management Module via TELNET. See 3.12.

Using Management Module Command-line Interface (CLI)

NOTE: Super User mode must be in effect. Changes made during TELNET session take effect at logout.

set trapmgr=nnn.nnn.nnn.nnn Sets the IP address to which all SNMP Traps will be sent. If the address is 0.0.0.0, NO traps are sent. A value of 255.255.255.255 results in traps being broadcast to ALL stations. Super User mode must be in effect.

show Displays configuration and status information.

sql=length This command allows the maximum Length (in bytes) of the Serial output Queue to be set. This queue holds text data waiting to be displayed on the console. When a large value is used, the chances of display data being dropped due to high backlog are reduced, but system performance can be seriously degraded under peak loads. Values that are too small may cause erratic display behavior, such as incomplete displays. Range: 200 to 65335. Default: 2000.

stat Displays a summary of the conversion devices and power supplies that are installed in the Media Conversion Center.

su=private community name Initiates super user mode. In this mode, privileged operations (such as save) are available.

su Terminates super user mode.

tcpstat Intended for use under the direction of Transition Networks Technical Support to show the current status of TCP connections. Shows if a Telnet session is active and the IP address of any client. If a session is inactive, the state is indicated by "s=2", and the remote IP address and mask, indicated by the "r=rip/ripmask(port)" entry, are those configured using the "SET TNTRIP" and "SET TNTRIPMASK" commands. If a session is active, the state of the connection is indicated by "s=5" and the remote IP address shown is that of the currently connected client.

tm=mask Sets trace mask to the hexadecimal value specified.

Enter:

?tm

for a list of available trace bits.

CAUTION: Using this command may seriously degrade system performance.:

The mask is always entered and displayed in hex, and is the combination of all of the currently selected traces - each represented by a

	<p>single bit. The default mask is 8101h - local SNMP trap condition + checksum + ICMP errors</p>
trappoll=n	<p>Sets the time interval at which slide-in cards are polled for trap conditions such as "link down". The value specified is the number of 1/10 second time ticks between polls, in decimal. Default is 10 (1 second). NOTE: Super User mode must be in effect.</p>
xr	<p>Initiates firmware update into management card. This process allows updated software to be loaded into the Management Module. To update the software, 1) obtain the newest compatible version from Transition Networks, 2) attach the management card's serial port to a terminal emulator that supports the XMODEM/CRC (256 byte blocks) protocol, 3) issue the XR command, and 4) initiate a "Send" or "Upload" command from the terminal emulator to send the new software to the Management Module.</p> <p><i>CAUTION: If the 'write' phase is interrupted or fails for any reason, the E-MCC-1600 Management Module will be damaged and will require servicing from Transition Networks. Using a battery-backed uninterruptible power supply is highly recommended.</i></p> <p><i>CAUTION: This software cannot check to make sure that the software that is downloading is compatible with the hardware into which the software is loaded. Incorrect software changes may damage the Management Module necessitating factory service. If you have any doubts, contact Transition Networks for assistance before starting</i></p> <p><i>CAUTION: Firmware update may cause all saved settings to be lost.</i></p>

4.2.4 Command-line Interface Messages

Messages that might be displayed at the command-line interface are listed in alphabetical order. Each item in the list includes an explanation of the probable source of the message and, where indicated, provides a suggested corrective action in response to the message.

ARP: no response from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to an expected packet that failed to arrive at the Ethernet interface. It indicates that the Management Module has abandoned (due to timeout) an attempt to determine the Ethernet address of the station it was asked to communicate with. Possible causes: 1) The destination station is down or does not exist 2) the subnet mask is set incorrectly 3) Ethernet communications have been disrupted. This message is printed only when the appropriate traces are enabled via the "TM=mask" command.

ARP: REQUEST from *nnn.nnn.nnn.nnn/nn nn nn nn nn nn* for *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. It indicates that another station (whose IP and Ethernet addresses are indicated at the beginning of the message) is attempting to determine the Ethernet address of the Management Module via Address Resolution Protocol (ARP). The Management Module answers each ARP request with a message containing the requested information. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. This message does not indicate an error condition. No corrective action is required.

ARP: REQUEST sent for *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface or in response to a console command. It indicates that the Management Module has transmitted an Address Resolution Protocol (ARP) packet in an attempt to determine the Ethernet address of the station whose IP address is noted at the end of the message. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. This message does not indicate an error condition. No corrective action is required.

ARP: RESPONSE from: *nnn.nnn.nnn.nnn=nn nn nn nn nn nn* to: *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that the Management Module has (via ARP) successfully determined the Ethernet address of the station whose IP address is noted at the beginning of the message. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. This message does not indicate an error condition. No corrective action is required.

[BNRY=0]

This unsolicited message indicates a latent software defect or a hardware failure in the Ethernet controller. Call Transition Networks for assistance.

Command only available in super-user mode. Enter 'SU='

This message is a response to a console command. You have entered a privileged command without first entering super-user mode. The privileged command is rejected. Enter "SU=" followed by the private community name, and then re-enter the command that caused the error.

Community name changed. Use SAVE command to make permanent.

This message is a response to a console command. The public or private community name was changed via the "PUBLIC=new-public" or "PRIVATE=new-private" commands. This message warns you that the changes made will be lost the next time the Management Module is reset, rebooted, or power cycled - unless they are saved in FLASH memory as suggested.

[console overflow]

This unsolicited message indicates that console output messages were lost due to overflow. The preferred method for correcting this situation is to reduce the amount of console output by using the "TM=" command to suppress messages. In the small number of cases where this is not sufficient or not applicable, the user can increase the buffer space available for queued output by using the "SQL=" command. This should be attempted with caution.

NOTE: Use of the "SQL=" command only increases the system's capacity to handle larger momentary peaks in console output; it does NOT increase the system's sustained console printing ability. In fact, due to the resources consumed by a high SQL allocation, the system's overall performance (including the sustained printing rate) may be substantially reduced. SQL is always reset to its default value when the system is reset.

[Count]

This is an advanced debug message that should be displayed only when debug traces have been enabled at the advice of Transition Networks technical support. This unsolicited message is displayed when an unusual condition is detected by the Ethernet controller. This message indicates that one of the Ethernet controller's internal counters has overflowed. This message can be ignored or disabled via the "TM=mask" command.

CPU ADDRESS ERROR, SP=nnnnnnnn PC=nnnnnnnn SR=nnnnnnnn

This unsolicited message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

<D>

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. An incoming Ethernet packet was discarded because the receive queue was full, i.e. Ethernet packets are arriving more quickly than they can be processed. This may occur occasionally (during periods of peak network load) without indicating a problem. However, if the message cannot be explained by heavy Ethernet traffic and it repeats more than a few times a minute or system operation is impaired, call Transition Networks for assistance. To eliminate these messages, use the "TM=mask" command to disable the traces.

DMA ADDRESS ERROR, SP=nnnnnnnn PC=nnnnnnnn SR=nnnnnnnn

This unsolicited message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

DOWNLOAD: Format of downloaded file is incorrect. Firmware update aborted. DOWNLOAD: Please reset the Management Module.

This message indicates that the signature at the end of the transferred file was incorrect, i.e. the file you are attempting to transfer is not a valid firmware module. The update process is aborted and the management module is halted as a precaution. Note that if you obtained new firmware in .ZIP format, you must unzip it before transferring it to the management module.

Using Management Module Command-line Interface (CLI)

DOWNLOAD: Invalid internal checksum. x=nnn, c=nnn Firmware update aborted.
DOWNLOAD: Please reset the Management Module.

The checksum calculated after the end of the XMODEM transfer did not compare correctly. Note that this probably does not indicate a problem with the XMODEM transfer into the management module. Instead, this probably indicates that the source firmware file you are attempting to transfer is corrupted. The update process is aborted and the management module is halted as a precaution.

DOWNLOAD: Press the ESC key to continue

This message is a response to the "xr" console command. This message is printed periodically after a firmware update attempt, under the assumption that the terminal emulator will fail to display console traffic it thinks is part of the XMODEM transfer. Waiting for an ESC before printing any final messages reduces somewhat the chances that your terminal emulator will mask them. When you see this message, press ESC and the XMODEM termination message(s) will be displayed.

DOWNLOAD: XMODEM/CRC receive error: *ttt*
DOWNLOAD: Rebooting

This message is a response to the "XR" console command. The XMODEM /CRC transfer failed. The last XMODEM/CRC error is displayed. Values for **ttt** include:

- "**Timeout**" - Timeout waiting for data
- "**Serial**" - low level serial transmission error
- "**Protocol**" - Unimplemented protocol, i.e. not XMODEM/CRC
- "**EOT**" - Received End Of Text from remote
- "**Canceled**" - Received CANCEL from remote
- "**Retries - EOT**" - too many retries on EOT
- "**Retries - C**" - too many retries on C.
- "**Retries - Receive**" - too many retries on receive. This is the code that will be displayed if the Management Module never sees any attempt by the terminal emulator to start the transfer.
- "**Unexpected packet number**" - packet received out of sequence.
- "**Last Packet resent**" - duplicate packet discarded
- "**Bad CRC**" -Data was corrupted in transit
- "**Not start of packet**" - Expected SOT, STX or EOT
- "**Not ACK**" - Expected ACK or NAK
- "**Received max # bytes**" - received packet too big

To resolve XMODEM receive problems, check the following:

- 1) Is serial cable configured correctly, in good condition, and plugged in firmly?
NOTE: Issuing console commands and receiving appropriate responses indicates null-modem cable is wired correctly.
- 2) Is XMODEM/CRC protocol used for the transfer? This protocol uses a 16 bit CRC with 128 byte data blocks. Neither original XMODEM (8 bit checksums with 128 byte data blocks) nor XMODEM-1K (16 bit CRCs with 1024 byte data blocks) is supported. NOTE: Many terminal emulator implementations use XMODEM/CRC but describe it as "XMODEM."
- 3) Is the transmitting station fast enough? Place the code on a local hard disk and use that copy as the source for your XMODEM/CRC transfer.

DOWNLOAD: XMODEM/CRC receive success, *nnn* bytes!

DOWNLOAD: FLASH 'WRITE' phase beginning. DO NOT INTERRUPT!

This message is a response to the "xr" console command. The XMODEM/CRC transfer was successful. This message is your "last chance" to abort the firmware update operation. When this message is displayed, you have approximately seven seconds left before the write begins (assuming that your terminal emulator displays it immediately when it is transmitted). If the write is interrupted, the Management Module will be damaged.

ETH: Can't transmit. Reason=*nn tttt*

This unsolicited message is printed periodically as applications attempt to transmit Ethernet packets. All outgoing Ethernet traffic has been halted. One or more reason code bits (*nn*) are expanded to text (*tttt*).

"Software incompatible with hardware." Contact Transition Networks technical support for assistance.

"Invalid IP/Netmask/Gateway configuration." Local IP address, subnet mask, and/or default gateway are improperly configured. Further explanation of the configuration error will be provided by other messages. For more information, see console commands "SET IP=*nnn.nnn.nnn.nnn*".

"Software Shutdown." Reset the Management Module. Contact Transition Networks if the message persists.

"Link Down." Indicates a problem with the link to the Management Module.

