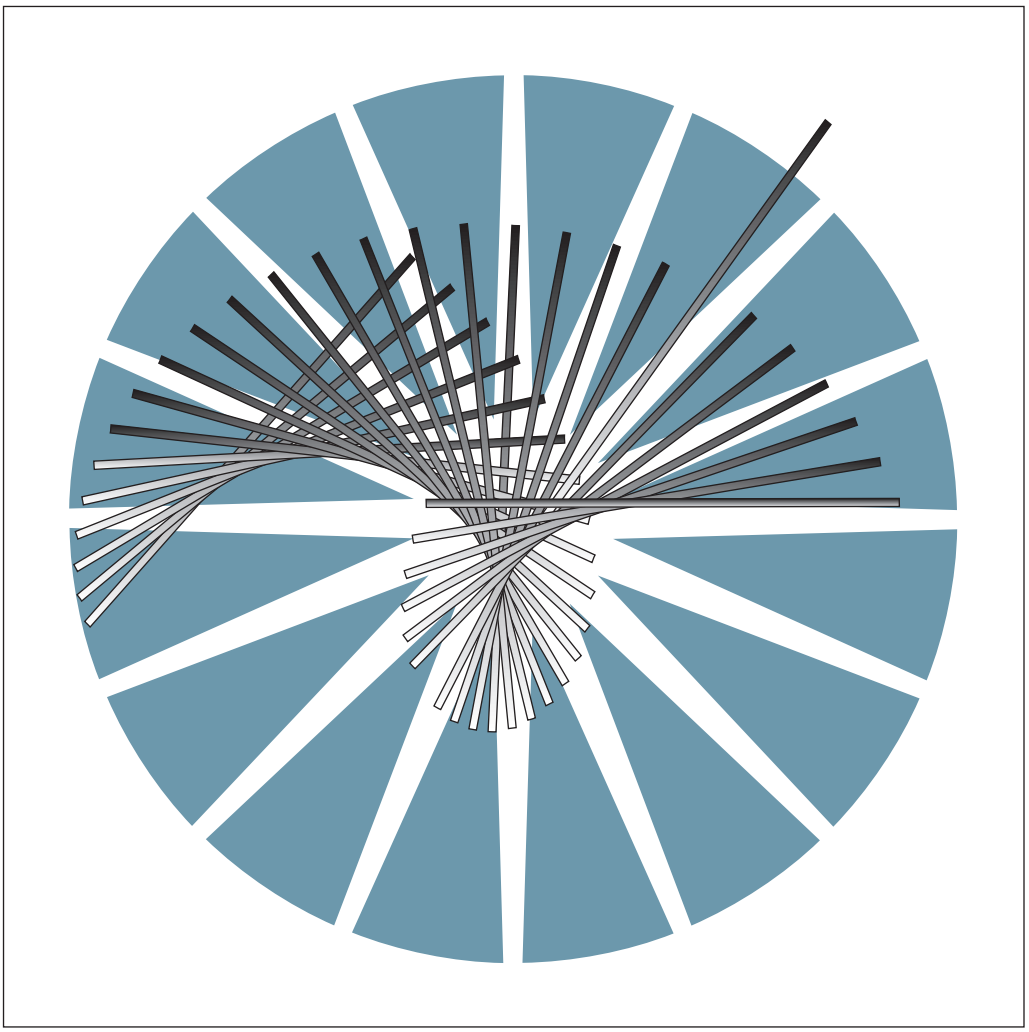
3746 Nways Multiprotocol Controller
Models 900 and 950

Multiaccess Enclosure Installation and Maintenance (Starting from EC F12720)



SY33-2124-02

3746 Nways Multiprotocol Controller
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Multiaccess Enclosure Installation and Maintenance (Starting from EC F12720)

SY33-2124-02

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page xv.

Third Edition (July 1999)

This edition applies to the multiaccess enclosure of the 3746 Nways multiprotocol Controller Models 900 and 950.

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Contents

Figures

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The IBM 3746 Model 900 and IBM 3746 Model 950 are manufactured according to the International Safety Standard IEC950 and, as such, are approved in the UK under the General Approval number NS/G/1234/J/100003.

The Active Remote Couplers (ARCs) and the X.21 Interface, housed within the 3746 Model 900 and 3746 Model 950, are approved separately, each having their own independent approval number. These interface adapters, supplied by IBM, do not contain excessive voltages. An excessive voltage is one which exceeds 42.4 V peak ac or 60 V dc. They interface with the 3746 Model 900 or 3746 Model 950, using Safe Extra Low Voltages only.

In order to maintain the independent approval of the IBM adapters, it is essential that other optional cards, not supplied by IBM, do not use mains voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by IBM.

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This product is Year 2000 ready. When used in accordance with its associated documentation, it is capable of correctly processing, providing, and/or receiving date data within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

For more information, refer to:

`http://www.ibm.com/year2000`

The 3745 and 3746 controllers require a certain level of microcode to be Year 2000 ready. For more detailed information, access the URL listed above and click **Product Readiness**.

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General Safety

This product meets IBM safety standards.

Safety Notices

For *Safety Notices* refer to *IBM 3745 Communication Controller All Models*, *IBM 3746 Expansion Unit Model 900*, *IBM 3746 Nways Multiprotocol Controller Model 950*, *Safety Information*, GA33-0400

Safety Notices for United Kingdom

1. The IBM 3746 Expansion Unit Model 900 and IBM 3746 Nways Multiprotocol Controller Model 950 are manufactured according to the International Safety Standard EN 60950 and as such are approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.
2. The network adapter interfaces housed within the IBM 3746 Expansion Unit Model 900 and IBM 3746 Nways Multiprotocol Controller Model 950 are approved separately, each one having its own independent approval number. These interface adapters, supplied by IBM, do not use or contain excessive voltages. An excessive voltage is one that exceeds 42.4 V peak ac or 60 V dc. They interface with the IBM 3746 Expansion Unit Model 900 and IBM 3746 Nways Multiprotocol Controller Model 950 using Safety Extra Low Voltages (SELV) only. In order to maintain the separate (independent) approval of the IBM adapters, it is essential that other optional cards, not supplied by IBM, do not use mains voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by IBM.

Service Inspection Procedures

The Service Inspection Procedures help service personnel check whether the 3746 conforms to IBM safety criteria. They have to be used each time the 3746 safety is suspected. The *Service Inspection Procedures* section is located at the beginning of the:

- *3746-950 Service Guide*, SY33-2108.
- *3746-900 Service Guide*, SY33-2116.

The 3746 areas and functions checked through service inspection procedures are:

1. External covers
2. Safety labels
3. Safety covers and shields
4. Grounding
5. Circuit breaker and protector rating

6. Input power voltage
7. Test of emergency power OFF/control power switch.
8. Power-ON indicator

About this Book

Who Should Use this Book

The IBM personnel using this book should be:

- Trained to service the multiaccess enclosure, 3746-900, and 3746-950.
- Familiar with the configuration of the 3746-900, and 3746-950.
- Familiar with the multiaccess enclosure service documentation.

How to Use this Book

This book provides procedures for installing and maintaining an multiaccess enclosure, starting from EC F12720. To ensure the most efficient installation:

- Read the instructions carefully before attempting to do them,
- Complete each step before going to the next one,
- Go through the chapters sequentially.

How this Book is Organized

Chapter 1	Presents the procedures to install and connect the multiaccess enclosure. It also gives procedures to customize the multiaccess enclosure parameters.
Chapter 2	Presents the software maintenance procedures for the multiaccess enclosure.
Chapter 3	Gives the procedures for problem determination.
Chapter 4	Gives the procedures for FRU exchange.
Chapter 5	Gives the procedures to access firmware and operational code
Chapter 6	Gives the procedures for adding or removing options.
Chapter 7	Gives the procedures for relocating or removing the multiaccess enclosure.
Appendix A	Gives the component locations of the multiaccess enclosure
Appendix B	Gives the adapter plugging rules.
Appendix C	Provides parameter worksheet for multiaccess enclosure.
Appendix D	Gives the component locations for units installed in a controller expansion.
Appendix E	Gives how to manage the operational code and configuration files.
Appendix F	Gives the common tasks.

Appendix G Gives hardware error codes.

Appendix H Gives the parts.

Appendix I Gives the external cables characteristics.

Appendix J A service and customer documentation bibliography.

A **Glossary** and an **index** are provided at the end of this book.

Where to Find More Information

For a complete list of the customer and service information manuals, see at the end of this manual. In this *multiaccess enclosure manual* , references are made to the following publications:

Caution: Safety Information-Read This First, SD21-0030

3746-950 Service Guide, SY33-2108

Service Processor Installation and Maintenance (Based on 6275), SY33-2125

Service Processor Installation and Maintenance (Based on 7585, 3172, and 9585), SY33-2120

3745 Communication Controller Models A and 3746 Models 900 and 950: Overview, Installation, and Integration, GA27-4234

3745 Communication Controller Models A and 3746 Models 900 and 950: Serial Line Adapters, GA27-4235

3745 Communication Controller Models A and 3746 Models 900 and 950: Token Ring and Ethernet, GA27-4236

3745 Communication Controller Models A and 3746 Models 900 and 950: ESCON Channels, GA27-4237

3745 Communication Controller Models A and 3746 Models 900 and 950: Physical Planning, GA27-4238

3745 Communication Controller Models A and 3746 Models 900 and 950: Management Planning, GA27-4239

3745 Communication Controller Models A and 3746 Models 900 and 950: Multiaccess Enclosure Planning, GA27-4240

3745 Communication Controller Models A and 3746 Models 900 and 950: Protocol Introductions, GA27-4241

World Wide Web

You can access the latest news and information about IBM network products, customer service and support, and microcode upgrades via the Internet at the URL: http://www.lagaude.ibm.com/3746pe

Online Documentation from CD-ROM

Starting at EC F12380, with the service processor is now shipped two identical CDs which contain the LIC and a copy of the 3746 web site. You will find from this web page, marketing, PE, and all information about CCP products.

To access this page:

1. Insert the CD into the CD disk drive of the SP.
2. From the MOSS-E primary menu, click on **Information**
3. Double click on **CD-ROM documentation**
4. Then if you want to display the CCP documentation, click on **Documentation**
5. Click on **La Gaude Information Development: Communication Controllers Information**

Note: To have the very last version of the web site, connect to Internet at: http://www.networking.ibm.com/.

Service Personnel Definitions

See the *3746-950 Service Guide*, SY33-2108, or the *3746-900 Service Guide*, SY33-2116.

Chapter 1. Installing and Setting Up Your MAE

Overview

The Multiaccess Enclosure (MAE) is based on an IBM 2216, for location refer to Appendix A, “Multiaccess Enclosure Components Location” on page A-1

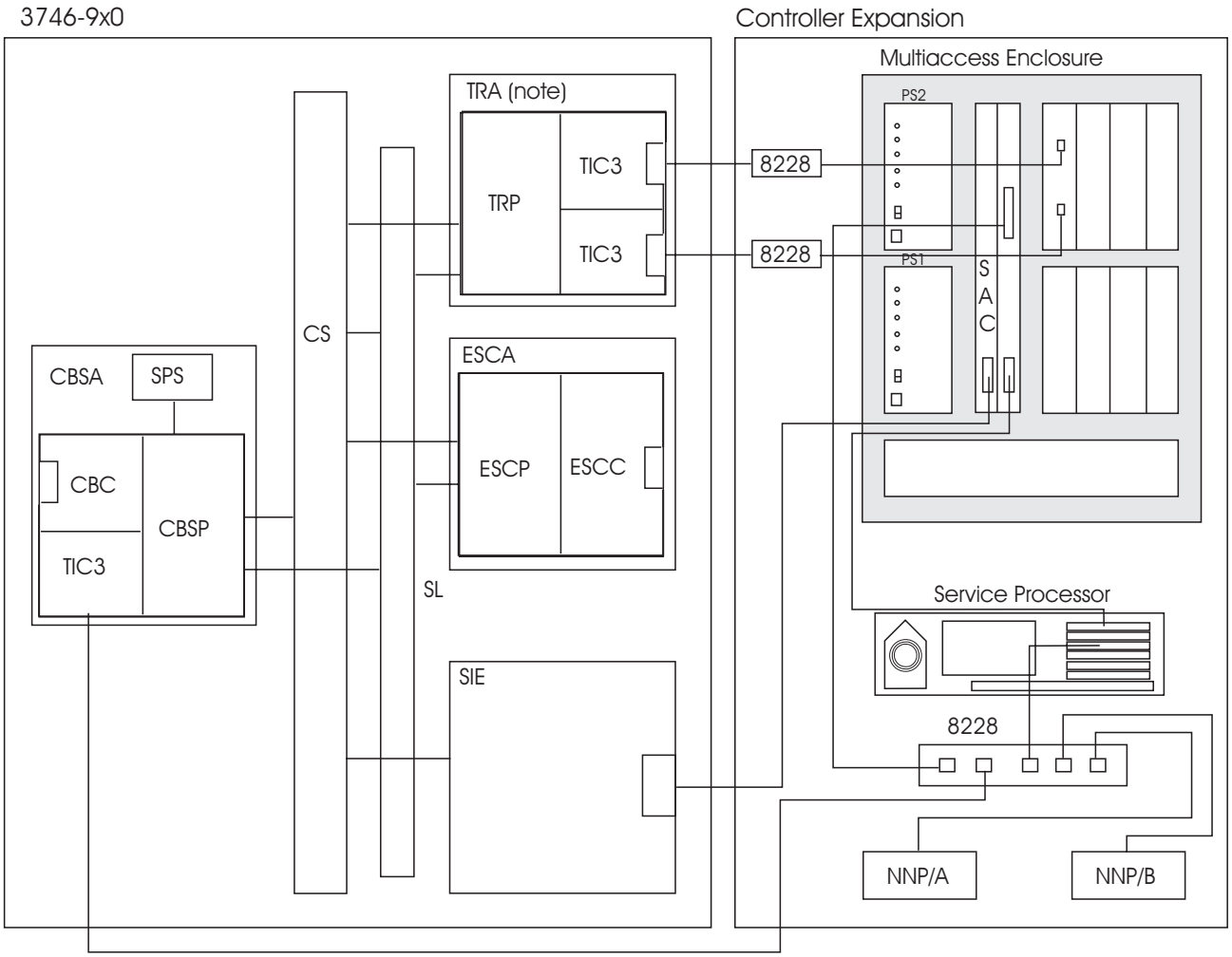


Figure 1-1. Multiaccess Enclosure Environment

There are **two links** between the 3746 and the MAE:

1. A **serial link** which is **mandatory** between the Switch Interface Extender **(SIE)** card in the 3746 and the Switch Adapter Card **(SAC)** card in the MAE.
2. A **Token-Ring** link which is **optional**:
   - If there is **no APPN®** traffic between the 3746 and the MAE, the TR link is not required.
   - To **support APPN** traffic between the MAE and the 3746-9X0 you can have:
     – **One link**: TIC3 - 8228 - MAE.
     – Or **two links** can be used to optimize the thruput from the MAE to the 3746-9X0 (the two TIC3s can be plugged on two different TRPs).

Installation Time

The estimated installation time for the multiaccess enclosure is: **2.45** Hours.

Note: A **second CE** is needed to help holding the MAE while it is being mounted in the controller expansion.

Multiaccess Enclosure Installation Tasks

TASK	DESCRIPTION	GO TO
1	Installation Preparation	**“Step 1 - Preparing Your Installation” on page 1-4**
2	Install the MAE.	**“Step 2 - Installing the MAE” on page 1-5**
3	Connect the MAE to the Service Processor	**“Step 3.1 - Connecting the MAE to a 7585” on page 1-11** **“Step 3.2 - Connecting the MAE to a 6275” on page 1-12**
4	Install the SIE cassette in the 3746-9X0	**“Step 4 - Installing the SIE Cassette in the 3746-9X0” on page 1-15**
5	Connect the MAE to the 3746-9X0	**“Step 5 - Connecting the MAE to the 3746-9X0” on page 1-16**
6	Customize the MAE.	**“Step 6 - Customizing the MAE” on page 1-21**

Go to, “Step 1 - Preparing Your Installation” on page 1-4

Step 1 - Preparing Your Installation

Important Notes

1. If your customer plan to have **only traffic** routing between MAE ports (**inside the MAE**) the note 2 does not apply (refer to “LAN link from the MAE to the 3746” on page C-1).
2. If required and before starting the installation be sure that one or two TIC3 and one or two token-ring cables are available to connect the MAE to the 3746-9X0. Refer to Figure 1-20 on page 1-18, these cables **3** connect the 8228 to the TIC3. The standard cable shipped with a TIC3 is PN 72F1236 (9M, 30Ft).
3. Two **CD-ROMs** are now shipped with the machine and contain the code for the service processor and for the multiaccess enclosure, these two CD-ROM are **identical** and are duplicated if one of them has been damaged. Store these disks in a safe place (service drawer is fine).
4. Before starting the installation, connect to the following web site: **http://www.lagaude.ibm.com/3746pe**, and download all mandatory fixes according to the level of the code that you are going to install.
5. The minimum EC level to support this MAE installation is **EC F12720**.

Obtain from the customer the following **Parameter worksheets**:

1. **Parameter definitions for multiaccess enclosure**
2. **LAN link between the MAE and 3746**

These parameter worksheets are part of the *3745 Communication Controller Models A and 3746 Models 900 and 950: Planning Guide*, GA33-0457 Appendix A and must be filled in by the customer. A copy of these parameter worksheets is given at the end of this manual see Appendix C, “Parameter Worksheets” on page C-1 and “LAN link from the MAE to the 3746” on page C-1.

Go to, “Step 2 - Installing the MAE” on page 1-5

Step 2 - Installing the MAE

__ 1. **Unpack** your MAE and verify that, along with this guide, the following items were included:

- **Documentation**
  - *Caution: Safety Information-Read This First*, SD21-0030
- **Hardware**
  - One SIE card
  - One cable PN 02L2764 (SIE to SAC cable)
  - One or two 8228 (optional)
  - Any cable ordered
  - One Power cord for each power supply
  - Rack mount installation kit
  - One ac outlet distribution box (if ordered when the MAE has two power supplies)

__ 2. According to the units to be installed in the controller expansion, **determine** the location where you are going to install the MAE in the controller expansion, refer to Figure D-1 on page D-2 and Figure D-6 on page D-7 for help.

__ 3. **Install** two brackets **1** (PN 58G5793) using four screws **2** (PN 2665527) in the controller expansion as shown in Figure 1-2.

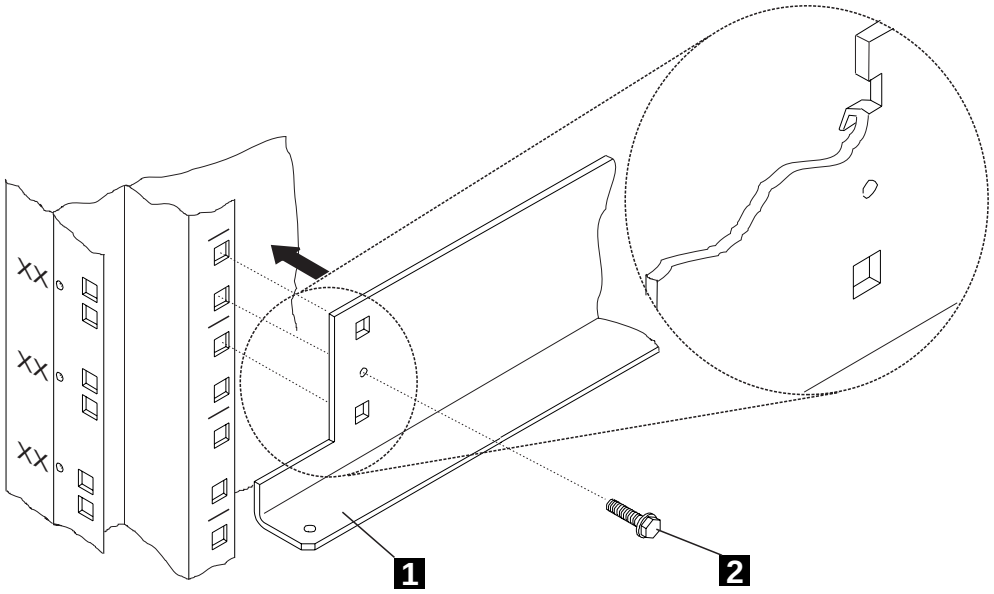


Figure 1-2. Brackets Installation

__ 4. To make the MAE easier to lift, **remove** the fan tray and each power supply.

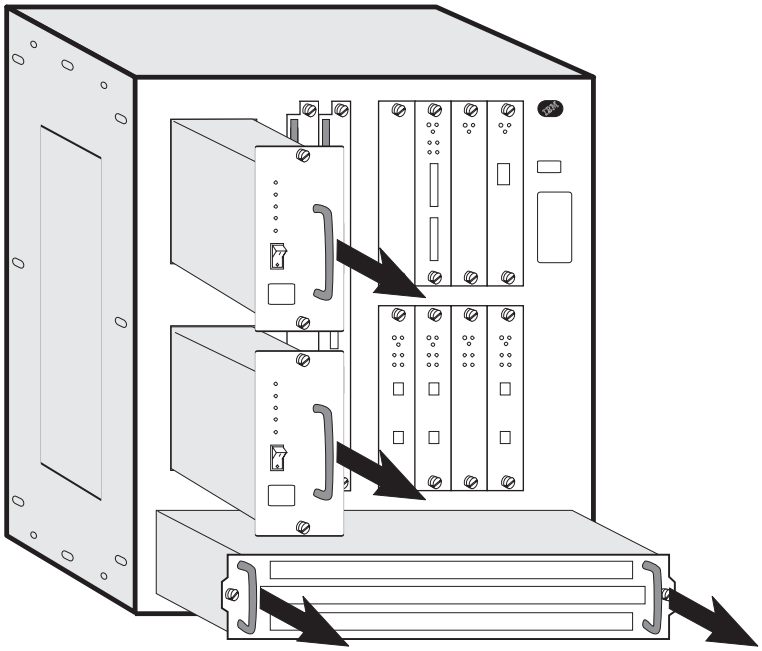


Figure 1-3. Fan Tray and Power Supply Removal.

__ 5. Refer to Figure 1-4, **remove** the four screws **1** installed on the MAE frame, then **install** on the left and right side of the MAE two brackets **2** (PN 0782961) using four screws **3** (PN 1621191).

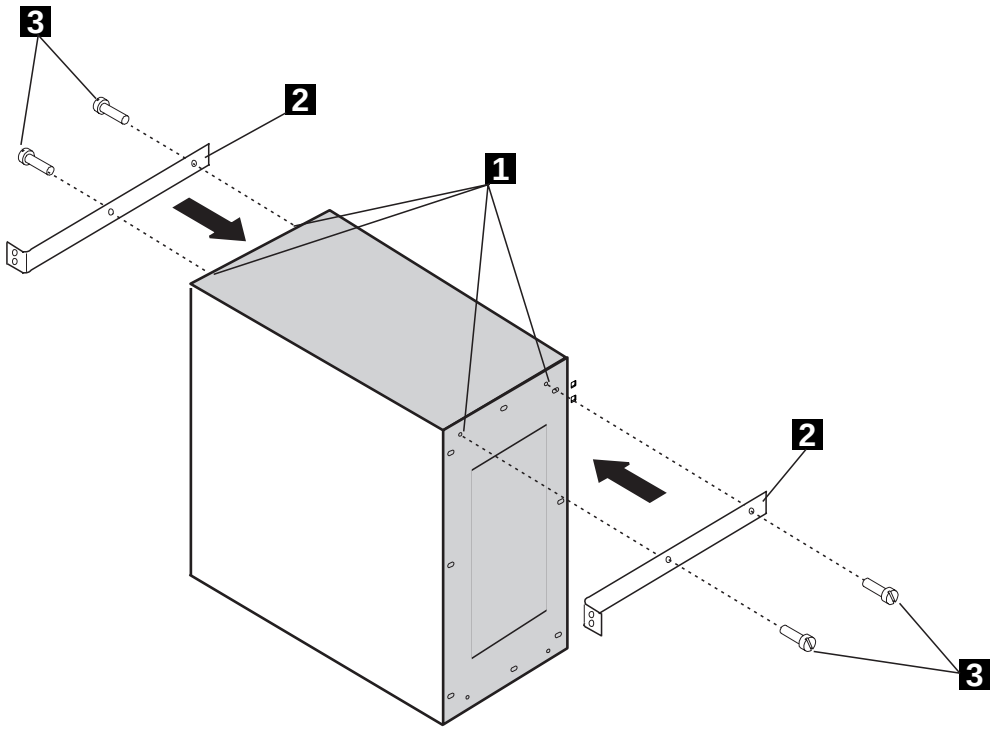


Figure 1-4. MAE Brackets Installation

__ 6. **Install** two captive nuts PN 58G5766 in the rear side of the controller expansion as shown in Figure 1-5, refer also to Figure D-6 on page D-7 to determine the location of the captive nuts from the brackets position.

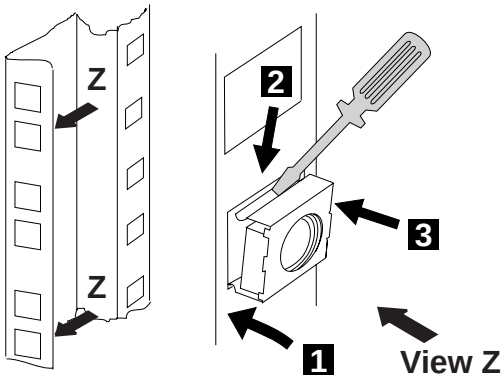


Figure 1-5. Captive Nuts Installation

__ 7. At the back of the controller expansion (with the help of a second CE), **set** the MAE on the brackets and fasten the MAE using two screws 1 (PN 1621230) as shown on Figure 1-6.

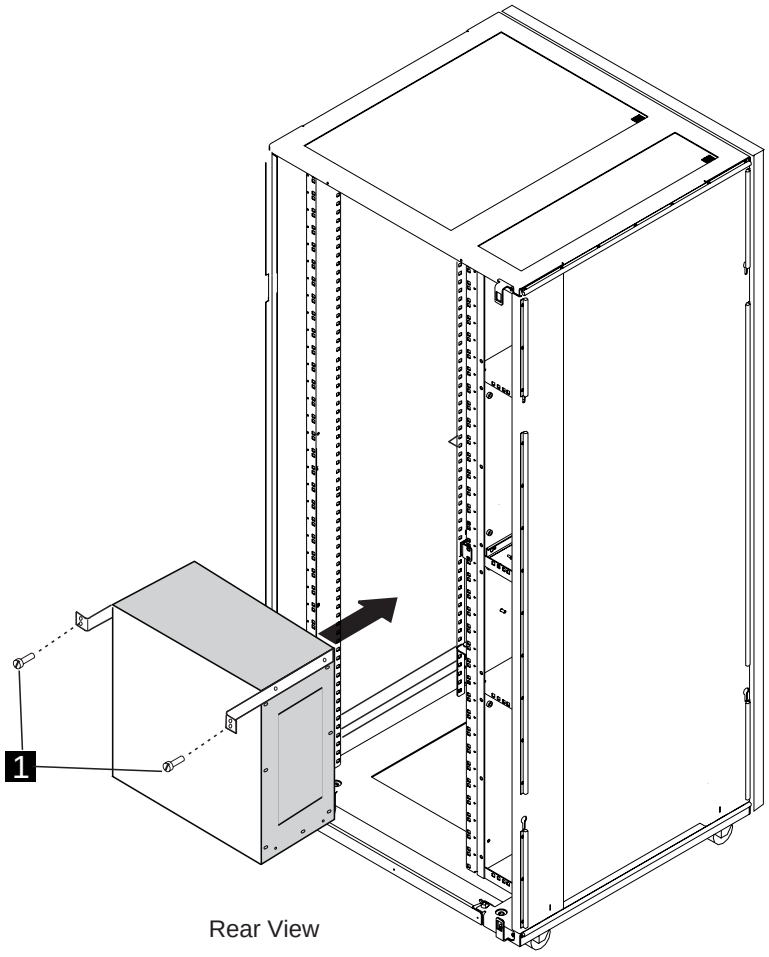


Figure 1-6. Installing MAE in the Controller Expansion

__ 8. **Reinstall** the fan tray and each power supply, making sure the screws are secured, refer to Figure 1-7.

Note: If you need to reinstall adapters, refer to Appendix B, “MAE Adapters Plugging Rules” on page B-1.

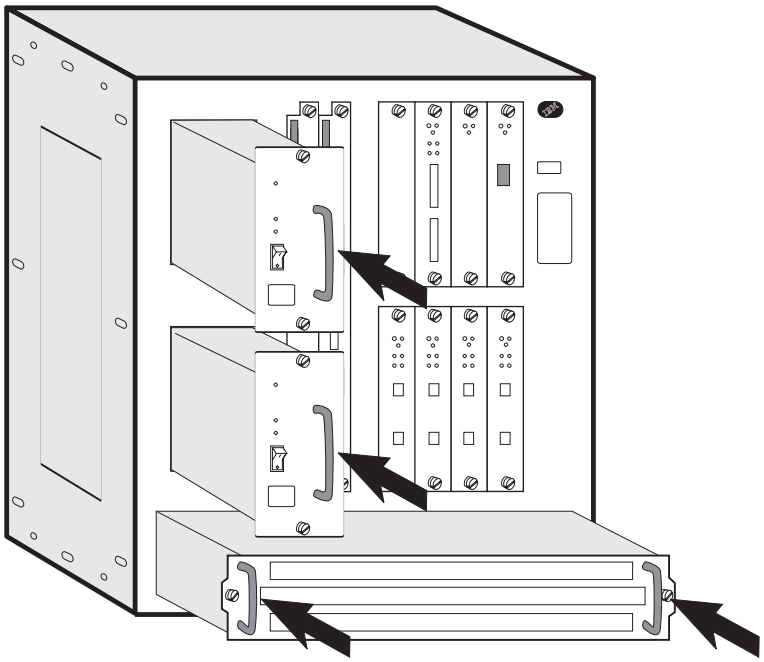
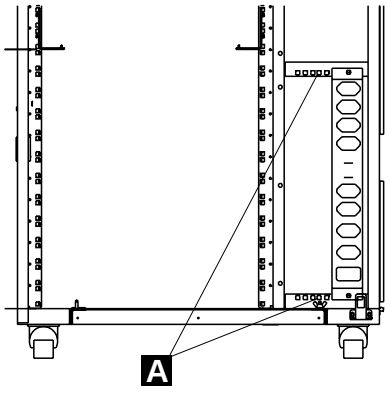


Figure 1-7. Installing Fan Tray and Power Supply

Do you have to install a second **ac outlet distribution box** ?

- **Yes**, go to Step 9.
- **No**, go to Step 17 on page 1-10.

__ 9. **Identify** the two locations for captive nuts **A** .



Rear View

Figure 1-8. Locating the Captive Nuts

__ 10. Refer to Figure 1-9, and **install** (if necessary) the two captive nuts (PN 58G5766).

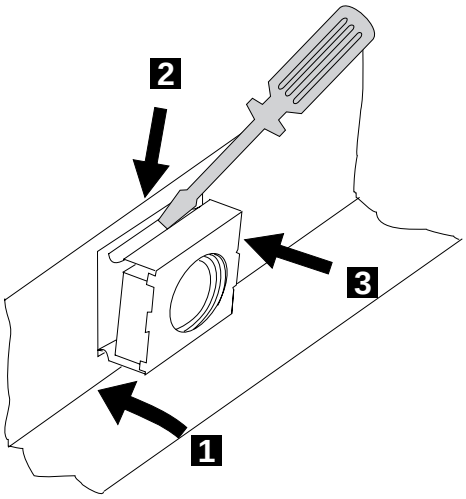


Figure 1-9. Installing the Captive Nuts

__ 11. Refer to Figure 1-10, using one lockwasher (PN 1622319), one starwasher (PN 1622347), and one screw (PN1673983), **connect** the ground jumper **A** (PN 63F2459) to the new ac outlet distribution box.

__ 12. **Install** the ac outlet distribution box **B** close to the first ac outlet distribution box and fasten using two screws **C** (PN 1621230).

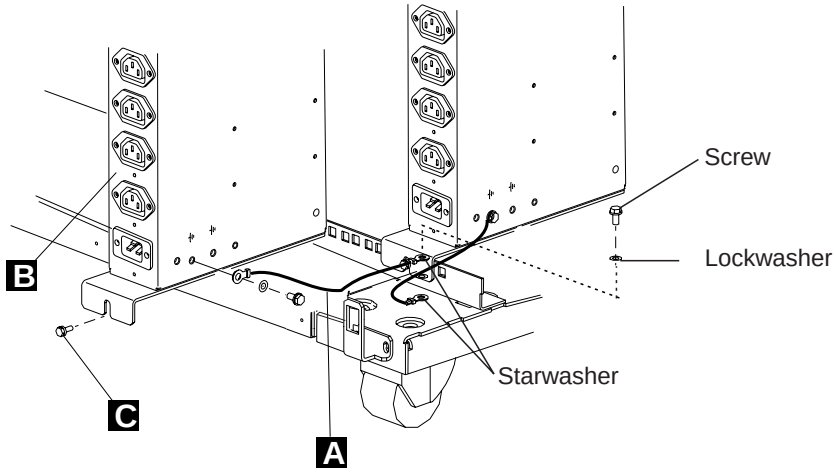


Figure 1-10. Installing the ac Outlet Distribution Box

__ 13. **Connect** the other end of the ground jumper **A** to the frame, using the same washers and screw used to connect the first ac outlet distribution box.

__ 14. Connect the ac outlet distribution box to the customer ac power as follows:

a. Plug the power cord **A** (country dependant) into location **IN** of the ac outlet distribution box.

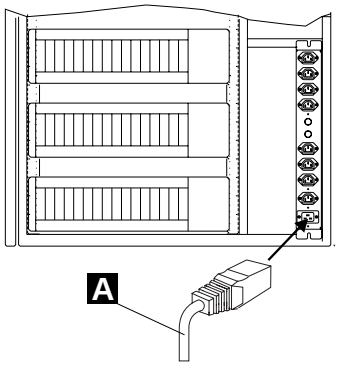


Figure 1-11. Power Cord Installation

b. Route and connect the other end of the power cord to the customer's power socket.

__ 15. Switch or ask the customer to switch ON the circuit breaker to be used for the ac outlet distribution box.

__ 16. Verify that the phase is distributed as shown below: **if not, notify the customer and do not proceed until the problem is corrected**.

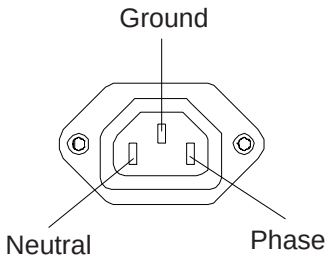


Figure 1-12. Power Distribution

__ 17. Depending on the service processor type installed, Go to:

- **7585**, “Step 3.1 - Connecting the MAE to a 7585” on page 1-11
- **6275**, “Step 3.2 - Connecting the MAE to a 6275” on page 1-12

Step 3.1 - Connecting the MAE to a 7585

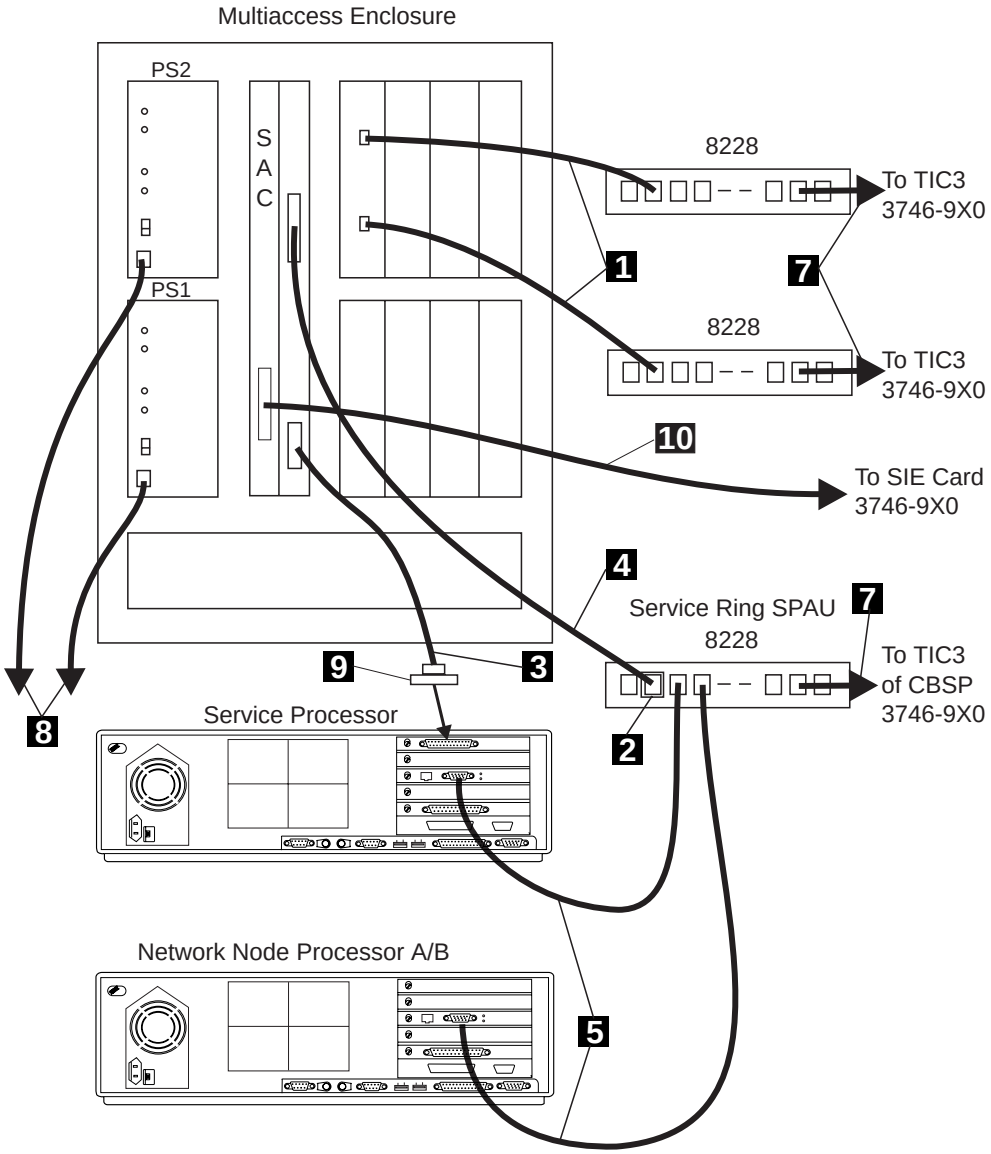


Figure 1-13. Cabling the Multiaccess Enclosure to a 7585

Connect the MAE to the service processor as follows:

__ 1. Plug one adapter **2** (PN 73G8314) into any free location of the service processor access unit (8228, service ring SPAU).

__ 2. Connect cable **4** (PN 782960) on top of the PCMCIA card, then plug the PCMCIA card into the system card (into any of the two slots) and the other end of the cable to the plug of the 8228 where you installed connector **2** in the previous step.

__ 3. Connect cable **3** (PN 782958) from the connector EIA-232 of the system card to the convertor **9** (PN 782982). And then, plug the convertor and cable to the COM 2 connector (upper slot) of the service processor.

Go to "Step 3.3 - Other MAE Cables Installation" on page 1-13

Step 3.2 - Connecting the MAE to a 6275

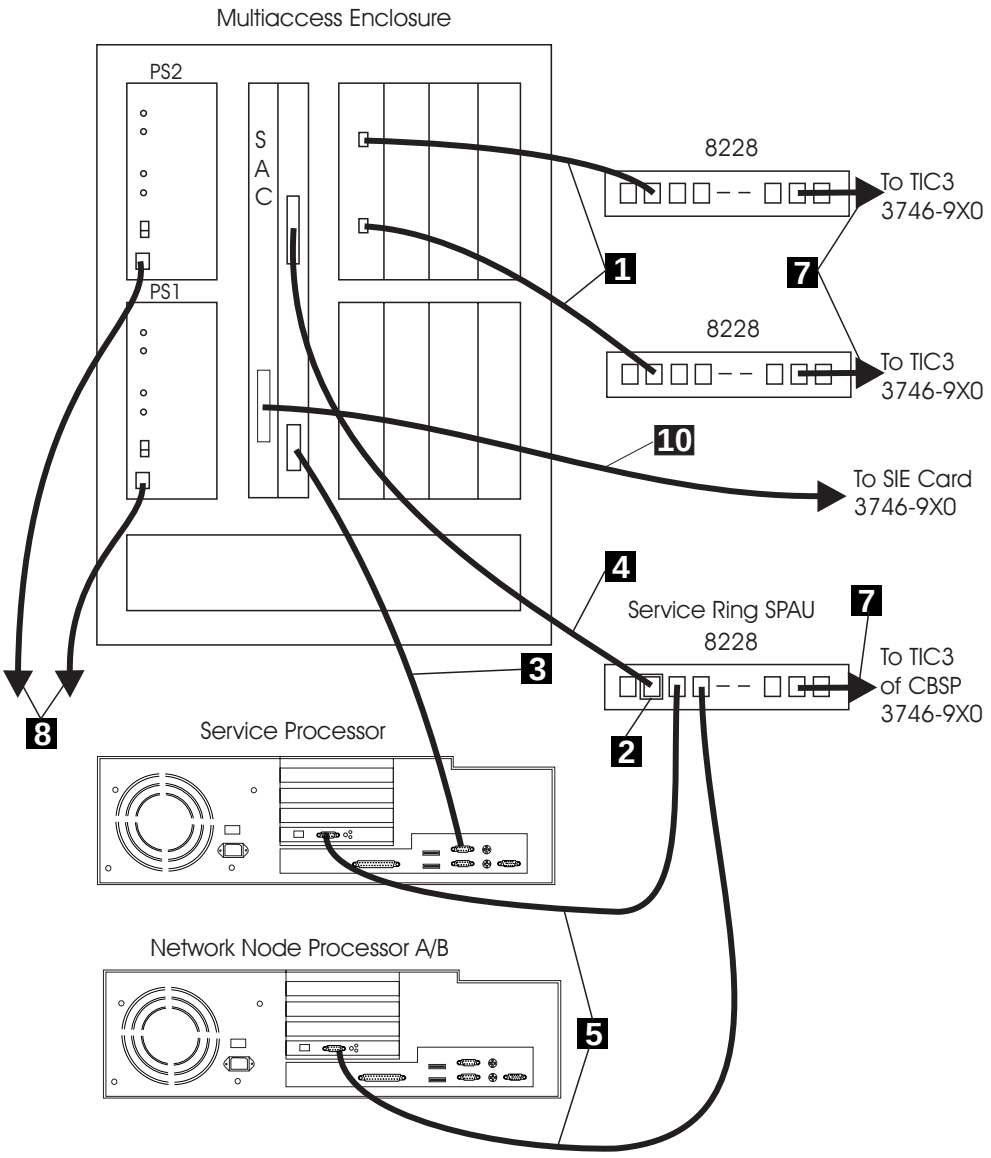


Figure 1-14. Cabling the Multiaccess Enclosure to a 6275

Connect the MAE to the service processor as follows:

__ 1. Plug one adapter **2** (PN 73G8314) into any free location of the service processor access unit (8228, service ring SPAU).

__ 2. Connect cable **4** (PN 782960) on top of the PCMCIA card, then plug the PCMCIA card into the system card (into any of the two slots) and the other end of the cable to the plug of the 8228 where you installed connector **2** in the previous step.

__ 3. Connect cable **3** (PN 782958) from the connector EIA-232 of the system card to the COM 2 connector (upper slot) of the service processor.

Go to "Step 3.3 - Other MAE Cables Installation" on page 1-13

Step 3.3 - Other MAE Cables Installation

If you have only one ac distribution box installed in the controller expansion go to "Single ac Outlet Distribution Box." Otherwise go to "Dual ac Outlet Distribution Box" on page 1-14.

Single ac Outlet Distribution Box

__ 1. Connect the power cords **8** (PN 58G5783) from the MAE power supply to the plugs of the ac outlet distribution box as shown in the figure Figure 1-15.

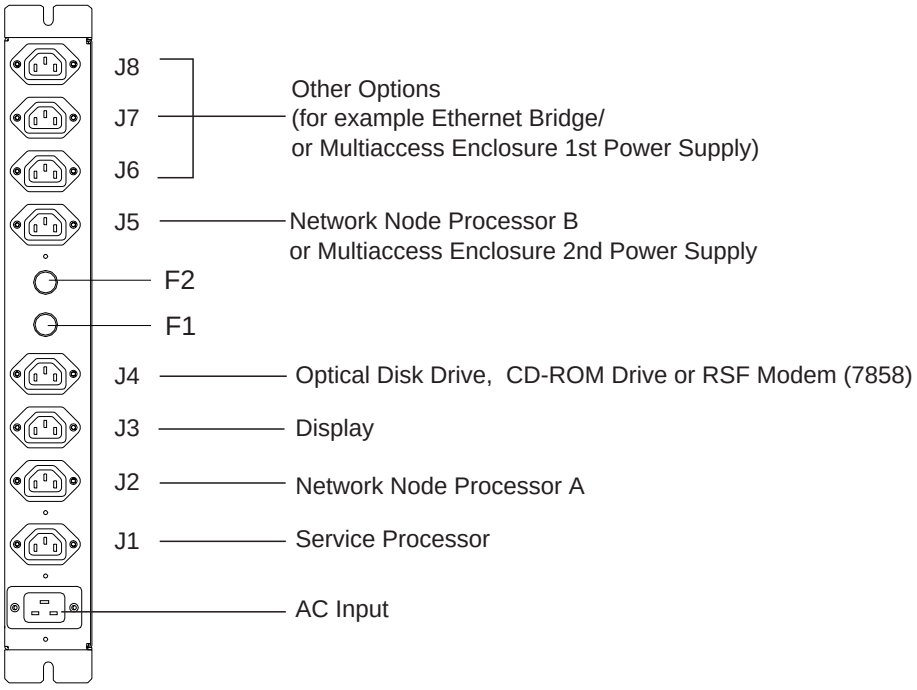


Figure 1-15. Power Plugging on a Single ac outlet Distribution Box

Notes:

a. These unit plugging guidelines are calculated no to exceed the F1 or F2 current rating. Therefore units should not be shuffled from the fuse group that is recommanded.

b. If the multiaccess enclosure second power supply option is installed, it is recommended that the second ac outlet distribution box is added.

__ 2. According to the plugging sheets, connect the external cables from slot 2 to 8 of the MAE.

Go to "Step 4 - Installing the SIE Cassette in the 3746-9X0" on page 1-15

Dual ac Outlet Distribution Box

__ 1. Connect the power cords **8** (PN 58G5783) from the MAE power supply to the plugs of the ac outlet distribution box as shown in the figure Figure 1-16.

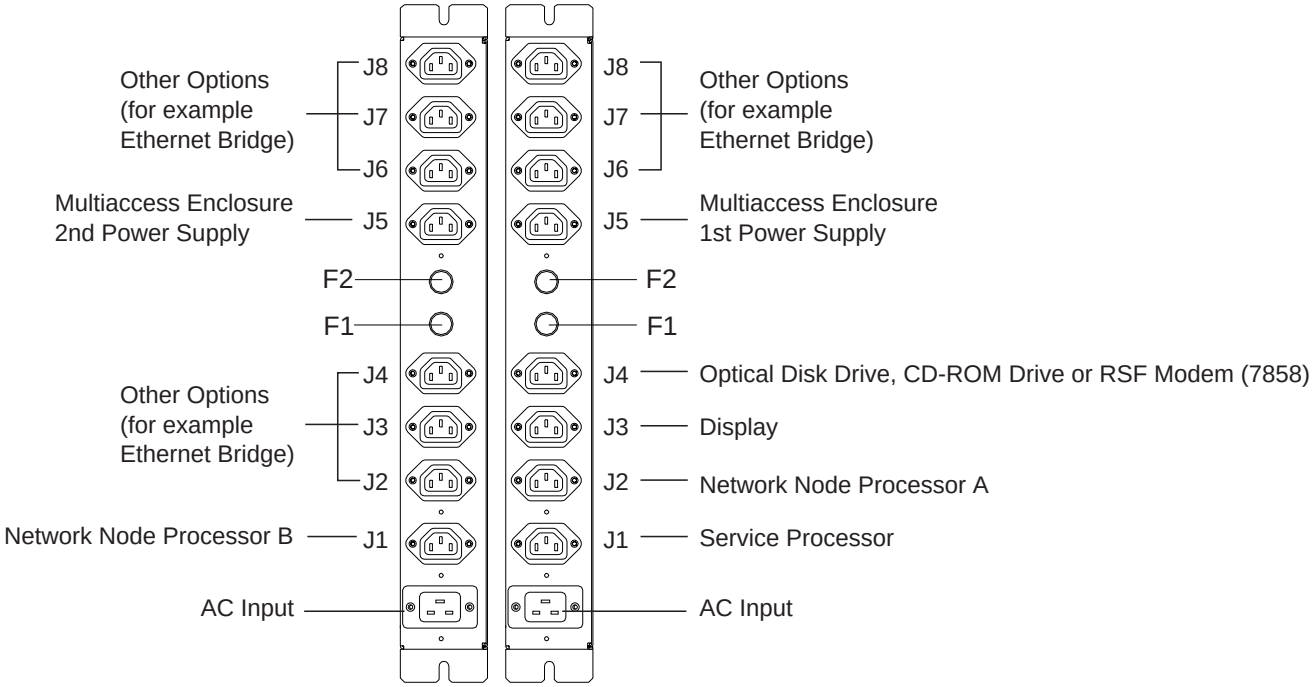


Figure 1-16. MAE Power Plugging on Dual ac Outlet Distribution Boxes

__ 2. According to the plugging sheets, connect the external cables from slot 2 to 8 of the MAE.

Go to "Step 4 - Installing the SIE Cassette in the 3746-9X0" on page 1-15

Step 4 - Installing the SIE Cassette in the 3746-9X0

Note

The SIE cassette is hot pluggable but the SIE/SAC cable must be plugged/unplugged while the **MAE** is powered **OFF**.

__ 1. According to the hone sheet received, locate the slot available in the 3746-9X0 to install the SIE cassette.

Note: The SIE can be installed into any slot, 07G-A1-H to P in the basic enclosure, or 07E(07D)-A1-D to P in the first or second expansion enclosure. But, when a CLP controls 3 or 4 LICs, the adjacent slot of the CLP can not be used to plug the SIE card.

__ 2. Remove the dummy cassette from this location and plug the SIE cassette.

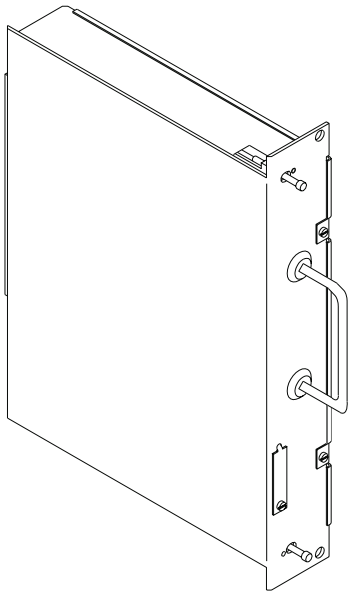


Figure 1-17. SIE Cassette

Go to "Step 5 - Connecting the MAE to the 3746-9X0" on page 1-16

Step 5 - Connecting the MAE to the 3746-9X0

If your customer has ordered one or two token-ring connection kits (refer to "LAN link from the MAE to the 3746" on page C-1), go to:

- "Installing the 8228s"
- Otherwise, go to "Connect the MAE from the SAC to the SIE Cassette" on page 1-19

Installing the 8228s

__ 1. Unpack the 8228, and then reset the 8228 ports as explained in the following steps:

Note: Use the IBM 8228 Setup Aid after you have installed the 8228 and before you connect any cables to it. Save one Setup Aid to be used later if you relocate an 8228.

__ 2. Before you begin, make sure no cables are connected to the 8228. If a cable bracket has been installed on the 8228, remove it.

__ 3. Insert the aid into receptacle 1 of the 8228. The yellow stripe should be aligned with the edge of the receptacle to ensure that the aid is firmly seated.

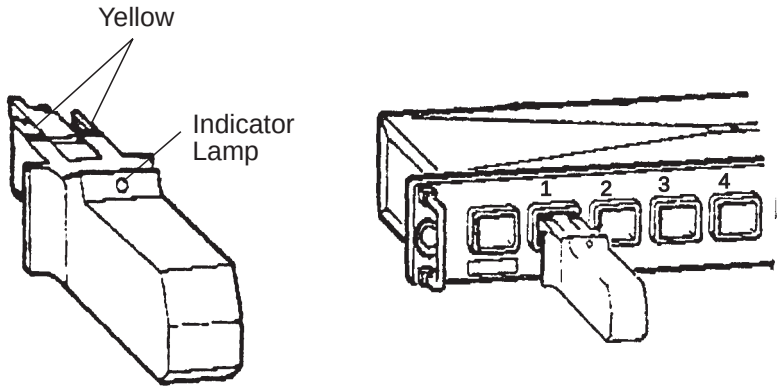


Figure 1-18. Use of the 8228 Setup Aid

The light will glow brightly when the aid is initially inserted and will gradually dim when the aid is firmly seated in the receptacle.

If the light does not glow brightly when you insert the Setup Aid, remove the screw from the aid and replace the battery. If the light still does not glow brightly after you have replaced the battery, try another Setup Aid.

__ 4. Leave the aid in the receptacle for four seconds after the light has gone out. Remove the aid from the receptacle and insert it into the next receptacle. The yellow stripe should be aligned with the edge of the receptacle to ensure that the aid is firmly seated.

Go to the next receptacle and repeat this step until you have set each receptacle, 1 through 8.

__ 5. When you have set receptacle 8, insert the aid into the RI receptacle for four seconds.

The light should glow brightly while the aid is in the receptacle. If the light does not come on or goes out while the aid is connected to the receptacle, the 8228 must be replaced. Notify your network planner or supervisor.

Note: The 8228 Setup Aid is to be used only in setting up the 8228 either initially or after relocating the 8228. It should never be used when the network is operating.

__ 6. Install the 8228s **A** in the controller expansion using two screws (PN 1621232) and two captive nuts (PN 58G5766) see Figure 1-19. Using label **B** (PN 782964), identify the 8228 as MAE Access Unit.

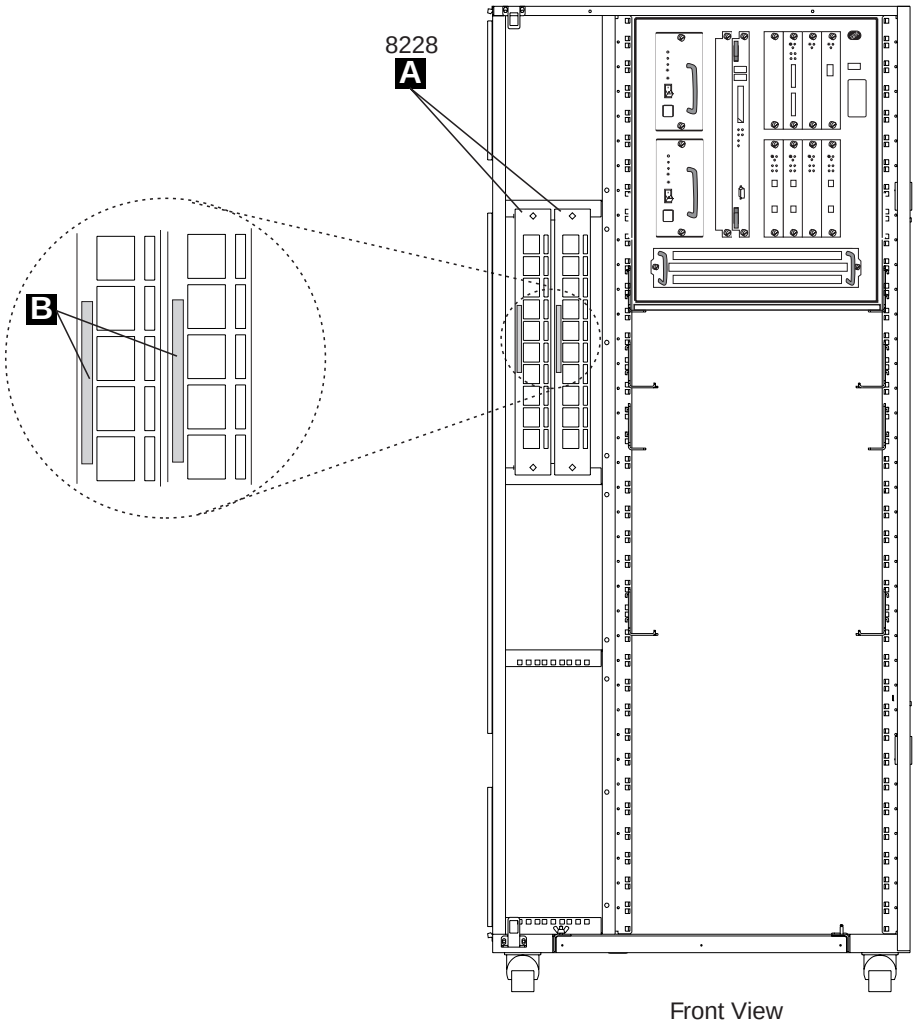


Figure 1-19. Installing the 8228 (Controller Expansion)

Connect the MAE to the 3746-9X0 thru 8228

Notes

1. You can have to install **one** or **two** links (TIC3 - 8228 - TR) from the 3746-9X0 and the MAE.
2. The TIC3(s) can be installed in **any position** in the basic or expansion boards of the 3746-9X0.

__ 1. Connect the cable(s) **4** (PN 43G3953) from the token-ring adapter connectors **2** installed in location 1 of the MAE to any free plugs (1 to 8) of the 8228.

__ 2. Obtain from your customer the cable(s) **3** PN 72F1236 (9M, 30 Ft) or any longer token-ring cables. Plug these cables from the 8228 (any free plugs 1 to 8) to the TIC3 connectors **1** available in the 3746-9X0.

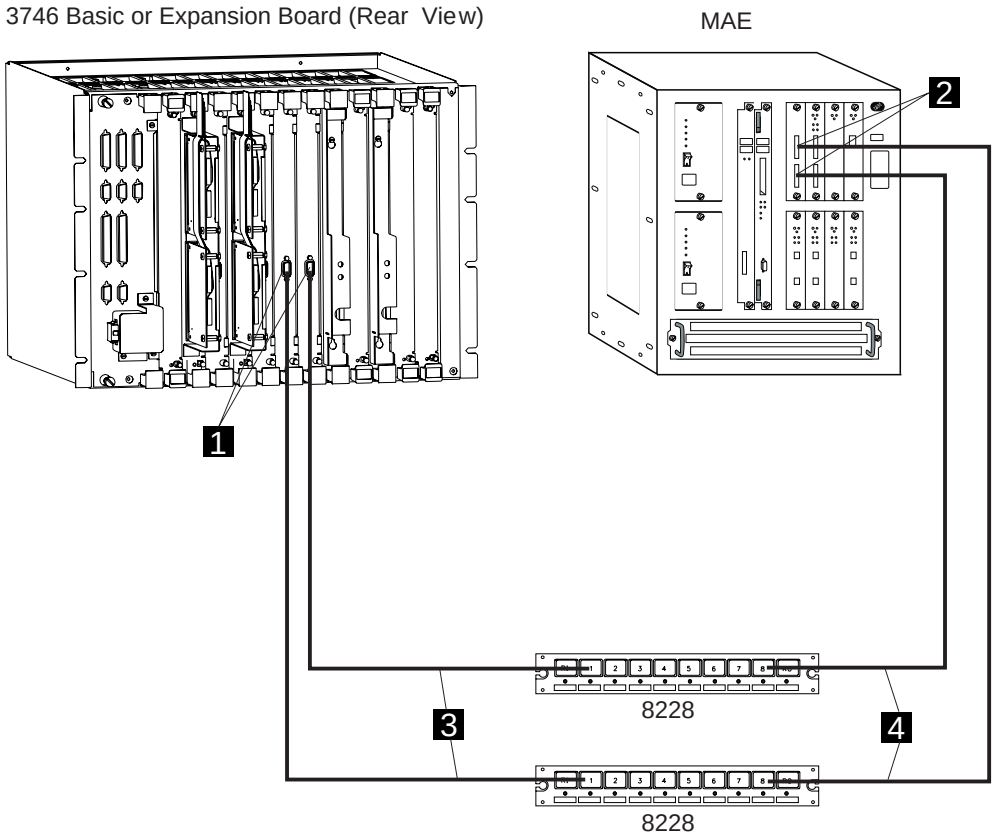


Figure 1-20. Connecting the MAE to the 3746-9X0 via 8228

Go to,"Connect the MAE from the SAC to the SIE Cassette" on page 1-19

Connect the MAE from the SAC to the SIE Cassette

Important

This operation **must** be performed with the MAE **powered OFF**.

__ 1. In the MAE, connect cable **5** (PN 02L2764) to the SAC **3** connector **4**

__ 2. Route cable **5** from the MAE to the 3746 board where the SIE cassette is installed.

__ 3. In the 3746-9X0, connect cable **5** to the SIE cassette **1** connector **2**.

Note: This card can be plugged in any position of the basic or expansion boards in the 3746-9X0.

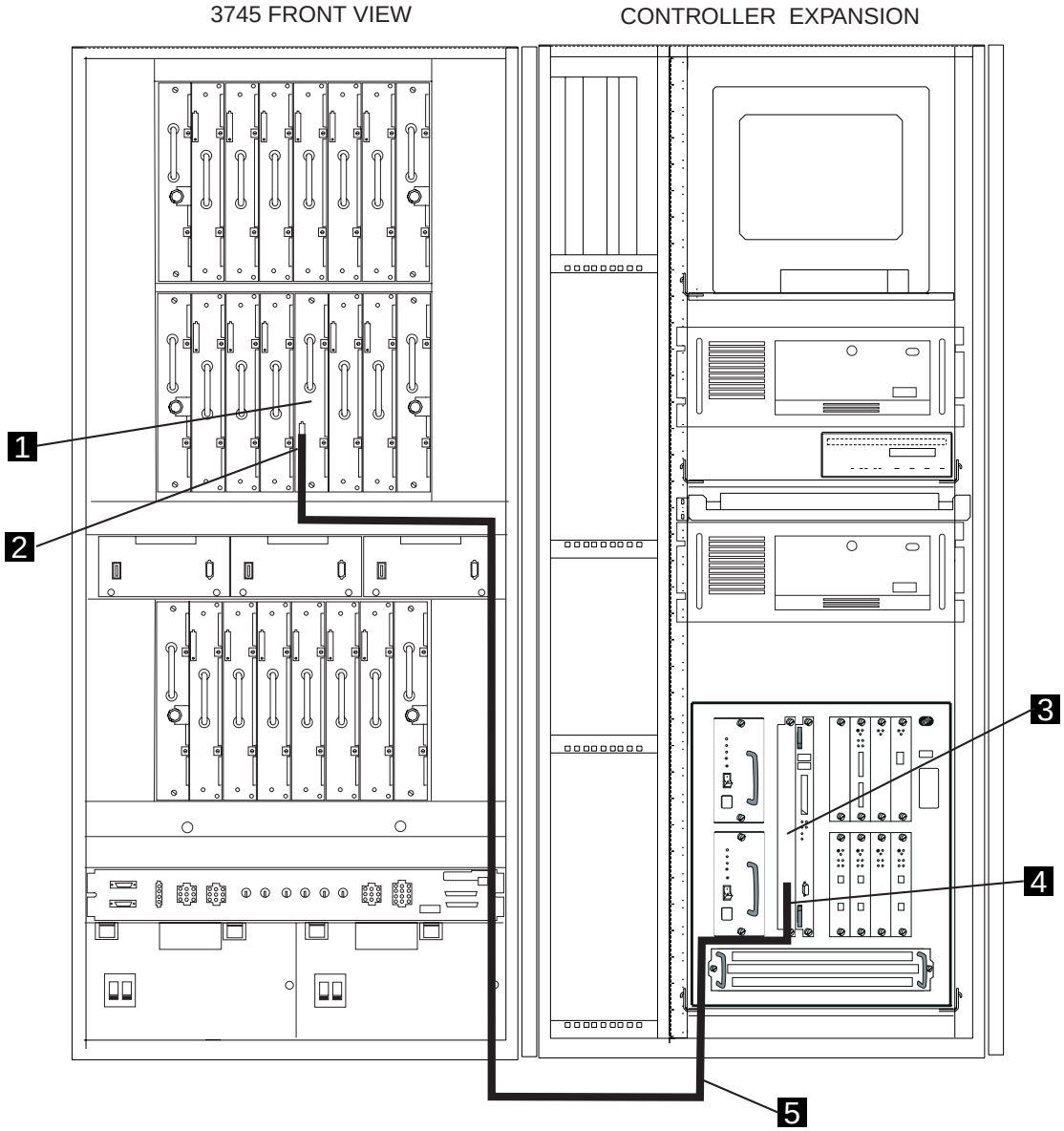


Figure 1-21. Connecting the MAE SAC Card to the 3746-9X0 SIE Cassette

Go to,“Step 6 - Customizing the MAE” on page 1-21

Step 6 - Customizing the MAE

Notes

For any unexpected message or error concerning the MAE, go to:

- The **START** page of the *3746-900 Service Guide*, SY33-2116, if you are working on a **3746 Model 900**.
- The **START** page of the *3746-950 Service Guide*, SY33-2108, if you are working on a **3746 Model 950**.

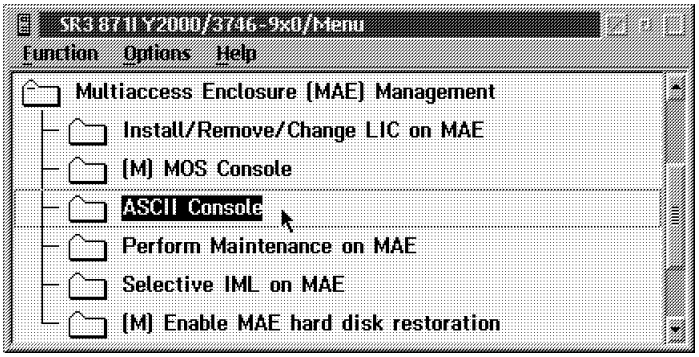
During the following procedures do NOT change the speed of the PCMCIA Token Ring card. This procedure must be used ONLY when for repair action you have to exchange the PCMCIA TR card.

