Hardware Installation and Maintenance Manual

MAXserver™ 1600 and 1608 Terminal Servers

Xyplex, Incorporated
330 Codman Hill Road
Boxborough, MA 01719

1-800-435-7997 (U.S.)
508-264-9903 (International)
support@xyplex.com (Internet)

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This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15, Subpart J of FCC Rules, which are designed to provide reasonable protection against such interference in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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Customer Support
Xyplex Incorporated
330 Codman Hill Road
Boxborough, MA 01719

Return the Product together with:

Return authorization number.
Proof of date of purchase.
Customer mailing address and telephone number with postage prepaid to the address listed above.

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Preface

About this Guide

This guide explains how to place a MAXserver model 1600 or 1608 terminal server into operation. The guide covers hardware installation, cabling, configuration, and a description of basic server commands.

Organization

This guide is organized as follows:

Chapter 1 (Introduction) -- Describes the functions and capabilities of the MAXserver 1600 and 1608 terminal servers. This chapter also describes software requirements, and explains how the MAXserver 1600 or 1608 stores its configuration data (parameters).

Chapter 2 (Getting Started) -- Describes the hardware installation procedures and explains how to initialize connected devices. By following the instructions in this chapter, you should be able to place a MAXserver 1600 or 1608 terminal server into operation without making a service call.

Chapter 3 (Troubleshooting) -- Describes what to do if you encounter a problem during the MAXserver 1600 or 1608 installation or while the server is in operation. This chapter explains how the MAXserver 1600/1608 indicates errors and how to reset the unit.

Chapter 4 (Configuration Menu) -- Explains how to access the ROM configuration menu and describes the menu options.

Appendix A (Specifications) -- Provides technical specifications for the MAXserver 1600 and 1608.

Appendix B (Cabling Considerations) -- Describes cabling considerations and options you should be aware of when installing MAXserver 1600 and 1608 terminal servers.

Appendix C (Network Configurations) -- Describes and illustrates supported network topologies.

Related Publications

The following publications are useful to persons who install and manage Xyplex terminal servers. To obtain copies, contact your Xyplex sales representative.

Manual	Description
SIMM Installation Service Instructions	Explains how to install MAXserver 1600/1608 Single Inline Memory Modules (SIMMs). (SIMMs should only be installed by qualified personnel.)
Software Installation Guide - *UNIX* - *VAX/VMS* - *MAXserver Loader*	These guides describe the procedures and tools you use to install and configure Xyplex software on UNIX, VAX/VMS, and MAXserver loader platforms.
TCP/IP-LAT Documentation Set; includes:	
Software Management Guide	Describes the configuration, setup, and management of Xyplex software packages.
User's Guide	Describes the commands you use at the terminal server to control and monitor server operation, connect and manage server sessions, configure ports, sessions, etc.

Chapter 1

Introduction

1.1 About the MAXserver 1600 and 1608

The MAXserver 1600 and 1608 are stand-alone terminal servers that provide:

Serial Ports -- The MAXserver 1600 provides16 asynchronous serial communication ports with RJ-45 interfaces. The MAXserver 1608 provides eight ports. (See Figure 2-4 for connector signal assignments.)

Ethernet Interfaces -- A 15-pin standard Ethernet Attachment Unit Interface (AUI) connector and a "ThinWire" Ethernet interface (BNC connector). (See Figure B-1 for AUI connector signal assignments.)

TCP/IP and LAT Protocol Support -- The MAXserver 1600 and 1608 provide concurrent support for the DEC Local Area Transport (LAT®) and TCP/IP protocols.

Memory Card -- An optional Memory card, from which the unit can load its operating software. Two memory card types are currently available from Xyplex:

- "Flash" cards, which are readable/writeable and can be upgraded to a newer software version
- "ROM" (or "OTP") cards, which are read-only and cannot be updated

The MAXserver 1600 and 1608 can also load software from the Memory card, over the network, to MAXserver 1100/1120, 1500/1520, 1600/1608, and 1800/1820 terminal server units.

Network Software Loading -- If you order a MAXserver 1600 or 1608 without a Memory card, the unit loads its operating software from a network host called a *load server*. The load server is typically a UNIX™ or VAX/VMS™ system. Alternatively, a Xyplex MAXserver Manager card (MAXman) or MAXserver 1800/1820 terminal server can be used. The load server downloads a software image to the MAXserver 1600/1608, over the network, whenever the terminal server is powered on or re-initialized. The load server can support other devices as well.

Expandable Memory -- The MAXserver 1600 and 1608 are shipped with either 1 MB or 3 MB of factory installed memory. The memory can be expanded in 2 MB increments, up to 5 MB, using SIMM memory modules. SIMMs should be installed by qualified personnel only. To upgrade your MAXserver 1600 or 1608, contact your Xyplex sales representative. The order code for a 2 MByte SIMM memory upgrade kit is MX-500-5744. (If you only need installation instructions, the order code is MX-420-0608.)

Concurrent Flow Control and Modem Control Support -- The MAXserver 1600 and 1608 provide concurrent support for RTS/CTS flow control signals and modem control signals on all 16 ports. New adaptors are available to support cabling to MAXserver 1600/1608 ports when these signals are used. In most cases, the MAXserver 1600/1608 can also use existing MAXserver 1000-series cabling, if support for the new signals is not required. (Refer to Section B.3.3 for more information.)

Figure 2-3 shows a front view of the MAXserver 1600/1608. Figure 2-2 shows a rear view.

1.1.1 Supported Communication Speeds

The MAXserver 1600 and 1608 support communication speeds of 110 bps to 38.4 Kbps.

1.2 Software Requirements

The MAXserver 1600 and 1608 require Xyplex TCP/IP-LAT software, Release 4.1 or greater. The units are configured at the factory to load software from a Memory card, if one is inserted in the card slot. If a card is not present, the unit requests software from a network load server, which can be:

- A MAXserver 1600 or 1608 that is equipped with a Memory card
- A MAXserver Manager (MAXMAN) card or MAXserver 1800/1820 terminal server
- A VAX/VMS host system, from which the unit can load via DEC Maintenance Operations Protocol (MOP)
- A UNIX system running:
    - Bootstrap protocol (BOOTP) and Trivial File Transfer Protocol (TFTP), or:
    - Reverse Address Resolution Protocol (RARP) and TFTP

The load server downloads a software image to the MAXserver 1600 or 1608, over the network, whenever the unit is powered on or re-initialized. By default, the MAXserver 1600/1608 requests software from each type of load server, until a server responds with a software load offer. (Section 3.2 provides a detailed description of the software loading process.)

If you need to install software on a network load server, refer to the *Software Installation Guide* for the type of load server you plan to use.

1.2.1 Changing the Software Loading Method

You can change the method the MAXserver 1600 or 1608 uses to load its software. For example, you can configure the unit to load exclusively from a specific type of load server; or, you can configure the unit to load from the Memory card only. You use the ROM Configuration menu to change the software loading method. (Refer to Chapter 4 for more information.) Alternatively, you can use DEFINE SERVER commands to change the software loading method. (Refer to the TCP/IP-LAT software documentation for more information.)

1.3 Parameter Storage

The MAXserver 1600 and 1608 are configured at the factory to store configuration data (parameters) locally, in Non-volatile storage (NVS). As an option, you can configure the unit to load parameters from a network host, called a parameter server, using the ROM Configuration Menu. (Refer to Chapter 4 for more information.) Alternatively, you can use DEFINE SERVER commands to change the parameter loading method. (Refer to the TCP/IP-LAT software documentation for more information.)

Chapter 2

Getting Started

2.1 Overview

This chapter explains how to install a MAXserver 1600 and place it into operation. (The procedures for the MAXserver 1608 are identical.) The basic installation consists of these procedures:

1. Unpack the MAXserver 1600, check the contents against the packing list, and inspect for possible damage during shipping.

2. Mount the MAXserver 1600 in a standard 19" rack or place it on a suitable flat surface (19" x 15").

3. If the MAXserver 1600 is equipped with a Memory card, insert the Memory card into the card slot on the front of the unit.

   Xyplex recommends that you wear a grounded wrist strap when you insert the card. If none is available, ground yourself by placing one hand on the MAXserver 1600 (or another grounded object), before you insert the Memory card, to prevent static from being discharged into the MAXserver.

   If the unit is not equipped with a Memory card, verify that Release 4.1 or greater of Xyplex TCP/IP-LAT software is installed in the network. (Refer to Section 1.2, Software Requirements.)

   If you are installing a MAXserver 1600 that is equipped with a Memory card, as well as units that are not, install the unit with the Memory card first. That unit can then serve as a load server for the other units.

4. Connect the Ethernet transceiver cable or ThinWire network cable to the MAXserver 1600.

5. Connect the power cord to rear of the MAXserver 1600, then to an AC power outlet, and observe the front panel lights.

6. Connect the serial device cables to the MAXserver 1600 and to the devices (terminals, PCs, etc.), and initialize the devices.

The following sections provide detailed installation instructions.

2.2 Unpack and Inspect the MAXserver 1600

Follow these steps:

1. Carefully unpack the MAXserver 1600 shipping carton.

2. Inspect the contents and make sure that you received all parts listed on the shipping order.

3. Place all packing materials back into the shipping carton and save the carton. (If you need to return the unit to Xyplex or your distributor, you should return it in the original carton.)

4. If the MAXserver 1600 has been damaged in shipping or any parts are missing, notify your Xyplex representative or distributor immediately.

2.3 Place MAXserver 1600 on Flat Surface or Mount on Rack

Select a location for the MAXserver 1600 that meets the following requirements:

Adequate Space -- A standard 19" rack or a 19" x 15" flat, stable surface such as a shelf or desktop must be available. You can locate the MAXserver 1600 in a variety of environments, including an office or computer room, provided the environmental requirements are met.

To reduce the possibility of dust entering the MAXserver 1600 and to allow easy inspection of the unit's front panel lights, make sure that the MAXserver is located at an optimum distance (preferably not less than 18 inches/45 centimeters) from the floor.

Environment -- Do not choose a location where the unit will be exposed to direct sunlight or subjected to vibration. Also, the MAXserver 1600 must be installed in an environment with 20% to 80% humidity, noncondensing, 0° - 40° C (32°-113° F).

Place the MAXserver on the flat, stable surface you have chosen for its location or use the instructions in Section 2.3.1 to mount it in a standard 19" rack.

Do not remove the MAXserver's "feet".

Do not place an object on top of the MAXserver 1600 that might block the air flow through the unit.

2.3.1 Rack Mount Installation (optional)

Rack mount installation is easier when performed by two persons -- one person holding the MAXserver 1600 while another secures the mounting bolts with a Phillips-head screwdriver. (Threaded clips and bolts are supplied with the unit).

Complete these steps:

1. Locate a mounting position on the rack that allows at least one inch of space above and below the MAXserver 1600.

2. Secure the MAXserver 1600 to the mounting rack using the supplied bolts, as shown in Figure 2-1. If the rack is not threaded, use the threaded clips supplied with the server.

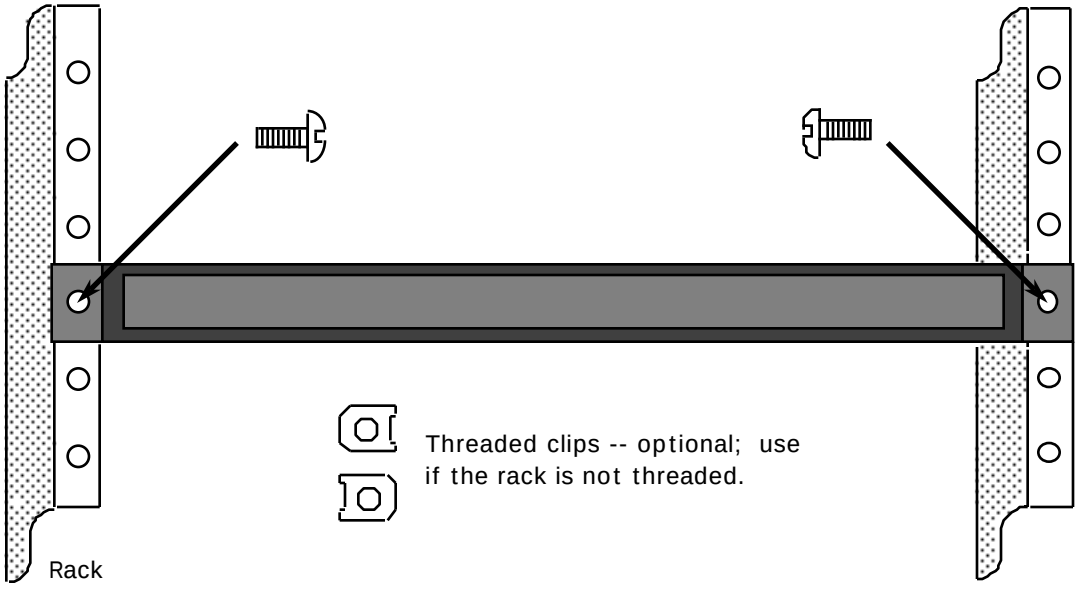


Figure 2-1. Mounting MAXserver 1600 in Rack

2.4 Insert the Memory Card (if Supplied)

If the unit is supplied with a Memory card, insert the card into the card slot on the front panel.

> *Xyplex recommends that you wear a grounded wrist strap when you insert the card. If none is available, ground yourself by placing one hand on the MAXserver 1600 (or another grounded object), before you insert the Memory card, to prevent static from being discharged into the MAXserver.*

Markings on the Memory card indicate which end you insert into the MAXserver 1600. (As another indication, the end you insert has two rows of small square holes.)

