Remote Support

(CRAY T90 ™ Series)

HMM-106-A

Cray Research Proprietary

Cray Research, Inc.

Record of Revision

REVISION	DESCRIPTION
	June 1995. Original printing.
A	April 1996. Reprint with revision. This revision reflects changes to remote support, resulting from the implementation of the display-back feature, XECHO.

REMOTE SUPPORT

Figures

Tables

Remote Support Overview

Remote Support is a tool that is used to troubleshoot, support, and maintain a CRAY T90 series computer system from a location other than a customer site location. Remote Support enables a Cray Research service provider to perform, from a remote location, all of the same diagnostic functions that are available from the maintenance workstation of the CRAY T90 series system.

At the customer site location, the standard remote access package includes the following hardware devices:

- A standard telephone line to enable remote access.

  If site security regulations permit the use of a modem, contact the local telephone company well in advance of system delivery to arrange for installation of the appropriate telephone line. The customer is responsible for installing a public-switched data telephone line, such as a telephone, X.25 pad, or ISDN terminal adapter.

- A Microcom DeskPorte *FAST* ES 28.8 modem or a Microcom DeskPorte 28.8S modem.

  Microcom modems are standard equipment for all system shipments in North America and provide predictable performance and reliability. The brand, model, and design of the modem used at locations outside North America may vary according to local government regulations. Network administrators can provide specific information about basic modem settings to facilitate the installation of modems purchased from other vendors.

- A NetBlazer model PN2 router that provides TCP/IP dial-up connectivity to the site.

  The NetBlazer provides Transmission Control Protocol/Internet Protocol (TCP/IP) dial-up connectivity to the site. Remote Support administrators and Cray Research Service personnel install and configure the appropriate software on the Telebit NetBlazer dial-up router.

Remote Access Hardware Configuration

Refer to Figure 1 for a diagram of the site support equipment configuration for a CRAY T90 series system.

Figure 1. Site Remote Support Configuration for CRAY T90 Series Systems
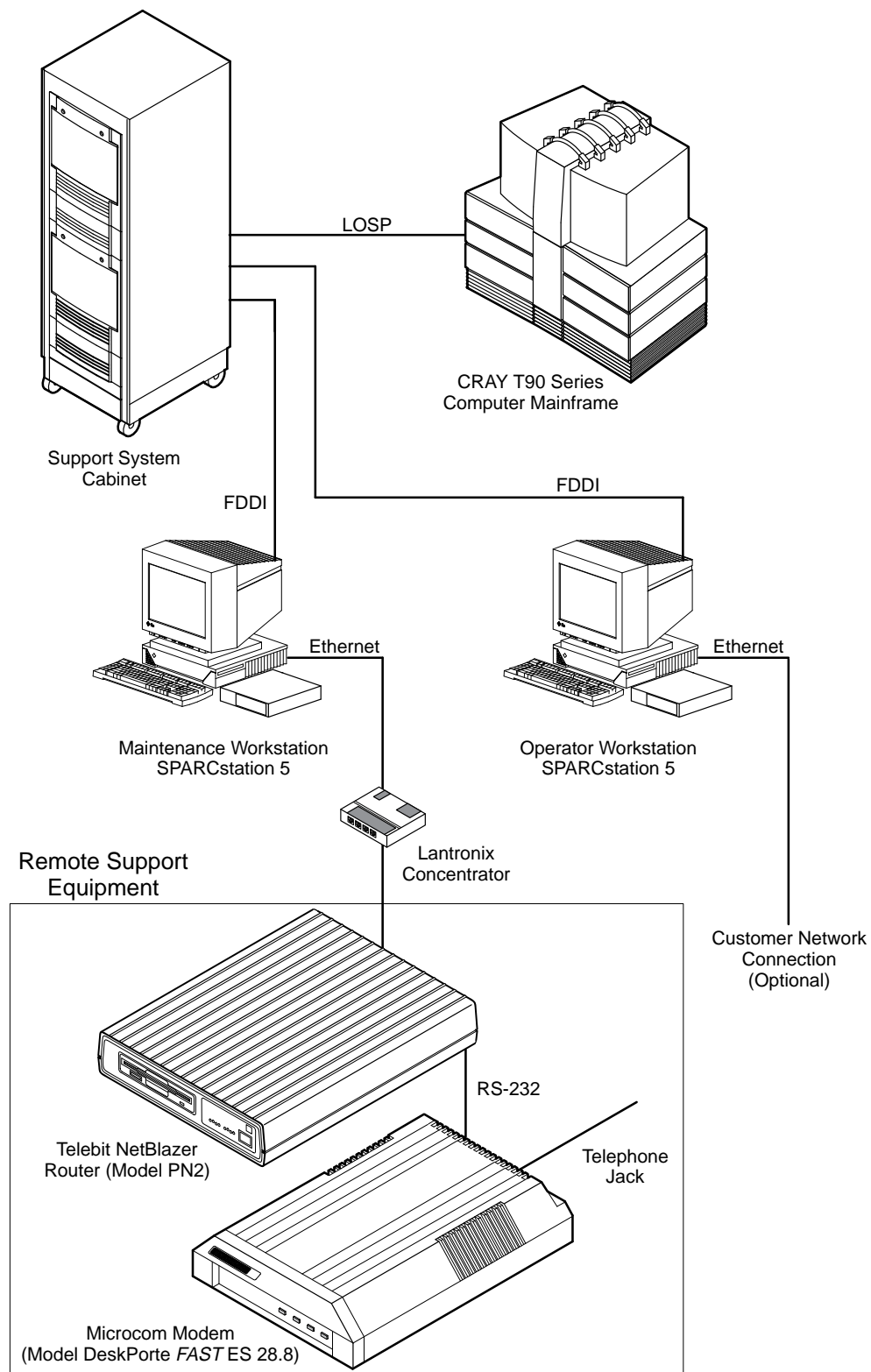
Part Number Information for Remote Support

Table 1 lists all the equipment and cables required to establish a remote support connection to a CRAY T90 series system. If you wish to continue using an earlier model NetBlazer or modem, you should also continue using the cables that accompanied that equipment.

Table 1. Remote Support Components

Part Number	Description
35457100	Telebit NetBlazer PN2
35487700	Microcom DeskPorte *FAST* ES modem or Microcom DeskPorte 28.8S modem (North America only)
13195300	Cable, Ethernet, RJ45 to RJ45, 5-ft (Lantronix to NetBlazer model PN2)
01751000 †	Cable, RS-232, 25-pin male to 25-pin female (Modem to NetBlazer)

† Use this number to order a replacement cable only. The initial RS-232 cable is included in the NetBlazer shipment.

Cable Pin Assignments

Table 2 and Table 3 provide cable pinout information for general reference. (This information is also available in the *NetBlazer Installation and Configuration Guide*, Telebit Corporation publication number 90270-01.)

Table 2. Pinouts for the Lantronix Concentrator to NetBlazer Cable

Pin	Description	Pin	Description
1	Data Out (+)	5	Not Connected
2	Data Out (−)	6	Data In (−)
3	Data In (+)	7	Not Connected
4	Not Connected	8	Not Connected

Table 3. Pinouts for the Modem to NetBlazer Cable

Pin	Description	Pin	Description
2	Transmit Data (TxD)	7	Signal Ground
3	Receive Data (RxD)	8	Data Carrier Detect (DCD)
4	Request to Send (RTS)	20	Data Terminal Ready (DTR)
5	Clear to Send (CTS)	22	Ring Indicator (RI)
6	Data Set Ready (DSR)		

Installation of Remote Support Equipment

Use the following procedure to install the standard remote support equipment. The only tool required is a 1/8-in., flat-bladed screwdriver.

NOTE: If you are reinstalling remote support components that are not listed in Table 1, please refer to the Appendix for supplemental information.

Order a public-switched communication line that is either a telephone, X.25, or ISDN connection, as appropriate. The telephone line should be a direct outside line that is not routed through a PBX system.

1. Install the Ethernet cable (13195300) between any RJ45 connector at the front of the Lantronix concentrator (Figure 2) and the RJ45 connector at the back of the NetBlazer (labeled UTP in Figure 3). The cable snaps into place when properly connected.