"Hardware initialization failed." Verify that the Management Module is properly connected to an active 10Base-T Ethernet port. Power cycle the Management Module. If message persists, contact Transition Networks technical support.

ETH: ERROR, This version of the driver cannot run on this hardware revision.

The Ethernet driver has determined that it is definitely incompatible with the hardware version it is attempting to run on. The ethernet driver is disabled. A software update is required to correct this problem. Contact Transition Networks technical support.

ERROR: Invalid configuration checksum. All saved values ignored.

This is a system startup message. The Management Module has disabled its network interface as a safety precaution. The user should (at a minimum) enter an IP address (via the "SET IP=*ip*" command), a subnet mask (via the "SET NETMASK=*mask*" command), and a gateway address (via the "SET GATEWAY=*ip*" command), then enter the "SAVE" command. This message is normal after a firmware upgrade but, at other times, may indicate a latent software defect or a hardware failure. If the message persists or recurs after performing the suggested corrective action, call Transition Networks for assistance.

ETH: Invalid frame type, len=0x*nnnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that the protocol type field of an incoming Ethernet II frame is not recognized, or the frame is not a valid Ethernet II frame. This usually indicates the presence on the local Ethernet segment of broadcast traffic that the Management Module is not programmed to interpret. The only supported types are ARP and IP over Ethernet II. This message is printed only when the appropriate traces are enabled via the "TM=*mask*" command. This message does not indicate an error condition. No corrective action is required.

Using Management Module Command-line Interface (CLI)

ETH: Link is now [UP | DOWN]

This unsolicited message indicates that the state of the management module's link to the ethernet hub has changed. While 'link=UP' is an excellent indication that communication with the hub has been achieved, it is not an **absolute** guarantee. If link is up and stations on the network are active, yet the ARP table remains empty, begin to suspect that something is wrong with hub or cable.

ETH: Unsupported protocol 0xnnnn

See "ETH: Invalid frame type, len=0xnnnn"

ETH: Warning, unknown model identifier.

This is a system startup message. The Ethernet driver does not recognize the model identifier of the hardware it is attempting to run on. This probably indicates that the software is older than the hardware. The driver attempts to continue, but correct operation cannot be guaranteed. A software update is required to eliminate this message. Contact Transition Networks technical support.

ETHERNET INITIALIZATION FAILED

This unsolicited message is displayed when an unusual hardware or software condition is detected. An attempt to initialize the Ethernet controller failed. Power cycle the Management Module. If the message persists, call Transition Networks for assistance.

ETHERNET RESET FAILED

See "ETHERNET INITIALIZATION FAILED"

FLASH: Erase verify failed. nnnn invalid words.

This message is a response to a console command. This message indicates a hardware failure or latent software defect. Retry the operation. If the message persists, call Transition Networks for assistance.

FLASH: Function not implemented.

This message is a response to a console command. This message indicates a latent software defect. Call Transition Networks for assistance.

FLASH: Illegal return code.

This message is a response to a console command. This message indicates a latent software defect. Call Transition Networks for assistance.

FLASH: Illegal target address range

This message is a response to a console command. This message indicates a latent software defect. Call Transition Networks for assistance.

FLASH: ROM starting address is not on sector boundary.

This message is a response to a console command. This message indicates a latent software defect. Call Transition Networks for assistance.

FLASH: Saving configuration, please wait up to one minute...

This message is a response to a console command. The Management Module is saving its configuration to flash (i.e. non-volatile) memory. If this operation is interrupted, the saved configuration will be invalid and the Management Module will be unable to access the network (e.g. it will be unable to respond to SNMP requests) until IP parameters are re-entered. In this case, media converters installed in the Media Conversion Center continue to operate normally. The primary purpose of the SAVE operation is to make sure that the appropriate network parameters (i.e. IP address, subnet mask, and gateway address) are automatically available should the Management Module be rebooted for any reason, though other parameters are saved as well.

FLASH: Source data does not fit in specified target range.

This message is a response to a console command. This message indicates a latent software defect. Call Transition Networks for assistance.

FLASH: This version of the software does not support flash.

This message is a response to a console command. This message indicates a latent software defect. Call Transition Networks for assistance.

FLASH: Write complete.

This message is a response to a console command. An attempt to save data or code in FLASH (i.e. non-volatile) memory was successful.

FLASH: Write verify failed. *nnnn* invalid words.

This message is a response to a console command. This message indicates a hardware failure or latent software defect. Retry the operation. If the message persists, call Transition Networks for assistance.

GENERAL ILLEGAL INSTRUCTION, SP=*nnnnnnnn* PC=*nnnnnnnn* SR=*nnnnnnnn*

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

[h=*nnnn*]

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect or a hardware failure. The Ethernet interface has failed. Call Transition Networks for assistance.

ICMP: DESTINATION UNREACHABLE message received from *nnn.nnn.nnn.nnn* (ignored)

ICMP: code=*tttt*

Where *tttt* is "NETWORK UNREACHABLE," "HOST UNREACHABLE," "PROTOCOL UNREACHABLE," "PORT UNREACHABLE," "FRAGMENTATION REQUIRED and DF SET," or "SOURCE ROUTE FAILED."

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. A gateway or host has determined that a datagram sent by the Management Module cannot be delivered. Frequently, this is due to an invalid IP address or a router, firewall or host configuration problem. A numeric value for *tttt* indicates that the code is not recognized, usually due to the use of proprietary codes. Contact the vendor of the transmitting station for assistance. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

Using Management Module Command-line Interface (CLI)

ICMP: ECHO message received from *nnn.nnn.nnn.nnn*, id=*nnn* seq=*nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The named station is PINGing the Management Module. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL. This message does not indicate an error condition. No corrective action is required.

ICMP: ECHO REPLY message received from *nnn.nnn.nnn.nnn*, id=*nnn* seq=*nnn*

Unsolicited message displayed in response to a packet that arrived at the Ethernet interface. A PING response was received. Note the identification and sequence numbers; similar numbers are displayed when the PING packet is transmitted. The values can be used to match transmissions with responses. See RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL. This message does not indicate an error condition. No corrective action is required.

ICMP: INFORMATION REQUEST message received from *nnn.nnn.nnn.nnn* (ignored)

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This probably means that another host is attempting to find out what network it is on. The incoming ICMP message is ignored, since the Management Module does not support the INFORMATION service. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL. This message does not indicate an error condition. No corrective action is required.

ICMP: INFORMATION REPLY message received from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message should never be displayed, since the Management Module does not support the INFORMATION service. If the message persists, call Transition Networks for assistance. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

ICMP: invalid checksum, perhaps from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The checksum of an incoming ICMP message was invalid. This is usually due to the corruption of the datagram in transit. Note that the source address displayed may be incorrect due to this corruption. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. This message does not indicate an error condition. No corrective action is required.

ICMP: PARAMETER PROBLEM message received from *nnn.nnn.nnn.nnn* (ignored)

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. A datagram sent by the Management Module was discarded by the named host. This message indicates that a message was corrupted in transit, or that an incompatibility exists between the networking code in the Management Module and the networking code in the named station. If the message persists, call Transition Networks for assistance. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

ICMP: REDIRECT message received from *nnn.nnn.nnn.nnn* (ignored)

ICMP: code=*tttt* recommended gateway=*nnn.nnn.nnn.nnn*

Where *tttt* is "REDIRECT for NETWORK", "REDIRECT for HOST", or "REDIRECT for NETWORK and TOS".

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message is sent by the 'from ip' gateway when multiple gateways are attached to the local subnet and the Management Module is using a less-than-ideal gateway to reach its destination host. Since the Management Module does not support the use of multiple gateways, the only guaranteed way to eliminate this message is to place the Management Module on a subnet with only one gateway. If this is not possible, the Management Module's gateway address can be changed to match the recommended gateway - though this will probably result in more redirect messages from the new gateway. Note that if the gateway that sent the redirect message conforms to standards, it will forward the data transmitted by the Management Module to the correct gateway and the messages can simply be disabled or ignored. A numeric value for *tttt* indicates that the code is not recognized, usually due to the use of proprietary codes. Contact the vendor of the transmitting station for assistance. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

ICMP: ROUTER ADVERTISEMENT message received from *nnn.nnn.nnn.nnn* (ignored)

ICMP: ROUTER SOLICITATION message received from *nnn.nnn.nnn.nnn* (ignored)

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. These messages are displayed when ICMP Router Discovery messages are received. The Management Module does not support ICMP Router Discovery. The incoming ICMP messages are ignored. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 1256, ICMP Router Discovery Messages, available via anonymous FTP from NIC.DDN.MIL. This message does not indicate an error condition. No corrective action is required.

ICMP: SOURCE QUENCH message received from *nnn.nnn.nnn.nnn* (ignored)

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. Due to congestion, the named gateway or host is requesting that the Management Module slow the flow of datagrams. Since the Management Module almost never transmits unsolicited datagrams, this message is ignored. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

Using Management Module Command-line Interface (CLI)

ICMP: TIME EXCEEDED message received from *nnn.nnn.nnn.nnn* (ignored)

ICMP: code=*tttt*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. A datagram sent by the Management Module was not delivered due to timeout in transit.

When *tttt* is "TTL EXPIRED IN TRANSIT" this means that a gateway saw a Time-To-Live value of zero - probably indicating a routing loop or other network configuration error. Note that the Management Module assigns the maximum legal Time-To-Live value to each outgoing datagram.

When *tttt* is "REASSEMBLY TIMER EXPIRED" this means that datagram fragment reassembly timed out at the destination host, which is caused by 1) the loss of one or more of the fragments in transit, 2) a short reassembly timer at the destination host, or 3) an extremely slow network path.

A numeric value for *tttt* indicates that the code is not recognized, usually due to the use of proprietary codes. Contact the vendor of the transmitting station for assistance. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

ICMP: TIMESTAMP message received from *nnn.nnn.nnn.nnn* (ignored)

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The incoming ICMP message is ignored, since the Management Module does not support the TIMESTAMP service. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL. This message does not indicate an error condition. No corrective action is required.

ICMP: TIMESTAMP REPLY message received from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message should never be displayed, since the Management Module does not support the TIMESTAMP service. If the message persists, call Transition Networks for assistance. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.

ICMP: UNKNOWN TYPE 0x*nn* message received from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that an unknown ICMP message was received. Some network vendors transmit proprietary types and codes in ICMP messages. If the message persists, contact the vendor of the transmitting station for assistance, or contact Transition Networks if you are reasonably sure the type is not proprietary. If system operation is not impaired, then no corrective action is required. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. For information on possible new ICMP messages see the RFC collection, available via anonymous FTP from NIC.DDN.MIL.

Illegal character

This message is a response to a console command. A non-printable character (outside the range 20h to 7Eh) was seen in a community name entered from the console.

Illegal length. 1-30 characters required.

This message is a response to a console command. Re-enter the console command, making sure that the community name entered falls within the given bounds. No white space is permitted anywhere in the command.

Illegal register read *nnnn nnnn nnnn*

Illegal register write *nnnn nnnn nnnn*

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect. Call Transition Networks for assistance.

ILLEGAL SLOT INSTRUCTION, SP=*nnnnnnnn* PC=*nnnnnnnn* SR=*nnnnnnnn*

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

Incorrect password.