2.5 Connect the Ethernet Interface

Connect the Ethernet transceiver cable or ThinWire network cable to the appropriate connector on the rear of the MAXserver 1600 (see Figure 2-2). When powered up, the MAXserver 1600 selects the interface on which it detects network activity[1].

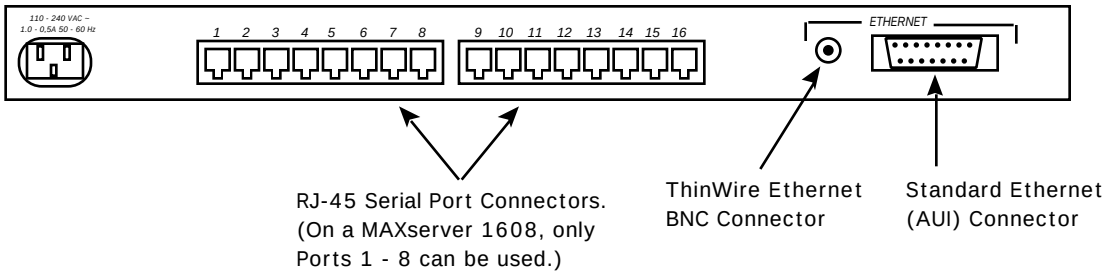


Figure 2-2. MAXserver 1600/1608, Rear View

Standard (AUI) Connection -- Install the Ethernet cable by plugging the male cable connector into the 15-pin female AUI socket on the rear of the MAXserver 1600 and fastening the slide latch. (The standard 15-pin AUI connector signal assignments are shown in Figure B-1.)

ThinWire Connection -- Install the Ethernet cable by plugging it into the ThinWire connector on the rear of the MAXserver 1600.

---

1 The MAXserver 1600 can be configured to work exclusively with an AUI or ThinWire interface. Refer to Section 4.3.2 for more information.

2.6 Connect the Power Cable

You do not need to set the MAXserver 1600 for 115V or 230V operation. The power supply automatically adapts to the input voltage.

A grounded AC power outlet should be located within six feet of the back of the MAXserver 1600. You can use a UL-approved, 3-prong extension cord if necessary, provided it has sufficient current and voltage capacity. (The cord must have sufficient capacity for the input power, as specified in Appendix A). AC power must meet the criteria listed in Appendix A.

Complete these steps:

1. Plug the AC line cord (supplied) into the AC power receptacle on the rear of the MAXserver 1600. (See Figure 2-2 for the location of the power receptacle.)

2. Plug the other end of the cord into a grounded 3-prong AC power outlet (or a UL-approved extension cord with sufficient capacity that is plugged into a suitable outlet).

3. When you apply power, the MAXserver 1600 performs a self test of its circuitry and then proceeds to load its software. When the unit has finished loading its software, the RUN light flashes slowly and the LAN light flashes as Ethernet packets are received. (Figure 2-3 shows the locations of the lights on the front panel.)

   If, after several minutes, the front panel lights do not behave as indicated, refer to Chapter 3, Troubleshooting.

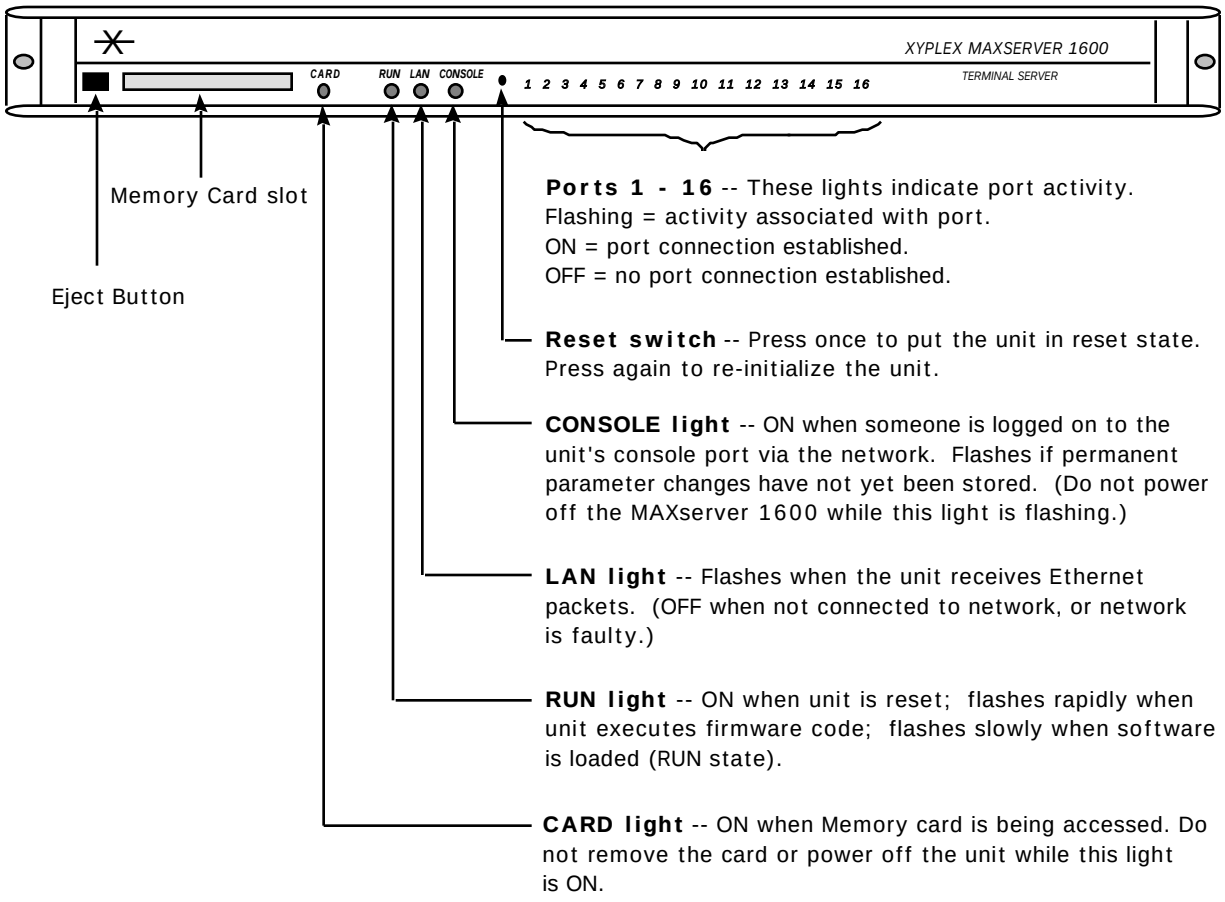
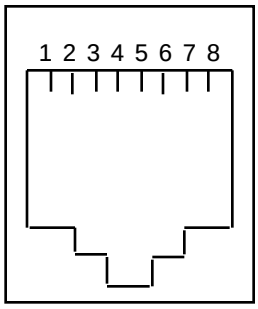


Figure 2-3. MAXserver 1600/1608 Front Panel

2.7 Connect Serial Device Cables

Connect the serial device cables to the 8-pin RJ-45 jacks on the rear of the MAXserver. For a MAXserver 1608, connect cables to Ports 1 - 8 only. For a MAXserver 1600, you can connect cables to Ports 1 - 16. The signal assignments of the 8-pin jacks are shown in Figure 2-4:



Pin	Signal
1	RNG/CTS (input)
2	DTR (output)
3	XMT (output)
4	XMTGND
5	RCVGND
6	RCV (input)
7	DSR/DCD (input) (discussed in Section B.3.3)
8	RTS (output)

Figure 2-4. Serial Device Connector (RJ-45) Signal Assignments

Note

MAXserver 1600 serial ports provide concurrent support for RTS/CTS flow control and modem control. Refer to Section 5.6 of the Software Management Guide for information about setting up flow control; refer to Section 5.5 for information about setting up modem control.

Xyplex recommends that you label all cables with the name of the device to which it connects and the number of the port you have assigned to it. This way, if the cable is removed for any reason, you can reconnect it easily. If the device cables have not yet been prepared with the correct RJ-45 connectors, refer to Appendix B, "Cabling Considerations".

2.8 Additional Considerations for an Internet Environment

If you plan to use the MAXserver 1600 in an Internet environment, you must define addressing and identification characteristics to enable Internet hosts to recognize the MAXserver 1600 as a member of the network. Refer to Chapter 3 of the *Software Management Guide* for information about configuring the MAXserver 1600 for an Internet environment.

2.9 Initialize Connected Devices

The MAXserver 1600 is shipped with a default configuration (parameter) file that sets all serial ports to operate with asynchronous ASCII terminal devices. If you are not connecting keyboard terminals or PCs running terminal emulation software, proceed to Section 2.9.2.

2.9.1 Terminals and Other Keyboard Devices

MAXserver 1600 serial ports are configured to adjust, automatically, to the communication speed (110 - 38.4K bps) of a connected terminal that is set up as follows:

- 8 bits, No Parity

  -- or --

- 7 bits, Even Parity

When your terminal is properly connected to the MAXserver 1600, turn its power ON, then press <RETURN> (or ENTER) a few times -- until the MAXserver 1600 recognizes the terminal. When the MAXserver 1600 responds, you see the following message on your screen:

```
Welcome to the Xyplex Terminal Server.
Enter username>
```

Type your name, your initials, or a nickname, then press RETURN again. You can type up to 16 characters (numbers or letters). This name is your identifier during this session. If you choose, you can change it each time you make a connection to the MAXserver 1600. It will be shown whenever you or any other person on the network requests information about who is connected to the MAXserver 1600.

After you enter your username, the MAXserver 1600 returns the local command prompt:

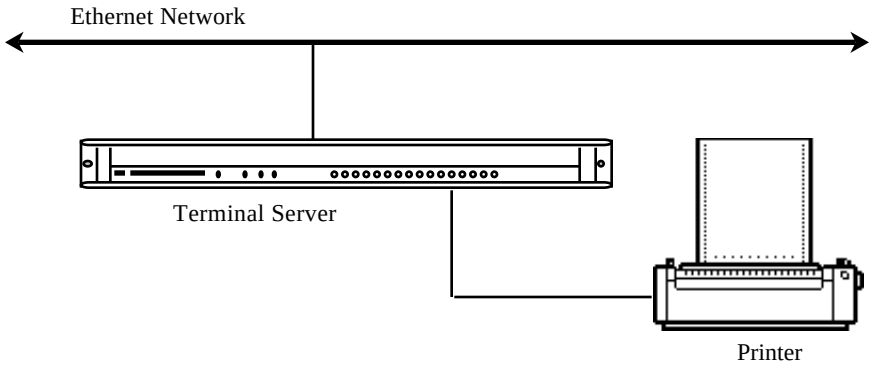
```
Xyplex>
```

The MAXserver 1600 is now ready to accept any of the commands described in the *TCP/IP-LAT Software User's Guide*. You can obtain on-screen information about the terminal server commands by typing HELP and pressing <RETURN>:

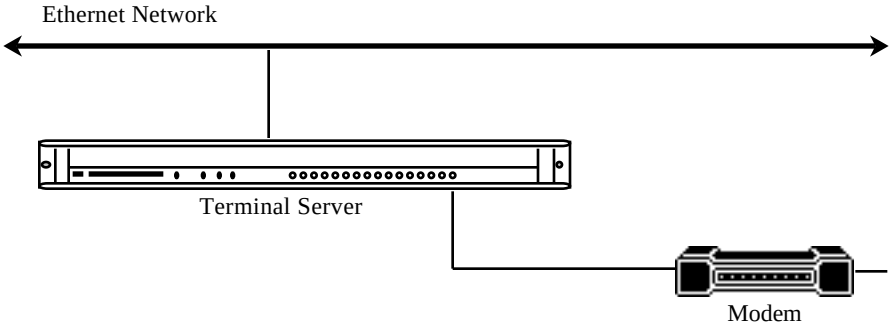
```
Xyplex>HELP
```

2.9.2 Connecting Other Devices

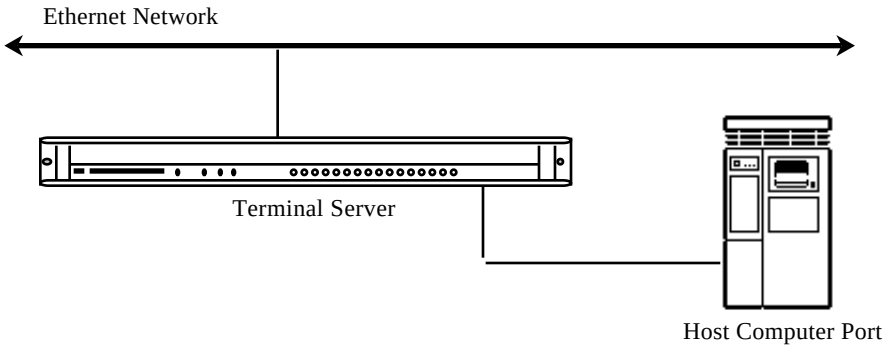
If you are connecting a modem, printer, plotter, host computer, or data switch, refer to the Xyplex TCP/IP-LAT System Documentation for instructions as follows:



Serial Printers, Plotters -- Refer to the section entitled "Shared Printer Services Setup" in Chapter 4 of the *Software Management Guide.*



Modems, Data Switches -- Refer to the section entitled “Modem Control Operation” in Chapter 5 of the *Software Management Guide.*



Host Ports -- Refer to the section entitled “Host Setup for Local Access Connections” in Chapter 3 of the *Software Management Guide.*

2.10 Formatting/Updating a Memory Card

Flash Memory cards are readable/writeable and can be updated to a newer software version. When you order a new Flash card from Xyplex, the card contains a software image. Future TCP/IP-LAT software versions will be available on FLASH and ROM cards; you can use either type of card to update a Flash card.