Figure 2. Lantronix Concentrator
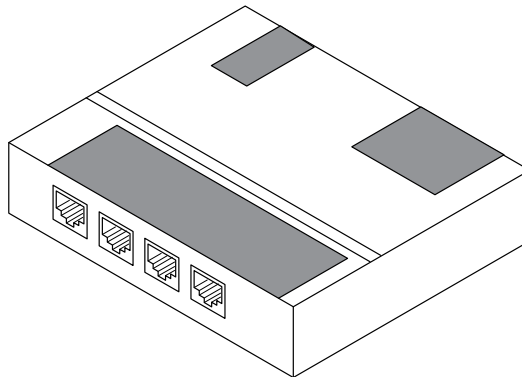
Figure 3. Telebit NetBlazer Model PN2 (Back View)
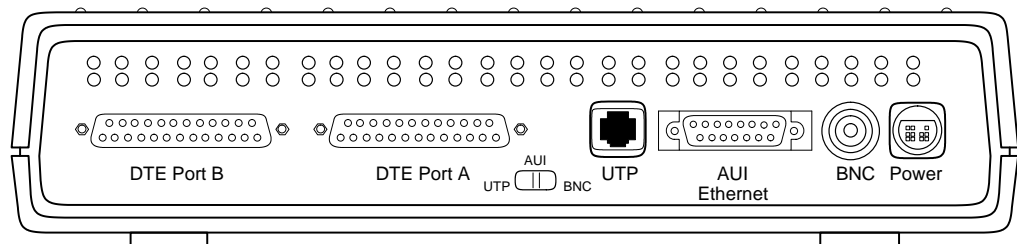
2. Set the Ethernet media selector switch at the back of the NetBlazer to UTP.

3. Install the RS-232 cable (01751000) between the 25-pin male DTE Port A connector at the back of the NetBlazer (Figure 3) and the 25-pin female DTE (or SERIAL PORT) connector at the back of the modem. Tighten the screws to secure the cable. (Refer to Figure 4 and Figure 5 for illustrations of the DeskPorte modem connectors.)

4. Plug one end of the supplied telephone cable into a telephone wall jack.

5. Plug the other end of the telephone cable into the connector on the back of the modem marked TO JACK (or LINE). The cable snaps into place when properly connected.

Figure 4. Microcom DeskPorte *FAST* ES 28.8 Modem, Back View

Cray Research Proprietary
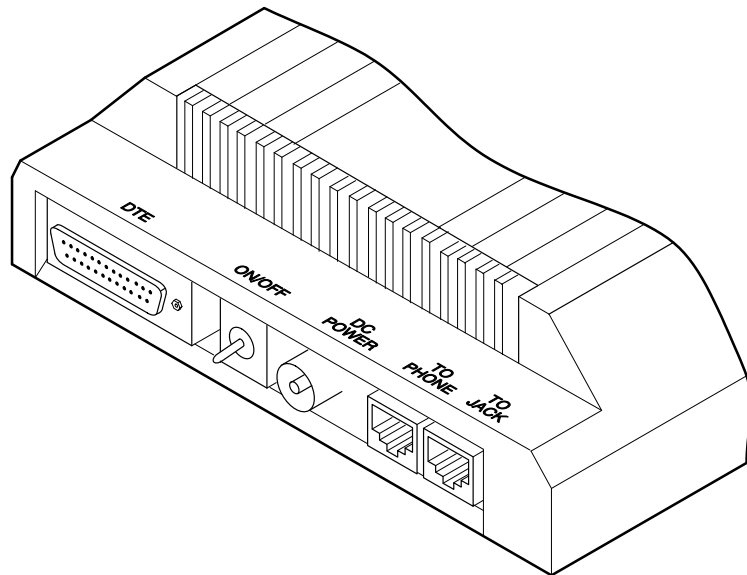
Figure 5. Microcom DeskPorte 28.8S Modem, Connectors and Switch
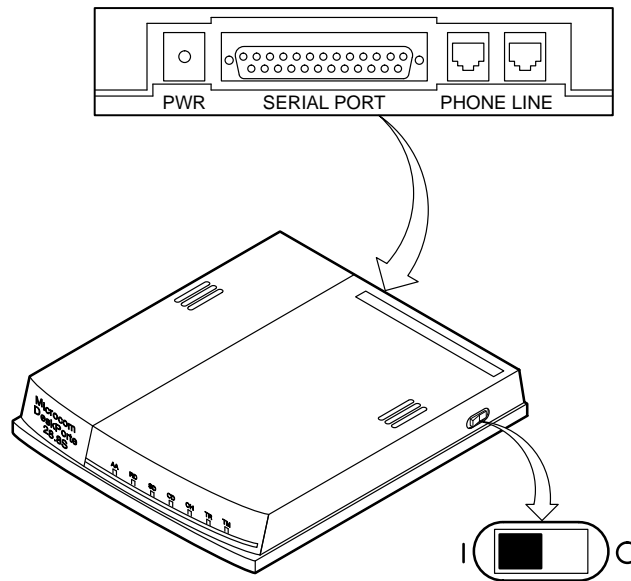
6. The NetBlazer PN2 is supplied with an autoranging universal power supply that automatically adapts itself to your line voltage. Connect the AC power cord supplied with the NetBlazer PN between the power cord connector on the power supply and an AC outlet.

7. Connect the male DC power connector between the power cord connector on the power supply and the receptacle labeled Power on the back of the NetBlazer PN2.

8. Insert the floppy disk that you received from the remote support administrator into the NetBlazer.

9. Press the POWER switch at the front of the NetBlazer PN2 to the right to apply power to the unit. When the NetBlazer PN2 is first powered on, it performs two automatic processes:

    • Power On Self Test (POST). This test consists of a series of specific hardware exercises that must successfully complete in turn. Passing this test indicates that the NetBlazer is functioning normally.

    • Booting. The NetBlazer operating system software on the floppy disk drive is loaded into memory.

When the POST sequence has finished, all four LEDs in the group next to the power switch flash on and off three times at a rate of one flash per second. At this point, the NetBlazer PN2 software begins loading from the floppy disk drive. During this time, the leftmost LED (RDY) blinks to indicate activity. After software loading has finished, this LED remains illuminated.

If an error is detected during POST, a stationary pattern is displayed on the Ethernet status LEDs. Document which LEDs are illuminated before you replace the unit.

10. Plug the barrel connector at the end of the modem power cable into the DC POWER (or PWR) socket at the back of the modem.

11. Plug the power supply into a wall outlet. Push the ON/OFF switch at the back of the modem to the left. The PWR indicator on the front panel should illuminate. (On the Microcom DeskPorte 28.8S modem, a sliding power switch is located on the side of the modem; there is no PWR indicator. Refer to Figure 5.)

The NetBlazer and modem are now connected to your maintenance workstation, to the power source, and to the telephone line. If you are using a Microcom QX4232 type modem, please refer to the subsection titled "Configuring Microcom QX/4232 Series Modems" in the Appendix for additional instructions.

Notational Conventions

This document uses the following style conventions to describe software used on a CRAY T90 series system:

- The base of a number is decimal unless otherwise stated; all memory references are in octal or hexadecimal.

- `Courier` type indicates directory pathnames, filenames, UNIX shell commands, console messages, and shell output.

- **`Courier bold`** type indicates commands, options, and field inputs that the user should enter at the command prompt.

- *Italic* type indicates a variable or user-supplied entry.

- *Enter* means either to type a command or to select a menu command and then press the Enter or Return key on your keyboard. Enter replaces the ↵ symbol.

- Commands must be entered as shown in the command syntax. Spaces must be included or left out as shown.

- References to "local" and "remote" systems (or devices) mean that the "local" system is physically closest to you and the "remote" system is at the location to which you wish to connect.

Configuring Internet Addresses for Remote Support

NOTE: Before you begin this configuration process, your site must already have obtained a NetBlazer diskette and an Internet protocol (IP) address for the MWS-T from the remote support system administrator. Also please read the procedural NOTE on page 14 before you begin.

To configure the NetBlazer software at the MWS-T, you must have superuser privileges to make and save the changes in the procedure that follows. You will be configuring several Internet addresses that are required for remote support and for the addition of routing information.

To configure the Ethernet port, either execute the following scripted procedure or skip to Page 13 and execute the manual procedure.