__ 1. Power **ON** the MAE.

__ 2. Double click on the **3746-9X0** icon.

__ 3. Click on **Multiaccess Enclosure Management**.

__ 4. Now double click on **ASCII Console**.



__ 5. Press the **Reset** button on the MAE.

__ 6. Several windows are displayed during tests. Wait until the **Boot Information** window is displayed.

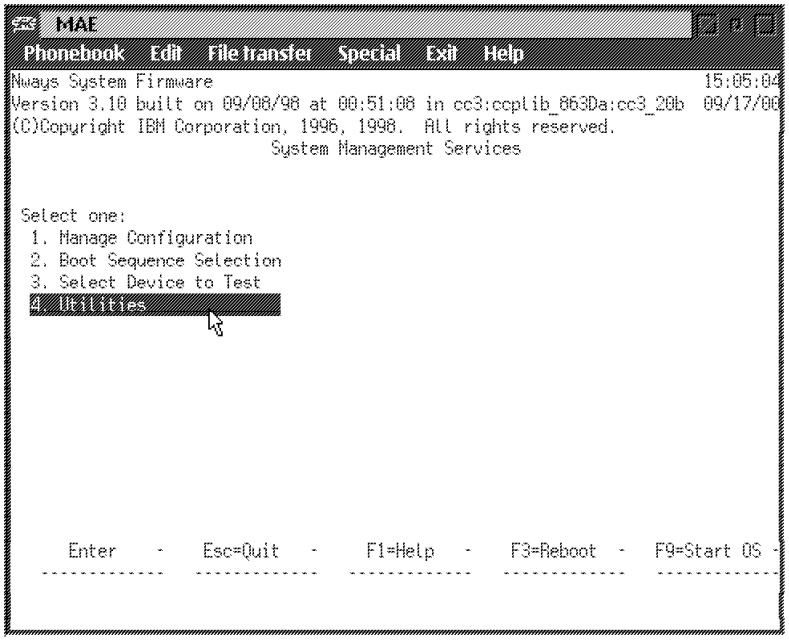
__ 7. Enter the Multiaccess Enclosure supervisory password when required: **2216**.

__ 8. Press **F1** when prompted (to prematurely terminate boot), then go to Step 9 on page 1-22. Otherwise change to manufacturing mode:

__ a. When **V**: prompt appears type **mfgmode 0**, then press **Enter**.

__ b. Enter **diags**, then press **Enter**. Continue with Step 9 on page 1-22.

__ 9. On the **System Management Services** window, select **option 4 - Utilities**



__ 10. ____ Using the arrows keys, select **(11) Remote Initial Program Load Setup** and press **Enter**, **(1) IP Parameters** is selected, press **Enter** again.

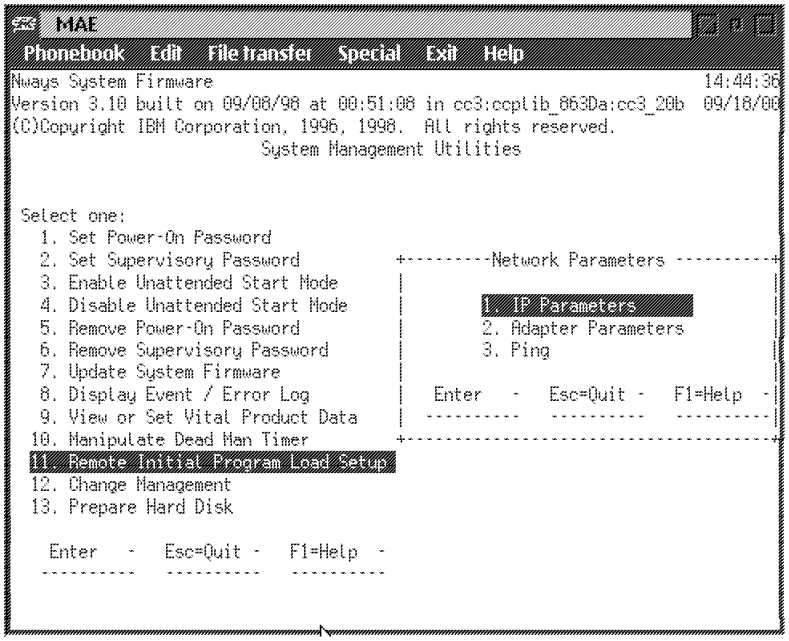


Figure 1-22. MAE

__ 11. ____ Refer to Figure 1-23, enter the **Client IP address** (MAE address of the PCMCIA card), **Server IP address** (service processor address), **Gateway IP address** (if no router on the ring, enter the service processor IP address), **Subnet Mask**, then press **Enter**.

Note: These IP addresses must be set according to the values given to the service ring IP parameters (refer to “For the multiaccess enclosure” on page C-1).

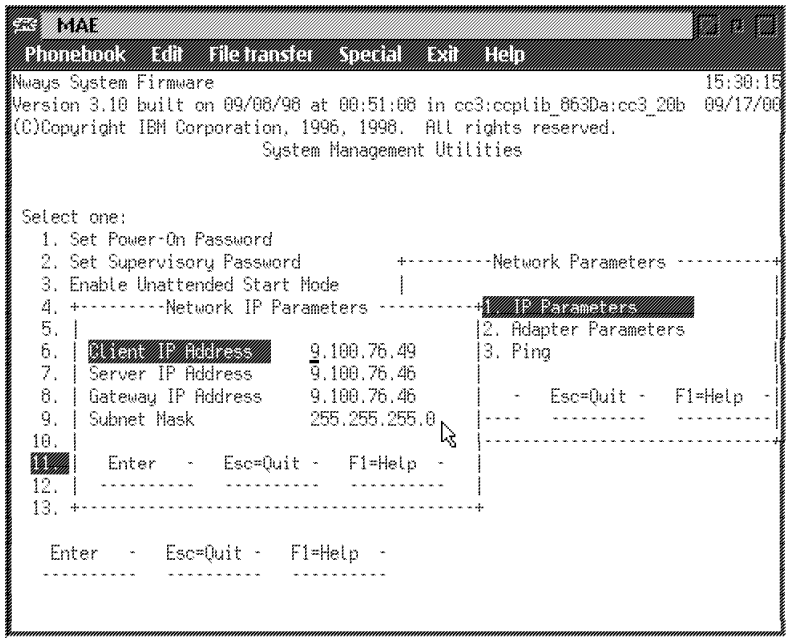


Figure 1-23. MAE

__ 12. ____ Press the **Esc** key twice, then close the ASCII window.

__ 13. Now double click on **Install/Remove/Change LIC on MAE**.

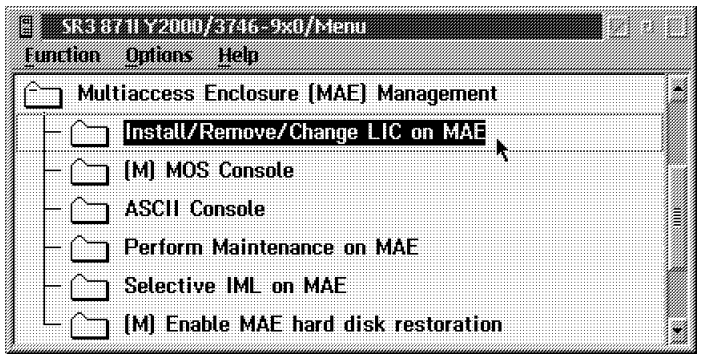


Figure 1-24. Install Multiaccess Enclosure

__ 14. Click on **Install MAE...**.

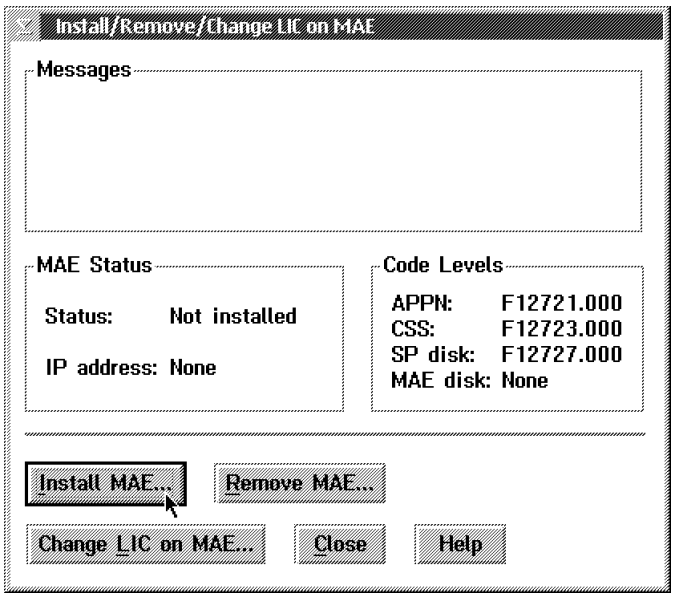


Figure 1-25. Install Multiaccess Enclosure

__ 15. Enter the **MAE IP address** (same value recorded in step 11 on page 1-23 as **Client IP address**), then click on **OK**.

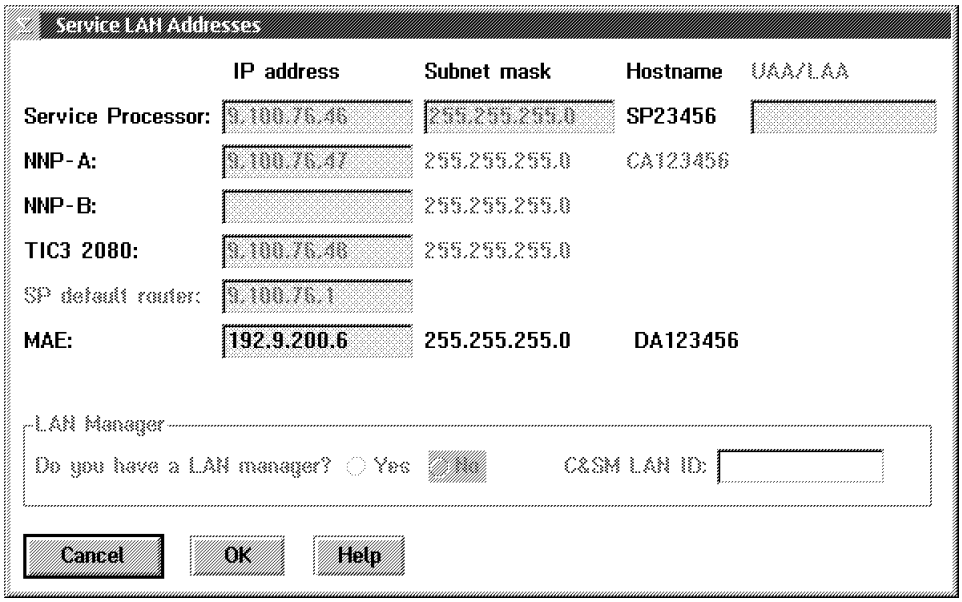


Figure 1-26. Service LAN Addresses

__ 16. Click on **Yes** to record your parameters.

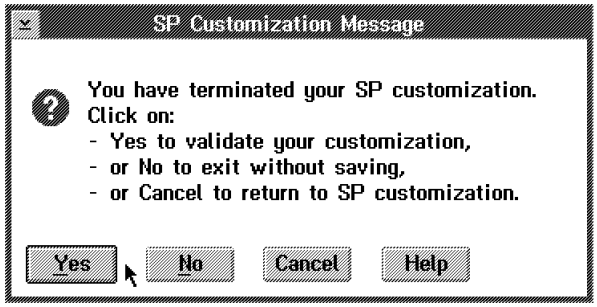


Figure 1-27. SP Customization Message

__ 17. When completed, click on **OK**.

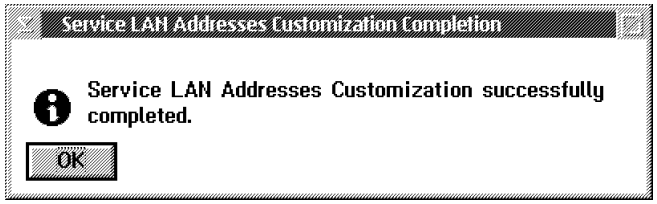
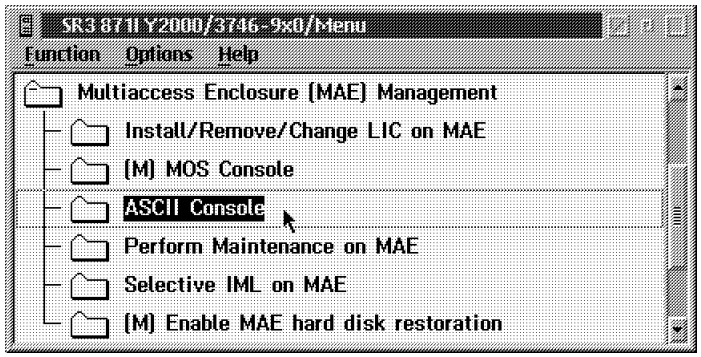


Figure 1-28. SP Customization Completed

__ 18. The MAE code is now being installed (it takes about 10 mn), when completed click on **Close**.

Note: Verify that the MAE link icon is **green**.

__ 19. Now double click on **ASCII Console**.



__ 20. Press the **Reset** button on the MAE.

__ 21. Several windows are displayed during tests. Wait until the **Boot Information** window is displayed.

__ 22. Press **F1** when prompted (to prematurely terminate boot).

__ 23. Enter the Multiaccess Enclosure supervisory password when required: **2216**.

__ 24. On the **System Management Services** window, select **option 4 - Utilities**

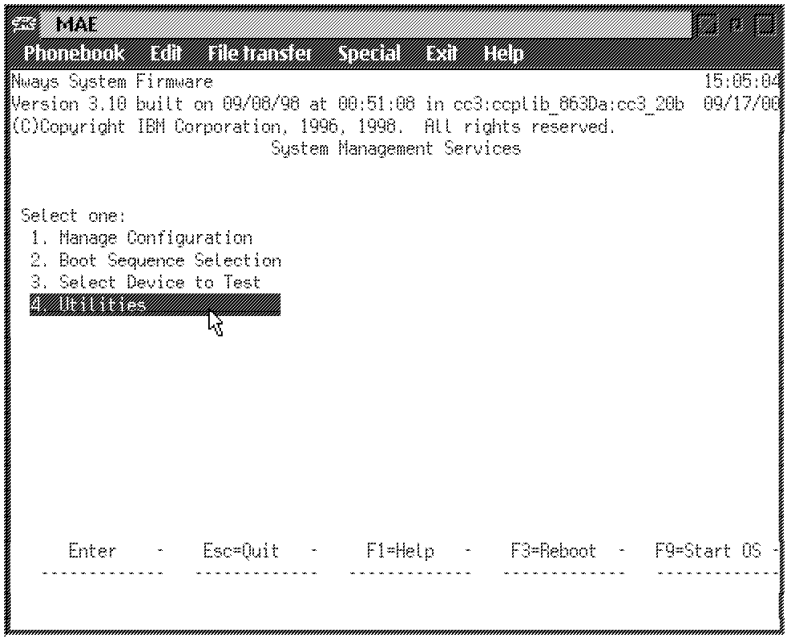


Figure 1-29. MAE

__ 25. Select **7. Update System Firmware** from the utilities panel, the System Firmware Update panel is displayed:

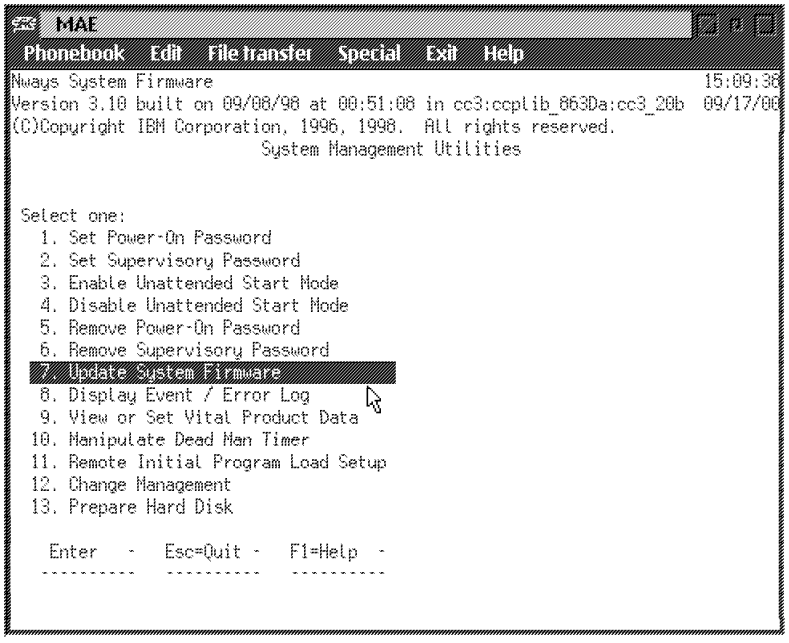
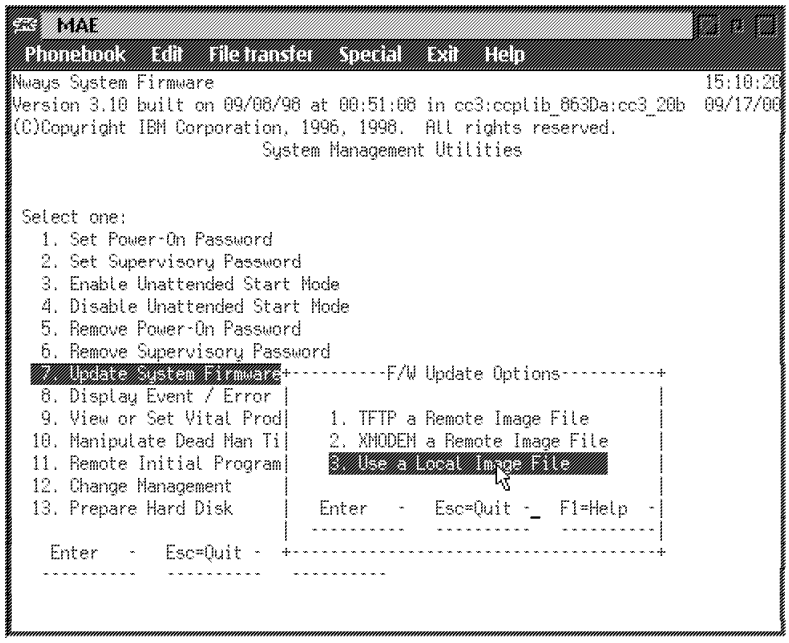


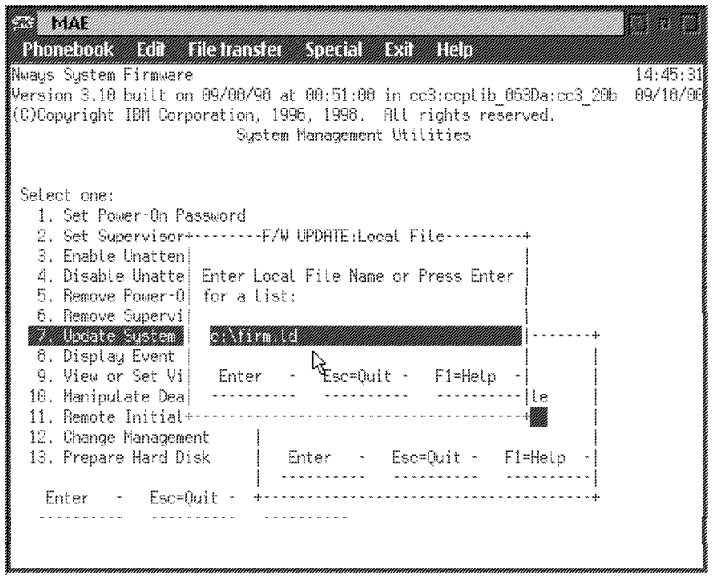
Figure 1-30. MAE

Attention: Do not power off the multiaccess enclosure during the process of updating the firmware. If the update fails, the multiaccess enclosure will boot a backup firmware image. If this happens, repeat the update procedure to reload the onboard firmware image.

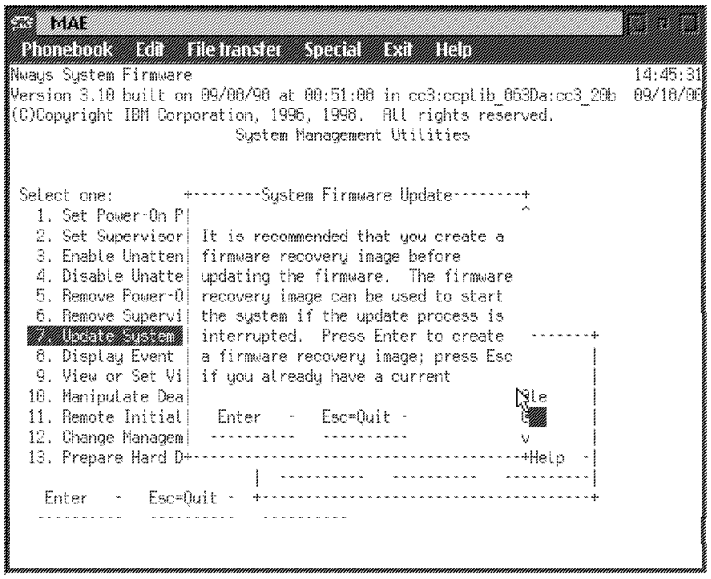
__ 26. From the **F/W Update Options** menu, select **3. Use a Local Image File**, then press **Enter**.



__ 27. Follows the prompts, enter the **Local File Name c:\firm.ld**, then press **Enter**

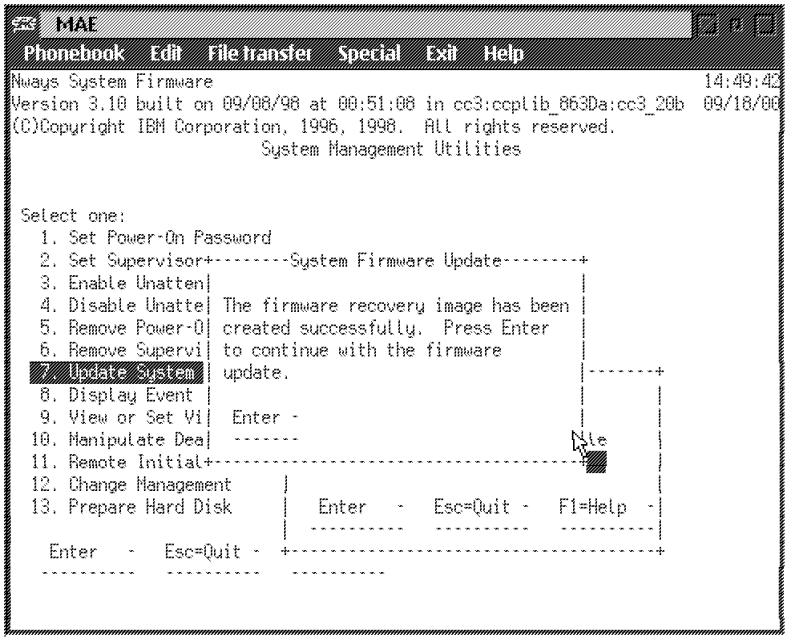


__ 28. On confirmation window, press **Y**, when the following window is displayed, press **Enter**.

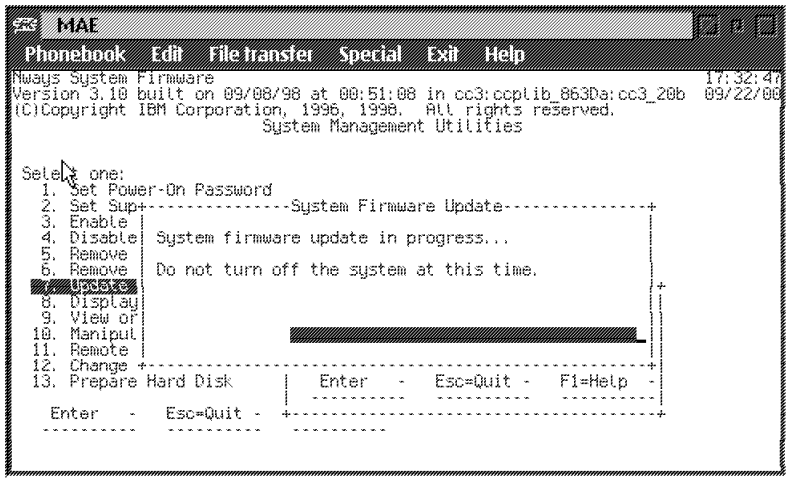


__ 29. If on the **System Firmware Update** window it is mentionned that you have the same level of system firmware, press **Enter**, then **Escape**, the go to Step 34 on page 1-29. Otherwise continue with the following Step.

__ 30. When recovery image has been done, press **Enter**.

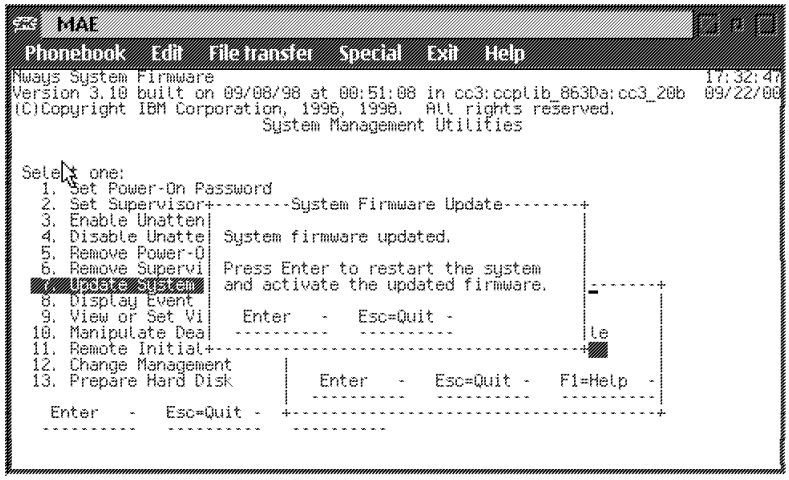


__ 31. Several windows are displayed followed by:



Note: Do not switch the system off. The process erases the old firmware and copies the new firmware into flash memory. If the machine is powered off before the process is complete, you will need to reload the firmware from the recovery image.

__ 32. A completed message appears when the firmware is updated.



__ 33. Press **Enter** to restart the system.

__ 34. Perform a general IML, on the **MOSS-E View** screen, double click on the **3746-9x0** icon.

__ 35. On the **3746-9x0 Menu** screen, click on **Operation Management**.

__ 36. Double click on **Perform a General IML**; Then click on **Yes** button

__ 37. On the **Perform a General IML** window, click on **No** to start an IML without diagnostics.

Complete Your Installation

Return to where you left the previous installation procedure using:

- The *3746-900 Installation Guide*, SY33-2114, if you are installing a **3746-900**.
- The *3746-950 Installation Guide*, SY33-2107, if you are installing a **3746-950**.
- Or if you are installing a MAE on a 3746-9X0 already installed, return to your **MAE MES installation instructions**.

Chapter 2. Maintaining the Code on the MAE

Notes

- For any error related to the multiaccess enclosure, go to the **START** page of:
  - the *3746-950 Service Guide*, SY33-2108 (**3746-900**)
  - Or the *3746-900 Service Guide*, SY33-2116 (**3746-950**)

  All the procedures to perform the problem determination, to run diagnostics, or to replace a failing FRU are described in these documents.
- For other customer procedures, refer to:
  - the *3745/17A-61A and 3746-900 Basic Operations Guide*, SA33-0177 (**3746-900**)
  - Or the *3746 Nways Multiprotocol Controller Model 950: User's Guide*, SA33-0356 (**3746-950**)

Overview of Managing the MAE Code and Configuration Files

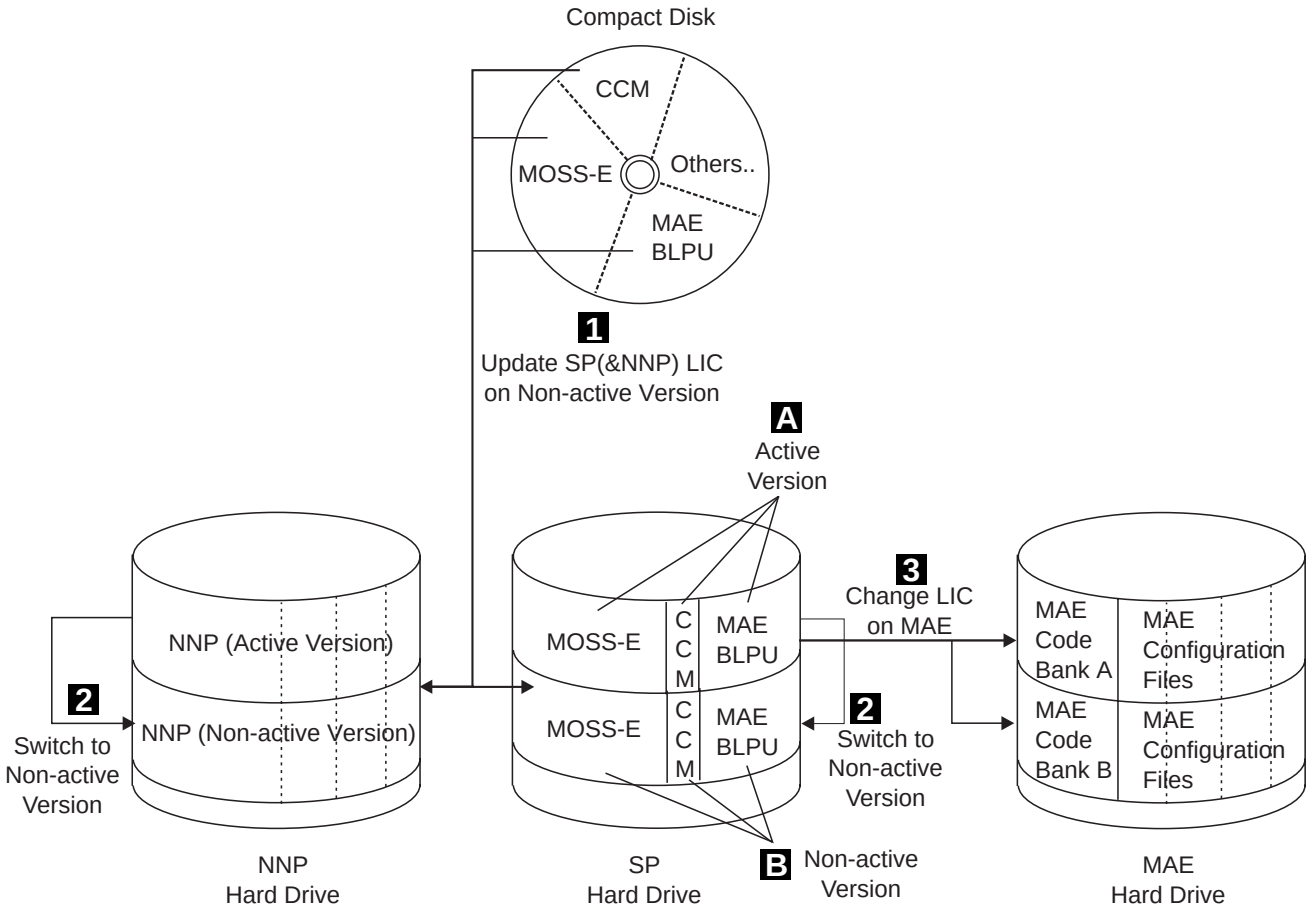


Figure 2-1. Overview of the MAE Code and Configuration Files Management

This drawing represents the different functions used to manage the License Internal Code (LIC) on the SP, NNP, and MAE hard drives.

There are two versions of the code loaded on the SP and NNP hard drives, the **active version** A and the **non-active version** B. When updating the LIC from the CD-ROM on the SP hard drive, we apply changes on the non-active version. But when changing the code on the MAE we load the MAE hard drive with the active version from the SP hard drive to the banks A & B on the MAE hard drive. To maintain the MAE code the following functions are used:

- **Update SP (&NNP) LIC on non-active version** (1): Used to update all BLPUs from the CD-ROM to the non-active version of the LIC installed on the SP and NNP hard drives.
- **Switch to non-active version** (2): this function is used to switch the active and non-active LIC.
- **Change LIC on MAE** (3) this function is used to copy from the SP hard disk the MAE LIC from the active version to the banks A and B of the MAE hard drive.

Displaying the Level of the MAE LIC

1. ____ Double click on the **3746-9x0** icon.
2. ____ Click on **Multiaccess Enclosure Management**, double click on **Install/Remove/Change LIC on MAE**.

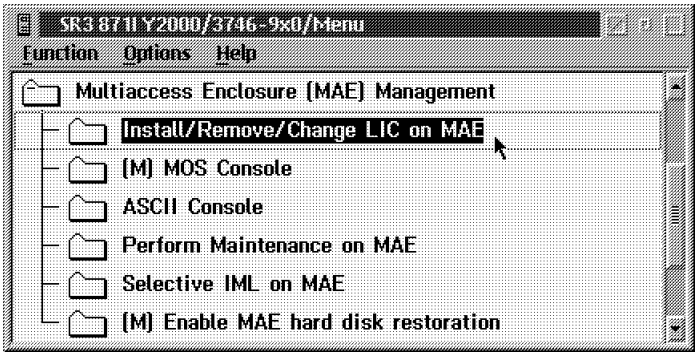


Figure 2-2. Multiaccess Enclosure (MAE) Management

In the code levels window you can find:

- The MAE LIC installed on banks A & B: **MAE disk**
- The MAE LIC installed on SP active version: **SP disk**

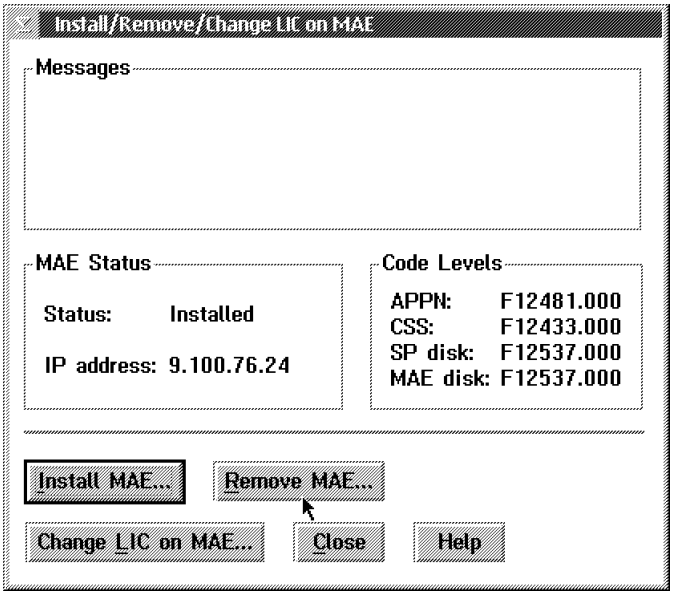


Figure 2-3. Install/Remove/Change LIC on MAE

Now if you want to display the **level** of the code loaded on the **non-active version** on the SP hard drive go to step 3 on page 2-4.

3. ____ Double click on the **Service Processor** icon.

4. ____ Click on **Change Management**, double click on **Switch to non-active version**,

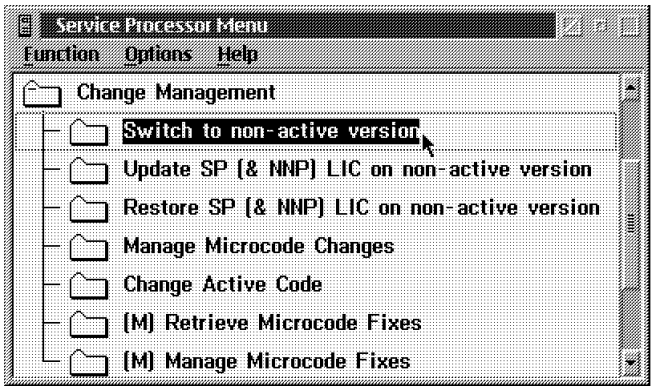


Figure 2-4. SP Change Management

5. ____ The level of the active and non-active version of the MAE LIC is now displayed.

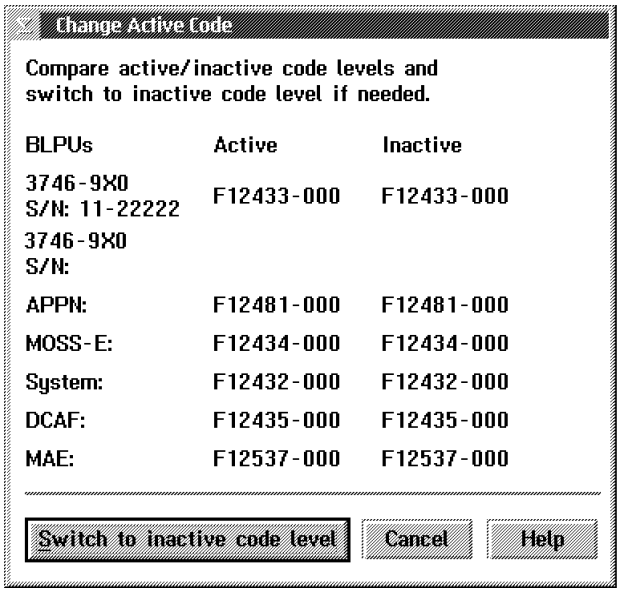


Figure 2-5. Active / Non-active Version

6. ____ Click on **Cancel** to return.

Installing a New Version of the LIC and Firmware

Important Note

The installation procedures depends on the level of the code currently installed and the level of the code to be installed.

Use the installation instructions shipped with the LIC to upgrade the LIC and the firmware of the MAE.

A copy of the installation instructions can be obtained from the web site: **http://www.networking.ibm.com/**.

Installing MCF on the MAE

Note

- This function is used to fix emergency problems on code and must be executed on Product Engineering recommendations.

1. ____ If you have received MCFs through VM, copy these MCFs on a diskette (we recommend to use ALMCOPY to download these files in binary format).
2. ____ Install the diskette in the Service Processor diskette drive.
3. ____ Enter the Service Processor maintenance password (default is IBM3745).
4. ____ Double click on the **Service Processor** icon.
5. ____ Click on **Change Management**.
6. ____ Double click on **Manage Microcode Fixes**
7. ____ Click on **View**, click on **Change directory path**
8. ____ Enter **A:*.*** to select the MCFs recorded on the diskette and click on **OK**.
9. ____ On the list displayed, click on the **fixes** to be applied.
10. ____ Click on **File**, click on **Move**
11. ____ when the change path is displayed, enter the directory path according to the information displayed on the following screen, then click on **OK**.
    - **J:\MAE\ALL** for MCF concerning the MAE

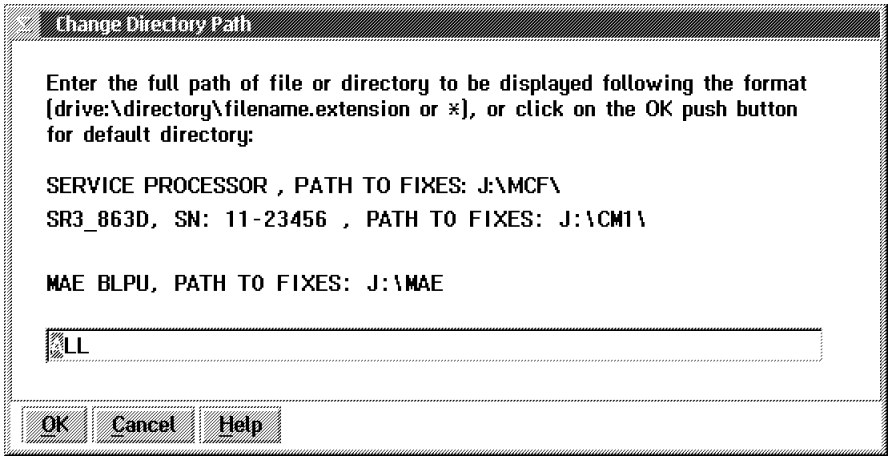


Figure 2-6. Manage Microcode Fixes

12. ____ Enter the **directory path** (see step 11 on page 2-6) then click on **OK**.

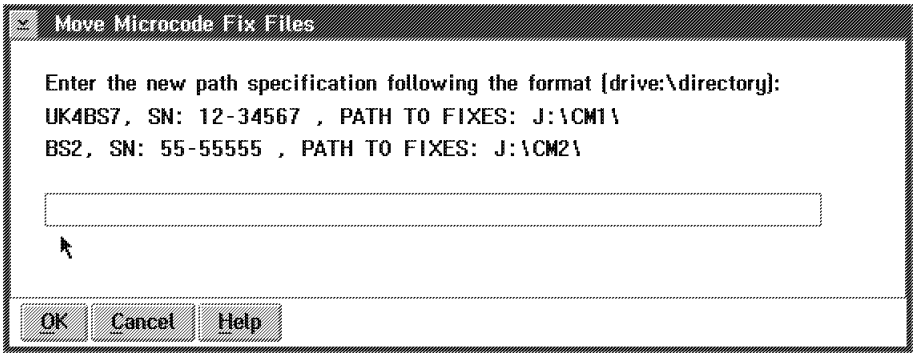


Figure 2-7. Manage Microcode Fixes

13. ____ Click on the lines of the MCFs to be applied (see example in the Figure 2-8)

14. ____ Click on **Options** and from the **Options** pull down menu click on **Activate microcode fix**

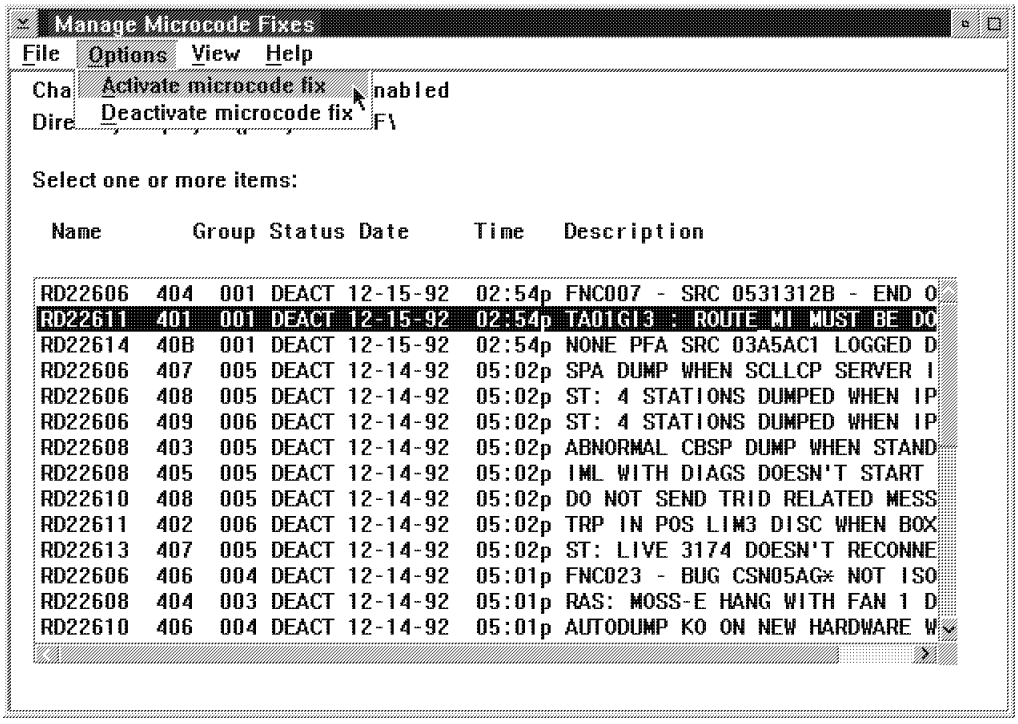


Figure 2-8. Manage Microcode Fixes

15. ____ Remove the diskette from the drive.
16. ____ Verify the MCFs status:
    a. ____ Enter the Service Processor maintenance password
    b. ____ Double click on the **Service Processor** icon.
    c. ____ Click on **Change Management**.
    d. ____ Double click on **Manage Microcode Fixes**
    e. ____ Click on **View**, click on **Change directory path**
    f. ____ Enter the **directory path**: **J:\MCF**.
    g. ____ Click on **OK** and verify the MCFs status, it must be **ACT**.
17. ____ Click on the **System Menu** icon, click on **Close** to exit from the function.
18. ____ Click on **Multiaccess Enclosure Management**.
19. ____ Double click on **Install/Remove/Change LIC on MAE**.

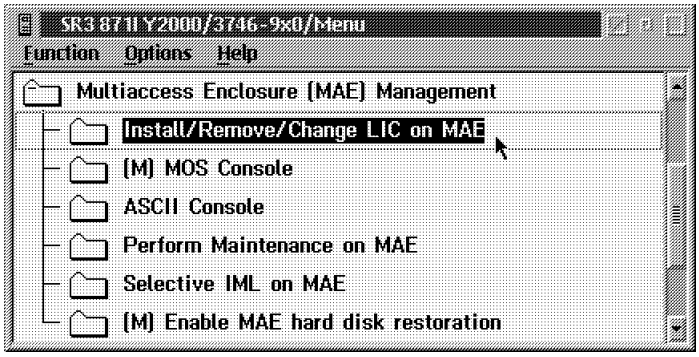


Figure 2-9. Multiaccess Enclosure (MAE) Management

20. ____ Click on **Change LIC on MAE**, the MAE code is now being copied from the SP hard drive to the MAE hard drive

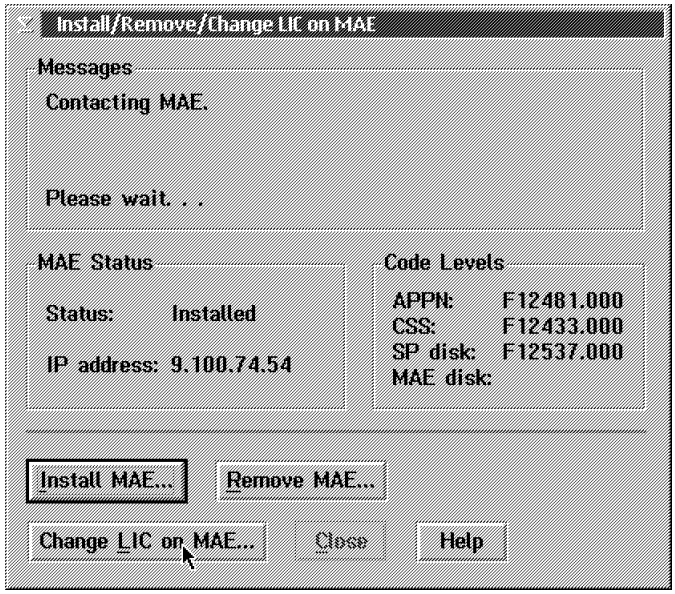


Figure 2-10. Install/Remove/Change LIC on MAE

21. ____ When completed, click on **Close** to exit from the function.

22. ____ From the MAE management screen, double click on **Selective IML on MAE** to reboot the MAE.

Removing Microcode Fixes on the MAE

1. ____ Enter the Service Processor maintenance password (default is IBM3745).
2. ____ Double click on the **Service Processor** icon.
3. ____ Click on **Change Management**.
4. ____ Double click on **Manage Microcode Fixes**.
5. ____ Click on **View**, click on **Change directory path**
6. ____ Enter the **directory path**:
   - **J:\MAE\ALL** for MCF concerning the MAE

   Then click on **OK**.
7. ____ Click on the lines of the MCFs to be removed (see Figure 2-8 on page 2-7)
8. ____ Click on **Options** and from the **Options** pull down menu click on **Deactivate microcode fix**
9. ____ Verify the MCFs status:
   a. ____ Enter the Service Processor maintenance password
   b. ____ Double click on the **Service Processor** icon.
   c. ____ Click on **Change Management**.
   d. ____ Double click on **Manage Microcode Fixes**
   e. ____ Click on **View**, click on **Change directory path**
   f. ____ Enter the **directory path**: **J:\MCF**.
   g. ____ Click on **OK** and verify the MCFs status, it must be **DEACT**.
10. ____ Click on the **System Menu** icon, click on **Close** to exit from the function.
11. ____ Click on **Multiaccess Enclosure Management**, double click on **Install/Remove/Change LIC on MAE**.

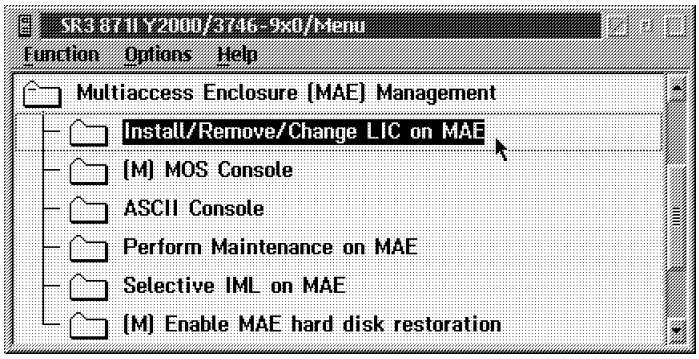


Figure 2-11. Multiaccess Enclosure (MAE) Management

12. ____ Click on **Change LIC on MAE**, the MAE code is now being copied from the SP hard drive to the MAE hard drive

Figure 2-12. Install/Remove/Change LIC on MAE

13. ____ When completed, click on **Close** to exit from the function.
14. ____ From the MAE management screen, double click on **Selective IML on MAE** to reboot the MAE.

Displaying a MAE Configuration

1. ____ Double click on the **3746-9x0** icon.
2. ____ Click on **Multiaccess Enclosure Management**, double click on **MOS Console** (this will start a telnet session into the MAE).

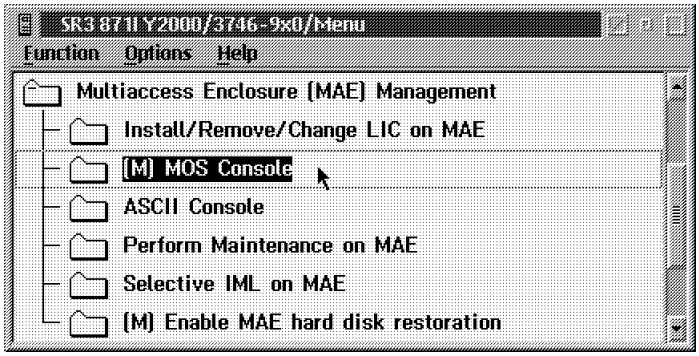


Figure 2-13. MAE MOS Console

3. ____ Enter **Talk 6 (or t 6)**, **list device**, then press **Enter**.

   Note: In this configuration example, one token-ring adapter is plugged in slot 1 the two ports are used. The token-ring adapter plugged in slot 5 has only one port (2) used. The Ifc identify the interface number.

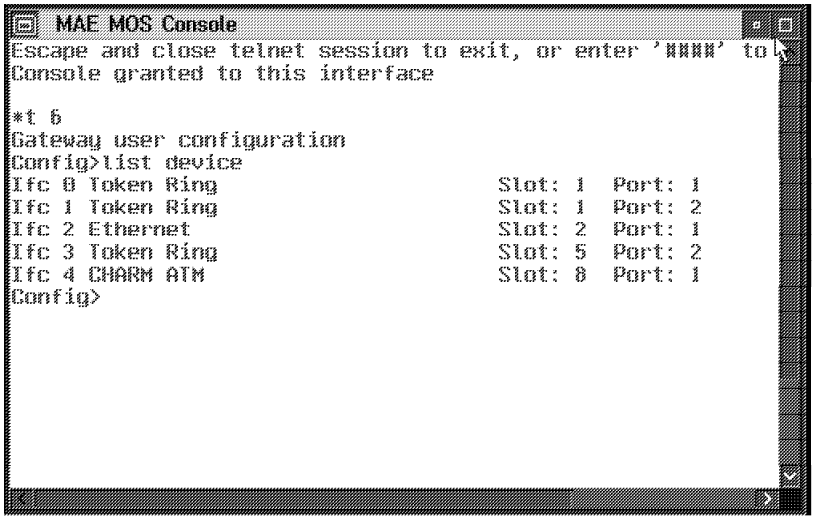
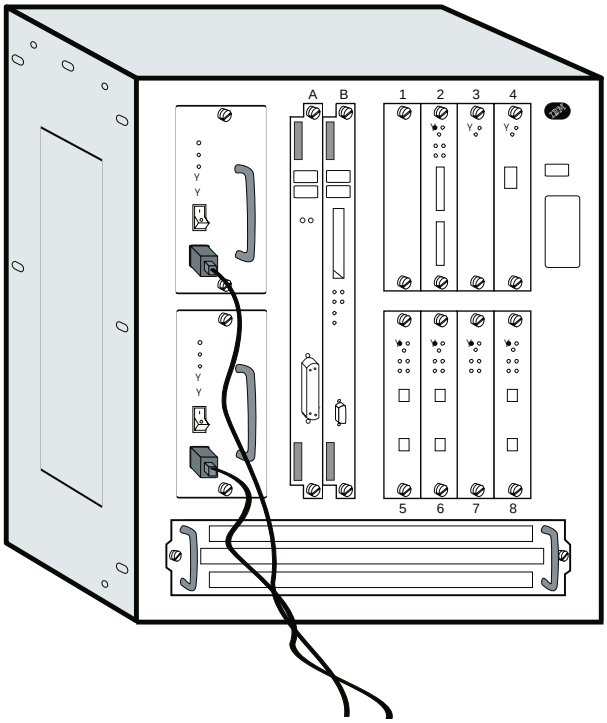


Figure 2-14. MAE Mos Console

Chapter 3. Multiaccess Enclosure Problem Determination

Note: The Multiaccess Enclosure service representative can run the diagnostics on site through the service processor connected directly to the Multiaccess Enclosure.



Multiaccess Enclosure Power Supply

The power supply panel contains:

- The power switch, which is used to power ON or OFF the multiaccess enclosure
- The Overcurrent Reset switch, which resets all current-limit circuits for the +12 V and -48 V outputs at the same time.
- LEDs which indicate the presence of AC, DC voltages or presence of overcurrent condition.

System Card LEDs

After power-on-reset (POR), the green and yellow LEDs will remain on until successful completion of the power on tests (which will be under 2 minutes). The green LED will begin blinking, which indicates that the code is being loaded into memory. The green LED will be switched on to indicate that the system code is operational.

Note: If the Multiaccess Enclosure is waiting for the power-on password, the green LED is off. If you do not have the console attached, you will not know that the system is waiting. Looking at the LEDs may lead you to believe that you have a hardware problem.

LED Indicators

The Multiaccess Enclosure has a number of light-emitting diodes (LEDs) that indicate how the unit is functioning.

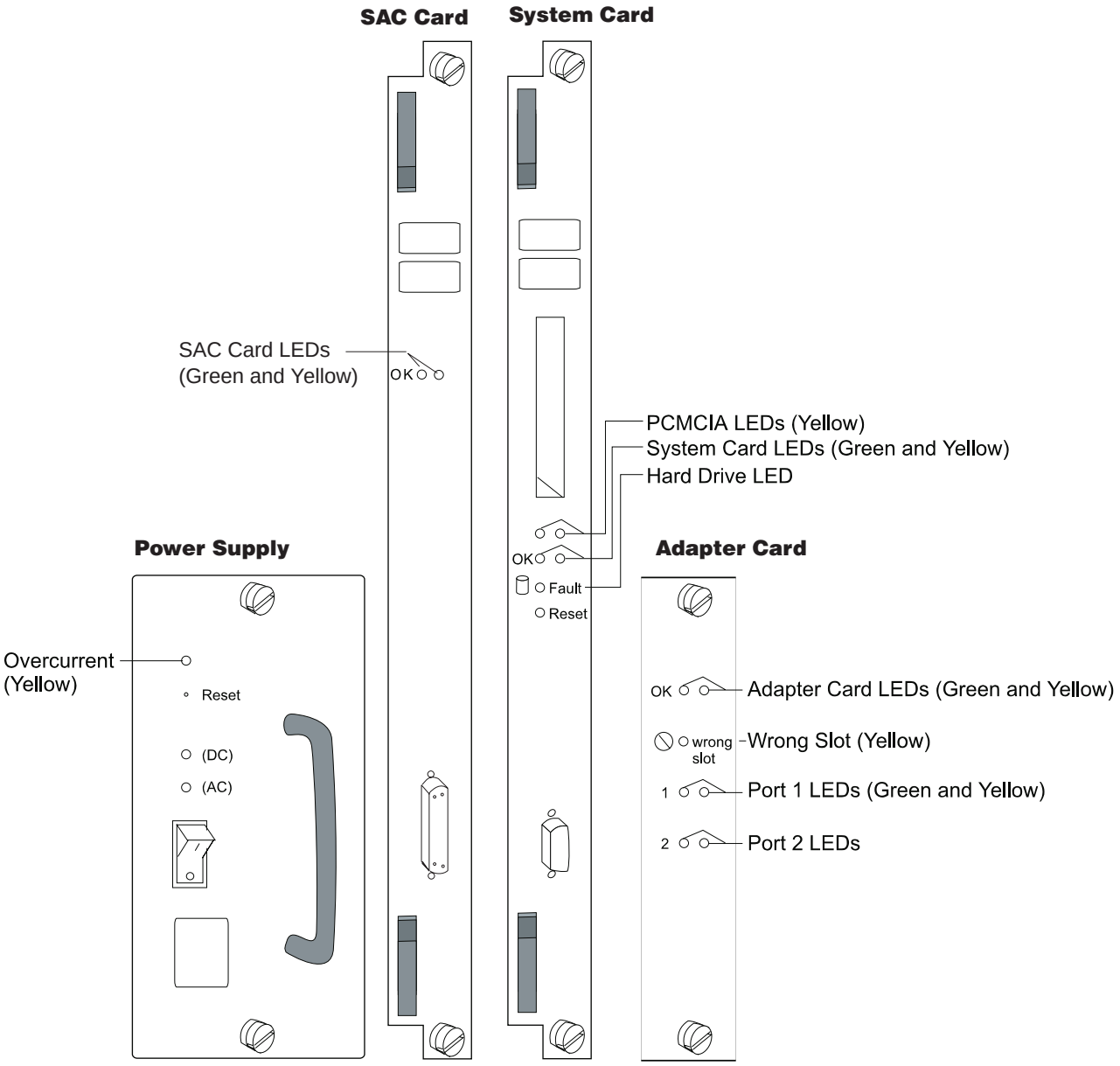


Figure 3-1. Power Supply, System Card, SAC Card, and Adapter Card LEDs

Power Supply Status

LEDs	Meaning
Yellow (Overcurrent)	On - There is an overcurrent condition with the –48 V to one or more of the adapters (slots 1–8) or the +12 V to the fan tray.
Green DC	On - +5 V, +12 V, and –48 V are OK.
Green AC	On - AC source voltage is present and within tolerance.

System Card Status

LEDs	Meaning
PCMCIA 1 or PCMCIA 2 (Yellow)	On - PCMCIA device has a fault, is not installed, or is not seated correctly. Off - Device passed self-tests
OK (Green)	On - Card hardware is operating normally. Blinking - Loading from hard file
OK (Yellow)	On - Card hardware has a fault.
OK (Green and Yellow)	On (both) - Waiting for password.
Fault Hard Drive (Yellow)	On - Hard drive has failed.

SAC Card Status

LEDs	Meaning
OK (Green)	On - Card hardware is operating normally. Blinking - Loading from hard file
OK (Yellow)	On • MAE is not configured • Quick config is running on MAE • Card hardware has a fault.

Adapter Card Status

LEDs	Meaning
OK (Green)	On - Adapter is operating normally.
OK (Yellow)	On - Adapter has a fault.
Wrong slot (Yellow)	On - Adapter is in the wrong slot. The wrong slot LED is ON only when an adapter that is plugged into the multiaccess enclosure violates the plugging rules described in Appendix B, “MAE Adapters Plugging Rules” on page B-1.
Green port[1]	On - Port is operating normally (enabled and configured). Off - Port is not configured or is disabled. For the ESCON® adapter: Blinking - The optical power measurement test is running.
Yellow port[1]	On - One or more ports has a hardware fault. Blinking - One or more ports has a port I/O or network failure. Use the Maintenance Analysis Procedures (MAPs) to isolate. Off - No problem detected.

Important Phone Numbers

Contact Name	Telephone Number
System Administrator:	
Service Representative:	

[1] The port LEDs of the multiport WAN adapters (FC 3282, FC 3291, and FC 3292) reflect the status of one or more of the ports.

Troubleshooting

Both hardware and software (operational code and configuration) problems can affect the multiaccess enclosure. Light-emitting diodes (LEDs), diagnostic programs, and error messages provide information needed for problem determination. This manual is chiefly concerned with diagnosing and correcting hardware problems. Chapter 5, “Multiaccess Enclosure Firmware and Operational Code” on page 5-1 has information about accessing the multiaccess enclosure.

Diagnosing Hardware Problems

Generally, errors that occur ***before*** the operational code is loaded are hardware-related. Light-emitting diodes (LEDs) on the front of the multiaccess enclosure indicate how the hardware components are functioning.

Go to “LED Indicators” on page 3-2 for LED status and indicators for the multiaccess enclosure. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1 for information on removal and replacement procedures for field-replaceable units (FRUs).

See “Using Multiaccess Enclosure Firmware” on page 5-2 to run hardware diagnostics ***before*** the multiaccess enclosure has been configured.

Note: If you can not load the operational code refer to “Preparing the Multiaccess Enclosure Hard Disk” on page 3-18.

Diagnosing Operational Code and Configuration Problems

Generally, errors that occurs ***after*** the operational code is loaded indicate problems with the operational code or configuration file.

Errors generate SRCs which are loaded in the service processor. To see them, from the service processor display:

1. Click on the **3746-9x0** icon
2. In the **3746-9x0 Menu** window, click on the **Problem Management**
3. In the **Problem Management** window, double click on the **(M) Manage Alarms/Errors/Events (SRCs)** option.

See “Using Operational Diagnostics” on page 5-41 to run hardware diagnostics ***after*** operational code and configuration files have been loaded.

Maintenance Actions and Procedures

Items	Then Go To
Basic Verification	“MAP 0300: Multiaccess Enclosure Basic Verification” on page 3-6
Parallel Channel problem	“MAP 0310: Parallel Channel Problem Isolation” on page 3-16
Verifying repair action on Parallel Channel	“MAP 0320: Verifying Repair Action for Parallel Channel” on page 3-17
External Wrap test on Parallel Channel Adapter	“External Wrap Testing Parallel Channel Adapters” on page 3-23

MAP 0300: Multiaccess Enclosure Basic Verification

You are here because you have a problem on the Multiaccess Enclosure.

001

- Check that the Multiaccess Enclosure unit is powered ON.
- If not switch the power ON button to the ON position.
- Within 2 minutes, check the status of the LEDs on the front of the multiaccess enclosure.
- The LEDs on the multiaccess enclosure should have the following status:

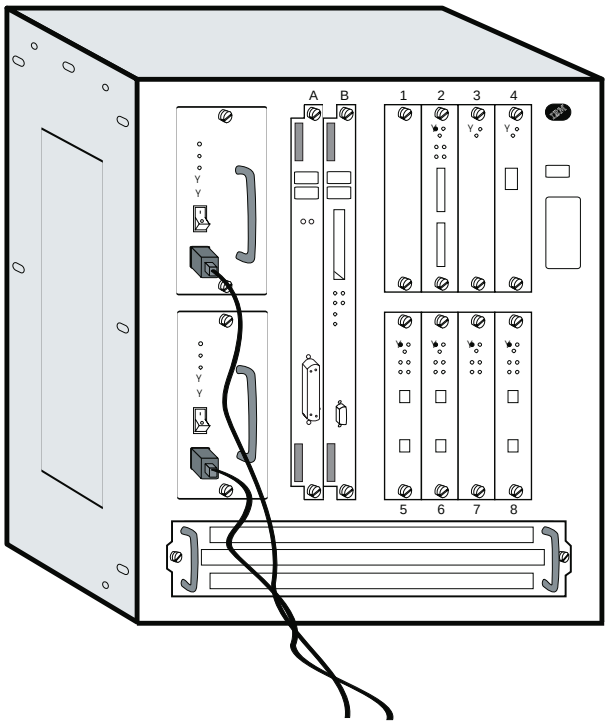


Table 3-1 on page 3-7 shows the desired status of the LEDs. Table 3-2 on page 3-8 shows messages that may appear at the operator console attached to the Multiaccess Enclosure that may indicate a problem.

Table 3-1. Machine LEDs

LED	Normal Status	Comments
ac indicator LED on power supply	ON	ac power is present and within the correct tolerances.
dc indicator LED on power supply	ON	dc output voltage is present.
Yellow LED on power supply	OFF	There is no overcurrent problem with the adapters or fan tray.
Green LED on system card	ON	Card is operational.
Yellow LED on system card	OFF	Card is OK.
Green LED on SAC card	ON	SAC card is operational.
Yellow LED on SAC card	OFF	SAC CARD is OK When the LED is ON that indicates that: • MAE is not configured • Quick config is running on MAE • SAC hardware has a fault.
PCMCIA Port 1 (yellow) on system card	OFF	Device has passed test.
PCMCIA Port 2 (yellow) on system card	OFF	Device has passed test.
All adapter green LEDs	ON	The adapter is operational.
All adapter yellow LEDs	OFF	ON indicates a hardware fault.
Wrong slot LED	OFF	Adapter is plugged into the correct slot.
All I/O port green LEDs	ON	The port is enabled and configured.
All I/O port yellow LEDs	OFF	• ON indicates that a fault has been detected. • BLINKING indicates a port or network failure.

Table 3-2. Network Management Console Messages	
Message	**Comments**
`Fan motor speed`	Replace the fan assembly. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.
`multiaccess enclosure is overheating`	Check for: • Room air conditioning • Obstruction of airflow • Fan motor problem
`Memory error with DIMM slot` ***y***	Replace the system card. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.

Are all LEDs OK?

Yes **No**

002

Go to Step 004

003

The multiaccess enclosure should be functioning. Go to “CE Leaving Procedure” on page 5-60.

004

- On the following table select the symptom that fits your situation.

LED Status	Action
ac indicator LED on a power supply is OFF.	Step 034 on page 3-12
dc indicator LED on a power supply is OFF and the ac indicator is ON.	Step 005 on page 3-9
Overcurrent Indicator LED on power supply is ON.	Step 008 on page 3-9
Adapter yellow fault indicator LED is ON (adapter is failing).	Step 015 on page 3-10
Adapter **Yellow** Wrong Slot LED is ON.	Step 018 on page 3-10
I/O port **Yellow** indicator is ON or BLINKING.	Step 021 on page 3-10
Yellow indicator on system card is ON	Step 024 on page 3-11
Yellow indicator on SAC card is ON	Step 029 on page 3-11
PCMCIA **yellow** indicator on system card is ON	Step 025 on page 3-11

005

(Step **005** continues)

005 (continued)
The dc indicator on a power supply is OFF. Replace the power supply. (See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.)
Is the problem corrected?
Yes **No**

006

Contact your support center for assistance.

007

Restart the verification procedure. Go to Step 001 on page 3-6.

008

The Overcurrent LED on a power supply is ON.
Are all adapter yellow fault LEDs OFF?
Yes **No**

009

Remove the adapter with a yellow fault LED ON, then press **Reset** on the power supply.
Is the Overcurrent LED now OFF?
Yes **No**

010

Replace the power supply. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1. Restart the verification procedure. Go to Step 001 on page 3-6.

011

Replace the adapter. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1. Restart the verification procedure. Go to Step 001 on page 3-6.

012

The problem may be with the fan tray. Remove it (see “Exchanging the Fan Tray” on page 4-40) and press **Reset** on the power supply.
Does this correct the problem?
Yes **No**

013

Re-install the fan tray. Contact your support center.

014

- Replace the fan tray. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.
- Restart the verification procedure. Go to Step 001 on page 3-6.

015

A **yellow** fault indicator LED on an adapter is ON. Replace the adapter. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.

Does this correct the problem?

Yes **No**

No

016

Contact your support center.

Yes

017

Restart the verification procedure. Go to Step 001 on page 3-6.

018

The **yellow** Wrong Slot LED indicator on an adapter is ON.

- If adapter LIC 280 or LIC 281 is in slot 3, then slot 4 must be empty.
- If adapter LIC 280 or LIC 281 is in slot 4, then slot 3 must be empty.
- If adapter LIC 280 or LIC 281 is in slot 7, then slot 8 must be empty.
- If adapter LIC 280 or LIC 281 is in slot 8, then slot 7 must be empty.

