CRAY J90™ Series EI-1 Upgrade/Migration Procedure

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CRAY RESEARCH, INC.
Logistics
6251 South Prairie View Road
Chippewa Falls, WI 54729

Comments about this publication should be directed to:

CRAY RESEARCH, INC.
Hardware Publications and Training
890 Industrial Blvd.
Chippewa Falls, WI 54729

EI-1 Upgrade/Migration Procedure

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Overview

Device to Be Upgraded/Migrated

This document contains procedures on how to add or migrate an Ethernet Interface-1 (EI-1) to a CRAY J90 series system.

Description of Upgrade/Migration

Customers have the option to connect to Ethernet networks for access to the CRAY J916 system. The following procedure is written for the purpose of aiding CRI support personnel in adding an EI-1 controller and cables to a CRAY J90 series system. The upgrade kit includes all the parts and instructions that a support person needs to complete the upgrade.

Special configuration considerations:

- The maximum number of EI-1s included in a CRAY J90 series system is 8.
- The maximum number of EI-1s per IOS in a CRAY J90 series system is 4.
- It is recommended that a full backup of existing file systems be completed before you begin this upgrade.

NOTE: This procedure also applies to sites who are migrating an EI-1 controller from a CRAY EL series system to a CRAY J90 series system. The migration procedure requires the support personnel to remove the EI-1 controller board from the CRAY EL series system and then install it in the CRAY J90 series system.

EI-1 Upgrade/Migration Prerequisites

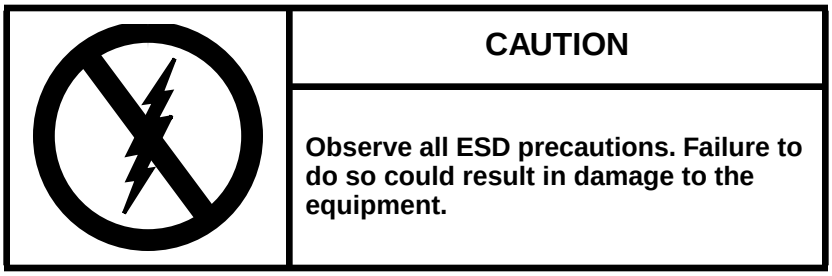
- It is recommended that a full backup copy of existing file systems be created before you begin this upgrade is started.
- Refer to the “Special Considerations” within the “Software Required” subsection on page 8 for information on problems and fixes.

Training Requirements

Cray Research personnel who perform this EI-1 upgrade must have completed training in CRAY J90 series hardware and system administration. If this is not possible, a hardware-trained person should have a system administrator available during this upgrade. Prior experience in upgrading or installing the UNICOS operating system on a CRAY J90 series system or CRAY EL series system is advised.

ESD Precautions

Observe ESD precautions during the entire upgrade process. Wear an ESD smock and an ESD wrist strap. Do not wear jewelry when you work on a CRAY EL or CRAY J90 series cabinet.



ESD Smock

Wear a Cray Research-approved static-dissipative smock when servicing or handling an ESD-sensitive device. Completely button the smock and wear it as the outermost layer of clothing. You must have a portion of the smock's sleeves in direct contact with the skin of your arms. Skin contact is essential for a dissipative path-to-earth ground through your wrist strap. Tuck hair that exceeds shoulder length inside the back of the smock.

Wrist Strap

Wear a Cray Research-approved wrist strap when handling an ESD-sensitive device to eliminate possible ESD damage to equipment. Connect the wrist strap cord directly to earth ground.

Reference Publications

Refer to the following publications if you have questions when performing this upgrade.

- *UNICOS Basic Administration Guide for CRAY J90 and CRAY EL Series*, Cray Research publication number SG-2416
- *CRAY IOS-V Commands Reference Manual*, Cray Research publication number SR-2170
- *CRAY IOS-V Messages*, Cray Research publication number SQ-2172
- *Automated Confidence Testing*, Cray Research publication number HDM-110-0
- *CRAY J916 Service Manual Kit*, Cray Research publication number HMK-101-0
- *UNICOS Installation and Configuration Tool Reference Manual*, Cray Research publication number SR-3090
- *UNICOS System Administration*, Cray Research publication number SG-2113
- International Software Field Notice (ISFN) 262

Estimated Time to Install Upgrade/Migration

Table 1 divides the EI-1 upgrade/migration process into four separate procedures. Use this table to determine how much system time you should request to complete this upgrade. Ensure that you allow for time on the CRAY EL Series system to remove the EI-1 controller if you are doing a migration.

Table 1. Estimated Time to Install Upgrade

Install Task	Estimated Time to Install Upgrade
Hardware Install	1 hour
Hardware Verification Testing	1 hour
Software Configuration	1 hour
Software Verification Testing	1/2 hour

Parts Required

Table 2. EI-1 Upgrade/Migration Kit Contents

CRI Part Number	Quantity Upgrade	Quantity Migration	Description
90227200	1	0	Module Assembly, EI-1
90175800	2	0	Plate Assembly, 15-pin D-sub
90185401	1	0	Label, Filler Plate Bulkhead EI-1
90347600	1	1	Cable Assembly, international Ethernet
90349200	1	1	Cable Assembly, Ethernet, VME Chassis-Bulkhead-B
90323900	1	1	Cable PVC Shielded, Ethernet

Tools Required

All tools required for this upgrade are included with the Customer Service toolkit.

Software Required

- Minimum IOS kernel revision - 1.3
- Minimum UNICOS Revision - 8.0.3.2J
- Special considerations: If your system is running UNICOS release 8.0.3.2J, refer to ISFN 262 for a description of problems with CRAY J90 series offline diagnostics used to verify your system.