This message is a response to a console command. The correct "SU=password" password is the same as the private community name. The default is "private". If you have forgotten your private community name and are unable to retrieve it from your Network Management Station, call Transition Networks for assistance.

***** Invalid IP address: *tttt***

This message is a response to a console command. An invalid local or gateway IP address was entered. An IP address must be entered as "a.b.c.d" where a, b, c, and d are decimal integers from 0 to 255. No white space is permitted anywhere in the command. This message is also displayed when the address 0.0.0.0 is entered for a local IP address (but not for a gateway address). It is not possible to use this address as a local or gateway IP address.

***** Invalid subnet mask: *tttt***

This message is a response to a console command. An invalid subnet mask was entered. The subnet mask must be entered as "a.b.c.d" where a, b, c, and d are decimal integers from 0 to 255. A further requirement for the subnet mask is that it consist of a single region of all '1' bits at the most-significant end and a single region of '0' bits at the least significant end (i.e. no '1' bit is permitted to the right of any '0' bit, and no '0' bit is permitted to the left of any '1' bit). No white space is permitted anywhere in the command.

Invalid password, access denied.

See "TELNET: An invalid login attempt was rejected..."

IP: Incoming datagrams with invalid checksums are being discarded.

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message is displayed the first time a datagram with an invalid IP checksum is received, and for every 256 such datagrams after that. Unless this message is displayed frequently, no corrective action is required. Excessive occurrences may indicate physical layer network problems resulting in packet corruption.

Using Management Module Command-line Interface (CLI)

IP: Incoming datagram fragment from *nnn.nnn.nnn.nnn* discarded.

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that the transmitting station (identified by its IP address) or a gateway along the way has split the message into fragments. The Management Module does not support IP fragmentation or reassembly, so the traffic is discarded. Fragmentation is usually triggered by a message that is too large to fit into the Maximum Transmission Unit (MTU) of one of the networks it must pass through. Large messages are created when a network management application attempts to perform a GET or a SET operation on a large number of variables at once; try splitting such requests up. Another possible cause is that the message passed through a non-Ethernet network with a small MTU. If possible, route the traffic around this network. This message is printed only when the appropriate traces are enabled via the "TM=mask" command.

IP: Incoming fragmented datagrams are being discarded.

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message is displayed the first time a IP datagram fragment is received, and for every 256 datagram fragments after that. See also "IP: Incoming datagram fragment from *nnn.nnn.nnn.nnn* discarded"

IP: Invalid IP checksum, possibly from *nnn.nnn.nnn.nnn*

IP: checksum calculated=*nnnn* transmitted=*nnnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The checksum of an incoming IP datagram was invalid. This is usually due to the corruption of the datagram in transit. Note that the address displayed may be incorrect due to this corruption. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. Unless this message is displayed frequently or system operation is impaired, no corrective action is required. Excessive occurrences may indicate physical layer network problems resulting in packet corruption.

IP: Unsupported protocol 0xnn from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The datagram is addressed to a protocol not supported by the Management Module. For example, if another station attempts to exchange EGP messages with the Management Module, this message will be displayed since the Management Module does not support EGP. Supported protocols: ICMP, UDP, TCP. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. This message does not indicate an error condition. No corrective action is required.

IP: Warning, no default gateway address specified. dest=*nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The Management Module has been asked to transmit a packet to a destination that is not on the same subnet as its own IP address, but no gateway address has been configured (via the "SET GATEWAY=ip" command). The Management Module will attempt to locate the destination station on the local Ethernet segment without using a gateway - this process almost always fails. This message is printed when any traces (including the default traces) are enabled via the "TM=mask" command.

Local IP=*nnn.nnn.nnn.nnn* Gateway IP=*nnn.nnn.nnn.nnn* Subnet mask=*nnn.nnn.nnn.nnn*

This message is a response to a console command. The network configuration settings currently in use are shown. These settings are not necessarily compatible or correct, and have not necessarily been saved. Once the settings have been proven to work, they should be saved to non-volatile memory via the "SAVE" command.

E-MCC-1600>

This is a prompt that indicates that the Management Module's command line interface is ready for another non-privileged command. To enter privileged commands, first enter the "SU=private" command.

NOTE: The console prompt string is determined by the MIB variable *mib2.system.sysName*. The default value for this MIB variable is E-MCC-1600, as shown here. Changing the value of *mib2.system.sysName* will change the appearance of the console prompt.

Memory test failed at *nnnnnnnn*

This is a system startup message. The DRAM test encountered an error. Power cycle the system. If the message persists, contact Transition Networks for assistance.

New trace mask = *nnnnnnnn*

This message is a response to a console command. The trace mask was successfully changed. For more information, see the description of the "TM=mask" command.

NON-MASKABLE INTERRUPT, SP=*nnnnnnnn* PC=*nnnnnnnn* SR=*nnnnnnnn*

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

[Overflow nn]

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. This unsolicited message is displayed when an unusual condition is detected by the Ethernet controller. This message indicates that the controller's receive buffer has overflowed. The Ethernet controller is reset as a precaution. If operation of the management module is not impaired, it is likely that the condition was triggered by a peak in network traffic, in which case the message should be ignored or disabled via the "TM=mask" command.

Using Management Module Command-line Interface (CLI)

PING: Traces of ICMP error indications have been enabled.

Trace mask: old=nnnnnnnn new=nnnnnnnn. Type ?TM for more information.

This message is displayed in response to a PING or RPING command entered from the console. This console message indicates that console tracing of incoming ICMP error indications (e.g. "Destination Unreachable") was previously suppressed, but has now been enabled. (It is recommended that this trace never be disabled.) These traces are automatically re-enabled when a PING or RPING command is entered because when a PING operation fails, the reason for the failure can often be detected and reported back to the originating station (via an Internet Control Message Protocol (ICMP) message) by another station (such as a router), and the suppression of this information can be a significant hindrance to network troubleshooting. PING: invalid destination IP address.

This message is a response to a console command. This indicates a syntax error in the entry of an IP address. Enter "PING=a.b.c.d" where a, b, c, and d are decimal integers from 0 to 255. No white space is permitted anywhere in the command. This message is also displayed when the IP address 0.0.0.0 is entered. It is not possible to ping this invalid address.

PING: pinging nnn.nnn.nnn.nnn, id=nnn seq=nnn

This message is a response to a console command. This message is displayed each time a ICMP ECHO packet is transmitted, i.e. once when a "PING" command is entered, and multiple times if the "RPING" command is entered. Note the identification and sequence numbers. They may be compared with those displayed when responses are received.

[Reset]

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. This unsolicited message is displayed when an unusual condition is detected by the Ethernet controller. This message indicates that the controller has entered the reset state or that the controller's receive buffer has overflowed. If operation of the management module is not impaired, it is likely that the condition was triggered by a peak in network traffic, in which case the message should be ignored or disabled via the "TM=mask" command.

[rr:no buffer nnnn]

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. An incoming Ethernet packet was discarded due to lack of memory. The number is the byte count of the packet, in hex. If this trace message occurs frequently, it indicates one of the following: 1) Excessive network traffic directed at the Management Module: 1a) Simultaneous SNMP requests from a large number of Network Management Stations 1b) Inadequate flow control - i.e. a station is continuously transmitting and not waiting for responses 1c) excessive broadcast traffic on the network segment. 2) Memory depletion due to excessive console output traffic Or, 3) a latent software defect or hardware failure. To eliminate these messages, use the "TM=mask" command to disable the traces.

RTL ISR=nn

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. The Ethernet controller caused an interrupt. Additional normal-completion indications may follow: "[Remote DMA complete]" "[TX ok]" "[RX ok]" "<get: b=nn-c=nn>".

[RTL RST]

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. This unsolicited message is displayed when an unusual hardware or software condition is detected. The Ethernet controller was reset by software in response to a perceived error condition. Check the Ethernet segment to which the Management Module is attached for unusual conditions, such as a jabbering station. If operation of the management module is not impaired, it is likely that the condition was triggered by a peak in network traffic, in which case the message should be ignored or disabled via the "TM=mask" command.

<RX>

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. A packet was extracted from the Ethernet receive queue. To eliminate these messages, use the "TM=mask" command to disable the traces. This message does not indicate an error condition. No corrective action is required.

[RX error]

This advanced debug message should be displayed only when debug traces have been enabled at the advice of Transition Networks technical support. The unsolicited message is displayed when an unusual condition is detected by the Ethernet controller and indicates one of the following: 1) A packet with an invalid CRC was received. 2) A frame alignment error occurred. 3) A packet was missed (probably due to a peak in network load). The Ethernet controller is reset as a precaution. To eliminate this message, use the "TM=mask" command to disable the traces.

SCI: Serial console errors are occurring. Check cables and terminal.

This unsolicited message indicates that hardware errors are being encountered on the console's serial interface. Most commonly, this message is seen on the Telnet console, and is frequently accompanied by an inability to enter commands properly due to garbage characters appearing on the console. The most common cause for this is that a terminal is attached to the system's serial port, but is powered down. This can (depending on the construction of the hardware in the terminal) cause electrical conditions that can be mistaken for incoming (but flawed) serial data. Check to make sure that you have either nothing at all or a fully operational terminal with a properly wired null modem cable attached to the Management Module's serial port. If this is the case and the message persists, call Transition Networks technical support for assistance.

Using Management Module Command-line Interface (CLI)

SNMP: berdecode - *tttt*.

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. Decode of an incoming PDU failed. The PDU was discarded. *tttt* provides a reason:

- “memory allocation failed” usually triggered by heavy network traffic and/or heavy console traffic. Unless this message is displayed frequently or system operation is impaired, no corrective action is required.
- “parent decode failed” occurs as SNMP attempts to clean up after an earlier error. Can be ignored.

The remaining messages indicate a malformed or incompatible incoming message:

- “Alignment failure” the expected length of some element of the message does not match the actual length.
- “invalid integer” an integer with a size other than 1, 2, or 4 bytes was received.
- “null OID” an Object ID had zero sub-identifiers.
- “illegal OID” indicates that a sub-identifier in an Object ID had more than 28 data bits.
- “invalid length” an octet string had zero data length, or a NULL had non-zero data length. This message is sometimes caused by an NMS transmitting a NULL community string. This is not supported by the Management Module.
- “undefined tag” an element of the message could not be identified.

SNMP: berdecode - Tag *nnnn* not defined

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that the Management Module received an SNMP PDU that it could not decode. If the message persists, call Transition Networks for assistance.

SNMP: berfree - tag *nnnn* not implemented

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates a latent software defect. Call Transition Networks for assistance.

SNMP: beroutput - unimplemented tag *nnnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that the Management Module received an SNMP PDU that it could not decode. If the message persists, call Transition Networks for assistance.

SNMP: Cannot process request. Reason: *tttt*

This message is a response to a console command. The GET/GETNEXT/SET operation entered from the console could not be processed for the given reason. Check the MIB document for the variable you are attempting to access to make sure the Object ID you are entering is correct, and (for SET operations) that you understand the type and range of the variable correctly. Note that the appropriate security information is automatically supplied for all GET/GETNEXT/SET operations initiated from the console. The console must be in super-user mode before a SET operation is permitted. For values of *tttt*, see message “SNMP: Error ‘*tttt*’ error_index=*nnn* on request from *nnn.nnn.nnn.nnn*”

Also note that OIDs must be fully specified when using the GET and SET commands; all table indices must be specified or a trailing *.0* must be specified for non-tabular variable, e.g. *get = sysName.0*.