Before you can update the software image on a Flash Memory card, you must format the card by issuing the following command while in privileged mode. (SET SERVER is optional.)

```
[SET SERVER] FORMAT CARD
```

You should see these messages ---

```
xxxxx format.  WARNING: all data will be lost.
Press <RETURN> to start format, any other character to abort
```

-- where xxxxx indicates the vendor of the utility that was last used to format the card (e.g., Xyplex). After you press <RETURN> this message appears:

```
Format in progress, please wait.  xx% complete
```

If your terminal type is HARDCOPY, you do not see the "%complete" display. Formatting requires between 1 and 3 minutes, depending on the network traffic load. (If you need to abort the formatting process, press <BREAK>. Afterwards, the card will be unusable until you format it.) Once the formatting is complete, the "% complete" message is replaced with this message:

```
Format complete
```

Using MOP/XMOP to Update the Card

To update the card using MOP or XMOP, use this command while in privileged mode:

```
[SET SERVER] GET CARD LOAD FILE "path/mx1500.sys" ADDRESS ethernet-address
```

The value "path/mx1500.sys" specifies the software load image name and its path on the load host; you can use a maximum of 63 characters. The filename on the host must be mx1500.sys; if you enter a different value, the MAXserver 1600 will generate an error message.

The Ethernet address identifies the load host where the newer software version resides. If you enter an Ethernet address with the Xyplex header (08-00-87), the MAXserver uses the Xyplex proprietary protocol (XMOP). For other Ethernet addresses, the unit uses MOP.

The loader file, **mcffs1.sys**, is automatically copied to the card when you issue a GET CARD LOAD FILE command.

Using TFTP to Update the Card

To update the card using TFTP, use this command while in privileged mode. (Refer to Section 7.6 of the *Software Installation Guide* for background information about loading software via TFTP.)

```
[SET SERVER] GET CARD LOAD FILE "path/mx1500.sys" INTERNET ADDRESS internet-address
```

The value "path/mx1500.sys" specifies the software load image name and its path on the load host; you can use a maximum of 63 characters. The filename on the host must be mx1500.sys; if you enter a different value, the MAXserver 1600 will generate an error message.

The Internet address identifies the load host where the newer software version resides. The loader file, **mcffs1.sys**, is automatically copied to the card when you issue a GET CARD LOAD FILE command.

Monitoring the Update Process

The MAXserver 1600 makes multiple attempts to load the file. (This might take a few minutes if the files are not present at the host, or if the host does not respond.) Use the MONITOR SERVER CARD STATUS command to monitor the progress of the update. The update requires approximately as much time as a software load operation.

You must re-initialize the MAXserver 1600 after updating the car
if you want to use the newsoftware version immediately.

If the Load Host is a MAXserver Loader

To update the software image from a MAXserver loader, which can be a MAXserver 1600, a MAXserver 1800/1820, or a MAXman card, the address of the MAXserver 1600 must be entered in the client database of the MAXserver loader. Or, the MAXserver loader must be configured to load MAXserver 1600 units globally. (The MAXserver 1600 Hardware type is 74.) Refer to the *Software Installation Guide for MAXserver Manager Load Hosts* for instructions.

If the MAXserver 1600 is too busy to update the Memory card, or if the card is currently being formatted or updated when you issue the GET CARD LOAD FILE command, you see this message:

```
Xyplex -730 - Temporary resource conflict.  Please try again.
```

Loading Other Units

A MAXserver 1600 with a Memory card can load its software image to MAXserver 1100/1120, 1500/1520, and 1800/1820 terminal servers, provided the units to be loaded are configured in its client database. Or, the MAXserver 1600 can be configured to load the other units globally. (Refer to the *Software Installation Guide for MAXserver Manager Load Hosts* for instructions.) The SHOW MANAGER STATUS display shows the status of remote loads. The MAXserver 1600 cannot function as a dump server or parameter server for other units.

Chapter 3
Troubleshooting

3.1 Overview

Refer to this chapter if you experience a problem with your MAXserver 1600 or 1608. This chapter describes:

- How to troubleshoot startup and loading problems
- What to do if the LAN light on the front panel goes out
- How to reset the MAXserver 1600/1608

3.2 Startup/Loading Problems

Refer to this section if you have powered up the MAXserver 1600, or re-initialized the unit, and the front panel lights do not behave as follows after several minutes. (Procedures for the MAXserver 1608 are identical.)

- RUN light flashes slowly
- LAN light flashes as Ethernet packets are received

Normally, the light pattern appears as follows when you power up the MAXserver 1600, or re-initialize the unit:

1. All lights ON for approximately one second.

   (The MAXserver 1600 is testing the lights.)

2. Each port light goes ON in order -- 16 to 1.

   (The MAXserver 1600 is running a self test.)

3. The RUN light flashes rapidly.

   (The self test has completed.)

4. The LAN light goes ON.

   (The MAXserver 1600 is starting the software loading process.)

5. The CARD light goes ON for approximately 15 seconds if the unit is loading from a Memory card.

   (The MAXserver 1600 is accessing the Memory card. Do not remove the card while the CARD light is ON.)

6. The RUN light flashes rapidly and the LAN light flashes as Ethernet packets are received.

   (The MAXserver 1600 is loading, or trying to load, software.)

7. When loading from a Memory card, or when using another MAXserver 1600 as a load server, Port lights
   8 - 1 go ON, sequentially. Then, lights 8 - 1 go OFF.

   (The MAXserver 1600 has finished loading the software image, and is decompressing it.)

8. When the MAXserver 1600 has finished loading its software, the RUN light flashes slowly and the LAN light flashes as Ethernet packets are received.

3.2.1 Startup Error Codes

If front panel lights do not behave as described in Section 3.2 when you power up or initialize the MAXserver 1600, the unit might be displaying an error code. A special pattern of diagnostic codes indicates that a hardware or software error has occurred. Figure 3-1 shows how the diagnostic code appears on the MAXserver 1600 front panel lights.

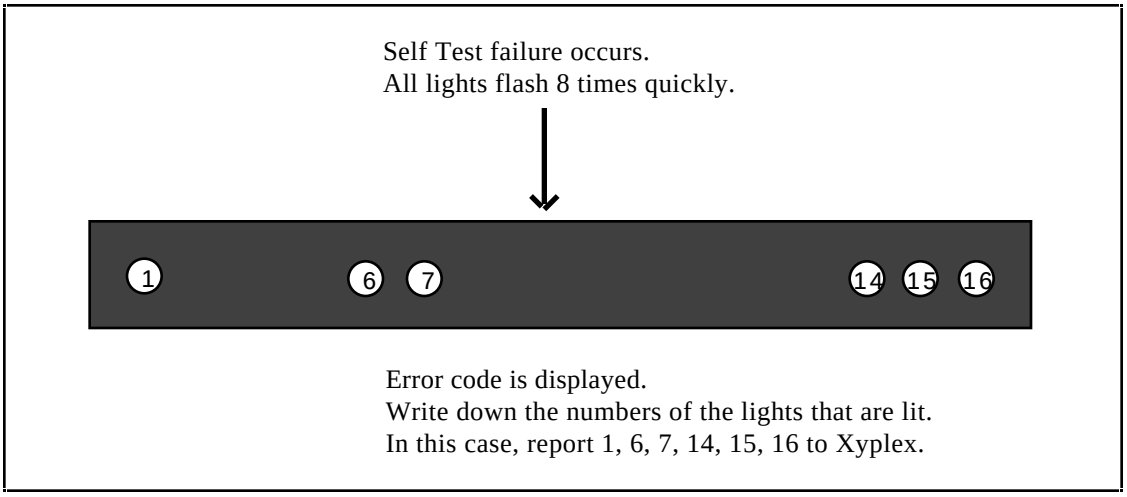


Figure 3-1. Sample Error Code Display

Write down the numbers of the error code (the lights that are ON) and contact your Xyplex Customer Support representative. (In the U.S., call 1-800-435-7997. For International calls, the number is 508-264-9903). Your representative will provide further instructions on how to handle the condition.

Common Error Codes

If you see this error code, the MAXserver 1600 has been configured for more memory than is actually installed:

3, 4, 6, 7, 11

To correct the error, you must either configure the MAXserver for less installed memory, using the ROM Configuration menu, or install additional SIMM memory. (The SIMM memory installation should only be performed by qualified personnel.) The Configuration menu is described in Chapter 4. Use Option 2, Modify Unit Configuration, to specify the amount of installed memory.

If you see one of these error codes, you must use the ROM configuration menu to re-initialize the unit:

3, 4, 8, 10, 16

3, 4, 6, 7, 11, 14

Chapter 4 explains how to access the ROM Configuration menu. Select Option 2, Modify Unit Configuration, from the menu. The following prompt appears:

```
Initialize configuration to defaults (Y/N) [N]?
```

Answer Y (yes) and press <RETURN>.

3.2.2 Problem Analysis

Following is a list of problems you might encounter when you power up or re-initialize a MAXserver 1600. The list includes descriptions of correct operations and possible solutions. (Procedures for the MAXserver 1608 are identical.)

Problem: You are trying to load from a Memory card and the CARD light does not go ON.

-- or --

The CARD light goes ON and then OFF quickly.

Correct Operation:

The CARD light should illuminate for approximately 15 seconds when the MAXserver 1600 loads software from a Memory card.

Possible solutions:

If the CARD light does not go ON, make sure that the card is inserted properly. Also, make sure that the MAXserver 1600 is configured to load from the Memory card, using the ROM Configuration menu. (Refer to Chapter 4.) By default, a MAXserver 1600 is configured to load from the card; however, someone might have changed this setting.

If the CARD light goes ON and then OFF quickly, make sure that the Memory card has been initialized. You can initialize a Memory card while it is inserted in the unit by issuing the FORMAT CARD command. (For instructions, refer to Section 2.10.) Alternatively, if you have a PC with a Memory card drive, you can check whether the SYSTEM directory is present on the card. The directory should contain the software image; the *file-name* must be **mx1500.sys**. Also, the loader file **mcffs1.sys** must reside in the same directory as mx1500.sys, and must appear before mx1500.sys.

Problem: The MAXserver 1600 does not appear to load from the network, or is slow to load from the network.

Correct Operation:

The load server downloads a software image and (optionally) parameters to the MAXserver 1600, over the network, whenever the unit is powered on or re-initialized.

After the software and (optionally) parameters have been downloaded from the load server, the RUN light should blink once every second. Then, if you type several <RETURN>s at a terminal connected to any serial port, the following message should appear:

```
Welcome to the Xyplex Terminal Server.

Enter username>_
```

Possible Solutions:

The MAXserver generates several messages during the load process, which can help you resolve loading problems. To see the messages, press <RETURN> several times at a terminal connected to a MAXserver serial port, when the unit begins the loading process. (When you do this, the serial port adjusts to the communication speed of the terminal. This process is called "autobauding".) The port light should go ON when you press <RETURN>.

If you type <CTRL><T> now, the unit will display the load server offer table when it receives load offers. (Only one <CTRL><T> is required.)

Refer to the following message descriptions for assistance in correcting loading problems. Note that each <RETURN> generates a single message. You must press <RETURN> every 5 - 10 seconds to receive updated messages. Also, if the load process takes place very quickly, you might miss some of the messages.

1. If the MAXserver 1600 is not connected to the network, you see one of the following messages when you
   press <RETURN>:

   ```
   Terminal Server, Type 74, Rev x.xx.x
   Ethernet address 08-00-87-xx-xx-xx, port x
   Automatic Network Selection: Searching for functional network.

   Terminal Server, Type 74, Rev x.xx.x
   Ethernet address 08-00-87-xx-xx-xx, port x
   Searching for functional Standard Ethernet network.

   Terminal Server, Type 74, Rev x.xx.x
   Ethernet address 08-00-87-xx-xx-xx, port x
   Searching for functional Thinwire Ethernet network.
   ```

2. A message similar to the following one appears for approximately 10 seconds after the self tests complete.

```
Terminal Server, Type 74, Rev x.xx.x
Ethernet address 08-00-87-xx-xx-xx, port x
Initializing...
```

3. A message similar to the following one is displayed while the server is waiting for a response to the load request. If this message does not appear after you type several <RETURN>s, the MAXserver 1600 could be at fault. Call Xyplex Customer Support. (In the U.S., call 1-800-435-7997. For International calls, the number is 508-264-9903).

```
Terminal Server, Type 74, Rev x.xx.x
Ethernet address 08-00-87-xx-xx-xx, port x
Requesting network load service
```

   If the this message remains displayed for more than 20 seconds after you type several <RETURN>s, either the MAXserver 1600 is not configured on a load server, or it cannot communicate with a load server. Check that the MAXserver 1600 is in the RUN state and that the Ethernet transceiver cable or ThinWire network cable is properly installed.

4. A message similar to the following one is displayed if the MAXserver 1600 has received a load offer from a
   load server:

```
Terminal Server, Type 74, Rev x.xx.x
Ethernet address 08-00-87-xx-xx-xx, port x
Evaluating service offers
```

   If you typed a <CTRL><T> after "autobauding" your terminal, messages similar to these will appear when the unit has stopped accepting load offers:

```
Received load service offers:

          Host Address        protocol     merit     filename
          xx-xx-xx-xx-xx-xx   0809         9C000037  MX1500
```

   One to ten load server addresses are displayed (typically, just one). The MAXserver 1600 selects the load server with the highest merit value.