Scripted Procedure

1. Log on to the MWS-T as `root`.

2. Enter **`/cri/bin/cray-rs.mwse`** to start the script.

3. When prompted, enter the appropriate IP addresses that have been assigned to your system. These addresses appear on the label of the NetBlazer diskette.

```
mws7777# /cri/bin/cray-rs.mwse

Property of Cray Research, Inc.
cray-rs.mwse: a program to configure Remote Support on an MWS-E or an MWS-T

This program will modify the files:
  /etc/hosts
  /etc.rc.local

Backup copies will be saved at:
  /etc/hosts.old
  /etc/rc.local.old

A file will be created called:
  /etc/rc.crayremote

Proceed? [Y/n]: y

Enter the serial number of the Cray system: 9999
For the MWS Ethernet address 147.219.X.Y, what is X?: 1
For the MWS Ethernet address 147.219.X.Y, what is Y?: 2
Is the NetBlazer Ethernet address 147.219.1.3? [Y/n]: n

For the NetBlazer Ethernet address 147.219.1.Z, what is Z?: 4

Remote Support hubs are located in the following countries:

        Australia
        France
        Germany
        Japan
        Korea
        Netherlands
        UK
        USA

Enter the country of the Remote Support hub for this machine: usa
...........add host: nb9999: gateway mws9999
add host chgus1: gateway nb9999
add host chgus2: gateway nb9999
.done.
```

Manual Procedure

To execute the manual version of the configuration procedure:

1. Enter the `vi` command to modify the `/etc/hosts` file.

```
vi /etc/hosts
```

2. Append the following lines to the `/etc/hosts` file:

```
#
#   Cray Research, Inc., Remote Support
#
147.219.xxx.yyy   mws####
147.219.xxx.yyz   nb####
IP_address_chg#1 host_name_chg#1
IP_address_chg#2 host_name_chg#2
```

In this procedure:

- `xxx.yyy` is the local net/host portion of the IP address
- `xxx.yyz` is the local net/host portion of the IP address + 1
- `####` is the system serial number
- `chg#1` is the primary service Communication Hub Gateway
- `chg#2` is the secondary service Communication Hub Gateway

Remove any other references to *mws####*, *nb####*, *host_name_chg#1*, and *host_name_chg#2* from the `/etc/hosts` file.

3. Save the modified `/etc/hosts` file by entering:

```
:w!
ZZ
```

4. Change the IP address for le0 by entering:

```
/etc/ifconfig le0 mws####
```

NOTE: When you change the IP address of the MWS-T, you must verify that the actual IP address of the Annex communication server is set to the address that is supplied by your remote support administrator. Otherwise, you may not be able to power on the CRAY T90 series system. Refer to the *Annex Communications Server Installation Guide*, HMM-054-B, for further instructions.

5.   Create a file named `rc.crayremote` by entering:

```
vi /etc/rc.crayremote
#
# Cray Research, Inc.
#Routes for NetBlazer Connection
#
/usr/etc/route add nb#### mws#### 0
/usr/etc/route add host_name_chg#1 nb#### 1
/usr/etc/route add host_name_chg#2 nb#### 1
```

6.   Save the `rc.crayremote` file by entering:

```
:w!
ZZ
```

7.   Set permissions on the `rc.crayremote` file by entering:

```
chmod 744 /etc/rc.crayremote
```

8.   Execute the `rc.crayremote` file by entering:

```
/etc/rc.crayremote
```

9.   Enter the `vi` command to modify the `/etc/rc.local` file.

```
vi /etc/rc.local
```

This file, which is always referenced during a system start-up, is a pointer to the `rc.crayremote` file.

10. Append the following lines to the /etc/rc.local file:

```
#
#   Cray Research, Inc.
#   Remote Support Routing Assignments
#
/etc/rc.crayremote
```

11. Save the rc.local file by entering:

```
:w!
ZZ
```

Telebit NetBlazer Router

The Telebit NetBlazer router is a multipurpose Transmission Control Protocol/Internet Protocol (TCP/IP) device used as a dial-up router for transferring IP data over a public telephone, ISDN, or X.25 network. It can route IP data to another host on the same network or through the public-switched telephone network to a host connected to another NetBlazer.

Network users will be unaware of most NetBlazer operations. The NetBlazer transparently performs all the tasks necessary to establish a remote connection without user interaction. When a user starts a telnet session to a remote location, the local NetBlazer automatically establishes the connection to the remote NetBlazer at that location.

The NetBlazer selected for CRAY T90 series remote support is the NetBlazer model PN2, which is shown in Figure 3 and Figure 6.

Figure 6. Telebit NetBlazer Model PN2 (Front View)
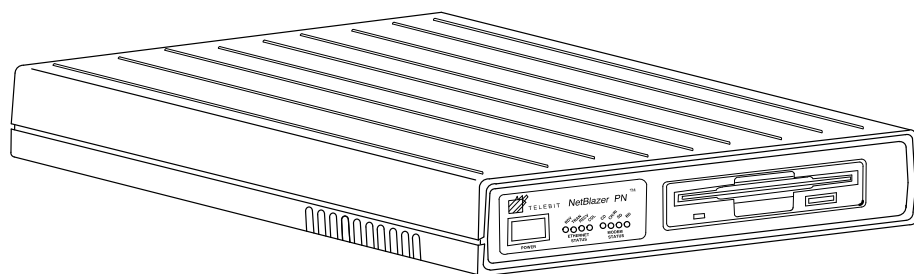
The PN2 model provides two serial RS-423 DTE ports and a single Ethernet port that is switch selectable to one of three media type interfaces: 10Base5 (AUI), 10BaseT (UTP), or 10Base2 (thin Ethernet). A 1.44-Mbyte 3.5-in. floppy diskette drive loads the NetBlazer operating system. The PN2 model contains no user-serviceable parts.

Microcom DeskPorte Series Modems

The Microcom DeskPorte *FAST* ES 28.8 modem (refer to Figure 7) and the physically smaller Microcom DeskPorte 28.8S modem (refer to Figure 8) are the standard modems used for remote support on CRAY T90 series systems. Both DeskPorte modems offer V.fast data transfer at speeds nominally up to 28,800 bps with MNP Class 10, Adverse Channel Enhancements (ACE), and Dynamic Transmit Level Adjustment (DTLA). Both modems are functionally equivalent and have the same part number.

Figure 7. Microcom DeskPorte *FAST* ES 28.8 Modem, Front and Back Views

Figure 8. Microcom DeskPorte 28.8S Modem

Unlike the Microcom QX4232*bis* modem used on earlier systems, Microcom DeskPort modems have no hardware configuration switches. Your NetBlazer communications software will initialize the modem and make all the configuration settings for you.

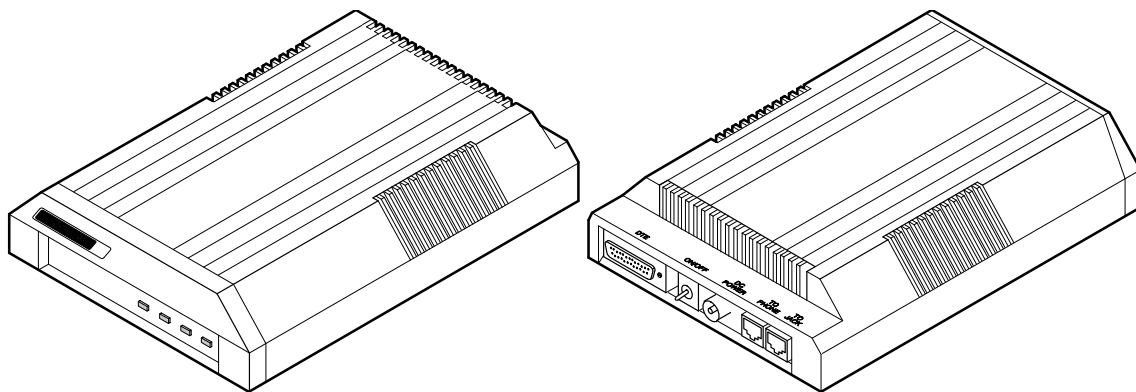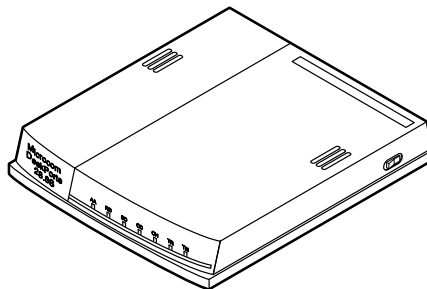Cray Research Proprietary

Establishing Remote Connections with XECHO

The following subsections describe how to use XECHO procedures to connect to the on-site MWS-T in preparation for starting MME remotely from a service center (your workstation).

NOTE: For information about configuring and operating xelog and nwacs remotely, refer to *xelog, xcfg, and nwacs User Information*, publication number HDM-012-D.