Relocate the adapter or adapters in slots 3, 4, 7, or 8 accordingly.

After relocating the adapters are all wrong slot LEDs OFF?

Yes **No**

No

019

Call your support center for assistance.

Yes

020

Restart the verification procedure. Go to Step 001 on page 3-6.

021

A **yellow** LED indicator for an I/O port is ON or BLINKING.

Is the yellow LED indicator BLINKING?

Yes **No**

No

022

I/O port LED ON - The adapter is defective. Replace it. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1. Restart the verification procedure. Go to Step 001 on page 3-6.

Yes

023

I/O port LED BLINKING -

There is a problem with the adapter, the cable, or the network. Run an external wrap test on the I/O port.

You must install an external wrap block (plug) prior to the test. See “Adapter Wrap Plugs (Service Kit - Part Number 30L6123)” on page 3-20 for the correct wrap plug. See “Running Diagnostics on the New Adapter” on page 5-50 to run diagnostics.

1. If the wrap test is successful, suspect the cable or the network. Correct any problem that you find. Restart the verification procedure. Go to Step 001 on page 3-6.
2. If you suspect a problem with the ESCON adapter, run the light test (see "ESCON Optical Power Measurement Test" on page 5-57).

024

The yellow LED on the system card is ON.

Is the Hard Drive LED ON?

Yes **No**

025

Is a PCMCIA Slot 1 or 2 LED ON?

Yes **No**

026

- The system card is defective. Replace it. See Chapter 4, "Multiaccess Enclosure FRU Exchange" on page 4-1.
- Restart the verification procedure. Go to Step 001 on page 3-6.

027

- The LED will be ON if there is no device plugged into slot.
- If a PCMCIA device is plugged into a slot and LED is ON, reseat the PCMCIA device and press reset on system card.
- If the LED is still ON replace the PCMCIA device.

028

The hard drive LED is ON, indicating a hard drive failure.

- Replace the hard drive. See Chapter 4, "Multiaccess Enclosure FRU Exchange" on page 4-1.
- Restart the verification procedure. Go to Step 001 on page 3-6.

029

Check if the MAE is configured using the **CCM - Controller Configuration and Management** on the **Network Node Processor (NNP) Management** (refer to "Configuring the MAE via CCM" on page E-6). When the MAE is configured it appears on the **CCM** window.

Is the MAE configured?

Yes **No**

030

Configure the MAE and restart the problem determination.

031

(Step **031** continues)

031 (continued)
Check that the MAE is not running the quick configuration. Look at the **MAE MOS Console**, and check if the following is displayed:

```
Config only>
```

Is Config only> displayed?
Yes **No**

032

- The SAC card is defective. Replace it. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.
- Restart the verification procedure. Go to Step 001 on page 3-6.

033

Wait for the end of configuration, then restart the problem determination.

034

You are at this Step because the ac indicator on a power supply is OFF.
Check that the ac power cable of the suspected unit is well connect at:

- The font of the unit
- On the ac outlet distribution box.

Is the problem solved?
Yes **No**

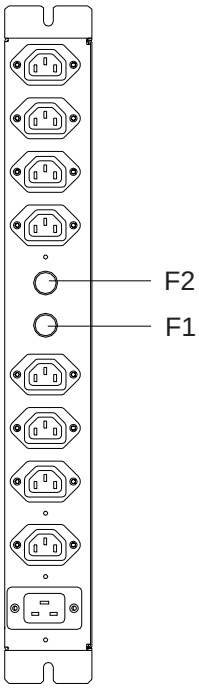
035

Continue with Step 037.

036

Problem solved. Go to “CE Leaving Procedure” on page 5-60.

037



Fuse Location on ac outlet distribution box

- On the ac outlet distribution box:
  - Fuse F1 controls the range of connectors J1 to J4
  - Fuse F2 controls the range of connectors J5 to J8.
- Check if other units are connected to the same range of connectors than the suspected unit.

Are there other units connected to the same range than the suspected unit?

Yes **No**

038

Go to Step 047 on page 3-14.

039

Check that the other units have their power ON/OFF switch to ON.

Are other units powered ON?

Yes **No**

040

Go to Step 042

041

Go to Step 053 on page 3-15.

042

Check the corresponding fuse.

Is the fuse OK?

Yes **No**

043

- Switch to OFF all the units controlled by this fuse.
- Exchange the defective fuse.
- Switch ON all the units controlled by this fuse.

(Step **043** continues)

043 (continued)
Is the fuse blown again?
Yes **No**

044

Problem solved go to “CE Leaving Procedure” on page 5-60.

045

Suspect a power problem in a unit powered through the ac outlet distribution box.

- Switch to OFF all the units controlled by this fuse.
- Exchange the fuse.
- Switch one by one the units controlled by this fuse to identify the unit which has a problem.
- Once you have identified the faulty unit continue with Step 053 on page 3-15.

046

Suspect the ac wall socket.

047

Check the corresponding fuse.
Is the fuse OK?
Yes **No**

048

- Switch to OFF the defective unit controlled by this fuse.
- Exchange the defective fuse.
- Switch ON the unit controlled by this fuse.

Is the fuse blown again?
Yes **No**

049

Problem solved go to “CE Leaving Procedure” on page 5-60.

050

Go to Step 053 on page 3-15

051

Are all other units installed in the controller rack powered ON?
Yes **No**

052

Suspect the ac wall socket.

053

Suspect a power problem in the Multiaccess Enclosure.

- Exchange the suspected power. See Chapter 4, “Multiaccess Enclosure FRU Exchange” on page 4-1.
- After power exchange check the ac LED.

Is the ac Power LED now ON?

Yes **No**

054

Call your Support Center for assistance.

055

Restart the verification procedure. Go to Step 001 on page 3-6.

MAP 0310: Parallel Channel Problem Isolation

001

–

Note: This procedure requires a channel-trained IBM service representative or customer's channel-trained person.

– Make sure that all cables are marked so that they can be reconnected to the appropriate adapters.

Table 3-3. Initial Symptom

Symptom Explanation	Conditions That could Cause the Symptom
There is a communication problem on a parallel channel. A symptom indicates a channel communication problem between the host and the multiaccess enclosure.	1. Select/Bypass Switch set to **B** (bypass) position (see Figure 3-19 on page 3-42) 2. Terminators have not been installed at the end of the channel 3. Bus and tag terminators have been interchanged (when you are using a cabling scheme that uses the Channel Interface-out) 4. Total bus or tag cable length is greater than the maximum length of 113 m (370 feet). To calculate total cable length, take: `400 - (number-of-Parallel Channel Adapters * 30 ft)`. 5. Total number of Parallel Channel Adapters on this bus and tag cable exceeds the maximum of six. 6. The Parallel Channel Adapter is cabled to the wrong channel. 7. The logical connection is not defined correctly (in the IOCDS) 8. Bent pins on the bus or tag cables or terminators (which is often caused by attempting to seat the connector without using the attaching screw on the cable) 9. Defective: a. Parallel Channel Adapter b. V-cable c. Channel Interface Cables Run diagnostic tests (see "Testing the Adapters" on page 5-49). 10. Host problem

MAP 0320: Verifying Repair Action for Parallel Channel

001

– Make sure that all cables are marked so that they can be reconnected to the appropriate adapters.

– Follow the sequence in "Testing the Adapters" on page 5-49 to test all the components that are installed in the multiaccess enclosure

–

Note: This procedure requires a channel-trained IBM service representative or customer's channel-trained person.

.

Did all of the multiaccess enclosure diagnostics run without errors?

Yes **No**

002

– Replace the failing hardware. Perform the action indicated by the diagnostic test.

003

Did you replace a Parallel Channel Adapter?

Yes **No**

004

– Connect all communication cables to their respective networks.

– Return the multiaccess enclosure to the customer.

005

– Run the Parallel Channel Adapter test with wrap blocks. See "Running the Parallel Channel Adapter External Wrap Tests" on page 3-27.

Did the Parallel Channel Adapter tests run without error?

Yes **No**

006

– Go to "MAP 0310: Parallel Channel Problem Isolation" on page 3-16.

007

– Re-connect all associated cables.

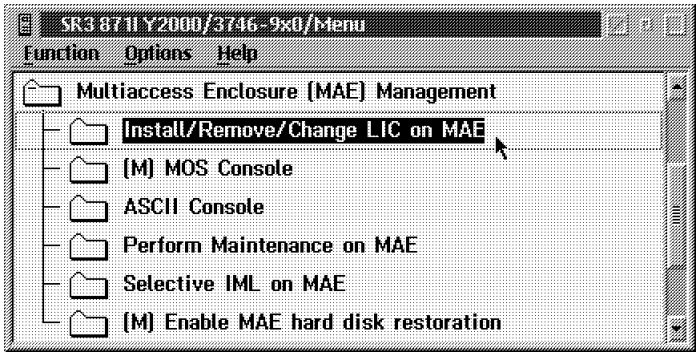
– Verify that the Select/Bypass Switch on the V-cable is in the **S** position.

– Return the multiaccess enclosure to the customer.

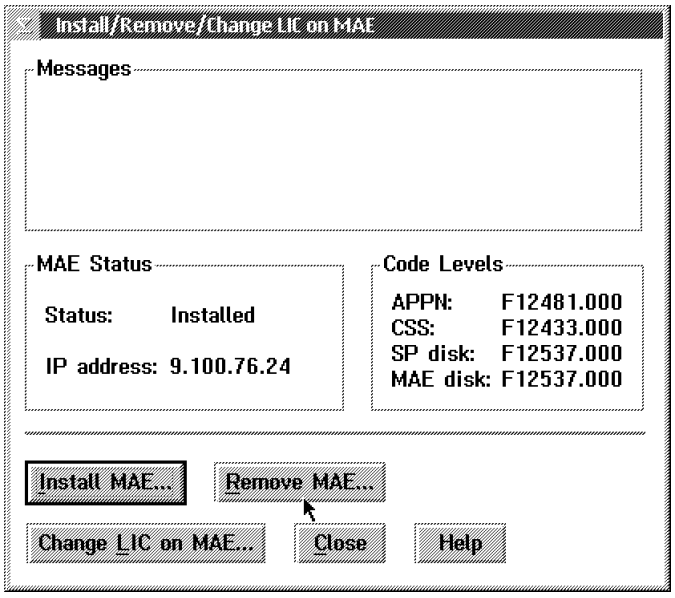
Preparing the Multiaccess Enclosure Hard Disk

1 Remove the MAE to avoid reboot after 40 minutes:

a Click on **Multiaccess Enclosure Management**, then double click on **Install/Remove/Change LIC on MAE**.



b Click on **Remove MAE**.



c Click on **Yes** to confirm.

d When completed click on **Close**.

2 Power ON and verify the LEDs. See “Adapter Card Status” on page 3-3.

3 Several windows are displayed during tests. Wait until the **Boot Information** window is displayed.

4 Press **F1** when required (to prematurely terminate boot) .

5 Enter the Multiaccess Enclosure supervisory password when required: 2216.

6. In the **System Management Services** window, select **4. Utilities** and press **Enter**.

7. From the menu, select **13. Prepare Hard Disk** and press **Enter**.

8. On the two following **Attention** windows press **Y**. The MAE will reboot and format the hard disk. Follow the prompts.
   - If no errors occur, press **F1** when prompted, then continue with Step 9.
   - If error code 30002000 occurs during format, do the following:

     a. In the **System Management Services** window, select **Select Device to test** and press **Enter**.

     b. Select **Test IDE devices**.

     c. Press the **F4**

        for Parm Setup

     d. Select **Run Interactive Test** and **Stop on Error**.

     e. Press **Enter** and **F6** to begin the tests.

     f. Several screens are displayed, follow the prompts.

     g. In **IDE Subsystem** window, select **Format IDE device**, and press **Enter**.

        Attention- This formats the hard disk and destroys all data on the hard disk.

     h. Follow the prompts to start HDD formatting.

     i. At the end of formatting the message **Format Complete Successful** is briefly displayed. Follow the prompts to return to the **System Management Services** menu. When it is done return to Step 7.

9. Select **4. Utilities**, the **System Management Utilities** is displayed.

10. Reload the firmware to the hard disk (see “Updating System Firmware” on page 5-16). When it is done continue with the next Step.

11. Restore the operational software on the new hard disk (see “Restoring the Image Code of the Multiaccess Enclosure Hard Disk” on page 5-30).

12. Activate the configuration (refer to “Activate MAE Configuration Via CCM” on page E-14).

13. Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

14. Go to “CE Leaving Procedure” on page 5-60.

Adapter Wrap Plugs (Service Kit - Part Number 30L6123)

Table 3-4. Multiaccess Enclosure. Adapter Wrap Plugs

Adapter	FRU P/N	Feature Code	Description	Wrap Plugs
LIC 280	85H5543	FC 3280	2-Port Token-Ring	UTP 04H8210
LIC 281	85H5542	FC 3281	2-Port Ethernet	UTP 04H8210 BNC 02G7433
LIC 282	85H4872	FC 3282	8-Port EIA232	CRD 68F7208 CBL 33F8985
LIC 283	85H4882	FC 3283	1-Port ISDN Pri (T1)	57G8097
LIC 284	85H4894	FC 3284	I Port 155Mbps (MMF ATM)	16G5609
LIC 286	86H0967	FC 3286	1-Port FDDI	Two - 16G5609
LIC 287	85H4878	FC 3287	1-Port ESCON Channel	5605670 Fiber-optic jumper cable 14F3797
LIC 288	86H1005	FC 3288	1-Port 100 Mbps Ethernet	UTP 85H7913
LIC 289	85H9703	FC 3289	1-Port HSSI	86H0974 for adapter 86H0973 for cable
LIC 290	85H4874	FC 3290	6 Port V.35/V.36	CRD 72F0168 V.35 BRICK 72F0167 V.36 CBL 73H2508
LIC 291	85H4876	FC 3291	8-Port X.21	CRD 06H3357 CBL 52G3378
LIC 292	85H4884	FC 3292	1-Port ISDN Pri (E1)	57G8097
LIC 293	85H6834	FC 3293	1-Port 155 Mbps (SMF ATM)	16G5609
LIC 294	86H0986	FC 3294	1-Port 155 Mbps (MMF ATM)	16G5609
LIC 295	86H0993	FC 3295	1-Port 155 Mbps (SMF ATM)	16G5609
LIC 297	02L2071	FC 3297	4-Port ISDN PRI (T1/J1)	25L4749
T1/J1 Daughter Card	02L2081	FC 3251	4-Port ISDN PRI (T1/J1)	25L4749
LIC 298	02L2084	FC 3298	4-Port ISDN PRI (E1)	25L4749
E1 Daughter Card	02L2085	FC 3252	4-Port ISDN PRI (E1)	25L4749
LIC 299	02L2336	FC 3299	1-Port Parallel Channel	71F1184

LIC 282, LIC 290, and LIC 291 External Wraps

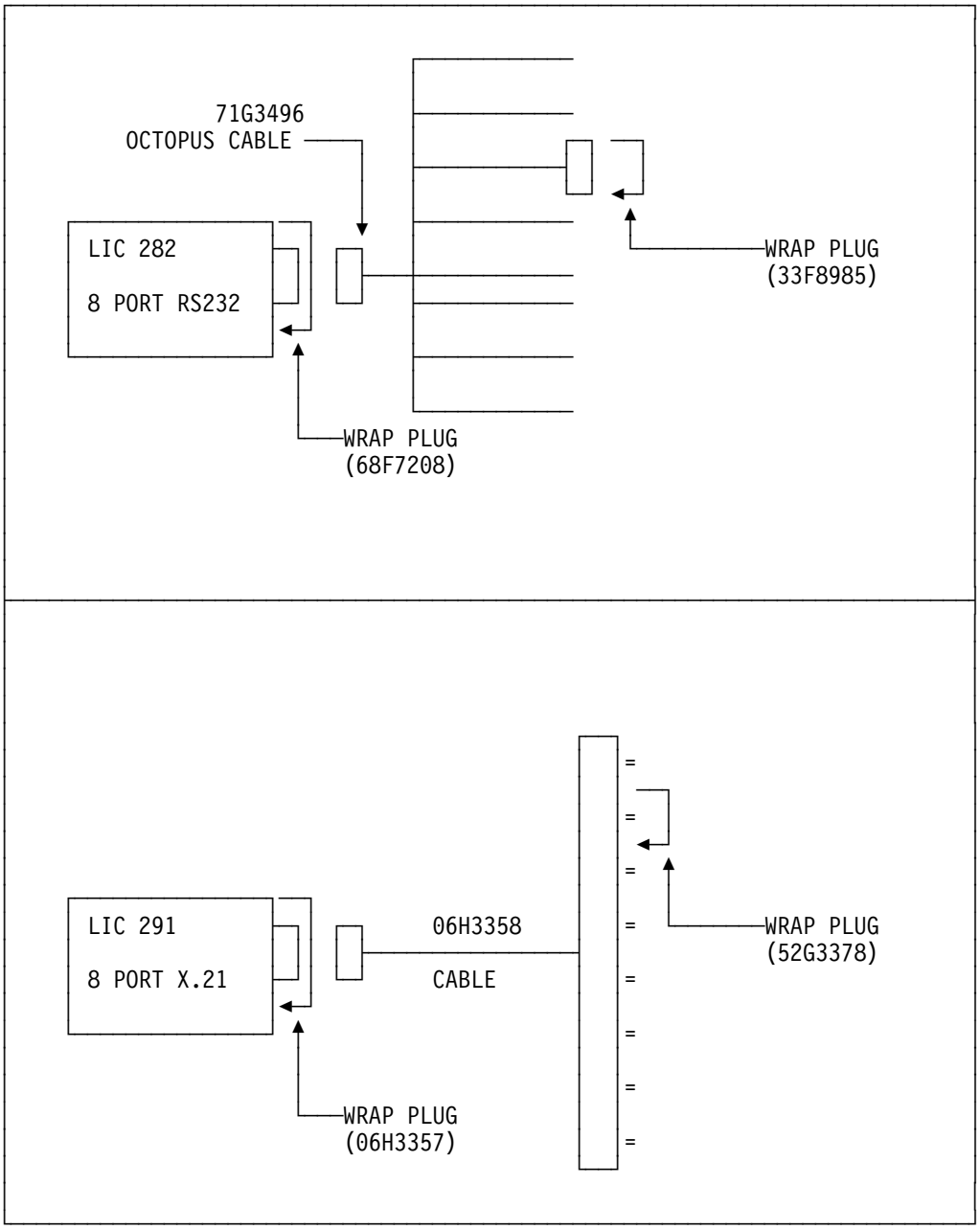


Figure 3-2. LIC 282 and LIC 291 Wrap Support

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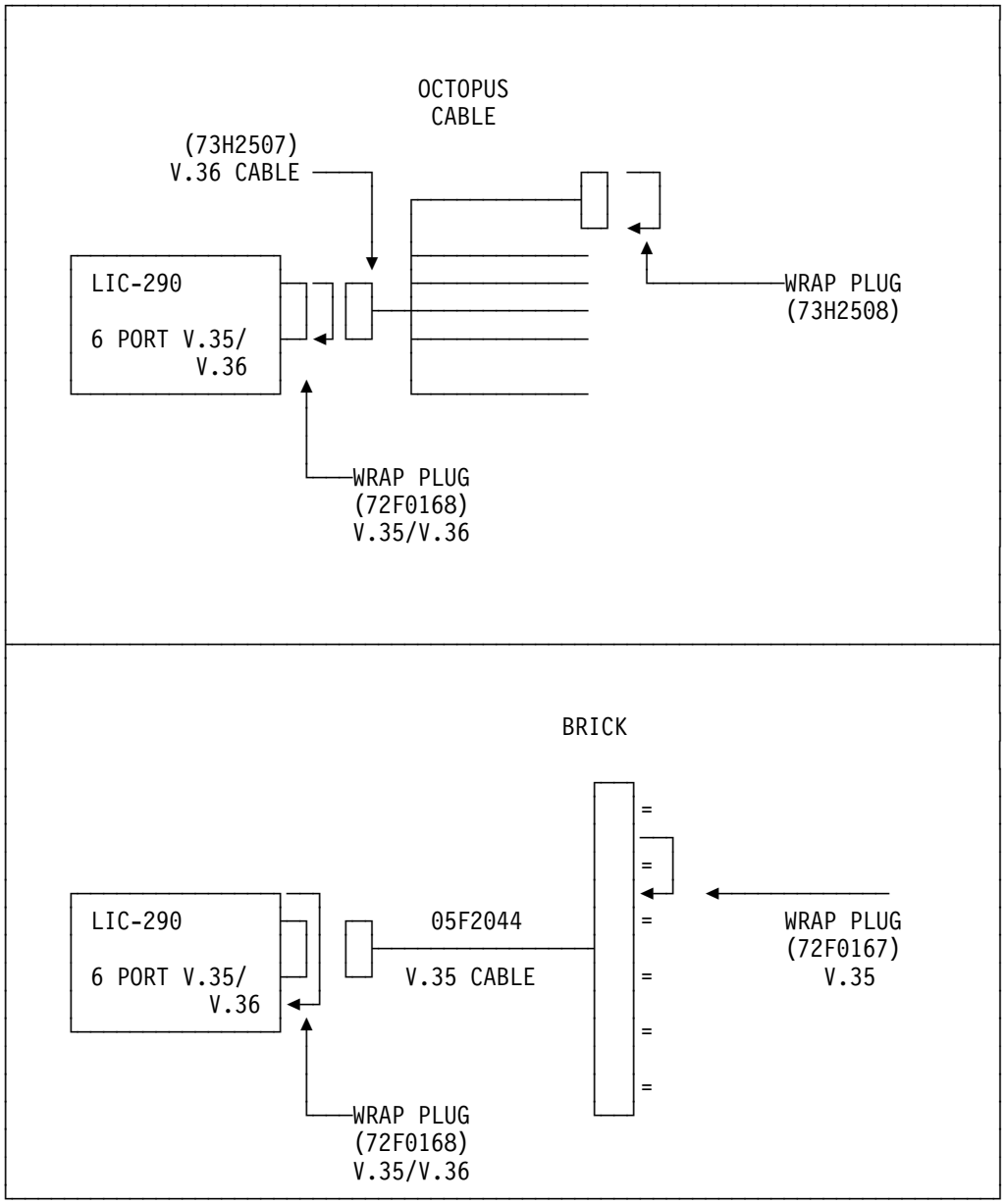


Figure 3-3. LIC 290 Wrap Support

External Wrap Testing Parallel Channel Adapters

Note: This procedure requires a channel- trained IBM service representative or customer's channel- trained person.

This section explains the basic concepts for preparing the channels for testing, contains rules governing channel attachment, and provides procedures for preparing the wrap blocks. When you are certain about your configuration, follow the procedures in this section.

Attention:

- ***Do not*** unplug the cables unless all the device addresses that are attached to the channel have been varied offline.
- ***Do not*** remove the cables unless necessary. Removing and reattaching bus and tag cables can cause pins to bend.
- Run diagnostic option 2 with a wrap block when:
  1. You are installing a Parallel Channel Adapter as an upgrade
  2. There is still an indication of a Parallel Channel Adapter channel error and you have already run diagnostic option 1 and it ran cleanly.

Concepts

When testing the Parallel Channel Adapters with wrap blocks, follow the procedures to ensure that all channels affected by your test remain operational.

1. First trace the V-cables and the Channel Interface Cables from the Parallel Channel Adapters that you are testing to their input and output connectors.
2. Even if you are not testing additional Parallel Channel Adapters in the multiaccess enclosure, trace the V-cable attached to the additional adapters to their input and output connectors.
3. Sketch your configuration, if necessary, to be sure that you know how the adapters are attached to the channels.

Rules for Parallel Channel Adapter Testing

Prepare the channel cables, other V-cables, and the other Channel Interface Cables so that the channel can be operational while you are testing the adapter. To preserve all channels to the host that might be affected by your test, follow these rules:

1. Be sure to vary the channel offline (make the channel inoperational).
2. When setting up the wrap test maintain a terminated channel path to the host as shown in Figure 3-4 on page 3-24 and Figure 3-5 on page 3-25.
3. If you want the channel to be online while doing wrap tests, vary the channel online after preparing the wrap test connections.
4. Perform the wrap tests that you need to perform.
5. Reconnect your cables according to the sketch that you made.

Preparing the Wrap Blocks

The procedures you follow to install wrap blocks depend upon the following conditions:

- V-cable interconnected configurations
- Interconnection of multiple adapters in a single multiaccess enclosure
- Interconnection of multiple adapters among multiaccess enclosures
- Options for testing the adapters in a single multiaccess enclosure, individually or together.

Install wrap blocks. Remember your configuration and refer to the sketch you made:

- When you are testing a Parallel Channel Adapter in a ***single multiaccess enclosure at the end of a channel***, follow these steps using the following figure:

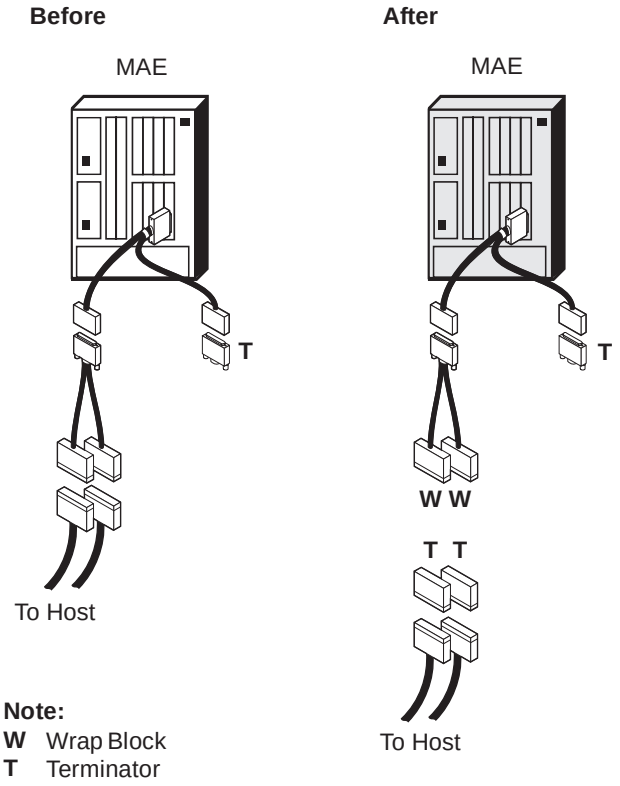
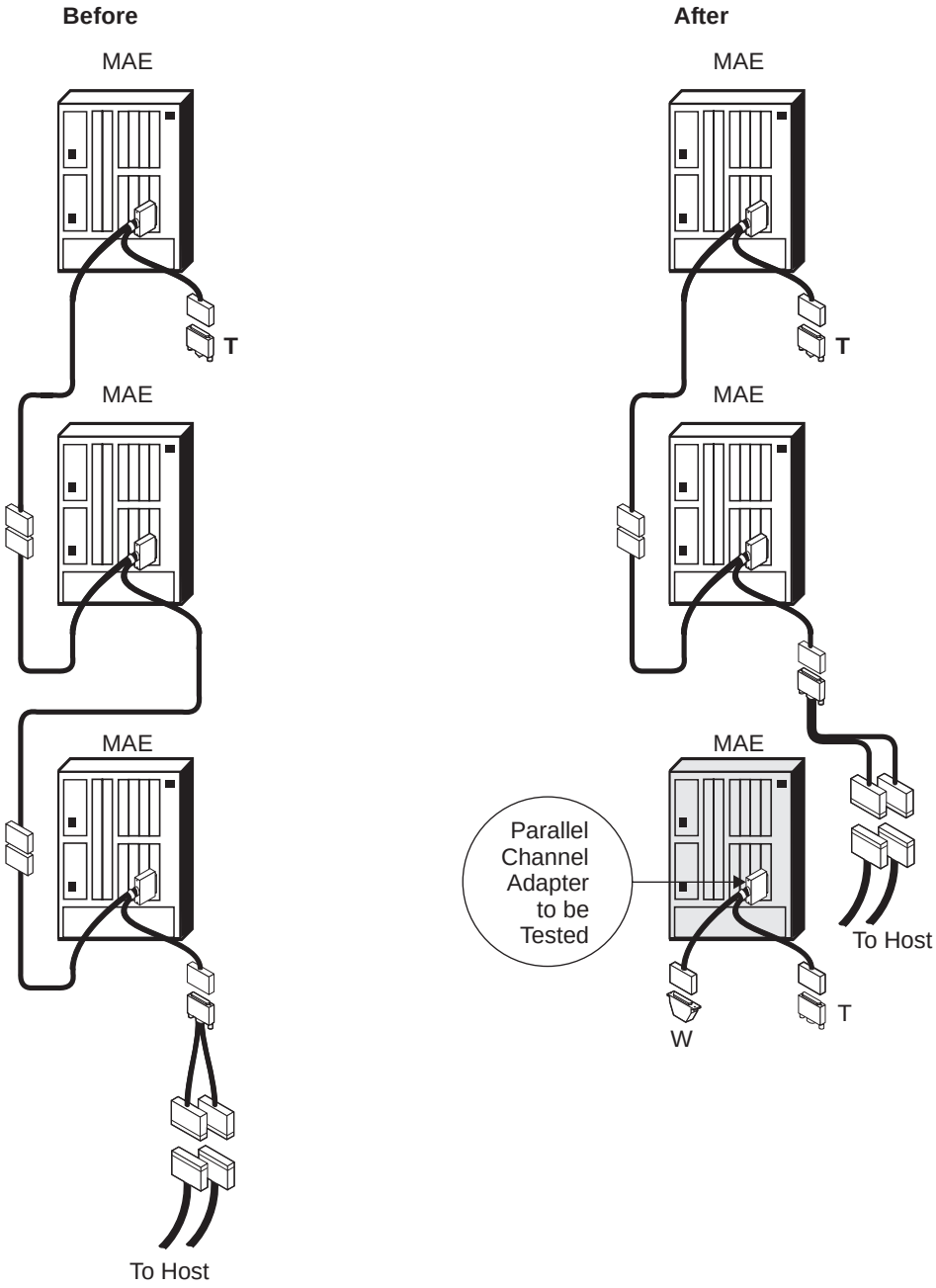


Figure 3-4. Single Parallel Channel Adapter at the End of a Channel

1. Unplug the channel cables from the Channel Interface Cables of the Parallel Channel Adapters that you are testing.
2. Insert the bus and tag wrap blocks into the bus-in and tag-in ends of the Channel Interface-in cable, and the V-cable terminator.
3. If you want to put the channel in the operational state while you are testing the adapter, insert bus and tag terminators on the ends of the associated bus and tag channel cables.
4. Go to Step 4 on page 3-32.

- When you are testing ***one Parallel Channel Adapter that is interconnected to an multiaccess enclosure with a single Parallel Channel Adapter***, use the figure to determine how you want to connect your cables, and go to Step 1 on page 3-26.



Note:
W Wrap Block
T Terminator

Figure 3-5. Interconnected Parallel Channel Adapters

Use the following when wrap testing interconnected Parallel Channel Adapters:

1. Are you testing a Parallel Channel Adapter that is interconnected with v-cables to other Parallel Channel Adapters?

   Yes Plug the two single ends of the V-cable from the Parallel Channel Adapters that are not being tested together to bypass the middle Parallel Channel Adapter. Continue with Step 2.

   No Plug the single V-cable end of the Parallel Channel Adapter that is not being tested into the Parallel Channel Adapter that is connected to the host. Continue with Step 2.

2. Plug both ends of the V-cable of the adapter that you are testing into unused Channel Interface Cables.
3. Insert wrap blocks and terminators into the cables that you are testing.
4. Return to “Running the Parallel Channel Adapter External Wrap Tests” on page 3-27.

Running the Parallel Channel Adapter External Wrap Tests

Use the external wrap tests to locate problems with the cables. Test the cables only after verifying the adapter is functional by running the online diagnostics of the adapter (see “Running Diagnostics on the New Adapter” on page 5-50).

Run the Parallel Channel Adapter test with the wrap blocks and terminators. This tests the Parallel Channel Adapter, the V-cable, and the Channel Interface Cables.

Run external wrap tests of the adapter and the cables in the following sequence:

1. The adapter, see Figure 3-6
2. V-cable, see Figure 3-7 on page 3-28
3. V-cable and the Channel Interface-in, see Figure 3-8 on page 3-29
4. V-cable, Channel Interface-in, and Channel Interface-out, see Figure 3-9 on page 3-30
5. V-cable and Channel Interface-out, see Figure 3-10 on page 3-31

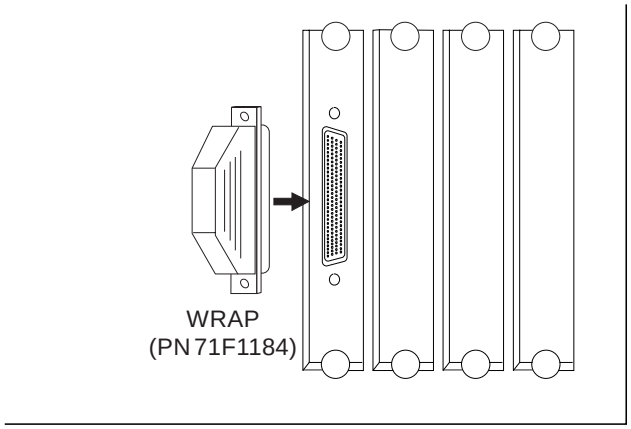


Figure 3-6. Adapter Wrap Test Connection

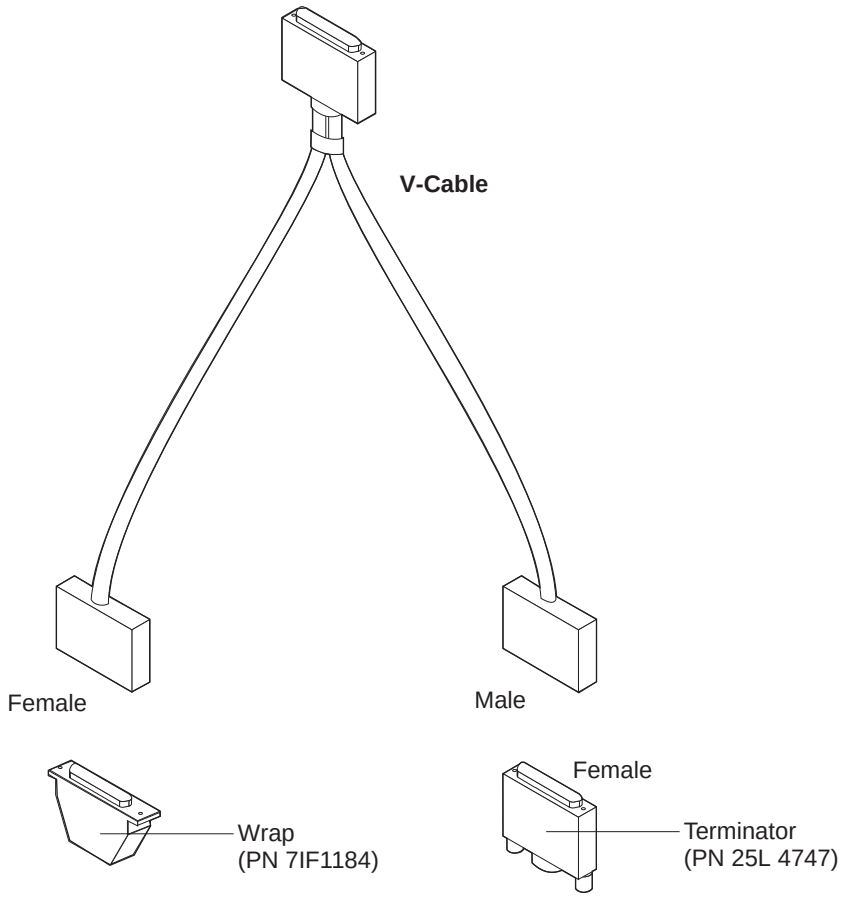


Figure 3-7. V-cable Wrap Test Connections

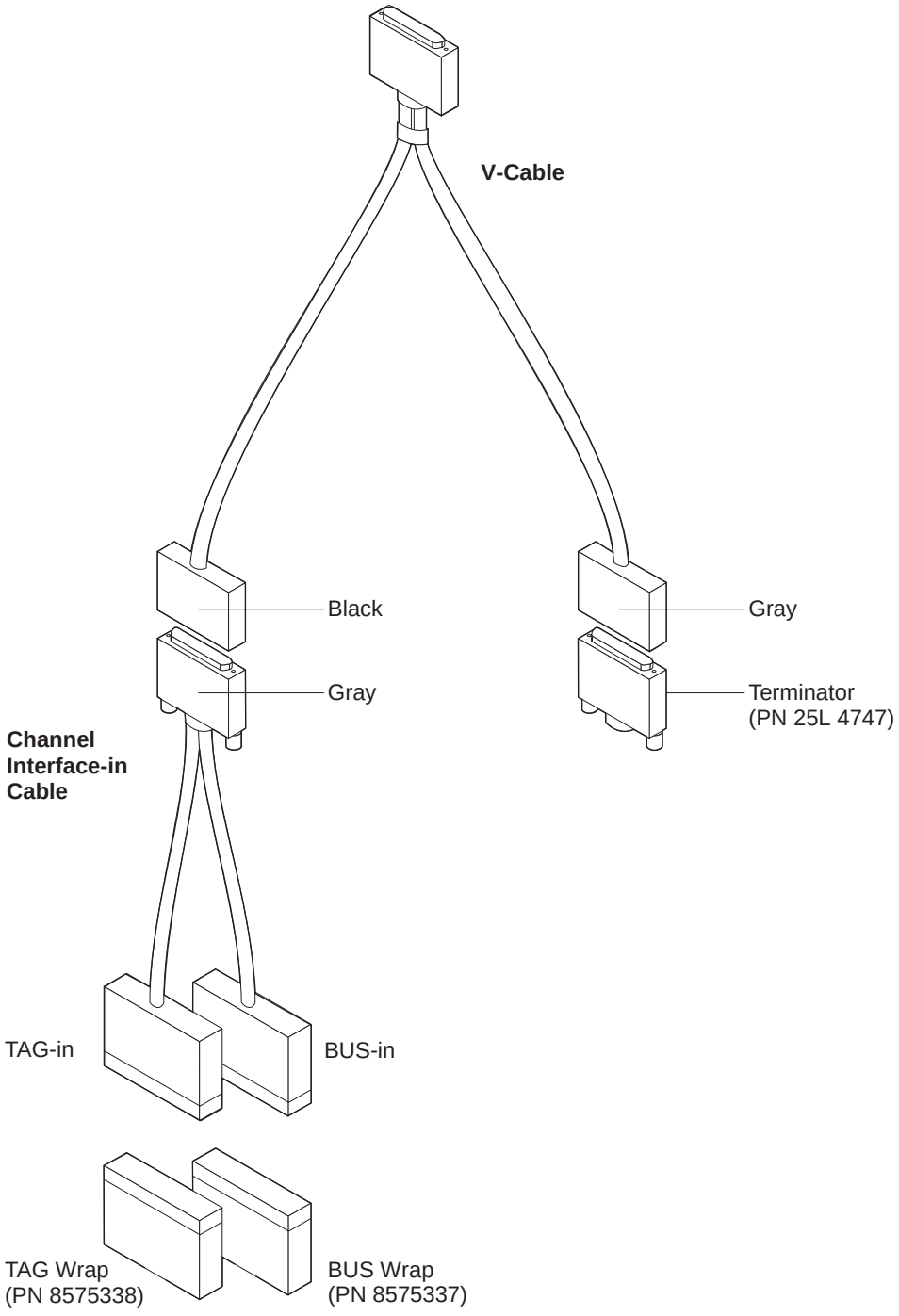


Figure 3-8. Channel Interface-in Wrap Test Connections

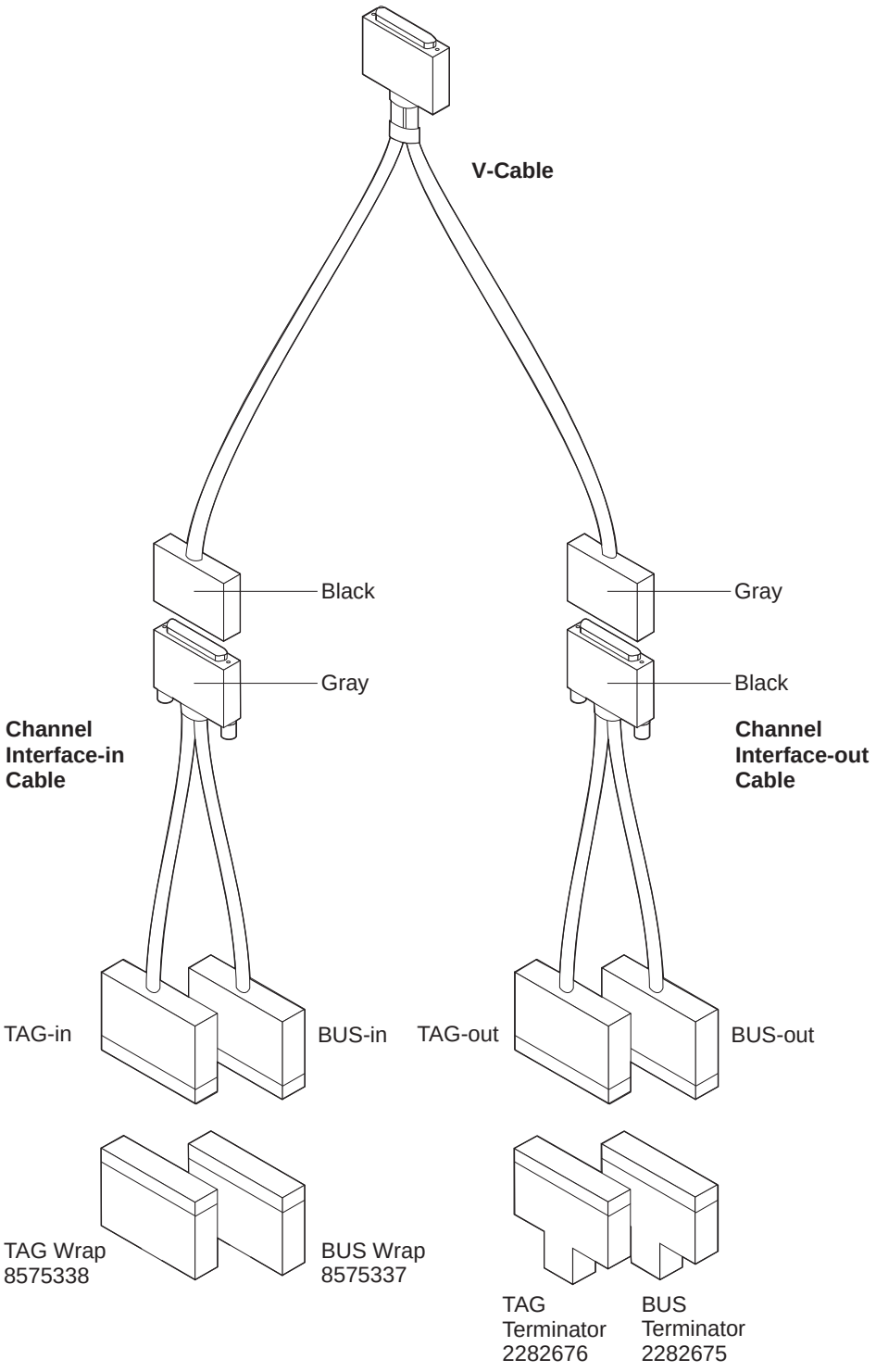


Figure 3-9. All Cables Wrap Test Connections

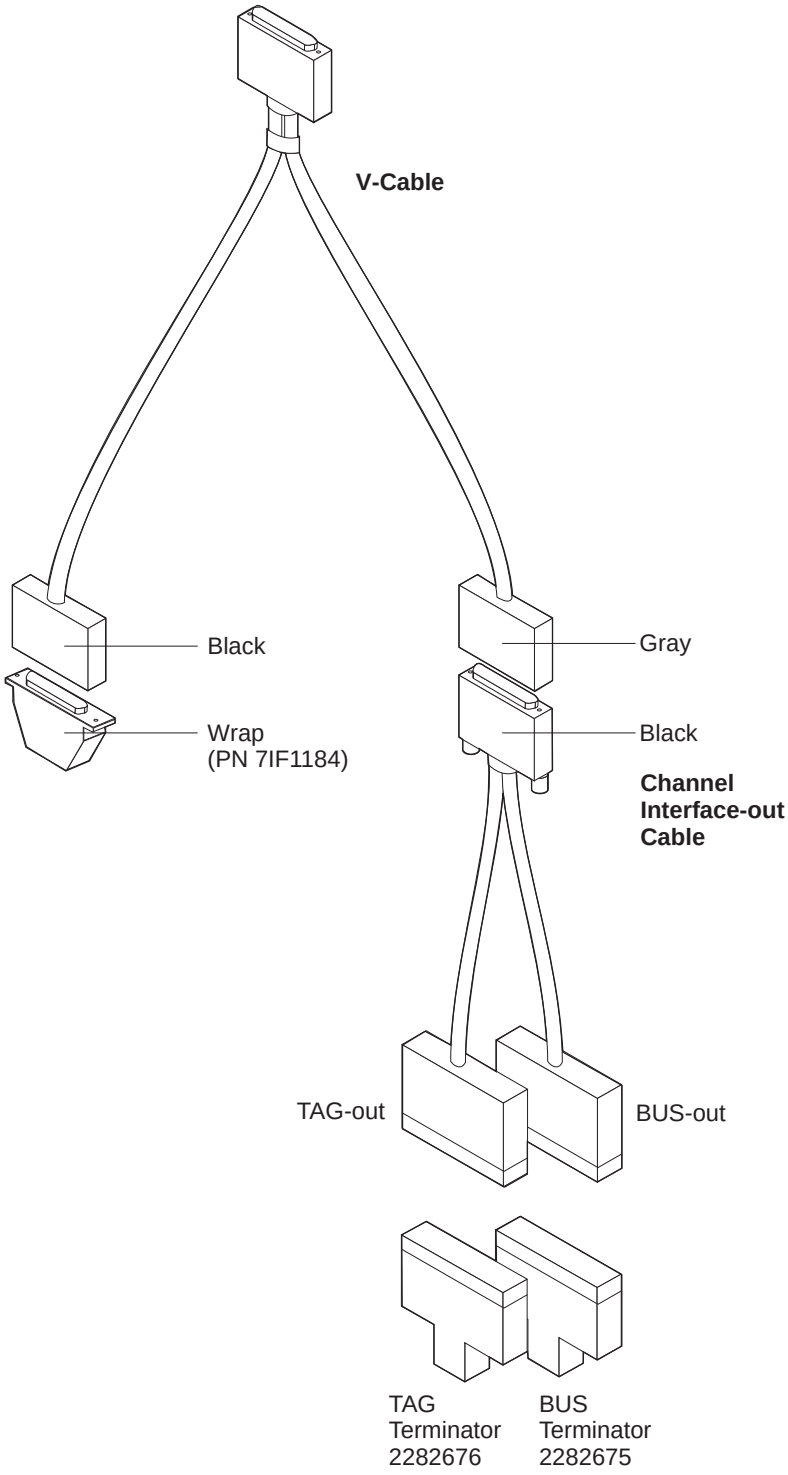


Figure 3-10. Channel Interface-out Wrap Test Connections

To run the Parallel Channel Adapter test with the wrap blocks, which includes a test of the V-cable and the Channel Interface Cables, follow these Steps:

1. Leave the V-cable attached to the adapter.
2. Ask the host computer operator to vary offline all device addresses attached to the channel that contains the adapter that is to be tested. This is required because the channel cables will be unplugged, which could cause host problems.
3. Prepare the channel cables, V-cables, Channel Interface Cables, wrap blocks, and terminators. See “External Wrap Testing Parallel Channel Adapters” on page 3-23.
4. After the cable preparation is complete, ask the host computer operator to vary online those units attached to channels that are ***not*** being tested.
5. Run the diagnostic test (see “Testing the Adapters” on page 5-49).
6. Do you want to repeat the Parallel Channel Adapter test?

   Yes Return to Step 3 to test the next cabling scenario until you are done.

   No Perform the following Steps:

   a. Ask the host computer operator to vary offline all device addresses attached to the channels you tested.

   b. Make sure that all Select/Bypass Switches that are connected to Parallel Channel Adapters are set to **S**.

   c. Remove the wrap blocks and extra terminators.

   d. Reconnect the channel cables to their correct locations.

   e. Ask the host computer operator to vary online all device addresses attached to the channels you tested.

   f. Return to the procedure you were following.

Installing and Removing Channel Adapters

This section explains how to perform channel adapter installation and replacement, and shows how to connect and install the cables for the channel adapters.

Note: This procedure requires a channel-trained IBM service representative or customers channel-trained person.

Parallel Channel Attachment

Up to six multiaccess enclosure base Parallel Channel Adapters can be attached to a single channel. When the channel is configured for 4.5 MB Data Streaming, the multiaccess enclosure base Parallel Channel Adapter must be a the end of the channel.

The adapter attaches to the channel with the Channel Interface Cable group *(V-cable and two unique optional-order Channel Interface Cables)*. Figure 3-13 on page 3-35 shows how the cables attach to the channel.

The V-cable, as shown in Figure 3-11, has a Select/Bypass Switch with settings of **S** and **B** that are used to select or bypass this adapter, respectively.

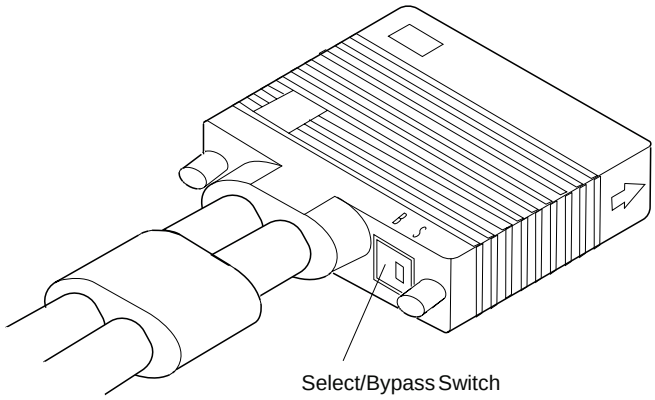


Figure 3-11. Select/Bypass Switch on V-Cable

Attention:

- During testing and installation, you may be instructed to use the Select/Bypass Switch to bypass the adapter you are working on.
- Be sure to ask the host operator to vary the channel off before you use the switch so that you will not disrupt the channel.

The cables are designed so that you can interconnect them in a serial fashion to form a channel path. This enables you to connect several adapters without each adapter connecting to a bus and tag channel cable.

The last Parallel Channel Adapter in the series must be terminated using either the multiaccess enclosure base specific channel terminators (PN 25L4747), or Channel Interface-out with standard bus and tag terminators. “Using Interconnected V-Cables” on page 3-38 explains the concepts regarding Parallel Channel Adapter interconnecting.

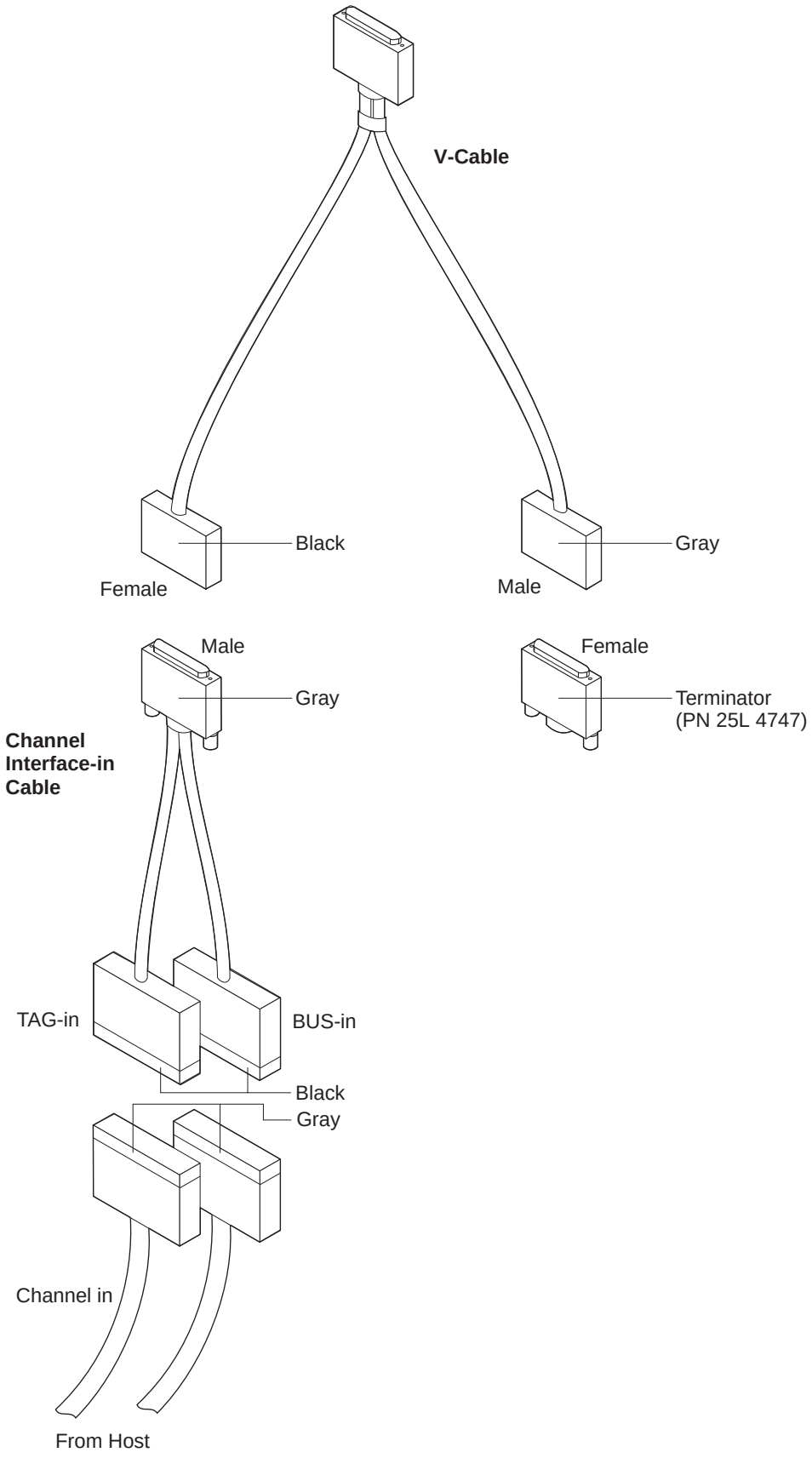


Figure 3-12. Cabling to IBM multiaccess enclosure at the End of Channel

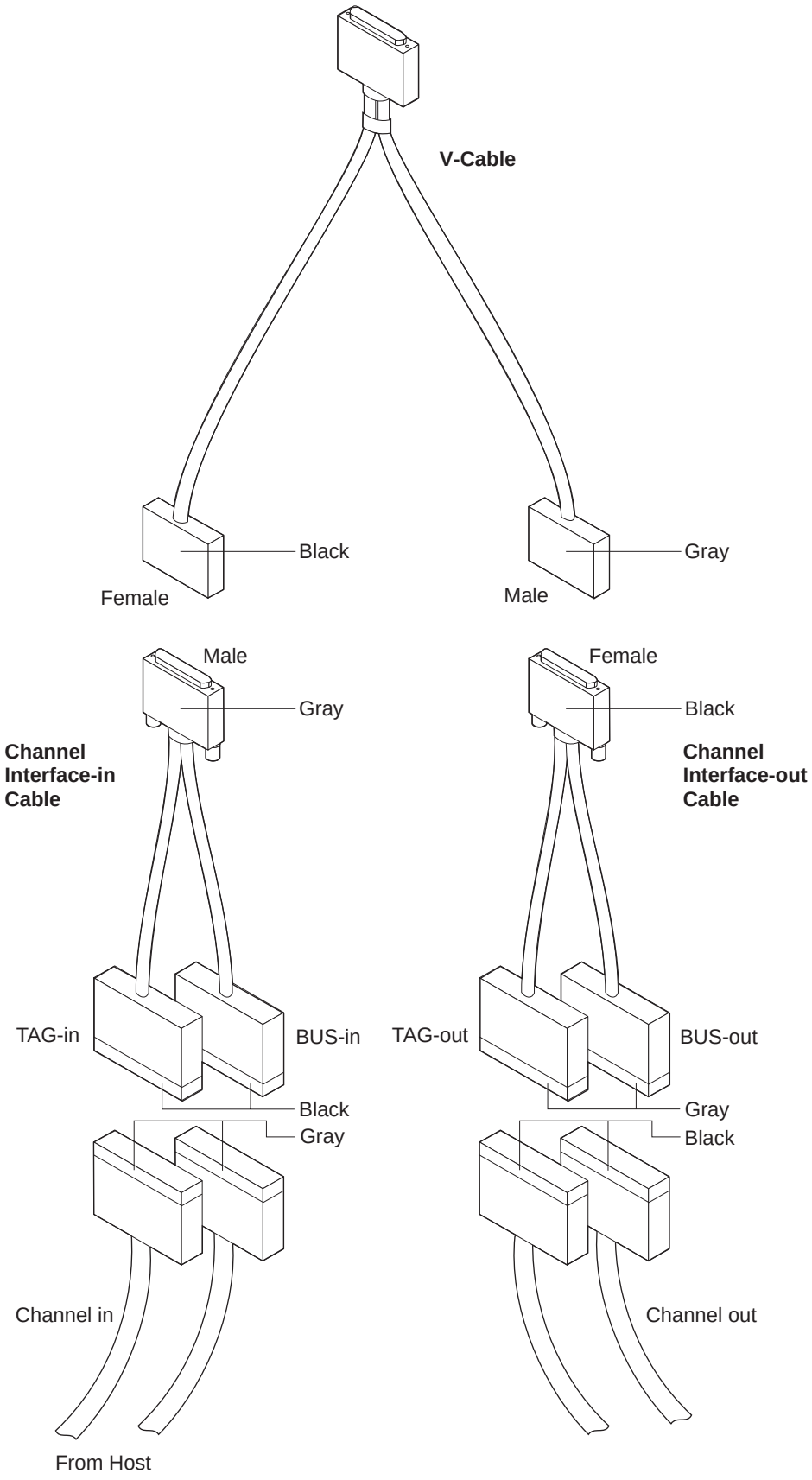


Figure 3-13. Cabling to IBM multiaccess enclosure in the Middle of the Channel

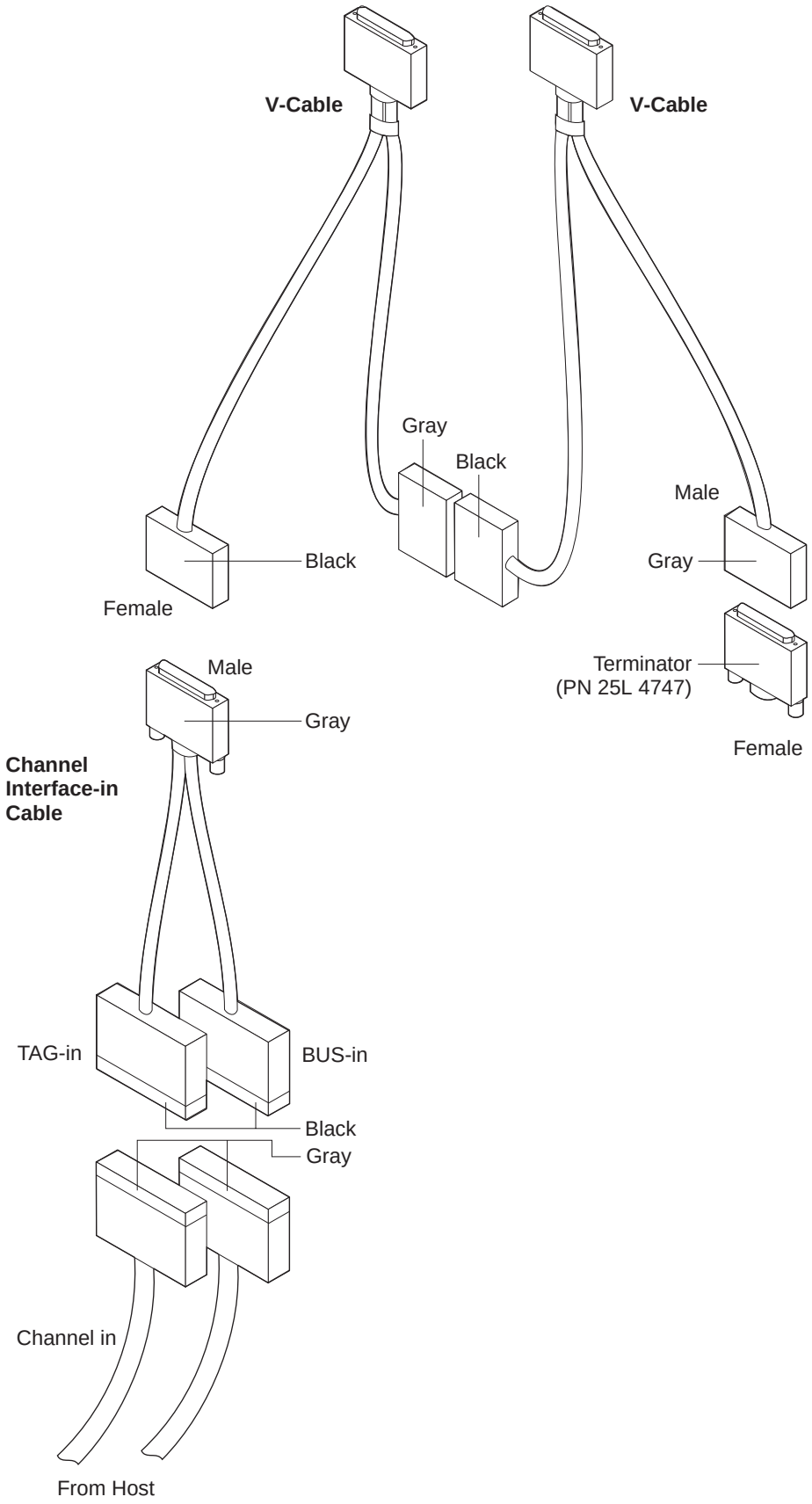


Figure 3-14. Interconnected V-cables

V-Cables

Use only v-cable PN 02L2074 with the multiaccess enclosure base Parallel Channel Adapter.

Use the following rules for correct parallel channel attachment:

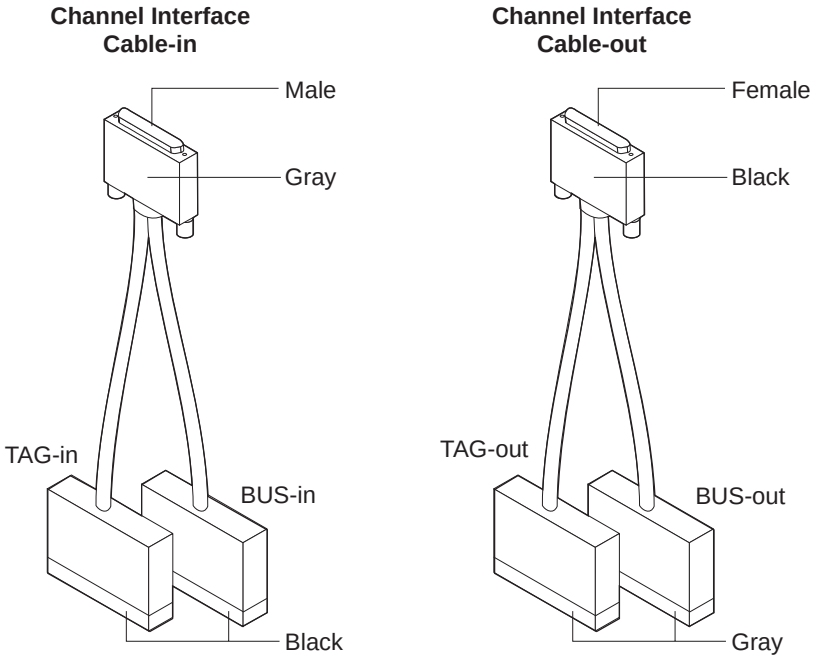
- A maximum of six Parallel Channel Adapters (including any 3172 Model 3s) can be attached to the same channel.
- The V-cable does not have to be interconnected to other Parallel Channel Adapters and can be located anywhere on the channel, provided that all other 4.5-MB devices are attached between the multiaccess enclosure base Parallel Channel Adapters (or 3172 Model 3s) and the host.

  Note: There is a possibility of interconnecting multiaccess enclosure base Parallel Channel Adapters to 3172 models. The following rules would apply in this case:

  1. The multiaccess enclosure base Parallel Channel Adapters can connect only to V-cables PN 33G3056 or PN 02L2074 (and no other).
  2. V-cable PN 25F9397 (used on early 3172 Model 1s) ***cannot*** be used.

Channel Interface Cables

The Channel Interface Cables are two distinct cables. They are not interchangeable. The following figure shows the cables. Use the colors on the connectors on the cables to distinguish the differences between the cables.



Using Interconnected V-Cables

The standard multiaccess enclosure base Parallel Channel Adapter connection to a channel is a 1.8 m (6 ft) V-cable and two unique Channel Interface Cables (see Figure 3-12 on page 3-34 and Figure 3-13 on page 3-35). However, multiple adapters can be interconnected in a serial fashion by connecting cables as shown in the figures that follow.

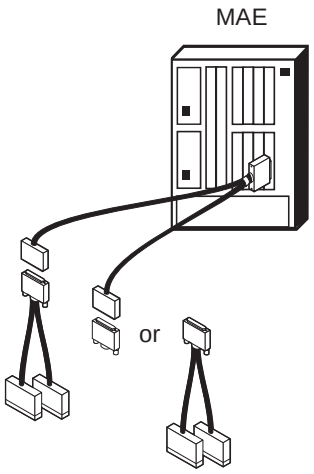


Figure 3-15. Standard Channel Connection

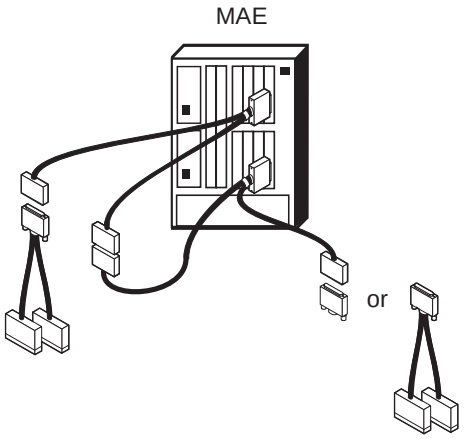


Figure 3-16. Two Adapters Attached to One Channel

Note: For the multiaccess enclosure, the Parallel Channel Adapters can be in separate multiaccess enclosure.