5. When the MAXserver 1600 chooses a load server, a message similar to this one appears:

```
Terminal Server, Type 74, Rev x.xx.x
Ethernet address 08-00-87-xx-xx-xx, port x
Loading over Link L1 from server xx-xx-xx-xx-xx-xx, message 0
```

   Link L1 refers to the Ethernet transceiver cable or ThinWire network cable; that is, the unit is loading via the LAN. If the message count remains at zero while you type <RETURN>s are continuously, the load server was configured to load the MAXserver 1600, but encountered a problem with the load file or directory. Check the file name and directory at the load server.

   Additionally, in some newer VAX /VMS installations, the logical name "MOM$LOAD" might not be defined properly. (Refer to the *Software Installation Guide* for VMS load hosts for more information.)

6. After the MAXserver 1600 loads a file, it checks the contents of the file for proper identification and size. One of the following messages can appear if the MAXserver 1600 encounters a file problem:

```
Server xx-xx-xx-xx-xx-xx; File error: not a load file.
```

   This message type appears if the load server attempted to load a file image that is incompatible with the MAXserver 1600. (The load file did not have a Xyplex ASCII identification string header.) This can happen if, for example, the file is a DECserver 200 load file.

```
Server xx-xx-xx-xx-xx-xx; File error: corrupted data.
```

   This message type indicates that the load server attempted to load a file that is compatible with the MAXserver 1600, but the file has been corrupted. Correct this problem by installing a new file in the load server. Refer to the *Software Installation Guide* for instructions.

```
Server xx-xx-xx-xx-xx-xx; File error: not executable.
```

   No 680xx CPU identifier appears in the file header. This is a Xyplex file, but it cannot be executed by the server. Resolve this problem by installing the proper file in the load server. Refer to the *Software Installation Guide* for instructions.

```
Server xx-xx-xx-xx-xx-xx; Timed out, will retry.
```

   This message type indicates that the MAXserver 1600 gave up waiting for the load server to send a load file image. When this happens, the server restarts the load request process. If the message count was not zero, and the "timed out" message was displayed, it is possible that your network experienced communication problems. Note that if there is no progress of the message count number beyond zero, a load server problem exists. A network problem probably exists if the message count remains stuck at a number other than zero.

7. If a failure occurs during the load process, the server will abort the load process and send a small dump file (approximately 60 bytes) to a server that is configured to accept a dump file. The dump file can be analyzed by Xyplex to assist you in resolving the fault. Call Xyplex Customer Support. (In the U.S., call 1-800-435-7997. For International calls, the number is 508-264-9903).

   The MAXserver 1600 uses the same algorithm for the dump server as for selecting the load server. Normally, messages similar to these appear:

   ```
   Terminal Server, Type 74, Rev x.xx.x
   Ethernet address 08-00-87-xx-xx-xx, port x
   Requesting dump service
   ```

   This type of message is displayed while the MAXserver 1600 waits for a response to its dump request. If this message remains displayed for more than 30 seconds after you type several <RETURN>s, the MAXserver 1600 is not configured on a dump server, or the MAXserver 1600 cannot communicate to a dump server. Refer to the *Software Installation Guide* for instructions on specifying the proper dump configuration.

8. A message similar to the following one is displayed if the MAXserver 1600 received a dump offer from a server.

   ```
   Terminal Server, Type 74, Rev x.xx.x
   Ethernet address 08-00-87-xx-xx-xx, port x
   Evaluating dump service offers
   ```

   If you typed a <CTRL><T> after a port speed had been selected, messages similar to these will appear when the unit has stopped accepting dump service offers:

   ```
   Received dump service offers
            Host Address        protocol     merit     filename
            xx-xx-xx-xx-xx-xx   0809         9C000037
   ```

9. The MAXserver 1600 selects the dump server with the highest merit value. If two or more dump servers have the same merit value, the MAXserver 1600 will select the first dump server listed.

   ```
   Terminal Server, Type 74, Rev x.xx.x
   Ethernet address 08-00-87-xx-xx-xx, port x
   Maintenance dump over Link L1 to 08-00-2B-05-8B-78, message 0
   ```

   Link L1 refers to the Ethernet transceiver cable or ThinWire network cable; that is, the server is dumping via the LAN. If a failure occurs during the dump process, the MAXserver 1600 will abort the dump and attempt to dump to the next dump server, until the dump server list is exhausted. After the dump process completes, the MAXserver 1600 selects the load server with the next highest merit value on the load offer list. If the load list is exhausted, the MAXserver 1600 will restart the loading process.

10. If the MAXserver 1600 is configured to load parameters from the network (rather than local Non-volatile storage- NVS), the unit requests a parameter file from the parameter server[1]. If a parameter file is not sent from the server, the MAXserver 1600 will wait indefinitely for the parameter file.

    The following message types can be generated during the parameter file load sequence. The process is similar to the load process:

    ```
    Terminal Server, Type 74, Rev x.xx.x
    Ethernet address 08-00-87-xx-xx-xx, port x
    Requesting parameter load service
    ```

    A message similar to the preceding one is displayed while the MAXserver 1600 waits for a response to the parameter load request. If this message remains displayed for more than 5 seconds after you type several <RETURN>s, the MAXserver 1600 is not configured on a load server for parameter load service. Refer to the *Software Installation Guide*.

    ```
    Terminal Server, Type 74, Rev x.xx.x
    Ethernet address 08-00-87-xx-xx-xx, port x
    Loading parameters over Link L1 from server xx-xx-xx-xx-xx-xx,
    message 0
    ```

    Link L1 refers to the Ethernet transceiver cable or ThinWire network cable; that is, the server is loading parameters via the LAN. If the message count remains at zero after you type several <RETURN>s, the load server is properly configured, but does not have a defined parameter file.

Problem: While loading from the network, no messages appear after you type several <RETURN>s. (Note that when the MAXserver 1600 is loading from a Memory card, you do not see any messages, and cannot access the terminal server.)

Correct Operation:

The port normally autobauds to the correct baud rate when you press several <RETURN>s. Once a port speed has been selected, the port light illuminates. In the first 20 seconds after power up, the server runs the self tests and does not respond to the <RETURN>s. Twenty seconds after power up, however, the port displays a message in response to a <RETURN>.

Possible Solutions:

Determine whether the port is receiving characters properly. Type several <RETURN>s and make sure the PORT light is ON steadily. This indicates that the MAXserver 1600 has received characters and selected a communication speed.

---

[1] By default, the MAXserver 1600 loads its configuration data (parameters) from NVS. However, you can configure the unit to load parameters from a network parameter server, using the ROM Configuration menu. The Configuration menu is described in Chapter 4.

If the port is receiving characters, the MAXserver 1600 might have autobauded to the wrong speed. Press the <BREAK> key to re-initialize the autobaud sequence, then type several <RETURN>s.

If the port is not receiving characters, a cable or device problem exists. Try changing the type of cable used (e.g., change from straight-through to crossover). Note that a MAXserver 1600-to-DTE device configuration requires a crossover cable connection. Refer to Appendix B for cable descriptions and order codes.

3.3 If the LAN Light Is Out

When the LAN light on the MAXserver 1600 front panel is ON, the server is communicating with the network. If you are unable to communicate with the network and the LAN light is not ON, check the following. (Procedures for the MAXserver 1608 are identical.)

- Make sure that the Ethernet transceiver cable or ThinWire network cable is securely connected to the back of the MAXserver 1600.

- There may be a problem with the network itself. Check whether any other devices connected to the network are experiencing communications problems.

- Check whether a diagnostic code is being displayed on the front panel lights (indicating a hardware or software error).

If none of these checks indicate a problem and the LAN light is still not ON, contact your Xyplex Customer Support representative for assistance. (In the U.S., call Xyplex Customer Support at 1-800-435-7997. For International calls, the number is 508-264-9903).

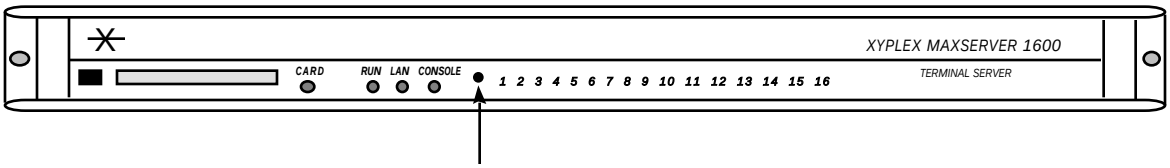
3.4 Resetting the MAXserver 1600

You can reset the MAXserver 1600 to force it to run a self test or to re-initialize the unit. Before resetting the server, check the port lights to make sure that no connections are in progress. All connections are terminated when the server is reset. (The procedure for the MAXserver 1608 is identical.)

To reset the MAXserver 1600, follow these steps:

1. Make a simple "tool" from an ordinary paper clip by bending one end outward. You need this tool to press the RESET button located behind the MAXserver 1600 front panel.

2. Look for the small hole between the CONSOLE light and the light labeled '1' (see Figure 3-2).



Reset switch -- Press once to put the unit in reset state. Press again to re-initialize the unit.

Figure 3-2. RESET Switch Location

3. Use the paper clip tool to press the RESET button once. This halts all MAXserver 1600 operations -- the server will no longer send or receive network data or data from its connected devices. The MAXserver 1600 enters RESET state; all front panel lights illuminate.

4. Press the RESET button again. The MAXserver begins its self test.

   - If the MAXserver 1600 detects an error, the front panel lights illuminate as described in Section 3.2.1. This error sequence continually repeats until the error is corrected or you power off the MAXserver 1600. During this time, no data is exchanged over the Ethernet cable or server ports.

   - If the MAXserver 1600 does not detect an error, it will begin loading software from the Memory card or the request a network load (if no Memory card is present). Once loaded, the MAXserver 1600 resumes normal operations.

Chapter 4

ROM Configuration Menu

4.1 Overview

MAXserver 1600 and 1608 terminal servers provide a ROM Configuration menu that you use to:

- View current ROM configuration settings, and change the settings when necessary.
- Change the method by which the MAXserver loads parameters.
- Change the method by which the server receives a software load image, or change the name of the load image that it requests.
- Change the method by which the MAXserver transmits dump files.
- Instruct the operating software, once loaded, to initialize server and port parameters.

4.1.1 Factory Configurations

The MAXserver 1600 and 1608 are configured at the factory to load software from a Memory card if one is inserted in the card drive. If a card is not present, the MAXserver 1600/1608 requests to be loaded by a host system that has the Xyplex TCP/IP-LAT software installed, or any Xyplex MAXserver Manager -- which can be a MAXserver 1600/1608 that has a Memory card, a MAXserver 1800/1820, or a MAXserver Manager card (MAXMAN).

The MAXserver 1600 and 1608 are also configured at the factory to store parameters locally in Non-volatile Storage (NVS).

4.2 How to Bring Up the Configuration Menu

To access the Configuration menu, follow these steps. (For a MAXserver 1608, the procedure is identical.)

1. Using a straightened paper clip, press the RESET switch once to enter reset mode. (Figure 3-2 shows the location of the switch.) All lights on the front panel should illuminate.

2. Press the RESET switch again, and hold the switch in. With the switch held in, observe the port lights. The lights for Ports 15 and 16 should illuminate. The port lights should then flash in sequence from 1 to 16 and then back to 1 again. Port lights 14, 15 and 16 then illuminate. When this sequence has completed, release the RESET switch. The MAXserver performs the standard self-test diagnostics. (The self test requires about 20 seconds to complete.)

3. When the RUN light flashes rapidly (indicating that the self test has completed), *autobaud* any serial port by pressing RETURN a few times at a terminal connected to the port. Once the MAXserver 1600 has selected a port speed, it generates the following message:

```
Terminal Server, Type 74, Rev x
Ethernet address 08-00-87-00-46-DD, port 1
Configuration in progress. Please wait.
```

4. Type the password "ACCESS" (note that there is no prompt) and press <RETURN>. The menu shown in Figure 4-1 appears:

```
                    Welcome to the Configuration Menu.

Terminal Server Configuration/Maintenance Menu

   1. Display unit configuration
   2. Modify unit configuration
   3. Initialize server and port parameters
   4. Revert to stored configuration
   S. Exit saving configuration changes
   X. Exit without saving configuration changes

Enter menu selection [X]:
```

Figure 4-1. MAXserver 1600/1608 Configuration Menu

4.3 Configuration Options

At the "Enter menu selection" prompt, type the number corresponding to the configuration action you want to perform, then press RETURN. (The default choice is X -- exiting without saving configuration changes.) The following list describes each of the options. Each option is described in more detail in a subsequent section. (For a MAXserver 1608, the options are identical.)

	Option	Description
1.	Display unit configuration	View a list of both the previously-stored configuration values and the values that will be used after you exit from the menu (using Option S -- "Exit saving configuration changes").
2.	Modify unit configuration	Change the method by which the MAXserver 1600 loads its software; change the name of the load image that it requests, if any; change the method by which the unit requests parameter service and dumps memory; specify the total configured memory; enable/disable load status messages; and change the specified Ethernet interface (Standard/ThinWire).