Conventions

The following conventions are used throughout this document:

Convention	Meaning
command	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
`manpage`(*x*)	Man page section identifiers appear in parentheses after man page names.
variable	Italic typeface denotes variable entries, words or concepts being defined.
`user input`	This bold fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
<KEY>	This convention indicates a key on the keyboard.

Getting Started

Ensure that you have inventoried the contents of this upgrade/migration kit before you begin. And to ensure that you have not missed a step, check off each step as you complete it.

Create a Backup Copy of the UNICOS File System

It is recommended that you create a backup copy of the UNICOS file system before you proceed with the upgrade procedures. See the *UNICOS Basic Administration Guide for CRAY J90 and CRAY EL Series*, publication number SG-2416, for details on how to create a backup copy of the UNICOS file system.

Power Down the CRAY J916 System

1. Ensure that the customer has brought the system to single-user mode.
2. Using the right mouse button, click on any open working space. The `Workspace` menu will appear.
3. From the `Workspace Menu`, select the `J90 Console` menu item.

   NOTE: You must have super user privileges to perform Step 4.

4. Log into the UNICOS operating system by entering `<CONTROL-a>` to get a UNICOS prompt and enter the root login and password.
5. Shut down the UNICOS operating system by entering the following commands at a UNICOS prompt:

   ```
   # cd /
   # /etc/shutdown 120  (takes 120 seconds to execute)
   # /bin/sync
   # /bin/sync
   # /bin/sync
   # /etc/ldsync  (if you are using ldcache)
   ```

6. Stop the `J90 Console` connection by entering the following commands:

   ```
   # <CONTROL-a>  (toggles to the IOS)
   sn9xxx-ios0> mc
   sn9xxx-ios0> reset  (takes 30 – 45 seconds to execute)
   BOOT[sn9xxx-ios0]> ~. <CONTROL-c>
   ```

7. Power off the system by pressing the CCU SYSTEM OFF button.

Open the CRAY J90 Series I/O Rear Door

1. At the rear of the I/O cabinet, locate the two door-locking fasteners at the left top and left bottom of the door. Turn these fasteners 1/4 turn counterclockwise with a 5/32-in. allen wrench.

2. Grasp the door handle and swing the door open to the right.

Open the CRAY J90 Series I/O Front Door

1. At the front of the I/O cabinet, locate the latch on the upper-right corner of the door.

2. Push down on the latch and swing the door open.

If you are migrating an EI-1 controller board from a CRAY EL series system to a CRAY J90 series system, follow the procedure in the subsection entitled "Remove the EI-1 Controller from the CRAY EL Series System."

Remove the EI-1 Controller from the CRAY EL Series System

1. Power down the IOS VME subsystem by depressing the VME INHIBIT/ENABLE button on the SCSI assembly.

2. Label the front ribbon cables and then remove them from each IOS board.

3. Loosen the retaining screws on the top and bottom of the board.

4. Grasp the board by the ejector handles located on the top and bottom of the board; push the top ejector handle up and the bottom ejector handle down at the same time and pull the board outward and away from the backplane.

5. Place the new board on an ESD-protected surface.

NOTE: Don't leave any open slots in the CRAY EL series IOS if the system is still being used.

Installing the EI-1 Upgrade

Install the EI-1 Controller

Install the new EI-1 controller board or the EI-1 controller that you have just removed from the CRAY EL series system into the correct IOS (depending on customer configuration) using the next available slot in that IOS.

1. Pull out the VME tray.
   a. Remove the AC line cord from the rear of the VME tray.
   b. Remove the four screws that secure the VME tray to the cabinet.
   c. Pull out the VME tray as far as it will go.
   d. Loosen the 14 1/4-turn screws that hold the top cover to the VME tray.
   e. Remove the VME tray top cover and set it aside.
2. Unpack the new controller board (P/N 90227200).
3. Place the new board on an ESD-protected surface.
4. Change any jumpers or switches necessary on the new EI-1 controller board. Refer to Figure 1. The jumper settings on JP7 for the second, third, and fourth EI-1 controllers are given on the bottom of Figure 1.
5. Loosen the VME slot filler screws and lift out the VME slot filler.
6. Insert the new EI-1 controller board into the guide slots in the VME chassis.