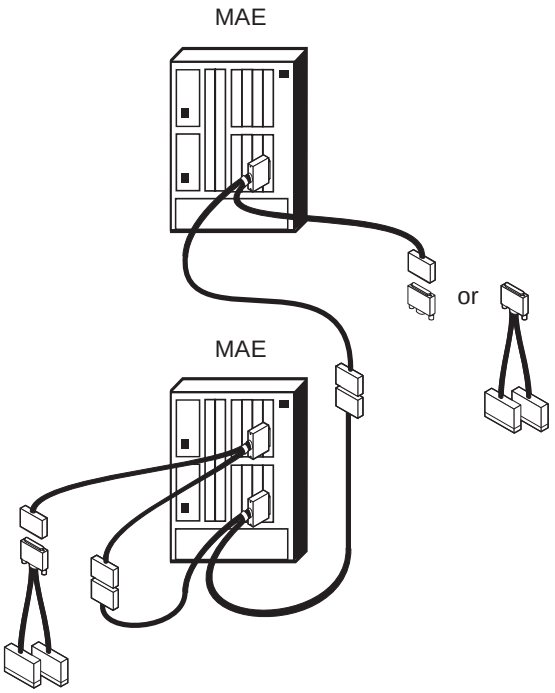


Figure 3-17. Three Adapters Attached to One Channel

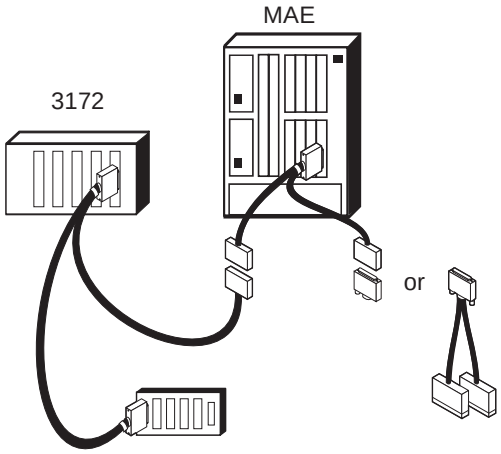


Figure 3-18. IBM multiaccess enclosure Parallel Channel Adapter on a Channel with a 3172 Connected to a Channel Interface Assembly

Installing Channel Feature 3299

Note: Use the field electrostatic discharge (ESD) kit when you are handling adapters. Guidelines for using the ESD tools are included inside the kit.

1. Verify that the new feature (and feature code) you are installing to make sure that the customer's adapters are supported. The feature code appears on the Bill of Materials included with the miscellaneous equipment specification (MES) under the heading "Bill Title."

   Because many adapter types are supported, only certain combinations are valid. You might be trying to add an MES that requires another

adapter to be moved to a different slot or removed from the IBM multiaccess enclosure.

To verify this, do the following:

a. Verify the availability of an empty slot for the adapter installation, using “Multiaccess Enclosure Slots and Adapters” on page B-2.

b. If an empty slot is not available, move an existing adapter to another slot before installing the new feature, or remove an existing adapter to accommodate the new feature. Removal of adapters must be coordinated with the customer. The customer must decide which feature is to be removed.

2. Select the slot in which to install the adapter.
3. If there is a filler panel in the slot that you want to use, loosen the retainer screw on the filler panel for that slot. Slide the filler panel up and remove it. Store it where you can find it to reinstall if you ever remove this adapter.

Parallel Channel Adapters Installation and Removal

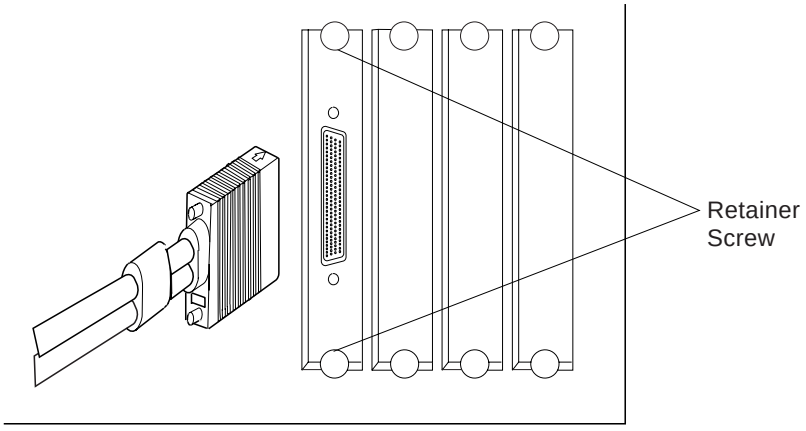
Use the following information after being directed to this section from “Exchanging an Adapter” on page 4-42.

To install or remove channel adapters, follow the directions in this section. Repeat these directions for each channel adapter that you are installing or removing.

Installing Channel Adapters

To **replace or install** a Parallel Channel Adapter, complete the following Steps:

1. Insert the V-cable straight into the Parallel Channel Adapter D-shell connector.
2. Tighten the screws on the top and bottom of the connector.

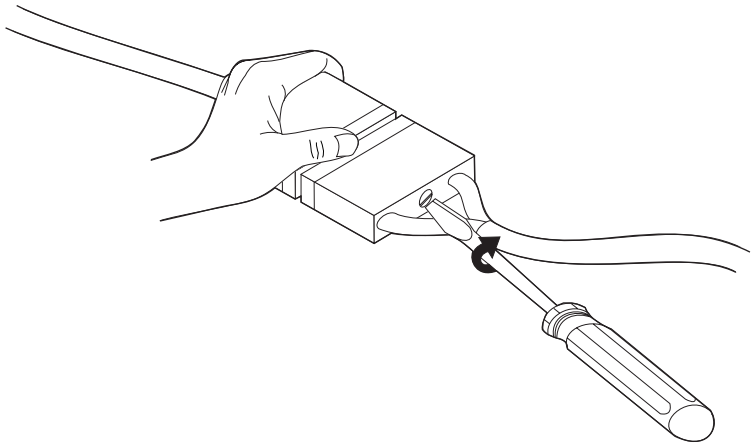


3. Ask the host computer operator to place the channel attached to this Parallel Channel Adapter in a non-operational state.

4. Remove the protective covers from the ends of the Channel Interface Cable connectors (if present).
5. Touch the connectors of the Channel Interface Cables and the channel cables to the grounding pad (PN 31G8908) before continuing.
6. Use Figure 3-12 on page 3-34, Figure 3-13 on page 3-35, and Figure 3-14 on page 3-36 as reference to continue the next Steps. Connect the Parallel Channel Adapter cables beginning at the host channel cable.
7. If you are installing the optional Channel Interface-in cable, connect the:
   a. Channel Interface-in bus and tag cables to the channel cables that come from the host side of the channel.

      Attention: To prevent bending the pins, draw the cables together by tightening the screw.

      Lay the cables on a flat surface and draw the cables together by tightening the screw near the center of the channel cable as shown.



8. Connect the:
   a. Channel Interface-in cable to the V-cable
   b. V-cable to the adapter (if you have not already done this in a previous Step)
   c. V-cable to the IBM multiaccess enclosure specific terminator, OR
      - V-cable to the Channel Interface-out cable
      - Bus and tag-out from Channel Interface-out cable to the associated bus and tag terminator (or to the next channel cables)
9. See “Routing the Adapter Cables through the Cable Guides” on page 3-47 for information about routing new cables.
10. Move the Select/Bypass Switch on the V-cable to **S**.

    Note: When the Select/Bypass switch is set to **B**, the Parallel Channel Adapter is bypassed on the attached channel.

    The Select/Bypass Switch must be set to **S** prior to restarting your host application.

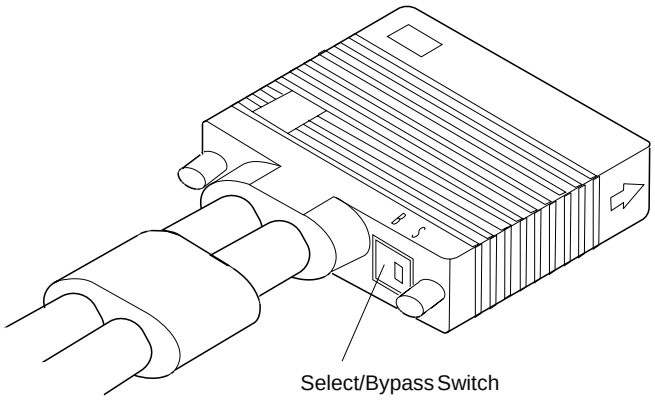


Figure 3-19. Select/Bypass Switch on V-Cable

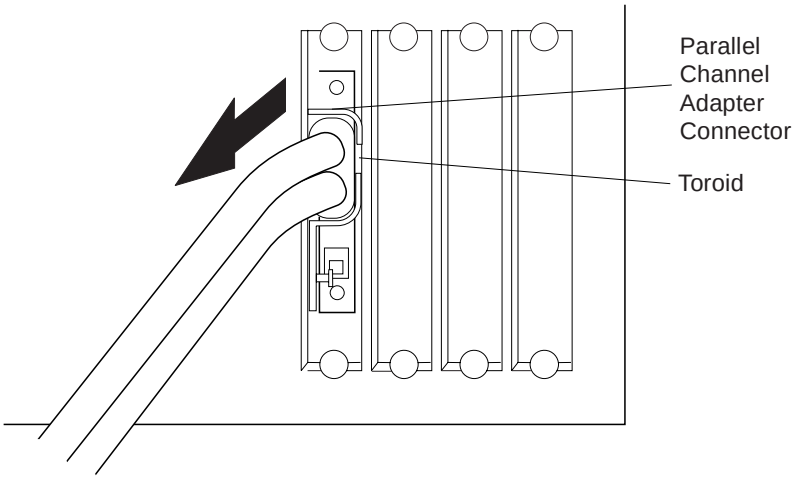
11. Run diagnostic tests (see “Testing the Adapters” on page 5-49) to verify that the adapter and cables are OK.
12. Tell the host computer operator that the channel can be returned to an operational state.
13. Return to the procedure that brought you here.

Removing Channel Adapters

Note: Perform the following procedure only after being directed to this section from “Exchanging an Adapter” on page 4-42.

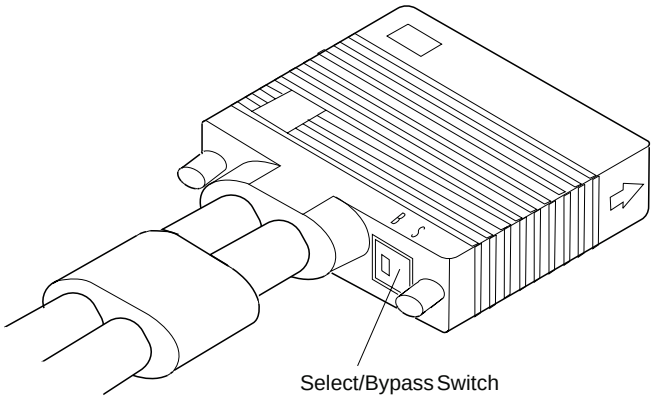
To **remove** a Parallel Channel Adapter, do the following:

1. Ask the host computer operator to place the channel attached to this Parallel Channel Adapter in a non-operational state.
2. Disconnect the V-cable from the Parallel Channel Adapter, by loosening the screws on the top and bottom of the connector.
3. Pull the connector on the cable from the D-shell connector on the adapter.



4. Move the Select/Bypass Switch on the V-cable to **B**.

   Note: When the Select/Bypass switch is set to **B**, the Parallel Channel Adapter is bypassed on the attached channel.



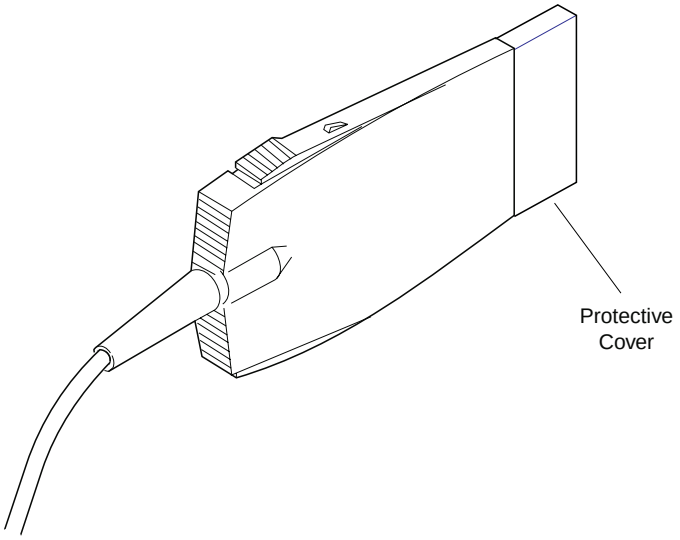
5. Tell the host computer operator that the channel can be returned to an operational state.
6. Return to the procedure that brought you here.

ESCON Channel Adapter Cable Installation

To install the optical fiber cables or the V-cable, follow the directions in this section. Repeat the Steps for each cable you are installing.

Installing Optical Fiber Cables

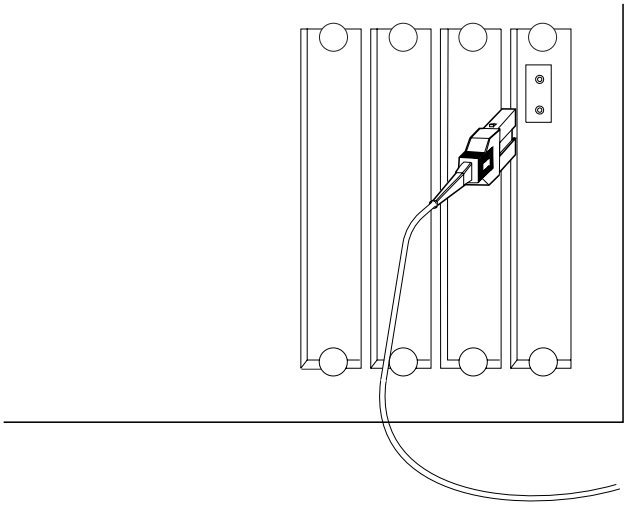
The ESCON connector has a protective cover on the pronged end. The protective cover does not need to be removed for operation.



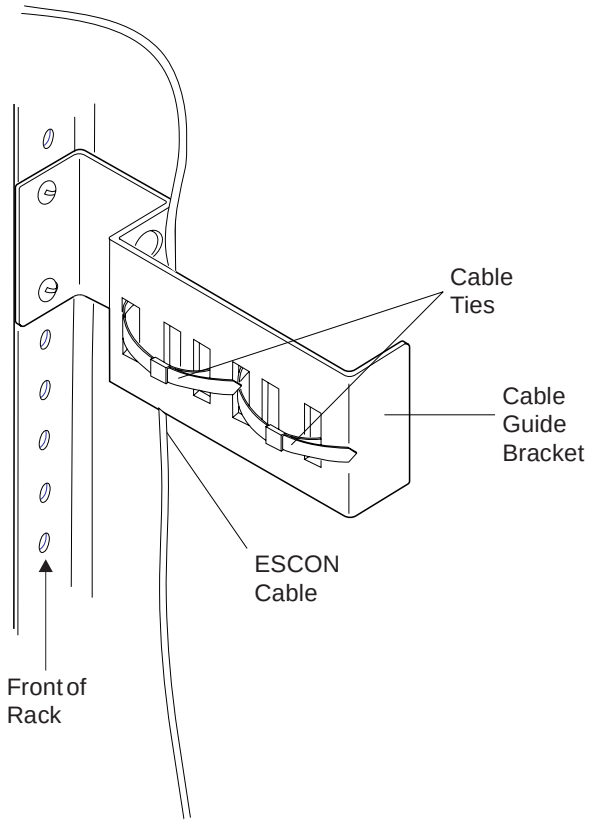
1.

Table 3-5. ESCON Cables

Connect	Disconnect
To connect the adapter cables to the **ESCON Adapter**, push the connector into the adapter connector until it clicks.	To disconnect the **ESCON Adapter** cable from the adapter connector, squeeze tabs on the top and bottom of the connector and remove it from the adapter connector.



Note: When fastening optical fiber and other cables together using the same cable tie, be careful not to fasten the tie too tightly. Overtightening the ties can damage the optical fiber cable. Whenever possible, fiber optic cables should be routed separately from wire-based cables.



2. Use tape or a marker to label the cable.

Channel Interface Cable Replacement Procedure

Note: Before starting this procedure, ask the host computer operator to place the channel that is attached to this Channel Interface Cable into a non-operational state.

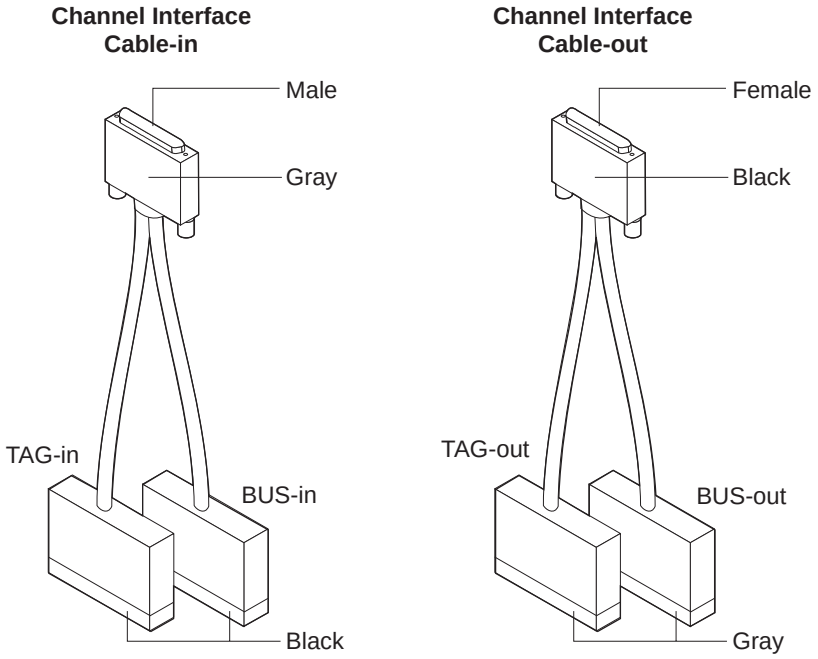
Removing a Channel Interface Cable

To remove a Channel Interface Cable, follow these Steps:

1. Ask the host computer operator to vary the channel off, which places the channel connected to the Channel Interface Cable in a non-operational state.

   Note: The channel will remain in that non-operational state until the cable work is completed.

2. Remove each channel cable (or terminator block) from the Channel Interface Cable. If you are replacing the Channel Interface Cable, note the location of each cable or terminator block so that you can easily transfer it to the new Channel Interface Cable. (The channel ends of the Channel Interface Cables are labeled for bus and tag.)



Reinstalling the Channel Interface Cable

To reinstall the Channel Interface Cable, follow these Steps:

1. Connect each cable or terminator block from the old Channel Interface Cable to the new one.
2. Ask the host computer operator to return the host computer or the channel to an operational state.
3. After completing the replacement process, return to the procedure that you were following.

Routing the Adapter Cables through the Cable Guides

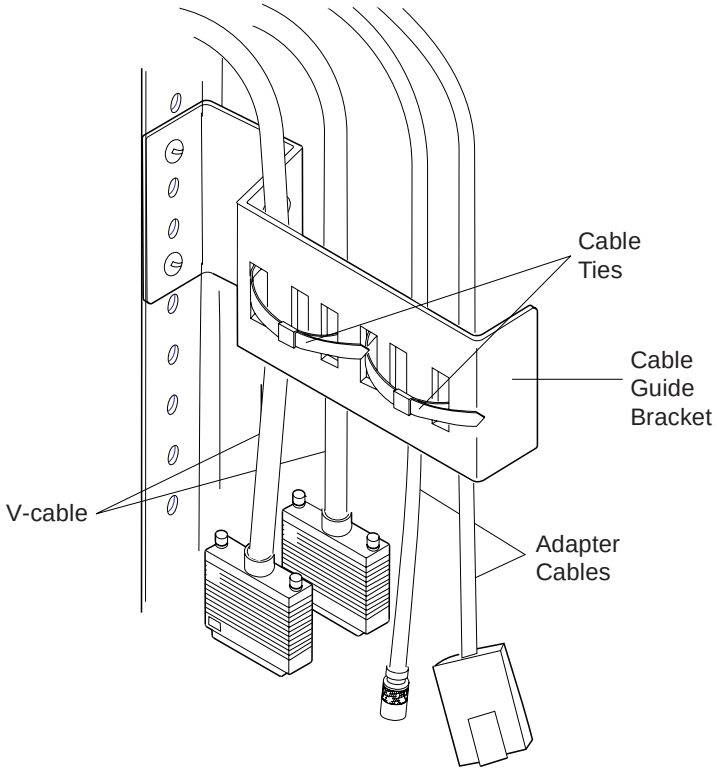
After you have completed all cable connections, secure the cables in the cable guides by following these Steps for each multiaccess enclosure base unit:

1. Release the existing plastic cable ties that hold the cables in the cable guide bracket.

   Notes:

   a. Do not attach any cable ties until you are finished routing all cables.

   b. When fastening optical fiber and other cables together using the same cable tie, be careful not to fasten the tie too tightly. Overtightening the ties can damage the optical fiber cable. Whenever possible, route optical fiber cables separately from wire-based cables.



2. Remove the plastic cable strap from the cable guide arm.
3. Route all cables, and extender cables through the cable guide arm and bracket, giving the cables the same amount of slack.
4. Replace the plastic cable strap from the cable guide arm.
5. Retie the plastic cable ties to secure the cables.

You have completed cable routing.

Releasing the Device to Your Customer

On multiaccess enclosure, a quick reference card is located in the slot under the multiaccess enclosure, enter the information about the adapter type and slot number for each Parallel Channel Adapter that is installed. Write on the worksheet the slot number for each Parallel Channel Adapter in the multiaccess enclosure.

After you complete the card return it to the slot under the multiaccess enclosure. Store the manuals in or near the rack.

If you have added or removed any hardware, the customer must reconfigure the application software.

You can now release the device to your customer.

Chapter 4. Multiaccess Enclosure FRU Exchange

Important

The **SAC, system card**, and a **single power supply** are **not** *hot pluggable*. This means that you must switch off power to the adapter when replacing either of them. Other FRUs are hot pluggable and can be exchanged without powering OFF the Multiaccess Enclosure, although the adapter or other FRU must be reset before new configurations can take effect. Follow carefully the procedure described.

Before removing an adapter, be sure that the corresponding resource has been ***disabled*** by the operator at the operator console.

Each time you change a FRU, carefully record its location and check that the attached cables are correctly labeled and reconnected.

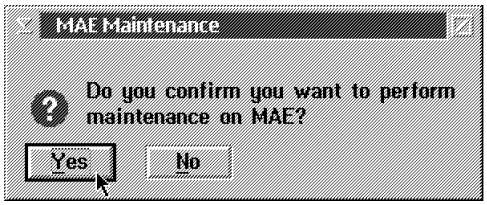
In the following table, find the FRU you want to exchange and go to the procedure indicated.

Table 4-1. FRU Exchange

FRU Name	Go to
Power Supply	If you have: • **Only one** power supply installed in your multiaccess enclosure go to “Prerequisite Before some FRU Exchanging” on page 4-2. • **Two** power supply installed in your multiaccess enclosure go to “Exchanging a Power Supply” on page 4-4.
System card	“Exchanging the System Card” on page 4-5
PCMCIA card	“Prerequisite Before some FRU Exchanging” on page 4-2
SAC	“Prerequisite Before some FRU Exchanging” on page 4-2
Hard drive	“Prerequisite Before some FRU Exchanging” on page 4-2
DIMM	“Prerequisite Before some FRU Exchanging” on page 4-2
Fan tray	“Prerequisite Before some FRU Exchanging” on page 4-2
Adapter type *xxx* (except ESCON adapter and Channel adapter)	“Exchanging an Adapter” on page 4-42
ESCON Adapter	“Exchanging the ESCON Adapter” on page 4-48
ISDN Daughter Card	“Exchanging the ISDN Daughter Card” on page 4-46
Channel Adapter	“Parallel Channel Adapters Installation and Removal” on page 3-40
Backplane	“Prerequisite Before some FRU Exchanging” on page 4-2

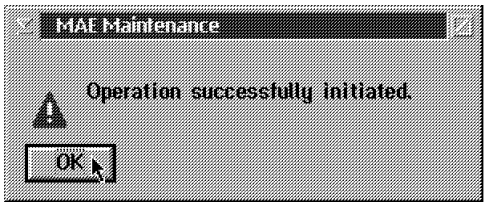
Prerequisite Before some FRU Exchanging

1. Ask the customer to stop the traffic on **all** the Multiaccess Enclosure.
2. On the Service Processor select the **3746/9x0 Menu**.
3. Click on the **Multiaccess Enclosure (MAE) Management**.
4. Double click on the **Perform Maintenance on MAE**.
5. The following window is displayed:



   Click on **Yes**.

6. The following window is displayed:



   Click on **OK**.

7. You should first received an alarm message saying: "MAE Concurrent Maintenance in Progress".
8. Click on **OK**.
9. In the following table, find the FRU you want to exchange and go to the procedure indicated.

Note: Be aware that the MAE will be restarted automatically after 40 minutes.

Table 4-2. FRU Exchange	
FRU Name	**Go to**
Power Supply	“Exchanging a Power Supply” on page 4-4
PCMCIA card	“Exchanging the PCMCIA Card” on page 4-35
SAC	“Exchanging the SAC” on page 4-24
Hard drive	“Exchanging the Hard Drive on the System Card” on page 4-25
DIMM	“Exchanging the Memory on the System Card” on page 4-32
Fan tray	“Exchanging the Fan Tray” on page 4-40
Backplane	“Exchanging the Backplane” on page 4-51

Note: If you do not want to continue the procedure, and leave the "Maintenance mode", double click on **Selective IML on MAE**.

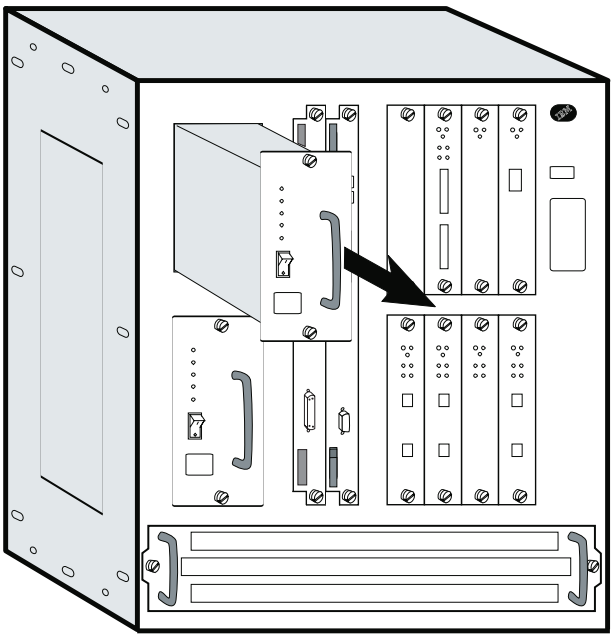
Exchanging a Power Supply

Attention: A power supply is hot pluggable if an optional load-sharing power supply is also installed.

1 Switch OFF the power supply.

2 Unplug the power cord.

3 Remove the power supply by loosening the screws at the top and bottom and pulling the handle.



4 Install the new power supply. The power supply will slide into place on metal rails in the unit.

5 Attach the power cord.

6 Switch ON the power.

7 Verify the LEDs. See “Adapter Card Status” on page 3-3.

8 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

9 Go to “CE Leaving Procedure” on page 5-60.

Exchanging the System Card

Attention:

1. The System Card is **not** hot pluggable.
2. You will remove and retain the hard drive from the defective system card. The hard drive that comes with the new system card is ***blank***.
3. Make note of the part number of your system card.
   - First-generation FRU system cards (PN 78H6297, 11J7464, or 89H8395) support 64 MB (two non-replaceable 32 MB dual inline memory modules (DIMMs)) of memory. These cards are only used on MAE (FC 3000) and are not addressed in this manual.
   - Second-generation FRU system cards:
     – FRU PN 85H9682 or PN 85H9744
     – FRU PN 25L5177 or PN 25L5176
     – FRU PN 25L4784 or PN 25L4783

     support up to 256 MB of total memory (up to 64 MB DIMMs or two 128 MB DIMMs).
   - The third generation FRU system card
     – FRU PN 31L4338 or PN 31L4336

     supports up to 512 MB of total memory.
4. Next, the intent is to reuse the customer's memory on the replacement card.

   When you replace a system card, you need to move the customer's DIMMs from the defective card to the replacement card. If the replacement card already has one DIMM, remove that DIMM and place it on the defective card. the defective card should be returned. The replacement FRUs come with zero or one DIMM installed.

1 Record the IP Addresses

a Double click on the **Service Processor** icon.

b Click on **Configuration Management**, then double click on **SP customization**.

c Check **Service LAN addresses**, then click on **Next>>**.

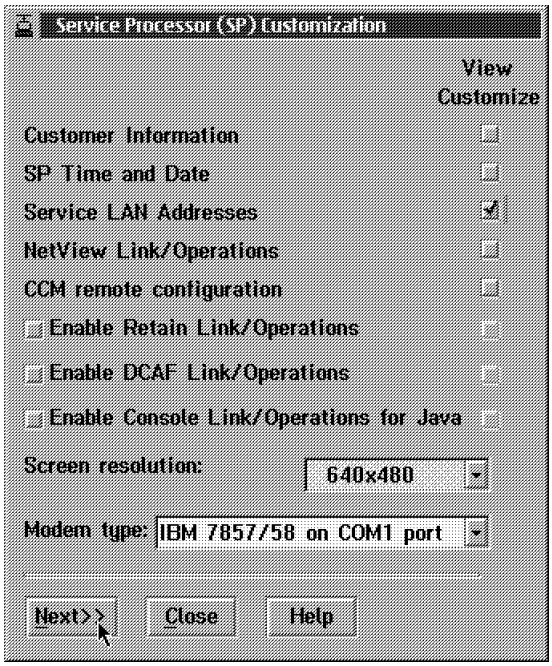


Figure 4-1. Service Processor Customization

d Record the IP address of the **Service Processor**, **MAE**, **Router** (if any) and the **Subnet mask**.

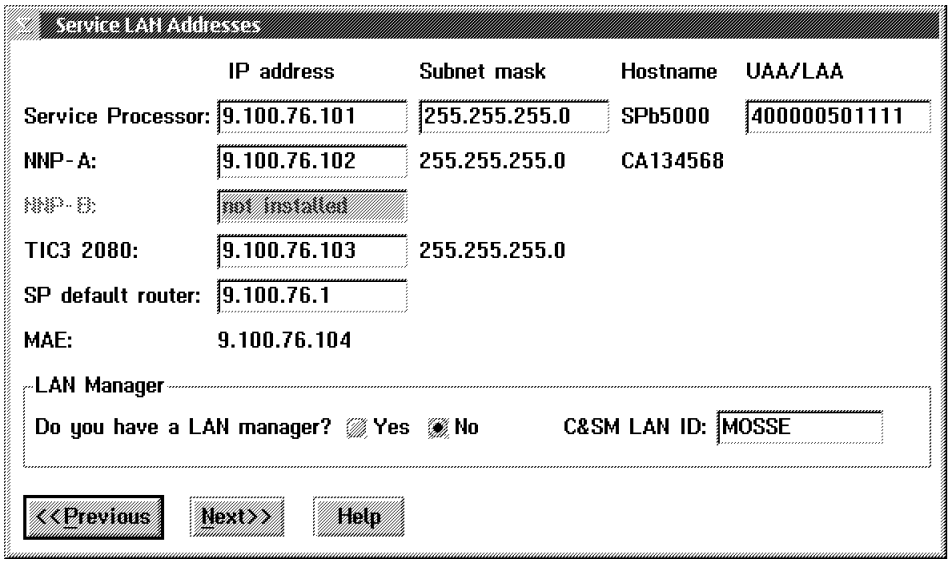


Figure 4-2. Service LAN addresses

e Then to exit from SP customization, click on **Previous**, **Close**, and **NO**.

2 Remove the MAE

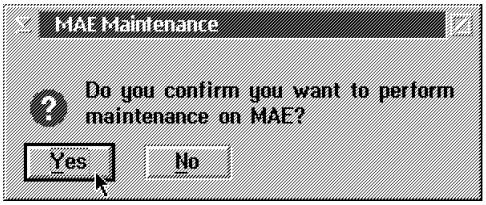
a Ask the customer to stop the traffic on **all** the Multiaccess Enclosure.

b On the Service Processor select the **3746/9x0 Menu**.

c Click on the **Multiaccess Enclosure (MAE) Management**.

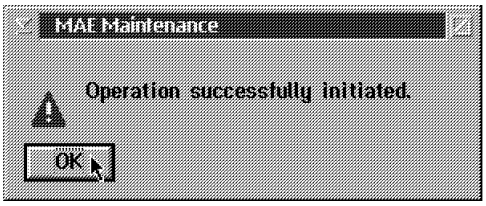
d Double click on the **Perform Maintenance on MAE**.

e The following window is displayed:



Click on **Yes**.

f The following window is displayed:



Click on **OK**.

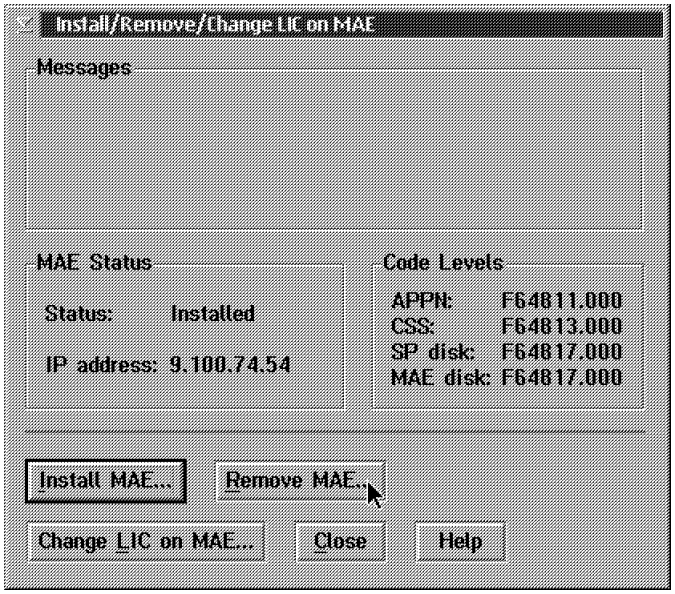
g You should first received an alarm message saying: "MAE Concurrent Maintenance in Progress".

h Click on **OK**.

i Return to the **3746/9x0 Menu**.

j Double click on **Install/Remove/Change Lic on MAE**.

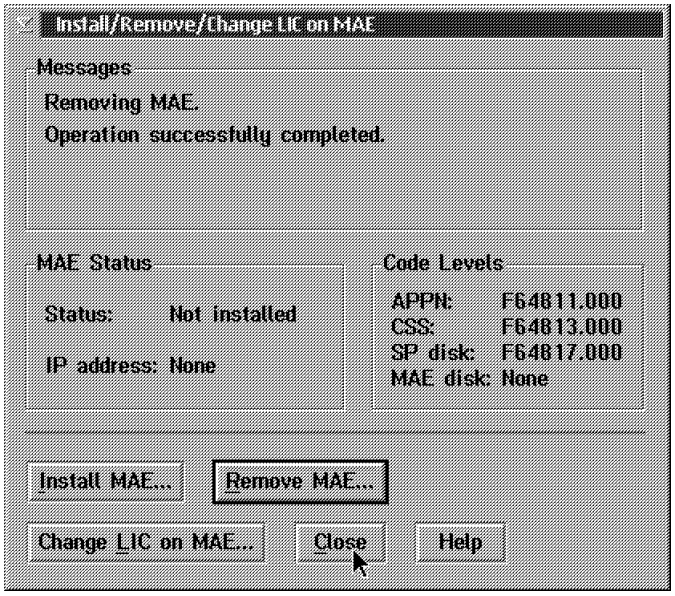
k Wait until the following window is displayed:



l Click on **Remove MAE**

m On the following window click on **Yes** to confirm.

n Wait until the message "Operation successfully completed" is displayed on the window.



o Click on **Close**.

3 Remove the old system card:

Attention

Electrostatic discharge (ESD) can damage the static-sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

- Do not remove the DIMM until you are ready to insert it into the Multiaccess Enclosure.
- Use correct grounding techniques when inspecting and installing the DIMM. Use a foot strap or grounding mat, or wear a grounded static discharge wrist strap, or touch a grounded rack or other source of ground before you handle the DIMM.

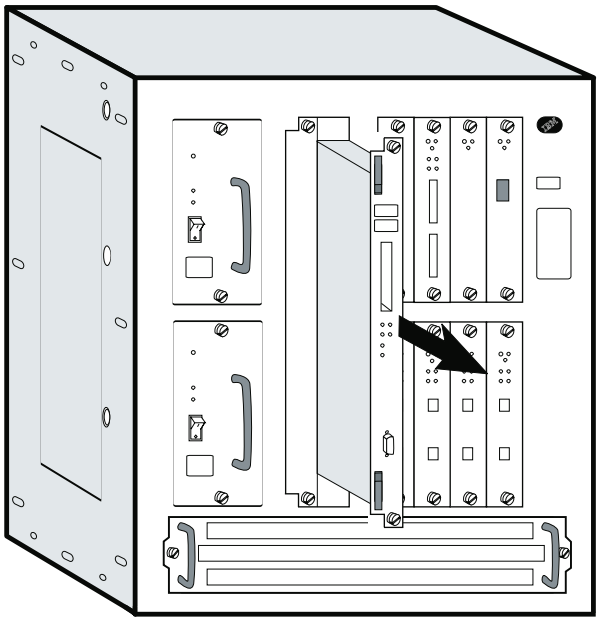
a Switch OFF each power supply.

b Label the cables on the system card. Unplug the cables and the PCMCIA card.

c Loosen thumbscrews on the system card.

d Remove the system card and lay it on a soft non-conductive surface.

e Unpack the new system card and lay it on a soft non-conductive surface.



4 Remove the DIMMS from the defective system card and install them on the new system card:

a Refer to “Exchanging the Memory on the System Card” on page 4-32 and perform Step 6 on page 4-32 to Step 11 on page 4-34.

5 Remove the hard disk from the defective system card and install it on the new system card:

a Refer to “Exchanging the Hard Drive on the System Card” on page 4-25 and perform Step 6 on page 4-26 to Step 9 on page 4-27.

b Reinstall the hard drive removed from the new card on the defective card.

c Continue with Step 6.

6 Install the New System Card:

a Install the new system card. Make sure the card is aligned with the plastic grooves and then slide it in until it is flush with the box. Hold the locking latches so that they are perpendicular to the face of the system card. With the card in full contact with the rear of the Multiaccess Enclosure, press the locking latches into the system card.

b Tighten the thumbscrews on the face of the adapter card clockwise.

c Plug the PCMCIA token-ring from the defective system card to the new system card.

d Plug the cables into the system card.

e Loosen thumbscrews on the SAC card.

f Unplug the SAC card from the board but keep it in its slot into the MAE.

g Power ON and verify the LEDs on the system card: The yellow LED of the system card and the hard drive must be OFF.

The Multiaccess Enclosure has a number of light-emitting diodes (LEDs) that indicate how the unit is functioning.

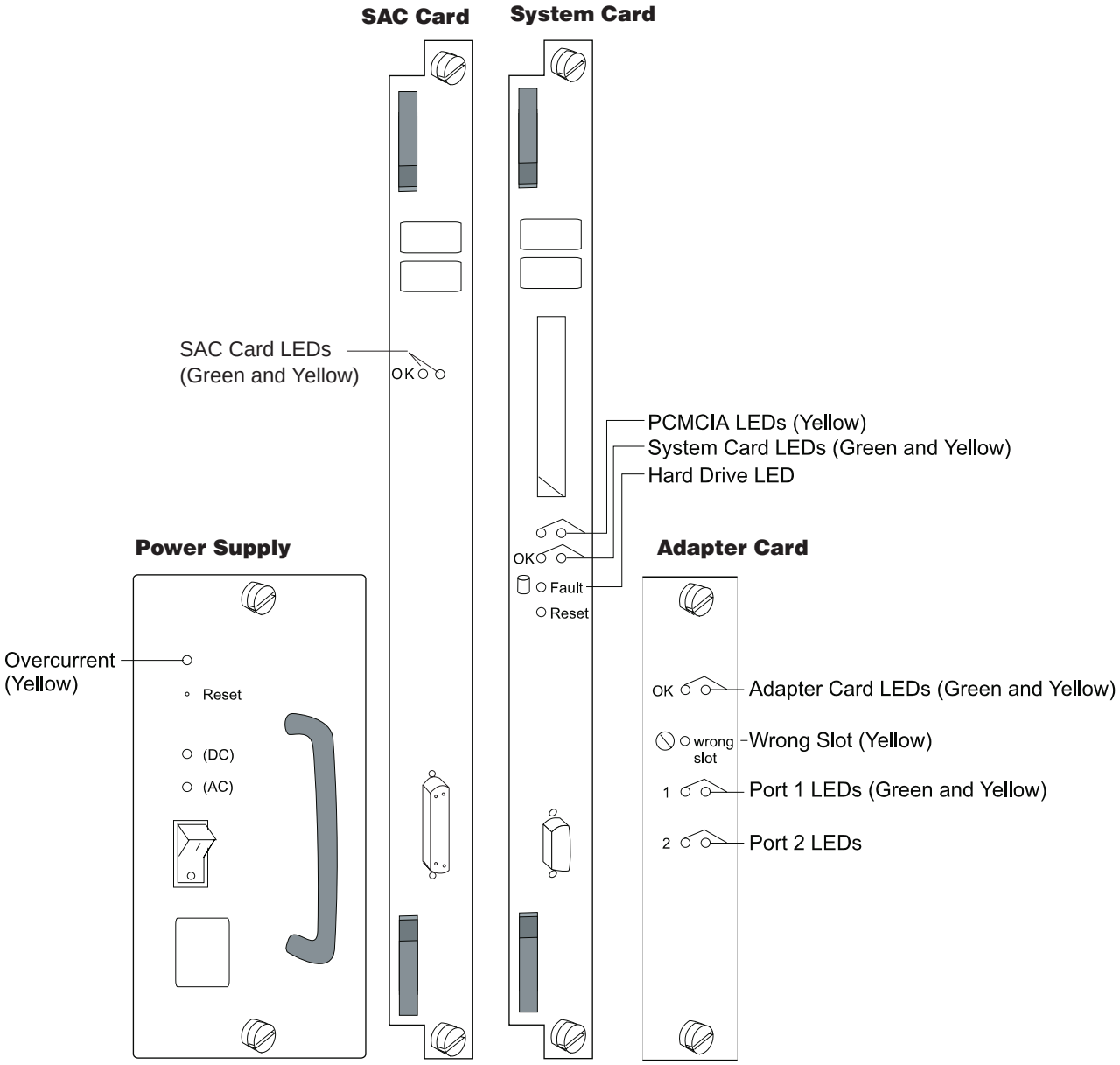
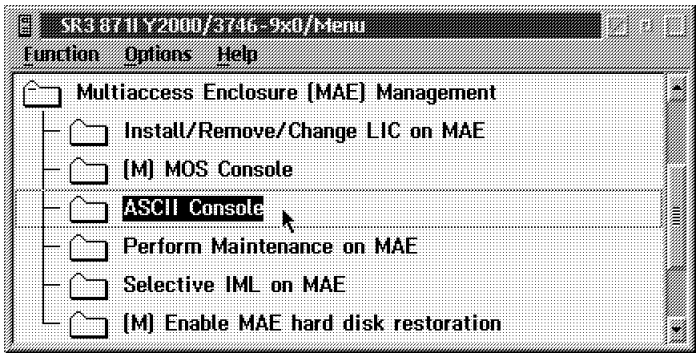


Figure 4-3. Power Supply, System Card, SAC card, and Adapter Card LEDs

7 Update the Vital Product Data:

a From the '3746-9x0 Menu', in **Multiaccess Enclosure (MAE) Management**, double click on **ASCII console**.



b Press **Enter**.

c Press **F1** if prompted (to prematurely terminate boot), then go to Step 7d. Otherwise change to manufacturing mode:

__ 1) When **V**: prompt appears type **mfgmode 0**, then press **Enter**.

__ 2) Enter **diags**, then press **Enter**. Continue with Step 7d.

d On the **System Management Services** window, select **4 - Utilities**, then press **Enter**.

e On the **System Management Utilities** window, select **9 - View or Set Vital Product Data**, then press **Enter**.

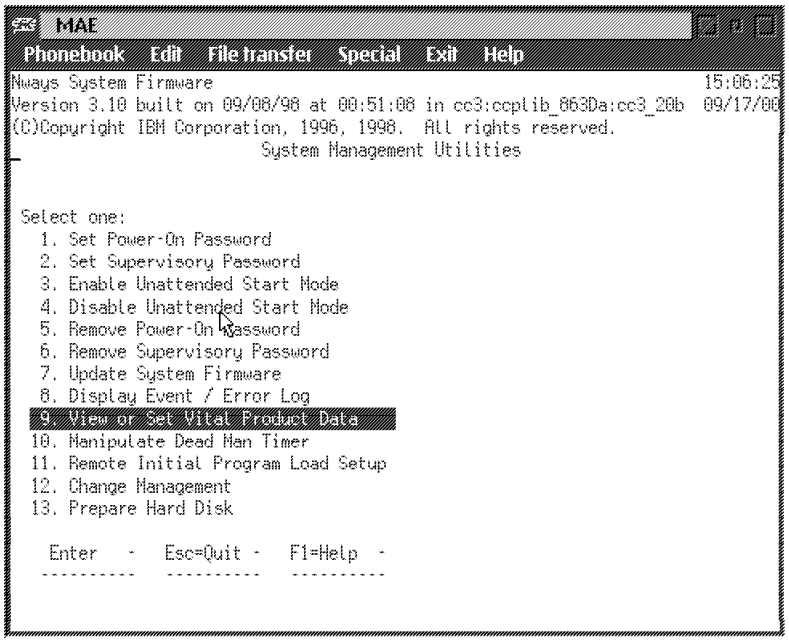


Figure 4-4. MAE

f From **View or Set Vital Product Data** window, select **Hardware Vital Product Data**, then press **Enter**.

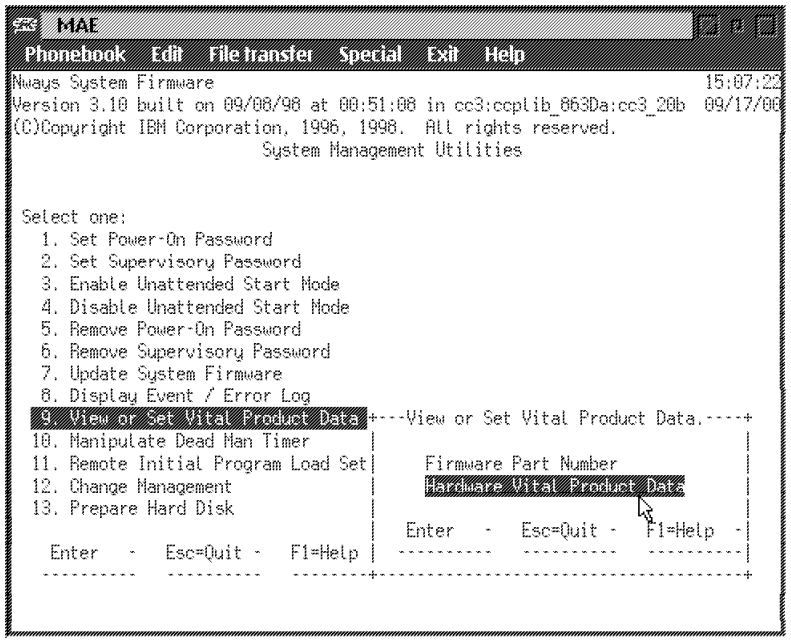


Figure 4-5. MAE

g Select **slot B**, then press **Enter**

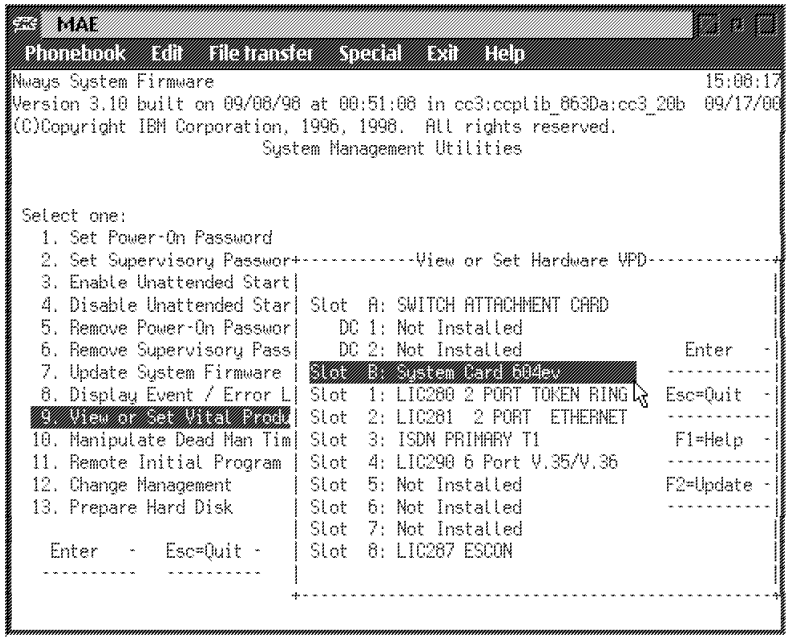


Figure 4-6. MAE

h In the BS entry field, type in the **MAE** serial number, then press **Enter**

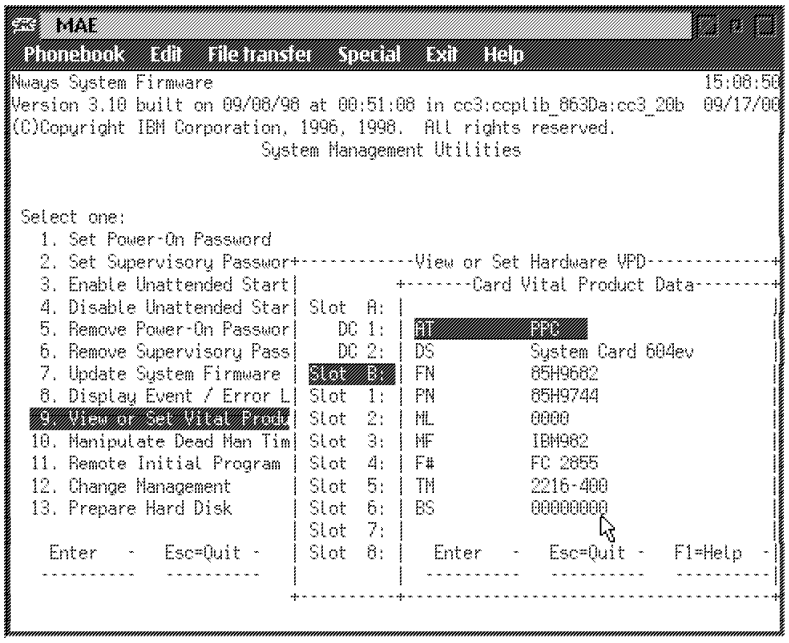


Figure 4-7. MAE

i Press ESC twice, then continue with Step 8

8 Set the IP addresses:

a Using the arrow keys, select **(11) Remote Initial Program Load Setup** and press **Enter**, **(1) IP Parameters** is selected, press **Enter** again.

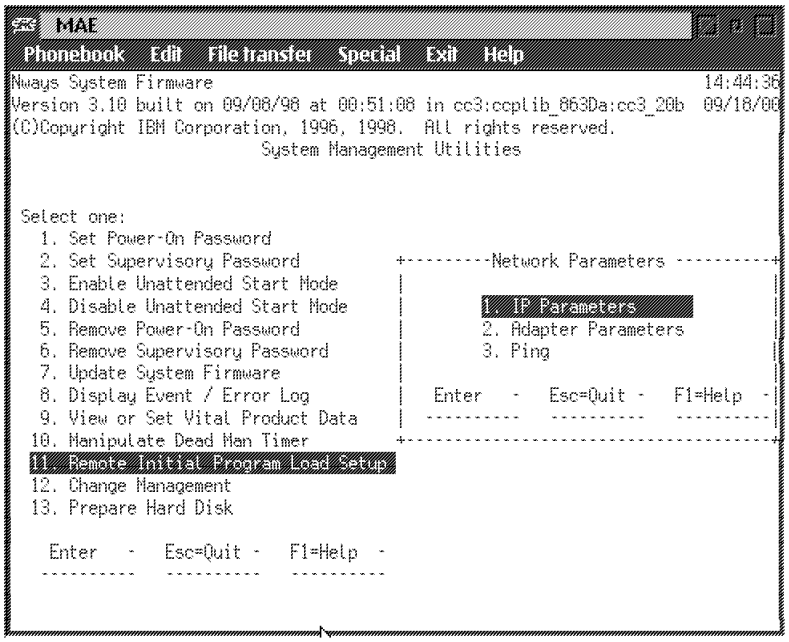


Figure 4-8. MAE

b Refer to Figure 4-9, and according to what you recorded in step **1d on page 4-6** , enter the:

- **Client IP address** (MAE address of the PCMCIA card),
- **Server IP address** (service processor address),
- **Gateway IP address** (if no router on the ring, enter the service processor IP address),
- **subnet mask**,

then press **Enter**.

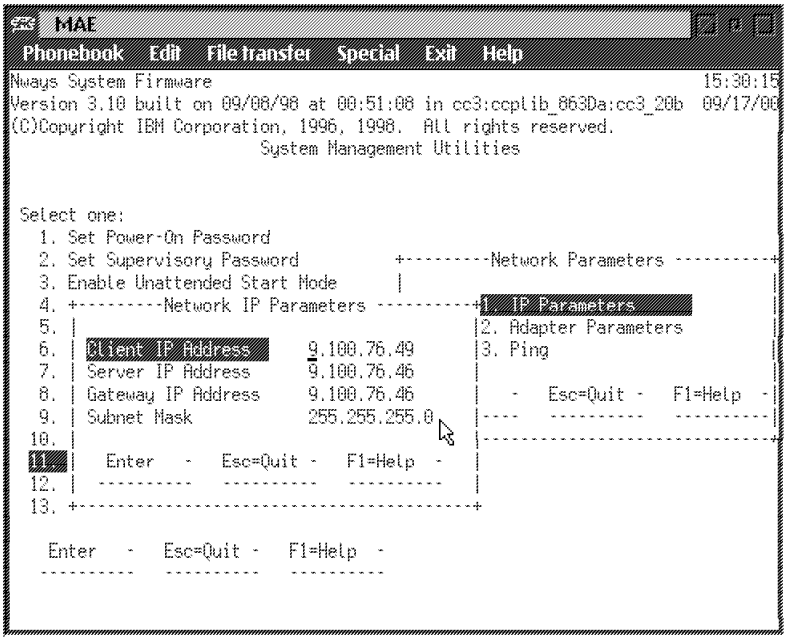
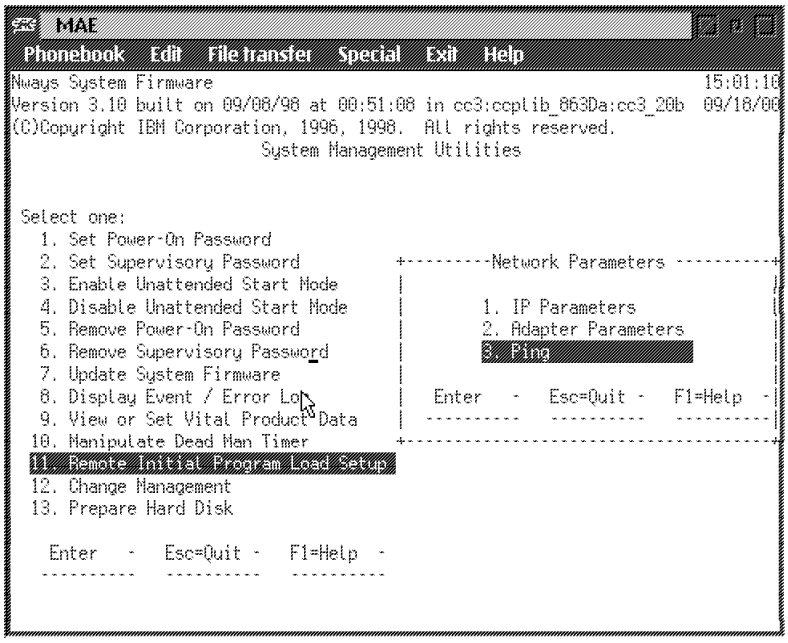
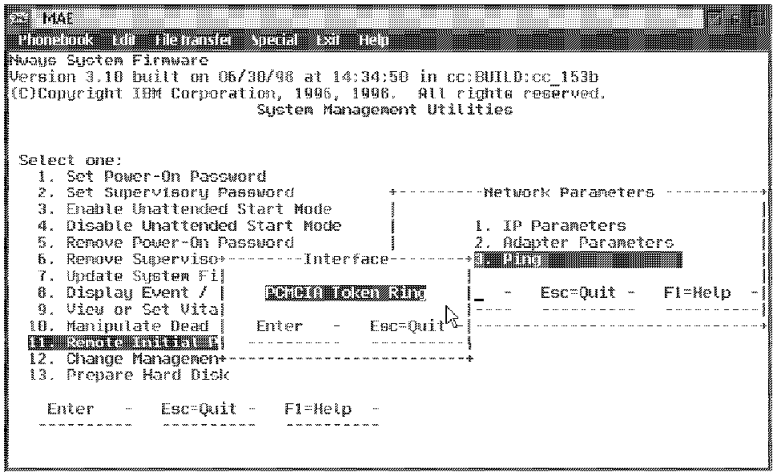


Figure 4-9. MAE

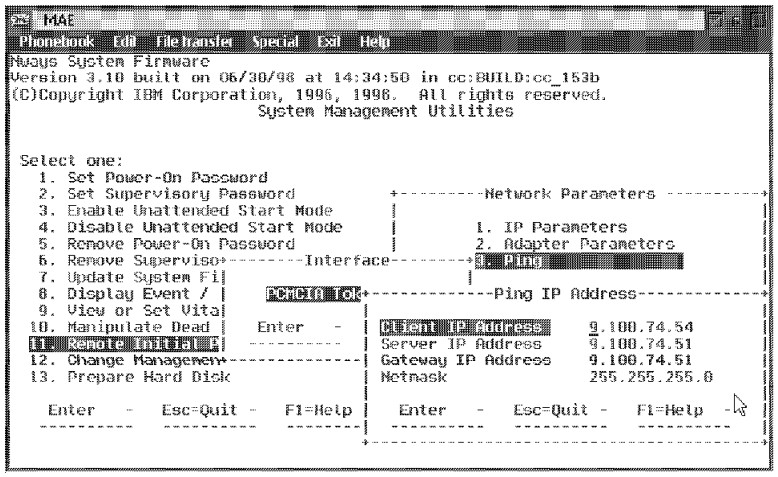
C Select **Ping**, then press **Enter**.



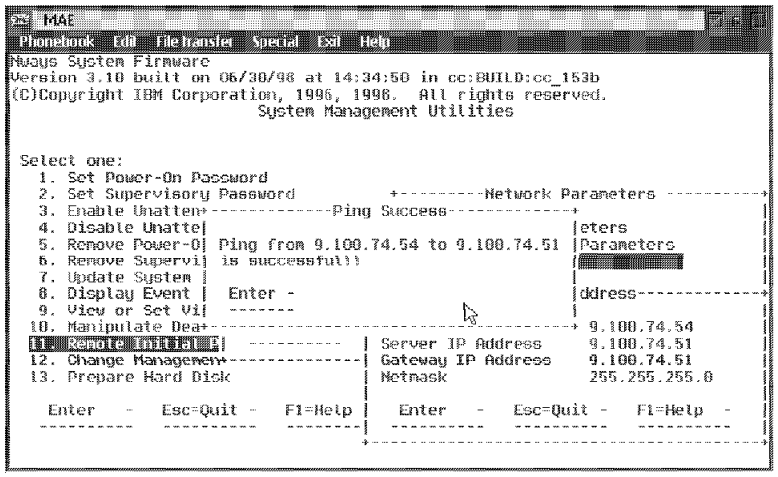
d When **PCMCIA Token Ring** is prompted, press **Enter**.



e On the **Ping IP Address** press **Enter**



f Wait for the test result. Verify that the ping is successful.



If not:

- Go to Step 8b on page 4-15 and check or modify the addresses.
- Check the speed (16 Mbps) using the **Adapter Parameters** option in the **Network Parameters** window.
- Check the cables

Otherwise continue with the next Step.

g Press **Enter**.

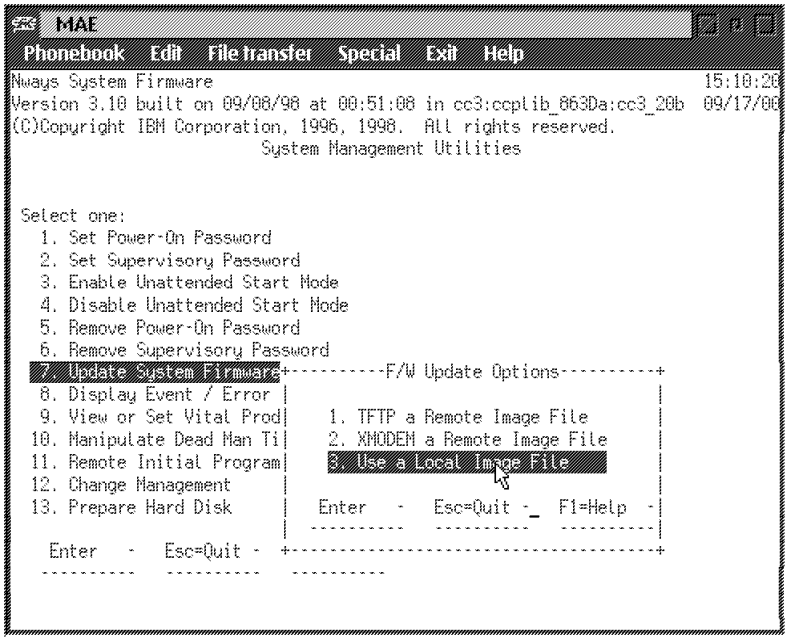
h Press the **Esc** key 3 times to exit.

i Continue with Step 9.

9 Update the system firmware:

a Select **7. Update System Firmware** and press **Enter**.

b From the **F/W Update Options** menu, select **3. Use a Local Image File** then press **Enter**.



c Follow the prompts, enter the **Local File Name**

`c:\firm.ld`

then press **Enter**.

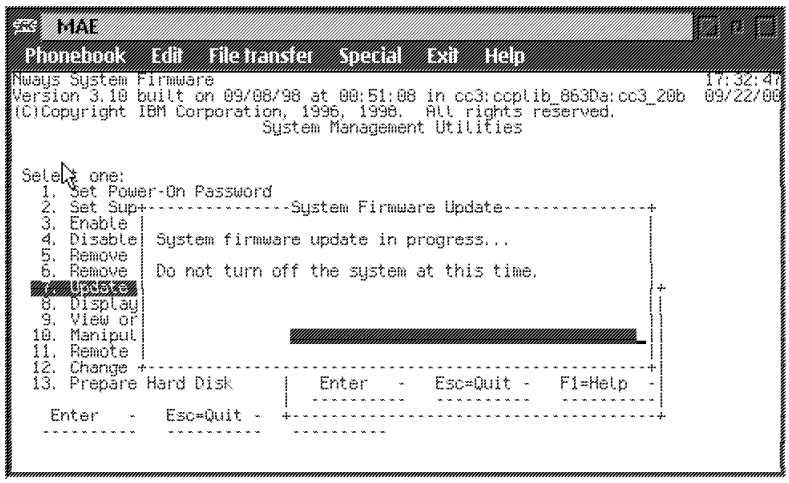
d When the **System Firmware Update** window is displayed, press **Y**.

e In the **System Firmware Update** window, press **Enter**.

f When the message "Firmware recovery image has been created successfully" is displayed press **Enter**.

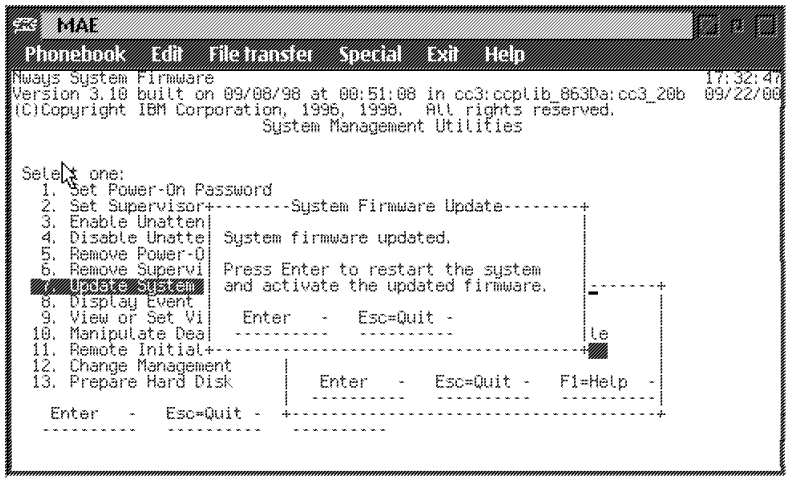
g If a **System Firmware Update** confirmation window is displayed, type **Y**.

h The following window is displayed:



Note: Do not switch the system off. The process erases the old firmware and copies the new firmware into flash memory. If the machine is powered off before the process is complete, you will need to reload the firmware from the recovery image.

i A completed message appears when the firmware is updated.



j Press **Enter**.

k Follow the prompts (do not press F1 key) and press the space bar (when required) to obtain the prompt:

```
Config (only)>
```

The message:

```
SAC mgr init failure
```

is displayed. This is a normal message because the SAC card is unplugged.

10 Reinstall the SAC Card:

a Power OFF the MAE.

b Replug the SAC card previously unplugged.

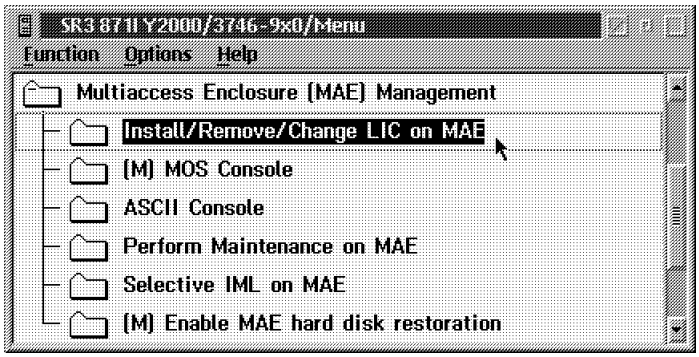
c Tighten the thumbscrews on the face of the adapter card clockwise.

d Power ON the MAE and wait the end of the reboot.

11 Reinstall the MAE:

a Return to the **3746/9x0 Menu**, select **Multiaccess Enclosure (MAE) Management**.

b Double click on **Install/Remove/Change LIC on MAE**.



c Wait until the following window is displayed, then click on **Install MAE...**.