3.	Initialize server and port parameters	Instruct the operating software, once loaded, to use factory default values for all server and port parameters. All current server and port parameters will be lost when you exit from the menu (using Option S "Exit saving configuration changes").
4.	Revert to stored configuration	Cancel any changes you have made without exiting from the menu. The MAXserver 1600 reverts to the configuration values that were last saved. Typically, you would select this option if you had changed some settings, and then decided to undo the changes and begin again.
S.	Exit saving configuration changes	Exit from the menu and store the changes that you have made.
X.	Exit without saving configuration changes	Exit from the Configuration menu without saving the configuration changes that you have made (i.e., use the configuration that was last saved).

The dialog associated with each of these menu choices is described in the sections that follow. After you exit from the Configuration menu, the MAXserver 1600 loads software and parameters.

Notes

For each command prompt shown in the Configuration menu dialog, the default choice is shown in square brackets, [ ]. For example, [A] indicates that "A" is the default choice for a prompt. You can press RETURN to select the default choice.

For many prompts, the default value for the prompt can change. The first time you run the Configuration menu, the default value shown is the factory default value. After you exit from the menu, having saved changes, the default value shown for a prompt is the currently-stored value, not the factory default value.

4.3.1 Option 1 - Display Configuration

To select this option, answer 1 to the "Enter menu selection" prompt. The display shows a list of currently stored configuration values and the new configuration values, similar to the list shown in Figure 4-2:

```
Configuration              Stored Configuration        New

Parameter load method:   XMOP MOP                    XMOP MOP
Image load method:       CARD DTFTP MOP              CARD DTFTP MOP
Dump method:             XMOP MOP BOOTP RARP         XMOP MOP BOOTP RARP
XMOP/MOP filename:       PROFILE.SYS                 PROFILE.SYS
Default unit IP addr:    173.179.90.21               173.179.90.21
DTFTP host IP addr:      173.179.90.4                173.179.90.4
DTFTP gateway IP addr:   0.0.0.0                     0.0.0.0
DTFTP filename:          mx1600.sys                  mx1600.sys
Load status messages:    Disabled                    Disabled
Network interface:       Thinwire                    Thinwire
Memory size expected:    2 Megabytes                 2 Megabytes
   (Found 2 Megabytes)

(Type any key to continue)
```

Figure 4-2. Sample Unit Configuration Display

The DTFTP (Directed Trivial File Transfer Protocol) information is present when DTFTP is listed as an Image load method. Similarly, the XMOP/MOP load filename is present when XMOP or MOP is listed as an Image load method.

4.3.2 Option 2 - Modify Unit Configuration

To select this option, answer 2 to the "Enter menu selection" prompt. The MAXserver 1600 prompts:

```
Initialize configuration to defaults (Y,N) [N]?
```

Valid answers to this prompt are Y (Yes) and N (No).

- If you answer ‘Y’, the MAXserver 1600 returns all configuration options to their factory default values,
  which are:

Parameter load method:	NVS
Image load method:	CARD, XMOP, MOP, BOOTP, RARP
Dump Method:	XMOP, MOP, BOOTP, RARP
XMOP/MOP load filename:	MX1500
Default unit IP address:	0.0.0.0
Total installed memory:	1 Megabyte
Load status messages:	Enabled
Network interface:	Auto

The MAXserver displays the message "Type any key to continue”.

- If you answer No (to the “Initialize configuration to defaults?” prompt) the MAXserver 1600 generates a series of prompts which are described in the following steps.

1. The MAXserver 1600 prompts:

   ```
   Load parameters from (NVS, Remote) [N]:
   ```

   Valid answers to this prompt are N (NVS) and R (Remote). Enter ‘N’ if you want to load parameters from the MAXserver's 1600 local Non-volatile storage. Select Remote if you want to load parameters from a parameter server on the network, such as a VAX/VMS or UNIX host system, or a Xyplex MAXserver Manager.

   If you select Nonvolatile storage, go to Step 3. Otherwise, proceed to Step 2.

2. The MAXserver 1600 prompts:

   ```
   Enable ALL methods for parameter loading (Y,N) [Y]?
   ```

   Valid answers to this prompt are:

   Y -- Use any parameter loading method: XMOP (Xyplex proprietary protocol), MOP (DEC Maintenance Operations Protocol), BOOTP (Bootstrap Protocol), RARP (Reverse Address Resolution Protocol)

   N -- Use specific method(s)).

   a. If you answer Y, proceed to Step 3.

   b. If you select N, the MAXserver 1600 prompts:

      ```
      Toggle (XMOP, MOP, BOOTP, RARP) parameter load methods: []
      ```

   Valid answers to this prompt are X (Xyplex Proprietary protocol), M (DEC MOP loader), B (BOOTP) or R (RARP). You can select up to four parameter loading methods.

   Selecting X enables the MAXserver to store and load parameters at a Xyplex MAXserver Manager. Selecting M enables the MAXserver 1600 to store and load parameters via the DEC MOP loader protocol. Selecting B enables the MAXserver 1600 to store and load parameters at a BOOTP/TFTP host. Selecting R enables the MAXserver 1600 to store and load parameters via RARP/TFTP.

   Select specific protocol(s) by removing letters from or adding letters to the brackets. To remove a letter, type the letter and press <RETURN>. The prompt reappears; however, the letter you typed does not appear within the brackets. To add a letter to those within the brackets, type the letter and press <RETURN>. The prompt reappears and the letter you typed is included within the brackets.

When the letters within the brackets represent all the protocols you want to use, press <RETURN>.

Note

You cannot enable RARP only. If you try to select RARP only, BOOTP is automatically enabled also. Similarly, you cannot disable BOOTP without disabling RARP.

3. The MAXserver 1600 prompts:

```
Enable ALL methods for image loading (Y,N) [N]?
```

Valid answers to this prompt are:

Y -- Use any software loading method: CARD (Memory card), DTFTP (Directed Trivial File Transfer Protocol), XMOP (Xyplex proprietary protocol), MOP (DEC Maintenance Operations Protocol), BOOTP (Bootstrap Protocol), RARP (Reverse Address Resolution Protocol)

N -- Use specific method(s)).

a. If you answer Y, proceed to Step 4.

b. If you select N, the MAXserver 1600 prompts:

```
Toggle (CARD,DTFTP,XMOP,MOP,BOOTP,RARP) image load methods [C,D,X,M,B,R]:
```

Valid answers to this prompt are C (Memory card), D (Directed Trivial File Transfer Protocol), X (Xyplex Proprietary protocol), M (DEC MOP loader), B (BOOTP) or R (RARP). You can select up to six methods.

Selecting C enables the MAXserver 1600 to load software from a Memory card. Selecting D enables the MAXserver 1600 to load via directed TFTP. Selecting X enables the MAXserver to load from a Xyplex MAXserver Manager. Selecting M enables the MAXserver 1600 to load software via the DEC MOP loader protocol. Selecting B enables the MAXserver 1600 to load software from a BOOTP host. Selecting R enables the MAXserver 1600 to load software via RARP.

4. The MAXserver 1600 prompts:

```
Enable ALL methods for dumping (Y,N) [Y]?
```

Valid answers to this prompt are:

Y -- Use any dumping method: XMOP (Xyplex proprietary protocol), MOP (DEC Maintenance Operations Protocol), BOOTP (Bootstrap Protocol/Trivial File Transfer Protocol (TFTP)), RARP (Reverse Address Resolution Protocol/TFTP)

N -- Use specific method(s).

a. If you answer Y, proceed to Step 5.

b. If you select N, the MAXserver 1600 prompts:

```
Select (XMOP, MOP, BOOTP, RARP) dump load methods: []
```

Valid answers to this prompt are X (Xyplex Proprietary protocol), M (DEC MOP loader), B (BOOTP) or R (RARP). You can select up to four methods. The prompt appears again after you enter your selection, enabling you to enter another dumping method. Press <RETURN> to proceed to the next prompt.

Selecting X enables the MAXserver 1600 to dump its memory contents to a Xyplex MAXserver Manager when a crash occurs. Selecting M enables the MAXserver 1600 to dump memory via the DEC MOP loader protocol. Selecting B enables the MAXserver 1600 to dump memory at a BOOTP host. Selecting R enables the MAXserver 1600 to dump memory via RARP.

5. If you have selected the XMOP or MOP loading method(s), you see the following prompt. (If you do not see this prompt, proceed to Step 6.)

```
XMOP/MOP load filename (16 characters max) [MX1500]:
```

This prompt requests the Xyplex/MOP load file name. There are two types of valid answers to this prompt -- file names or numerical values. Valid file names consist of up to 16 characters, which can be letters and numbers, the underscore character (_), the hyphen character (-), and the period (.) character. The default Xyplex/MOP load file name is MX1500. (The actual name of the load file is MX1500.SYS. In the default load filename (MX1500), the .SYS suffix is implicit.

You can use numerical values to specify that a MAXserver loader is to determine the appropriate load file based on:

- The MAXserver's hardware type, or:
- A Node entry in the client database of the MAXserver loader

You can also use numerical values to specify that a MOP (Maintenance Operations Protocol) loader is to determine the appropriate load file based on the contents of the NCP (Network Control Program) database.

Valid numerical values consist of the pound-sign character (#) and a number in the range of 0 through 128. Xyplex load servers respond to the numbers #1 through #5. The default numerical value is #1. The numerical value #1 allows you to specify a load file name via the NCP commands at a VAX/VMS load server, or via client entries on a MAXserver loader. Numerical values #2 through #4 are reserved for use by Xyplex. The numerical value #5 requires a Xyplex load server, which can be a MAXserver 1600 with a Memory card, a MAXserver 1800/1820 or a MAXserver Manager card (MAXMAN), to ignore the load request -- unless the load server's client database contains a node entry for the requesting terminal server. (The numerical value #5 is useful when you want to require that a specific Xyplex load server be used to load a MAXserver.) Numerical values #6 through #128 are currently undefined.

Type your answer and press <RETURN>.

6. The following prompts appear:

```
Enter unit IP address [0.0.0.0]:
```

Enter the Internet address of the MAXserver 1600, or press <RETURN> to accept the default address, 0.0.0.0. You must supply a non-zero Internet address if you have specified DTFTP as a loading method.

```
Enter host IP address [0.0.0.0]:
```

Enter the Internet address of the load host, or press <RETURN> to accept the default address, 0.0.0.0. You must supply a non-zero Internet address if you have specified DTFTP as a loading method.

```
Enter gateway IP address [0.0.0.0]:
```

If the load host is not on the same network as the MAXserver 1600, enter the Internet address of a gateway.

```
Enter TFTP load filename []:
```

Enter the name of the file to load (max. 64 characters)

7. The MAXserver 1600 prompts:

```
Display Load status messages (Y,N) [Y]:
```

It might be necessary to prevent the MAXserver 1600 from generating status messages during the software loading process, if a device such as a bar code reader, which cannot interpret status messages, is connected to a serial port. To disable load status messages, enter 'N'. Otherwise, leave the default (Y) intact.

8. The MAXserver 1600 prompts:

```
Use (Automatic, Standard, Thinwire) network interface [A]:
```

Valid answers to this prompt are A (Automatic), S (Standard), and T (ThinWire). If you answer A, the MAXserver 1600 will automatically determine whether it is connected to a standard or ThinWire Ethernet network. Otherwise, the unit can only be connected to the type of Ethernet interface you specify.

9. The MAXserver 1600 prompts:

```
Total installed memory in megabytes (1,3,5) [1]:
```

The prompt indicates the amount of installed memory for which the MAXserver has been configured. If you remove memory, you must change this value. (Preferably, you should change this value before you remove the memory.) Also, if you have enabled more software features than the MAXserver 1600 can support with the reduced memory, you will not be able to re-initialize the unit after you remove the SIMMs. If this happens, you must re-install the SIMMs and configure the TCP/IP-LAT software image for fewer features.

SIMMs should only be installed or removed by qualified personnel. SIMM Installation Service Instructions, which explain how to install and renove SIMM memory modules, are available from Xyplex[1].

The MAXserver 1600 automatically detects added memory. Therefore, you do not need to increase the "installed memory" value when you install additional memory. If you choose to increase the value anyway, do not do so before you install the additional memory. If you do, the MAXserver 1600 will generate the following warning message:

```
WARNING:  After saving the new configuration, you must turn the
unit off and install the additional memory specified (x MB).
```

(This message appears only while you are using the Configuration menu.)

In addition, you will be prompted to turn off the unit and install the memory if you attempt to exit the Configuration menu, saving changes (Option S). Also, the front panel lights will flash an error code the next time the MAXserver 1600 is initialized, if you have not yet installed the memory.

10. The MAXserver 1600 prompts:

```
(Type any key to continue)
```

Press any key; the MAXserver 1600 returns you to the Configuration menu.

---

1 The order code for for a 2 MByte SIMM memory upgrade kit is MX-500-5744. If you only need Service Instructions, the part number is MX-420-0608.

4.3.3 Option 3 - Initialize server and port parameters

To select this option, answer 4 to the "Enter menu selection" prompt. The server prompts:

```
When the software has been loaded, should
default server and port parameters be used (Y,N) [N]?
```

Valid answers are Y (yes) and N (no). Type your answer and press <RETURN>; the MAXserver 1600 returns you to the Configuration menu.

The parameter initialization takes effect after you exit from the Configuration menu and the MAXserver 1600 loads its image (assuming that you specify that the MAXserver 1600 should save the changes -- Option S). Changes you have made through the ROM Configuration menu take place after you exit from the menu.

If you decide that you do not want to revert to the initial values, you can again select Option 3 from the Configuration menu, and answer No to the preceding prompt, or exit without saving the changes (i.e., select Option X).