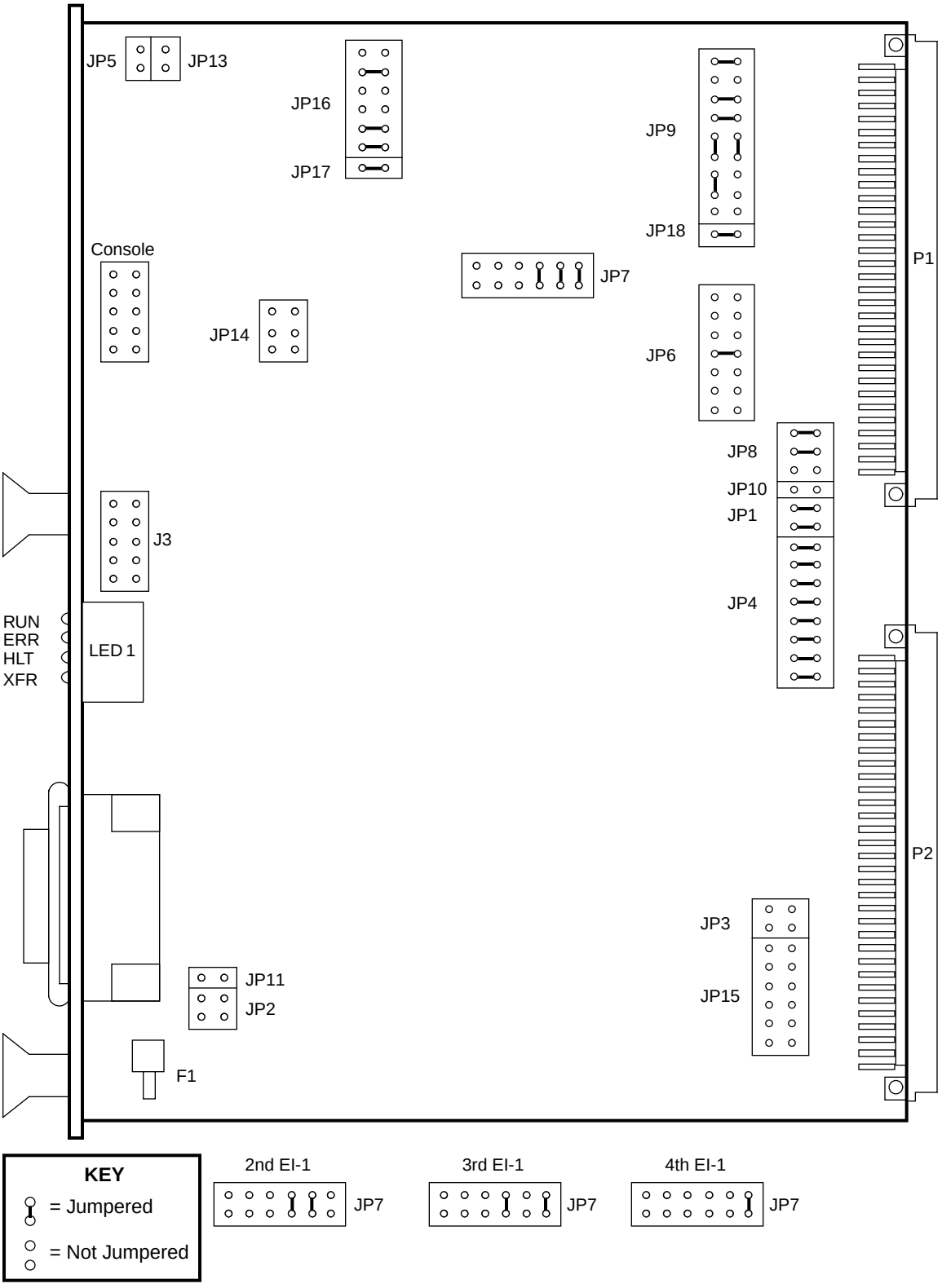


Figure 1. EI-1 Jumper Settings

Install Controller to VME Bulkhead Ribbon Cable (P/N 90347600)

NOTE: Try to use a location on the bulkhead that is in line with the newly installed controller card in the VME to minimize the crossing of cables.

1. Remove B19 from the VME bulkhead by removing two screws. Refer to Figure 2.

OR

2. If you are installing a second, third, or fourth EI-1, remove a blank plate from slots B1 through B13.

3. Install the new EI-1 15-pin dsub VME bulkhead plate assembly (P/N 90175800) and secure the two screws removed in Step 1.

4. Attach the ribbon cable connector P1 into the EI-1 controller. Slide the lock slide to secure this cable.

5. Attach the J1 connector at VME bulkhead location B19 by removing the hex standoff screw and inserting the connector into the empty plate. Secure the two hex standoff screws.

OR

6. If you are installing a 2nd, 3rd, or 4th EI-1, insert the plate assembly (P/N 90175800) and secure the cable to the two hex standoff screws.

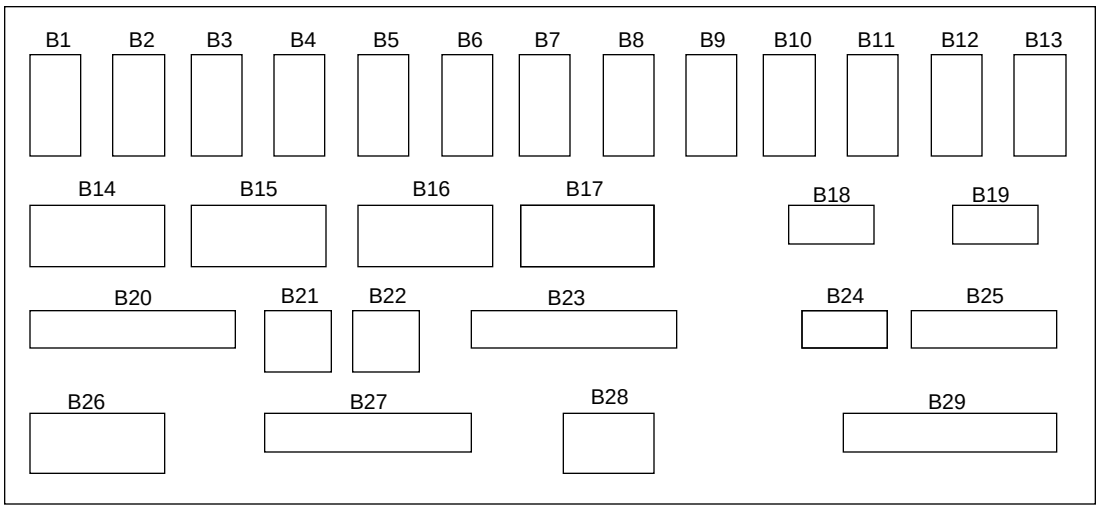


Figure 2. VME Bulkhead

Install I/O Bulkhead Plate

1. Remove the I/O bulkhead cover plate labeled “Ethernet” by removing its two securing screws. Refer to Figure 3 for the location of the I/O cabinet’s first EI-1 bulkhead location.
2. If you are installing an additional EI-1, remove a blank plate from slots A1 through A11. Refer to Figure 3.
3. Install the I/O bulkhead plate assembly (P/N 90175800).
4. Install the label (P/N 90185401) on the plate selected.