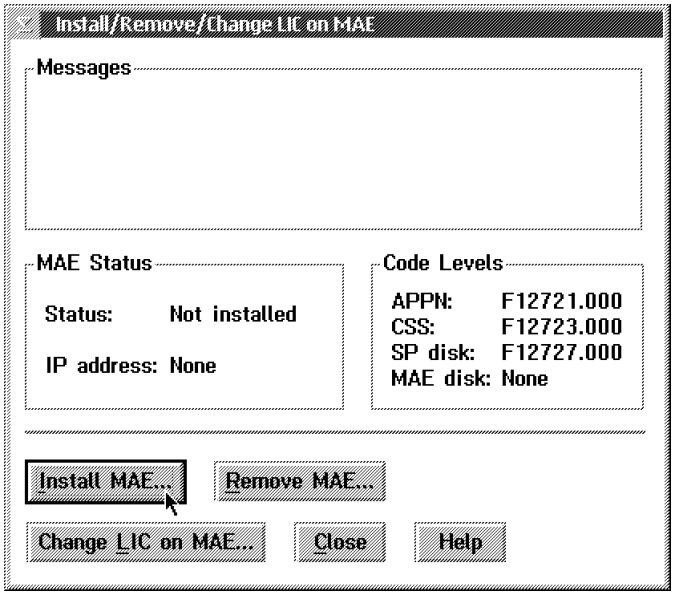


Figure 4-10. Install Multiaccess Enclosure

d Enter the **MAE IP address** (value recorded at the beginning of the procedure), then click on **OK**.

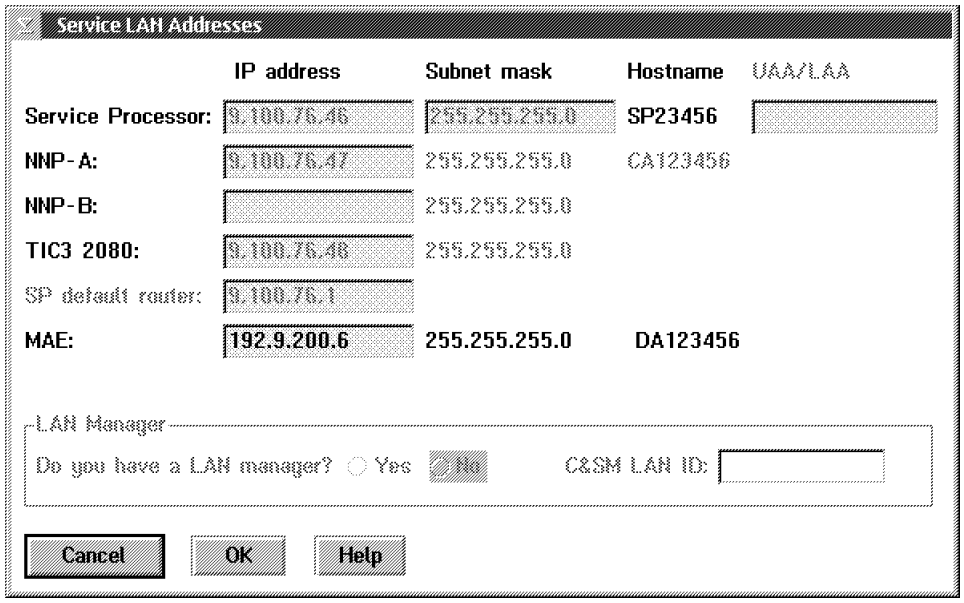


Figure 4-11. Service LAN Addresses

e Click on **Yes** to record your parameters.

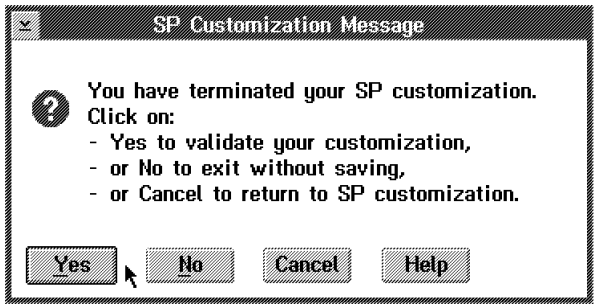


Figure 4-12. SP Customization Message

f When completed, click on **OK**.

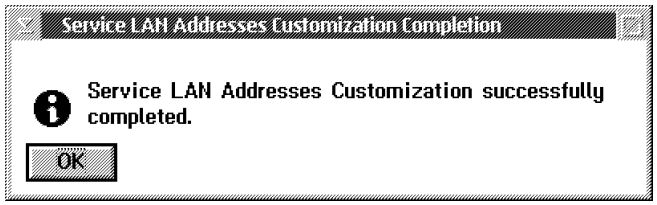


Figure 4-13. SP Customization Completed

g The MAE code is now being installed (it takes about 10 mn), when completed click on **Close**.

Note: Verify that the MAE link icon is **green**.

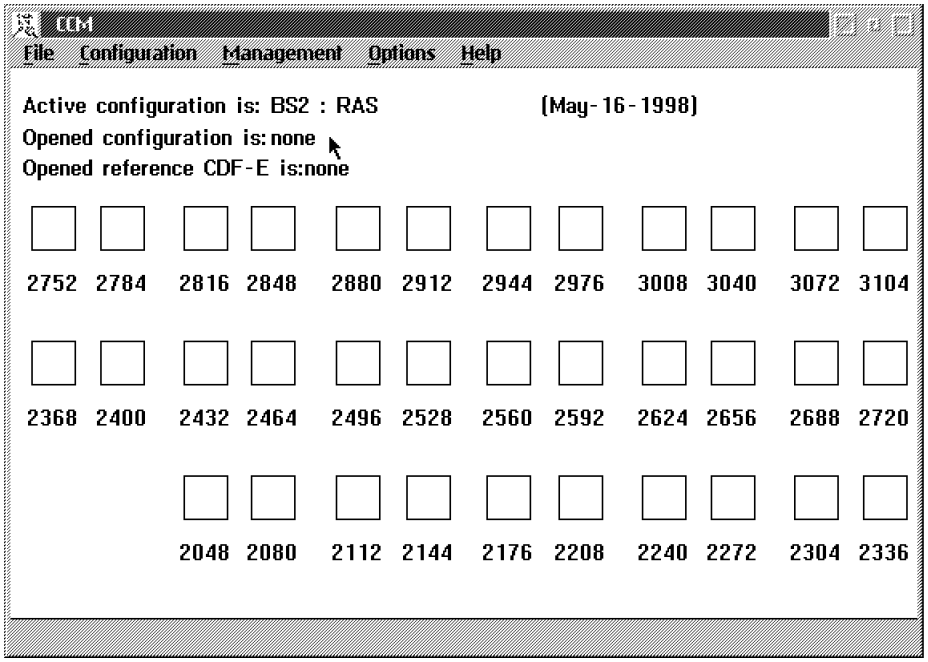
12 Activate CCM Configuration:

a Return to the **3746-9x0 menu**,

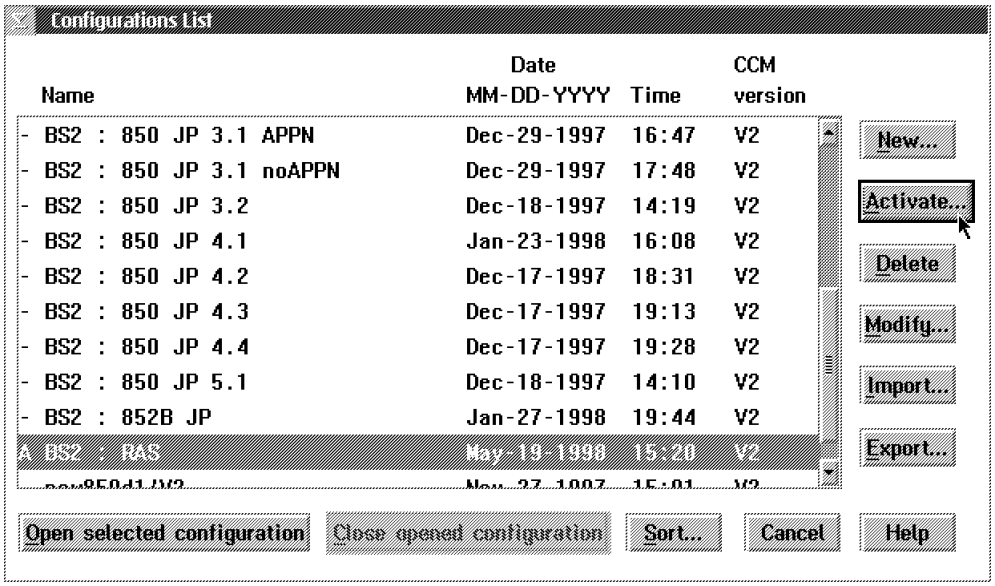
b Click on the **Network Node Processor (NNP) Management** option.

c Double click on the **CCM Controller Configuration and Management** option.

d The **CCM** window is displayed:



e Click on **File** in the title bar, then select **Open**. The **Configuration List** window is displayed:



f Select the name of the configuration that you want activate, then click on **Activate**.

g Follow the prompts and wait until the following window is displayed.

Click on **OK**.

h The MAE is rebooting.

i Wait for the MAE IML complete. Be sure that the 3746 icon comes green.

13 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

14 Go to “CE Leaving Procedure” on page 5-60.

Exchanging the SAC

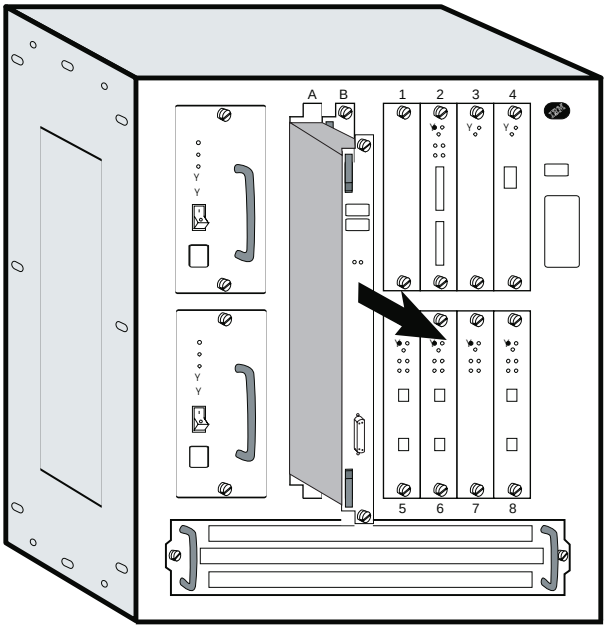
Attention:

1. Be sure that all the traffic has been stopped on the Multiaccess Enclosure.
2. The SAC is **not** hot pluggable.

1 Switch OFF each power supply.

2 Label the cable on the SAC. Unplug the cable.

3 Loosen thumbscrews on the SAC.



4 Remove the defective SAC.

5 Install the new SAC. Make sure the card is aligned with the plastic grooves and then slide it in until it is flush with the box. Hold the locking latches so that they are perpendicular to the face of the system card. With the card in full contact with the rear of the Multiaccess Enclosure, press the locking latches into the system card.

6 Tighten the thumbscrews on the face of the adapter card clockwise.

7 Plug the SIE/SAC cable to the new SAC.

8 Power ON and verify the LEDs. See “Adapter Card Status” on page 3-3.

9 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

10 Go to “CE Leaving Procedure” on page 5-60.

Exchanging the Hard Drive on the System Card

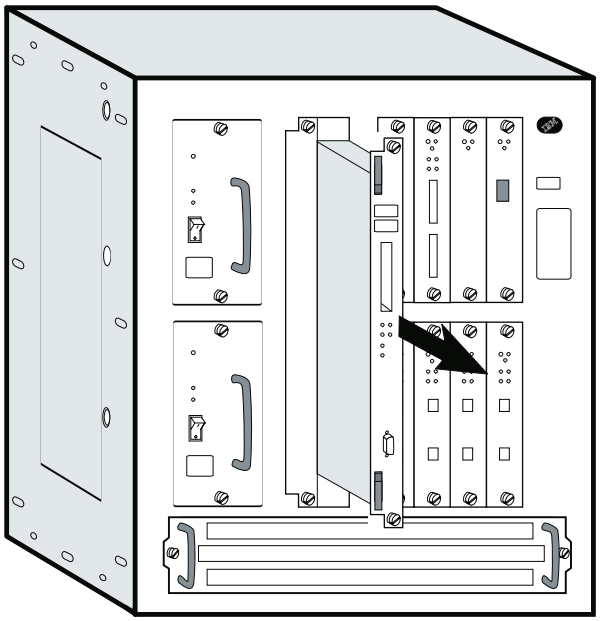
Attention: The System Card is ***not*** hot pluggable.

1 Switch OFF each power supply.

2 Label the cables on the system card. Unplug the cables and the PCMCIA card.

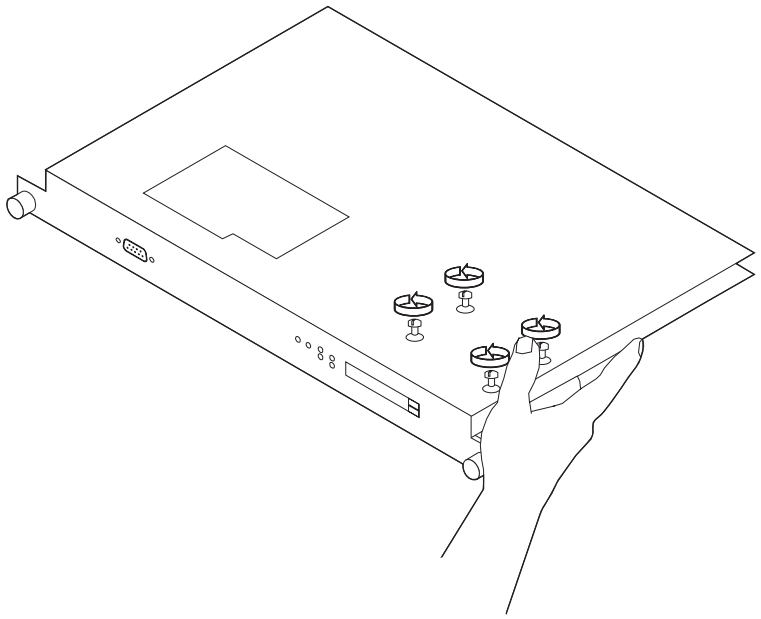
3 Loosen thumbscrews on the system card.

4 Remove the system card and lay it on a soft non-conductive surface.

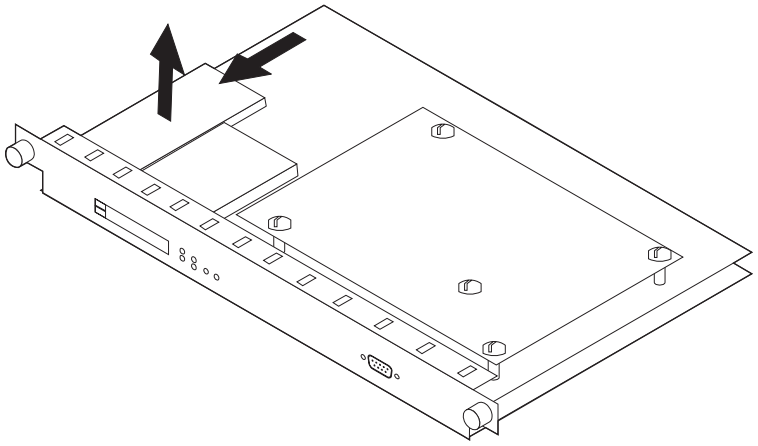


Attention: In the following Step, be sure to support the hard drive to avoid damaging the pins when the screws are removed.

5 Lay the system card on a soft non-conductive surface.



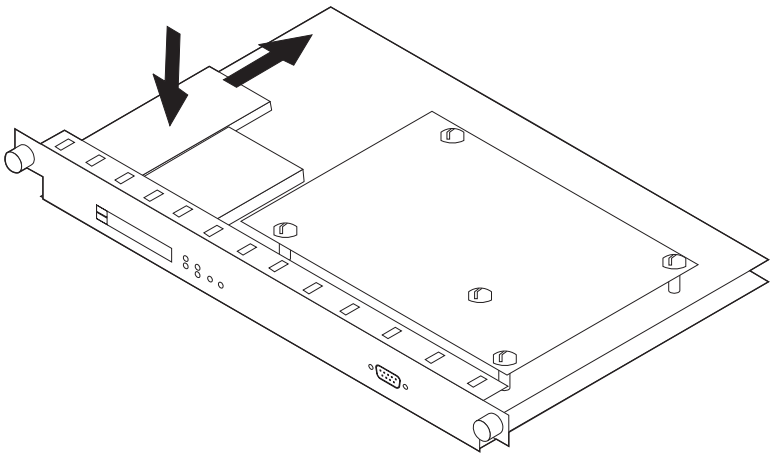
6 On the bottom of the system card, remove the four screws (with a screw starter) while holding the hard drive in place.



7 On the reverse side of the system card, disconnect the drive from the connector and lift it off the system card.

8 Center the new hard drive inside the lines on the system card.

Note: If you do not center the hard disk drive, the electrical pins on the hard drive will be visible next to the hard drive connector on the system card. Install the new hard drive by reversing Steps 6 and 7 above. Be sure to support the hard drive while installing the screws.



9 **If your are replacing the system card return to “Exchanging the System Card” on page 4-5 Step 5b on page 4-10** .

10 Install the system card. Make sure the card is aligned with the plastic grooves and then slide it in until it is flush with the box. Hold the locking latches so that they are perpendicular to the face of the system card. With the card in full contact with the rear of the Multiaccess Enclosure, press the locking latches into the system card.

11 Tighten the thumbscrews on the face of the adapter card clockwise.

12 Plug the PCMCIA token-ring from the defective system card to the new system card.

13 Plug the cables into the system card.

14 Record the MAE IP Address

a Double click on the **Service Processor** icon.

b Click on **Configuration Management**, then double click on **SP customization**.

c Check **Service LAN addresses**, then click on **Next>>**.

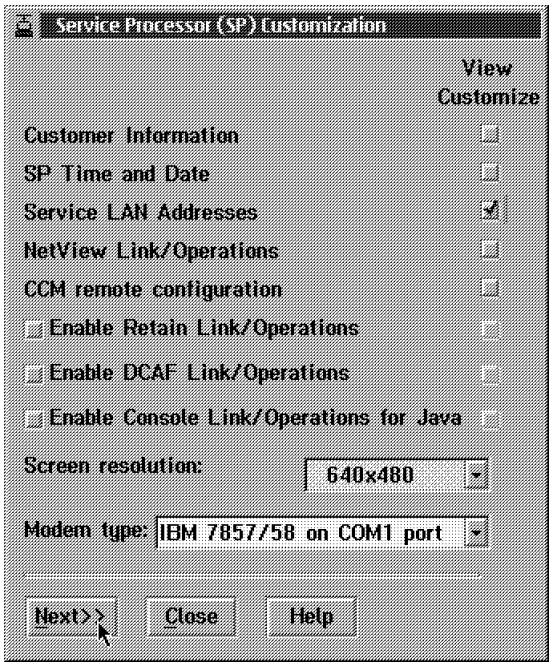


Figure 4-14. Service Processor Customization

d Record the IP address of the **MAE**.

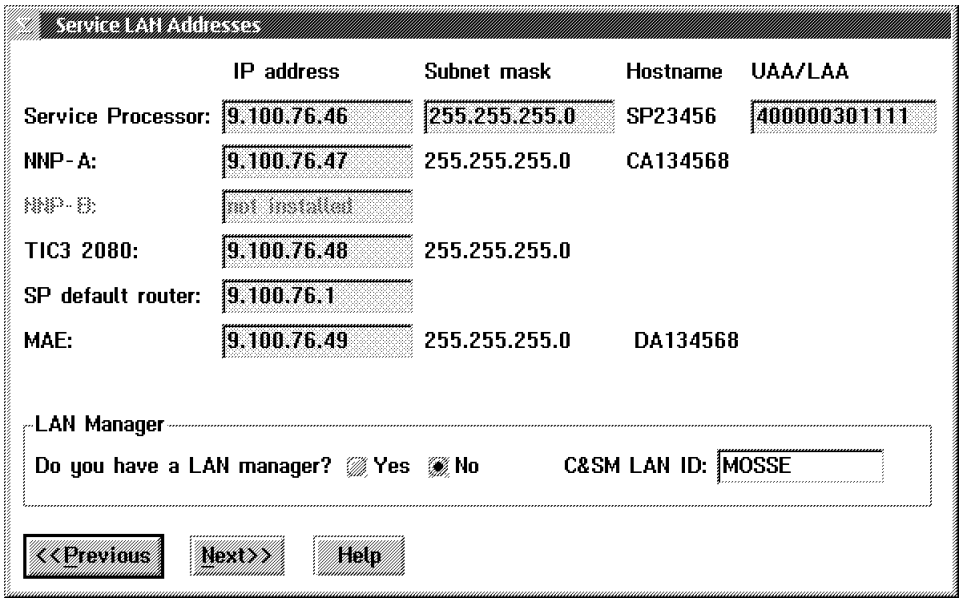


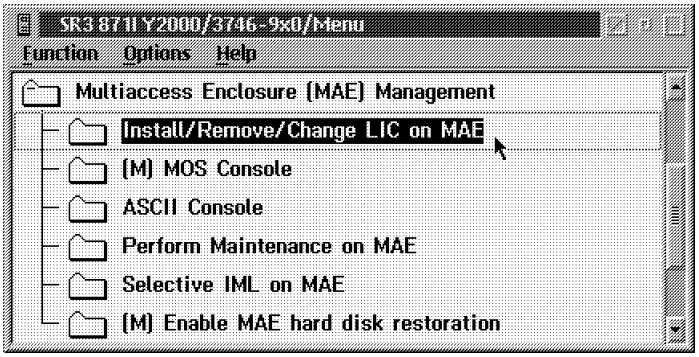
Figure 4-15. Service LAN addresses

e Then to exit from SP customization, click on **Previous**, **Close**, and **NO**.

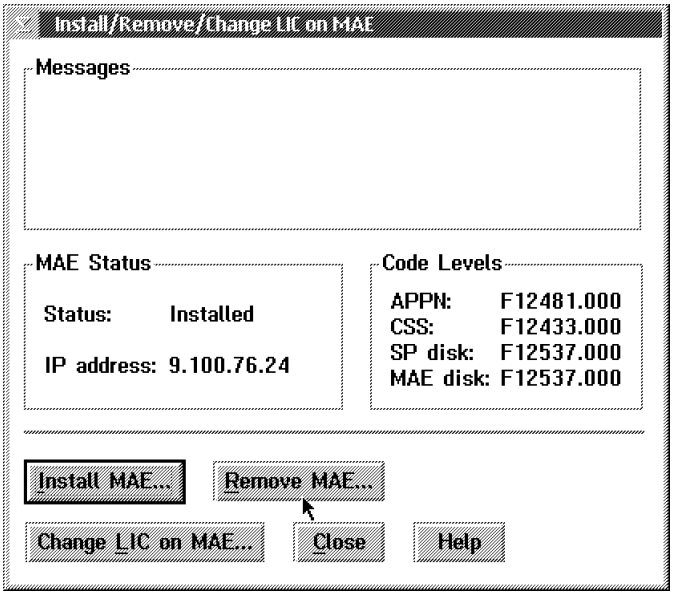
15 Return to the **3746-9x0 Menu**, click on **Multiaccess Enclosure (MAE) Management**. The following window is displayed.

16 Remove the MAE to avoid reboot after 40 minutes:

a Click on **Multiaccess Enclosure Management**, then double click on **Install/Remove/Change LIC on MAE**.



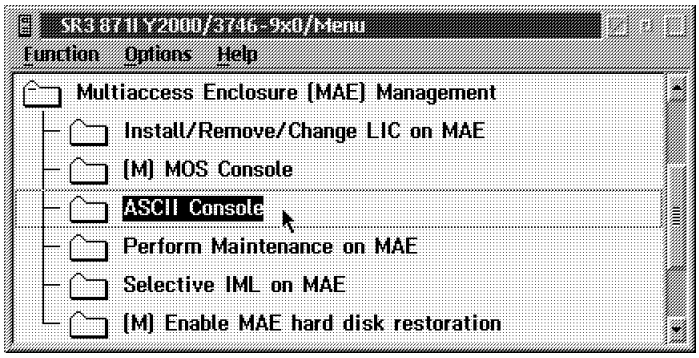
b Click on **Remove MAE**.



c Click on **Yes** to confirm.

d When **Operation successfully Completed** is displayed, click on **Close**.

17 Double click on the **ASCII Console** option.



18 Power ON and verify the LEDs. See “Adapter Card Status” on page 3-3.

19 Several windows are displayed during tests. Wait until the **Boot Information** window is displayed.

20 Press **F1** when required (to prematurely terminate boot) .

21 Enter the Multiaccess Enclosure supervisory password when required: 2216.

22 In the **System Management Services** window, select **4. Utilities** and press **Enter**.

23 From the menu, select **13. Prepare Hard Disk** and press **Enter**.

24 On the two following **Attention** windows press **Y**. The MAE will reboot and format the hard disk. Follow the prompts.

- If no errors occur, press **F1** when prompted, then continue with Step 25 on page 4-31.
- If error code 30002000 occurs during format, do the following:

a In the **System Management Services** window, select **Select Device to test** and press **Enter**.

b Select **Test IDE devices**.

c Press the **F4**

for Parm Setup

d Select **Run Interactive Test** and **Stop on Error**.

e Press **Enter** and **F6** to begin the tests.

f Several screens are displayed, follow the prompts.

g In **IDE Subsystem** window, select **Format IDE device**, and press **Enter**.

Attention- This formats the hard disk and destroys all data on the hard disk.

h Follow the prompts to start HDD formatting.

i At the end of formatting the message **Format Complete Successful** is briefly displayed. Follow the prompts to return to the **System Management Services** menu. When it is done return to Step 23.

25 Select **4. Utilities**, the **System Management Utilities** is displayed.

26 Reload the firmware to the hard disk (see “Updating System Firmware” on page 5-16). When it is done continue with the next Step.

27 Restore the operational software on the new hard disk (see “Restoring the Image Code of the Multiaccess Enclosure Hard Disk” on page 5-30).

28 Activate the configuration (refer to “Activate MAE Configuration Via CCM” on page E-14).

29 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

30 Go to “CE Leaving Procedure” on page 5-60.

Exchanging the Memory on the System Card

The multiaccess enclosure comes with a minimum of 64 MB (one dual inline memory module [DIMM]). There are slots for two DIMMs on the system card.

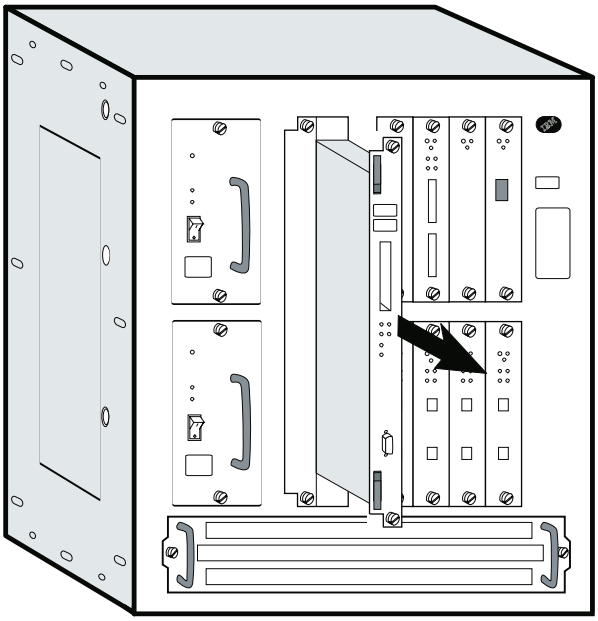
This procedure can be used for removing faulty DIMM modules or to install memory upgrades to your multiaccess enclosure.

1 Switch OFF each power supply.

2 Label the cables on the system card. Unplug the cables and the PCMCIA card.

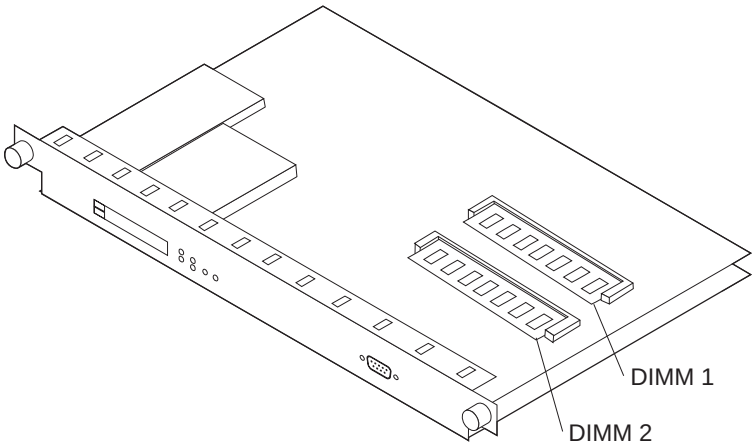
3 Loosen thumbscrews on the system card.

4 Remove the system card and lay it on a soft non-conductive surface.



5 Identify the faulty memory module. See the following for socket designations.

6 Remove the DIMMs by pulling down the lever at the edge of the DIMM socket. (Use your thumbnail or a small non-metallic device to gently move the spring latch away from the end of the DIMM.) The DIMM will automatically be pushed partially out of the slot.



7 Gently slide the DIMM module out of its connector socket.

8 Remove the DIMM, in its antistatic bag, from its shipping container.

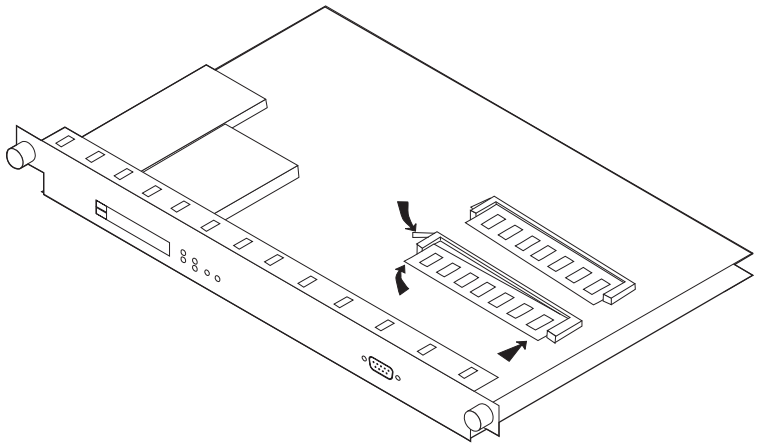
Attention: Electrostatic discharge (ESD) can damage the static-sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

- Do not remove the DIMM until you are ready to insert it into the multiaccess enclosure.
- Use correct grounding techniques when inspecting and installing the DIMM. Use a foot strap or grounding mat, or wear a grounded static discharge wrist strap, or touch a grounded rack or other source of ground before you handle the DIMM.

9 Remove the DIMM from the antistatic bag. Inspect it for damage. Always handle the DIMM by the ends (preferably grasp it between the middle finger and thumb; do not touch the components). If the DIMM appears to be damaged, return it to the antistatic bag and contact the supplier.

10 Insert the replacement DIMM into the appropriate slot. (Grasping the DIMM between the middle finger and thumb, place it connector edge down into the DIMM socket. Applying slight pressure to the top edge of the DIMM, move it forward until it is correctly aligned and snaps in place.)

The lever will snap back into place as the DIMM is fully inserted.



11 **If you are coming from the “Exchanging the System Card” on page 4-5, return to Step 5 on page 4-9. Otherwise continue with the following Step.**

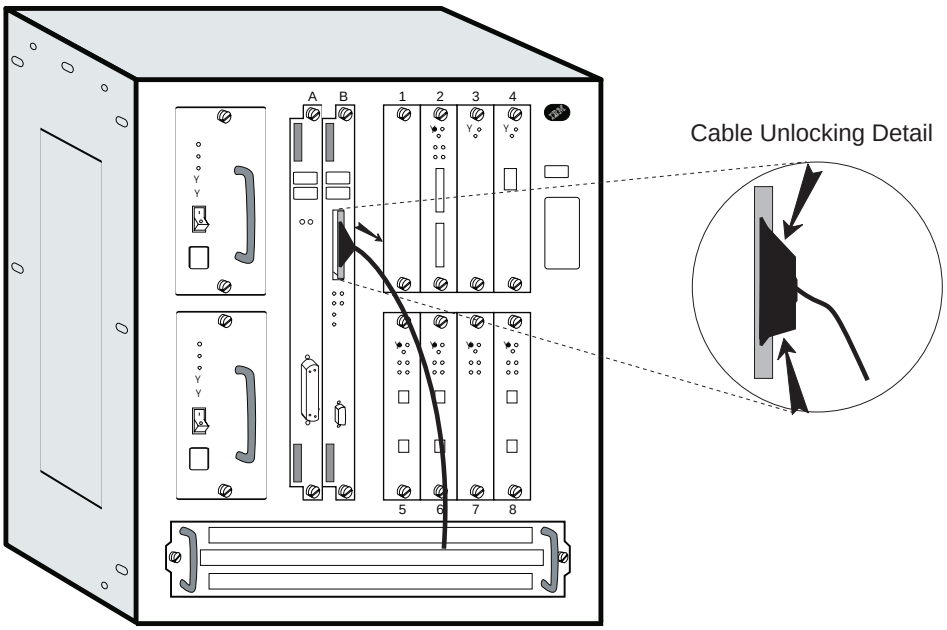
12 Go to “Exchanging the System Card” on page 4-5.

Exchanging the PCMCIA Card

Attention

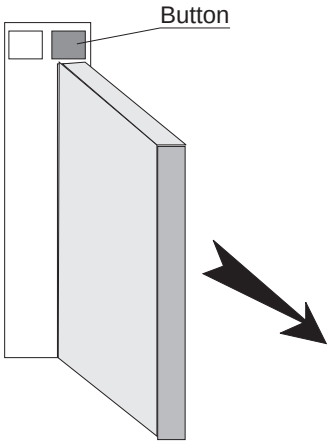
The PCMCIA card is hot pluggable, but the customer traffic must be stopped on the multiaccess enclosure.

1 Remove the cable from the PCMCIA Card.



2 Press the upper button to remove the PCMCIA card from the multiaccess enclosure.

Detail of PCMCIA
Card Locking



3 Plug the new PCMCIA card into any slot of the system card of the multiaccess enclosure.

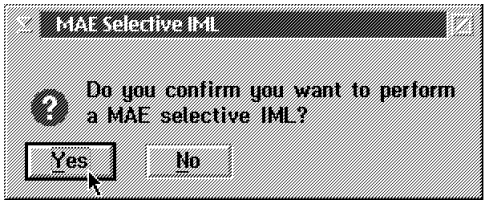
4 Reconnect the cable previously removed to the PCMCIA card.

5 Return to the **3746/9x0 Menu**.

6 Click on the **Multiaccess Enclosure (MAE) Management**.

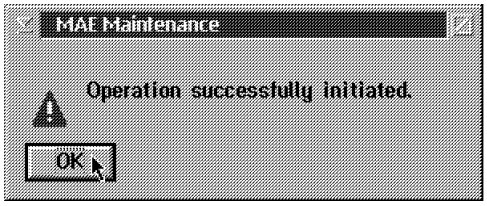
7 Double click on the **Selective IML on MAE**.

8 The following window is displayed:



Click on **Yes**.

9 The following window is displayed:



Click on **OK**.

10 You should first received an alarm message saying: "MAE Selective IML in Progress".

11 Click on **OK**.

12 Wait until you received an alarm message saying: "MAE IML Complete", then click on **OK**. The icon **MAE Link** should be green.

13 Check and modify if necessary the PCMCIA speed setting using the following procedure.

PCMCIA Speed Setting

1 Follow the procedure “Step 6 - Customizing the MAE” on page 1-21 from Step **1** to Step **5**, then continue with Step **2** .

2 In the following window select **11. Remote Initial Program Load Setup** option, then press **Enter**.

3 Select **Adapter Parameter** option, then press **Enter**.

4 Select **PCMCIA Token-Ring** option, then press **Enter**.

5 Select **View or Set Parameters** option, then press **Enter**.

6 Select **Ring Speed** option, then press **Enter**.

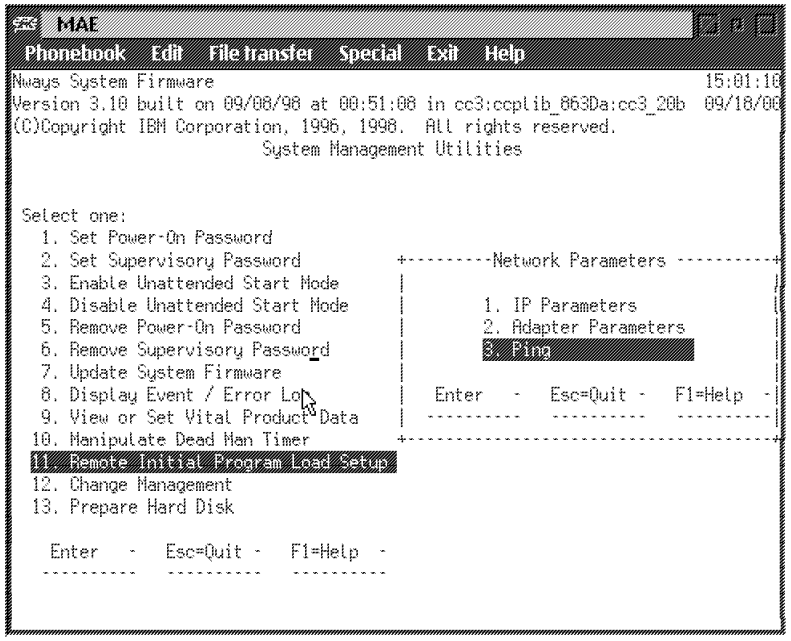
7 Select speed: **16Mb** via the arrow keys and space bar to validate, then press **Enter**.

8 Wait and when prompted, press **PF2** to save.

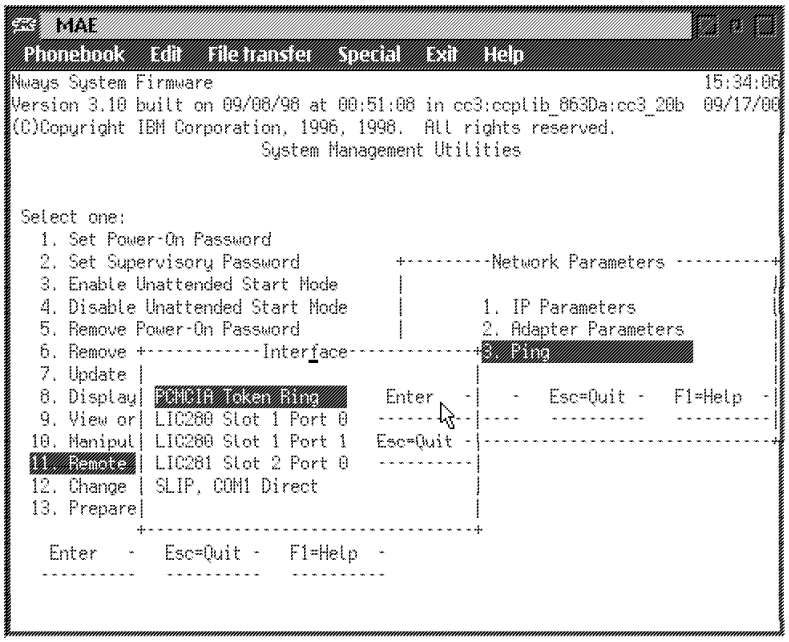
9 Press **Esc** to quit the different windows to return to the **Network Parameters** window and continue with “PCMCIA Checking.”

PCMCIA Checking

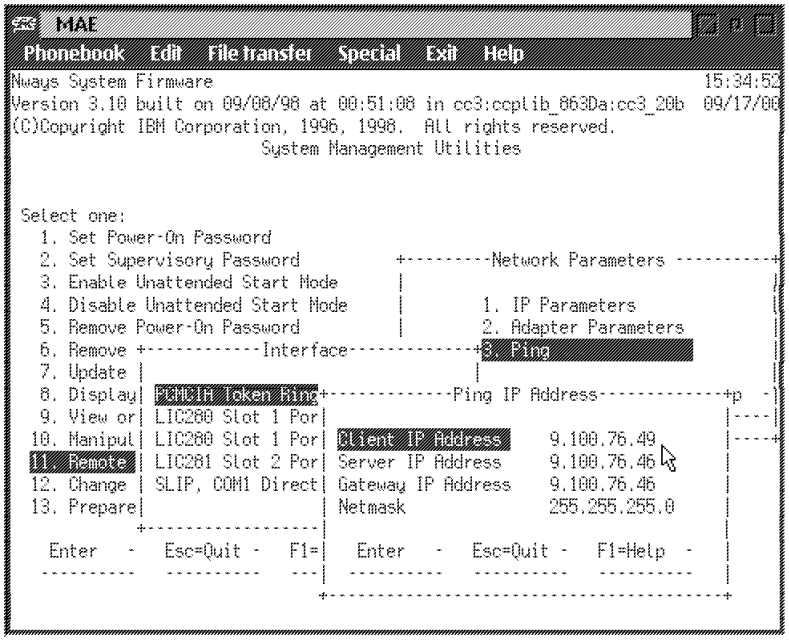
1 In the **Network Parameters** window, select **Ping** option, then press **Enter**.



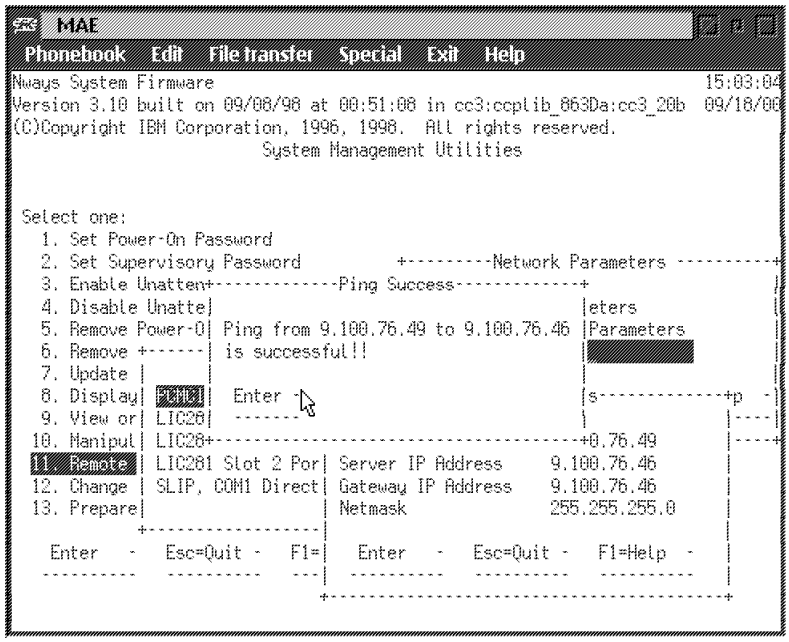
2 Select **PCMCIA Token Ring** option in the **Interface**, then press **Enter**.



3 Press **Enter**.



4 You should obtain a window similar to the following.



5 Is the test successfully?

Yes Continue with Step **6** .

No Call your support.

6 Press **Enter**, then **Esc** to quit the different windows to return to the **System Management Services** window, press **PF3** to reboot.

7 Follow the prompts until the following message is displayed: "Please press the space bar to obtain the console".

8 Press the **Space bar**, "Console Granted to this interface" is displayed.

9 Close the MAE window.

10 You are now on the **3746-9x0/MultiAccess Enclosure (MAE) Management**.

11 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

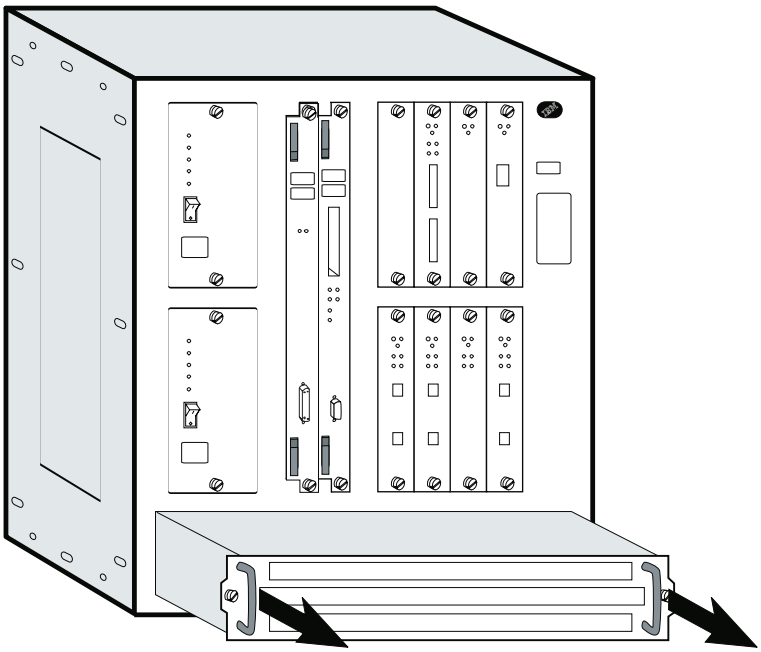
12 Go to “CE Leaving Procedure” on page 5-60.

Exchanging the Fan Tray

Attention: The fan tray is **not** hot pluggable on multiaccess enclosure that have a first-generation system card (PN 85H7916 or 30L5820). You must shut down the multiaccess enclosure completely before replacing the fan tray. If the fan tray is removed, or if two or more fans fail, the box may shut down.

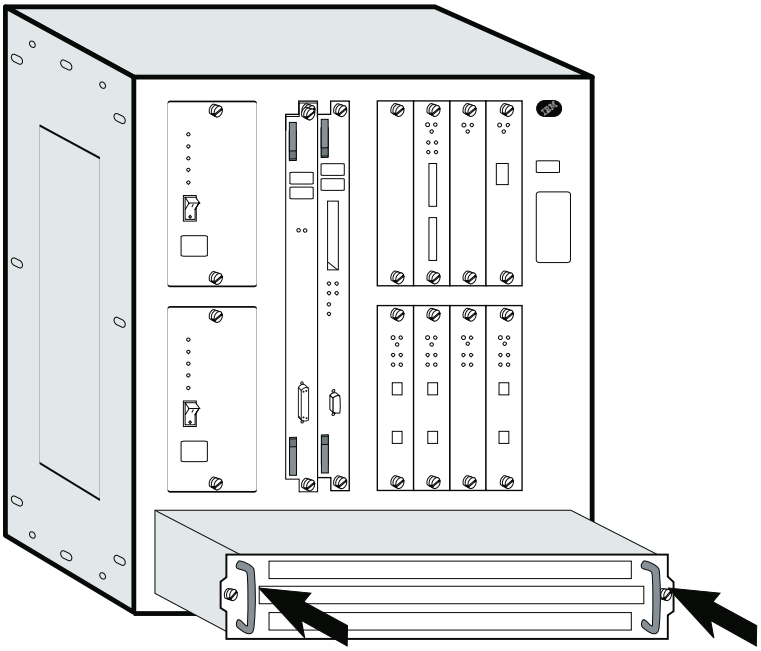
The fan tray **is** hot pluggable on multiaccess enclosure that do not have a first-generation system card (PN 85H7916 or 30L5820): however, you must install the new tray within **3 minutes** of removing the defective tray to prevent overheating the multiaccess enclosure.

1 Loosen the two thumbscrews that secure the fan tray and remove the fan tray.



2 Slide the new fan tray in until the tabs on the back of the fan tray are in the slots. This aligns the connectors with the plugs.

3 When the fan tray is flush with the box, tighten the two thumbscrews.



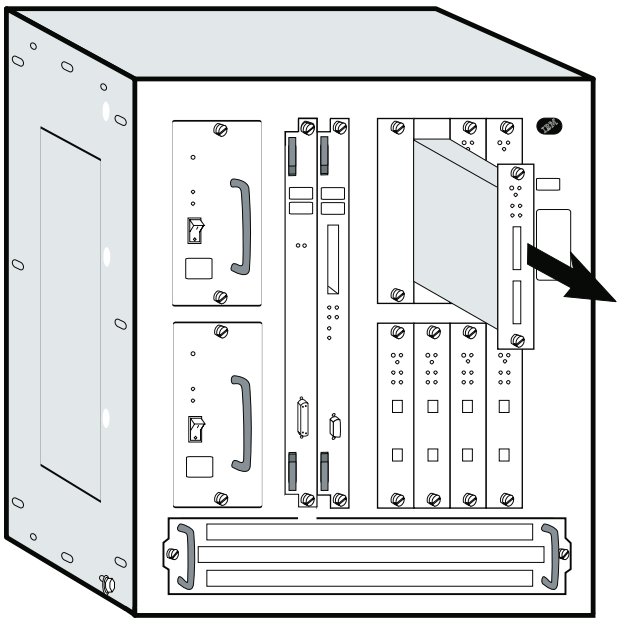
4 Verify the LEDs. See “Adapter Card Status” on page 3-3.

5 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

6 Go to “CE Leaving Procedure” on page 5-60.

Exchanging an Adapter

Note: The adapter you replace must be of the same type as the original. Otherwise, you will need to reconfigure. See the *3746 Nways Multiprotocol Controller Model 900 and 950: Controller Configuration and Management: User's Guide*, SH11-3081.



1 Locate the adapter module to be replaced.

Attention:

a. Adapters are hot pluggable, but all adapter ports must be disabled before cables are removed. See “Suspend Traffic on an Adapter Port” on page F-3.
b. If an adapter is removed prior to disabling the ports, a machine check can occur.
c. If you are removing a serial adapter (EIA-232E/V.24, V.35/V.36, X.21 which are LICs 282, 290, and 291), you need to disable the WAN Reroute process before you remove the adapter. (See “Disabling Interfaces that Have WAN Reroute Enabled” on page F-4).
d. If you removing a Parallel Channel Adapter (LIC 299), perform the steps in “Removing Channel Adapters” on page 3-43 beginning with Step 1. (This require a channel-trained service person.)

2 Label the cables for proper reconnection.

3 Loosen the screws (if present) that secure the cable or cables.

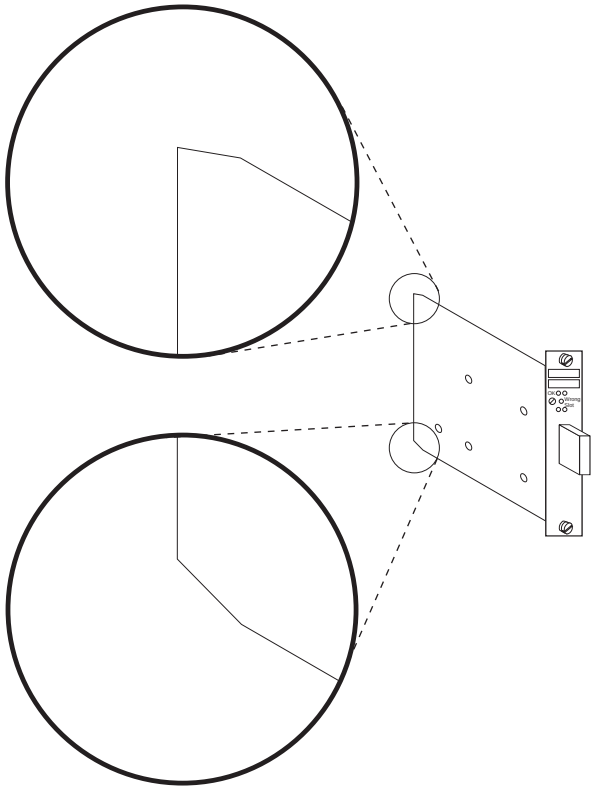
4 Remove the cable or cables.

Attention: You must turn the adapter's thumbscrews simultaneously when unseating or seating the adapter during removal or installation. By doing so, you prevent stripping the thumbscrews. If you strip the thumbscrews, you may not be able to seat or reseat the adapter properly.

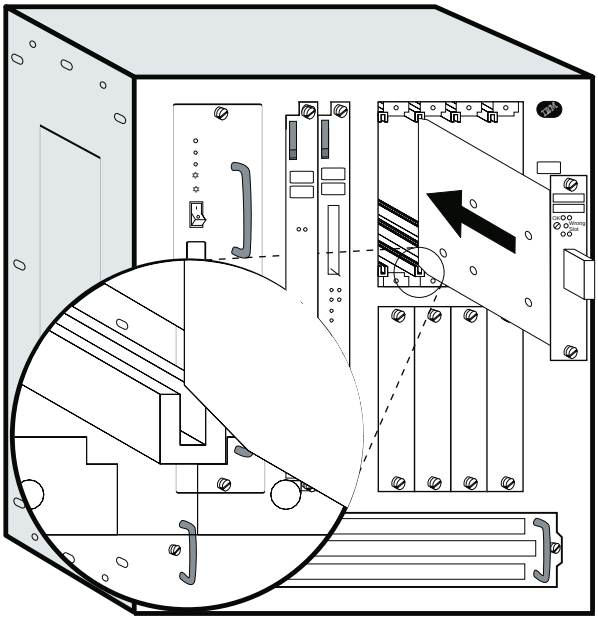
5 Loosen the screws on the adapter.

6 Remove the adapter from its location.

If you are replacing LIC 297 or 298 (4-port ISDN PRI/Channelized adapter), remove the daughter cards from the old adapter and put them onto the new adapter (see “Exchanging the ISDN Daughter Card” on page 4-46).

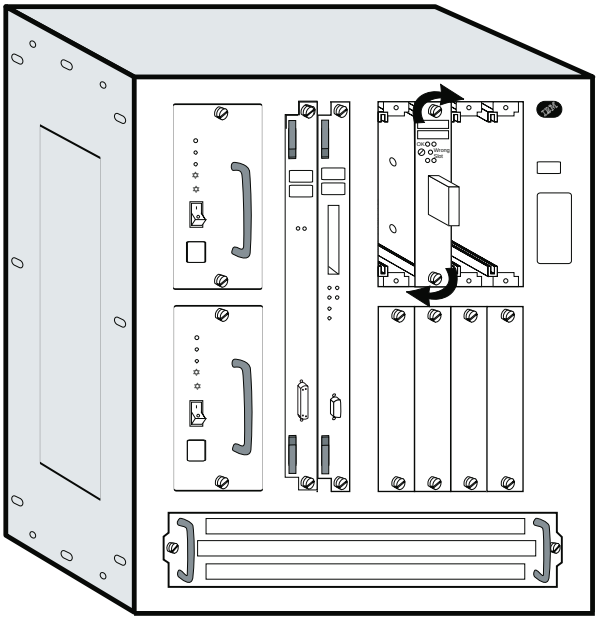


7 Install the new adapter. Notice the notches at the adapter card's angled corners and position them on the left as illustrated.



8 Carefully position the notches of the adapter card in the appropriate adapter slot's upper and lower rails. Then, guide the adapter forward on the rails as pictured.

9 Make sure the adapter card is aligned with the plastic grooves and then slide it in until it is flush with the box.



When the card makes full contact with the rear of the Multiaccess Enclosure, press and simultaneously turn each thumbscrews on the face of the adapter card clockwise, only until the adapter is firmly seated.

10 Secure the module by tightening the screws.

11 Check that the green LED of the adapter comes ON and that the Wrong Slot LED is OFF. If not, check the adapter installation. If the problem persists call the Network Support Center. Otherwise, continue.

12

- If you are replacing/inserting a serial adapter (EIA-232E/V.24, V.35/V.36, X.21 which are LICs 282, 290, and 291) and you went through the WAN Reroute disable procedure (“Disabling Interfaces that Have WAN Reroute Enabled” on page F-4), you need to enable the WAN Reroute process. (See “Enabling WAN Reroute after You Have Disabled it” on page F-5).
- If you are replacing a Parallel Channel Adapter (LIC 299), perform the Steps in “Installing Channel Adapters” on page 3-40 beginning with Step 1.

13 Replace the removed cable or cables, then tighten the cable screws (if present).

14 Re-enable all adapter ports. See “Resume Traffic on an Adapter Port” on page F-3.

15 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

16 Go to “CE Leaving Procedure” on page 5-60.

Exchanging the ISDN Daughter Card

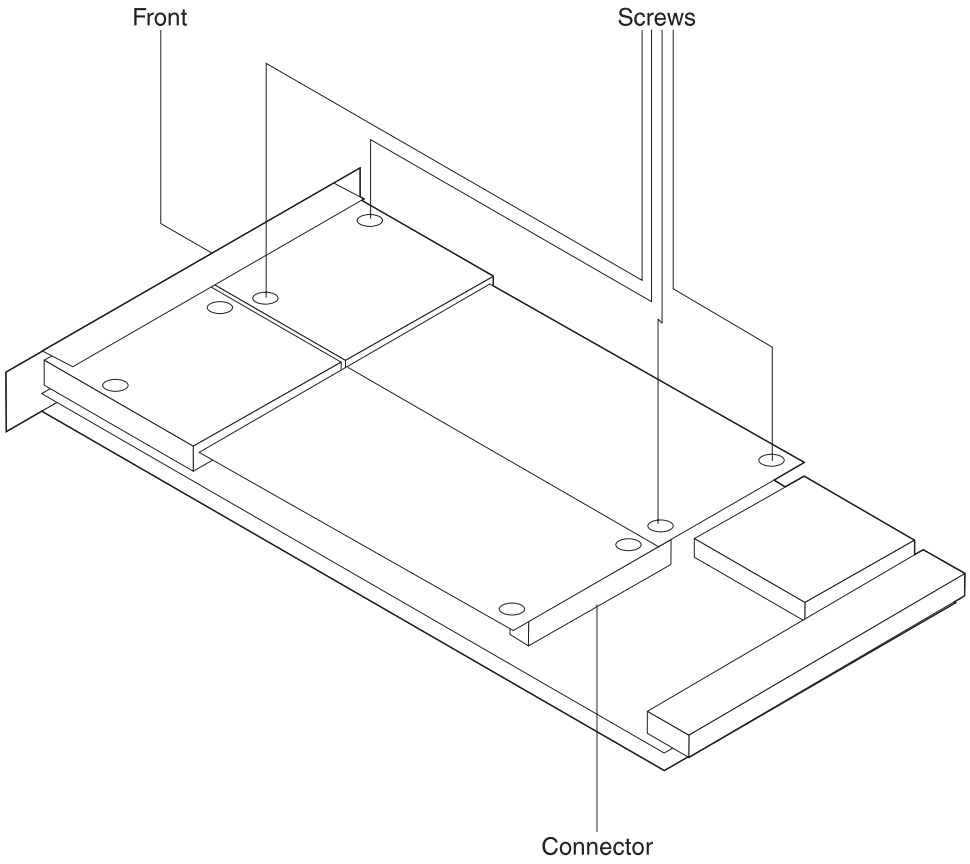
1 Remove the adapter. (See “Exchanging an Adapter” on page 4-42. Perform all Steps through step 6 on page 4-43.)

2 Follow these Steps to remove the faulty daughter card:

a Lay the adapter (metal side down) on a flat surface.

b Remove (and keep) the four screws that attach the daughter card to the adapter.

c Disconnect the daughter card from the adapter connector by gently pulling the daughter card up about an inch from the adapter.



d While raising both ends of the daughter card, slide the daughter card to the side to remove the card.

3 Follow these Steps to install the daughter card:

a With the large white label facing up, slide the end of daughter card into the rectangular opening on the front panel.

b Gently push on the card near the two holes in the corners of the card to secure the connector

c Install the two short screws into the corners of the card.

d Install the two longer screws into the holes that are near the black cover on the card.

4 Install the adapter. (Use the Steps beginning at step 7 on page 4-43).

Exchanging the ESCON Adapter

1 Locate the adapter module to be replaced.

2 **Power Off** the multiaccess enclosure.

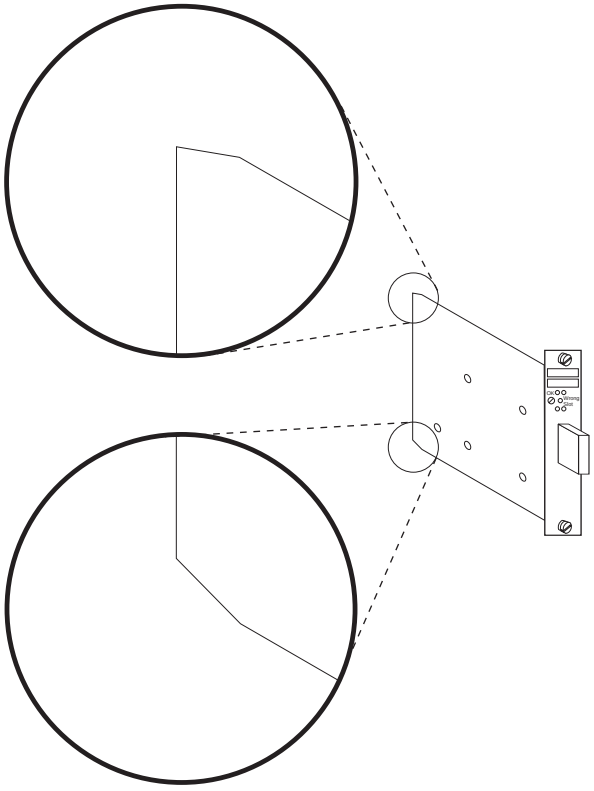
3 Label the cable for proper reconnection.

4 Remove the cable.

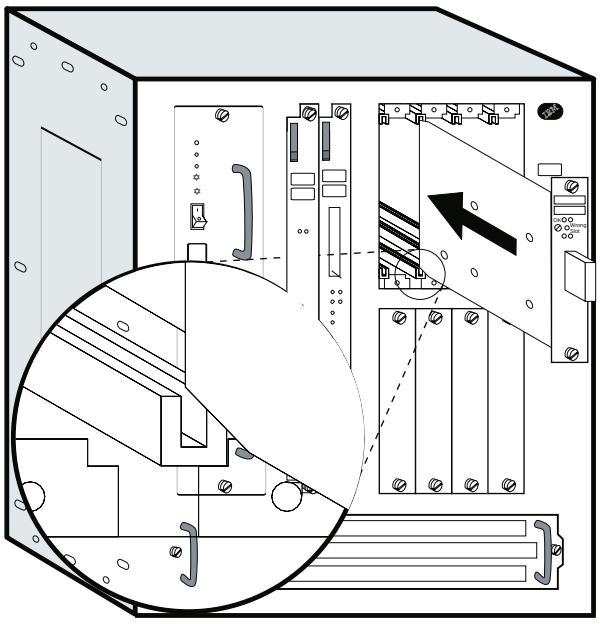
Attention: You must turn the adapter's thumbscrews simultaneously when unseating or seating the adapter during removal or installation. By doing so, you prevent stripping the thumbscrews. If you strip the thumbscrews, you may not be able to seat or reseat the adapter properly.

5 Loosen the screws on the adapter.

6 Remove the adapter from its location.

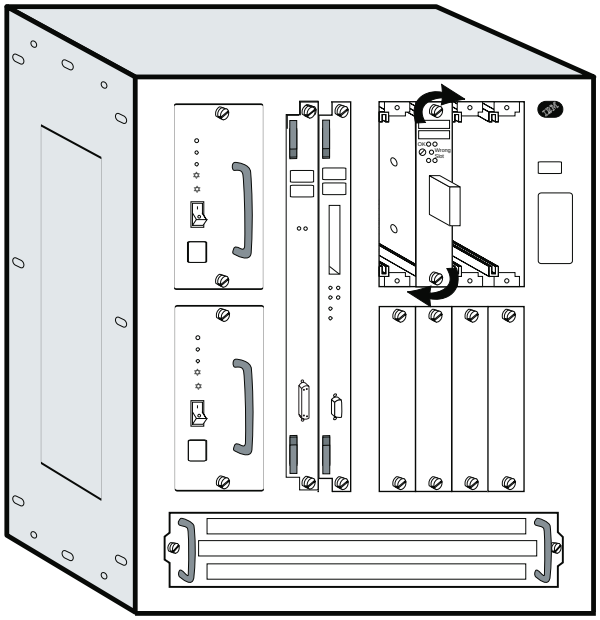


7 Notice the notches at the adapter card's angled corners and position them on the left as illustrated.



8 Carefully position the notches of the adapter card in the appropriate adapter slot's upper and lower rails. Then, guide the adapter forward on the rails as pictured.

9 Make sure the adapter card is aligned with the plastic grooves and then slide it in until it is flush with the box.

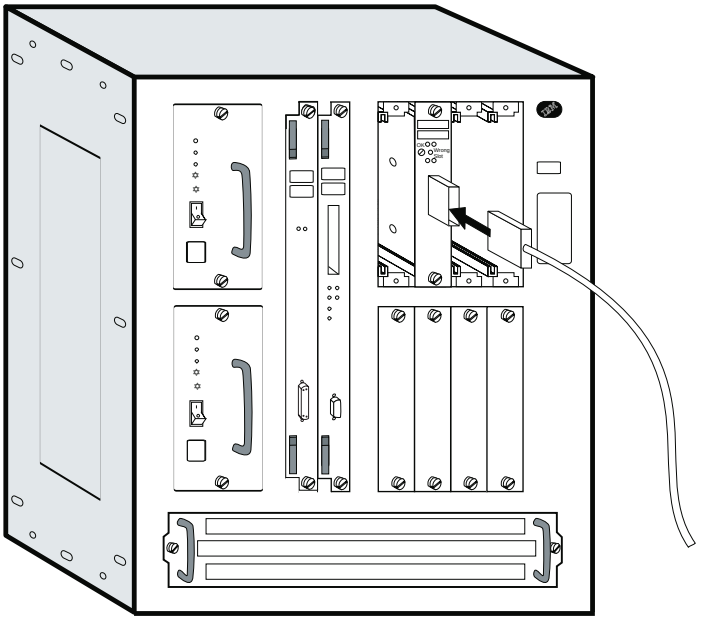


When the card makes full contact with the rear of the Multiaccess Enclosure, press and simultaneously turn each thumbscrews on the face of the adapter card clockwise, only until the adapter is firmly seated.

10 Secure the module by tightening the screws.

11 Connect the ESCON fiber optic cable to the adapter by inserting the connector into the adapter until a snap is heard.

Note: The connector is keyed to prevent inserting it incorrectly.



12 Power **ON** the Multiaccess Enclosure.

13 Check that the green LED of the adapter comes ON and that the Wrong Slot LED is OFF.

- If not, check the adapter installation.
- If the problem persists call the Network Support Center.
- Otherwise, notify the network administrator that you are finished repairing the Multiaccess Enclosure.
- Go to “CE Leaving Procedure” on page 5-60.

Exchanging the Backplane

This procedure requires two people.

1 Switch OFF each power supply.

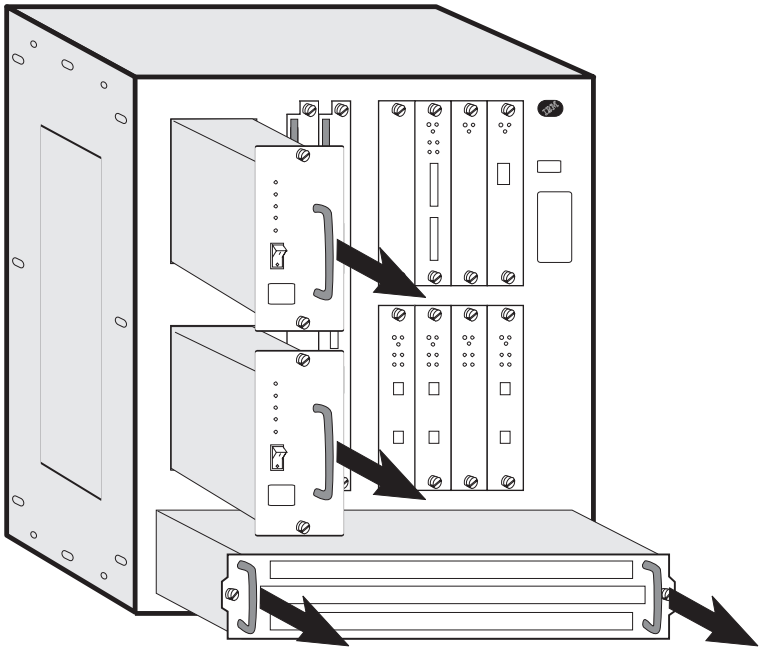
2 Unplug the power cord from the power receptacle.