XECHO is a hub workstation program that provides X Window display-back capabilities for remote support. X Window connections are ordinarily established through a TCP/IP connection on port 6000. The security firewall into the Cray Technical Network (CTN) filters out traffic on this port. The XECHO program provides a mechanism for redirecting X Window traffic through a different TCP/IP port and forwards the X Window traffic from the site to your workstation within the CTN. The XECHO program can run either directly from a command line or more transparently with the XSM program.

The Remote Support package provides an extended remote TCP/IP network connection to a site. Service personnel must first connect to a Communication Hub Gateway (hereafter called a *hub*) with the telnet command before connecting to a site, as described in the following subsection. Once you establish a remote connection to the on-site maintenance workstation, you can run diagnostic tests and other programs on the CRAY T90 series computer system and display the results on your workstation.

Prerequisites

You must satisfy the following conditions before you start maintenance software from a service center through a hub:

- The service center system must have a network connection to the hub.

- Each end of the connection between the site MWS-T and the hub must have a modem and a NetBlazer router.

- The user must have a login account for the hub and for the site MWS. (At the hub and at the site maintenance workstation, the user must be registered in the mws group.)

XECHO Connection

The following procedures describe how to use XECHO with the command line or xsm methods.

Command Line Method

1. In a window, enter the following command to enable redirection of the hub workstation display image to the service center workstation:

    ```
    xhost + hub
    ```

    Replace *hub* with the hostname of the hub workstation.

2. Connect to the hub workstation by entering:

    ```
    telnet hub
    ```

    Replace *hub* with the hostname of the communication hub workstation; for example, chgus1.

3. In the hub window, enter one of the following commands (depending on your shell type) to set the DISPLAY variable to your service center workstation:

    ```
    DISPLAY=your_workstation:0.0
    export DISPLAY
    ```

    or

    ```
    setenv DISPLAY your_workstation:0.0
    ```

    Replace *your_workstation* with the hostname of your workstation.

4. Enter the following command to start xecho:

> **/cri/bin/xecho** *[-display* x-display*]* *host*

Option	Description
-display x-display	x-display identifies the X Window display to which all X Window traffic is directed. The default setting is the DISPLAY environment variable.
host	The host parameter is required. The host parameter identifies the name of the site workstation to which XECHO, using Telnet, will connect. XECHO will accept X Window connections from this host only.

For example: /cri/bin/xecho –display ncd:0.1 mws####

5. In the same window, a display that is similar to Figure 9 should appear. Log in to the MWS-T and set the DISPLAY variable exactly as displayed in the window. Select the command that is appropriate to your workstation shell.

Figure 9. Setting up XECHO Using the Command Line Method


```
$ /cri/bin/xecho mws4008

!!!! The DISPLAY environment variable MUST be set on
!!!! the site workstation in one of the following ways:

sh:
  DISPLAY=198.149.100.1:1190.0; export DISPLAY

csh:
  setenv DISPLAY 198.149.100.1:1190.0

Trying 147.219.130.2 ...
Connected to mws4008.
Escape character is '^]'.


SunOS UNIX (mws4008)

login: mws
Password:
Last login: Wed Nov  1 15:26:03 from chgus2
SunOS Release 4.1.2 (MWS_FY) #1: Tue Feb 15 14:44:06 CST 1994

You have new mail.
Setting window size to 24 x 80
mws4008$ DISPLAY=198.149.100.1:1190.0; export DISPLAY
mws4008$ pwd
/cri/mws
mws4008$ █
```

6. You are now in control of the MWS-T and can start an X Window application in the site workstation window.

7. When the remote support session is complete, exit from the site workstation and from the hub workstation.

xsm Method

1. In a window, enter the following command to enable redirection of the hub workstation display image to the service center workstation:

```
xhost + hub
```

Replace *hub* with the hostname of the hub workstation.

2. Log in to the hub workstation by entering:

```
telnet hub
```

Replace *hub* with the hostname of the communication hub workstation; for example, chgus1.

3. In the hub window, enter one of the following commands (depending on your shell type) to set the DISPLAY variable to your service center workstation:

```
DISPLAY=your_workstation:0.0
export DISPLAY
```

or

```
setenv DISPLAY your_workstation:0.0
```

Replace *your_workstation* with the hostname of your workstation.

4. Enter the following command to start xsm:

```
/cri/bin/xsm
```

> **NOTE:** The DISPLAY (override) option that is available in the
> command line mode is not available with xsm.

5. A list of sites to which you can connect appears. (Refer to
    Figure 10.) Select a serial number with the mouse.

Figure 10. Site Serial Numbers

6. A background Telnet executes automatically in an xterm window
    opened by XECHO (you may notice a short delay while the
    connection between the hub workstation and the site workstation is
    being established). When the site login prompt appears, log in to the
    site workstation. (Refer to Figure 11.)

Figure 11. Setting up XECHO Using the xsm Program Method

```
┌─────────────────────────────────────────────────────────┐
│ ▽                          xecho                         │
├─────────────────────────────────────────────────────────┤
│                                                          │
│ !!!! The DISPLAY environment variable MUST be set on     │
│ !!!! the site workstation in one of the following ways:  │
│                                                          │
│ sh:                                                      │
│   DISPLAY=198.149.100.1:1161.0; export DISPLAY           │
│                                                          │
│ csh:                                                     │
│   setenv DISPLAY 198.149.100.1:1161.0                    │
│                                                          │
│ Trying 147.219.130.2 ...                                 │
│ Connected to mws4008.                                    │
│ Escape character is '^]'.                                │
│                                                          │
│                                                          │
│ SunOS UNIX (mws4008)                                     │
│                                                          │
│ login: mws                                               │
│ Password:                                                │
│ Last login: Wed Nov  1 17:11:11 from chgus2              │
│ SunOS Release 4.1.2 (MWS_FY) #1: Tue Feb 15 14:44:06 CST 1994 │
│                                                          │
│ You have new mail.                                       │
│ Setting window size to 24 x 80                           │
│ mws4008$ DISPLAY=198.149.100.1:1161.0; export DISPLAY    │
│ mws4008$ █                                               │
│                                                          │
└─────────────────────────────────────────────────────────┘
```

7. Another `xecho` window opens. Log in to the MWS-T and set the `DISPLAY` variable exactly as displayed in the window. Select the command that is appropriate to your workstation shell.

8. You are now in control of the MWS-T and can start an X Window application in the site workstation window.

9. When the remote support session is complete, exit from the site workstation and from the hub workstation.

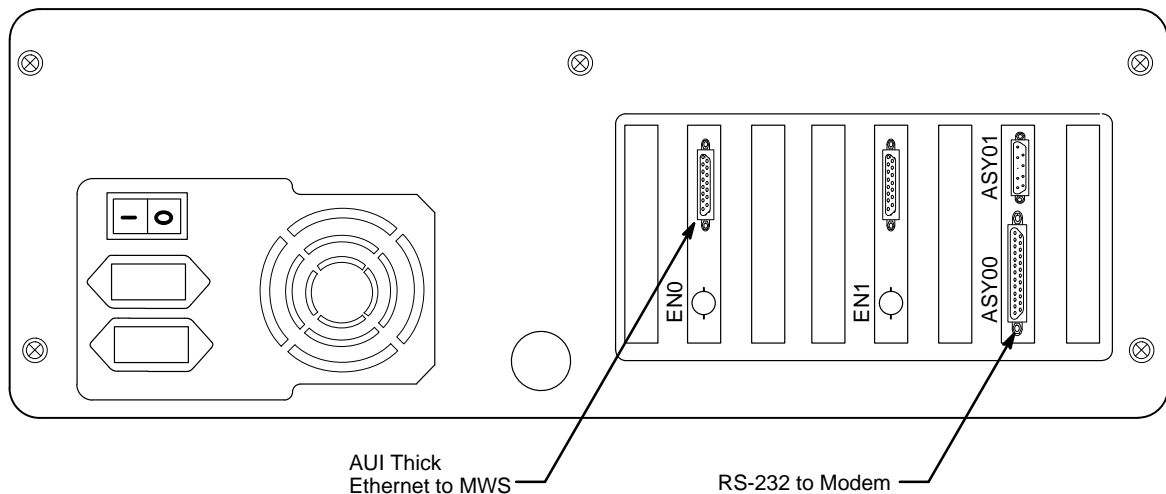# TELEBIT NETBLAZER AND MODEM CONFIGURATION

Telebit NetBlazer Router

If you are installing a new CRAY T90 series system and plan to continue using previously installed remote support equipment, you will have to make some minor modifications to this equipment to accomodate your new configuration.
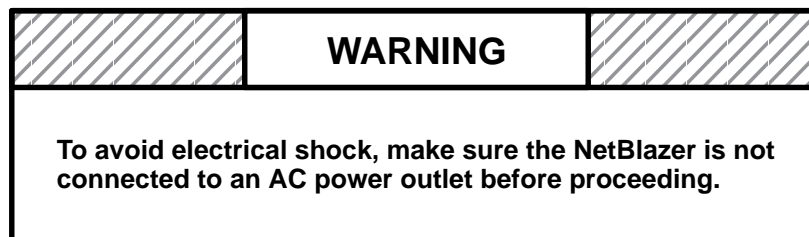
Two earlier model NetBlazers, the NetBlazer model N2-1E (also known as the NetBlazer 40) and the NetBlazer model NS2-2E (also known as the NetBlazer ST), contain several generations of Ethernet boards. You must inspect your NetBlazer to determine which Ethernet board it contains and then reconfigure the board if necessary.