SNMP: Community is not OCTET STRING in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Decode of incoming PDU failed

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. A variety of causes are possible, e.g. malformed SNMP message, out of memory, etc. Usually, this message is accompanied by other more specific messages, if the appropriate traces are enabled.

SNMP: dumpbertree - tag *nnnn* not implemented

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates a latent software defect. Call Transition Networks for assistance.

SNMP: Error '*ttttt*' error_index=*nnn* on request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The Management Module was unable to process an incoming SNMP request for the stated reason. The error index indicates which of the (possibly many) variable bindings (i.e. individual sub-requests) in the incoming message caused the error. Values for *ttttt* include:

"noError" Theoretically impossible. If this message is displayed, contact Transition Networks for assistance.

"tooBig" An incoming message or the response to that message was too large for the Management Module to handle. If this message persists, contact Transition Networks for assistance.

"noSuchName=*ttttt*" A request was received for an Object ID that is not supported by the Management Module, or the community name in the request is invalid. Make sure the correct community names and MIBs are loaded into the managing station. Another possible cause is that a SET request message attempted to change an item that is read-only in the current MIB view. (i.e. the data item is read-only in all MIB views, or the public community string was used for a SET operation on a read-write data item.)

"badValue" An incoming SET request had a variable binding with an SMI data type incompatible with that of the variable being changed (e.g. "sysName" cannot be set to an integer), or the data was excessively large.

"readOnly" Theoretically impossible. If this message is displayed, contact Transition Networks for assistance.

"genErr" One of the following: 1) An incoming message contained an integer that was 3 bytes long or 5 or more bytes long 2) An incoming message contained an unrecognized BER data type. 3) Memory allocation failed while processing an SNMP message. 4) An incoming message contained an excessively long Object ID.

SNMP: Error displaying SNMP message

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. Probably indicates a low-memory condition during the display of "outgoing SNMP" traces.

SNMP: [ERROR | ERROR CLEAR] trap transmitted to *nnn.nnn.nnn.nnn*.

This unsolicited message is displayed when a trap condition occurs. This message is printed only when the appropriate traces are enabled via the "TM=mask" command and traps are properly configured

SNMP: Error index is not 0 in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates a malformed incoming PDU. If the message persists, call Transition Networks for assistance.

Using Management Module Command-line Interface (CLI)

SNMP: Error index is not INTEGER in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Error status is not 0 in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Error status is not INTEGER in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Extra data in variable binding in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: GET [*nnn.nnn.nnn.nnn*] id=*nnnn* ind=*nnnn* *tttt* *nnn.nnn.nnn...*

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. It indicates that a variable binding is being processed by SNMP. The message that immediately follows shows the data associated with the binding. Note that one trace message is printed per binding; the id=*nnnn* given allows the user to determine which bindings were grouped in a single PDU. The text string *tttt*, if present, indicates an error code returned during processing of the binding. The remainder of the line is the object ID requested in the binding. This message is printed only when the appropriate traces are enabled via the "TM=mask" command.

SNMP: getlen - unimplemented tag *nnnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates that the Management Module received an SNMP PDU that it could not decode. If the message persists, call Transition Networks for assistance.

SNMP: GETNEXT [*nnn.nnn.nnn.nnn*] id=*nnnn* ind=*nnnn* *tttt* *nnn.nnn.nnn...*

See "SNMP: GET id=..."

SNMP: Individual variable binding SEQUENCE missing in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Internal error, invalid backlink scanning slot *n*

This message indicates a latent software defect or a hardware defect. Power cycle the management module. If message persists, contact Transition Networks for assistance.

SNMP: Internal error, invalid MIB structure

This is a system startup message. This message indicates a latent software defect. Call Transition Networks for assistance.

SNMP: Invalid oid *tttt*

This message is a response to a console command. Either a symbolic OID (as in the Appendix) or a numeric Object ID with at least three sub-identifiers was expected (e.g. "1.3.6"). For GET and SET operations, a fully specified OID is required, i.e. all indices (for tables) or a trailing ".0" (for scalars) must be specified, even when the OID is specified symbolically.

SNMP: Invalid OID tag in variable binding in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates a malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Memory allocation error

This message is a response to a console command. Insufficient memory was available to process the request, usually due to a peak in system activity. Retry the operation. If the message persists, call Transition Networks for assistance.

SNMP: Outer variable binding SEQUENCE missing in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates a malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: PDU from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. An SNMP message has arrived from the IP address noted. If enough memory is available, a decode of the message will be displayed. This message is displayed only if the appropriate traces are enabled via the TM= command.

SNMP: PDU to *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. An SNMP message is being transmitted to the IP address noted. If enough memory is available, a decode of the message will be displayed. This message is displayed only if the appropriate traces are enabled via the TM= command.

SNMP: Power supply #[1 | 2] is [UP | DOWN]. Trap sent to *nnn.nnn.nnn.nnn*.

This message is displayed either at system start up or as an unsolicited message during operation. It indicates that the operational status of one of the chassis' power supplies has changed and that a "POWER SUPPLY STATUS CHANGE" trap has been transmitted. It is normal for this message to be displayed during system startup if the chassis lacks its normal complement of two power supplies. This message is printed only when the appropriate traces are enabled via the "TM=mask" command and traps are properly configured.

SNMP: Request ID is not INTEGER in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates a malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: SET [*nnn.nnn.nnn.nnn*] id=*nnnn* ind=*nnnn* *tttt* *nnn.nnn.nnn...*

See "SNMP: GET id=..."

Using Management Module Command-line Interface (CLI)

SNMP: SNMP PDU is not SEQUENCE in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: system reset performed via SNMP from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The Management Module has been ordered (via an SNMP "SET" operation) to save all settings into FLASH (as if the SAVE command had been entered from the console) and reboot itself.

SNMP: Trap polling is now enabled.

This message indicates that the user has successfully enabled trap polling. As a result, the trap detection system has been re-initialized and the chassis slots are now being examined for new trap conditions. See also "SNMP: Warning: SNMP traps are disabled until..."

SNMP: Variable binding value is constructed in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Version is not INTEGER in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Unrecognized request tag *nnnn* in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message indicates an malformed incoming PDU. If the message persists, call Transition Networks for assistance.

SNMP: Version is not V1 in request from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. A remote network management system (identified by its IP address) has attempted to communicate with the Management Module using a version of SNMP SMI other than V1. This version of the Management Module's software supports only SMI V1.

SNMP: Warning: SNMP traps are disabled until a manager address is defined via the SET TRAPMGR command and a trap poll interval is assigned via the TRAPPOLL command.

In order for trap polling to occur, the conditions mentioned in the message must be met. A parameter is 'defined' or 'assigned' when it is non-zero. These values must be saved via the 'SAVE' command or they will be lost during the next reboot, and trap polling will again be disabled.

[su] E-MCC-1600>

This is a prompt that indicates that the Management Module's command line interface is ready for another super-user command. To return to non-privileged mode, enter the "SU" command.

NOTE: The console prompt string is determined by the MIB variable *mib2.system.sysName*. The default value for this MIB variable is E-MCC-1600, as shown here. Changing the value of *mib2.system.sysName* will change the appearance of the console prompt.

Super-user mode off.

This message is a response to a console command. Super-user mode was disabled via the "SU" command. The default command set has been restored.

Super-user mode on.

This message is a response to a console command. Super-user mode was enabled via the "SU=password" command. Additional privileged commands are now available. See the help menu.

TCP: duplicate TCB in create_tcb nnnn,nnn.nnn.nnn.nnn,nnnn,nnn.nnn.nnn.nnn

This message may indicate a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TCP: Incoming datagrams with invalid checksums are being discarded.

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message is displayed the first time a segment with an invalid TCP checksum is received, and for every 256 such datagrams after that. Unless this message is displayed frequently, no corrective action is required. Excessive occurrences may indicate physical layer network problems resulting in packet corruption.

TCP: insufficient resources in create_tcb

This message may indicate a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TCP: Invalid cond in scmp

This message may indicate a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TCP: invalid option. TCB=n

This unsolicited message is printed in response to a packet that arrived at the Ethernet interface. It indicates that an unrecognized option was seen on an incoming TCP segment, implying some sort of data corruption or protocol stack incompatibility. If the message persists, contact Transition Networks for assistance.

TCP: Invalid state for CLOSE nnnnnnnn n

This message may indicate a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TCP: Invalid TCP checksum, possibly from nnn.nnn.nnn.nnn port nnnn**TCP: checksum calculated=nnnn transmitted=nnnn ln=nnnn**

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The checksum of an incoming TCP segment was invalid. This is usually due to the corruption of the datagram in transit. Note that the address displayed may be incorrect due to this corruption. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. Unless this message is displayed frequently or system operation is impaired, no corrective action is required. Excessive occurrences may indicate physical layer network problems resulting in packet corruption.

TCP: Not initialized

This message may indicate a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TCP_send fail n. tcb=nnnnnnnn buf=nnnnnnnn len=nnn state=n

This message may indicate a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TELNET: Change will become effective when this Telnet session ends.

Changes made via the "SET TNTRIP" or "SET TNTRIPMASK" commands take effect at the next *start* of a Telnet session, whether or not one is currently active.

TELNET: High-volume debug traces disabled. Old mask=nnnnnnnn

This message is displayed after a Telnet session with the management module is initialized. This is a notification that, due to reduced console throughput over Telnet, traces that are likely to cause large amounts of output have been disabled. Though it is not recommended, these traces may be re-enabled.

TELNET: An invalid login attempt was rejected. Password entered was:

This message is displayed on the console (serial) after an invalid attempt to log in to the Telnet server. A hexadecimal dump of the invalid password follows this message. The correct password is the private community string, and is case sensitive. The most common cause of an inability to complete a Telnet login is the use of a Telnet client that uses nonstandard TCP or Telnet options. Check for non-ASCII characters in the hexadecimal dump of the password, and look for other TCP or Telnet related error messages on the serial console. If either of these are found, try running your Telnet client in its simplest (i.e. most compatible) mode, or try using a different Telnet client. If neither of these are found, recheck that the password you are using is identical to the private community string. If you are still unable to log in, contact Transition Networks technical support for assistance.

TELNET: open failed

This message indicates that the Telnet server's attempt to begin listening for an incoming TCP connection was unsuccessful. This may be an indication of a latent software defect. Power cycle the management module. If the message persists, contact Transition Networks for assistance.

TELNET: Remote from nnn.nnn.nnn.nnn console disconnected.

This is a notification that an active Telnet console session has been terminated or that the Telnet server's network resources have been deallocated as part of reinitialization of the server, as happens when the Telnet security configuration is changed. An active session is terminated when the remote client actively disconnects from the management module's Telnet server, when the server is unable to contact the client, or when the LOGOFF command is entered.

TRANSMIT TIMEOUT

This unsolicited message is displayed when an unusual hardware or software condition is detected. The Ethernet controller did not confirm completion of a transmit command. This may indicate a hardware failure. Power cycle the Management Module. If the message persists, call Transition Networks for assistance.