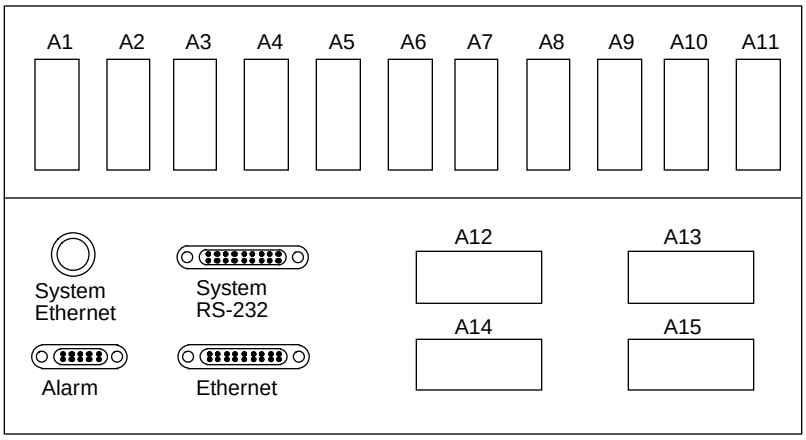


Figure 3. I/O Bulkhead

Route EI-1 Cable (P/N 90349200) through Flexible Cable Way

1. Disconnect all cables from the VME bulkhead that are routed through the appropriate flexible cable way. The appropriate flexible cable way is physically located closest to the EI-1 cable you are about to route.
2. Disconnect the flexible cable ways by removing the two screws that secure them to the VME tray. Refer to Figure 4.
3. Lay the cable ways flat.
4. Loosen the two 1/4-turn screws at the front of the I/O cabinet just below the VME tray.
5. Remove the single screw from the front of the VME.
6. Extend the VME tray completely.

7. Remove the cable tray cover by sliding the cover out through the front of the I/O cabinet and set it aside.

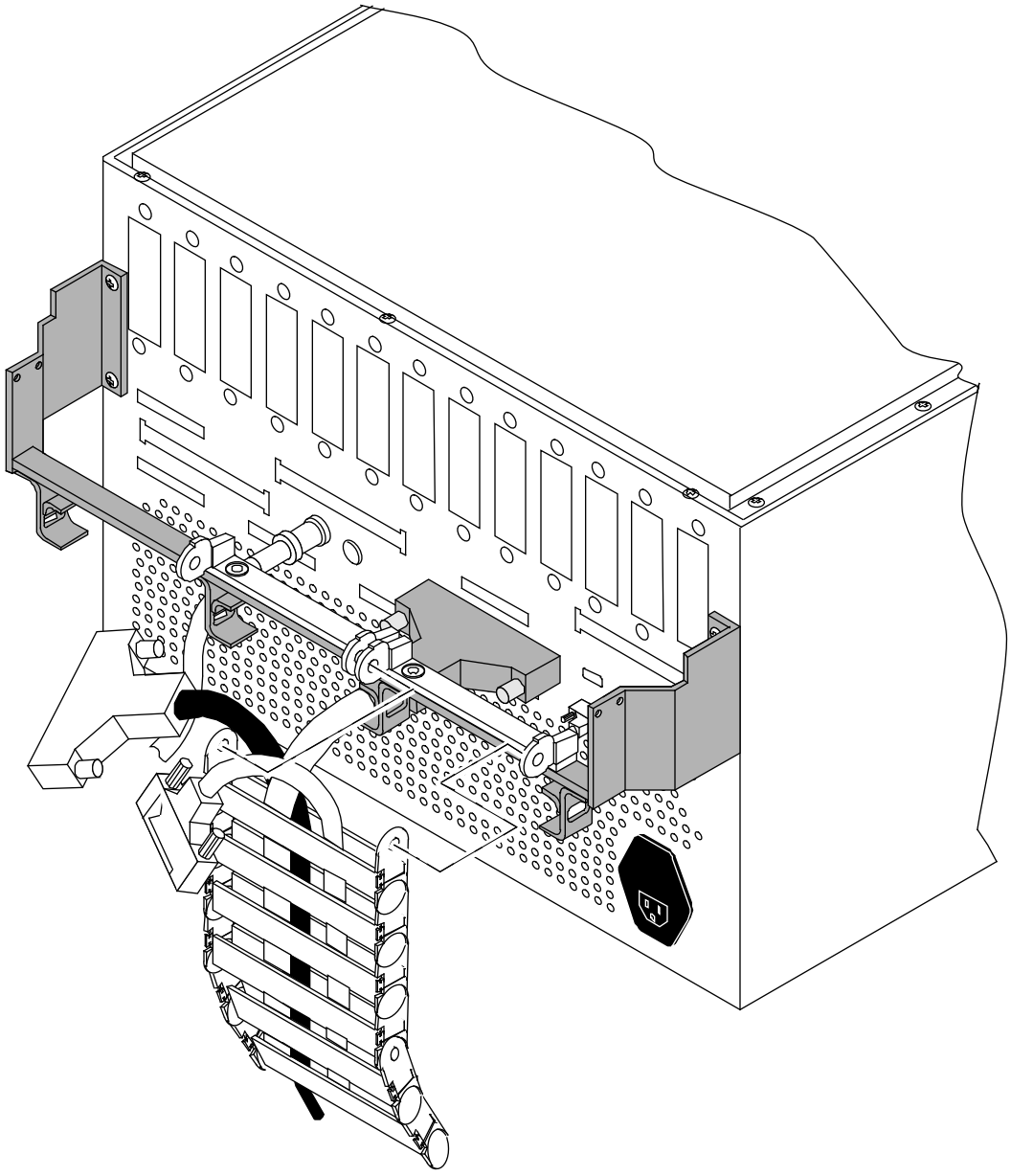


Figure 4. Flexible Cable Way

8. Pry open each crossbar of the cable way, using a standard 1/8-in. flat-bladed screwdriver and leave the inner side attached. Refer to Figure 5.