NetBlazer Model N2-1E

The NetBlazer N2-1E (Figure 12) is the original NetBlazer model used by Cray Research.

Figure 12. Rear View of NetBlazer Model N2-1E

WARNING

To avoid electrical shock, make sure the NetBlazer is not connected to an AC power outlet before proceeding.

Use the following procedure to open the NetBlazer model N2-1E case to access the Ethernet board.

1. Using a Phillips screwdriver, remove the five screws that secure the rear of the top cover. Refer to Figure 12 for their locations.

2. Slide the top cover back about 8 in., then lift the top cover off the NetBlazer.

You should now determine which type of Ethernet board your unit contains and verify that it is configured for an AUI connection or, in the case of the CNet TB850 Ethernet board (Figure 17), that it is configured for an RJ45 connection. The figures and the accompanying text in the following "Ethernet Boards" subsection provide all the information you will need.

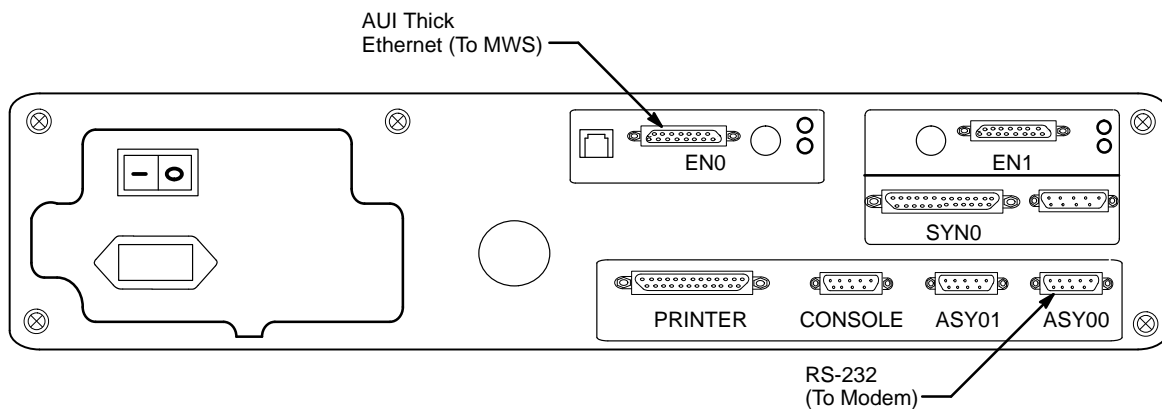Use the following procedure to close the NetBlazer model N2-1E case.

1. Lower the top cover onto the NetBlazer model N2-1E so that the notches in the guide rails on the inside of the top cover align with the side edges of the front panel, and slide the top cover into position.

2. Replace the five top cover mounting screws on the back of the system.

You may now connect the AC power cord supplied with your NetBlazer between the power cord connector on the back of the NetBlazer and an AC outlet.

NetBlazer Model NS2-2E

The second generation NetBlazer, Model NS2-2E (Figure 13), is a smaller version of NetBlazer Model N2-1E. It differs from its predecessor in that it provides three internal board slots instead of eight, a 25-MHz processor instead of a 16-MHz processor, and two DB-9 connectors for the serial ports (ASY0x) instead of one DB-9 and one DB-25 connector. Both models are functionally equivalent.

Figure 13. Rear View of NetBlazer Model NS2-2E

Use the following procedure to open the NetBlazer model NS2-2E case.

1. Using a Phillips screwdriver, remove the two screws on each side of
    the NetBlazer NS2-2E top cover. Do not remove the screws shown
    at the back of the unit in Figure 13.

2. Slide the top cover back about 1 in., then lift the top cover off the
    NetBlazer.

You should now determine which type of Ethernet board your unit
contains and verify that it is configured for an AUI connection or, in the
case of the CNet TB850 Ethernet board (Figure 17), that it is configured
for an RJ45 connection. The figures and the accompanying text in the
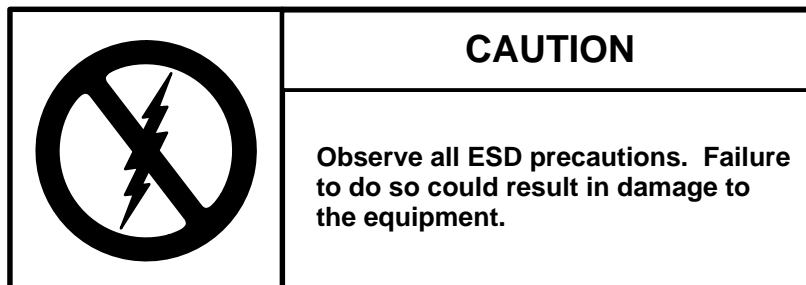following "Ethernet Boards" subsection provide all the information you
will need.

Use the following procedure to close the NetBlazer model NS2-2E case.

1. Lower the top cover onto the NetBlazer model N2-1E so that the
    notches in the guide rails on the inside of the top cover align with the
    side edges of the front panel, and slide the top cover into position.

2. Replace the four cover mounting screws on the sides of the system.

You may now connect the AC power cord supplied with your NetBlazer
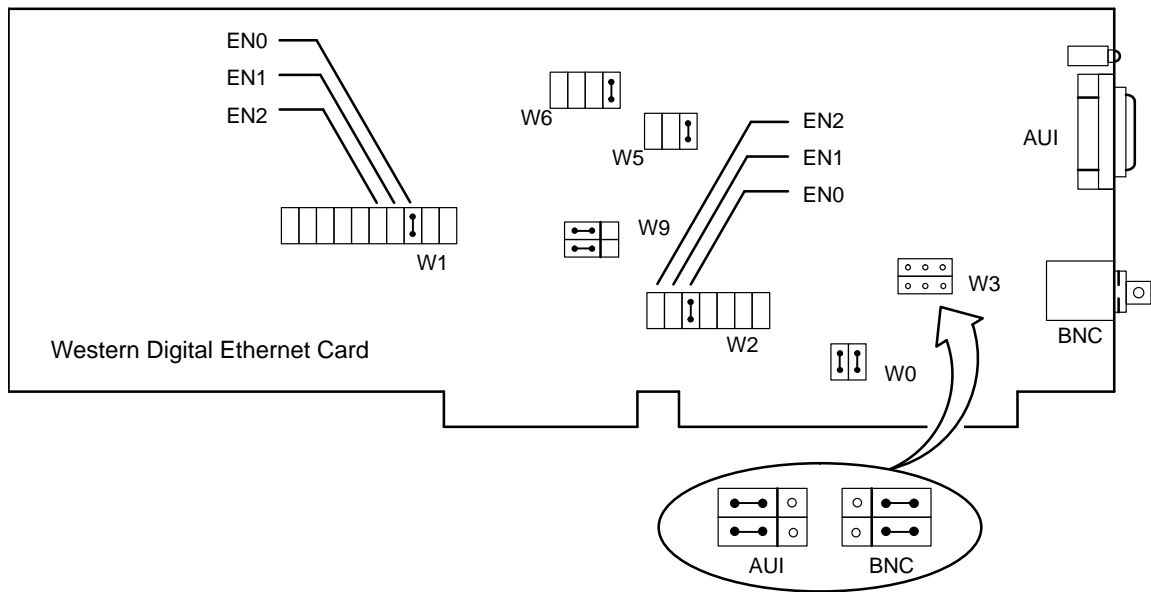between the power cord connector on the back of the NetBlazer and an
AC outlet.