<TX>

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. An Ethernet transmit attempt was made. To eliminate these messages, use the "TM=mask" command to disable the traces.

[TX error]

This is an advanced debug message that should only be displayed when debug traces have been enabled at the advice of Transition Networks technical support. This unsolicited message is displayed when an unusual condition is detected by the Ethernet controller. This message indicates that a transmit attempt was aborted due to excessive collisions. The Ethernet controller is reset as a precaution. To eliminate this message, use the "TM=mask" command to disable the traces.

UDP: Incoming datagrams with invalid checksums are being discarded.

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. This message is displayed the first time a datagram with an invalid UDP checksum is received, and for every 256 such datagrams after that. Excessive occurrences may indicate physical layer network problems resulting in packet corruption.

UDP: Invalid UDP checksum, possibly from *nnn.nnn.nnn.nnn* port *nnnn*

UDP: checksum calculated=*nnnn* transmitted=*nnnn* In=*nn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The checksum of an incoming UDP datagram was invalid. This is usually due to the corruption of the datagram in transit. Note that the address and port displayed may be incorrect due to this corruption. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. Excessive occurrences may indicate physical layer network problems resulting in packet corruption.

UDP: Unsupported destination port *nnn* from *nnn.nnn.nnn.nnn*

This unsolicited message is displayed in response to a packet that arrived at the Ethernet interface. The datagram is addressed to a service not supported by the Management Module. For example, if another station attempts to communicate with the UDP TFTP service on the Management Module, this message will be displayed since the Management Module does not support TFTP. The only supported port is SNMP. This message is printed only when the appropriate traces are enabled via the "TM=mask" command. This message does not indicate an error condition. No corrective action is required.

UNEXPECTED EXCEPTION, SP=*nnnnnnnn* PC=*nnnnnnnn* SR=*nnnnnnnn*

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

Using Management Module Command-line Interface (CLI)

Usage: PING=*nnn.nnn.nnn.nnn*

This message is a response to a console command. This indicates a syntax error in the entry of a PING command. Enter "PING" to use the last valid PING address provided, or "PING=a.b.c.d" where a, b, c, and d are decimal integers from 0 to 255. No white space is permitted anywhere in the command. This message is also displayed when the command form "PING" is entered but no valid IP address has been entered via a previous "PING=a.b.c.d". This message is also displayed when the IP address 0.0.0.0 is entered. It is not possible to ping this address.

Use the SAVE command to make the current configuration permanent.

This message is a response to a configuration change made from the console or via SNMP. The configuration has changed since the last restart of the Management Module. The changes made will be lost the next time the Management Module is reset, rebooted, or power cycled - unless they are saved in FLASH memory as suggested. You must first enter super-user mode by entering the "SU=password" command to make the SAVE command accessible.

USER BREAK, SP=*nnnnnnnn* PC=*nnnnnnnn* SR=*nnnnnnnn*

This unsolicited message is displayed when an unusual hardware or software condition is detected. This message indicates a latent software defect or a hardware failure. Call Transition Networks for assistance.

WARNING: Gateway IP address is undefined. (Use SET GATEWAY= *command*)

This message can be displayed at system startup and whenever the Management Module's IP parameters are changed via console command or SNMP PDU. The default value for the Management Module's gateway IP address is 0.0.0.0, which is invalid. A gateway IP address must be assigned to the Management Module before it can communicate with any station that is not on the same logical IP subnetwork.

WARNING: Local IP address is undefined. (Use SET IP= *command*)

This message can be displayed at system startup and whenever the Management Module's IP parameters are changed via console command or SNMP PDU. The default value for the Management Module's IP address is 0.0.0.0, which is invalid. An IP address must be assigned to the Management Module before it can be accessed via a management station.

WARNING: Local IP *nnn.nnn.nnn.nnn* and gateway IP *nnn.nnn.nnn.nnn* are not on the same subnet under subnet mask *nnn.nnn.nnn.nnn*

This message can be displayed at system startup and whenever the Management Module's IP parameters are changed via console command or SNMP PDU. This message indicates that the gateway is not on a locally attached network (i.e. the 'network' bits in the local IP address are not the same as the corresponding bits in the gateway address) and is therefore unreachable. This probably means that there has been an error configuring the local IP address, the gateway address, or the subnet mask. The most likely result of this is that all IP datagrams not destined for stations on the local subnet will be lost. To fix this problem, choose a local IP address, a gateway IP address, and a subnet mask that are compatible, and enter them into the system via the "SET IP=ip", "SET GATEWAY=ip", and/or "SET NETMASK=mask" commands, then enter the "SAVE" command to make the changes permanent.

WARNING: Saved configuration settings missing or corrupt.

This is a system startup message. This message is normal on a new Management Module or (sometimes) on a Management Module whose firmware has been updated. When this message appears, the Management Module's network interface is disabled. The user should (at a minimum) enter an IP address (via the "SET IP=ip" command), a subnet mask (via the "SET NETMASK=mask" command), and a gateway address (via the "SET GATEWAY=ip" command), then enter the "SAVE" command. If this procedure does not eliminate the message, call Transition Networks for assistance.

WARNING: Subnet mask is undefined. (Use SET NETMASK= command)

This message can be displayed at system startup and whenever the Management Module's IP parameters are changed via console command or SNMP PDU. The default value for the Management Module's subnet mask is 0.0.0.0, which is invalid. A subnet mask must be assigned to the Management Module before it can communicate with any station that is not on the same logical IP subnetwork.

nnnnnnnn=nnnn
nnnnnnnn==nnnn

This is an advanced debug message that should be displayed only when debug traces have been enabled at the advice of Transition Networks Technical Support. These messages show I/O operations to the Ethernet chip. At the left is the I/O address being read/written, at the right is the value being *read* (==) or *written* (=). To eliminate these messages, use the "TM=mask" command to disable the traces.

4.2.5 Command-line Interface Trace Masks

The trace mask, set using the **TM=** command and always entered and displayed in hex, is the combination of all of the currently selected traces - each represented by a single bit.

To see a list of the available (and currently active) trace masks, at the command line interface, enter

?TM

Currently active trace masks are indicated by an asterisk.

NOTE: The default mask is hex 8101 - local SNMP trap condition + checksum + ICMP errors

Using trace masks (other than the default) is not recommended except on the specific advice of Transition Networks Technical Support. Trace masks may impair the Management Module's operation due to the large amount of console output they can cause if the network segment is carrying even light traffic.

NOTE: *When the console output queue (which holds roughly 30 lines of text by default) is full, new console messages are discarded without notice.*

4.2.6 Traps

When urgent, unexpected conditions occur, the Media Conversion Center Management Module is able to send the following unsolicited messages, called traps, to a designated station.

COLDSTART (defined in RFC 1157)

Signifies that the MCC-1600 is re-initializing itself due to power cycle, user command, or system crash.

POWER SUPPLY STATE CHANGE (defined in E-MCC-1600.MIB)

Indicates that one of the unit's redundant power supplies either has become active or has become inactive.

ERROR (defined in E-MCC-1600.MIB)

Indicates that a monitored entity was 'operational' the previous time it was checked, and is currently either 'down' or 'non-existent.'

NOTE: 'Monitored entities' are physical status LEDs that monitor the network connection, such as 'Inserted' (Token-Ring) or 'link' or 'Jabber' (Ethernet). For Media Converter Slide-In-Modules that have no such indicators, the Power LED is monitored so that the removal of the converter from the chassis can be reported.

ERROR CLEAR (defined in E-MCC-1600.MIB)

Indicates that a monitored entity that was either 'down' or 'non-existent' the previous time it was checked is currently 'operational.'

NOTE: The ERROR CLEAR trap generally complements the ERROR trap, but it is possible to receive an ERROR CLEAR without first receiving an ERROR, and vice versa.

4.3 Using Remote SNMP

The Management Module supports the standard SNMP protocol, which means that any SNMP-compliant NMS can be used to monitor the E-MCC-1600 and installed Slide-In-Modules.

Please see your reseller for a copy of TN-View, a software package that allows the Media Conversion Center to be displayed graphically.

5 MAINTENANCE

Maintenance direction provided in this section for the Media Conversion Center includes:

5.1	<i>Fault Isolation and Recovery</i>	5.2
5.1.1	At the Remote Network Management Station	5.2
5.1.2	At the Chassis Front or Back	5.4
5.2	<i>Hardware Replacement Procedures</i>	5.6
5.2.1	Replacing Media Converter Slide-In-Module	5.6
5.2.2	Replacing Fuse on Standard Power Supply Module	5.7
5.2.3	Replacing Standard Power Supply Module	5.8
5.2.4	Replacing 48V Power Supply Module	5.10
5.2.5	Replacing Management Module	5.12
5.3	<i>Firmware Upgrades</i>	5.13

5.1 Fault Isolation and Recovery

Fault isolation and recovery involving the Media Conversion Center or a Media Converter Slide-In-Module begins at the network location most convenient for the network administrator.

5.1.1 At the Remote Network Management Station

At the remote Network Management Station (NMS), use the installed SNMP network management software to validate the connection between the NMS and the Media Conversion Center.

- **Determine if the Media Conversion Center is receiving but rejecting SNMP requests from the NMS.**

Error messages from the SNMP management application such as "No Such Name," "Read Only," "Access Denied," "Request Rejected" may indicate that the Media Conversion Center Management Module is receiving, but failing to process, requests from the SNMP management application.

If the Management Module is receiving but rejecting the Manager's requests, a configuration mismatch (possibly induced by changes at the NMS) is indicated. Referring to documentation for the SNMP management application at the NMS, install the correct MIB document into the SNMP management application. Enter the same community names into the SNMP management application and the Media Conversion Center Management Module.

- **Determine if the NMS can display SNMP data from network devices other than the Media Conversion Center Management Module.**

Refer to documentation for the SNMP management application for the appropriate diagnostic method(s) to use to verify that NMS access to the network has not been interrupted.

If NMS access to the network has been interrupted, refer to documentation and/or technical support for the NMS.

- **Determine if the NMS has an up-to-date map of the network (including DNS names, if applicable).**

Refer to documentation for the SNMP management application for appropriate diagnostic method(s) to use to verify that the DNS names and IP addresses for the DNS server, the SNMP management application at the NMS, and the Media Conversion Center Management Module all match.

If the addresses do NOT match, refer to documentation for the DNS server, the SNMP management application at the NMS, and/or the Media Conversion Center Management Module for direction for modifying the addresses to correct the discrepancy.

- **Determine if the NMS can PING the Media Conversion Center**

Management Module.

Refer to documentation for the SNMP management application for direction for entering the PING command and specifying the DNS name of the Media Conversion Center Management Module.

If the PING is successful, SNMP traffic may be blocked by a router or firewall or the fault may be in the SNMP management application. Check configuration of all network devices between Management Station and the Management Module to ensure that none are filtering SNMP traffic. Recheck configuration and operation of the SNMP management application.

If PING reports that a DNS name is invalid, the NMS may be unable to reach the DNS server because of an incorrect NMS configuration, a network fault, or a problem with the DNS server. Try PINGing the Media Conversion Center Management Module IP address instead of the DNS name. If this works, investigate possible problem with NMS DNS configuration, a mismatch between the IP address in the Media Conversion Center Management Module and the entry in the DNS server, or some other problem with the DNS server.