3 Label the cables with the adapters and ports they plug into. Unplug all the cables.

4 The unit is too heavy fully populated.

5 Remove the:

- Power supplies (Loosen the screws on each component and pull the handle)
- System card (see “Exchanging the System Card” on page 4-5)
- SAC (see “Exchanging the SAC” on page 4-24)
- Adapters (see “Exchanging an Adapter” on page 4-42)
- Fan tray (see “Exchanging the Fan Tray” on page 4-40).



6 At the rear of the rack remove the screws **2** which maintain the multiaccess enclosure.

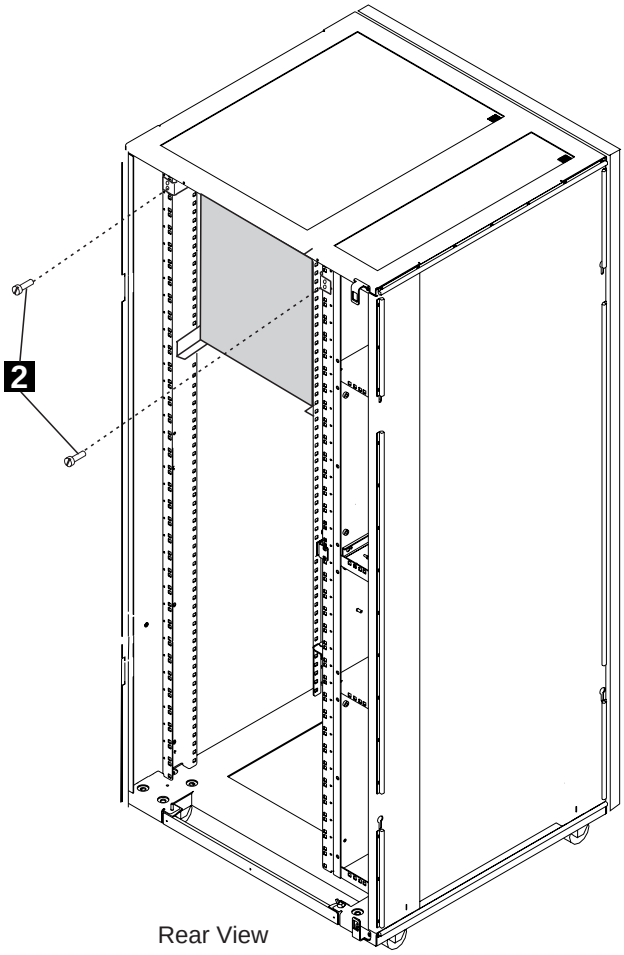
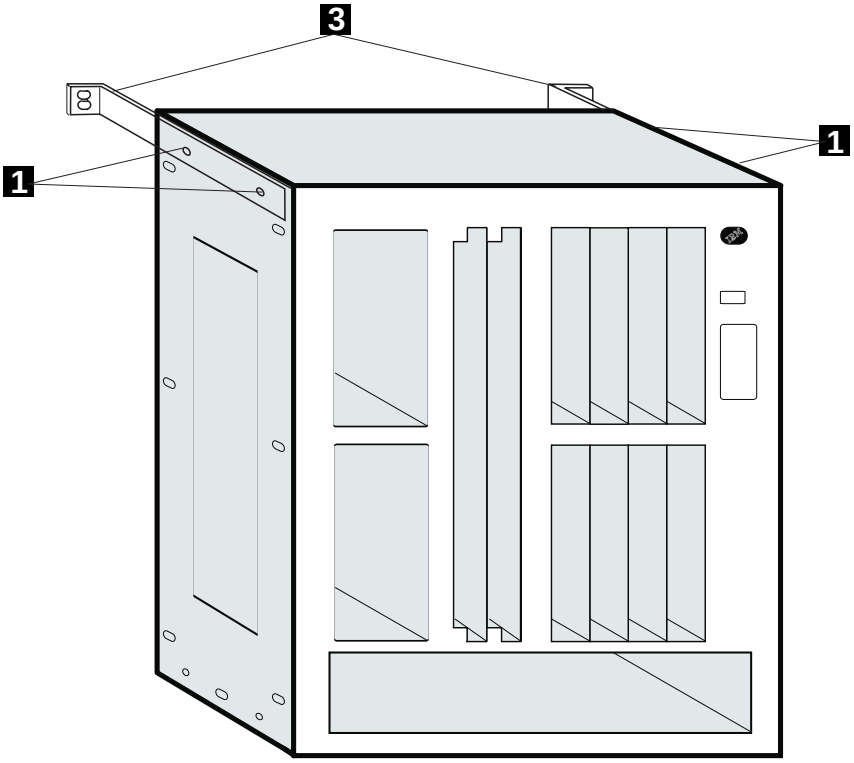


Figure 4-16. Removal of the Multiaccess Enclosure

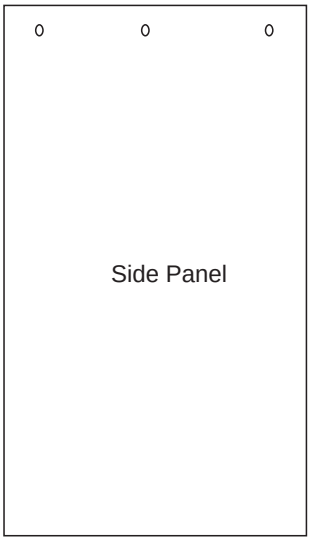
7 Hold the Multiaccess Enclosure from the top of the front and bottom of the back, and then slide it backward out of the rack.

8 Place the Multiaccess Enclosure on a table.



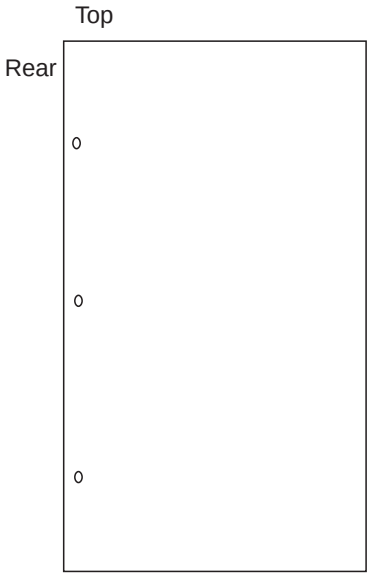
a Remove the ***bottom*** left and right screws on each side first. Do not remove the middle screws. They hold the top and bottom panels in place.

b While holding the side panel and the bracket **3** , remove the ***top*** left and right screws **1** .

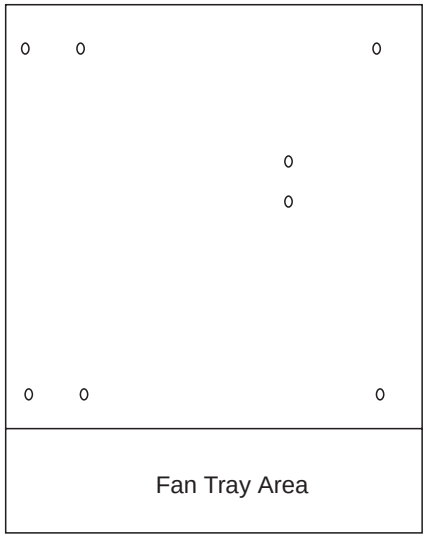


9 Remove the top panel. To do this, go to the rear of the Multiaccess Enclosure. Lift the top panel, and then slide the panel toward you.

10 On each side of the Multiaccess Enclosure, remove the three screws along the rear of the side panels of the Multiaccess Enclosure that hold the backplane in place.

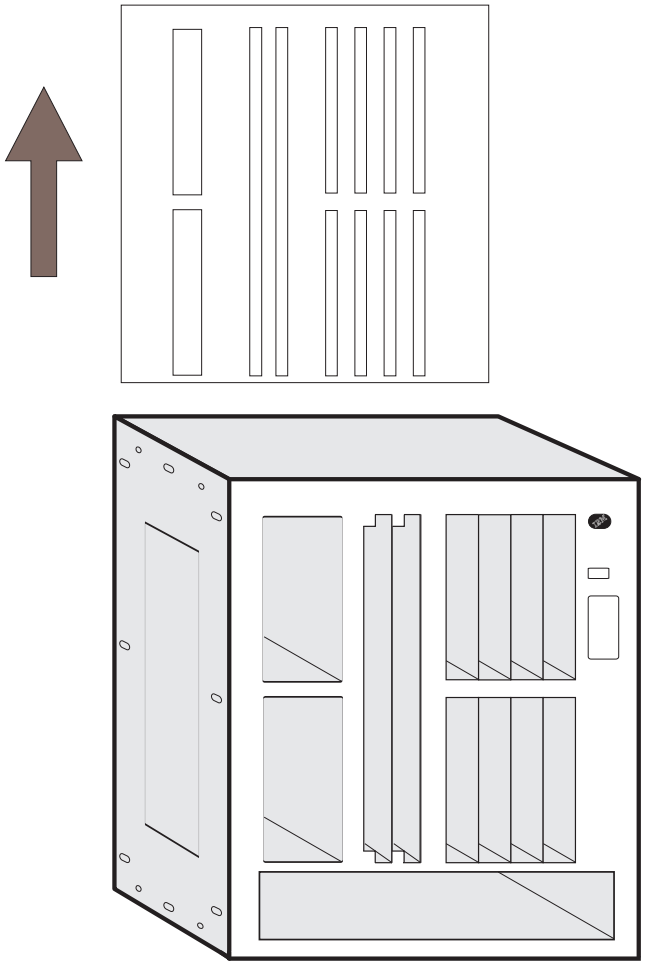


11 Remove the eight nuts and star washers located on the inside of the Multiaccess Enclosure.



Relative locations of the nuts viewed from the front of the box

12 Hold the backplane by the finger holes and lift it straight out of the Multiaccess Enclosure.



13 Hold the new backplane by the finger holes and lower it gently into the Multiaccess Enclosure.

14 Align the screw holes on the backplane with those on the sides of the box.

15 Loosely install the top two screws on each side of the Multiaccess Enclosure.

16 Reach inside the Multiaccess Enclosure, grasp the bottom middle of the backplane's plastic shield, and press it up and toward you until all the bulkhead screws protrude through the chassis.

17 Loosely insert the remaining screws on each side.

18 Install and tighten the eight nuts and star washers inside the Multiaccess Enclosure that secure the backplane to the system.

19 Tighten the screws along the side of the box that hold the backplane in place.

20 Replace the top of the unit.

a Align the five tabs on the top panel with the slots on the top front of the Multiaccess Enclosure.

b Lower the top, and then press it back into place.

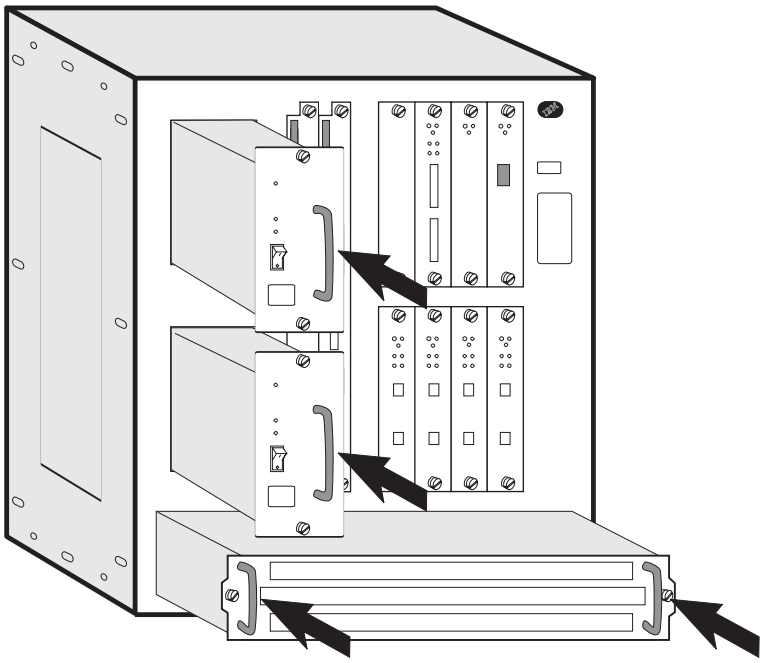
c Reinstall the middle screw on each side.

21 Reinstall and tighten the three screws that secure the top of the box to each side of the box.

22 Mount the Multiaccess Enclosure in the rack.

a Slide the Multiaccess Enclosure into the rack and secure it with the two screws **2** previously removed. See Figure 4-16 on page 4-52.

23 Install the fan tray. Slide the fan tray in until the tabs on the back of the fan tray are in the slots. This aligns the connectors with the plugs. When the fan tray is flush with the box, tighten the two screws.



24 Install the SAC into slot A.

25 Install the system card in slot B. Make sure the card is aligned with the plastic grooves and then slide it in until it is flush with the box. (See “Exchanging the System Card” on page 4-5 for details). Tighten the screws.

26 Moving from left to right, install the remaining adapters. Slide each adapter along the plastic grooves until it clicks into place. Tighten the screws. (See “Exchanging an Adapter” on page 4-42 for details).

27 Finally, install the power supplies. The power supplies will slide into place by following metal rails in the box.

28 Connect the cables and power cord to the power receptacle.

29 Switch ON the power.

30 Verify the LEDs. See “LED Indicators” on page 3-2 and “MAP 0300: Multiaccess Enclosure Basic Verification” on page 3-6.

31 Notify the network administrator that you are finished repairing the Multiaccess Enclosure.

32 Go to “CE Leaving Procedure” on page 5-60.

Chapter 5. Multiaccess Enclosure Firmware and Operational Code

This chapter explains how:

- To access to multiaccess enclosure and use the firmware or the operational code for running diagnostics.
- To access to multiaccess enclosure and use the firmware for configuration, boot sequence, or utilities.

Running Diagnostics

There are two ways to run diagnostic on the multiaccess enclosure depending the multiaccess enclosure status.

Select in the following table what you intend to do:

What you want to do	Go to
Run diagnostics on the complete multiaccess enclosure after installation (multiaccess enclosure not configured and without operational code).	“Accessing the Firmware from the Service Processor” on page 5-3
Run diagnostics on part of the multiaccess enclosure which is operational (multiaccess enclosure configured and operational code loaded).	“Accessing the Operational Diagnostics from the Service Processor” on page 5-42

Using Multiaccess Enclosure Firmware

The multiaccess enclosure firmware tests the hardware each time the multiaccess enclosure is powered on. If the multiaccess enclosure has not loaded its operational code, the firmware should be running. The firmware menu will come up and pause when the multiaccess enclosure is set up to boot up in “Attended Mode.” Attended Mode requires direct intervention from console input to complete the boot-up process (a password may be required).

Important:

1. You can also access the firmware by stopping the boot process. To do this, you must have a TTY console directly attached to the serial port and a null modem.
2. To access the firmware:
   a. When the multiaccess enclosure starts its boot process, press **F1** at the terminal keyboard.
   b. If the firmware panels do not appear:
      1) Make sure your workstation is connected to the serial port on the multiaccess enclosure
      2) Power off, and power on, the multiaccess enclosure.

Note: Make sure the screen size for your terminal emulation software is set to 80 columns by 24 rows.

Connection in Attended mode is a TTY (using limited VT100, VT220, IBM 3151 or 3161 emulation) connection. You can transfer files using the Xmodem protocol for TTY.

Attended Mode

When the multiaccess enclosure is configured to come up in Attended mode, you are given access to the Firmware command set. (A password is required for access to the firmware.) From this level of commands, you can select the Image Bank from which to load. You can also choose the config file from within that Image Bank. At this point, you can load new config files or image files.

In Attended mode, you can start booting the multiaccess enclosure by pressing **F9** to start the operating system.

Unattended Mode

This is the normal mode for the multiaccess enclosure. (A password is not required to access the firmware in unattended mode.) To do this, you must have a TTY console directly attached to the serial port and a null modem.

Starting Firmware

You are ready to begin using the information in this chapter after you have established connection with the multiaccess enclosure using the “Accessing the Firmware from the Service Processor.”

Accessing the Firmware from the Service Processor

1 You should be logged ON on the service processor. If not go to Step 2. Otherwise continue with Step **3** .

2 To log ON:

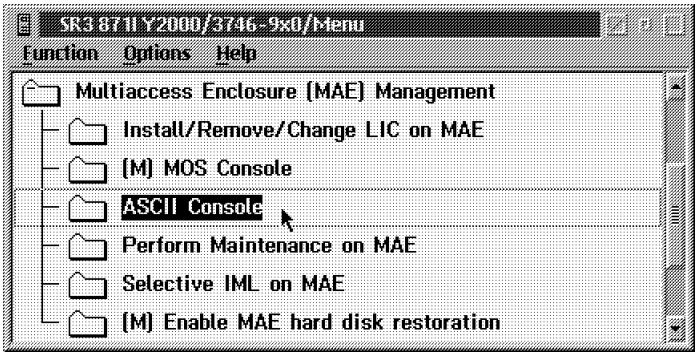
a On the **MOSS-E View** window, click on **Program** (in the action bar).

b Click on **Log On MOSS-E**.

c Enter the password and continue with Step **3** .

3 On the **MOSS-E View** window, double click on the 3746 icon.

4 On the **3746-9x0 Menu** click on the **Multiaccess Enclosure (MAE) Management** option. The following window is displayed:



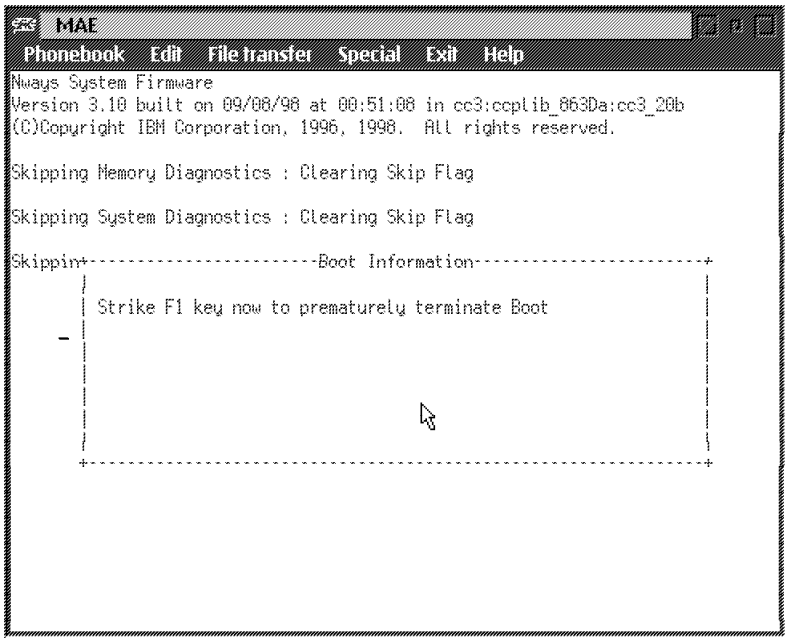
5 Double click on the **ASCII Console** option.

6 Power **ON** or **Reset** the MAE.

Note: If prompted, the default password is **2216**.

7 **Watch** the screen **carefully** and when prompted, press **F1** (to prematurely terminate boot)

Note: If you get the message: 'System programs cannot be entered from warm boot, please turn system off and try again'. Press the MAE reset push button on the system card, and when prompted press F1.



8 The firmware menu is displayed. From the menu (as shown in Figure 5-1), you can select from four services. The following sections explain these services and provide instructions for using the associated panels:

- "Managing the Configuration" on page 5-6.
- "Selecting the Boot Sequence" on page 5-7.
- "Selecting a Device To Test" on page 5-9.
- "Using the Utilities" on page 5-10.

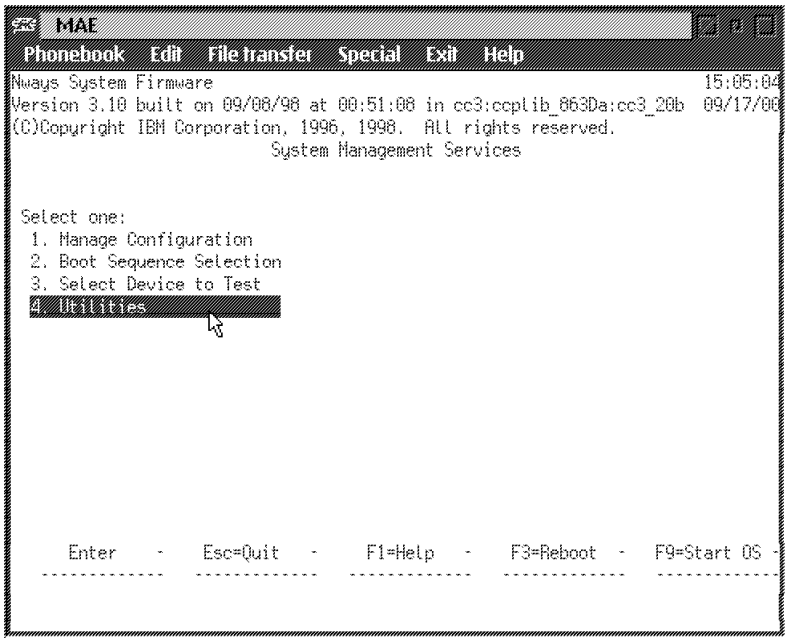


Figure 5-1. System Management Utilities

The Function Keys

As seen in Figure 5-1 on page 5-4, various function keys appear in the lower part of the panel. Some of these keys are common among the firmware panels. On other panels, the function keys are stacked at the right of the panel. Use the F1 Help key to get descriptions for the function keys associated with the firmware.

Obtaining Help

Online helps are available for panels whenever the F1 key is displayed in the lower portion of the panel. Pressing F1 presents a pop-up help window with information relating to the currently active panel.

Managing the Configuration

Managing the configuration involves defining and modifying some configuration values. You can change the operational parameters for the serial ports. For example, you could modify the serial ports or PCMCIA modem's speed, parity, data bits, and so on, by pressing F6.

1 Select **1. Manage Configuration** from the main menu as shown in Figure 5-1 on page 5-4.

2 The System Configuration Information panel is displayed as shown in Figure 5-2.

Note: Only the fields under Serial Ports can be modified. To modify the specifications for a port, move the cursor to the field, and type in the new value.

Use the down arrow (↓) key to scroll to the next panel.

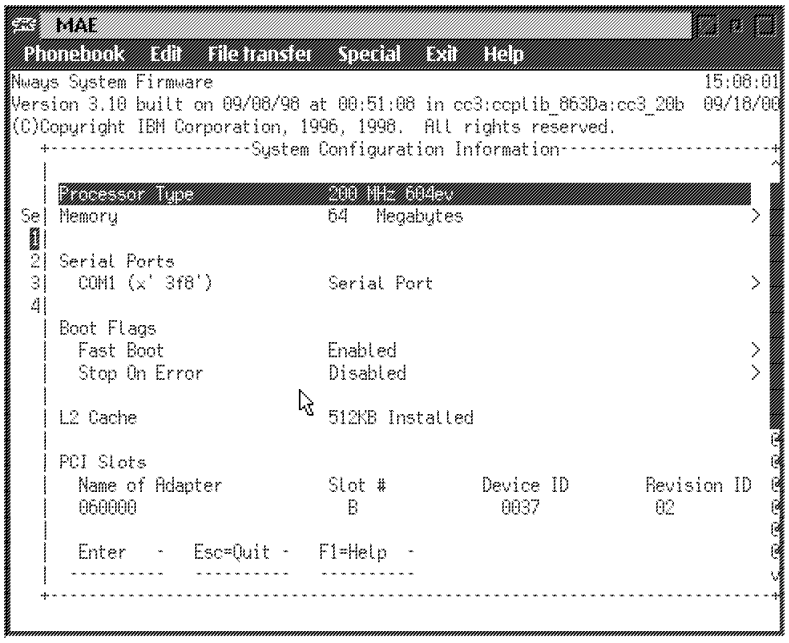


Figure 5-2. System Configuration Information

Selecting the Boot Sequence

This function enables you to select a sequence for the various boot devices, display the current boot device settings, restore the default setting, and boot from other boot devices. To select a boot sequence:

1 Select **2. Boot Sequence Selection** from the main menu.

2 The Boot Sequence Selection panel is displayed as shown in Figure 5-3.

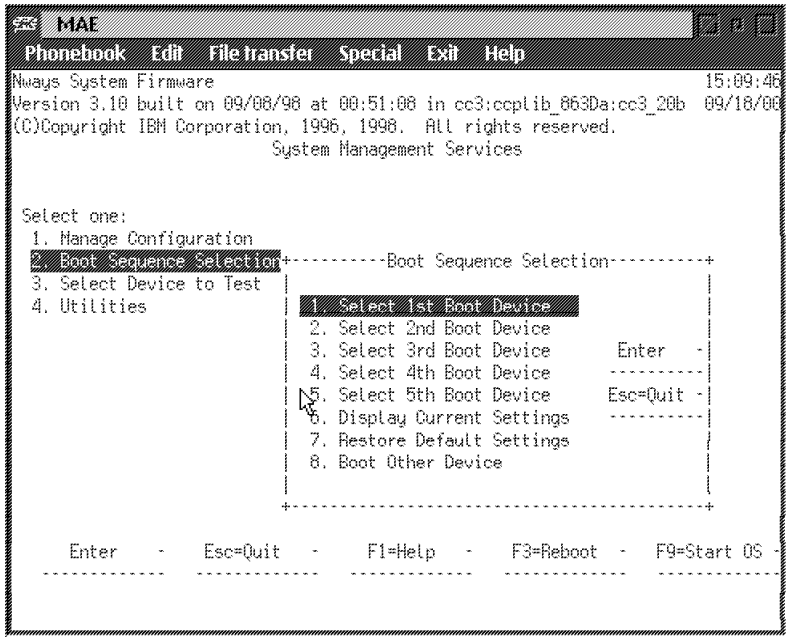


Figure 5-3. Boot Sequence Selection

3 Select one of the options (1 through 5) and press **Enter**. The appropriate Boot Device Selection panel will be displayed. Default boot devices are:

- None
- IDE hard drive
- Network adapter (IBM PCMCIA Modem)
- Network adapter (IBM SLIP, Com 1 Direct)

4 Highlight your choice and press **Enter**.

5 Repeat step 3 and step 4 to select as many boot devices as you want to define.

6 Press **Esc** to exit the boot sequence selection menu.

7 Press **F3** to reboot the multiaccess enclosure and make your boot device change effective.

Note: To restore the defaults, select option 7 before you reboot the multiaccess enclosure. The default boot device settings will then be restored. The Current Boot Sequence will be displayed as in Figure 5-4 on page 5-8.

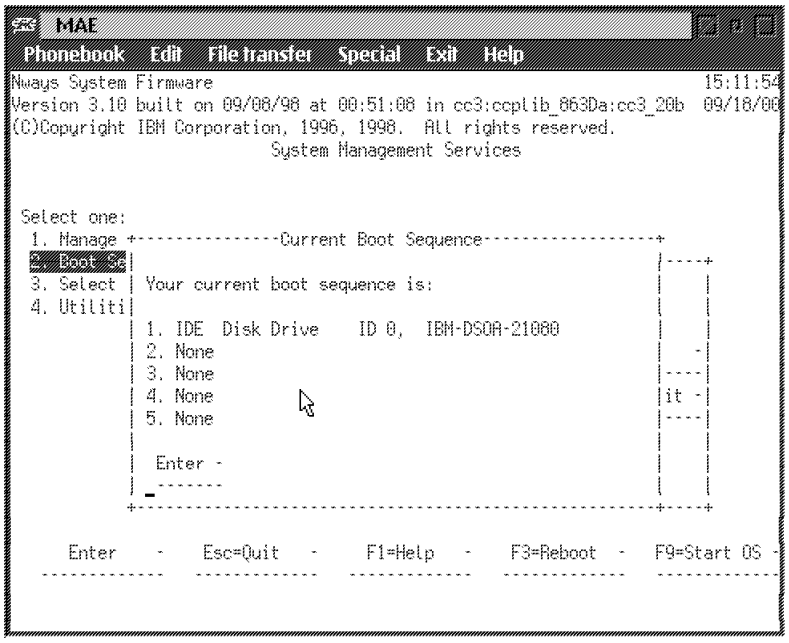


Figure 5-4. Current Boot Sequence

Selecting a Device To Test

Extensive hardware tests are performed by the firmware when the multiaccess enclosure boots up. But there may be times when you have removed and replaced a failing part and you want to run an individual test before a full bootup or reset. The firmware allows you to run these individual tests:

- Test All Subsystems: This test runs all the subsystem tests that are listed on this panel.
- Test Memory: This test searches all available memory regions, tests the regions, and presents a consolidated list of test results.
- Test System Board: This tests the PowerPC® CPU, the System Board interrupts, and the PCMCIA controller.
- Test IDE devices: This test runs on the IDE devices.

1 Select **3. Select Device to Test** from the main menu.

2 The Select Device to Test panel is displayed (Figure 5-5).

Note: The Select Device to Test panel is created dynamically, depending on what diagnostics have been loaded, but the items shown always appear.

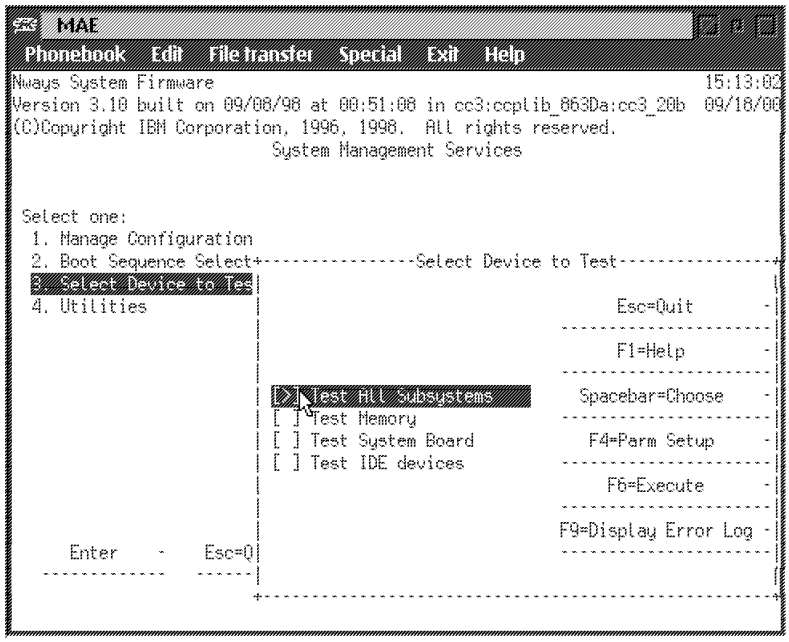


Figure 5-5. Test Selection Panel

3 Use the spacebar and up arrow and down arrow keys to select the test.

4 Press **F4** to define additional test parameters.

Note: Errors encountered during diagnostics are logged in the hardware error log.

5 Press **F6** to start a test.

6 After the test is complete, press **Esc** to return to the main menu panel.

Using the Utilities

To use the utilities:

1 Select **4. Utilities** from the main menu.

2 A menu listing the available utilities is displayed (Figure 5-6).

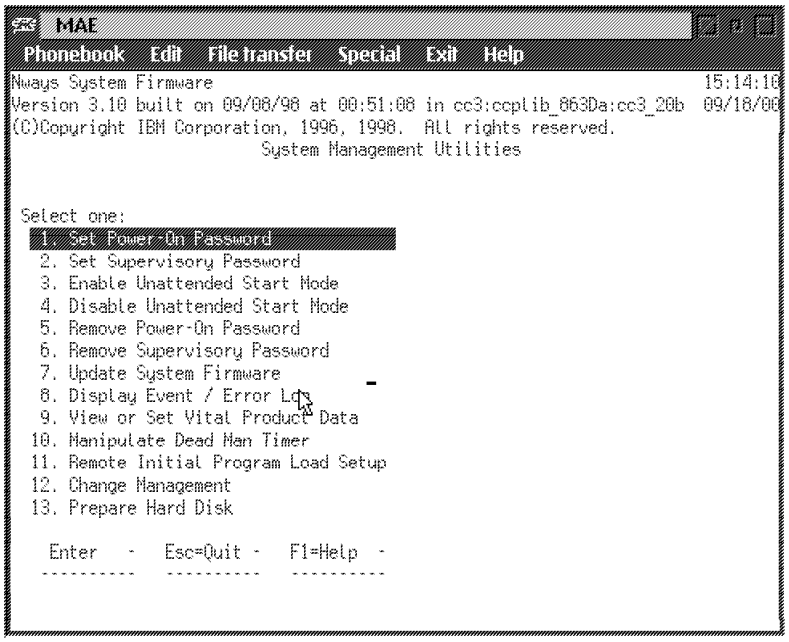


Figure 5-6. Utilities Selection Panel

3 Make your selection. You will be prompted for additional information, and messages are displayed to indicate that the task was performed.

Setting the Power-On Password

If a password is set/installed and the multiaccess enclosure is not in unattended mode, you must set a power-on password before operational code can be loaded in the multiaccess enclosure. The multiaccess enclosure is initially shipped with a password of **2216**. This utility allows you to set and change the password.

1 Select **1. Set Power-On Password** from the utilities panel. The Set Power-On Password panel is displayed (Figure 5-7).

2 Type your new password and press **Enter**. You are prompted to enter your new password again.

Note: The power-on password can consist of from 1 to 8 characters with no restrictions on which characters can be used.

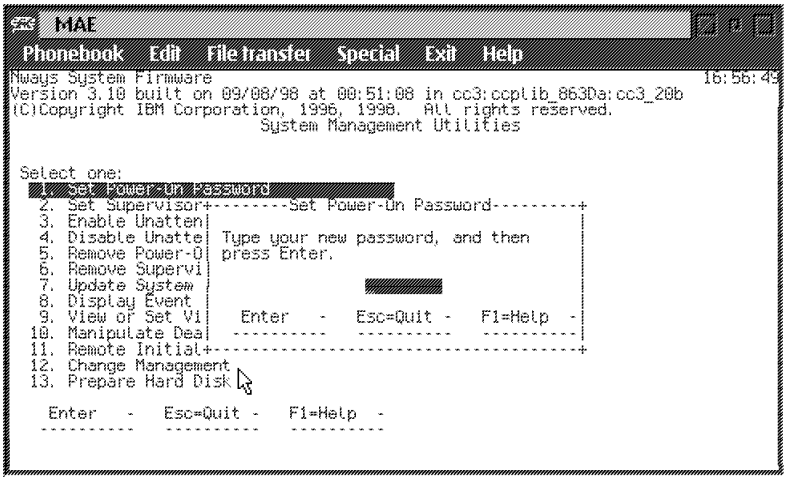


Figure 5-7. Set Power-On Password Panel

3 Type the password again and press **Enter**.

4 The Password Saved panel is displayed with the message that your power-on password has been saved.

Setting the Supervisory Password

If a supervisory password is set, the password must be entered prior being able to access to the “System Management Services.” You must set a supervisory password before operational code can be loaded in the multiaccess enclosure. The multiaccess enclosure is initially shipped with a password of **multiaccess enclosure**. This utility allows you to set and change the password.

1 Select **2. Set Supervisory Password** from the utilities panel. The Set Supervisory Password panel is displayed (Figure 5-8).

2 Type your new password and press **Enter**. You are prompted to enter your new password again.

Note: The supervisory password can consist of from 1 to 8 characters with no restrictions on which characters can be used.

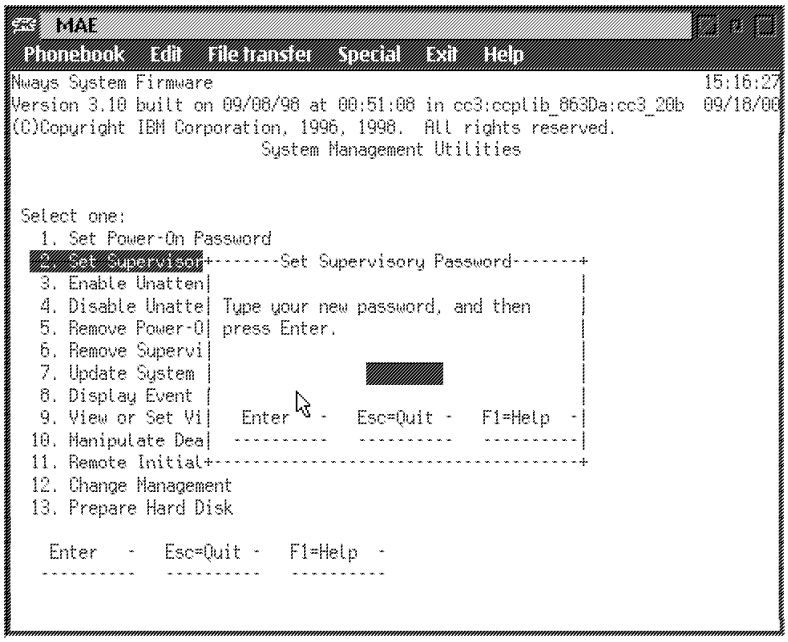


Figure 5-8. Set Supervisory Password Panel

3 Type the password again and press **Enter**.

4 The Password Saved panel is displayed with the message that your supervisory password has been saved.

Enabling Unattended Start Mode

The default is that Unattended start mode is enabled. This causes the multiaccess enclosure to load operational code automatically.

1 Select **3. Enable Unattended Start Mode** from the utilities panel. The Unattended Start Mode Changed panel is displayed (Figure 5-9).

2 Press **Enter**.

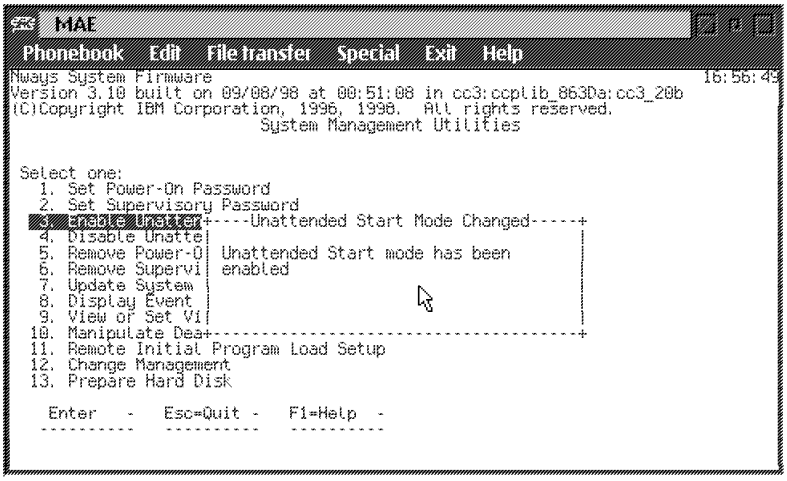


Figure 5-9. Unattended Start Mode Changed (Enabled) Panel

Note: After you have enabled Unattended start mode, you can enter the firmware by pressing and holding **F1** at the terminal keyboard when the boot process begins.

Disabling Unattended Start Mode

The default for the multiaccess enclosure firmware is that the Unattended start mode is enabled. You disable Unattended Start Mode using this utility.

1 Select **4. Disable Unattended Start Mode** from the utilities panel. The Unattended Start Mode Changed panel is displayed (Figure 5-10).

2 This panel informs you that the Unattended start mode has been disabled and prompts you to press **Enter**.

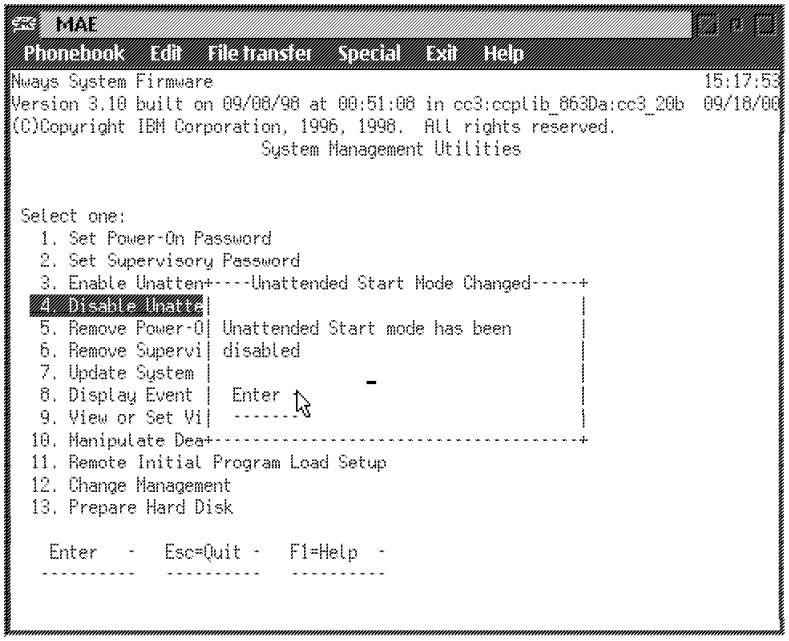


Figure 5-10. Unattended Start Mode Changed (Disabled) Panel

Removing the Supervisory Password

The use of a supervisory password allows you a degree of security by preventing unauthorized access to the multiaccess enclosure. However, removing the enforcement of the password could be a convenience while servicing the multiaccess enclosure.

1 Select **6. Remove Supervisory Password** from the utilities panel.

2 The Remove Supervisory Password panel is displayed (Figure 5-11).

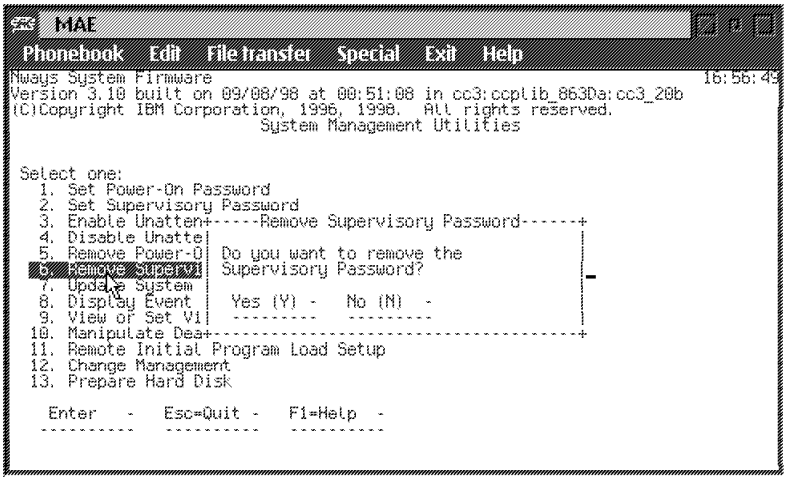


Figure 5-11. Remove Supervisory Password Panel

3 Select **Yes** if you want to remove the supervisory password. Press **Enter**.

4 The Password Removed panel is displayed. This panel informs you that the supervisory password has been removed.

Updating System Firmware

Use this utility to update the multiaccess enclosure firmware. Only full images of the firmware are shipped; therefore, when you select this option you completely replace the previous level of firmware.

1 Select **7. Update System Firmware** from the utilities panel.

2 The System Firmware Update panel is displayed:

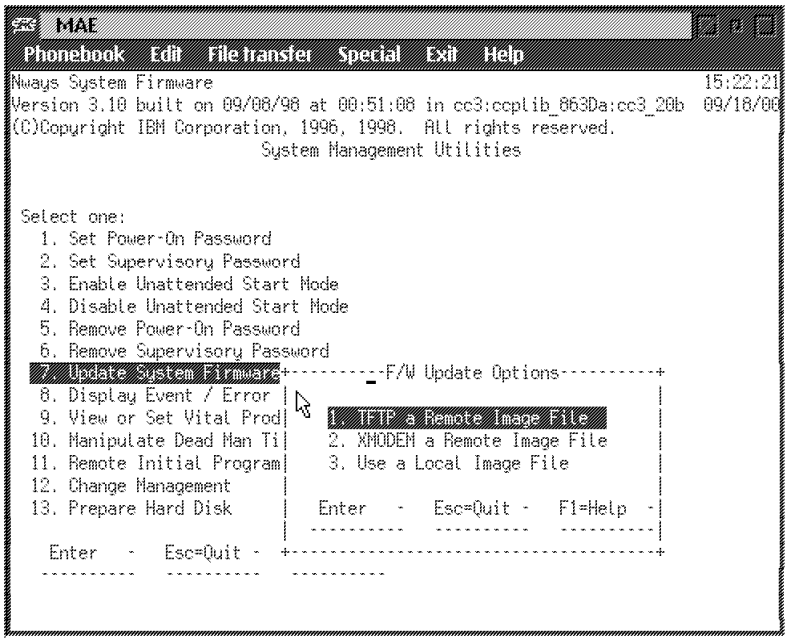
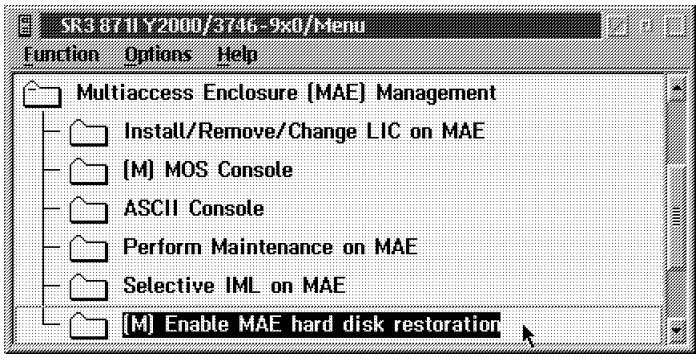


Figure 5-12. System Firmware Update Panel

Attention: Do not power off the multiaccess enclosure during the process of updating the firmware. If the update fails, the multiaccess enclosure will boot a backup firmware image. If this happens, repeat the update procedure to reload the onboard firmware image.

3 In the **Multiaccess Enclosure (MAE) Management** window, double click on the **Enable MAE hard disk restoration** option.

.



4 The following window is displayed:

.

Press **Start**.

5 The following window appears:

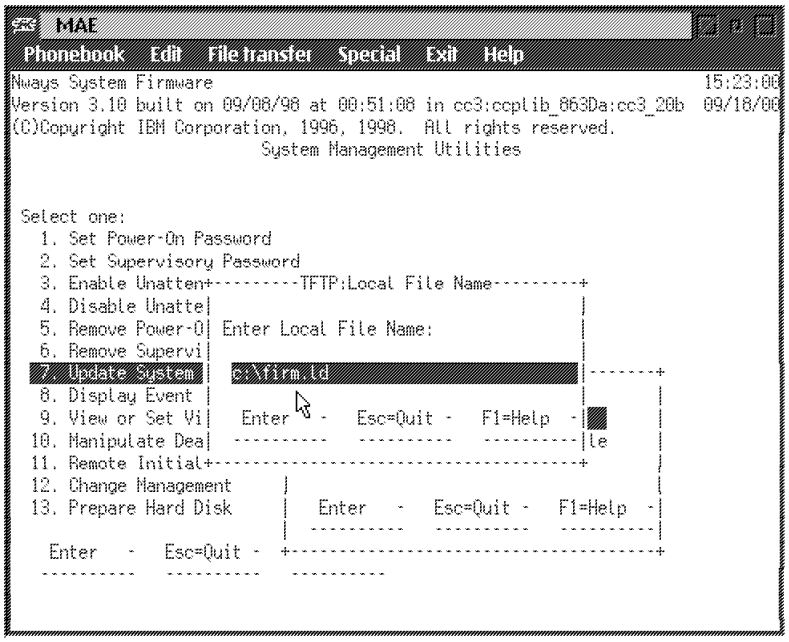
.

Do not Click on any Function key

6 Return to the **System Management Utilities** window, select **TFTP a Remote Image file**, then press **Enter**.

7 The following window appears:

.



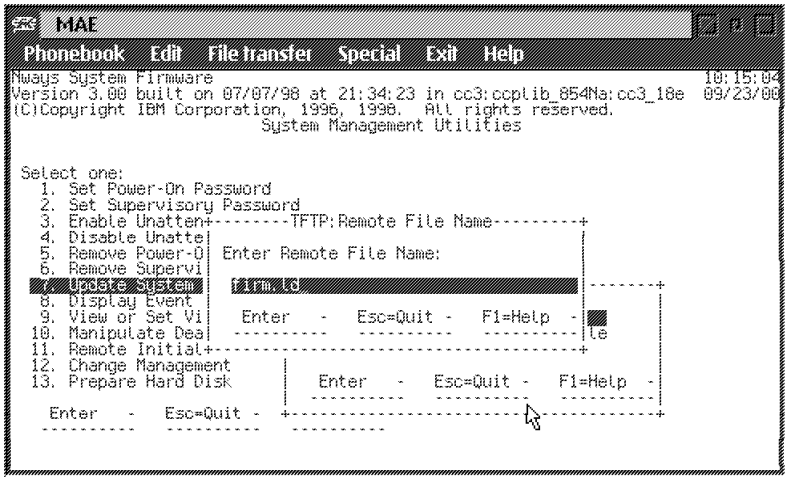
Enter the local file name:

`c:\firm.ld`

Press **Enter**.

8 On the following window

.



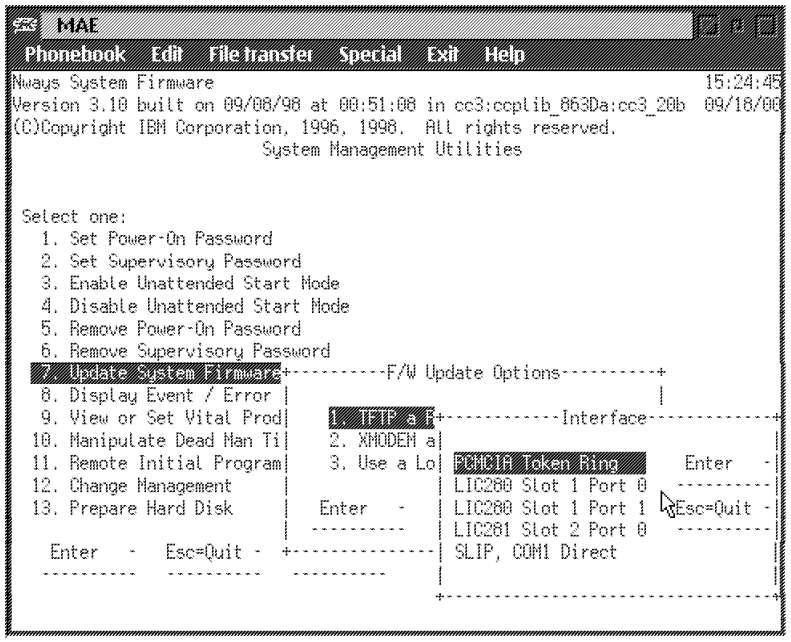
Enter the remote file name:

`firm.ld`

Press **Enter**.

9 The interface window is displayed with **PCMCIA Token Ring** selected.

.

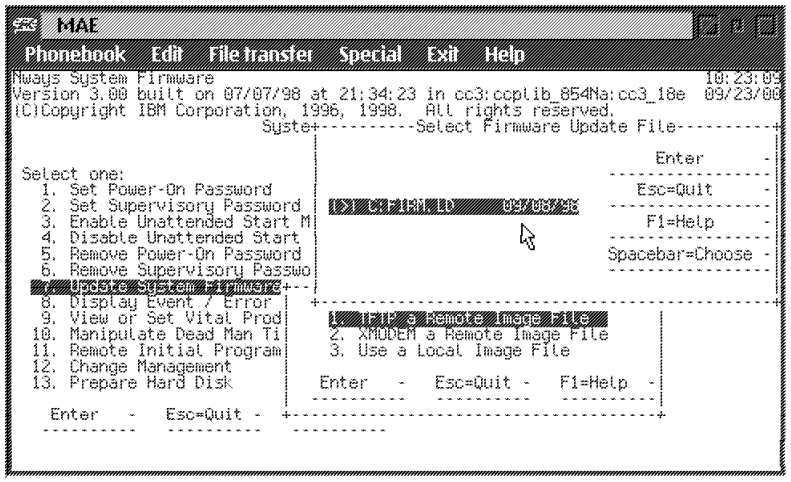


Press **Enter**.

10 Put the current window in background by clicking on the **Service Processor Menu** by example.

11 On the **Select Firmware Update File** select **FIRM.LD**.

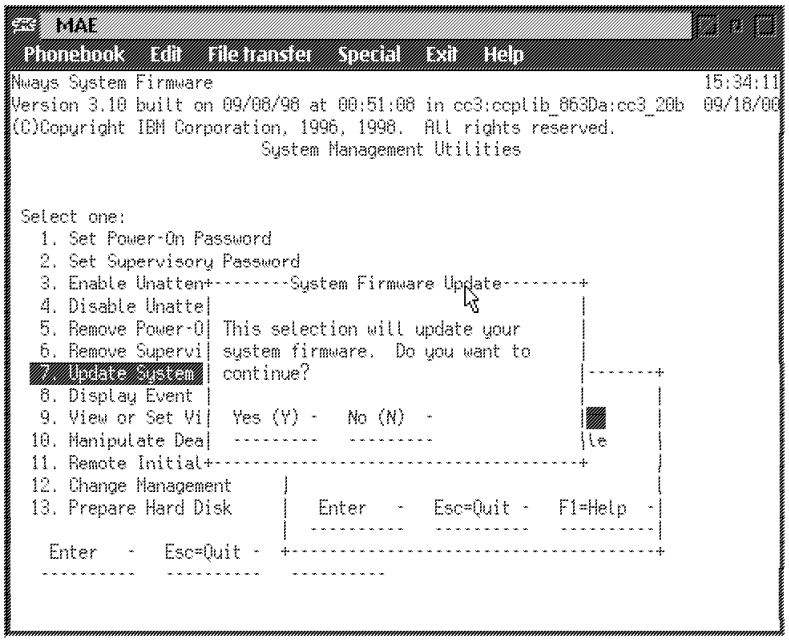
.



Press **Enter**.

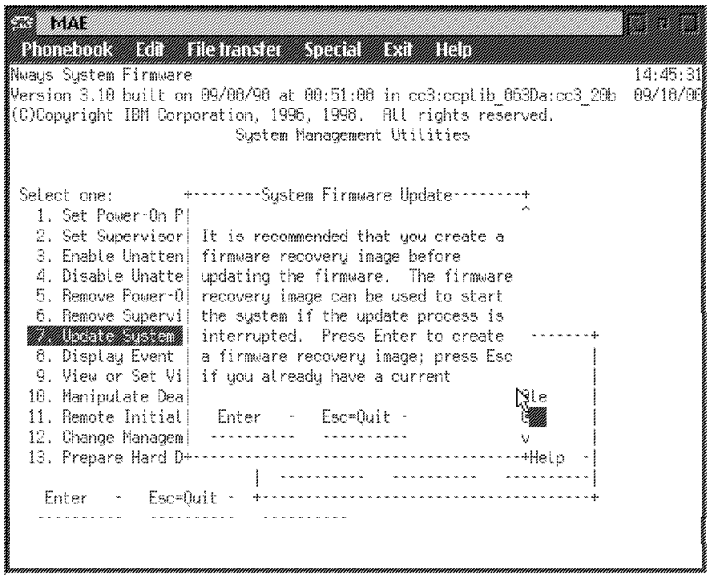
12 On the **System Firmware Update** window

.



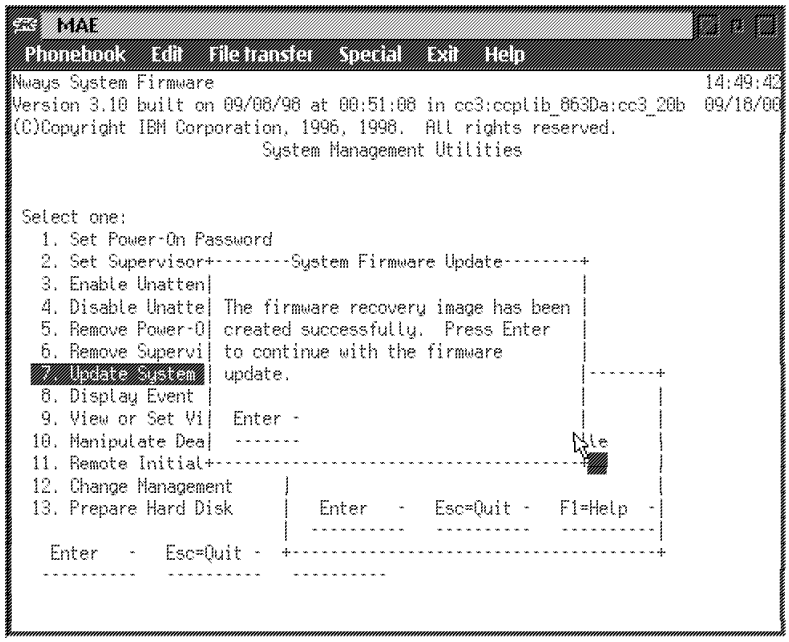
Press **Y**.

13 The following window is displayed:



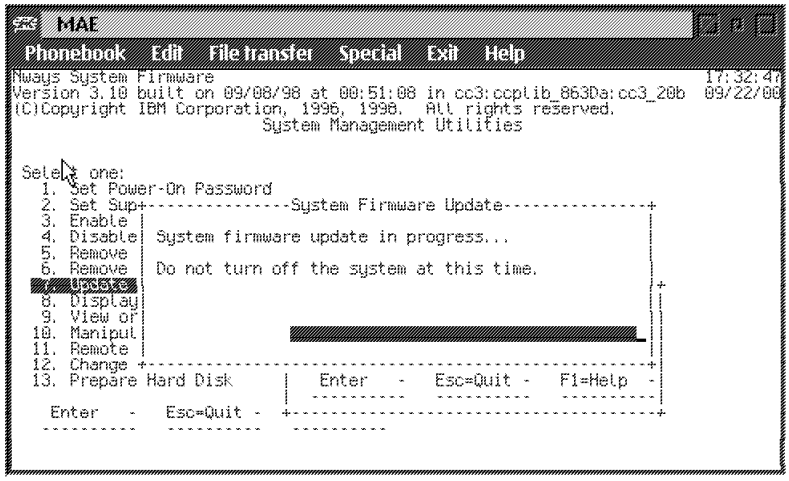
press **Enter**.

14 When recovery image has been done:



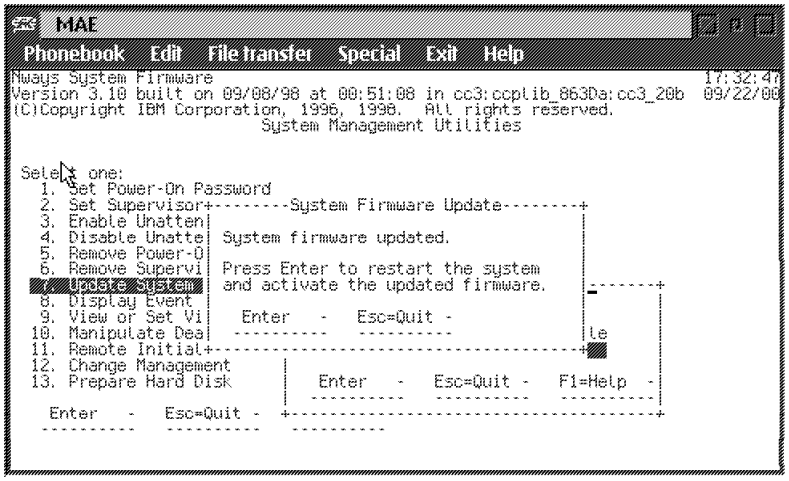
press **Enter**.

15 Several windows are displayed followed by:



Note: Do not switch the system off. The process erases the old firmware and copies the new firmware into flash memory. If the machine is powered off before the process is complete, you will need to reload the firmware from the recovery image.

16 A completed message appears when the firmware is updated.



17 Press **Enter** to restart the system.

18 Press **F1** when prompted to terminate the boot.

Displaying the Event / Error Log

The error log is resident in NVRAM (not on the hard drive). See Appendix G, “Hardware Error Codes” on page G-1 to interpret the data that appears in the Error Code field.

1 Select **8. Display Event / Error Log** from the utilities panel, then press **Enter**..

2 The Error Log panel is displayed (Figure 5-13). See Appendix G, “Hardware Error Codes” on page G-1 for and explanation of the data that appears in the Error Codes field.

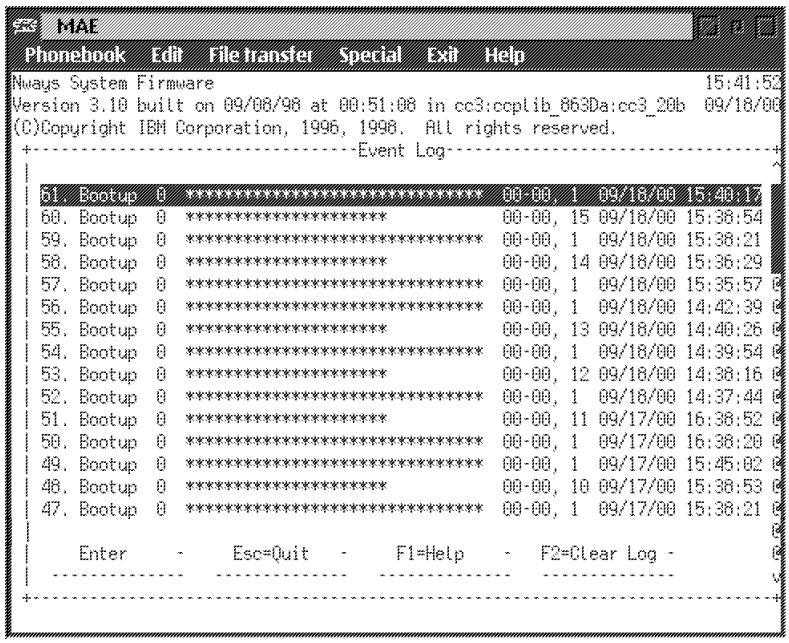


Figure 5-13. Example of Error Log Panel

Note: PF7, PF8, and Page down keys can be used to scroll the error log.

Viewing or Setting Vital Product Data

This utility allows you to view vital product data (VPD) for the multiaccess enclosure. The system serial number is entered at the factory, but can be changed on the panel that appears after you select to view or set the VPD.

1 Select **9. View or Set Vital Product Data** from the utilities panel, then press **Enter**.

2 The View or Set Vital Product Data panel is displayed (Figure 5-14). From this panel you can select the type of vital product data you want to view or set. The system card serial number field is the only field (under the "Hardware Vital Product Data" menu) that is modifiable; Firmware Part Number is only viewable.

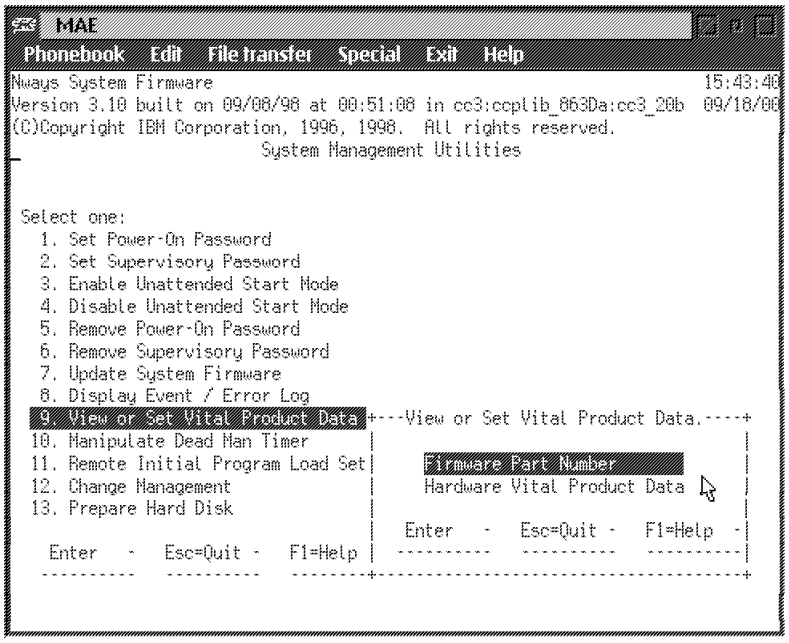
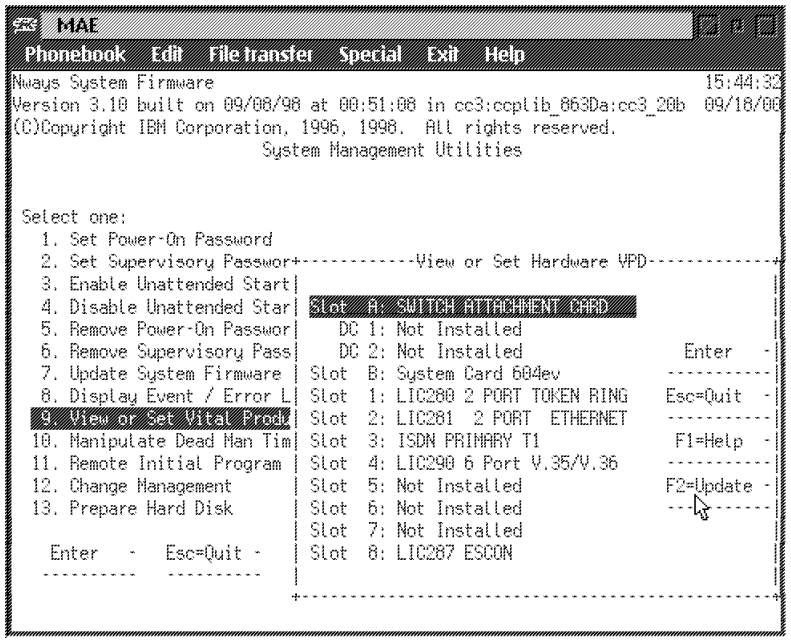


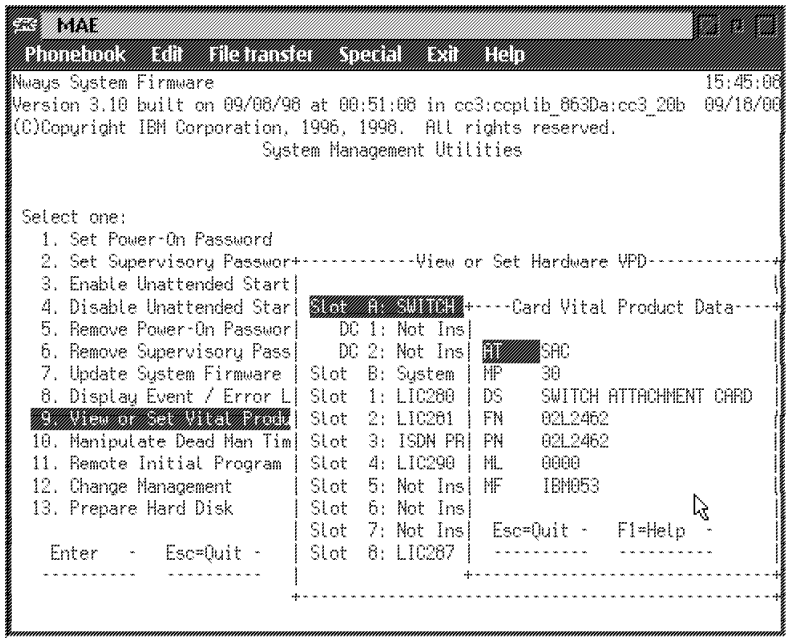
Figure 5-14. View or Set Vital Product Data Panel

3 For each selection, a View or Set Part Number panel is displayed that contains the part number you selected. Version number and dates are provided for the firmware and System Management Services.