   NOTE: The P1 connector of the EI-1 cable (P/N 90349200) plugs into the back of the VME bulkhead while the J1 connector plugs into the back of the I/O bulkhead.

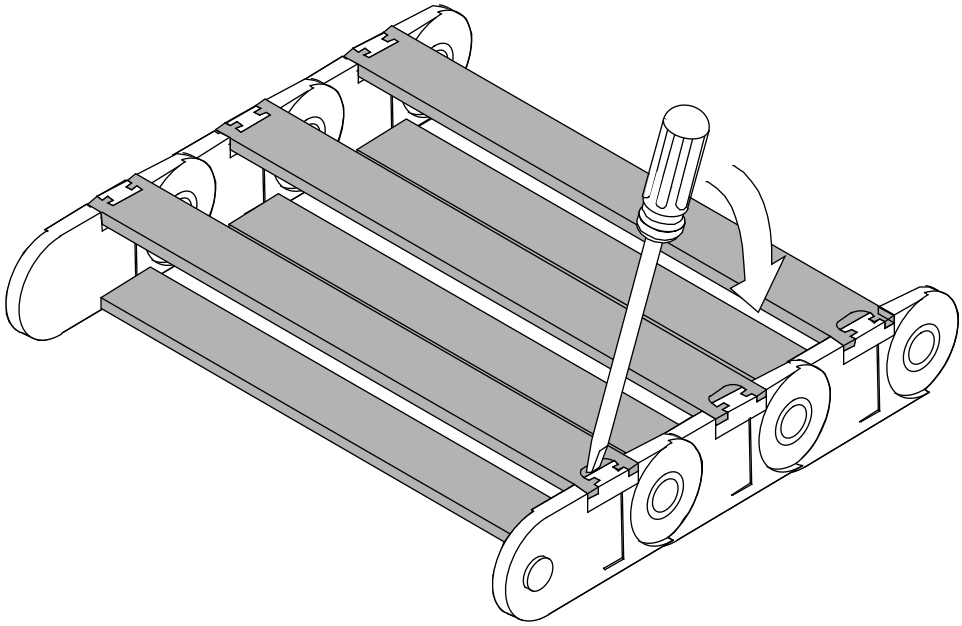


Figure 5. Flexible Cable Way Crossbars

9. Use tie wraps to route the EI-1 cable (P/N 90349200) down or up the side of the I/O cabinet next to the power and control distribution rail.

10. Place the EI-1 cable (P/N 90349200) in the flexible cable way and in the cable routing tray beginning with lowest tray installed with this upgrade. Ensure that the cables do not cross in the flexible cable way because this will make adjusting the cables more difficult.

11. After the cable has been routed, loosely secure the EI-1 cable with tie wraps.

12. Snap down all cross pieces for the flexible cable way. (This is not easy!)

13. Carefully slide the VME tray into the cabinet and secure with one screw.

CAUTION

Do not pinch the cables when you slide in the VME tray or the cable cover.

NOTE: Y1, power, and control cables are routed below the VME flexible cable-way attachment bar.

14. Reconnect the flexible cable way using the two screws originally removed from the flexible cable-way bar. Refer to Figure 4.

Connect EI-1 Cable P/N 90349200 to VME Bulkhead

1. Connect the EI-1 cable P1 connector to the back of the VME bulkhead at B19.

OR

2. If this connection is a second, third, or fourth EI-1 installation, install P1 to the plate assembly (P/N 90175800) and then attach it to an empty slot in slots B1 through B13.

Connect EI-1 Cable P/N 90349200 to I/O Bulkhead

1. Connect the EI-1 cable J1 connector to the back of the I/O bulkhead "Ethernet" port and secure the connector finger-tight.

OR

2. If this connection is a second, third, or fourth installation, install the J1 connector to the plate assembly installed in slots A1 through A11.

3. Reattach the Y1 cables to the back of the VME bulkhead.

4. Reattach the rest of the cables to VME bulkhead, referring to the cable and bulkhead labels.

5. Remove the single retaining screw and extend the VME tray out until the tray slides lock.

6. Adjust the cables inside the cable tray and flexible cable way if there is excess slack at the bulkhead.

7. Reinstall cable tray cover by sliding it carefully in and over the cable tray from the front of the I/O cabinet.
8. Secure the cable tray cover at the front of the I/O cabinet with two 1/4-turn screws.
9. Install the VME cover.
10. Slide the VME tray in.
11. Install the four screws in front of the VME tray.

Connect the External Cable to Customer Network

When connecting to the customer's network transceiver, ensure that the SQE clock pulse is enabled.

Close the Front I/O Door

Close the Rear I/O Door

Power Up the CRAY J90 Series System

1. Using the right mouse button, click on any open working space. The `Workspace` menu will appear.
2. Select the `J90 Console` menu item.
3. Move the circuit breaker on the back of the I/O cabinet to the `ON` position first, and then move the circuit breaker on the mainframe cabinet to the `ON` position.
4. Press the `Alarm Acknowledge` button on the CCU.
5. Press the `CPU RESET` button on the CCU.
6. Press the `VME RESET` button on the CCU.
7. Verify that the SYSTEM READY light on the CCU illuminates.
8. Close the mainframe front door.

Use Nettest to Verify That the Upgraded Hardware is Functional

NOTE: If your system is running UNICOS release 8.0.3.2J, see ISFN 262 for a description of problems with CRAY offline diagnostics used to verify your system.

`Nettest` checks communication over the Ethernet network and FDDI token ring network.

Part 1: Checks to determine whether the board is installed, checks the results of the onboard power-up tests, and reports any failures if the onboard power-up tests failed. The onboard power-up tests are run by the controller at power-up time.