4.3.4 Option 4 - Revert to stored configuration

To select this option, answer 3 to the "Enter menu selection" prompt. The MAXserver 1600 prompts:

```
Revert to the stored configuration (Y,N) [N]? y
```

Valid answers are Y (Yes) and N (No). If you answer No, the MAXserver returns you to the Configuration menu. If you answer Yes, the MAXserver displays the messages:

```
Configuration reset to stored values.

(Type any key to continue)
```

Press any key; the MAXserver 1600 returns you to the Configuration menu (Figure 4-1). You can then exit from the Configuration menu using Option S or X.

4.3.5 Option S - Exit Saving Configuration Changes

To select this option, answer S to the "Enter menu selection" prompt. If you have made any changes, the MAXserver 1600 prompts:

```
Save changes and exit (Y,N) [Y]?
```

If the MAXserver 1600 is configured to store parameters locally, you see this message:

```
Non-volatile Storage Device Update In Progress:
Please Wait (May Take Up To One Minute)
```

If you have not made any changes, the MAXserver 1600 displays:

```
No changes made.  Exit Configuration menu (Y,N) [Y]?
```

To exit from the Configuration menu, press <RETURN>. If you do not want to exit from the menu, type 'N' and press <RETURN>; the Configuration menu appears.

4.3.6 Option X - Exit Without Saving Configuration Changes

To select this option, answer X to the "Enter menu selection" prompt. If you have made changes, the MAXserver 1600 prompts:

```
Exit without saving changes (Y/N) [N]?
```

Valid answers to this prompt are Y (Yes) and N (No). To exit the Configuration menu, type 'Y' and press <RETURN>. If you do not want to exit from the menu, simply press <RETURN>; the Configuration menu appears.

If you have not made any changes, the MAXserver 1600 displays:

```
No changes made.  Exit Configuration menu (Y,N) [Y]?
```

To exit from the Configuration menu, press <RETURN>. If you do not want to exit from the menu, type 'N' and press <RETURN>; the Configuration menu appears.

Appendix A

Technical Specifications

A.1 Technical Specifications

Table A-1 lists MAXserver 1600 and 1608 terminal server technical specifications:

Table A-1. MAXserver 1600/1608 Technical Specifications

Item	Description
Terminal Signals	Transmit Data, Receive Data, Transmit Ground, Receive Ground, Data Set Ready/Data Carrier Detect (DSR/DCD), Data Terminal Ready (DTR), Ring/Clear-to-Send (RNG/CTS), and Ready-to-Send (RTS)
Terminal Cabling	Modular RJ-45
Cable Lengths	Serial Speed — Length 19.2 Kbps or less — 305 meters (1000 feet) 38.4 Kbps — 152 meters (500 feet)
Memory Card Interface	Accepts industry standard JEIDA/PCMCIA Memory cards.
Serial Line Speed	300 to 38.4 Kbps
Maximum Sessions Per Port[1]	16
Maximum Sessions Per Unit[1]	128
Display lights	RUN, LAN, CARD, Console, Port status for serial ports
Controls	Run/Reset push button switch
Dimensions	Height -- 4.45 cm. (1.75 in.) Depth -- 30.48 cm. (12 in.) Width -- 48.26 cm. (19 in.)
Weight	3.64 kg. (8 lbs.)

1 The maximum sessions per unit/port depends on the amount of memory the unit has available. This varies based on the software features that are enabled. Refer to the *TCP/IP-LAT Software Release Notes* for more information.

Item	Description
Memory	1 or 3 MB DRAM, expandable to 5 MB with SIMM memory modules.
Environment	20% to 80% humidity, noncondensing, 0° - 40° C (32° - 113° F)
Input Voltage	110 - 240 VAC 50 - 60 Hz
Power	Maximum: 120V - 1.0A 240V - 0.5A Typical: 120V - 0.25A 240V - 0.13A 30W, 100 BTU
Software	Xyplex TCP/IP-LAT Software, V4.1 or later
Ethernet Interface	Ethernet/IEEE 802.3 Connection -- ThinWire or Standard AUI Transceiver

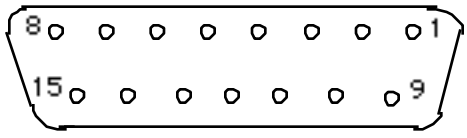
Appendix B
Cabling Considerations

B.1 Overview

This appendix describes cabling considerations you should be aware of when installing MAXserver 1600 and 1608 terminal servers.

B.2 Ethernet Transceiver Cable

Figure B-1 shows the standard 15-pin AUI connector signal assignments:



Pin	Signal
1	Chassis Ground
2	Collision +
3	Transmit +
4	Chassis Ground
5	Receive +
6	Power Return
7	Not Used
8	Not Used
9	Collision -
10	Transmit -
11	Chassis Ground
12	Receive -
13	Power (+12Vdc)
14	Chassis Ground
15	Not Used

Figure B-1. 15-Pin Female AUI Connector Signal Asignments

B.3 Cabling Options

The MAXserver 1600 and 1608 use modular cables that are designed for easy cable connections. The cabling options available from Xyplex include:

- Crossover cables (male RJ-45 to male RJ-45, 10 and 25 feet)
- Straight-through cables (male RJ-45 to male RJ-45; lengths: 1, 10, and 25 feet)
- "Octopus" cables (a single 50-pin male or female Telco connector, or a 36-pin male or female Telco DEConnect connector, fanning out to eight male RJ-45 connectors)
- DEConnect crossover cable (male RJ-45 to male MMJ, 10 and 25 feet)
- Modular adaptors:
  - Female RJ-45 to male DB-25, supporting RING signal
  - Female RJ-45 to male DB-25, supporting RTS/CTS flow control (Modems that perform compression/decompression typically use this type of flow control.)
  - Female RJ-45 to female DB-25
  - Female RJ-45 to female MMJ
  - Female RJ-45 to female RJ-45
  - Male RJ-45 to female RJ-12
  - Male RJ-45 to female MMJ
- Customer cable-making kits

Standard cabling items available from Xyplex allow you to connect to any serial device that uses a male or female DB-25 connector. All you need is the appropriate modular cable (crossover cable for connecting to a DTE device, straight-through cable for connecting to a DCE device), and the correct modular adaptor (male or female DB-25 connector), which is essentially an RJ-45-to-DB25 adaptor.

Xyplex also supplies DEConnect-compatible crossover cables and modular adaptors for use with the MAXserver 1600 and 1608. These cables are described later in Section B.3.3.

B.3.1 Making Your Own RJ-45 Cables

If you make your own cables, you should be very careful when using the crimping tool. Make sure that the RJ-45 connector is fully inserted into the die set cavity of the crimping tool, and that the wire is fully inserted into the RJ-45 connector, before crimping. The die set might be fragile, and could break if the RJ-45 connector is not properly seated before you squeeze the handle.

Also, Xyplex recommends that you use different colored wires for straight-through and crossover cables, in order to keep track of the cable type. For example, Xyplex recommends silver wire for making crossover cables and black wire for making straight-through cables.

B.3.2 Device RJ-45 Wiring Considerations

You should give special consideration to the wiring scheme when connecting a device such as a terminal to a MAXserver serial port. The MAXserver is considered a DTE device. If you want to connect to another DTE device such as a terminal that is also DTE, you will need a crossover wiring scheme somewhere in the cabling. (Communication between DTE-to-DTE devices requires a crossover.) When a DCE device is connected to a MAXserver serial port, straight-through wiring is required.

To make a modular cable with a crossover, you need only crimp the RJ-45 connector in the same direction at both ends. This crosses all wires in the cable. To make a modular straight-through cable, you need only crimp the RJ-45 connector in opposite directions at both ends. Figure B-2 shows the crossover and straight-through wiring schemes.

The crossover connects the MAXserver transmit data (XMT) line to the receive data (RCV) line of the user DTE device. Similarly, the MAXserver receive data (RCV) line crosses over to the transmit data (XMT) line of the user DTE device. The other signals are crossed over in a similar manner (see Figure B-4).

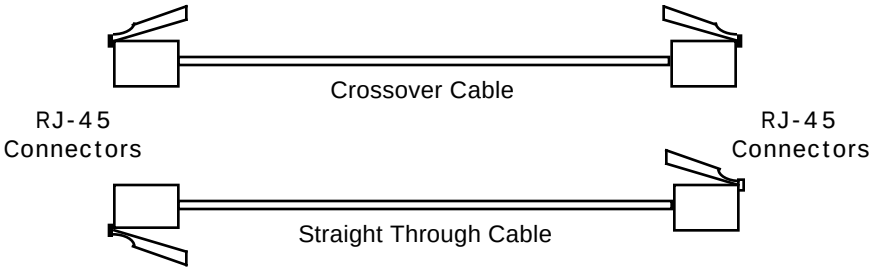


Figure B-2. Crossover and Straight-through Wiring Schemes

B.3.3 Modular Adaptors (RJ-45 to DB-25)

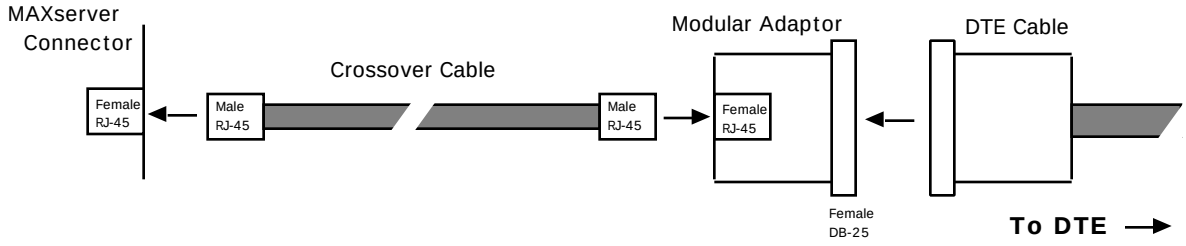
You can obtain adaptors with male and female DB-25 connectors from Xyplex. These adaptors direct signals from the RJ-45 connector on the cable to the correct pin on the DB-25 connector. Figures B-3 and B-4 show how devices are cabled when you use these adaptors. Figure B-5 shows RJ-45 and DB-25 pin assignments.

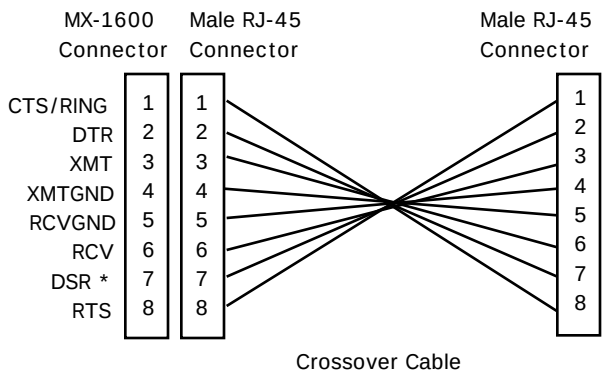
Flow Control and Modem Control

MAXserver 1600 and 1608 serial ports can be set up to support RTS/CTS flow control. Section 5.6 of the *Software Management Guid*e describes flow control options and explains how to set up flow control at a port. The adaptors shown in Figures B-3 and B-4(b) support RTS/CTS flow control. MAXserver 1600/1608 serial ports can also be set up to support modem control. Section 5.5 of the *Software Management Guide* describes modem control options and explains how to set up modem control at a port. The adaptor shown in Figure B-4(a) supports modem control, by supporting the RING signal.

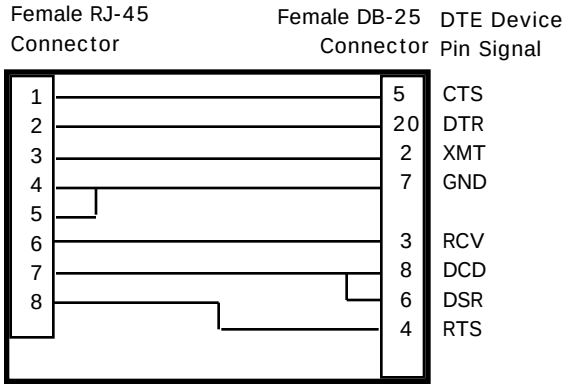
Using Existing MAXserver 1000-series Cabling

The adaptors shown in Figures B-3 and B-4 are new models, which have been designed for use with the MAXserver 1600/1608. If you have existing MAXserver 1000-series cabling at your site, the cabling can be used to connect MAXserver 1600/1608 ports to DTE devices -- provided you do not need to turn on RTS/CTS flow control at the ports. If you plan to connect the MAXserver 1600 to a DCE device, you should use one of the adaptors shown in Figure B-4.