4 If you want to view or change vital product data, select **Hardware Vital Product Data**.



5 The hardware VPD is stored in keyword format.



6 The following is a list of the keywords and their meanings. Depending on the configuration of your system, not all of the keywords listed are necessarily present or have meaningful values.

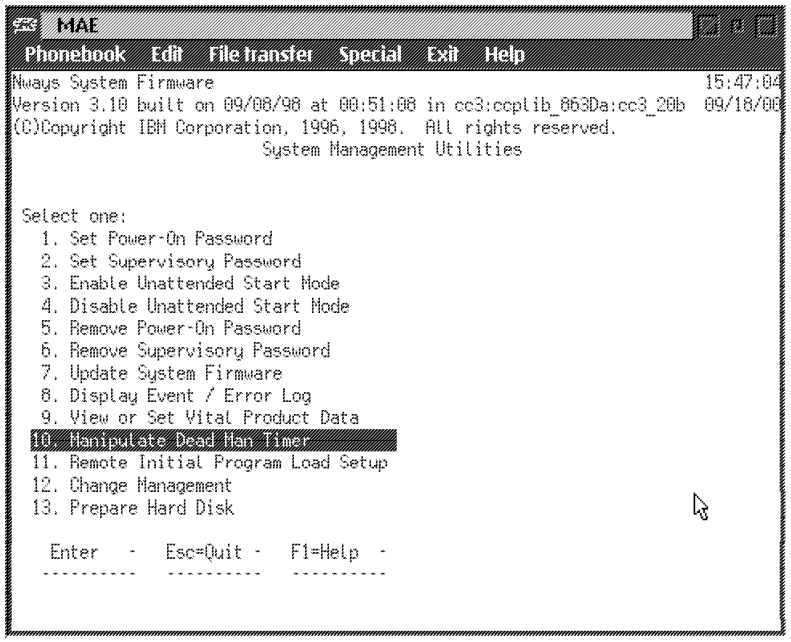
AT - Main logic card type
DS - Text description of card
FN - FRU number
PN - Manufacturing part number
ML - Maintenance level

MF - Manufacturing location
MP - xx
SN - Serial number
BF - Boot flash level and ID
NA - Burned-in MAC Address in ASCII Format
ZB - Burned-in MAC Address in Hex Canonical Format
TM - Machine type and model
F# - Feature Number
BS - Box serial number
RC - Recycle count
Z0 - Vendor ID

Manipulating the Dead Man Timer

This utility allows you to selectively enable or disable the dead man timer. The dead man timer has a granularity of 0.25 seconds and expires in 10 seconds. This tool would be useful in some troubleshooting procedures.

1 Select **10. Manipulate Dead Man Timer** from the utilities panel, then press **Enter**.



2 A Dead Man Timer Options panel is displayed. From this panel you can enable or disable the timer.

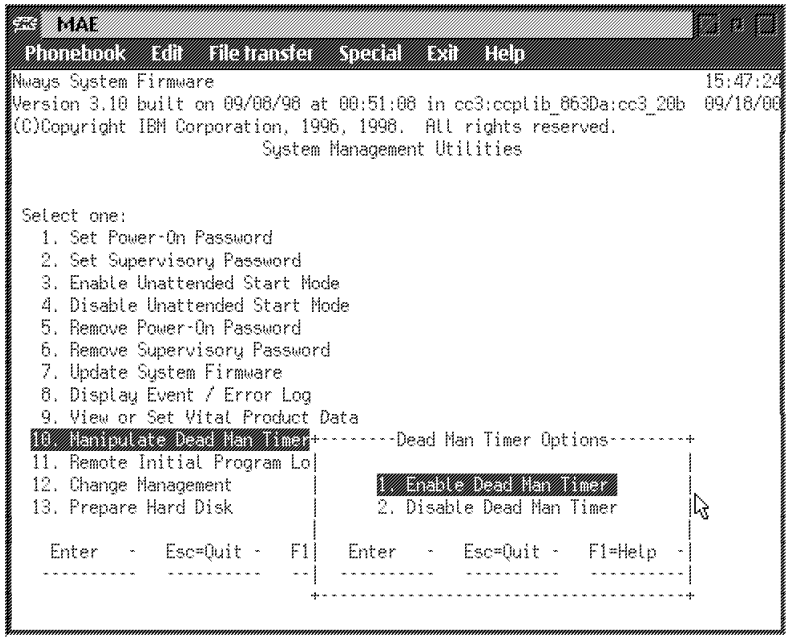


Figure 5-15. Manipulate Dead Man Timer Panel

Setting Up Remote Initial Program Load

This utility allows you to load this minimum information to install this device in your network so that you can send it a configuration file or otherwise communicate with it. This utility allows you to Ping the multiaccess enclosure, after loading its minimum network parameters, to see if you can communicate with it.

1 Select **11. Remote Initial Program Load Setup** from the utilities panel, then press **Enter**.

2 The “Network Parameters” panel is displayed (Figure 5-16). From this panel, you can select to enter the IP address of the multiaccess enclosure and the host, input PCMCIA adapter parameters, or Ping from the multiaccess enclosure to the host.

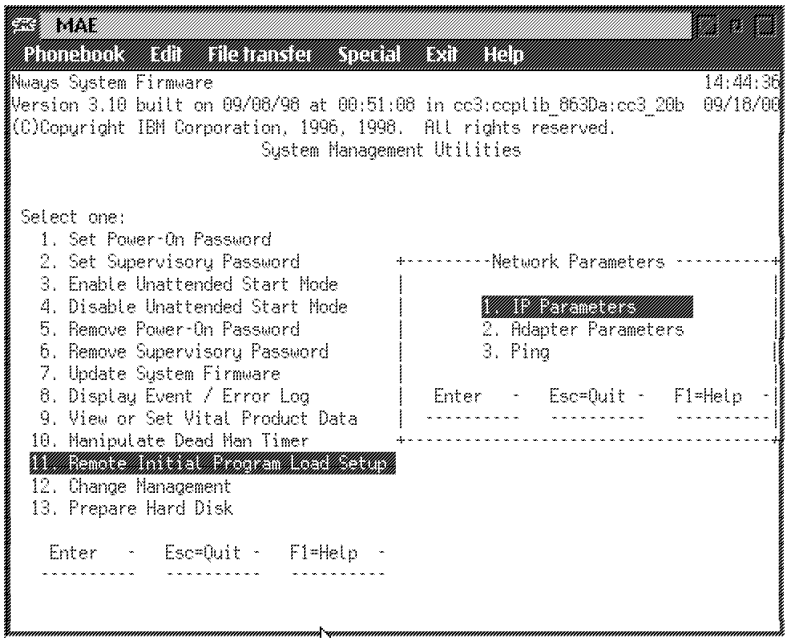


Figure 5-16. Setup Remote Initial Program Load Panel

- If you select **IP Parameters**, a panel will be displayed on which you can enter:
  - Client IP Address (the IP address of the multiaccess enclosure see note a)
  - Server IP Address (Service Processor)
  - Gateway IP Address (see note b)
  - Subnet Mask

  Notes:

  a. This is the address of the PCMCIA token-Ring card plugged on the system card of the MAE.

  b. If no gateway, specify the IP address of the service processor.

  An multiaccess enclosure comes from the factory with the following default IP addresses:

  Client 111.11.11.11

Server	111.11.11.10
Gateway	111.11.11.10
Subnet mask	255.255.255.0

3 The **Ping** option allows you to test connectivity.

Change Management

Change Management enables you to manipulate the multiaccess enclosure level of software code that will run on the multiaccess enclosure (Appendix E, “Managing Operational Code and Configuration Files” on page E-1 has additional information about change management.

Xmodem Software Selection

The Xmodem protocol is supported only from the “System Management Services” menu. To access the “System Management Services” menu, you have to either interrupt the boot-up sequence or bring up the multiaccess enclosure in Attended mode. The Change Management command is available from the “System Management Utilities” option of the Main Menu. From that point, the multiaccess enclosure will direct you as to what to transfer in and where to put the image.

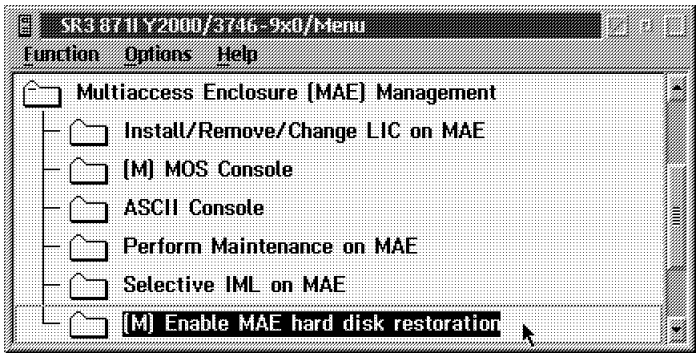
Note: When the multiaccess enclosure is in firmware mode, there is no active configuration or image. Therefore, you should use caution when specifying where to write new images or configurations.

Restoring the Image Code of the Multiaccess Enclosure Hard Disk

1 If the **Enable MAE hard disk restoration** has already been started go to Step **5 on page 5-31** . Otherwise continue with Step **2** .

2 In the **Multiaccess Enclosure (MAE) Management** window, double click on the **Enable MAE hard disk restoration** option.

.



3 The following window is displayed:

.

Press **Start**.

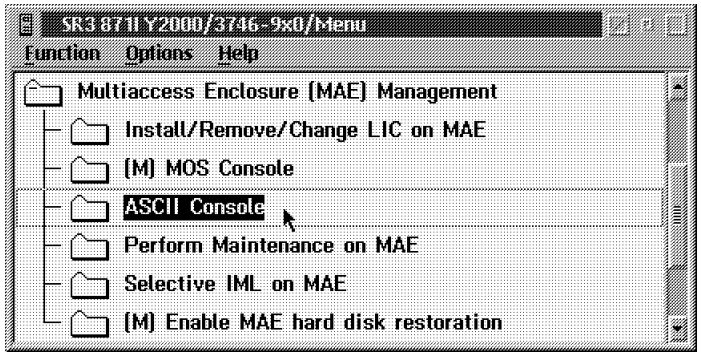
4 The following window appears:

.

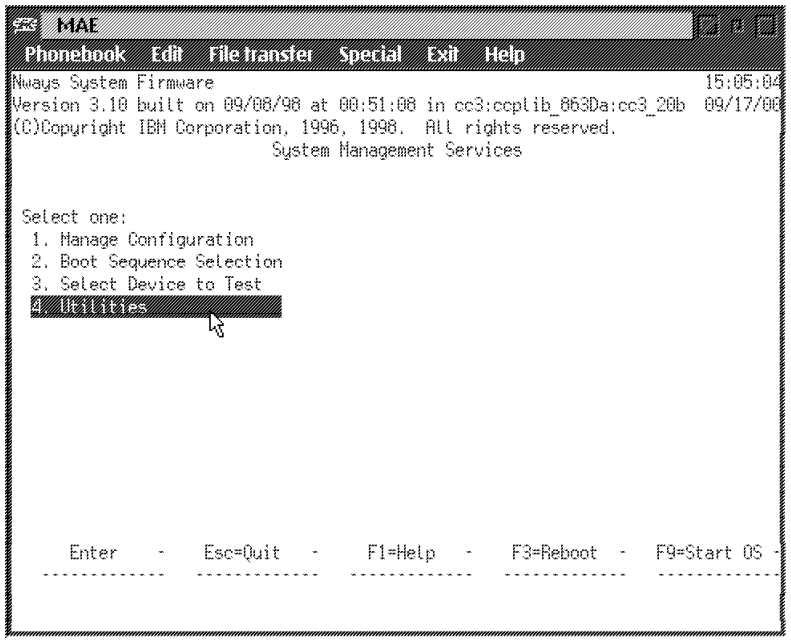
Do not Click on any Function key

5 Return to the **Multiaccess Enclosure (MAE) Management** window, then double click on the **ASCII Console** option.

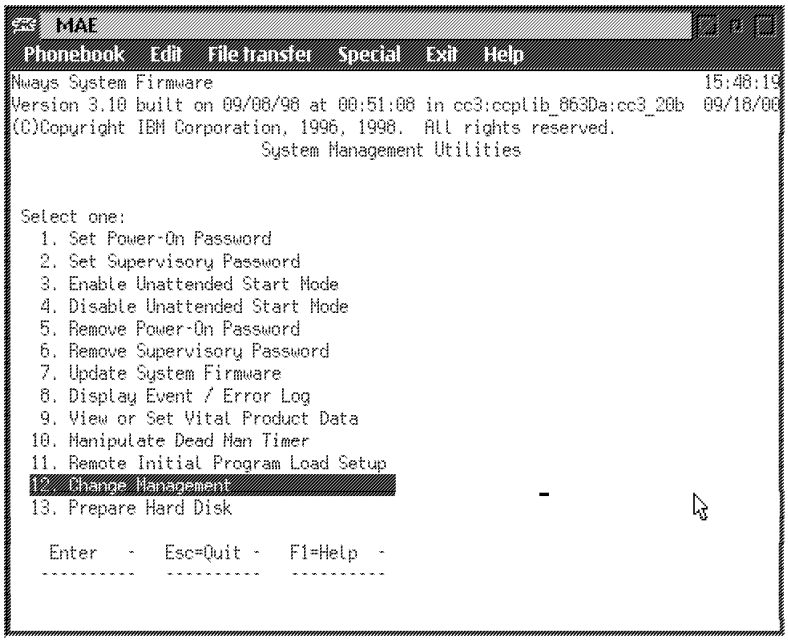
.



a The following window is displayed. Select **4. Utilities**.



b On **System Management Utilities** window, select **12. Change Management**.



C On **Change Management Software Control** window, select **10. TFTP Software**.

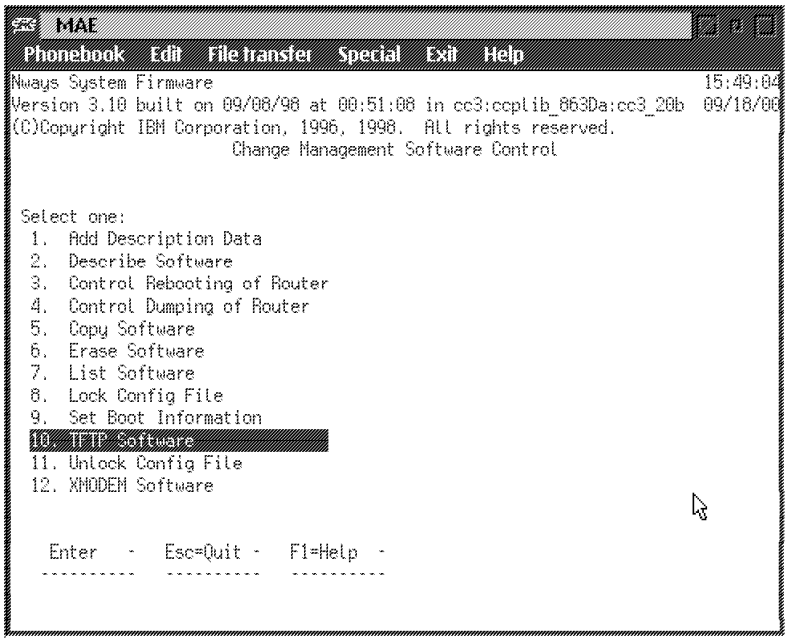
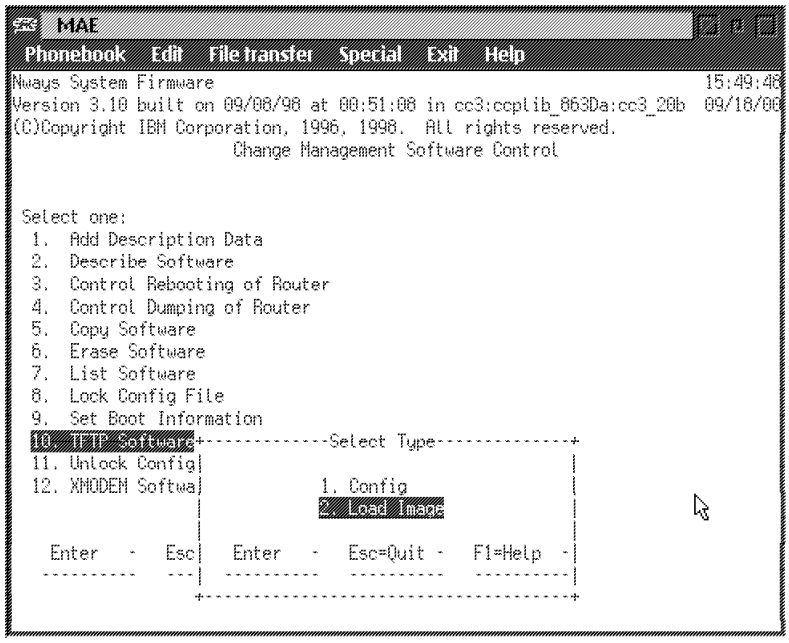
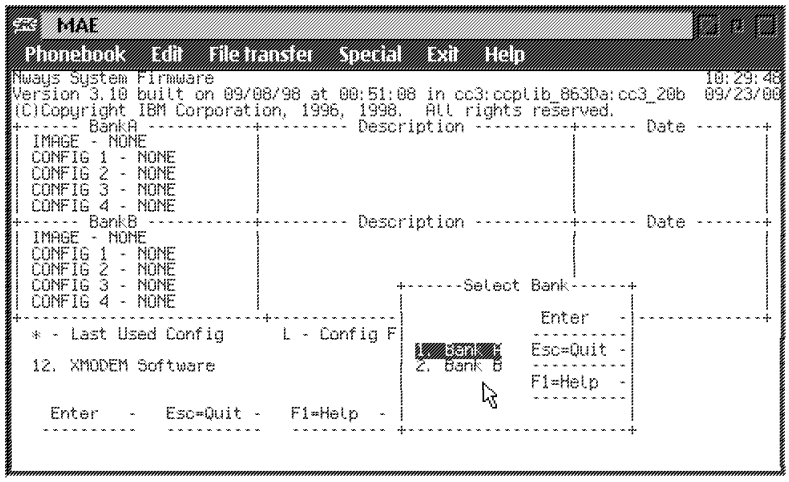


Figure 5-17. TFTP Software Selection

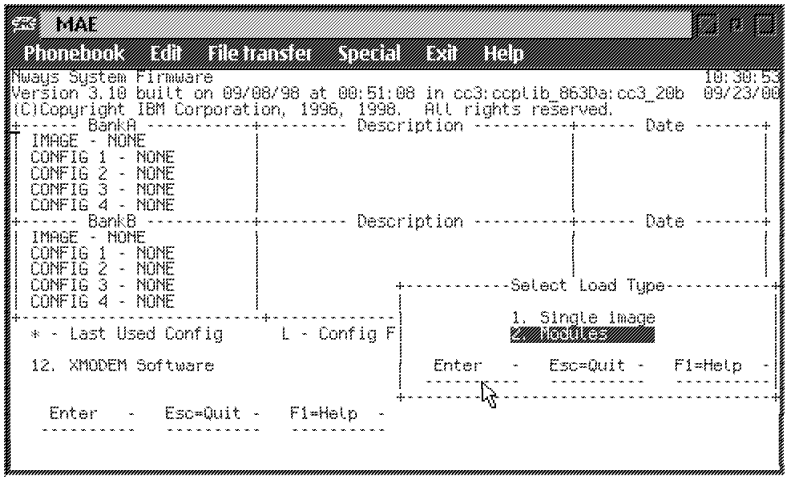
d Select **Load Image**, then press **Enter**.



e Select **1. Bank A**, then press **Enter**.

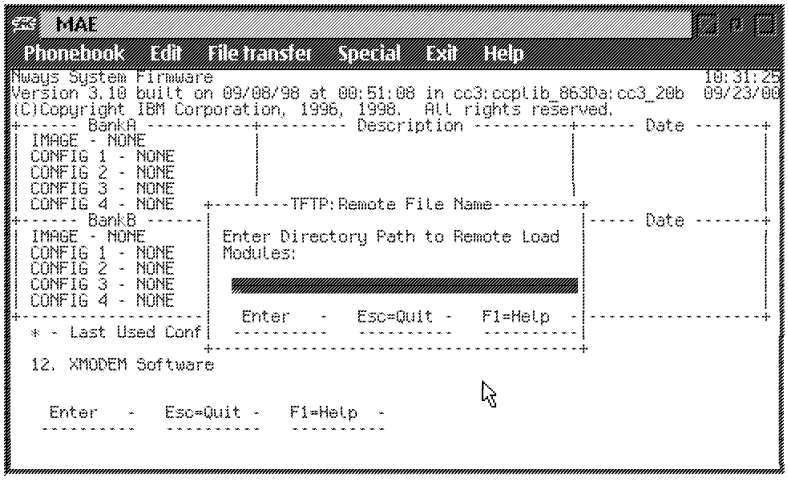


f Select **2. Modules**, then press **Enter**.



g The following window is displayed:

.



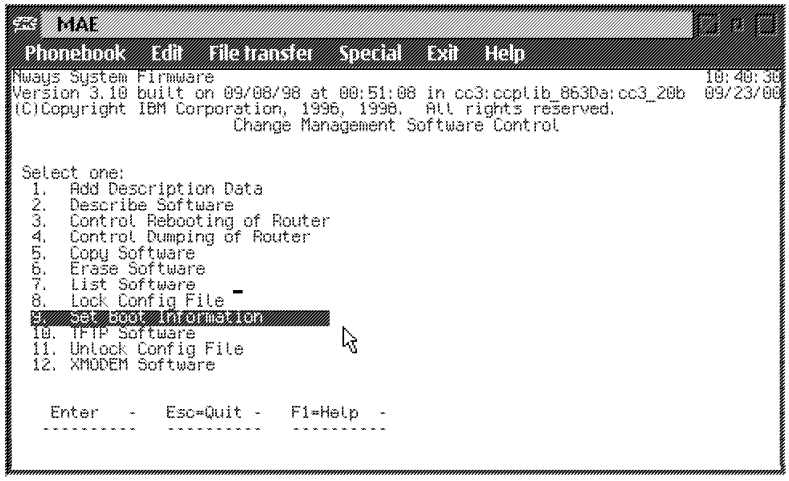
h Press **Enter**.

i The **Interface** window is displayed with **PCMCIA** selected. Press **Enter**.

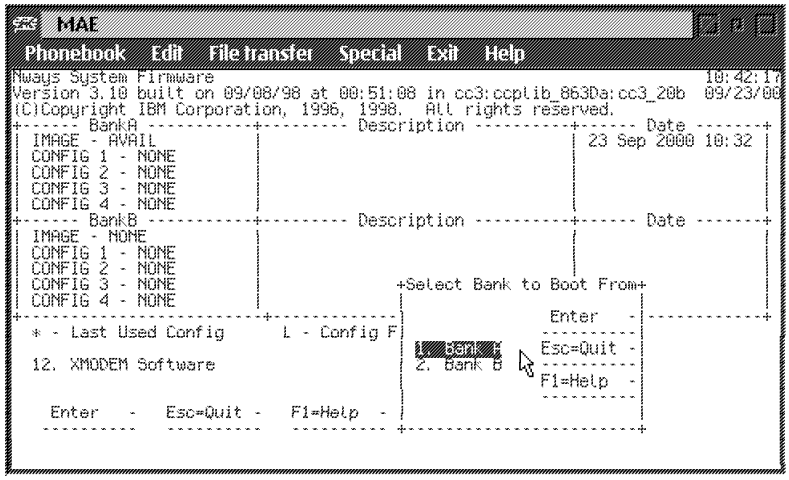
j Put the current window in background by clicking on the **Service Processor Menu** window, by example.

k Wait until the window Figure 5-17 on page 5-32 is displayed:

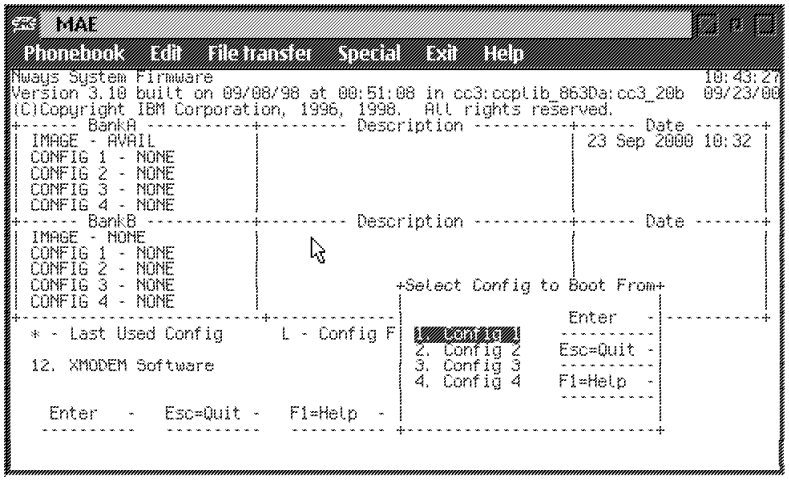
6 On **Change Management Software Control** window, select **9- Set Boot Information**.



7 Select **Bank A**, then press **Enter**.



8 In **Select Config to Boot from** window, select **Config 1**, then press **Enter**.



9 In **Select Duration** window select **Permanent**, then press **Enter**.

10 The **Change Management Software Control** window is displayed select **3. Control Rebooting of Router** then press **Enter**.

11 Select **Enable**, then press **Enter**.

12 On the **Change Management Software Control** window, select **4. Control Dumping of Router** then press **Enter**.

13 Select **Enable**, then press **Enter**.

14 On the **Change Management Software Control** window, press **Esc**, twice to return to **System Management Services**.

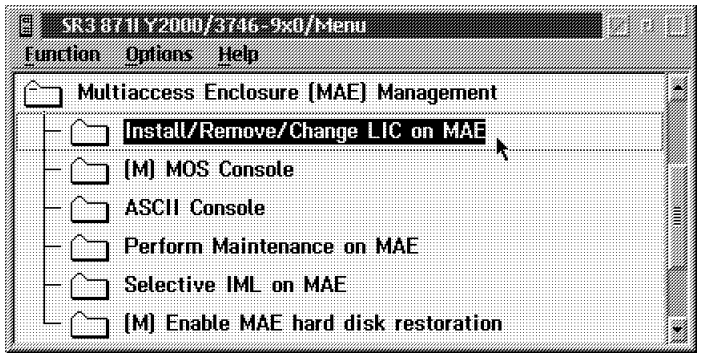
15 Press **F9**, to start the operating system. Follow the prompts and press the space bar to obtain the prompt:

```
Config (only)>
```

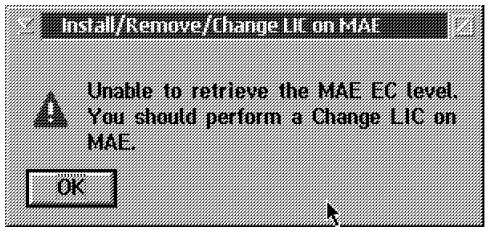
16 Return to the **Enable MAE hard disk restoration** window, then press **Exit**.

.

17 Now double click on **Install/Remove/Change LIC on MAE**.



18 If the following window is displayed:



19 Click on **OK**.

20 If you are in this procedure after changing the hard disk on the system card continue with Step **20a** . Otherwise go to Step **21 on page 5-39** .

a Click on **Install MAE...**.

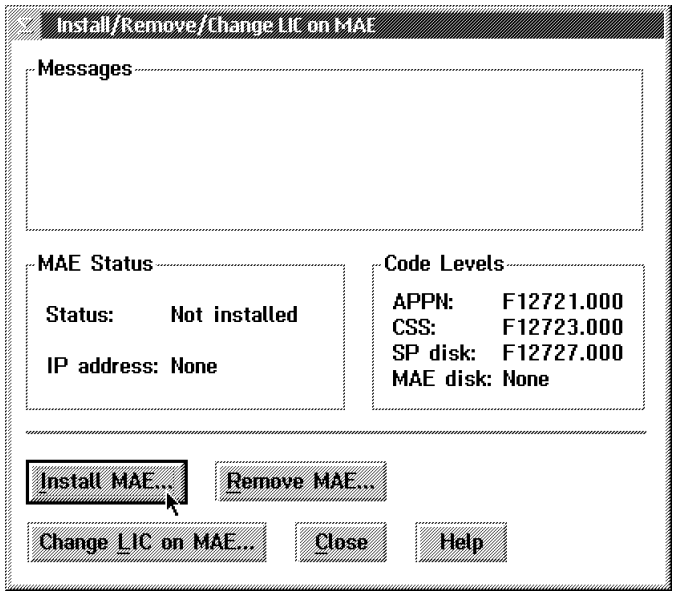


Figure 5-18. Install Multiaccess Enclosure

b Enter the **MAE IP address** (value recorded at the beginning of the procedure), then click on **OK**.

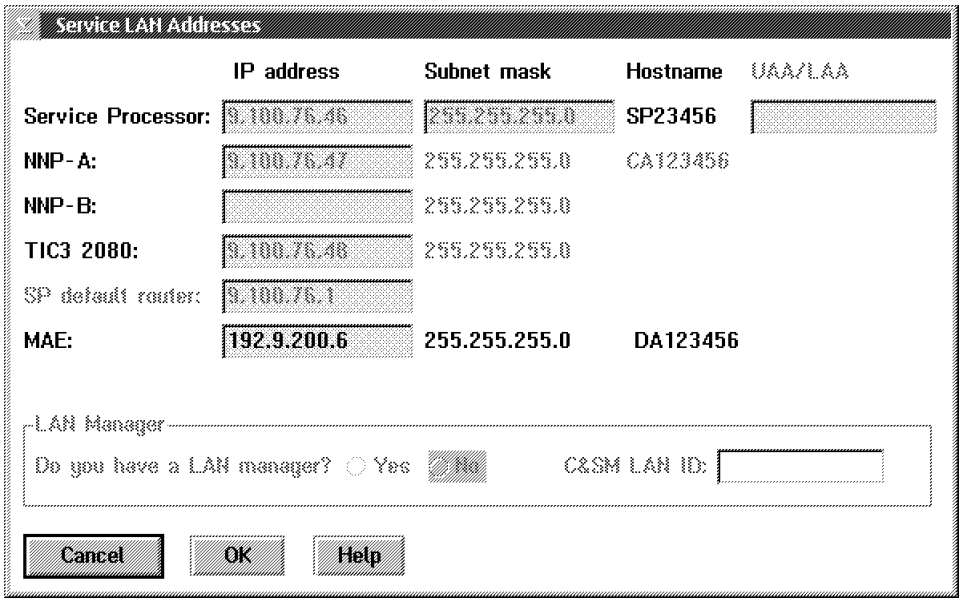


Figure 5-19. Service LAN Addresses

c Click on **Yes** to record your parameters.

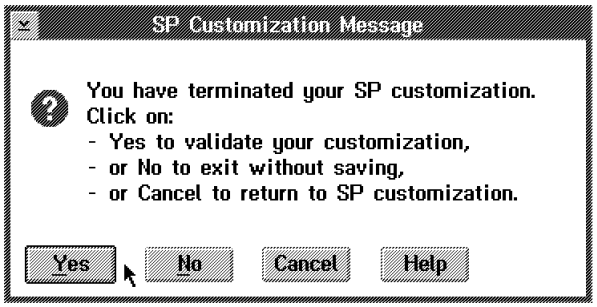


Figure 5-20. SP Customization Message

d When completed, click on **OK**.

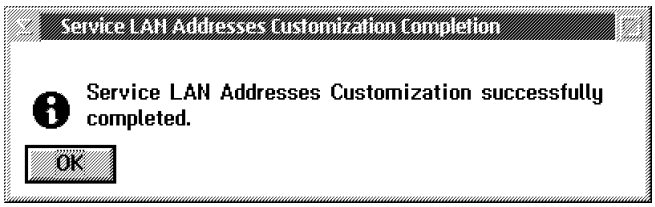


Figure 5-21. SP Customization Completed

e The MAE code is now being installed (it takes about 10 mn), when completed click on **Close**.

Note: Verify that the MAE link icon is **green**.

f Go to Step **25 on page 5-40** .

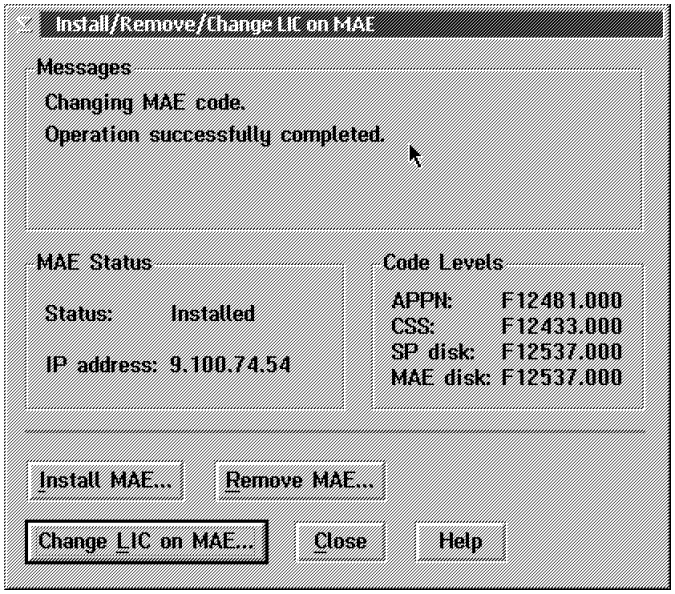
21 On the following window,

click on **Change LIC on MAE**.

22 Click on **OK** on the information message.

23 On the **Install/Remove/Change LIC on MAE** window, the name of files transfered appears.

24 Wait until the following window is displayed:



Click on **Close**.

25 Return to the procedure where you come from.

Using Operational Diagnostics

Operational diagnostics for the multiaccess enclosure can be invoked through the command line interface. Invoke the multiaccess enclosure operational diagnostics using the “Accessing the Operational Diagnostics from the Service Processor” on page 5-42.

If the multiaccess enclosure is not configured (booted up and in config-only mode), operational diagnostics cannot be invoked.

This chapter describes general procedures for invoking operational diagnostics and includes sample screens.

Overview of Diagnostic Functions and Status Information

Diagnostics are available to test each adapter. In some cases, you may also be able to test individual ports of multi-port adapters. These tests execute concurrently with normal operation on other adapters and ports.

You can use the following types of diagnostic pages:

- **Device List** to show a summary list of devices.
- **Device Status and Control** to allow you to disable and test a device
- **Test Results** to present the results of the test for a device.
- **Test Options** to allow you to choose specific testing options for a device.
- **Setup for Loop Test** to prompt for the presence of diagnostic aids such as wrap plugs.
- The **Restore from Loop Test** to prompt you to remove diagnostic aids that have been installed prior to testing.

Many of the diagnostic pages have help information that provides definitions of the status fields and testing options.

These diagnostics operate in a multi-tasking environment that allows several diagnostic processes to be active at the same time. The Diagnostic Control Program controls which test processes are active and which one has access to the user interface.

When you make a selection from the Device Status and Control Page for a device, a separate testing process is started that runs independently of the other diagnostic menus. You can then go back to the Device List page or exit the diagnostic menus, returning later to view the results of the test.

When an active test process wants to report results or obtain information from you, the diagnostic status for the device will change to MESSAGE. When you select the device on the Device List page, the testing process will be given access to the console interface and the message will be displayed.

Note: It is necessary to “refresh” the Device List and Device Status and Control pages in order to see the changing status of active test processes.

Accessing the Operational Diagnostics from the Service Processor

1 You should be logged ON on the service processor. If not go to Step 2. Otherwise continue with Step **3** .

2 To log ON:

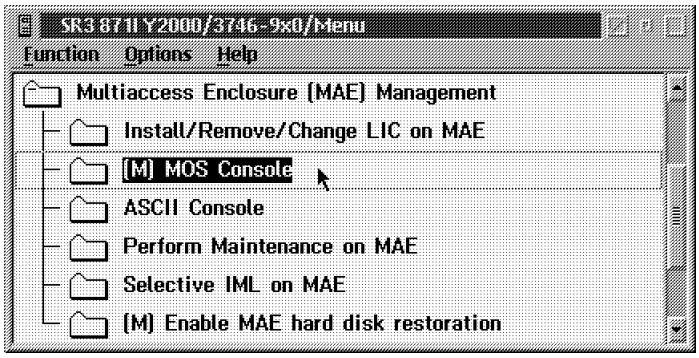
a On the **MOSS-E View** window, click on **Program** (in the action bar).

b Click on **Log On MOSS-E**.

c Enter the password and continue with Step **3** .

3 On the **MOSS-E View** window, double click on the 3746 icon.

4 On the **3746-9x0 Menu** click on the **Multiaccess Enclosure (MAE) Management** option. The following window is displayed.



5 Double click on the **MOS Console** option.

6 The command line interface (***** prompt). window is displayed.

```
*
```

7 Type **diags** and press **Enter**.

8 The Diagnostic Menu appears (Figure 5-22 on page 5-43). To make your selection, type in the number of your choice and press **Enter**.

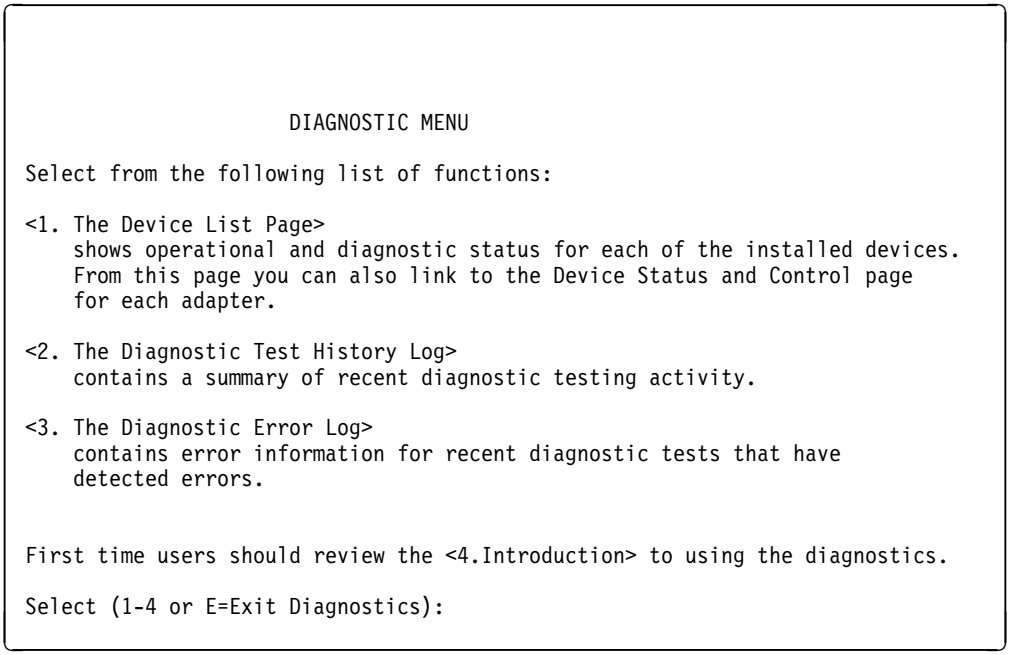


Figure 5-22. Operational Diagnostics Main Menu

Using the Command Line Interface Operational Diagnostics

The following example shows how to access the multiaccess enclosure diagnostics through the command line interface:

1 Select <**1. The Device List** > to view a list of installed devices. (Status and test options for each device are from the Device List page.) The Device Status and Control panel (similar to the one in Figure 5-23) appears.

```
                          Device List

"For more information on each device select from the following list:

   Device       Location                                Status
   Token Ring    Slot 1    Multi-Port   Adapter       ENABLED
< 1. Token Ring> Slot 1      Port 1     Net # 0       ENABLED
   Token Ring    Slot 1      Port 2                   NOT CONFIGURED
< 2. ATM MMF >   Slot 2      Port 1     Net # 1       DISABLED
  < 3. ESCON >   Slot 3   Single Port   Net # 2       ENABLED
  < 4. ESCON >   Slot 4   Single Port      --         NOT CONFIGURED




Some of the devices are note currently available for testing.  This can occur
when a test is not available for the device or when the device must be
configured in order to be tested,

Select (1-4 or D=Down B=Back  R=Refresh h=Help):
```

Figure 5-23. Sample of Device List Panel Showing Interfaces

The Device List is the starting point for running a test. It also provides a check to determine if all of the installed devices are being recognized by the multiaccess enclosure.

The Device List includes a summary status for each device. The devices that are testable or that have additional status available can be selected. Selecting a device will then display the Device Status and Control page for that device.

The Status displayed for a device may have the following values:

ENABLED	Device is enabled for normal operation. For multi-port devices this means that at least one port is enabled.
ENABLE PENDING	Waiting for completion of Enable request.
Special	Device is in a special state that is explained on the Device Status and Control Page.
DISABLED	Device is Disabled. Diagnostic testing can now be performed. For multi-port Devices this means that all ports are disabled.
DISABLE PENDING	Waiting for completion of Disable request.
MESSAGE	Select the device to view and respond to the message.

TESTING The device is being tested.

NOT CONFIGURED The device is not configured for normal operation.

MIS CONFIGURED The configuration does not match the physical device.

HARDWARE ERROR A Hardware Error has been detected which prevents further use of the device.

2 If you select the ATM interface (<**2. ATM MMF**> on the Device List panel), the Device Status and Control panel for the ATM adapter appears (Figure 5-24).

```
                          Device Status and Control

155Mb/s ATM over multi-mode fiber, Slot 2,- Net # 1

 Operational Status   Diagnostic Status  Fault Status   Network Connection
      DISABLED           ACTIVE              OK              UP

Select from the following:
    Disable Device
<1. Enable Device >
<2. Run Default Test >
<3. Run Interactive test >
<4. Loop Test - stop on first error >
<5. Loop Test - Log all errors >
     Stop Test
<6. View Hardware Test Log >
<7. View Hardware Error Log >


---------------------------------------------------------------

Select (1-7 or B=Back R=Refresh H=Help):
```

Figure 5-24. Device Status and Control Panel (Device Disabled)

The Device Status and Control Page displays status and a menu of actions for the selected device. The status fields that are displayed are dependent on the characteristics of the device.

The menu items that are active on the Device Status and Control panel are dynamically determined depending on the state of the device (that is, whether it is enabled, disabled, or testing).

In this example, the device is disabled. The Enable Device choice and all of the choices to start a test are active and can be selected. If the device were enabled, it would need to be disabled before testing.

When the Device Status and Control panel is displayed (and the status for the device is ENABLED), you can disable the device by selecting the Disable option.

When testing is complete, the device can be enabled using the diagnostic menus or using the router's **talk 5** commands.

Select **Refresh** periodically to update the status information for a device.

The status fields which are displayed for most devices have the following meanings:

- ***Operational Status***

ENABLED	The device is enabled for normal operation. For multi-port devices this means that at least one port is enabled.
ENABLED PENDING	Waiting for completion of Enable request.
See Note	The device is in a special state that is explained on the Page.
DISABLED	The device is Disabled. Diagnostic testing can now be performed. For multi-port Devices this means that all ports are disabled.
DISABLE PENDING	Waiting for completion of Disable request.
DIAGNOSTICS	A configured device is being used by the diagnostics.
NOT CONFIGURED	The device is not configured for normal operation.
MIS CONFIGURED	The configuration does not match the physical device.
HARDWARE ERROR	A hardware error has been detected that prevents further use of the device.

- ***Diagnostic Status***

INACTIVE	Diagnostic for the device is not running.
TESTING	A testing process for the device is active and the device is being tested.
LOOP AND LOG	A testing process for the device is active and will loop and log any errors until stopped.
LOOP UNTIL ERROR	A testing process for the device is active and will loop until an error occurs or it is stopped.
MESSAGE	A testing process for the device is active and it is waiting for user input.

- ***Fault Status***

OK	The last test of the device completed without error.
ISOLATED	A hardware failure has been detected and isolated to the device.
NON-ISOLATED	A problem has been detected, but the failure may be external to the device. This most often occurs with network adapters that have external cables, modems, or LAN connections. Running a diagnostic of the adapter with a wrap plug attached can usually determine if the adapter has failed.

UNKNOWN	No test results are currently available for the device.

- ***Network Status***

UP	The network connection is established.
DOWN	A network connection cannot be detected.
TESTING	The router is attempting to determine if a network connection exists.
UNKNOWN	The state of a network connection cannot be determined at this time.
N/A	Network Status does not apply to this device.

Explanation of menu choices

While all of the menu choices are displayed for each device, only those that are appropriate for the current state of the device will be active for a selection.

Enable Device	The device will be enabled for normal operation. This performs the same function as the **enable** or **test** commands available at the router's monitoring (talk 5) prompt (+).
Disable Device	The device is taken out of its normal operational state. If this menu option is available, then the device must be disabled before any diagnostic test can be started. This performs the same function as the **disable** command available at the router's monitoring (talk 5) console.
Run Default Test	This starts a test which assumes that the device is set up for normal operation. For communication adapters this means that it has a cable attached and is connected to the network.
Run Interactive Test	This starts a test which will present an additional menu of options such as cable attachment and wrap plugs can be specified.
Stop Test	Stops a looping test. Depending on the length of each test loop, this could take up to a minute.
Loop Test - stop on first error	This starts a looping test that will stop when the first error is detected. A menu of additional test options may be presented before the loop is started.
Loop Test - Log all errors	This starts a looping test that will loop until a \"Stop Test\" request is made. All detected errors are logged. A menu of additional test

	options may be presented before the loop is started.
View Test History Log	Displays a history of recent diagnostic tests that have been executed.
View Hardware Error Log	Displays a list of errors detected by diagnostic tests.

3 Type **E** and press **Enter** to exit the diagnostic menus and return to the command line interface prompt (*****).

Testing the Adapters

These tests for the adapters help to determine whether or not the adapter is functioning correctly. Most of the adapters (for example, the EIA 232, X.21, V.35/36, ESCON, and HSSI) contain basic testing functions; however, other adapters may have additional tests such as wrap plug and cable tests. The ESCON adapter also has optical power (page 5-57) and light reception tests (page 5-53).

Complete the following steps to test a faulty (or newly installed) Adapter:

- Power on the multiaccess enclosure.
- Run diagnostics on the new adapter (page 5-50)
- If you have an ESCON adapter, run the light test on the new fiber optic cable (page 5-53).

Refer to “Overview of Diagnostic Functions and Status Information” on page 5-41 for additional information on the use of multiaccess enclosure operational diagnostics.

Running Diagnostics on the New Adapter

The following is a sample sequence with sample screens for running the diagnostics. The selections that you see during your test may be different.

Before running the test, disable the adapter (see “Suspend Traffic on an Adapter Port” on page F-3).

1. Refer to “Accessing the Operational Diagnostics from the Service Processor” on page 5-42 to obtain the **DIAGNOSTIC MENU** (Figure 5-22 on page 5-43).
2. Type **1** and press **Enter** to access the Device List Page.
3. Select a device to test (for example, type **4** for ESCON) to test the ESCON channel adapter in slot 4.
4. Select **Run Interactive Test**. The Test Options menu appears:

```
                                                                Screen 1 of 1
                          Test Options

LIC 287 - ESCON Channel Adapter, Slot 4

Operational Status  Diagnostic Status  Fault Status  Network Connection
  NOT CONFIGURED         MESSAGE         UNKNOWN          UNKNOWN

Do not remove this device while testing.
Select one of the following test options:
 * < 1. Run all tests excluding external wrap test >
 * < 2. Run all tests including external wrap test >
   Individual tests:
 * < 3. PCI BUS >
 * < 4. PROCESSOR >
 * < 5. MEMORY >
 * < 6. MEMORY PROT >
 * < 7. TIMER >
 * < 8. AIB >
 * < 9. WRAP PLUG >
 * <10. OPTICAL POWER >
 * <11. LIGHT RECEPTION >


Select (1-11 or   B=Back R=Refresh H=Help ):2
```

5 Type **2** and press **Enter** to run all tests including external wrap test. The following panel appears:

```
                                                                  Screen 1 of 1
                      Setup For Wrap Test

LIC 287 - ESCON Channel Adapter, Slot 4

Operational Status  Diagnostic Status  Fault Status  Network Connection
  NOT CONFIGURED         TESTING         UNKNOWN          UNKNOWN

Do not remove this device while testing.

Install the wrap plug (PN 5605670) on the ESCON adapter located in slot 4

Confirm that the wrap plug is installed.
< 1. Start test. >



Select (1 or   B=Back R=Refresh H=Help ):1
```

6 Attach the wrap plug. Type **1** and press **Enter** to start the test.

This is a long-running test. The Device Status and Control Menu is displayed again. Note that the Diagnostic Status is TESTING. This indicates that the tests are running and will take about 3 minutes to complete.

```
                                                                  Screen 1 of 1
                            Device Status and Control Menu

LIC 287 - ESCON Channel Adapter, Slot 4

Operational Status  Diagnostic Status  Fault Status  Network Connection
  NOT CONFIGURED         TESTING         UNKNOWN          UNKNOWN

Do not remove this device while testing.

Select from the following:
        Disable Device
        Enable Device
        Run Default Test
        Run Interactive Test
        Loop Test - stop on first error
        Loop Test - Log all errors
        Stop Looping Test
   < 1. View Test History Log >
   < 2. View Hardware Error Log >



Select (1-2 or   B=Back R=Refresh H=Help ):r
```

7 Type **r** and press **Enter** to refresh the display until the Diagnostic Status changes from TESTING to MESSAGE. At this point, the following panel is displayed:

```
                                                                Screen 1 of 1
                            Restore From Wrap Test

LIC 287 - ESCON Channel Adapter, Slot 4

Operational Status  Diagnostic Status  Fault Status  Network Connection
  NOT CONFIGURED         MESSAGE         UNKNOWN          UNKNOWN

Do not remove this device while testing.

Remove the wrap plug on the ESCON adapter located in slot 4.

Reattach the fiber connection.

Select Back to see the results of the test.
Select (  B=Back R=Refresh H=Help ):b
```

8 Remove the wrap plug.

9 Reconnect the network cable to the adapter.

10 Select **b** to view the results of the test. In this example, the system reports test completion with No Errors. If the test fails, you will receive a message directing further action.

```
                                                                Screen 1 of 1
                                 Test Results

LIC 287 - ESCON Channel Adapter, Slot 4

Operational Status  Diagnostic Status  Fault Status  Network Connection
  NOT CONFIGURED        INACTIVE           OK            UNKNOWN

The Test Completed with No Errors.




Select (  B=Back ): b
```

11 Select **b** to return to the Device Status and Controls Menu.

ESCON-only Tests

Run the Light Test on the New Fiber Optic Cable

After you have run diagnostics on the new ESCON adapter and verified that it is functioning correctly, you can test that the fiber optic cable is connected correctly and transmitting light to the adapter.

1 From the Device Status and Controls Menu, select Run Interactive Test to display the Test Options panel.

```
                                                                Screen 1 of 1
                          Test Options

LIC 287 - ESCON Channel Adapter, Slot 4

Operational Status  Diagnostic Status  Fault Status  Network Connection
  NOT CONFIGURED         MESSAGE         OK              UNKNOWN

Do not remove this device while testing.
Select one of the following test options:
 * < 1. Run all tests excluding external wrap test >
 * < 2. Run all tests including external wrap test >
   Individual tests:
 * < 3. PCI BUS >
 * < 4. PROCESSOR >
 * < 5. MEMORY >
 * < 6. MEMORY PROT >
 * < 7. TIMER >
 * < 8. AIB >
 * < 9. WRAP PLUG >
 * <10. OPTICAL POWER >
 * <11. LIGHT RECEPTION >


Select (1-11 or   B=Back R=Refresh H=Help ):11
```

2 Enter **11** on the Test Options Panel to run the light reception test. At this point, the following panel appears.

```
                                                                Screen 1 of 1
                       Setup For Light Reception Test

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     NOT CONFIGURED     TESTING            OK            UNKNOWN

First, be sure that you have successfully run the Wrap Plug Test on slot 4.

Then, remove the wrap plug from the ESCON adapter
(if still installed).

Connect the fiber for an operational ESCON channel to the adapter located in
slot 4.

Confirm that the correct fiber is installed.
< 1. Start test. >









Select (1 or   B=Back R=Refresh H=Help ):1
```

3 Install the fiber, then enter **1** to start the test. Because this is a “long running test,” the Device Status and Control Menu will be displayed again. Notice that the Diagnostic Status is TESTING. This indicates that the test is now running and will take about 20 seconds to complete.

```
                                                                Screen 1 of 1
                            Device Status and Control Menu

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     NOT CONFIGURED     TESTING             OK            UNKNOWN

Do not remove this device while testing.

Select from the following:
        Disable Device
        Enable Device
        Run Default Test
        Run Interactive Test
        Loop Test - stop on first error
        Loop Test - Log all errors
        Stop Looping Test
   < 1. View Test History Log >
   < 2. View Hardware Error Log >



Select (1-2 or   B=Back R=Refresh H=Help ):r
```

4 Keep entering **r** until the Diagnostic Status changes from TESTING to MESSAGE. At this point, the following panel is displayed.

```
                                                                Screen 1 of 1
             Restore From Light Reception Test

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     NOT CONFIGURED     MESSAGE             OK            UNKNOWN

Do not remove this device while testing.

Leave the fiber connected to the ESCON adapter located in slot 4
if it is the fiber intended for this adapter.

If it is not the fiber intended for this adapter,
connect the correct fiber now.

Select Back to see the results of the test.









Select (  B=Back R=Refresh H=Help ):b
```

5 Typically, you do not need to do anything here. If you are testing cables, this simply tells you that the test has completed and that you should ensure that the correct fiber is connected.

6 Select **b** to see the results of the test.

```
                                                                Screen 1 of 1
                                Test Results

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     NOT CONFIGURED     INACTIVE            OK            UNKNOWN

The Test Completed with No Errors.









Select (  B=Back ):
```

If the test completed with no errors, light was detected on the fiber optic cable.

```
                                                                Screen 1 of 1
                Test Results

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     NOT CONFIGURED     INACTIVE       NON-ISOLATED       UNKNOWN

No light is being detected on the ESCON adapter in slot 4.  Ensure that the
ESCON fiber is connected to an ESCON director or an ESCON channel.









Select (  B=Back ):e
```

If light was not detected, an error message is displayed, indicating that the fiber and its connections need to be rechecked.

ESCON Interactive Test Options

The Test Options menu is displayed in response to a Run Interactive Test request on the Device Status and Control Menu. Both test suites and individual tests are available to allow you to examine the entire adapter or isolate its various components.

```
                                                                Screen 1 of 1
                                  Test Options

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     DISABLED           MESSAGE          UNKNOWN          UNKNOWN

Do not remove this device while testing.
Select one of the following test options:
 * < 1. Run all tests excluding external wrap test >
 * < 2. Run all tests including external wrap test >
   Individual tests:
 * < 3. PCI BUS >
 * < 4. PROCESSOR >
 * < 5. MEMORY >
 * < 6. MEMORY PROT >
 * < 7. TIMER >
 * < 8. AIB >
 * < 9. WRAP PLUG >
 * <10. OPTICAL POWER >
 * <11. LIGHT RECEPTION >

Select (1-11 or   B=Back R=Refresh H=Help ):
```

Option 1 on the Test Options menu runs tests 3 through 8. Option 2 runs the first test set and the wrap test. The remaining options, 3 to 11, enable the execution of tests individually.

If you select option 3, 4, 6, or 7, the results will be displayed immediately.

If you select test option 1, 2, 5, 8, 9, or 11 (all long-running tests) the result may not be available for a few minutes. In this case, the test will continue to run and the Device Status and Control Menu will be displayed again.

If you select option 1, 2, 5, 8, 9, or 11, you will also notice that the Operational Status field indicates “TESTING.” In these instances, you will need to refresh the panel until the system displays your test results. Option 10 is also a long-running test, but selection of this option does not invoke the Device Status and Control Menu. Instead, the system displays a panel that allows you to end the test at your convenience.

The individual tests are the same tests that run as part of the default tests. However, there are a few additional tests that are available only from the Test Options menu. They are:

Wrap plug Option 9 runs the AIB test unit and an optical (external) wrap test. The wrap test requires that the fiber be removed and a wrap plug be installed. For an example of using this function, see “Testing the Adapters” on page 5-49.

Optical power Option 10 runs the AIB test unit and allows you to measure the optical output of the adapter. This test requires that the fiber be removed and an optical power meter be attached. See “ESCON Optical Power Measurement Test” on page 5-57 for additional information.

Light reception Option 11 runs the AIB test unit and also tests whether the attached fiber is transmitting light. This test can be used to determine if the remote end of the fiber is connected. For an example of using this function, see “Testing the Adapters” on page 5-49.

ESCON Optical Power Measurement Test

The following example describes the use of option **10**, Optical Power.

Enter **10** on the Test Options panel to run the optical power meter test.

```
                                                              Screen 1 of 1
                                Test Options

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     DISABLED           MESSAGE          UNKNOWN          UNKNOWN

Do not remove this device while testing.
Select one of the following test options:
 * < 1. Run all tests excluding external wrap test >
 * < 2. Run all tests including external wrap test >
   Individual tests:
 * < 3. PCI BUS >
 * < 4. PROCESSOR >
 * < 5. MEMORY >
 * < 6. MEMORY PROT >
 * < 7. TIMER >
 * < 8. AIB >
 * < 9. WRAP PLUG >
 * <10. OPTICAL POWER >
 * <11. LIGHT RECEPTION >

Select (1-11 or   B=Back R=Refresh H=Help ):10
```

The optical power measurement test verifies that the ESCON channel adapter in the slot indicated is operating correctly and that the receive input level is within tolerance.

This test assumes that you have the following equipment installed:

- Optical Power Meter
- Duplex-to-Duplex Coupler
- Duplex-to-Biconic Test Cable

If you do not have the correct equipment, or wish to bypass this test, reinstall the fiber (if you removed it) and select **B** to return.

Using the materials previously listed to complete the test, perform the following steps:

1 Ensure that the black cap is over the biconic receptacle at the top of the power meter.

2 Press power On/Off. AUTO OFF appears on the display.

3 Allow a 2-minute warm-up. The meter turns off if you do not press a button within 10 minutes.

4 If the meter does not display **Optical Power Meter**, repeatedly press the lambda pushbutton until 1300 nm appears.

Note: To ensure that the pushbutton produces the desired results, do not hold down the pushbutton for more than half a second.

5 Press Zero. The following two displays appear:

- A value between 0.30 and 0.70 nanowatts (nW)
- After a short time **0** blinks, indicating that the meter is correctly zeroed.

  If the meter is not correctly zeroed, a Hi or Lo is displayed after you press Zero. Press Zero again, and using a jeweler's screwdriver, adjust the trim pot that is beside the biconic receptacle at the top of the meter until a value between 0.30 and 0.70 nW is displayed. Set the value to 0.50, if possible.

6 Press Zero again to zero the meter.

The meter must also display dBm. If nW is displayed, press dBm/Watt. The optical power meter is now set.

7 After you set the meter, connect the black biconic connector of the test cable to the biconic receptacle on top of the power meter.

8 Enter **1** to start the test as indicated in the following example.

```
                                                                Screen 1 of 1
                            Setup For Optical Test

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
   DISABLED              TESTING         UNKNOWN          UNKNOWN

Do not remove this device while testing.

Install the duplex-to-biconic test cable connector to the ESCON
channel adapter located in slot 4.

Set the optical power meter to the following options:
 * -- Power turned on
 * -- Set for 1300 nanometers (nm)
 * -- Zeroed
 * -- The decibel scale displayed (dBm)

Confirm the meter is set.

< 1. Start > the adapter transmitter.

Select (1 or   B=Back R=Refresh H=Help ):1
```

The green port LED on the multiaccess enclosure ESCON Adapter will start blinking once the adapter has started transmitting the idle sequences. At this point, record the signal level displayed on the power meter. A correctly functioning multiaccess enclosure ESCON adapter should have a power level of -21.0 dBm or more (for example, -18.0 dBm).

9 Replace the ESCON Channel Adapter if its power level is too low.

10 Enter **1** from the Optical Test in Progress panel to Stop the test.

```
                                                                  Screen 1 of 1
                            Optical Test In Progress

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
   DISABLED             TESTING         UNKNOWN          UNKNOWN

Do not remove this device while testing.

The green PORT LED should now be flashing on the ESCON channel
adapter in slot 4, indicating that it is transmitting IDLE sequences.
You may now record the power level displayed on the optical power meter
A properly functioning ESCON should have a power level of -21.0dBm or more
(for example -18.0dBm).

Select < 1. Stop > test when you have finished
measuring the signal level.




Select (1 or   B=Back R=Refresh H=Help ): 1
```

11 The following Test Results panel is displayed when you stop the test.

```
                                                                  Screen 1 of 1
                                  Test Results

LIC 287 - ESCON Channel Adapter, Slot 4, Net # 0

Operational Status  Diagnostic Status  Fault Status  Network Connection
     DISABLED           INACTIVE            OK            UNKNOWN

The Test Completed with No Errors.









Select (  B=Back ):
```

CE Leaving Procedure

Check List

You should use the following list to ensure that the machine is in suitable condition for customer operation and that call information is recorded.

1. If previously, you have worked on 3745 or 3746, be sure to have restore them at a correct status for customer application: MOSS online, 3746 online, FRU active in CDF-E, and **MAE-Link** icon green (see note).
2. Ask the customer to restart his application.
3. If you have a problem, call your support for assistance

Note: The SIE resource does not appear in CDF-E. The MAE status appears as available in CDF-E.

Chapter 6. Installing Options

Installing a Dual Power Supply (FC 3500)

BEFORE INSTALLATION

Machines Affected

3746 Models 9X0 with a Multiaccess Enclosure FC 3000, and without a Dual Power Supply (FC 3500).

This feature should only be applied on the machine serial for which it is specified.

Related BMs and ECs

None.

BMs to be Installed

FFBM	Title
86H0248	Dual Power Supply (FC 3500).

Preparation

__ 1. Familiarize yourself with the purpose and details of these installation instructions.

__ 2. Check all the items and count the parts listed on the B/M(s) to be installed to determine that all the parts have been received.

__ 3. Obtain the Hone plugging sheet (provided by the Marketing Representative) or ask to the customer.

Programming

None

Purpose and Description

Purpose

Increase the reliability of the 3746 Nways Multiaccess Enclosure

Description

Install a second Power Supply on the Multiaccess Enclosure.

Installation Time

BM Installed	Machine Hours	System Hours	Nb of CE
86H0248	0.0	0.0	1

Tools/Materials Required

None

INSTALLATION

Safety

Review the **Safety Notices** and the **Safety Inspection Procedures** located at the beginning of the:

- *3746-950 Service Guide*, SY33-2108, or
- *3746-900 Service Guide*, SY33-2116.

Details of Installation

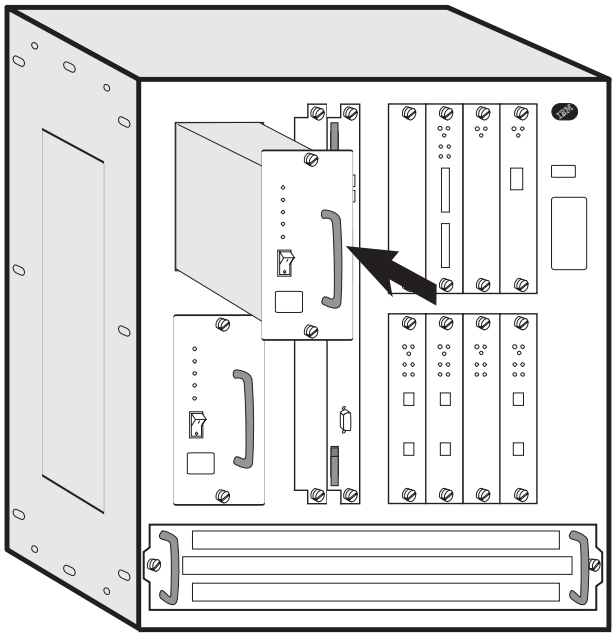
__ 1. Open the front and back doors of the Controller Expansion

__ 2. Identify the location where the second power supply module has to be installed.

__ 3. Remove the filler plate.

__ 4. Unpack the power module and verify that the power switch is set to **OFF (0)**.

__ 5. Insert the power module into the Multiaccess Enclosure.



__ 6. Position the screws, then slide the module into its location.

__ 7. Secure the module by tightening the screws.

__ 8. Plug one side of the power cord (PN 58G5783), provided with the B/M, on the power module, route it to the nearest ac Outlet Distribution Box, then plug the other side of the power cord on a free connector of the ac Outlet Distribution Box

__ 9. Verify that the **AC Indicator** LED is **ON**

If the **AC Indicator** LED is **OFF**, refer to Chapter 3, “Multiaccess Enclosure Problem Determination” on page 3-1.

__ 10. Switch **ON** the power module.

__ 11. Verify that the **DC Indicator** LED is **ON** and the **Overcurrent Indicator** LED is **OFF**.

If the **AC Indicator** LED is **OFF** or the **Overcurrent Indicator** LED is **ON**, refer to Chapter 3, “Multiaccess Enclosure Problem Determination” on page 3-1.

__ 12. Close the front and back doors of the Controller Expansion

__ 13. Notify the Customer that you are finished installing the feature.

Test procedures.

No test required.

Field Updating.

None.

Go to “After Installation.” on page 6-17 .

Installing an Adapter (FC 32XX).

BEFORE INSTALLATION

Machines Affected

3746 model 9X0 with Multiaccess Enclosure FC 3000.

This feature should only be applied on the machine serial for which it is specified.

Related BMs and ECs

None.

BMs to be Installed

FFBM	Title
02L0647	1-Port High-Speed Serial Interface Adapter (FC 3289), or
02L0649	1-Port 10/100-Mbps Ethernet Adapter (FC 3288), or
02L0651	1-Port High Performance ATM 155-Mbps MMF Adapter (FC 3294), or
02L0653	1-Port High Performance ATM 155-Mbps SMF Adapter (FC 3295), or
08L3395	1-Port Parallel Channel Adapter (FC 3299), or
25L3563	4-Port ISDN PRI/Channelized T1/J1 Adapter (FC 3297), or
25L3565	4-Port ISDN PRI/Channelized E1 Adapter (FC 3298), or
86H0247	2-Port Token Ring Adapter (FC 3280), or
86H0246	2-Port Ethernet Adapter (FC 3281), or
86H0238	8-Port EIA-232E/V24 Adapter (FC 3282), or
86H0241	1-Port ISDN-PRI T1/J1-Interface Adapter (FC 3283), or
86H0244	1-Port ATM 155-Mbps MMF Adapter (FC 3284), or
85H9681	1-Port FDDI Adapter (FC 3286), or
85H0251	1-Port ESCON Channel adapter (FC 3287), or
86H0239	6-Port V35/V36 Adapter (FC 3290), or
86H0240	8-Port X21 Adapter (FC 3291), or
86H0242	1-Port ISDN-PRI E1-Interface Adapter (FC 3292), or
86H0245	1-Port ATM 155-Mbps SMF Adapter (FC 3293).