Part 2: Runs transmit/receive tests in the following manner:

- Sets the controller in promiscuous mode (receive all packets).
- If user specified both local IP and destination IP addresses, transmits ARP packets to the destination host.
- Transmits an ARP packet every second for at least 20 seconds. The minimum number of transmitted packets is 20.
- Terminates the test if 20 packet responses are received or 60 seconds have passed.
- Checks the controller's LANCE statistics for errors.
- Prints an analysis of the transmitted and received statistics.

Run NETTEST

1. Enter **nettest**. The following output is displayed:

```
IOS0>nettest

 CRAY RESEARCH J90 SERIES IOS-V DIAGNOSTIC
 Network Controller Confidence Test
 Running in IOS 0.

> Enter:
   E - Ethernet test
   F - FDDI test
   Q - Quit

 :e

 Ethernet testing selected
> Enter / to see menu, L to list test number and function, test number, or
 Q to quit: l
```

2. Enter **e** to select the Ethernet test; then enter **l** to list the test numbers and functions for the Ethernet test (as shown in the previous display). The following main menu is displayed:

```
 Select    Description

    99   : Run all tests
    1    : Check Power-up test.
    2    : Check Tx/Rx capability.

> Enter / to see menu, L to list test number and function, test number, or
 Q to quit: /
```

3. Enter **/** (as shown in the previous display). The following main menu is displayed.

```
 Select    Description

    C:        Select controller (default=0)
    L:        List test menu
    I:        Select IP address for this host
    D:        Select IP address for destination host

> Enter / to see menu, L to list test number and function, test number, or
 Q to quit: i
```

4. Enter **i** (as shown in the previous menu). Enter the IP address for your system, for example, 192.9.0.51. Then enter **d** to enter the IP address for the destination host.

5. Enter **99** to run all the tests. An output similar to the following example is displayed:

```
Ethernet test 1: Checking power-up test results for controller 0.
Controller 0 - detected
Ethernet controller 0 passed all power-up tests.
Ethernet test 2: Checking Tx/Rx on Ethernet controller 0

Starting transmit/receive of packets.
Test may take up to 60 seconds. Please wait...

(Receiving packets from net...)
          Successful transmissions: 22
               Successful receipts: 30

Ethernet test 2: completed
.
.
.

> Enter / to see menu, L to list test number and function, test number, or
 Q to quit: q
```

6. Enter **q** (as shown in the previous display) to quit the `nettest`.

Software Change Procedure

NOTE: If your system is running UNICOS release 8.0.3.2J, see Special Considerations under the Software Required subsection on page 6 before continuing.

Perform the following procedure to use the UNICOS Installation / Configuration Menu System (ICMS) to rebuild the UNICOS operating system. You must have super-user privileges. For additional information on the ICMS, see the *UNICOS Installation and Configuration Tool Reference Manual*, publication SR-3090.

NOTE: If you have not already done so, it is recommended that you create a backup copy of the UNICOS file system.

You must change the IOS `config` file and UNICOS kernel configuration files as part of the CRAY EI-1 upgrade. Modify the IOS `config` file and boot the system by executing the following commands:

1. Edit the IOS `config` file by entering the following command on the console (`9`*xxx* is your system serial number):

   ```
   # vi /opt/ios/9xxx/config
   ```

2. Add the `/dev/ethnet` strategy and `/dev/ether` driver to the IOS(s) on which your Ethernet controller(s) reside. The strategy name must be added before the driver name is added. The following is a sample file section (this example shows the Ethernet controller in IOS0):

   ```
   sn9001-ios0: 10.1.0.1
   #
   # Strategy name
   # -------------
   /dev/console
   /dev/disk
   /dev/ethnet
   /dev/taped
   /dev/tape
   /dev/upacket

   # Device driver name
   # ------------------
   /dev/dc5i
   /dev/si2
   /dev/sdisk
   /dev/s2tape
   ```

```
/dev/ether
```

3. Save the existing `/sys/param` file by entering the following commands:

```
sn9xxx-ios0> cd /sys
sn9xxx-ios0> cp param param.old
```

4. Reload the IOS to load the Ethernet strategy and driver by entering the following command:

```
sn9xxx-ios0> reload
```

NOTE: The following message will be displayed if the Ethernet interface(s) are recognized in the IOS. The controller number will increment up depending on the number of Ethernet controllers in your system.

```
Ethernet: Controller 0 - detected
```

5. Start the UNICOS operating system by entering the following command:

```
sn9xxx-ios0> boot
```

NOTE: The following message will be displayed if the Ethernet interfaces are recognized in UNICOS (the numeric values will be site configuration-specific):

```
INFO: line 831: en maxdevs 2
INFO: line 831: configuring up en dev 9, ios 1 chan 0020
```

6. Enter multiuser mode by entering the following command (for more information on bringing your system to multiuser mode, see the *UNICOS Basic Administration Guide for CRAY J90 and CRAY EL Series*, publication SG-2416):

```
# /etc/init 2
```

7. Log on as super user (`root`).

8. To ensure that the `/etc/config/param` file is up-to-date, copy it from the IOS disk to the UNICOS file system by entering the following command:

```
# exdf -i /sys/param > /etc/config/param
```

Continue with the UNICOS configuration for the Ethernet interfaces by using the UNICOS ICMS:

9. Enter the UNICOS ICMS by entering the following command:

```
# /etc/install/install
```

NOTE: It is recommended that before you configure your system, you update the ICMS configuration by importing the current system configuration into the ICMS by completing the following steps.