Ethernet Boards

Since remote support hardware has become available, several generations of Ethernet boards have been installed in the NetBlazer 40 and the NetBlazer ST. They are presented in the order in which they were released as Figure 14, Figure 16, Figure 17, and Figure 18. Each board has its own switch and jumper settings. All of these boards are functionally equivalent.

	CAUTION
	Observe all ESD precautions. Failure to do so could result in damage to the equipment.

WD8013 Ethernet Board

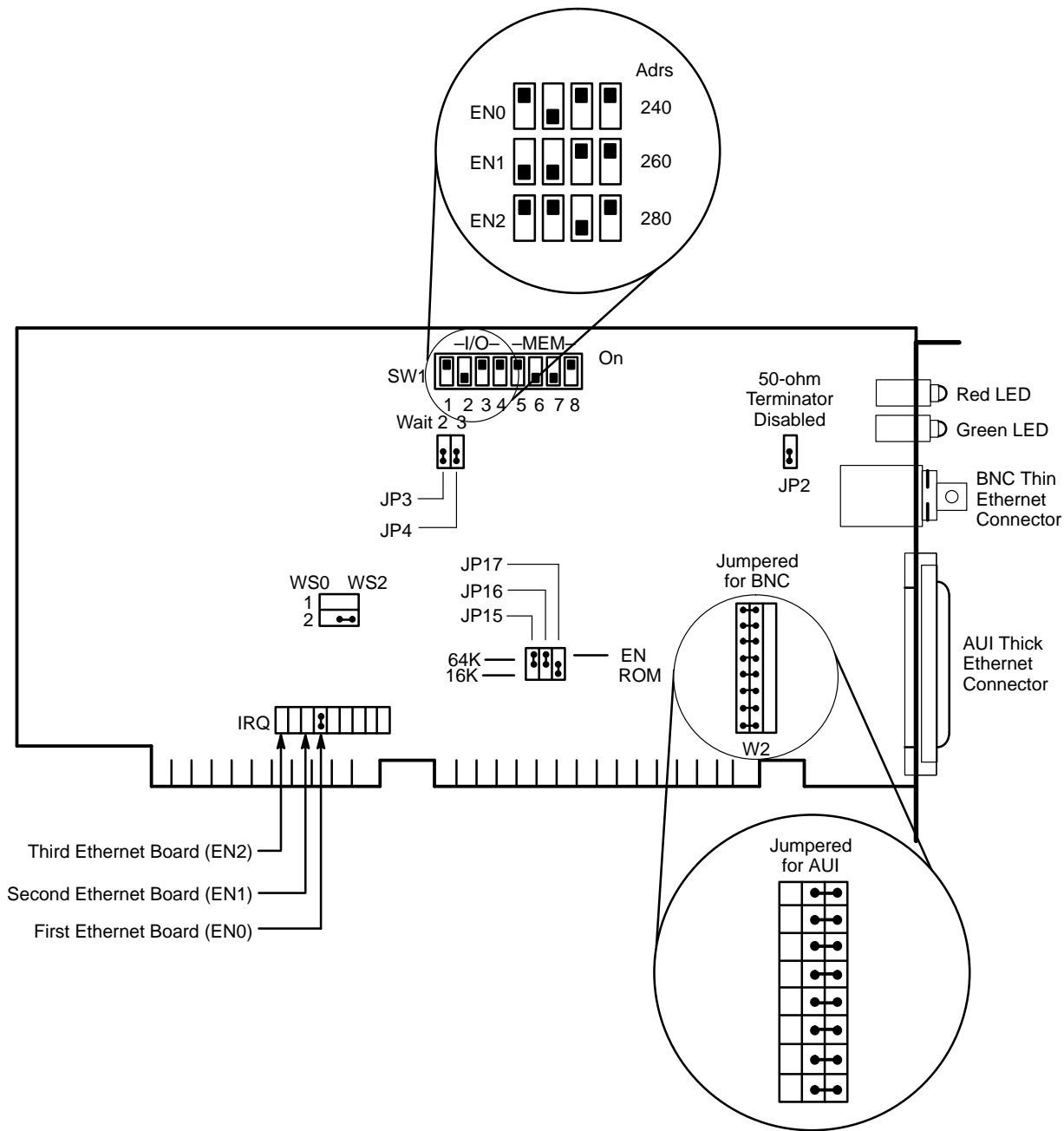Figure 14. WD8013 Ethernet Board Configuration, Component View

To connect the WD8013 Ethernet board (Figure 14) to a twisted pair
(10BaseT) environment, ensure that jumper block W3 is configured for
AUI. Then install a transceiver/adapter, CRI part number 35504600,
between the RJ45 connector at the end of the cable and the AUI connector
on the board. (Refer to Figure 15.)

Figure 15. Ethernet Transceiver/Adapter
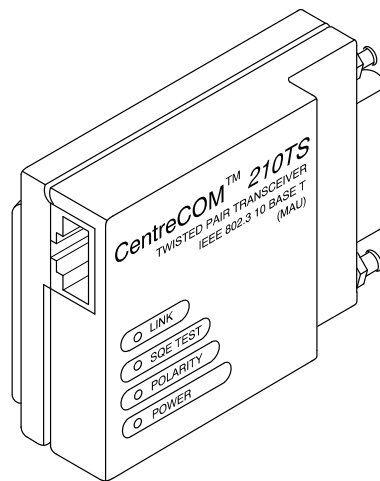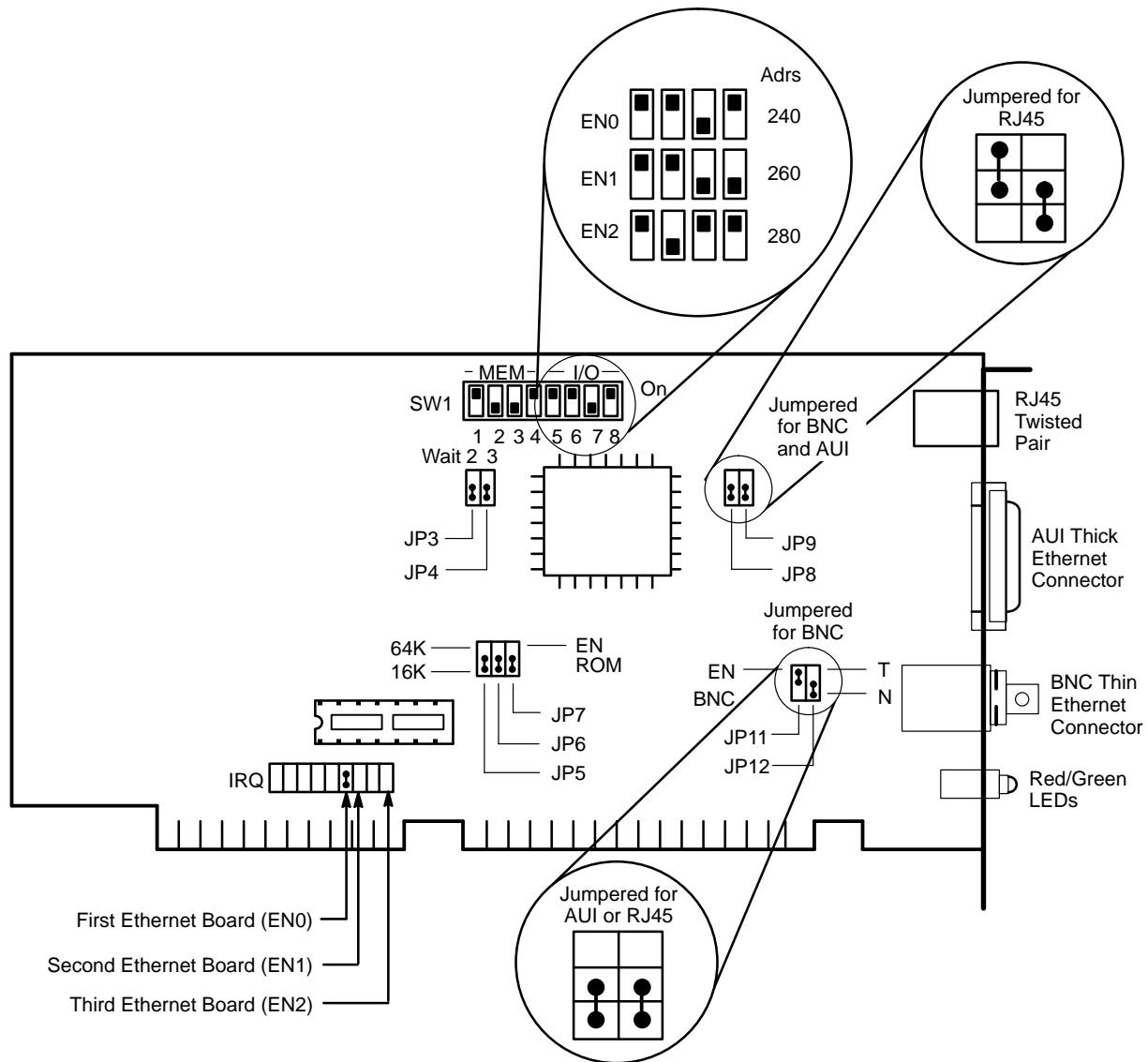
CNet 300E Ethernet Board

Figure 16. CNet 300E Ethernet Board Configuration, Component View

To connect the CNet 300E Ethernet board (Figure 16) to a twisted pair (10BaseT) environment, ensure that jumper block W2 is configured for AUI. Then install a transceiver/adapter, CRI part number 35504600, between the RJ45 connector at the end of the cable and the AUI connector on the board. (Refer to Figure 15.)