- **Determine if the NMS can PING other stations on the same IP subnet as the Media Conversion Center Management Module.**

Refer to documentation for the SNMP management application for direction for entering the system PING command and specifying the IP address or DNS name of an IP station on the same IP subnet as the Media Conversion Center Management Module.

If the PING is successful, SNMP traffic may be blocked by a router or firewall or by a fault in the SNMP management application.

If the PING fails, investigate an invalid IP configuration in the SNMP management application.

NOTE: An incorrect subnet mask may permit access to some, but not all, of a remote subnet.

- **Determine if a computer on the same IP subnet as the Media Conversion Center Management Module can PING the Media Conversion Center Management Module.**

Referring to the computer's networking utilities documentation, enter the PING command, specifying the IP address or DNS name of the Media Conversion Center Management Module.

If the PING is successful, investigate an invalid subnet mask and/or gateway address in the Media Conversion Center Management Module IP configuration.

If the PING fails, look for a fault other than in communication between the SNMP management application and the Media Conversion Center Management

5.1.2 At the Chassis Front or Back

At the Media Conversion Center, examine the hardware and connections.

Determine if RESET corrects the problem.

Press the RESET button on the Media Conversion Center Management Module and observe the results.

Determine if the Media Conversion Center is receiving power.

Inspect power LED indicators at the front of the Media Conversion Center. At least one of the two **In Use** LED indicators should be illuminated. If not, check the power LED indicator on the power supply installed at the rear of the Media Conversion Center.

Failure may indicate:

- Loss of AC power at outlet
- Unit unplugged
- Power switch OFF
- Fuse blown
- Power supply not seated in its slot
- Power supply failed.

If fuses blow repeatedly, have the AC outlet inspected by a qualified electrician. If no “power” or “in-use” indicators on the front of the chassis are illuminated but power indicators on the rear of the chassis are illuminated, unplug the power supply from the AC outlet, pull it out of its slot and re-seat it. If these and the other obvious corrective actions fail, contact Transition Networks technical support.

Determine if the Management Module is receiving power.

Verify that the Management Module power indicators on the front of the chassis and on the back of the Management Module are illuminated installed at the rear of the Media Conversion Center.

Failure may indicate:

- Management Module not properly seated in its slot
- Management Module failure
- Media Conversion Center failure.

If reseating the Management Module in its slot does not cause the power LED indicator to be illuminated, contact Transition Networks Technical Support.

Determine if the Media Conversion Center Management Module is connected to an active 10BASE-T Ethernet port.

NOTE: On a network that is too quiet, this test will not be possible.

The **RX** LED indicator should blink every time a network broadcast is transmitted. The **TX** LED indicator should blink every time the Management Module responds.

Failure may indicate:

- Media Conversion Center Management Module connection to the network has failed.

Verify the integrity of the 10BASE-T hub/switch port into which the Media Conversion Center Management Module is attached and of the 10BASE-T twisted pair Ethernet cable that leads from the hub/switch to the Media Conversion Center Management Module.

NOTE: 100BASE-TX, Token-Ring, and other network media are NOT supported by the Media Conversion Center Management Module.

If a network tester is not available, verify the network path by unplugging the Ethernet cable from the back of the Media Conversion Center Management Module and plugging the cable into a replacement station (such as a PC – not a hub or a switch) to verify network connectivity. If the 10BASE-T replacement station can communicate with the network and the TX and RX LED indicators on the Media Conversion Center Management Module still do not respond when the same cable is attached, contact Transition Networks Technical Support.

5.2 Hardware Replacement Procedures

WARNING: The 16-Slot Media Conversion Center contains no user-serviceable parts. **DO NOT, UNDER ANY CIRCUMSTANCES, open and attempt to repair 16-Slot Media Conversion Center equipment.** Failure to observe this warning could result in personal injury or death from electrical shock.

NOTE: Failure to observe the above warning will immediately void any warranty.

5.2.1 Replacing Media Converter Slide-In-Module

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Media Converter Slide-in-Module(s) in the 16-Slot Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter Slide-in-Module(s).

NOTE: The Media Converter Slide-in-Modules are hot-swappable.

To replace a Media Converter Slide-in-Module in the E-MCC-1600 chassis:

1. Remove Media Converter Slide-in-Module to be replaced by rotating and removing one (1) screw that secures Slide-in-Module to E-MCC-1600 chassis front and sliding Media Converter Slide-In-Module from E-MCC-1600 chassis.
2. Carefully slide replacement Media Converter Slide-in-Module into installation slot.

NOTE: Ensure that the Media Converter Slide-in-Module is firmly seated against the backplane.

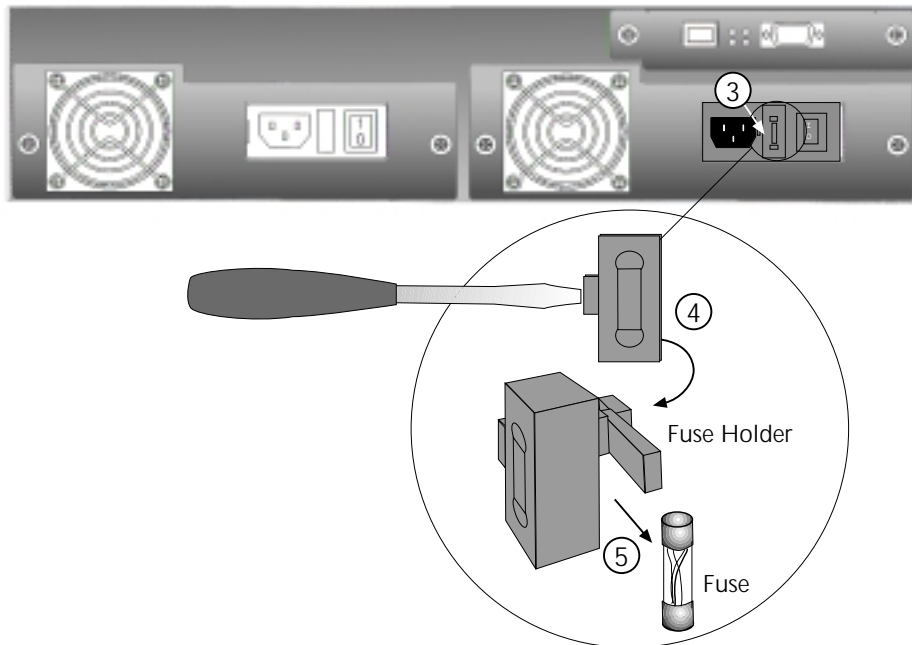
3. Secure Media Converter Slide-in-Module by carefully rotating installation screw clockwise.

5.2.2 Replacing Fuse on Standard Power Supply Module

CAUTION: Replace fuse only with same size and rating. Failure to observe this caution could result in equipment damage.

To replace a Power Supply Module fuse:

1. Disconnect outlet end of power cord from AC wall socket.
2. At *Media Conversion Center back*, disconnect power cord from Power Supply Module power receptacle.
3. From inside edge of power receptacle, insert small flat blade screwdriver into groove on front inside edge of fuseholder and carefully pry fuse holder (with installed fuse) from Power Supply Module.



4. Rotate fuse holder to display fuse.
5. Carefully remove fuse from fuse holder.
6. Install **same size and rating** replacement fuse in fuse holder.
7. Return fuse holder and fuse to installation position in Power Supply Module.

NOTE: Snap fuse holder into place.

8. Connect power cord to Power Supply Module power receptacle.
9. Connect power cord to AC wall socket.
10. Verify that POWER LED at front of 16-Slot Media Conversion Center is illuminated.

5.2.3 Replacing Standard Power Supply Module

CAUTION: When installing a Power Supply Module that has a Master/Slave switch in a chassis with a Power Supply Module that does not have a Master/Slave switch, the Power Supply Module with the Master/Slave switch must be configured as primary (master).

When installing two Power Supply Modules that have Master/Slave switches, at least one Power Supply Module must be configured as primary (master). Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module(s).

WARNING: Do NOT connect Power Supply Module to AC power before installing in Media Conversion Center. Failure to observe this caution could result in equipment damage and/or personal injury or death.

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Power Supply Module in the 16-Slot Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Power Supply Module.

To replace a Power Supply Module in the E-MCC-1600 chassis:

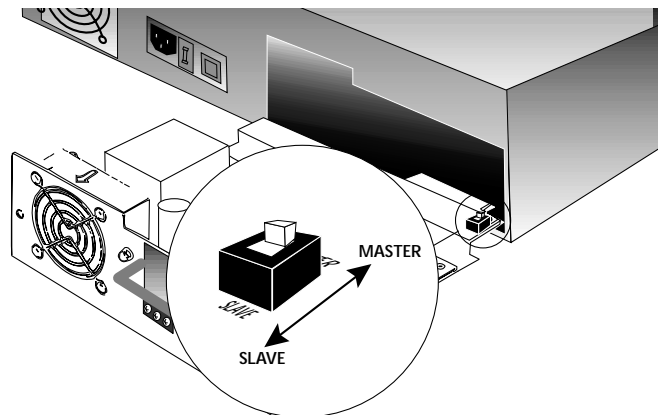
Remove Faulty Power Supply Module from Chassis

1. Disconnect outlet end of power cord from AC wall socket.
2. *At Media Conversion Center back*, disconnect power cord from power receptacle of Power Supply Module to be replaced.
3. Remove Power Supply Module to be replaced by removing two (2) screws that secure Power Supply Module to E-MCC-1600 chassis front and sliding Power Supply Module from chassis.

NOTE: Retain screws for installing replacement Power Supply Module.

Set Replacement Power Supply Module Master/Slave Switch, if Applicable

1. Determine if Master/Slave switch is installed on Power Supply Module.



NOTE: If Master/Slave switch is installed on ANY Power Supply Module installed in chassis, ensure that at least one Power Supply Module in the E-MCC-1600 chassis is configured as the primary (master) Power Supply Module.

2. Set Master/Slave switch, if necessary.

To configure the Power Supply Module as the primary (master) Power Supply Module, set Master/Slave switch to position labeled "MASTER".

To configure the Power Supply Module as the secondary (slave) Power Supply Module, set Master/Slave switch to position labeled "SLAVE".

Install Replacement Power Supply Module in Chassis

1. Carefully slide replacement Power Supply Module into installation slot, aligning Power Supply Module with installation guides:

NOTE: Ensure that the Power Supply Module is firmly seated against the chassis backplane.

2. Carefully install two (2) retained screws through Power Supply Module into Media Conversion Center chassis, rotating clockwise to secure.

Connect to Power

1. Connect female end of power cord to power receptacle on Power Supply Module.
2. Plug male end of power cord into correct voltage AC rack or wall socket.
3. Set Power Supply Module power switch to "I".
4. Verify that Media Conversion Center is powered by observing illuminated Power LED and fan operation.

5.2.4 Replacing 48V Power Supply Module

CAUTION: When installing a Power Supply Module that has a Master/Slave switch in a chassis with a Power Supply Module that does not have a Master/Slave switch, the Power Supply Module with the Master/Slave switch must be configured as primary (master).

When installing two Power Supply Modules that have Master/Slave switches, at least one Power Supply Module must be configured as primary (master). Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module(s).