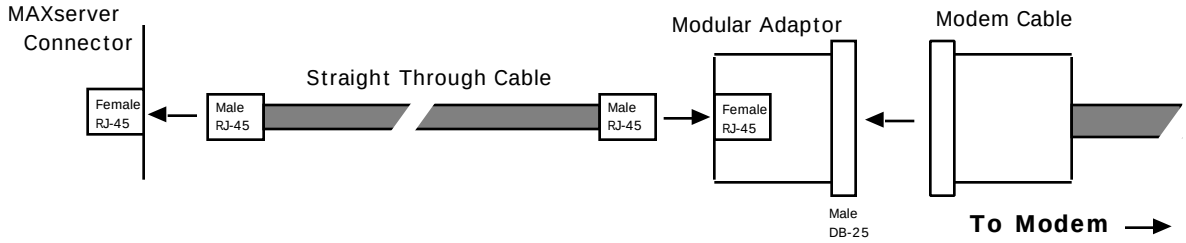


* (See Note, Page 6)

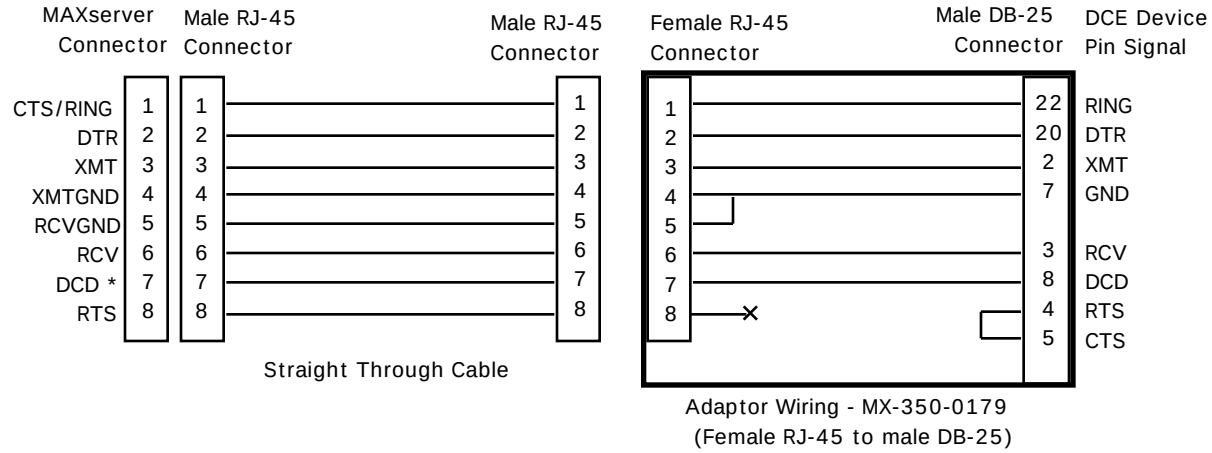


Adaptor Wiring - MX-350-0181
(Female RJ-45 to female DB-25)

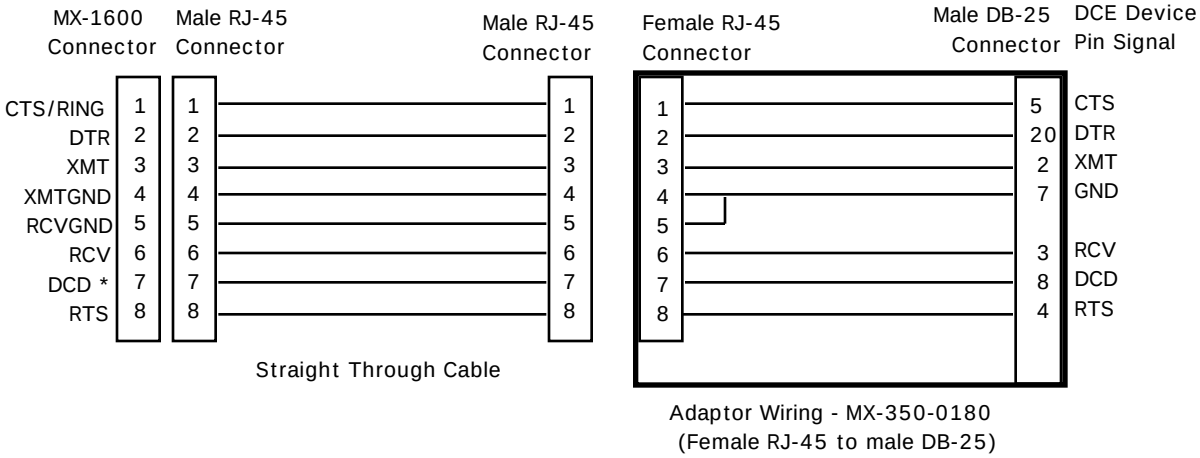
Figure B-3. Adaptor Wiring, MAXserver to DTE



(a) Supports RING:



(b) Supports RTS/CTS:



* (See Note, Page 6)

Figure B-4. Adaptor Wiring, MAXserver to DCE

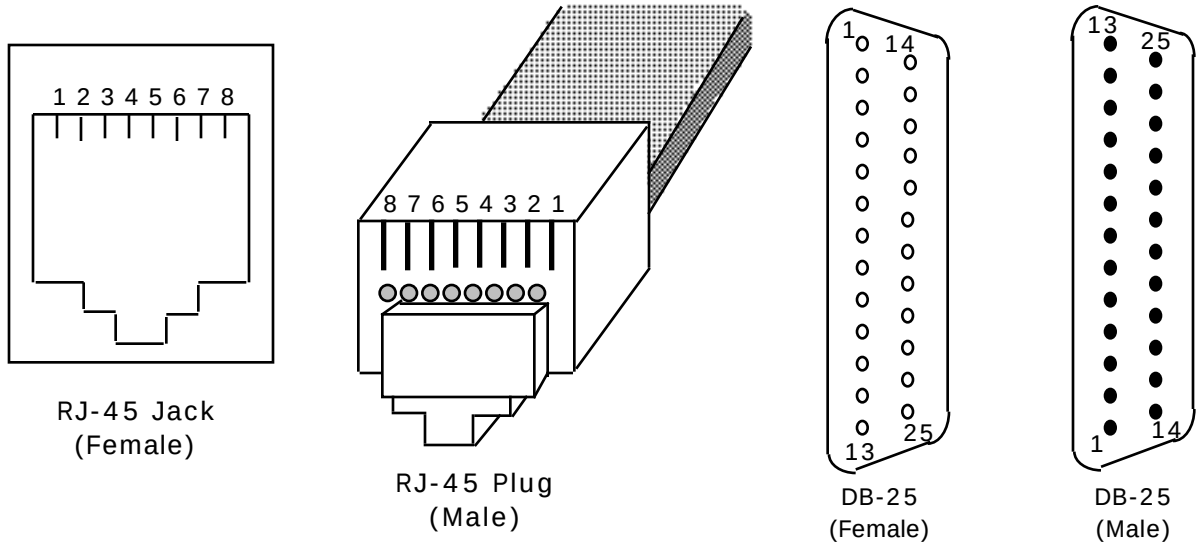


Figure B-5. RJ-45, DB-25 Pins

Notes

In order to expand the functionality of the serial interface, the MAXserver 1600/1608 modular cabling allows you to connect different signals to pin 7 of the MAXserver. (This pin is an input to the MAXserver.) When a DCE device is connected to a MAXserver serial port, the device's DCD output is connected to pin 7. In this case, the signal at pin 7 is referred to as DCD.

When a DTE device is connected to a MAXserver serial port, the device's DTR output is connected to pin 7 of the MAXserver. In this case, the signal at pin 7 is referred to as DSR. (This cabling scheme also provides DECconnect compatibility, since DECconnect does not support the DCD signal.)

B.3.4 DEConnect RJ-45 Cables

Figure B-6 shows the DEConnect-compatible cables available from Xyplex and shows how the cables are wired. The Male RJ-45 connector is attached to the server. The MMJ connector attaches to the DEConnect-compatible device (DTE). The cable is a crossover cable that uses the six inner pins of the server port and makes the signals available at the MMJ connector. The cable is constructed using standard six-wire cable.

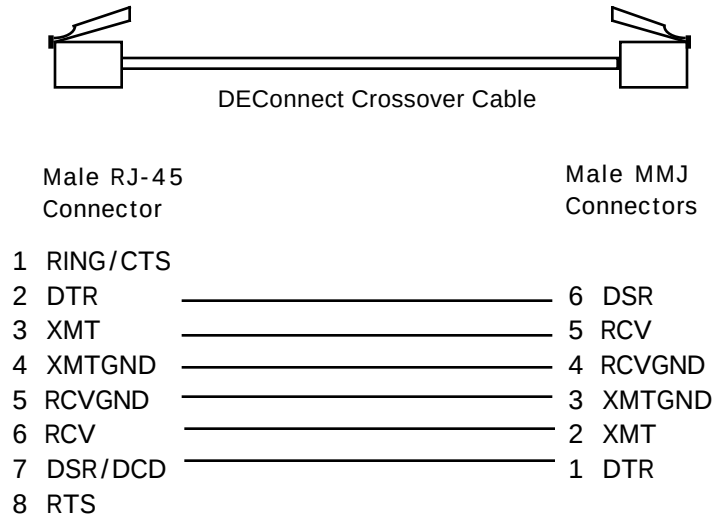


Figure B-6. MAXserver 1600 DEConnect Cable

Note

If you have existing DEConnect cables that you want to use with the MAXserver 1600/1608, the one-foot straight through cable and the RJ-45 to MMJ adaptor or modular adaptor allow you to use these cables without making any changes. You can also use the male RJ-45 to female MMJ adaptor.

B.3.5 Octopus Cables

An octopus cable fans out a single 50-pin male or female Telco connector, or a 36-pin male or female Telco DEConnect connector, to eight male RJ-45 connectors. These cables enable you to connect a MAXserver's serial ports to existing wiring in your facility. For example, you can use octopus cables to connect the MAXserver's serial ports to a punch down block.

Figure B-7 shows an octopus cable with a 50-pin Telco connector:

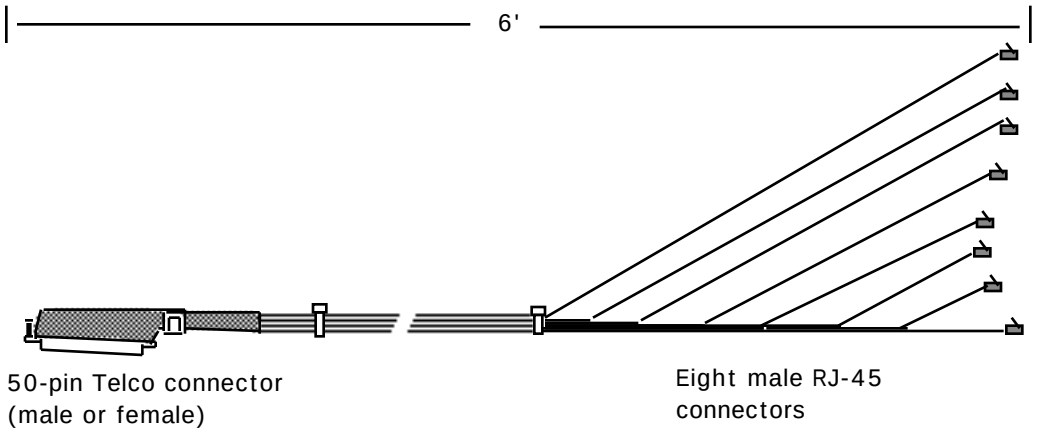


Figure B-7. Octopus Cable with 50-pin Telco Connector

Figures B-8 shows an octopus cable with a 36-pin female Telco DEConnect connector. Figure B-9 shows an octopus cable with a 36-pin male Telco DEConnect connector.

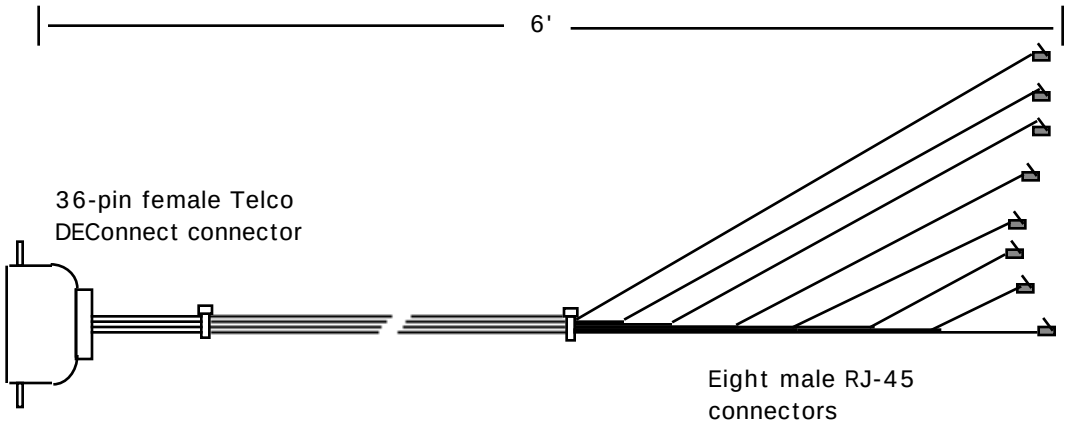


Figure B-8. Octopus Cable With 36-pin Female DEConnect Connector

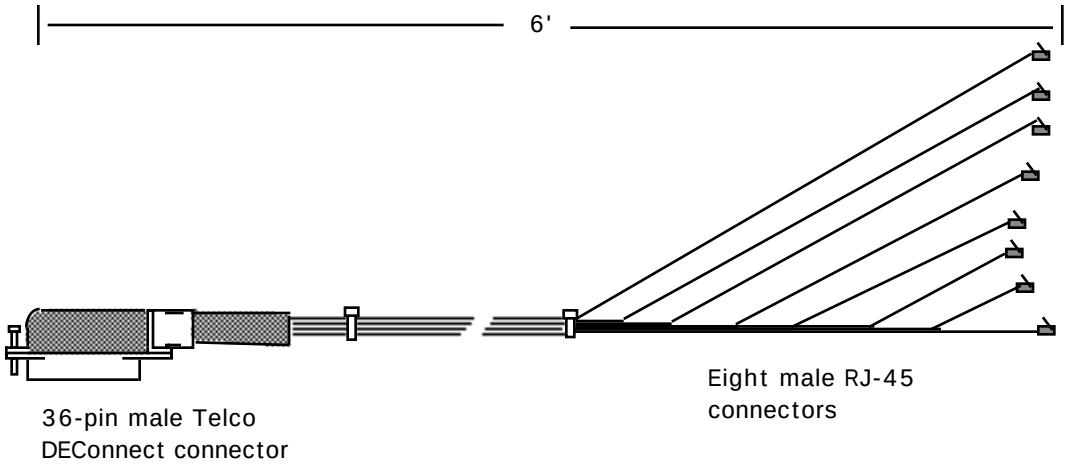


Figure B-9. Octopus Cable With 36-pin Male DEConnect connector

Connecting to a Distribution Panel

By using two types of octopus cable, you can connect MAXserver 1600/1608 serial ports to a distribution panel that has DB-25 connectors. This enables you to adapt MAXserver 1600 cabling to Xyplex TSERV-style cabling. Xyplex offers octopus cables that fan out a 50-pin Telco connector to eight male or female DB-25 connectors. These cables are available in 3', 6', 10', 25' and 50' lengths. You can connect the unit to the distribution panel via the two octopus cables as shown in Figure B-10. (You might need an extension cable to connect the two cables.)