10. Select the `Import Options` menu:

```
UNICOS 8.0 Installation / Configuration Menu System
.   Utilities
.   .   Import Utility
.   .   .   Import Options
```

11. Set the Import Options to the following values:

```
     Import Options
S->  Import root mount point
     Stop import on error?              YES
     Import host or guest versions?     host
     Reload default import table ...
```

12. Select the `Import Table` menu. Set `Import?` to `YES` for the following Import Table entries:

```
UNICOS 8.0 Installation / Configuration Menu System
.   Utilities
.   .   Import Utility
.   .   .   Import Table
```

Import Table

	Class	Description	Import?	Program	Options
E->	HARDWARE	Param	**YES**	hdwparam.sh	-i $RELEA
	KERNEL	Config.h uts	**YES**	utsconfh.sh	-i $RELEA
	KERNEL	Param uts	**YES**	utsparam.sh	-i $RELEA
	KERNEL	Comm channels	**YES**	utscparam.sh	-i $RELEA
	HOSTS	Hosts	**YES**	utlimp.sh	hosts
	NETWORKS	Networks	**YES**	utlimp.sh	networks
	NETIF	Network Interfaces	**YES**	netifs.sh	-i

13. Select the `Import Utilities` menu. Set the `Import Class to run` to `ALL`.

```
UNICOS 8.0 Installation / Configuration Menu System
.   Utilities
.   .   Import Utility

          Import Utility

        Import options ==>
M->     Import table ==>
        Import class to run      ALL
        Run the import process...
```

14. Execute `Run the import process` and answer yes (`y`) to the question to overwrite all or parts of the menu system database.

15. Select the `Low-speed Channel Configuration` menu. Create entries for all Ethernet interfaces that are being installed. Enter the following parameters to build the `endev` entries in the `param` file (see the Definitions that follow for correct entry information):

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   UNICOS Kernel Configuration
.   .   .   Communication Channel Configuration
.   .   .   .   Low-speed Channel Configuration

          Low-speed Channel Configuration

S->     Low-speed device (npdev) ordinal    0
        I/O cluster (IOC) number            0
        IOP number                          0
        Channel number                    020
        Interface type                     EN
        Custom interface type name
```

Definitions:

`Low-speed device ordinal` is the number of the Ethernet interface that will be defined in the param file. Possible values are 0 through 15.

`I/O cluster number` is the IOS the Ethernet module will reside. Possible values are 0 through 15.

`IOP number` will always be 0.

`Channel number` is the IOP channel number the IOP uses to communicate with the Ethernet module in the IOS. This number is unique to each IOS. Valid values for this field are octal 20, 21, 22, and 23. Use 020 for the first module, 021 for the second module, and so on, in each IOS.

`Interface type` must be set to `EN` to designate an Ethernet type.

16. Exit the `Low-speed Channel Configuration` menu and answer `y` to the question: `Do you want to update form file? (y/n)`

17. Select the `Network Parameters` menu. Enter the following parameters to configure the Ethernet interfaces (see the Definitions that follow for correct entry information):

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   UNICOS Kernel Configuration
.   .   .   Network Parameters
```

NOTE: The following parameters represent only a portion of the Network Parameters display but are the only parameters that must be updated to install the Ethernet interfaces.

```
                Network Parameters

 S-> Number of TCP memory buffers (TCP_NMBSPACE) 1800
     Max. low-speed network devices (enmaxdevs)  2
```

Definitions:

`Number of TCP memory buffers` refers to the number of `mbufs` to be defined for the system. This value is system-dependent. If your system is configured for NFS and/or gated, you may have to monitor `mbuf` usage and increase the amount if needed. To determine the correct number of `mbufs` for your system, read subsection 23.3.2, Buffering and Memory Requirements, in *UNICOS System Administration*, publication number SG-2113. Each time you change this value, you **must** reboot UNICOS, because the kernel allocates memory for `mbufs` at boot time.

`Max. low-speed network devices (enmaxdevs)` refers to the maximum number of Ethernet modules allowed for this system. Valid values are 1 through 16. Set this to the number of Ethernet interfaces to be installed in this system.

18. Select the `UNICOS Kernel Configuration` menu. Select the `Activate the kernel configuration` option.

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   UNICOS Kernel Configuration
```

NOTE: Files other than the ones mentioned at the beginning of this section will also be updated. This is due to some of the menus that touch other configuration files. If you started with the UNICOS ICMS that resembles your system's configuration, everything will be updated appropriately. If your system's configuration does not match the UNICOS ICMS then answer `no` to the question to proceed with the configuration update and refer to the beginning of this section.

19. Select the `Host address configuration` menu. Configure the Ethernet internet connection(s) for TCP/IP by creating entries for each host that will be connected on the Ethernet (see the Definitions that follow for correct entry information):

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   Network Configuration
.   .   .   General Network Configuration
.   .   .   .   Hot Address Configuration

                    Host Address Configuration

Proto   Name          Address   Comment
---------------------------------------->
inet    localhost-ether   128.162.102.25
inet    remotehost-ether  128.162.102.27
```

Definitions:

`Proto` should be `inet`.

`Name` is the IP address alias.

`Address` is the standard IP address value.

20. Select the `Network Address Configuration` menu. Configure the Ethernet internet network address for TCP/IP by creating an entry for each Ethernet network. There will be a network address for each Ethernet channel pair that is being installed that will communicate via TCP/IP.

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   Network Configuration
.   .   .   General Network Configuration
.   .   .   .   Network Address Configuration
```

```
                Network Address Configuration

Proto   Name          Address      Comment
-----   ----------    ----------   --------->
E->  inet    yourethernet      128.162.102.25
```

Definitions:

`Proto` should be `inet`.

`Name` refers is the IP host address alias.

`Address` is the standard IP address value.

21. Select the `Network Interface Configuration` menu. Enter the information to automatically configure the Ethernet interfaces up on a UNICOS boot for this system (see the Definitions that follow for correct entry information):

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   Network Configuration
.   .   .   General Network Configuration
.   .   .   .   Network Interface Configuration
```

```
      Network Interface Configuration

  Name HycfFamily    Address Dest SubnetType  Bcst Mtu  RdSi

  1o0      inet      yourhost-ether
E->en0     inet      remotehost-ether 0xffffff00
```

Definitions:

`Name` is the interface name and ordinal of the Ethernet interface to configure. This name is in the format of `en`*X* (*X*=ordinal number)

`Hycf` is not used.