WARNING: Do NOT connect Power Supply Module to AC power before installing in Media Conversion Center. Failure to observe this caution could result in equipment damage and/or personal injury or death.

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Power Supply Module in the 16-Slot Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Power Supply Module.

To replace a Power Supply Module in the E-MCC-1600 chassis:

Remove Faulty Power Supply Module from Chassis

1. Set 48 VDC Power Supply Module power switch to "0".
2. Disconnect +48 VDC terminal to Media Conversion Center terminal block control marked "+" by turning terminal screw counter-clockwise.
3. Disconnect -48 VDC terminal to Media Conversion Center terminal block control marked "-" by turning terminal screw counter-clockwise.
4. Disconnect ground terminal to Media Conversion Center terminal block control marked "chassis ground" by turning terminal screw counter-clockwise.
5. Remove Power Supply Module to be replaced by removing two (2) screws that secure Power Supply Module to E-MCC-1600 chassis front and sliding Power Supply Module from chassis.

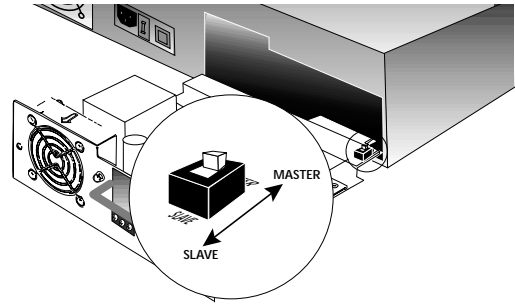
NOTE: Retain screws for installing replacement Power Supply Module.

Set Replacement Power Supply Module Master/Slave Switch, if Applicable

1. Determine if Master/Slave switch is installed on Power Supply Module.

NOTE: If Master/Slave switch is installed on ANY Power Supply Module installed in chassis, ensure that at least one Power Supply Module in the E-MCC-1600 chassis is configured as the primary (master) Power Supply Module.

2. Set Master/Slave switch, if necessary.



To configure the Power Supply Module as the primary (master) Power Supply Module, set Master/Slave switch to position labeled "MASTER".

To configure the Power Supply Module as the secondary (slave) Power Supply Module, set Master/Slave switch to position labeled "SLAVE".

Install Replacement Power Supply Module in Chassis

1. Carefully slide replacement Power Supply Module into installation slot, aligning Power Supply Module with installation guides:

NOTE: Ensure that the Power Supply Module is firmly seated against the chassis backplane.
2. Carefully install two (2) retained screws through Power Supply Module into Media Conversion Center chassis, rotating clockwise to secure.

Connect to Power

CAUTION: Ensure that power source is **NOT** powered and that 48 VDC power ON/OFF switch is set to "O" when connecting to Power Supply Module. Failure to observe this caution could result in damage to, and subsequent failure of, Power Supply Module.

1. Connect +48 VDC terminal to Media Conversion Center terminal block control marked "+". Turn terminal screw clockwise to secure.
2. Connect -48 VDC terminal to Media Conversion Center terminal block control marked "-". Turn terminal screw clockwise to secure.
3. Connect ground terminal to Media Conversion Center terminal block control marked "chassis ground". Turn terminal screw clockwise to secure.
4. Set 48 VDC Power Supply Module power switch to "I".
5. Verify that Media Conversion Center is powered by observing illuminated Power LED and fan operation.

5.2.5 Replacing Management Module

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing Management Module in the 16-Slot Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Management Module.

NOTE: The 16-Slot Media Conversion Center Management Modules are hot-swappable.

To replace a 16-Slot Media Conversion Center Management Module in the E-MCC-1600 chassis:

1. At *Media Conversion Center back*, remove Management Module to be replaced by removing two screws that secure Management Module to back of E-MCC-1600 and sliding Management Module from E-MCC-1600 chassis.

NOTE: Retain screws for installing replacement Management Module.

2. Carefully slide replacement Management Module into installation slot, aligning the Management Module with the installation guides.

NOTE: Ensure that the Management Module is firmly seated against the backplane.

3. Secure Management Module by carefully rotating installation screws clockwise.

5.3 Firmware Upgrades

CAUTION: The MCC-1600 software cannot check to ensure that the firmware is compatible with installed hardware. Incorrect firmware downloads **WILL** damage the Management Module, **NECESSITATING FACTORY SERVICE**. If in doubt, abort the upgrade and contact Transition Networks Technical Support for assistance.

CAUTION: If the 'WRITE' phase is interrupted or fails for any reason, the Management Module will be damaged, **NECESSITATING FACTORY SERVICE**. Use of a battery-backed uninterruptible power supply is **HIGHLY** recommended.

NOTE: The firmware download command "XR" is unavailable when a telnet session is active. The Management Module's firmware can only be upgraded via the serial port.

NOTE: Firmware update may cause all saved settings to be lost.

NOTE: Do NOT transfer a ZIP file. UnZIP the ZIP file and transfer the binary file contained in the ZIP file. (Firmware files are NOT automatically extracted from ZIP files.)

To upgrade the firmware:

1. Obtain new firmware by contacting Transition Networks Technical Support.
2. Initiate the MCC-1600 end of X-modem transfer by entering the following two commands at the MCC-1600 command-line prompt:

```
MCC16> su=private  
[su] MCC16> xr
```
3. Enter terminal-emulator specific commands to initiate the terminal emulator end of the X-modem transfer to cause the file to be transferred. When file transfer is complete, the new code will be written into flash memory and the Management Module will reboot.

Appendix A. E-MCC-1600 Technical Specifications

Dimensions

Chassis

17" x 14" x 3.5"
(430 mm x 356 mm x 89 mm)

Media Converter Modules



3" x 1" x 4.7"

Power Supply Modules

7.5" x 2.7" x 7.8"

Management Module

5.3" x 0.8" x 7.7"

		DECLARATION OF CONFORMITY
Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 USA	
Model:	Media Conversion Center Chassis	
Part Number:	E-MCC-1600	
Regulation:	EMC Directive 89/336/EEC	
Purpose:	To declare that the E-MCC-1600 to which this declaration refers is in conformity with the following standards.	
	EMC-CISPR 22: 1985 Class A; EN 55022: 1988 Class A; EN 50082-1:1992; EN 60950 A4:1997; IEC 801.2, IEC 801.3, and IEC 801.4; IEC 950	
	<i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</i>	
	 Stephen Anderson, Vice-President of Engineering	April 8, 1999 Date

Shipping Weight

Chassis

12 Lbs

Universal Power Supply

Input Range: 85 to 265 VAC at 47 to 63 Hz. Rated at 110 watts maximum.

NOTE: Power supply modules supply +12VDC at 9A maximum. Only one power supply module provides power to the chassis and installed modules; the second power supply is used if the first fails.

AC Input:

TN P/N	Requirement	Location
3344	120 volts, 60 hertz	USA/Canada/Mexico
3344	100 volts, 50-60 hertz	Japan
3347	230 volts, 50 hertz	Europe
3348	240 volts, 50 hertz	Australia
3349	240 volts, 50 hertz	United Kingdom

Environment

Temperature:	0-50°C (32° to 122° F)
Humidity	10-90%, non condensing
Altitude	0-10,000 feet

Warranty

Lifetime

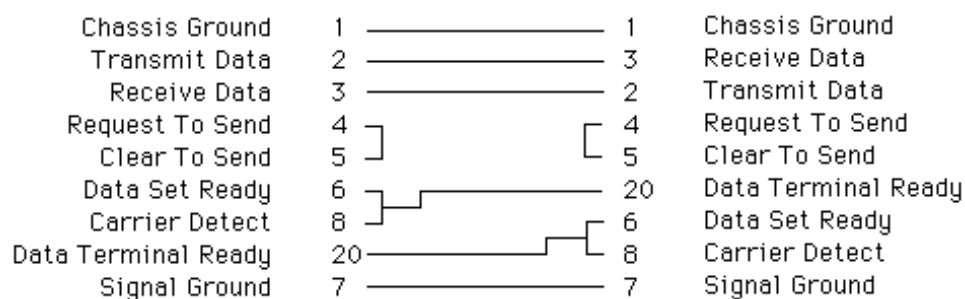
Appendix B. Null Modem Cable Specifications

The DD9 cable is used for connecting a terminal or terminal emulator to the Media Conversion Center Management Module to access the command-line interface.

The table below shows the pin assignments for the DB9 cable.

Function	Mnemonic	Pin
Carrier Detect	CD	1
Receive Data	RXD	2
Transmit Data	TXD	3
Data Terminal Ready	DTR	4
Signal Ground	GND	5
Data Set Ready	DSR	6
Request To Send	RTS	7
Clear To Send	CTS	8

25 Pin RS-232 Null Modem Cable



Appendix C. Introduction to SNMP in the E-MCC-1600

NOTE: A protocol is a set of rules that governs data transmission and reception. The Simple Network Management Protocol (SNMP) is an Internet protocol (as are protocols such as the Transmission Control Protocol (TCP) and Internet Protocol (IP)). SNMP was developed in the mid-1980's as an interim response to communication barriers encountered among different types of networks. Formally specified in a series of related Request for Comment (RFC) documents, SNMP is becoming the de facto Internet network management standard.

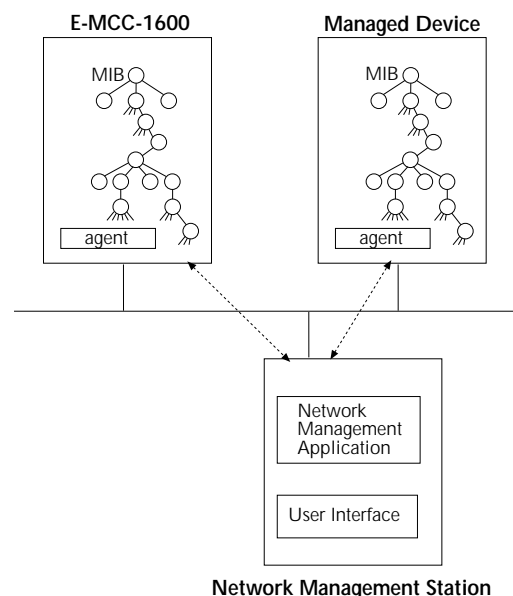
SNMP is a protocol that defines network communication between a **Managed Device** (such as the E-MCC-1600) and the network administrator at a **Network Management Station**. The SNMP protocol uses simple **Operations** on a set of variables on the managed device (called instances of **Managed Objects**) to allow the network administrator to monitor and to control the managed device from a remote location.

Managed Device A managed device is a hardware unit with embedded SNMP software (including a **Management Information Base (MIB)** – the set of managed objects on that managed device – and an **agent** – the software that monitors the data in the MIB) connected to a network with SNMP management available. *NOTE: An E-MCC-1600 with installed Media Converter Modules, and with an installed Management Module, is a single managed device.*

Network Management Station (NMS) A network management station (NMS) is a high-end workstation, also connected to the network, that provides **SNMP network management application software** and a **user interface**. *NOTE: An optional network management application and user interface for the E-MCC-1600 are provided by SNMPc™ software from CastleRock Computing installed on a network Windows™ PC.*

SNMP Operations SNMP is a simple *request-response* protocol with four defined operations: GET, GET-NEXT, SET, and TRAP. To monitor (read) the managed device, the network administrator initiates, through the user interface to the network management application on the NMS, the GET and GET-Next operations on selected called instances of managed objects (variables) in the managed device MIB. To control (write) the managed device, the network administrator initiates, through the user interface to the network management application on the NMS, the SET operation on selected instances of managed objects in the managed device MIB. The SNMP agent on the managed device initiates the trap operation to alert the network administrator, through the user interface to the network management application on the NMS, of instances of MIB-defined asynchronous events on the managed device.