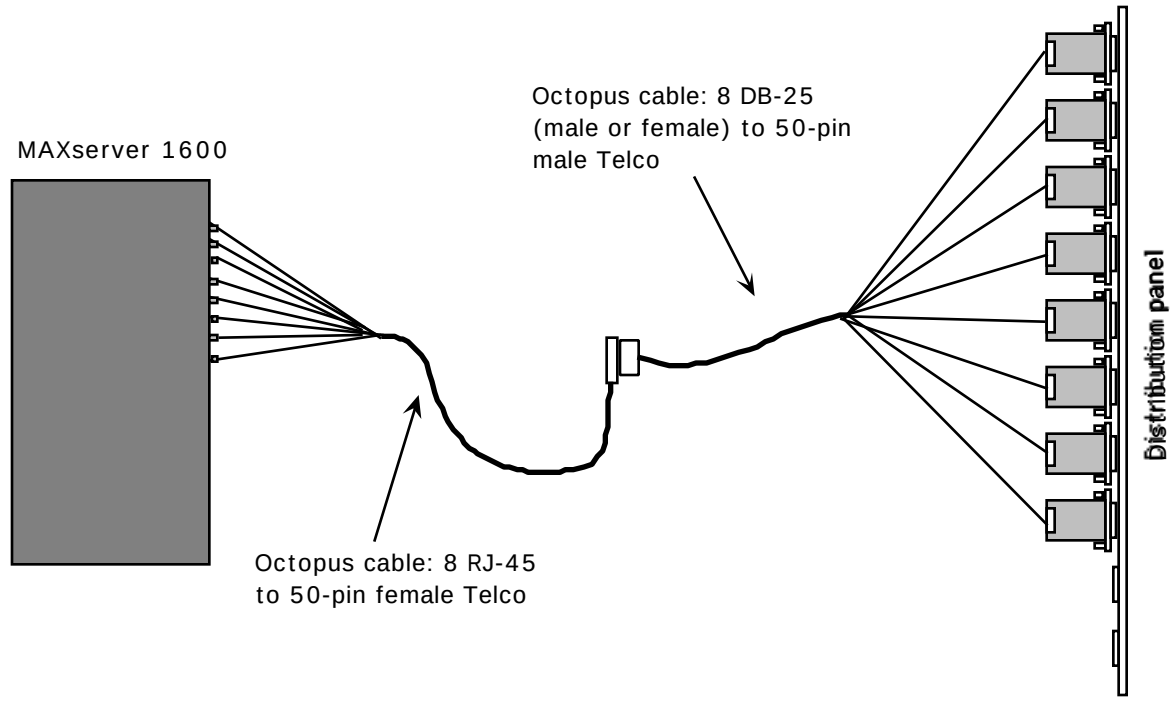


Figure B-10. Connecting MAXserver 1600 to DB-25 Distribution Panel

B.3 Order Codes

Cables and Modular Adaptors

RJ-45 Straight Through and Crossover Cables (see Figure B-1)

Straight through cable, male RJ-45 to male RJ-45, 7.62 m (25 feet)		MX-151-3025
Crossover cable, male RJ-45 to male RJ-45, 7.62 m (25 feet)		MX-151-3026
Straight through cable, male RJ-45 to male RJ-45, 3.05 m (10 feet)		MX-151-3027
Crossover cable, male RJ-45 to male RJ-45, 3.05 m (10 feet)		MX-151-3028
Straight through cable, male RJ-45 to male RJ-45, 0.305 m (1 foot)		MX-151-3033

"Octopus" Cables

"Octopus" cable, eight male RJ-45 to one female 50-pin TELCO connector, 1.83 m (6 feet), used to adapt MAXserver 1000 Series cabling to Xyplex TSERV-Style cabling (see Figure B-7)		MX-151-3034
"Octopus" cable, 8 male RJ-45 to 1 male 50-pin Telco (see Figure B-7)		MX-151-3035
"Octopus" cable, 8 male RJ-45 to 1 male 36-pin Telco DEConnect (see Fig. B-8)		MX-151-3036
"Octopus" cable, 8 male RJ-45 to 1 female 36-pin Telco DEConnect (see Fig. B-9)		MX-151-3037
"Octopus" cable, 8 female DB-25 to 50-pin male Telco, "null modem" wired (see Figure B-8):	.915 m (3 feet)	MX-151-3085
	1.83 m (6 feet)	MX-151-3109
	3.05 m (10 feet)	MX-151-3095
"Octopus" cable, 8 male DB-25 to 50-pin male Telco, wired "straight-through" (see Figure B-10):	.915 m (3 feet)	MX-151-3088
	1.83 m (6 feet)	MX-151-3098
	3.05 m (10 feet)	MX-151-3101
	15.24 m (50 feet)	MX-151-3103
Modular adaptor, female RJ-45 to male DB-25, supporting RING signal, with red/gray casing (see Figure B-3)		MX-350-0179
Modular adaptor, female RJ-45 to male DB-25, supporting CTS/RTS flow control, with red/gray casing (see Figure B-3)		MX-350-0180
Modular adaptor, female RJ-45 to female DB-25 (supports CTS/RTS flow control), with red/white casing (see Figure B-4)		MX-350-0181
Modular adaptor, female RJ-45 to female MMJ connector		MX-350-0190
Modular adaptor, female RJ-45 connector to female RJ-45 connector Coupling used to connect 2 RJ-45 and/or RJ-12 style modular cables		MX-350-0191
Modular adaptor, male RJ-45 to female RJ-12, used to adapt MAXserver 1000 Series cabling to TSERV-style cabling		MX-350-0197
Modular adaptor, male RJ-45 to female MMJ		MX-350-0198

DEConnect Cables (See Figure B-4)

Crossover cable, male RJ-45 to male MMJ, 7.62 m (25 feet; see Figure B-4)	MX-151-3032
Crossover cable, male RJ-45 to male MMJ, 3.05 m (10 feet; see Figure B-4)	MX-151-3031

Cable-Making Products

Cable, 8-wire, with silver casing (recommended for making cross-over cables), 305 m (1000 feet)	MX-150-0110
Male RJ-45 connectors, quantity 100	MX-170-0399
Crimping tool for RJ-45 male connectors	MX-350-0186
Crimping tool for MMJ male connectors	MX-350-0194
Conversion kit to convert crimping tool to accept RJ-45 plugs	MX-350-0195
Conversion kit to convert crimping tool to accept MMJ plugs	MX-350-0196

Appendix C
Network Configurations

C.1 Overview

This appendix describes possible Ethernet configurations using one or more terminal servers.

C.2 Ethernet Configuration Rules

The MAXserver 1600/1608 terminal servers support the Ethernet configuration rules for multiport transceivers. On networks with an Ethernet backbone, there must be no more than **one** multiport transceiver between the MAXserver 1600/1608 and the backbone, as shown in Figure C-1:

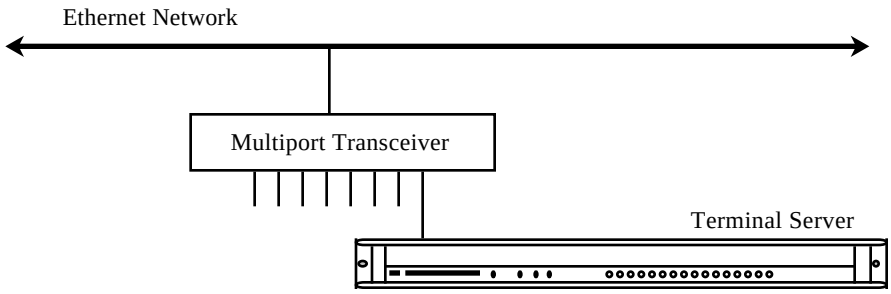


Figure C-1. Valid Multiport Transceiver Configuration on Ethernet Backbone

Two multiport transceivers can be linked (cascaded) together in a standalone network that has no Ethernet backbone, as shown in Figure C-2:

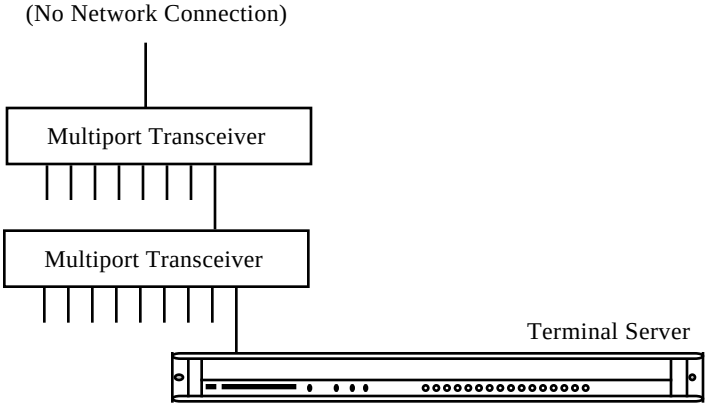


Figure C-2. Valid Multiport Transceiver Configuration on a Standalone Network

Invalid multiport transceiver configurations include:

- More than **one** multiport transceiver between the MAXserver1600/1608 and an Ethernet backbone, as shown in Figure C-3.
- More than two multiport transceivers cascaded together in a standalone network that has no Ethernet backbone, as shown in Figure C-4.

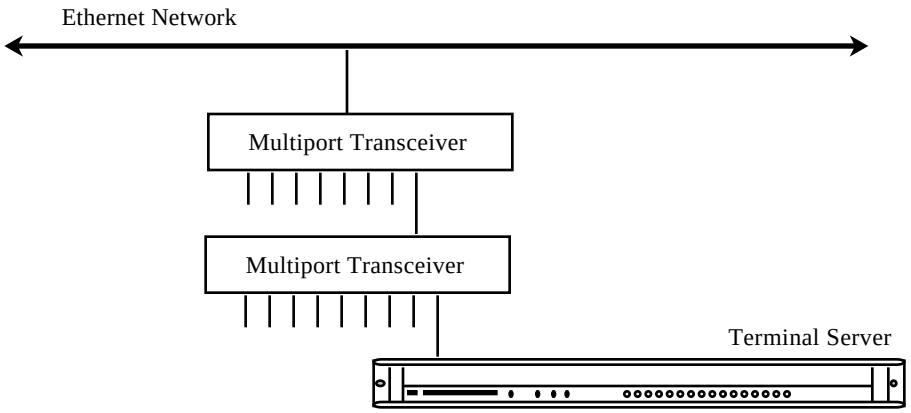


Figure C-3. Invalid Multiport Transceiver Configuration on an Ethernet Backbone

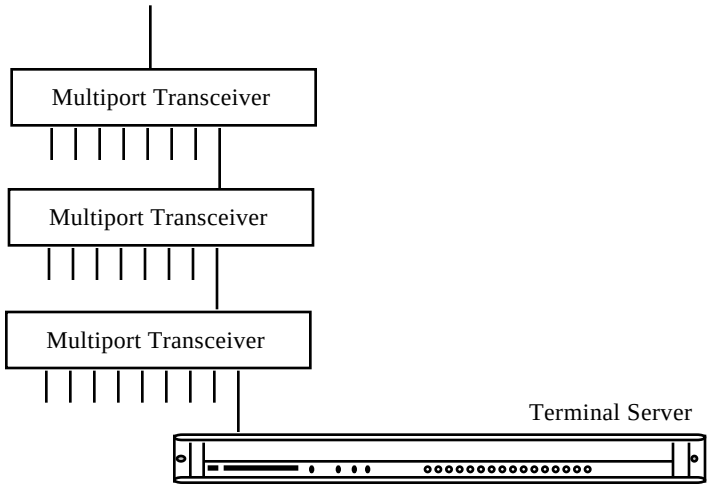


Figure C-4. Invalid Multiport Transceiver Configuration on a Standalone Network

C.2.1 Configuration Rules -- Background Information

Multiport transceivers, such as the DEC DELNI and Cabletron MT-800, send a Signal Quality Error (SQE) to all ports when a transmission from any port ends. If several multiport transceivers are cascaded together to form a hierarchical network connection (a configuration not recommended by DEC), the MAXserver 1600/1608 might receive an SQE near the end of a packet. This causes the MAXserver to believe that an error (i.e., a collision) has occurred.