CNet TB850 Ethernet Board

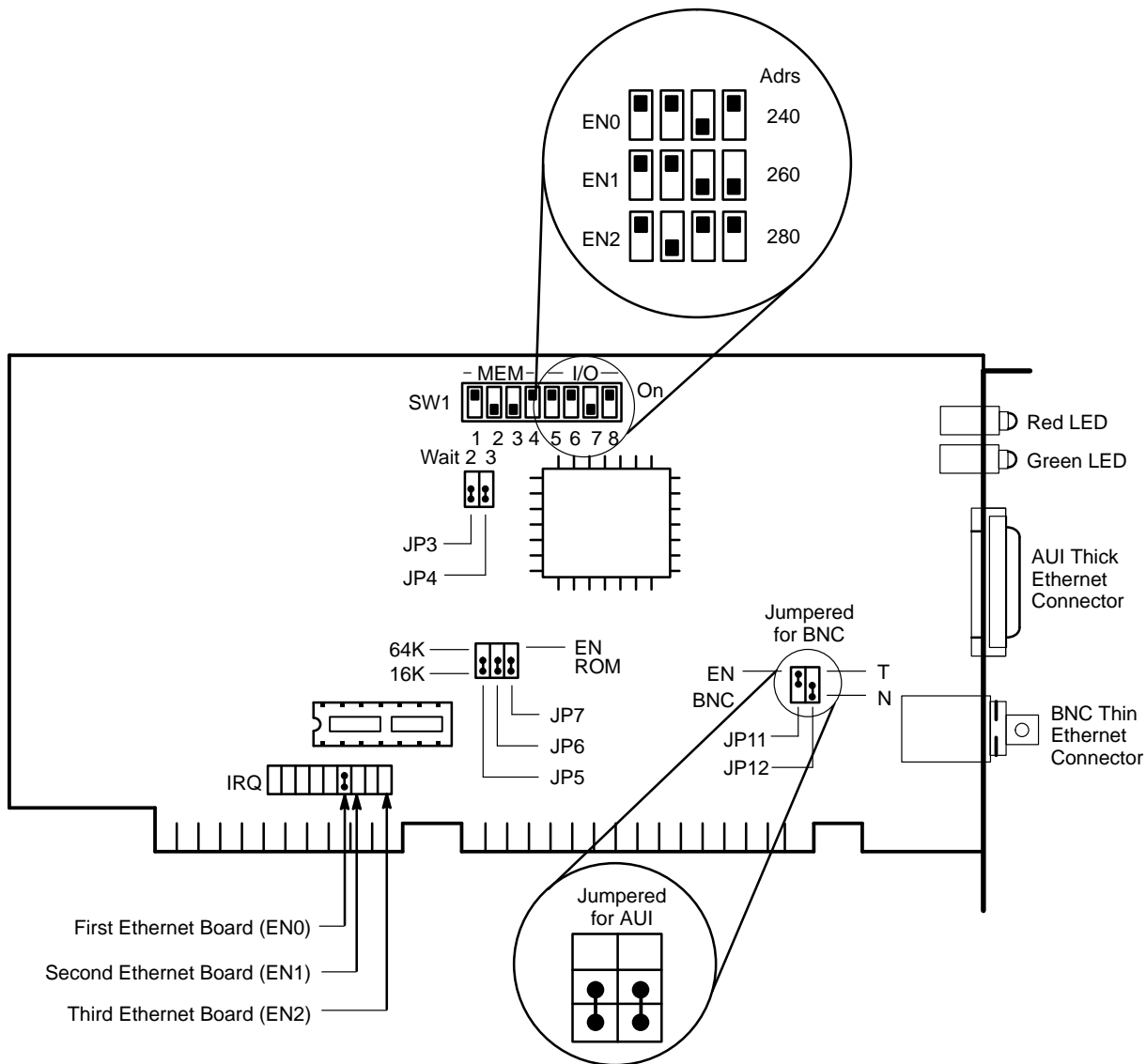Figure 17. CNet TB850 Ethernet Board Configuration, Component View

NOTE: Ensure that jumper JP12 remains in the default (lower) position as shown; this setting disconnects the internal 50-ohm terminating resistor. DO NOT move JP12 to the upper position unless ALL of the following conditions exist: the thin Ethernet connection is enabled, this board is at the end of the trunk, and there is no external 50-ohm terminating resistor attached to the coaxial T-connector.

To connect the CNet TB850 Ethernet board (Figure 17) to a twisted pair (10BaseT) environment, ensure that jumper blocks JP8 and JP11 are configured for RJ45. Then connect the RJ45 connector at the end of the cable to the RJ45 connector on the board.

CNet 380300 Ethernet Board

Figure 18. CNet 380300 Ethernet Board Configuration, Component View

NOTE: Ensure that jumper JP12 remains in the default (lower) position as shown; this setting disconnects the internal 50-ohm terminating resistor. DO NOT move JP12 to the upper position unless ALL of the following conditions exist: the thin Ethernet connection is enabled, this board is at the end of the trunk, and there is no external 50-ohm terminating resistor attached to the coaxial T-connector.

To connect the CNet 380300 Ethernet board (Figure 18) to a twisted pair (10BaseT) environment, ensure that jumper block JP11 is configured for AUI. Then install a transceiver/adapter, CRI part number 35504600, between the RJ45 connector at the end of the cable and the AUI connector on the board. (Refer to Figure 15.)

Microcom QX/4232 Series Modems

The Microcom QX/4232hs and the QX/4232*bis* modems appear identical. Both models provide Microcom Networking Protocol level 10 (MNP10) error control and data correction that conforms to the Open Systems Interconnection (OSI) model developed by the International Standards Organization for connection between modems from different vendors. Hereafter, the QX/4232hs and QX/4232*bis* modems are referred to as QX/4232 series modems to reflect their common characteristics. (A special case is the Microcom QX/4232eh modem, which is used only in Germany.) This appendix covers only the recommended Microcom modems.

International sites and service centers should use a modem that complies with International Telephone and Telegraph Union Standardization Sector (ITU-T) standards V.32, V.42, V.32*bis*, V.42*bis,* or V.34 (V.fast) and supports MNP-5 or higher.

Configuring Microcom QX/4232 Series Modems

This subsection describes how to set the configuration switches in the Microcom QX/4232hs and Microcom QX/4232*bis* modems.

NOTE: If your Microcom modem has a black pushbutton on the back side, continue with the following subsection, "Modems without a Power Switch." If your Microcom modem has a red pushbutton on the back side, skip to the subsection titled "Modems with a Power Switch" on page 34.

Figure 19. Microcom QX/4232 Series Modem
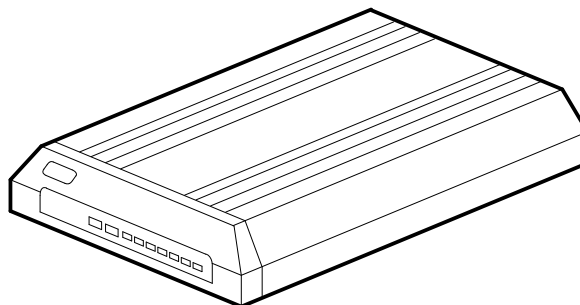
Modems without a Power Switch

1. Disconnect power from the modem. Place the T/D and O/A buttons on the front panel in the O (originate) position. (Refer to Figure 20.)