`Family` must be set to `inet`.

`Address` is the IP host address for this interface connection. This parameter must be defined in the `/etc/hosts` file.

`Dest` is the destination (point-to-point) address. It is not used for the Ethernet connection.

`Subnet` is the subnet address mask to be used for this interface.

22. Select the `General Network Configuration` menu. Select the `Activate general network configuration` option.

```
UNICOS 8.0 Installation / Configuration Menu System
.   Configure System
.   .   Network Configuration
.   .   .   General Network Configuration
```

Answer `y` to the question `Do you want to proceed with the configuration update?`.

23. Copy the `param` file to the console disk by selecting the `Expander File Transfers` menu.

```
UNICOS 8.0 Installation / Configuration Menu System
.   Utilities
.   .   Expander File Transfers
```

24. Verify that the following parameters are configured to transfer the `/etc/config/param` file to the console disk:

```
                Expander File Transfers

  S->   Transfer UNICOS kernel to the expander? NO
        Transfer CSL param file to the expander?YES

  Expander directory name                        sys
  Expander file name suffix

  Do the transfer to the expander ...
```

25. Execute the transfer by selecting the following option:

```
A-> Do the transfer to the expander ...
```

26. Exit the Installation / Configuration Menu System by typing `q` and answering yes (`y`) to the question `Do you want to quit?`

Configuration File Examples

The UNICOS Installation / Configuration Menu System updates the files described in this section. Exact parameter settings will be system-dependent.

NOTE: Only the part of the files that refer to the Ethernet interface and what was configured with the ICMS are shown in the samples provided.

1. The `/etc/config/param` file details the parameters needed to configure the Ethernet interface(s) for the host system. It contains the following information:

```
network {
    1800 tcp_nmbspace;
      2 enmaxdevs;

endev 0 {
    iopath {
      cluster 0;
      eiop 0;
      channel 020;
      }
    }
}
```

2. The `/etc/config/interfaces` file contains the parameters to configure the Ethernet interface(s) up with the `/etc/initif` script. It contains the following information:

```
# File format is:
#
# name hycf_file       family address         pt-to-pt-dest   args:
#                                                             netmask
#                                                             iftype
#                                                             broadcast
#                                                             mtu
#                                                             rbuf
#                                                             wbuf
#                                                             bg
#                                                             hwloop
#
lo0   -     inet yourhost-ether -
en0   -     inet remotehost-ether - netmask 0xffffff00
```

3. The `/etc/hosts` file contains the following information:

```
128.162.102.25   yourhost-ether
128.162.102.30   remotehost1
128.162.102.31   remotehost2
```

4. The `/etc/networks` file contains the following information:

```
yourethernet          128.162.102
```

Test the Ethernet Interface(s)

To test the Ethernet interface, complete the following steps:

NOTE: The software verification procedure consists of communicating to another node connected to the Ethernet. The verification procedure is written with the assumption that a node exists on the same Ethernet to which the EI-1 will be connected.

1. Shut down the UNICOS operating system by entering the following commands at a UNICOS prompt:

```
# cd /
# /etc/shutdown 120(executes after 120 seconds)
# /bin/sync
# /bin/sync
# /bin/sync
# /etc/ldsync          (if you are using ldcache)
# <CONTROL-A>          (toggles to the IOS)
sn9xxx-ios0>
```

2. To test the Ethernet interface, use the `nettest` IOS offline diagnostic. For a detailed description on how to execute the `nettest` command, refer to *IOS Based Diagnostics*, publication number HDM-099-0.

   You will need to know the internet address (in our example, 128.162.105.27) of another node on the Ethernet network to which the Ethernet will connect. You also will need to choose an address for the local connection (in our example, 128.162.105.25).

3. Reload the IOS by entering the following command:

```
sn9xxx-ios0> reload
```

   NOTE: The following message will be displayed if the Ethenet modules are recognized in the IOS:

```
Ethernet: Controller 0 - detected
```

Boot the System

Boot the system by executing the following commands from the system console:

1. Boot the system to single-user mode by entering the following command:

```
# boot
```

NOTE: The following messages are a sample of what will be displayed if the Ethernet interfaces are recognized in UNICOS (the exact number for `en maxdevs`, `ios`, and `chan` will be site-dependent):

```
INFO: line 831: en maxdevs 2
INFO: line 831: configuring up en dev 9, ios 1 chan 0020
```

2. Enter multiuser mode in UNICOS by entering the following command:

```
# /etc/init 2
```

NOTE: Questions will be displayed and will require input before UNICOS will be completely booted to multiuser mode. For specific information about these messages, see the *UNICOS Basic Administration Guide for CRAY J90 and CRAY EL Systems*, publication SG-2416.

Messages indicating that the Ethernet interfaces are recognized will be displayed when the interfaces are initialized by UNICOS. The following is sample message output:

```
en0 ethernet address: 2:CF:1F:B0:5:68
 en0
```

Test TCP/IP across the Ethernet Interface

The following commands can be used to test the Ethernet interface using TCP/IP. For more information, refer to the man page for each command.

- `ping`(8)
- `telnet`(1B)
- `ftp`(1B)

Removed Parts Disposition

Do not dispose of removed parts locally; return the removed parts to:

Cray Research, Inc.
1000 Halbleib Road
Chippewa Falls, WI 54729
Attention: Removed Equipment Management

IR Reporting

There is a separate incident report for upgrades. Refer to *CSH # ADM-COM-9307*. Please fill one out.