Managed Objects Managed objects are the types of information on a managed device that can be identified and collected by SNMP agent software and that can be made available to the network administrator through the user interface on the NMS. Managed objects can be scalar (a single object instance – such as the E-MCC-1600 network IP address) or tabular (related instances – such as the various LED displays on a Media Converter Module installed in the E-MCC-1600).



MIBs and Object Identifiers

The Management Information Base (MIB) is the set of managed objects on a managed device and is depicted as an abstract tree with unnamed root, as shown in the diagram.

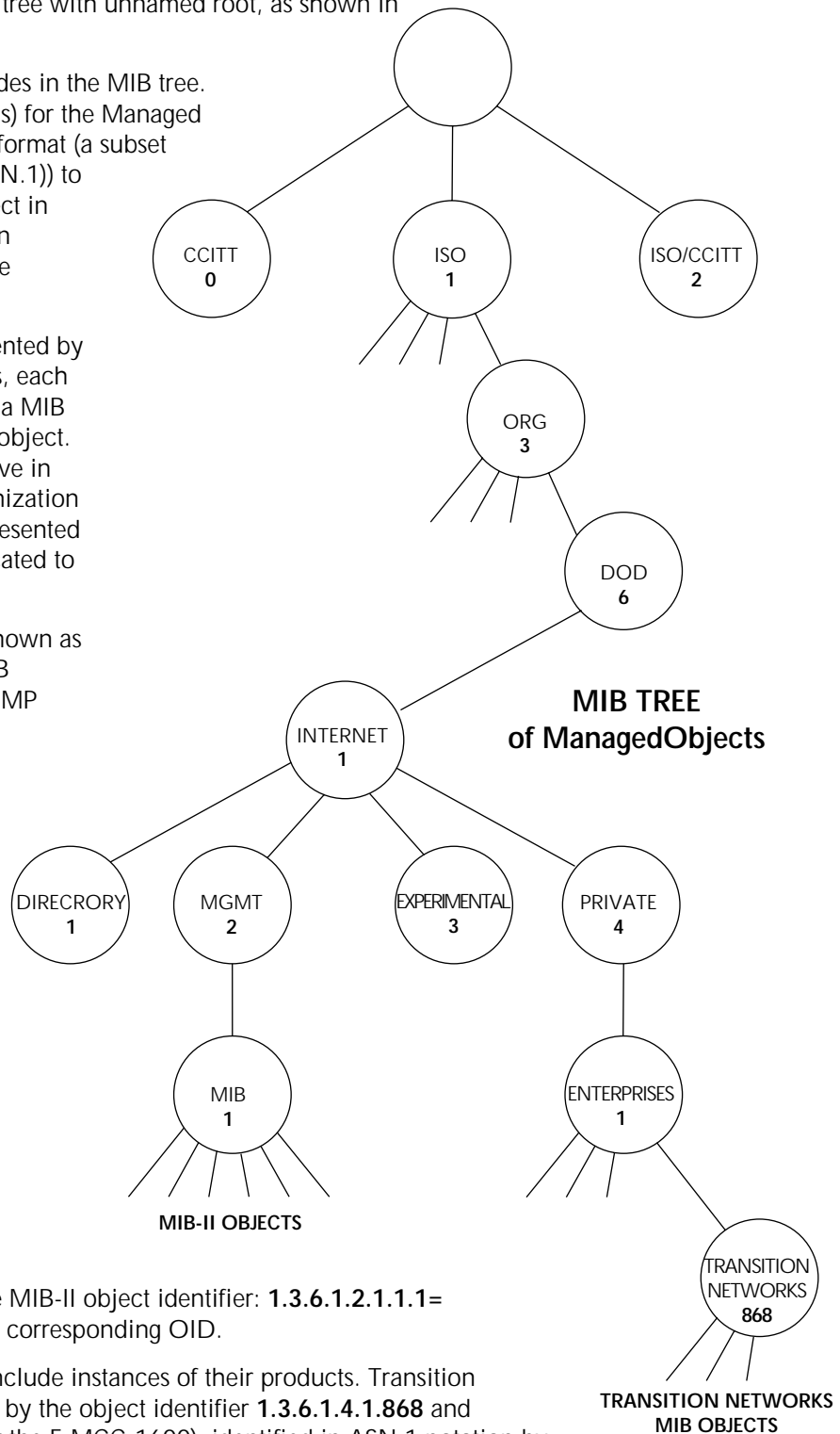
Managed Objects are depicted as nodes in the MIB tree. Object identifiers (object IDs, or OIDs) for the Managed Objects use a machine-independent format (a subset of the Abstract Syntax Notation 1 (ASN.1)) to uniquely identify each managed object in the MIB tree. NOTE: Abstract notation allows communication among diverse networks.

OIDs in the ASN.1 syntax are represented by a structured series of positive integers, each separated by a period, that "follows" a MIB path to uniquely identify a managed object. (MIB development is particularly active in the portion of the International Organization for Standardization (ISO) branch represented by object identifier 1.3.6.1 and dedicated to the Internet community.)

The current Internet-standard MIB (known as MIB-II, with OID 1.3.6.1.2.1) is a MIB module typically supported by all SNMP agents on TCP/IP enabled devices or systems. MIB-II contains 171 objects grouped by protocol (including TCP, IP, UDP, SNMP), with other identifiers, including **system (1)** and **interfaces (2)**. This MIB file contains a description of the object hierarchy on the managed device, as well as the OID, syntax and access privileges for each variable in the MIB.

The network administrator can use an OID: 1.3.6.1.2.1.1 to identify MIB II "system description" data to an SNMP agent. The network administrator also can use the associated label, **sysDescr**, to identify the same data to the SNMP agent, since the SNMP agent uses the MIB-II object identifier: 1.3.6.1.2.1.1.1=**sysDescr** to translates the label to the corresponding OID.

Vendors define private branches to include instances of their products. Transition Networks' private MIB is represented by the object identifier 1.3.6.1.4.1.868 and includes objects such as "**chassis**" (for the E-MCC-1600), identified in ASN.1 notation by OID 1.3.6.1.4.1.868.2.4 with the associated label "**mcc16ComIpAddr**" (the E-MCC-1600 IP address), which is identified in ASN.1 notation by OID 1.3.6.1.4.1.868.2.4.2.1.1.4.



Appendix D. Displaying the E-MCC-1600 MIB Tree

Some users find it helpful to have access to a list of the MIB variables that are supported by the E-MCC-1600's SNMP agent (for example when formulating specialized SNMP queries or when attempting to determine whether or not the firmware in the agent contains support for a new device).

The list of supported variables expands frequently as new Media Conversion products are introduced. Therefore, this list is not included in the printed documentation. However, the Management Module CLI contains a OID to Text translation table, which serves as a list of the MIB variables that are supported by any given firmware revision. This list can be displayed in its entirety or searched by OID or variable name using the "?=" command.

Displaying MIB Variables

Example 1: Displaying the names and OIDs of all MIB variables related to a media converter.

Each media converter-related MIB variable has a prefix that is simply the media converter model name with all punctuation removed. Therefore, the following command will display the names and OIDs of all MIB variables related to the C/E-TBT-FRL-03:

```
MCC16> ?=cetbtfr103
```

Example 2: Displaying the names and OIDs of all MIB variables that have to do with LINK:

```
MCC16> ?=link
```

Example 3: Displaying the names and OIDs of all supported items in the mib-2.system group:

```
MCC16> ?=1.3.6.1.2.1.1
```

Displaying the Entire MIB Tree

The information in this section is useful in displaying large quantities of MIB data.

NOTE: The Management Module's CLI contains a setting that limits the amount of memory that can be allocated for queueing console output. The default (and recommended) value for this setting is too small to permit the entire MIB table to be displayed. (The message "[console overflow]" will be displayed when the limit is exceeded.)

To display the entire MIB table, refer to the example below. Note the use of the "sql" command to temporarily increase the amount of buffer space available for console output. This is followed by the command "?=" which searches the MIB entries for a period. (Since every entry contains a period, all entries are displayed.)

NOTE: It is highly recommended that "sql" be returned to the default value after the MIB has been displayed. Failure to do this may result in impaired system performance. The example assumes that the system

prompt and private community string have not been changed from their default values of "MCC16" and "private" respectively.

```
MCC16> su=private
```

```
Super-user mode on.
```

```
[su] MCC16> sql=20000
```

```
Serial queue limit changed from 2000 to 20000 bytes
```

```
[su] MCC16> ?=.
```

(the MIB is displayed here)

```
[su] MCC16> sql=20000
```

```
Serial queue limit changed from 20000 to 2000 bytes
```

```
[su] MCC16> su
```

```
Super-user mode off.
```

Appendix E. SNMP GLOSSARY

ARP	Address Resolution Protocol Method for determining Ethernet address from IP address.
binding	See 'variable binding.'
flash	Memory that retains its contents when power is disconnected.
MIB	Management Information Base. The types, names, and OID tree structure of a group of SNMP variables. Manifested in software on the managed network entity and in a text document for the managing station. [The objects that are available in a managed system. The information is represented in Abstract Syntax Notation 1 (ASN.1)]
ICMP	Internet Control Message Protocol. A set of information, error, and control messages used on IP networks. For more information, see RFC 792, Internet Control Message Protocol, available via anonymous FTP from NIC.DDN.MIL.
IP	Internet Protocol. A network layer protocol whose primary responsibility is routing.
Object Id	A "name" for a particular piece of SNMP data. for example, a GET operation on the object id "1.3.6.1.2.1.1.1.0" returns a string describing the managed system. This same OID is used for every system that supports the system description variable. The dotted numeric value is used instead of a simple text name so that a tree structure can be implied in the name.
OID	Object ID See above.
get	An SNMP 'read' operation in which the data associated with a specific, exact object id is returned.
getnext	An SNMP 'read' operation where the data returned is the data associated with the object id that is numerically 'next.' e.g. a GETNEXT operation on the object id 1.3.6.1.2.1.1.1.0 would return the Object ID 1.3.6.1.2.1.1.2.0 and the data associated with it.
PDU	Protocol Data Unit. An SNMP operation encoded for network transmission.
Protocol	The formal set of rules on coding, formatting and timing of inputs and outputs between communicating devices.
set	An SNMP 'write' operation.
SNMP	Simple Network Management Protocol An application layer protocol that allows remote management of networked devices.
SMI	Structure of Management Information.

UDP	User Datagram Protocol. A connectionless transport layer protocol used in IP networks; provides an end-to-end interface for use by applications. This protocol carries SNMP as a payload, and is carried as a payload by IP.
variable binding	A subsection of a PDU. A variable binding contains an Object ID and the data value associated with that Object ID.
XMODEM/CRC	A protocol commonly used to transfer files across an RS-232 link.

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