2. Use the end of a wire paper clip to remove the front switch access panel as shown in Figure 20. Removing the front switch access panel reveals the front DIP switches as shown in Figure 21. The back switches are located on the back of the modem as shown in Figure 22.
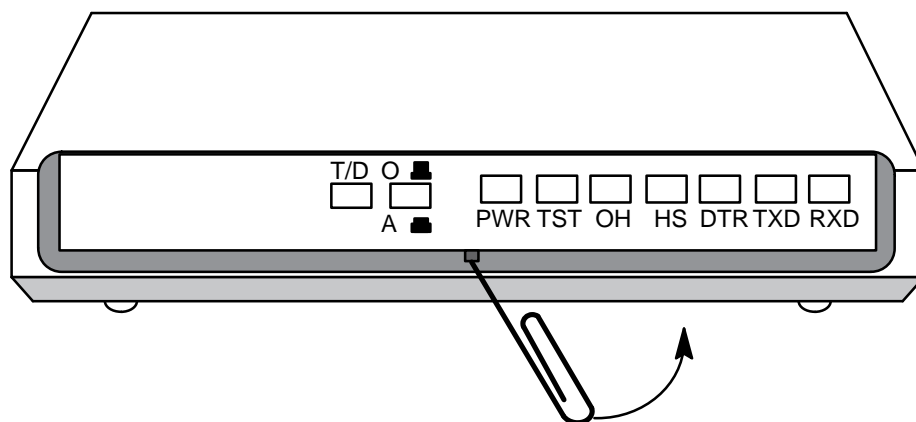
Figure 20. Removing the Modem Front Switch Access Panel

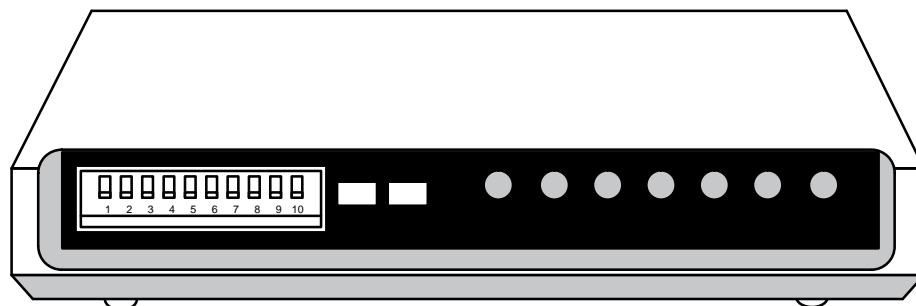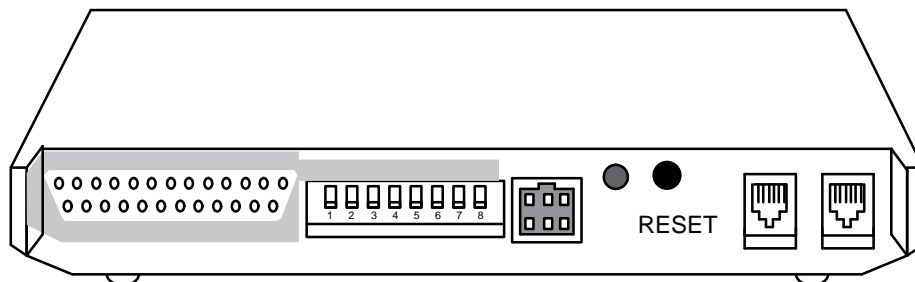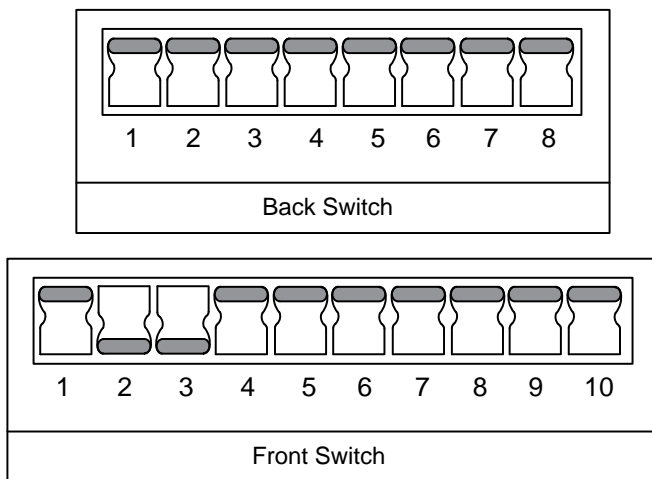Figure 21. Modem Front DIP Switches (Access Panel Removed)

Figure 22. Modem Switches (Back View)

3. Connect the power cord to the back of the modem to turn the modem on. Verify that the PWR lamp on the front of the modem is illuminated.

4. Set the front and back configuration switches as shown in Figure 23.

Figure 23. Switch Settings, Step 4

5. Press the RESET button on the back of the modem and wait until the TST lamp on the front of the modem is no longer illuminated. This action clears the AT mode extended switch settings in the Microcom modem.

6. After resetting the modem, reset the configuration switches as shown in Figure 24.

Figure 24. Switch Settings, Step 6
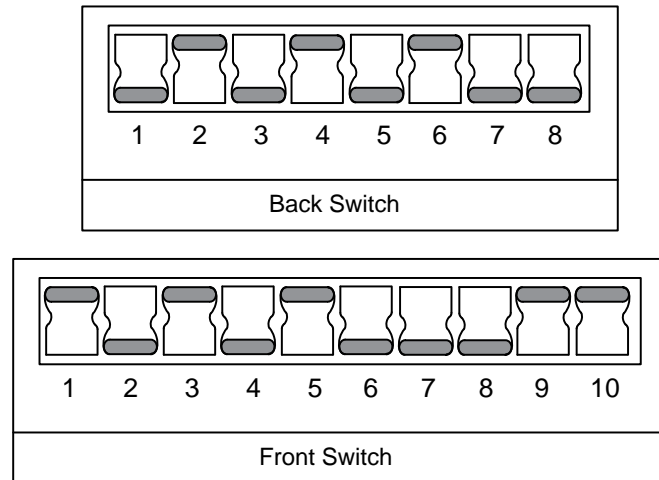
7.   Once again, press the RESET button on the back of the modem and wait until the TST lamp on the front of the modem is no longer illuminated.

8.   Replace the front switch access panel.

You may now power off the modem without loss of the AT command mode, AT extended mode, or other software switch settings. When you power up or reset the modem with the RESET button, the switch settings are restored. For additional information on Microcom QX/4232 series modem switch settings, refer to the vendor's (OEM) manual that was shipped with your modem.

Modems with a Power Switch

Some system shipments include a redesigned Microcom QX/4232*bis* modem. This modem has the same Cray Research part number (01677300) as the previous design.

The differences between the older and revised versions are the color, labeling, and use of the RESET button. In the older model, the RESET button is a momentary-contact, black pushbutton that resets the internal logic. In the revised model, it is a detent-type, red pushbutton, labeled ON/OFF that both resets the logic and controls power to the unit.

This design change modifies the procedure for setting the AT mode and command default registers, using the front and rear switches. All of the switches retain the same function and settings; only the procedure for entering these settings changes.

To configure and save the physical switch settings correctly, follow this revised modem installation procedure:

1. Disconnect power from the modem. Place the T/D and the O/A buttons on the front panel in the O (originate) position. (Refer to Figure 20.)

2. Use the end of a wire paper clip to remove the front switch access panel in order to reveal the front DIP switches.

3. Position the ON/OFF pushbutton in the out (OFF) position.

4. Connect the power cord to the rear of the modem and plug the power pack into an AC outlet.

5. Verify that the power lamp (PWR) on the front of the modem is not illuminated.

6. Set the front and rear dip switches as shown in Figure 23.

7. Press the ON/OFF button on the back of the modem and wait until the TST lamp on the front of the modem is no longer illuminated. This action sets the nonvolatile command default modification register.

8. Press the ON/OFF button on the back of the modem and verify that the power lamp (PWR) on the front of the modem is no longer illuminated.

9. Change the front and rear dip switches to the settings shown in Figure 24 on page 34.

10. Press the ON/OFF button on the back of the modem and wait until the TST lamp on the front of the modem is no longer illuminated. This action sets the nonvolatile AT mode register (sometimes referred to as *extended switches*).

11. Press the ON/OFF button on the back of the modem and verify that the power lamp (PWR) on the front of the modem is no longer illuminated.

12. Replace the front switch access panel. The configuration is complete.