Preparation

- Familiarize yourself with the purpose and details of these installation instructions.
- Check all the items and count the parts listed on the B/M(s) to be installed to determine that all the parts have been received.
- Obtain the Hone plugging sheet (provided by the Marketing Representative) or ask to the customer.

Programming

None

Purpose and Description

Purpose
Increase the connectivity capability of the 3746-9x0

Description
Install an adapter in the 3746 Nways Multiaccess Enclosure.

Installation Time

BM Installed	Machine Hours	System Hours	Nb of CE
*	0.5	0.0	1

* See BM to be installed.

Tools/Materials Required
None

INSTALLATION

Safety

Review the **Safety Notices** and the **Safety Inspection Procedures** located at the beginning of the:

- *3746-950 Service Guide*, SY33-2108, or
- *3746-900 Service Guide*, SY33-2116.

Details of Installation

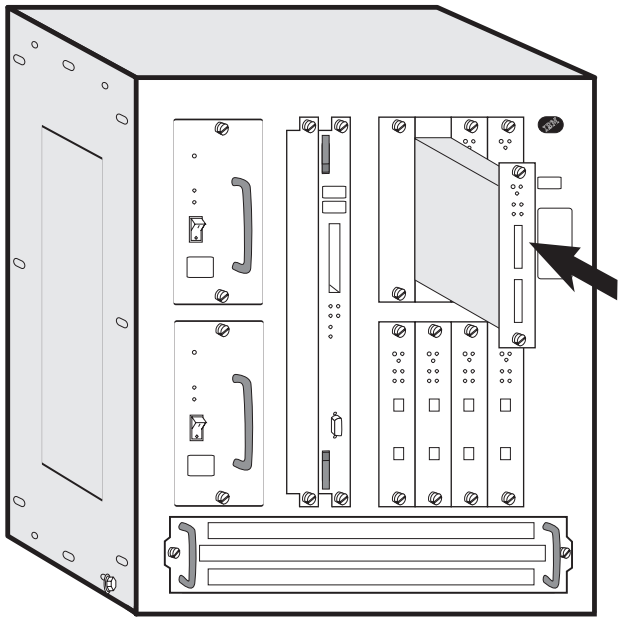
Installing an Adapter

__ 1. Open the front door of the Controller Expansion

__ 2. Using the Hone sheet, the Figure A-1 on page A-1 and refering to Appendix B, “MAE Adapters Plugging Rules” on page B-1, identify the location where the adapter has to be installed.

__ 3. Remove the filler plate.

__ 4. Insert the adapter module into the machine.



__ 5. Position the screws, then slide the module into its location.

__ 6. Secure the module by tightening the screws.

__ 7. Check that the green LED of the adapter comes ON and that the Wrong Slot LED is OFF.

- If not, check the adapter installation.
- If the problem persists call the Network Support Center.
- Otherwise, continue.

__ 8. Connect the cable provided with the B/M on the adapter connector according to the worksheet or ask the customer.

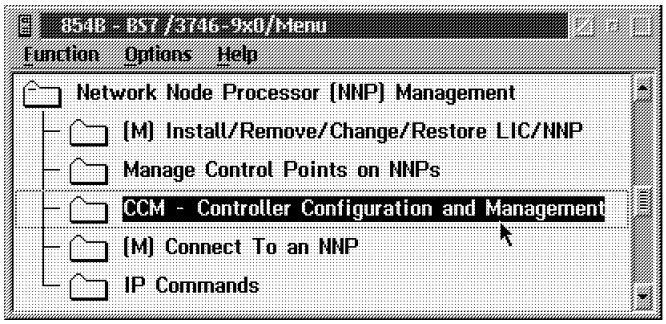
__ 9. Then, tighten the cable screws (if present).

__ 10. Label the cables for proper reconnection.

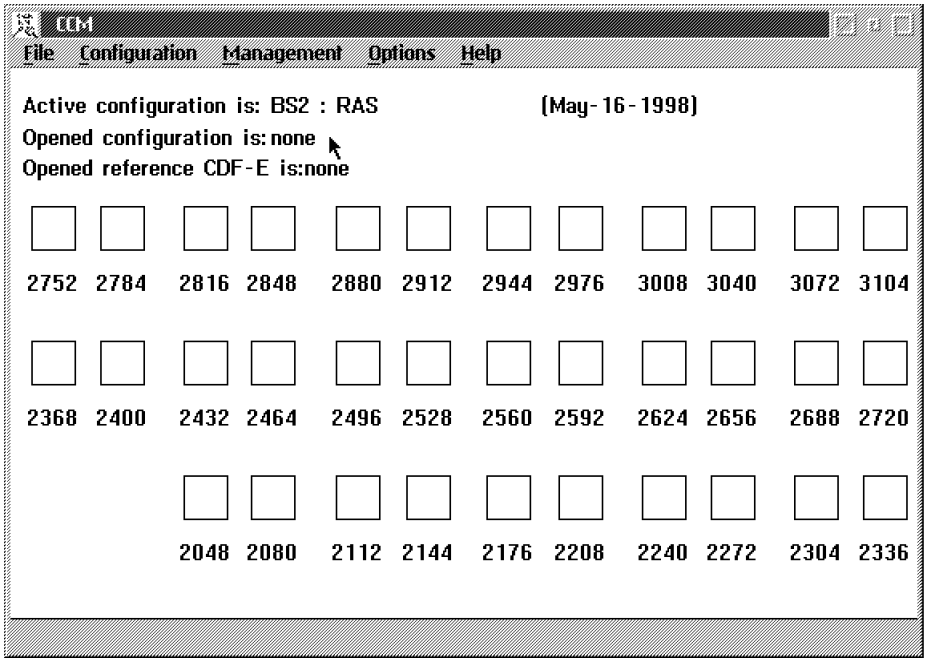
Configuring the Adapter.

__ 1. In the **Main Menu** click on **Network Node Processor (NNP) Management** option.

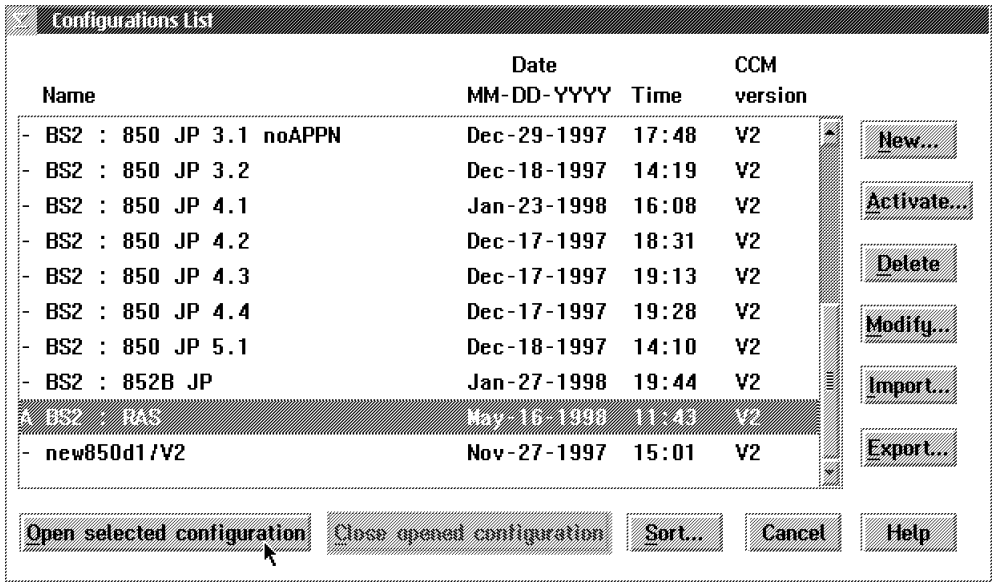
__ 2. In the **Network Node Processor (NNP) Management** window, double click on the **Controller Configuration and Management (CCM)** option.



__ 3. The following window is displayed.



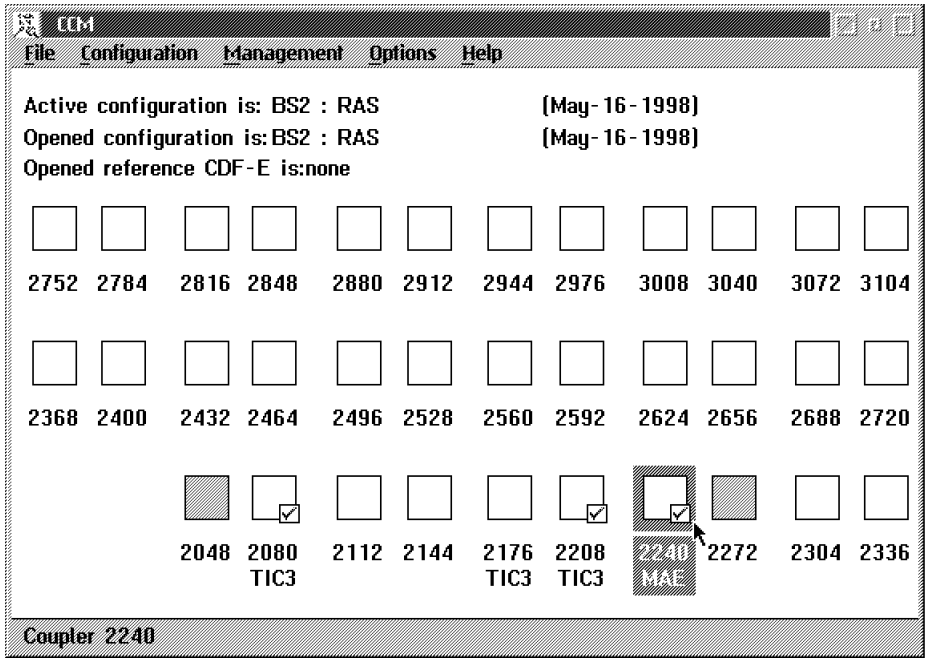
__ 4. Click on **File** in the title bar, then select **Open** The **Configuration List** window is displayed.



__ 5. Select the name of the configuration that you want to modify, then click on **Open Selected Configuration**.

__ 6. A message may appear saying: "MAE configuration is updated".

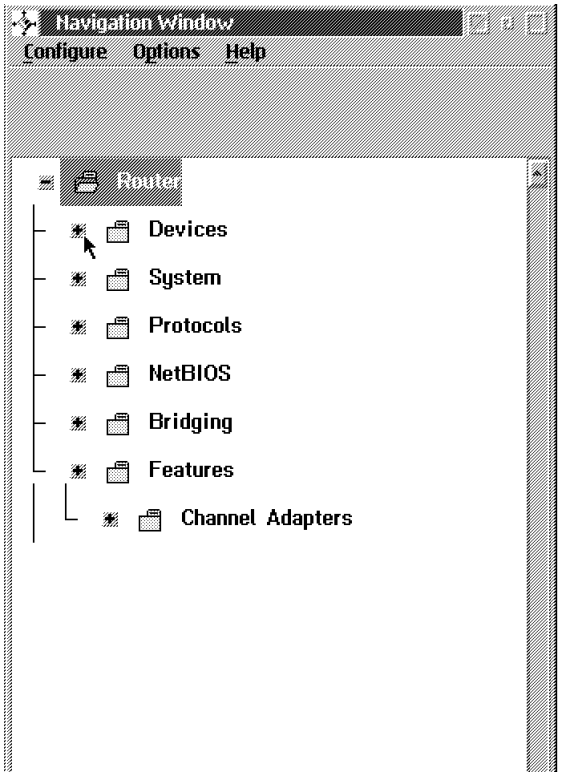
__ 7. The following window is displayed:



__ 8. Double click on the MAE address range. Wait for the **Nothing Selected** window is displayed.

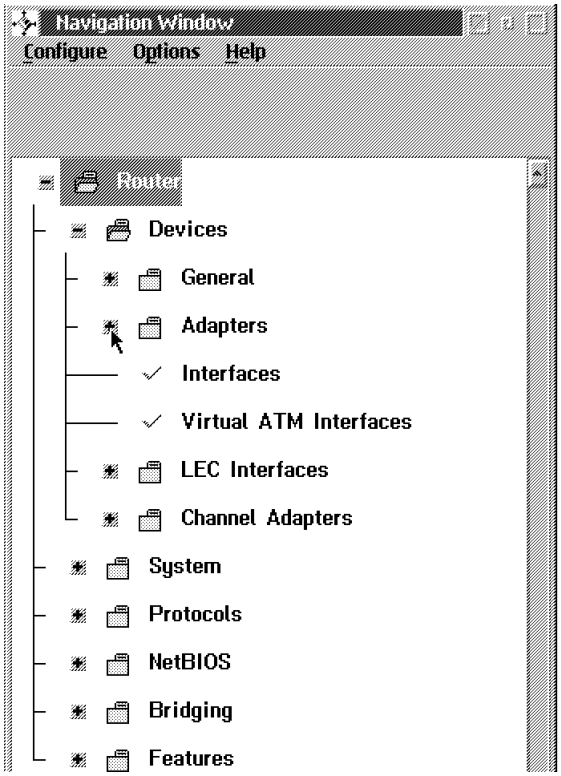
__ 9. Press **Ctrl/Esc**.

__ 10. The **Window List** is displayed. Double click on the **Navigation Window**.The **Navigation Window** is displayed.

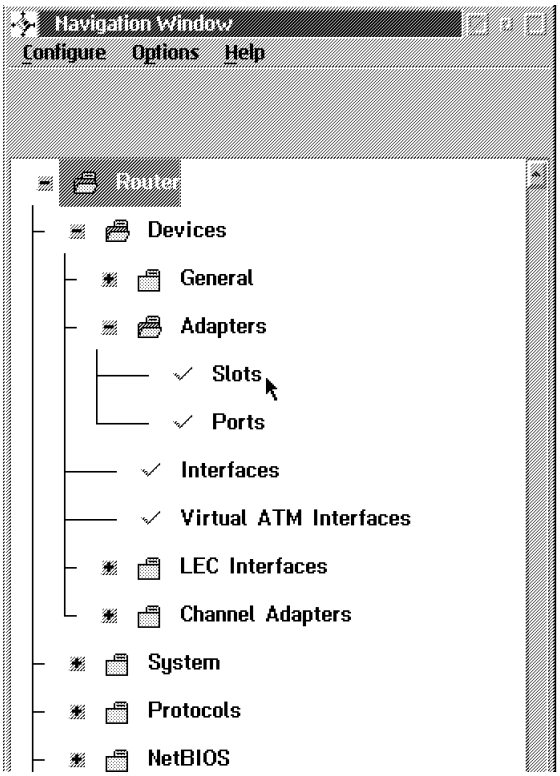


Note: By clicking on the + on the left side of the icon the view is expanded.

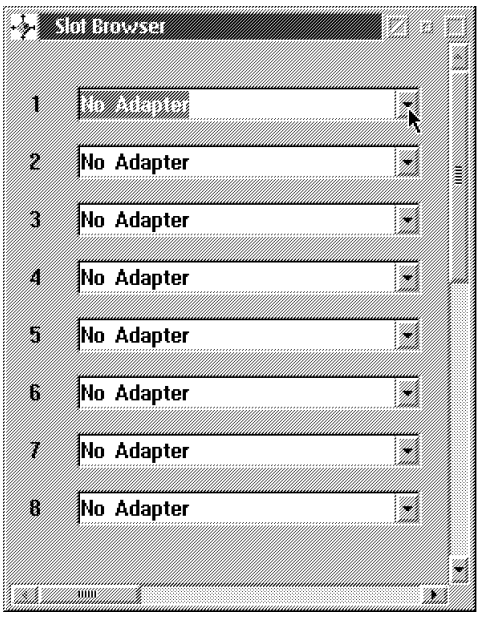
__ 11. Expand the **Devices**. The following window is displayed:



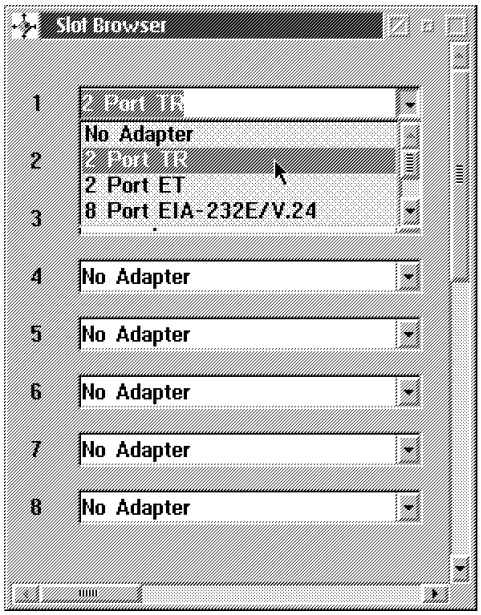
__ 12. Expand the **Adapters**. The following window is displayed:



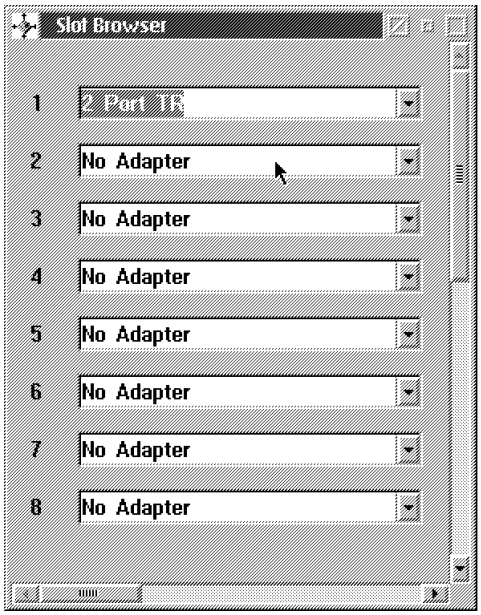
__ 13. Click on the **Slots** option. The **Slot Browser** window similar to the following is displayed.



__ 14. Select the slot where you want to add or remove an adapter by clicking on the desired position. A new window appears with a choice.

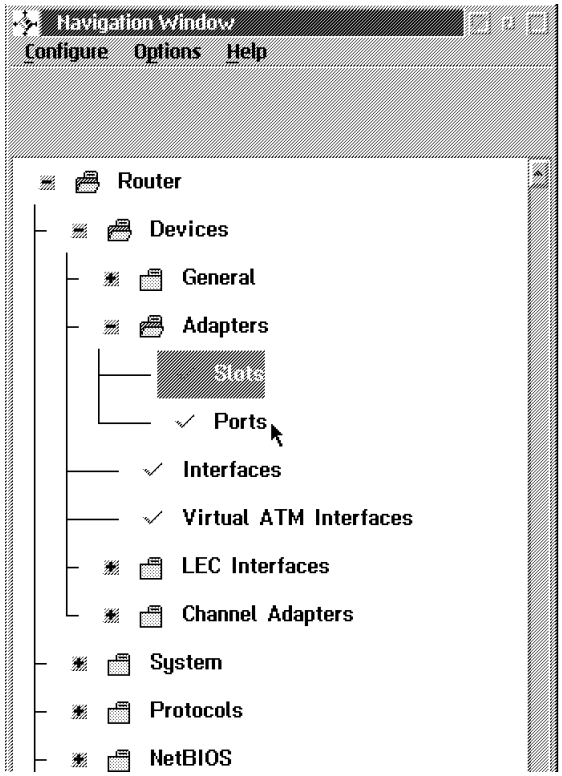


__ 15. If you are removing an adapter click on the **No Adapter** option. Otherwise click on the appropriate adapter. The **Slot Browser** window is again displayed with the change.

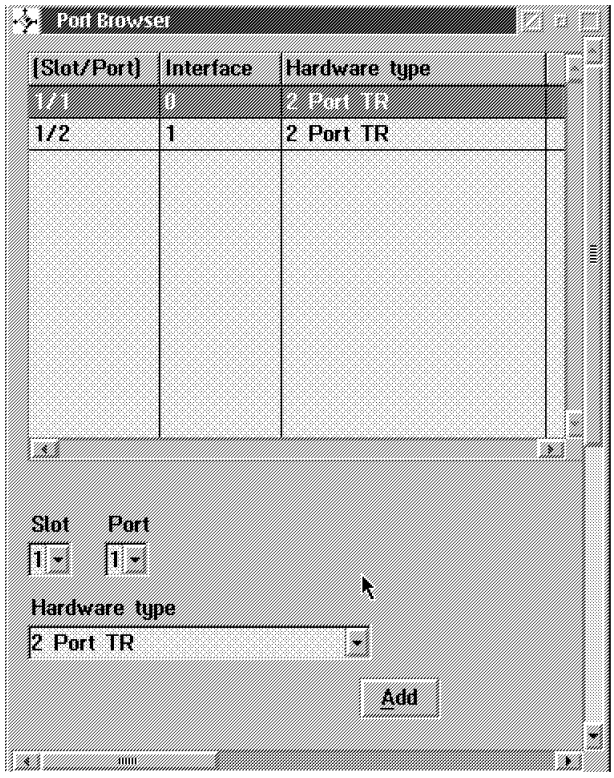


__ 16. Press **Ctrl/Esc**.

__ 17. The **Window List** is displayed. Click on the **Navigation Window**.The **Navigation Window** is displayed.



__ 18. If you have several ports on the adapter click on **Ports** option. Windows are displayed to help you.



__ 19. Press **Ctrl/Esc** to return to the **Navigation Window**.

__ 20. Modify all the other needed options using a similar process. For more details about configuration refer to the *3745 Communication Controller Models A and 3746 Models 900 and 950: Planning Guide*, GA33-0457, manual.

__ 21. When the needed options have been modified, press **Ctrl/Esc** to return to the **Navigation Window**.

__ 22. In **Navigation Window** Click on **Configure** to exit MAE and return to 3746 resources. Click on **Yes** to save the changes.

__ 23. Activate the resources (refer to “Activate MAE Configuration Via CCM” on page E-14).

Test procedures

No test required.

Field Updating

None.

Go to “After Installation.” on page 6-17 .

After Installation.

Publications Update

None.

Parts Disposition

- **Purchased Machines**: Refer to the parts ownership matrix to determine the correct owner of removed/unused parts. All parts determined to be the property of IBM should be processed as stated in the rental machine directions below.
  - For EMEA/APG/AG Areas, refer to *Hardware and General Service Code Description*.
  - For Domestic Areas, return parts to the customer.
- **Rental Machines**: Provide all parts to the IBM branch office for potential return in accordance with existing return, recovery, and reclamation programs.

Machine Records

- Install the new **MACHINE HISTORY** supplied.
- Report installation and quality to existing procedures.

Chapter 7. Removing or Relocating Your Multiaccess Enclosure

Deleting the Configuration Parameters

Delete your multiaccess enclosure parameters from the MOSS-E hard disk as follows:

1. ____ Double click on the **3746-9x0** icon.
2. ____ Click on **Multiaccess Enclosure (MAE) Management**, double click on **Install/remove/Change LIC on MAE**.

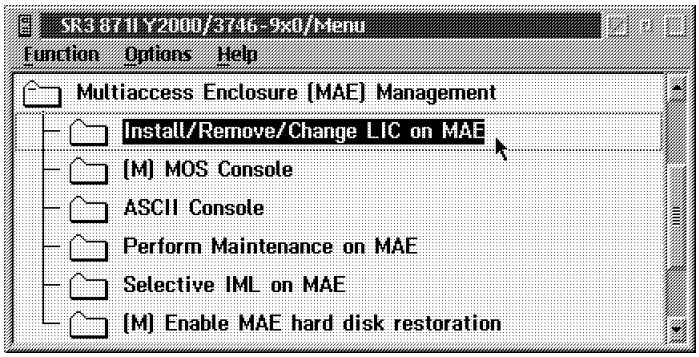


Figure 7-1. 3746-9X0 Multiaccess Enclosure Management

3. ____ Click on **Remove MAE...**

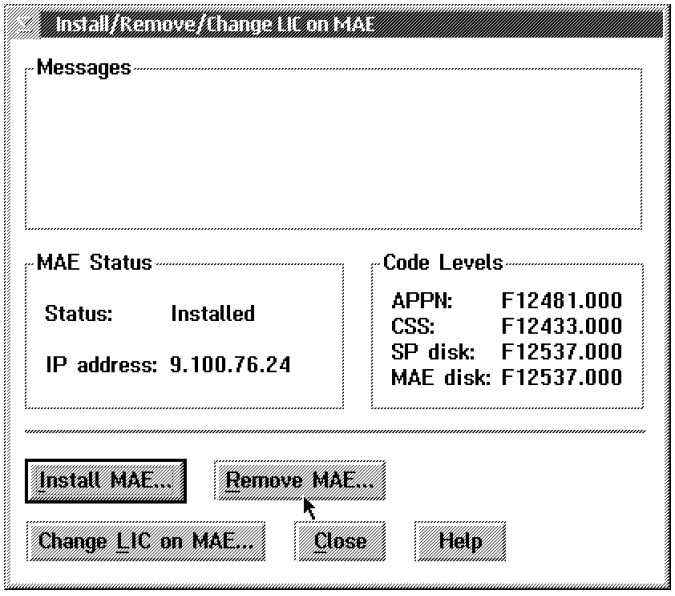


Figure 7-2. Remove Multiaccess Enclosure

4. ____ When completed, click on **Close**

Disconnecting the MAE from Power and Removing Cables

1. ____ **Power off** the MAE, then proceed in reverse order as for the installation:
2. ____ **Remove** the external cables, see “Step 3.1 - Connecting the MAE to a 7585” on page 1-11.
3. ____ **Remove** inter-machines cables, refer to “Step 5 - Connecting the MAE to the 3746-9X0” on page 1-16.
4. ____ **Remove** the MAE from the controller expansion
5. ____ **Remove** the 8228 (if any) from the controller expansion, see “Installing the 8228s” on page 1-16.
6. ____ **Remove** the brackets installed on the MAE and the hardware from the controller expansion, see “Step 2 - Installing the MAE” on page 1-5.
7. ____ If installed, **remove** the second ac outlet distribution box.

Preparing the MAE for Shipment

1. ____ Pack the machine using the pack/unpack instructions.
2. ____ Pack the customer's parts and documentation in one package and label it: "Customer Package".
3. ____ Pack other parts and all maintenance documentation in another package and label it: "Maintenance Package". Hold for use by IBM Service Representative.
4. ____ Coil all removed cables and store them alongside the machine.
5. ____ Complete the removal records according to existing procedures. Inform the IBM Branch Office that the machines are ready for shipment.

Appendix A. Multiaccess Enclosure Components Location

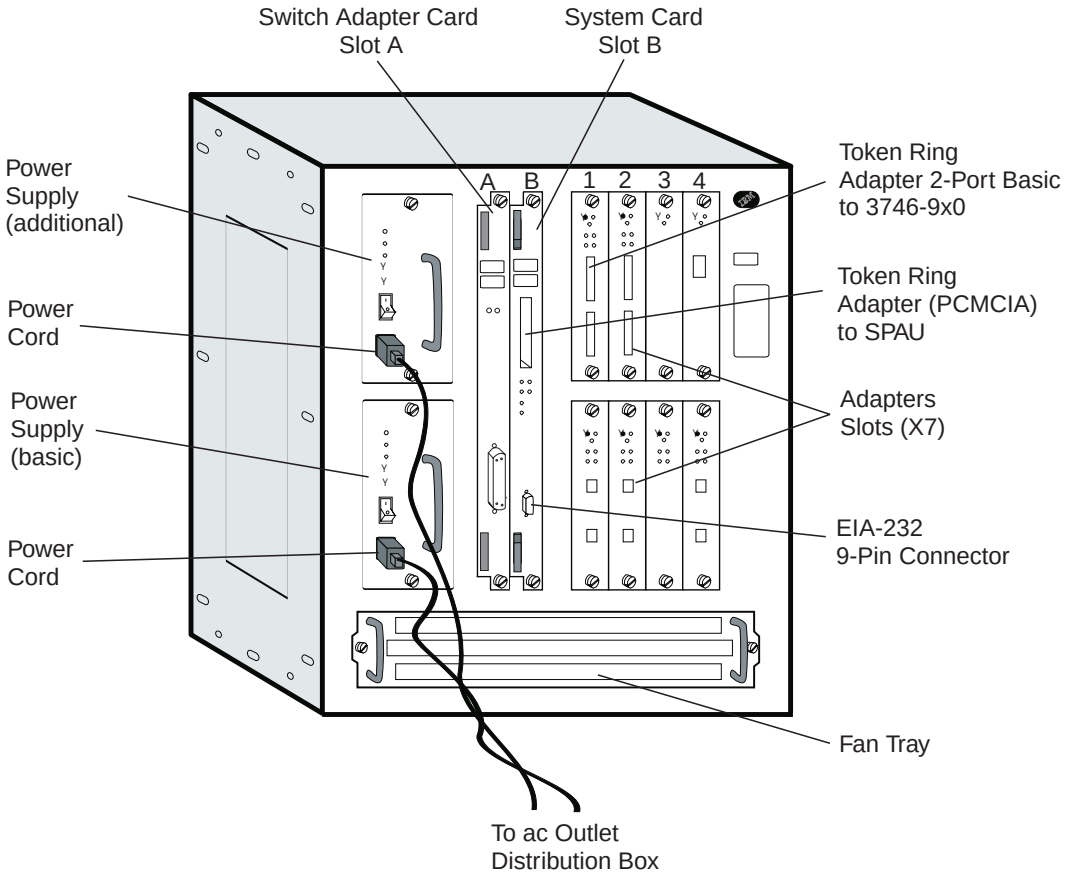


Figure A-1. Multiaccess Enclosure Components Location

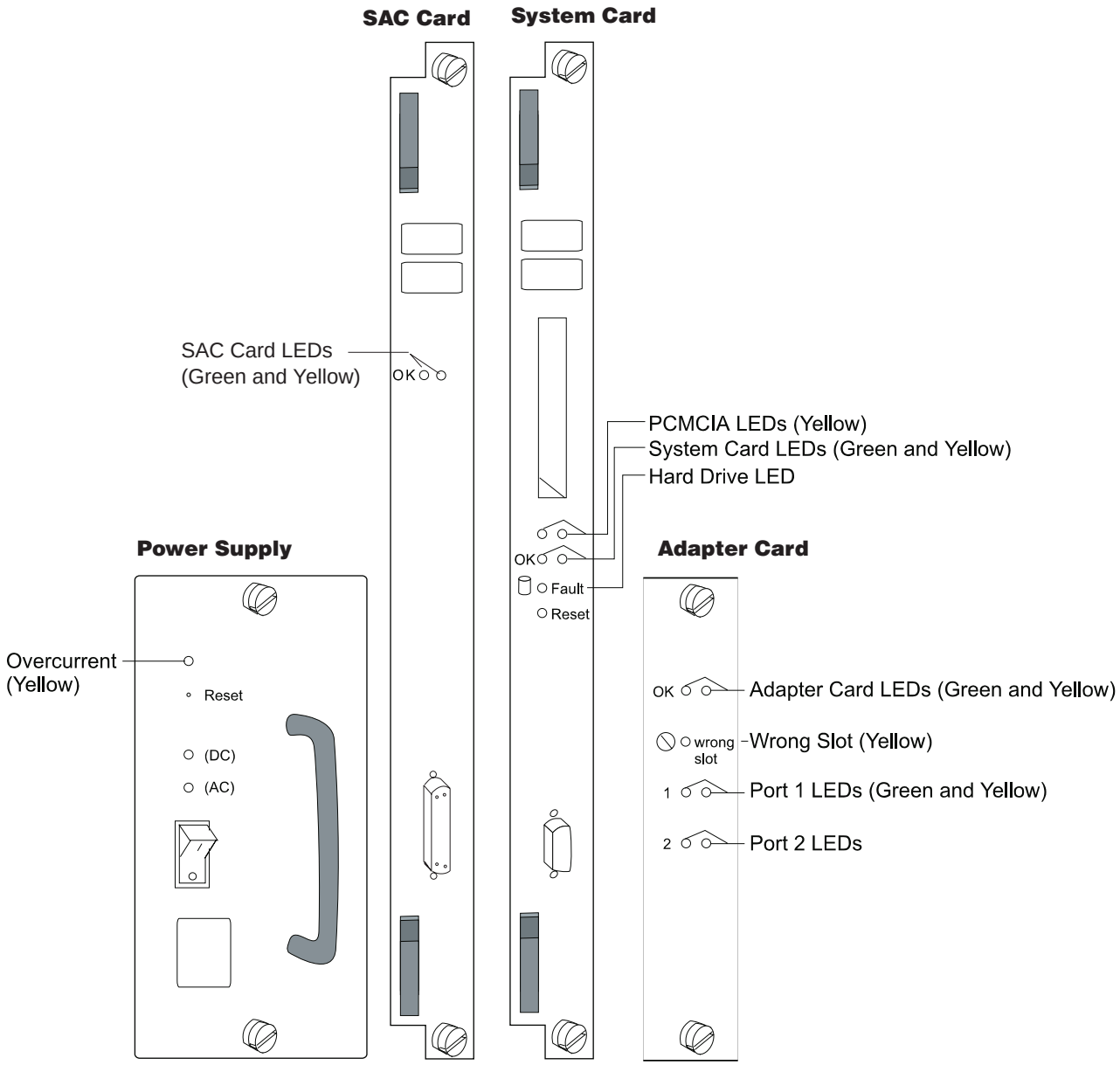


Figure A-2. Multiaccess Enclosure Components

Appendix B. MAE Adapters Plugging Rules

Units assembled at the factory follow certain plugging rules, as described below, use the same rules when installing adapters in the field.

Assumptions

Note: If required, to support APPN traffic **one Token-Ring** (FC 3280) adapter is plugged in **slot 1** (link to the 3746-9X0).
For the other slots the following rules applies (one more adapter is authorized when the TR adapter is not plugged in slot 1):

- No more than five of any combination of **Token-Ring** (FC 3280) and Ethernet (FC 3281) adapters will be installed.
- If a combination of *five* 3280 and 3281 adapters are to be installed, no other adapters will be installed.
- If a combination of *four* 3280 and 3281 adapters are to be installed, then one additional adapter can also be installed.
- A maximum of *four* ESCON adapters (3287) can be installed.
- A maximum of *four* ISDN adapters (3283 or 3292) can be installed.
- A maximum of *two* ATM adapters (3284 and 3293) can be installed.

Plugging Sequences

The following table illustrates how the slots are numbered: two rows of four slots, numbered 1 through 8 (slot 1 is reserved):

Table B-1. Slot Numbering

Slot 1	Slot 2	Slot 3	Slot 4
Slot 5	Slot 6	Slot 7	Slot 8

These tables show the default sequence of installation for the various adapters.

LIC 280s and LIC 281s are installed left to right, beginning with slot 5. A maximum of five may be installed in any single MAE.

Table B-2. FC 3280s (LIC 280s) and FC 3281s (LIC 281s)

Reserved (1)	2 nd	4 th	
1 st	3 rd	5 th	

Note: (1) This slot is reserved for the TR adapter when APPN traffic is required between the MAE and the 3746-9X0.

Other adapters are installed right-to-left in the first-available slot beginning with slot 8 on the bottom and far right.

Table B-3. All Other Adapters

Reserved (1)	6 th	4 th	3 rd
7 th	5 th	2 nd	1 st

Note: (1) This slot is reserved for the TR adapter when APPN traffic is required between the MAE and the 3746-9X0.

Multiaccess Enclosure Slots and Adapters

There are two large slots, designated *A* and *B*, on the multiaccess enclosure Slot *A* is unused. Slot *B* is occupied by the system card. In addition, there are eight adapter slots, designated *1* through *8*.

- 3280 or 3281 — If ***six*** Token-Ring (FC 3280) and Ethernet (FC 3281) adapters are installed in any combination, no other adapters can be installed.
- 3280 or 3281 — If a combination of ***five*** 3280 and 3281 adapters is to be installed, then two other adapters can also be installed.
- The multiaccess enclosure supports a maximum of:
  - ***Four*** channel adapters, which can be Parallel Channel Adapters (FC 3299) in any combination with ESCON adapters (FC 3287)
  - ***Two*** ATM adapters (FC 3284, 3293, 3294, or 3295)

    Note: This adapter is also used for fast token-ring (FasTR)
  - ***One*** 4-port ISDN PRI/Channelized (T1/J1 interface) adapter (FC 3297)

    One 4-port ISDN PRI/Channelized T1 Daughter card (FC 3251) can be added to the base 4-port ISDN PRI/Channelized T1/J1 adapter (which produces a total of 8 ports on a single adapter).
  - ***One*** 4-port ISDN PRI/Channelized (E1 interface) adapter (FC 3298)

    One 4-port ISDN PRI/Channelized E1 Daughter card (FC 3252) can be added to the base 4-port ISDN PRI/Channelized E1 adapter (which produces a total of 8 ports on a single adapter).
  - ***Four*** ISDN adapters (FC 3283 or FC 3292)

    A maximum of 8 ISDN interfaces are allowed. Four can be FC 3283 or 3292.

  Note: You can configure a multiaccess enclosure with as many high-speed adapters (FDDI FC 3286, 10/100-Mbps Ethernet FC 3288, and HSSI FC 3289) as desired; however, you may not be able to achieve full media throughput concurrently on all the adapters. When planning for installation, review system performance expectations with an IBM representative.

Adapters can be installed in any of the eight adapter slots with the following restrictions:

1. If the 2-port Token-Ring (FC 3280) or 2-port Ethernet (FC 3281) adapter is plugged into slot 3 and active, then slot 4 cannot be used.

2. If the 2-port Token-Ring (FC 3280) or 2-port Ethernet (FC 3281) is plugged into slot 4 and active, then slot 3 cannot be used.
3. If the 2-port Token-Ring (FC 3280) or 2-port Ethernet (FC 3281) adapter is plugged into slot 7 and active, then slot 8 cannot be used.
4. If the 2-port Token-Ring (FC 3280) or 2-port Ethernet (FC 3281) adapter is plugged into slot 8 and active, then slot 7 cannot be used.

Appendix C. Parameter Worksheets

The worksheets in this appendix list the parameters that are needed during the multiaccess enclosure installation.
Default parameter values are included (in parentheses) in the table.

For the multiaccess enclosure

Table C-1. IP Addresses and Subnet Mask	
Client IP address (multiaccess enclosure see note 1)	(192.9.200.5)
Server IP address (Service Processor)	(192.9.200.1)
Gateway IP address (see note 2)	(192.9.200.1)
Subnet mask	(255.255.255.240)

Notes:

1. This is the address of the PCMCIA Token Ring card plugged on the system card of the MAE.
2. If no gateway, specify the IP address of the service processor.

LAN link from the MAE to the 3746

Table C-2. LAN link to 3746	
LAN link to 3746 required	□ Yes • □ One link • □ Two links □ No

Appendix D. Controller Expansion Component Locations

If you want more information about:	Refer to
• Positioning the units in the front side of the controller expansion	• Figure D-1 on page D-2
• Positioning the units in the rear side of the controller expansion	• Figure D-2 on page D-3
• Installing captive nuts and brackets (for 7585)	• Figure D-3 on page D-4
• Installing captive nuts for LCBs	• Figure D-4 on page D-5
• Installing captive nuts for 8229s	• Figure D-5 on page D-6
• Installing captive nuts and brackets for MAE	• Figure D-6 on page D-7
• Installing brackets for processor type 6275 or 7585	• Figure D-7 on page D-8
• Example of units installation (processor type 7585)	• Figure D-8 on page D-9
• Example of units installation (processor type 7585 + MAE)	• Figure D-9 on page D-9
• Example of units Installation (SP and NNP Type 6275)	• Figure D-10 on page D-10
• Example of units Installation (SP and NNP Type 6275 + MAE)	• Figure D-11 on page D-10
• Connecting the units to the ac Outlet Distribution Box.	• Figure D-12 on page D-11
• Connecting the Units to the Dual ac Outlet Distribution Boxes	• Figure D-13 on page D-11

Use this drawing to setup the **units** on the **front side** of the controller expansion, for the units that can be installed on the rear, refer to Figure D-2 on page D-3.

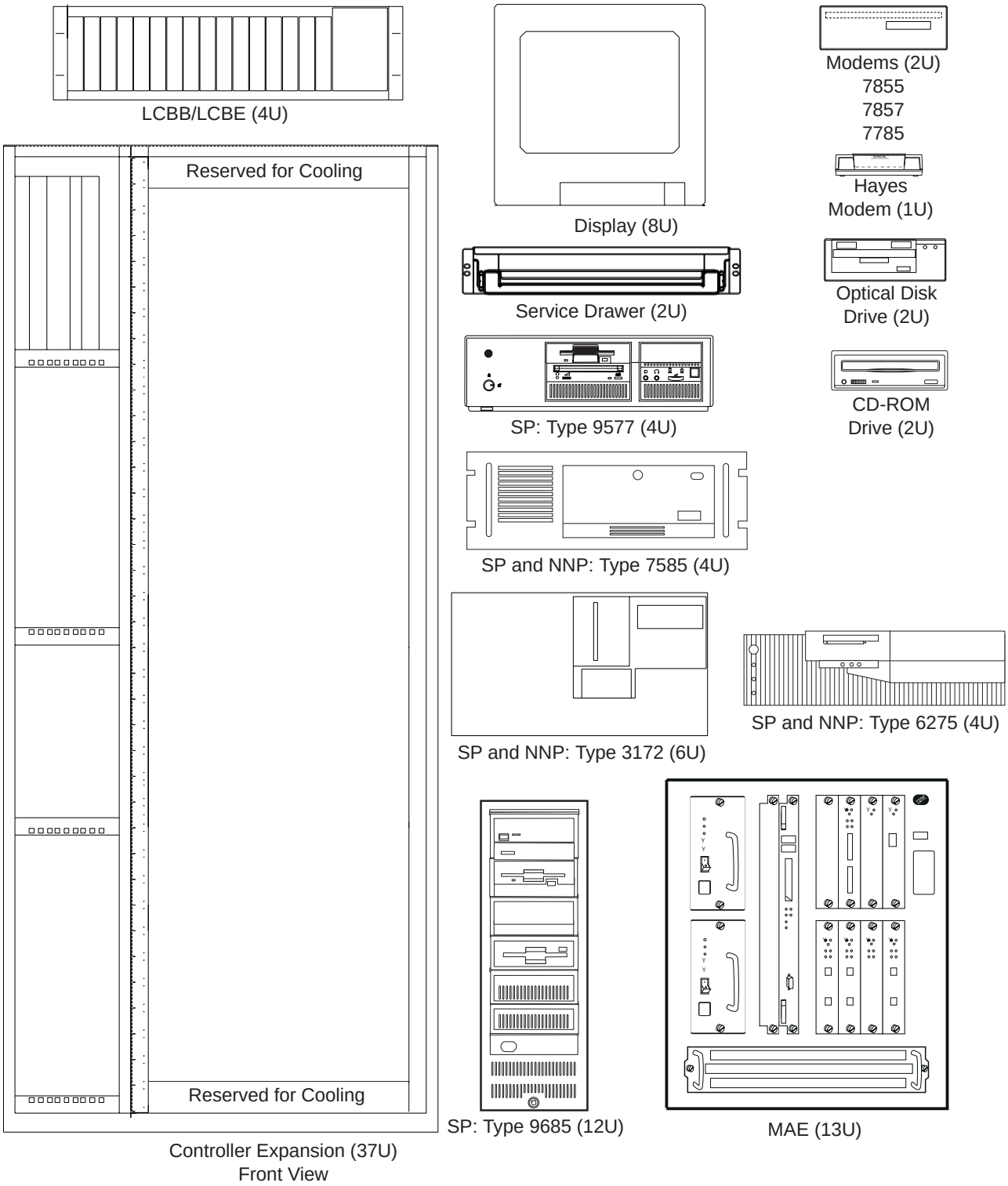


Figure D-1. Controller Expansion Inventory Chart (Front View).

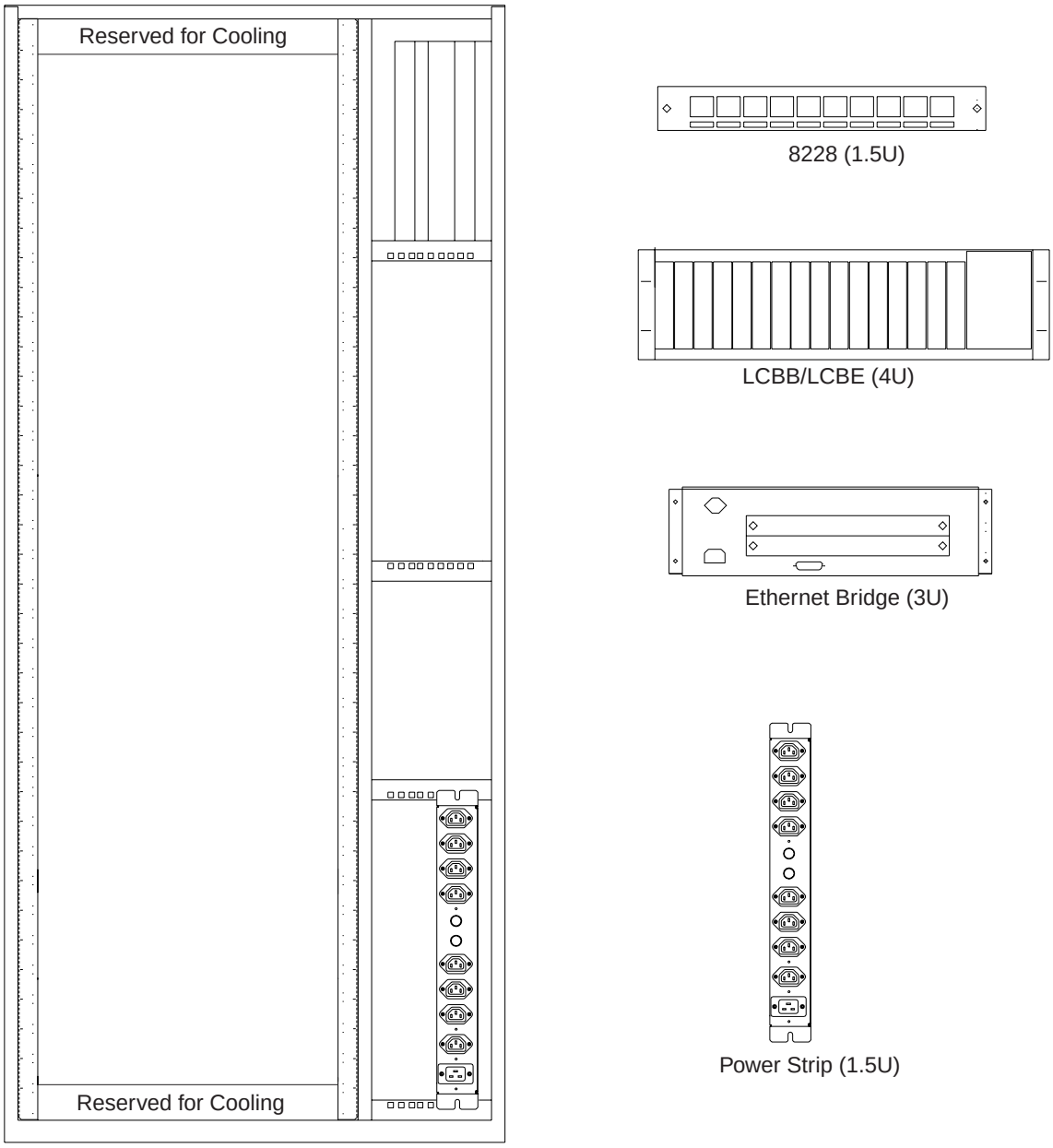


Figure D-2. Controller Expansion Inventory Chart (Rear View).

Notes:

1. The units dimensions are scaled to the size of the controller expansion diagram. The values represent the size used to setup the units in the controller expansion, it is not the size of the units themself.
2. The attachment holes along each side of the controller expansion are divided into units of measure called EIA units. Each EIA unit (U) equals 44.5 millimeters (1.75 inches).
3. The controller expansion is 37 U high but only 35 are usable, one U must be reserved at the top and at the bottom for proper cooling.

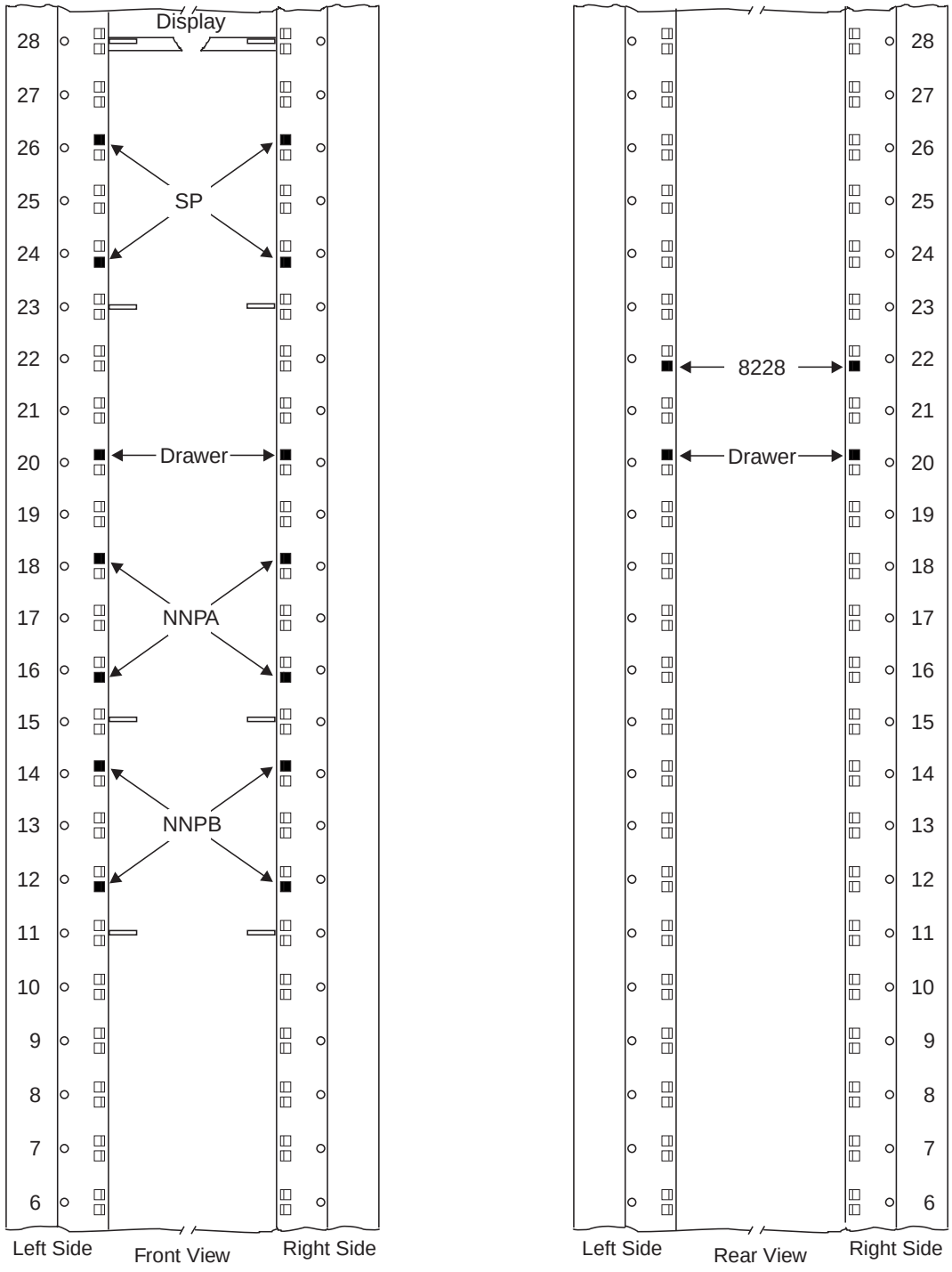


Figure D-3. Installing Captive Nuts and Brackets for the Display, Drawer, SP and NNP Type 7585

Note: This symbol '■' identify the locations to install the captive nuts.

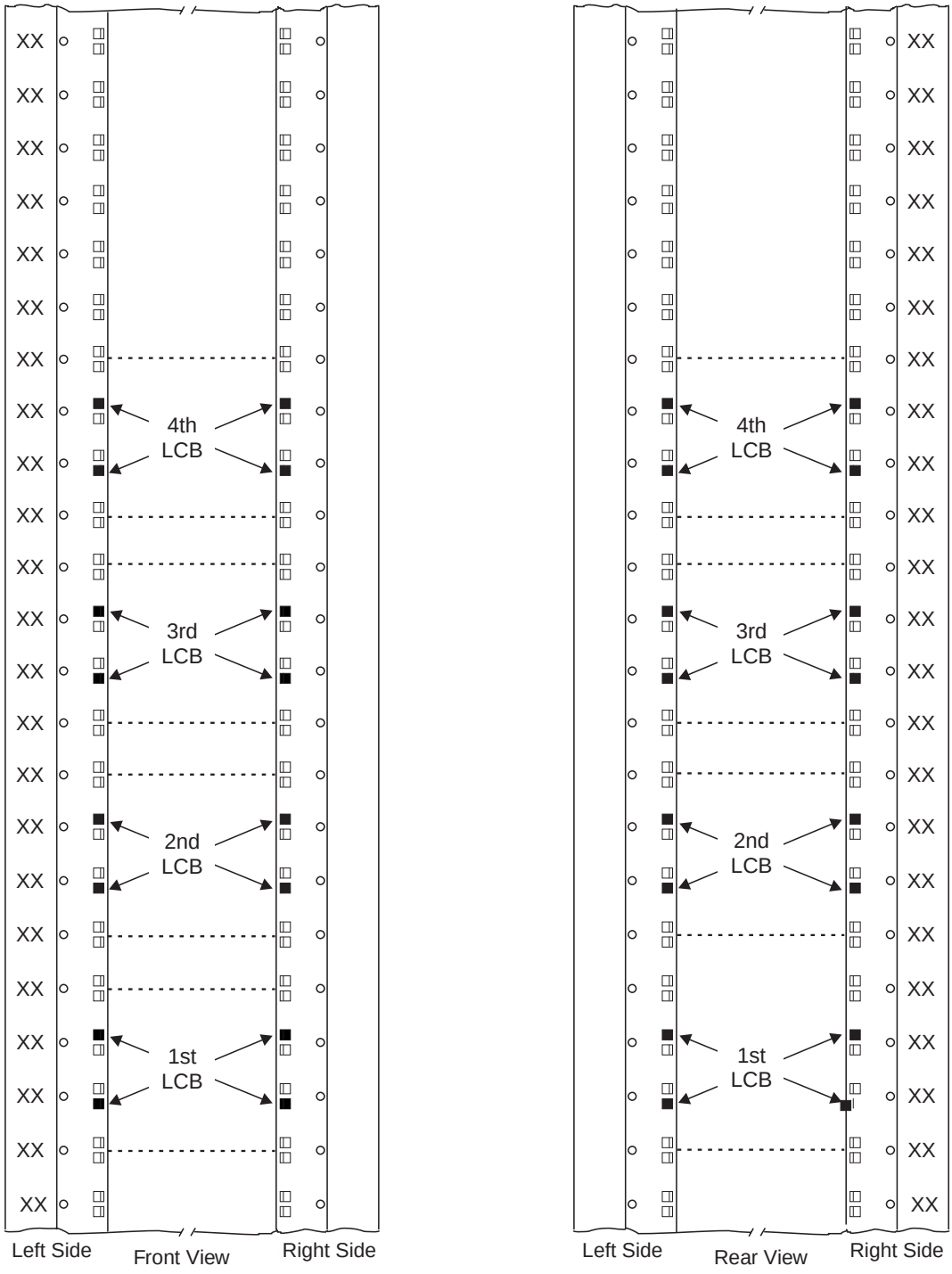


Figure D-4. Installing Captive Nuts for LCBs

Note: This symbol '■' identify the locations to install the captive nuts.

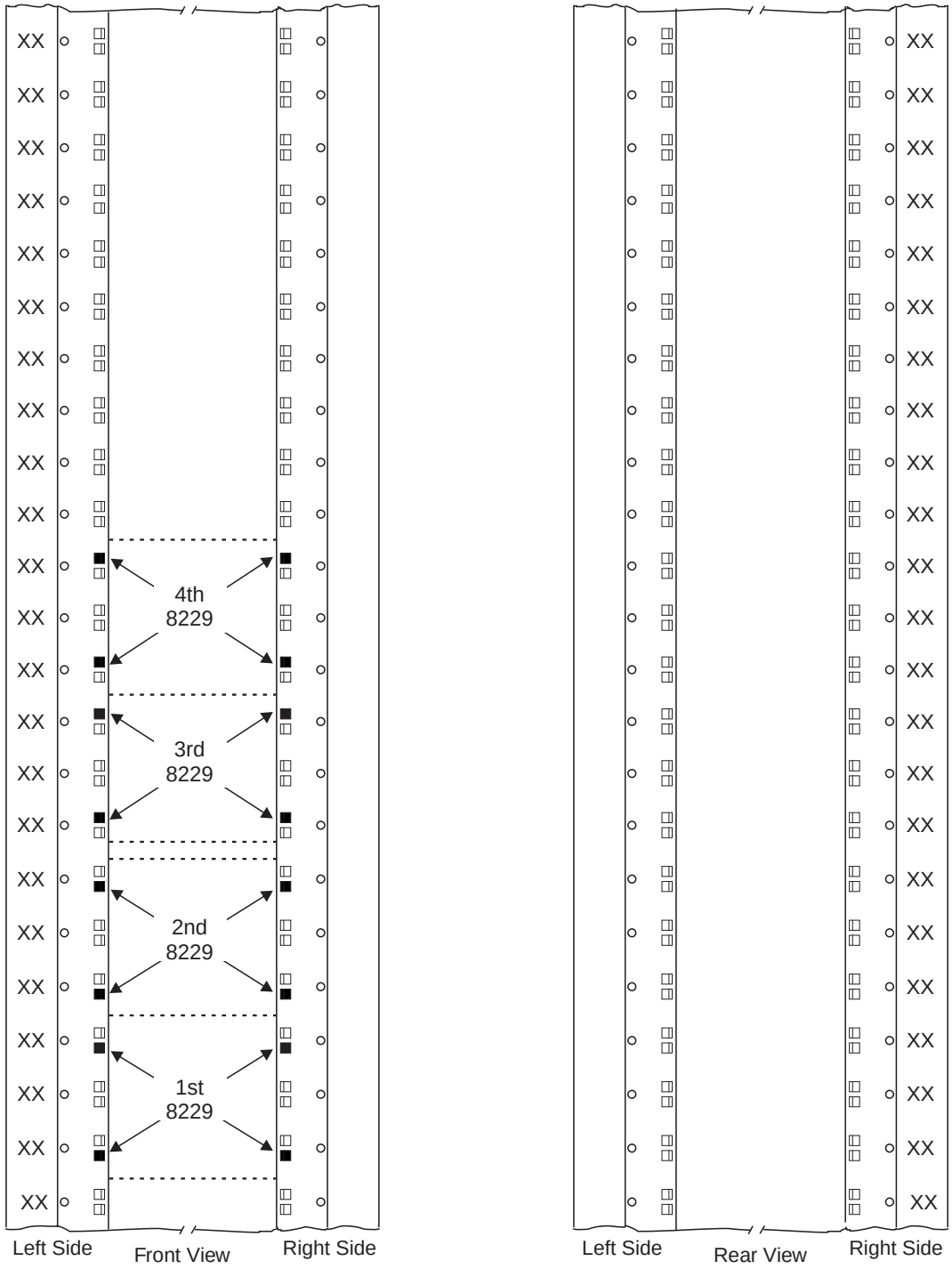


Figure D-5. Installing Captive Nuts for 8229s

Note: This symbol '■' identify the locations to install the captive nuts.

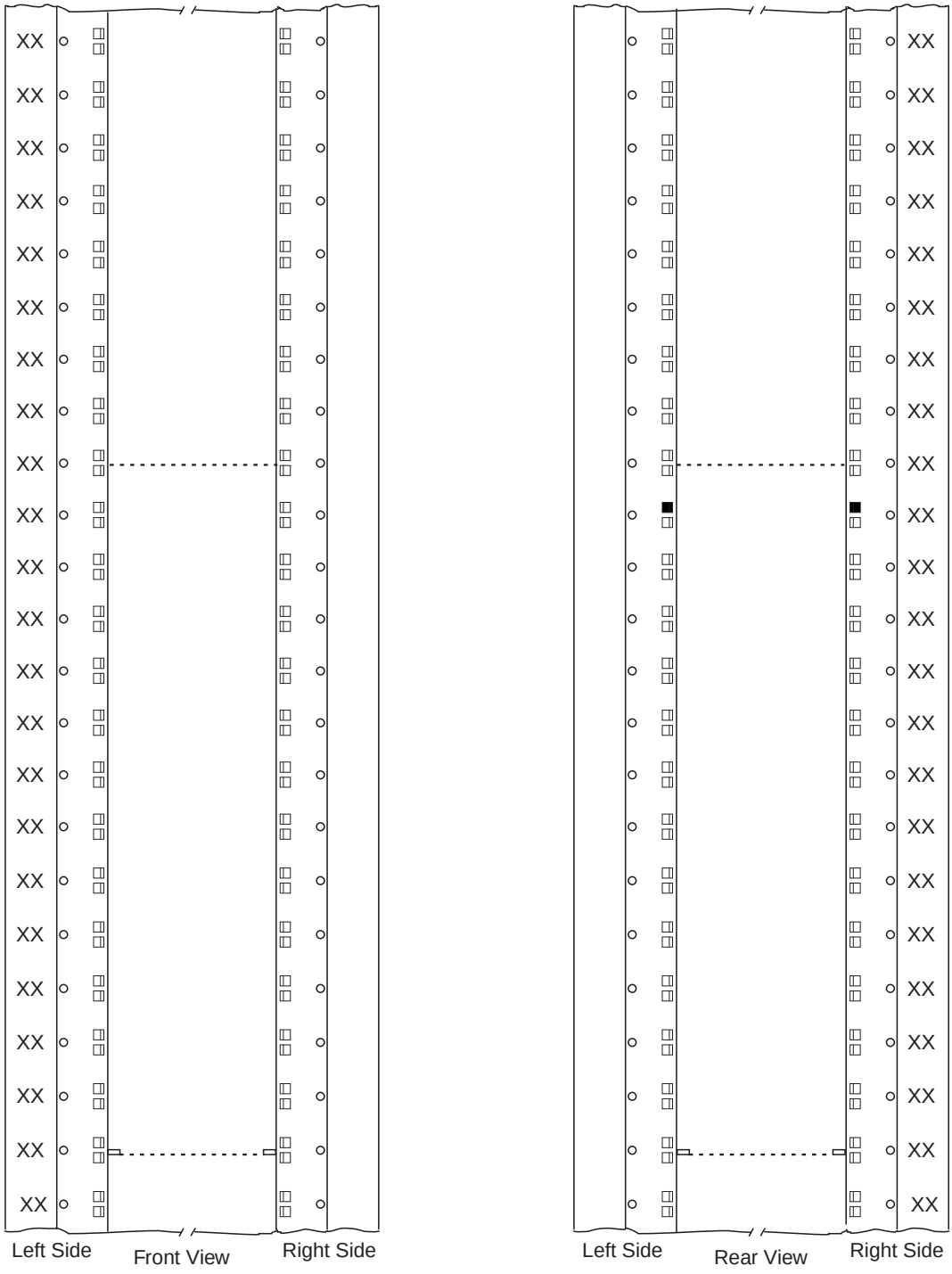


Figure D-6. Installing Captive Nuts and Brackets for MAE

Note: This symbol '■' identify the locations to install the captive nuts.

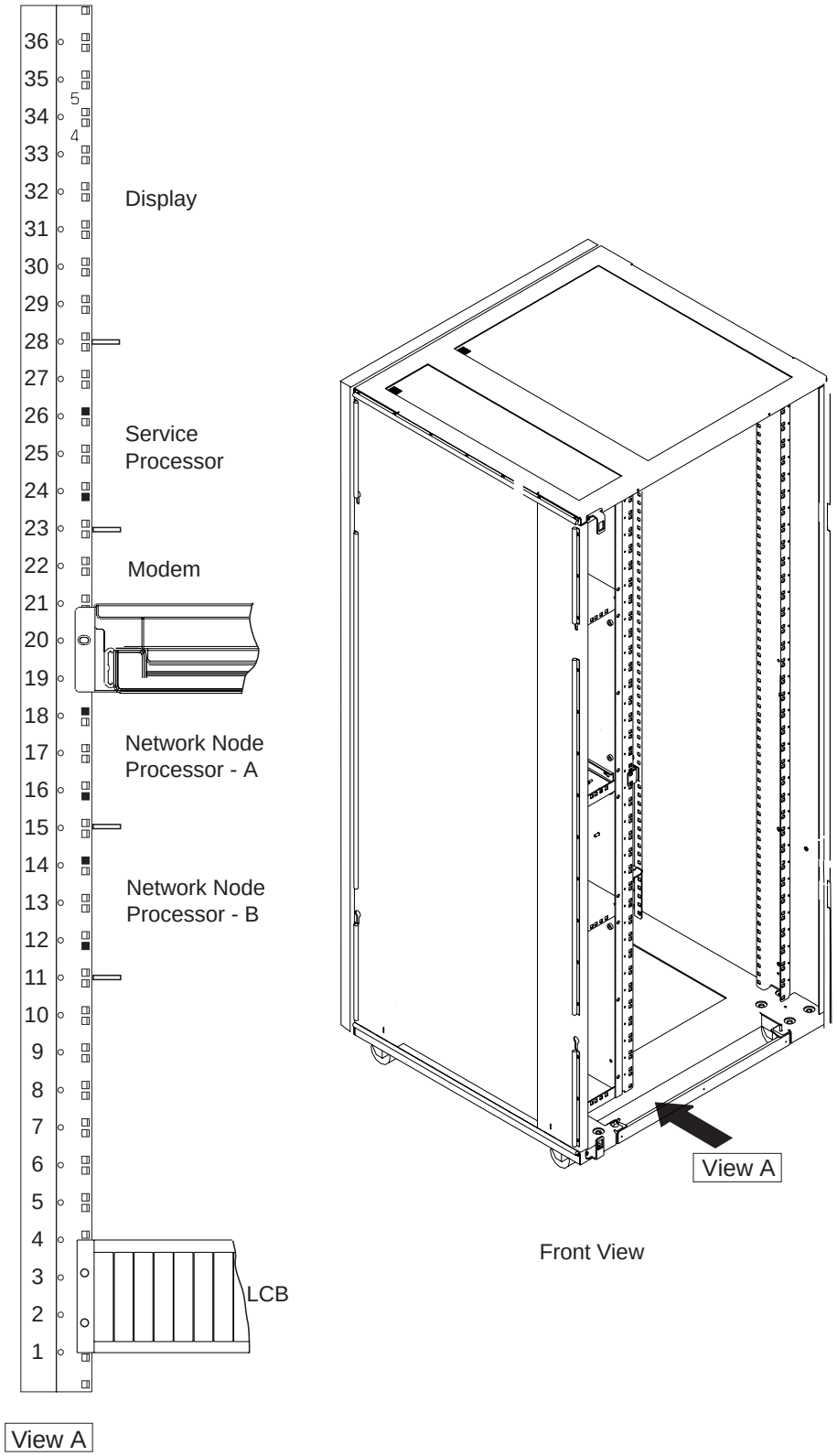


Figure D-7. Installing Brackets (PN 58G5752) for Processor Type 6275 or 7585

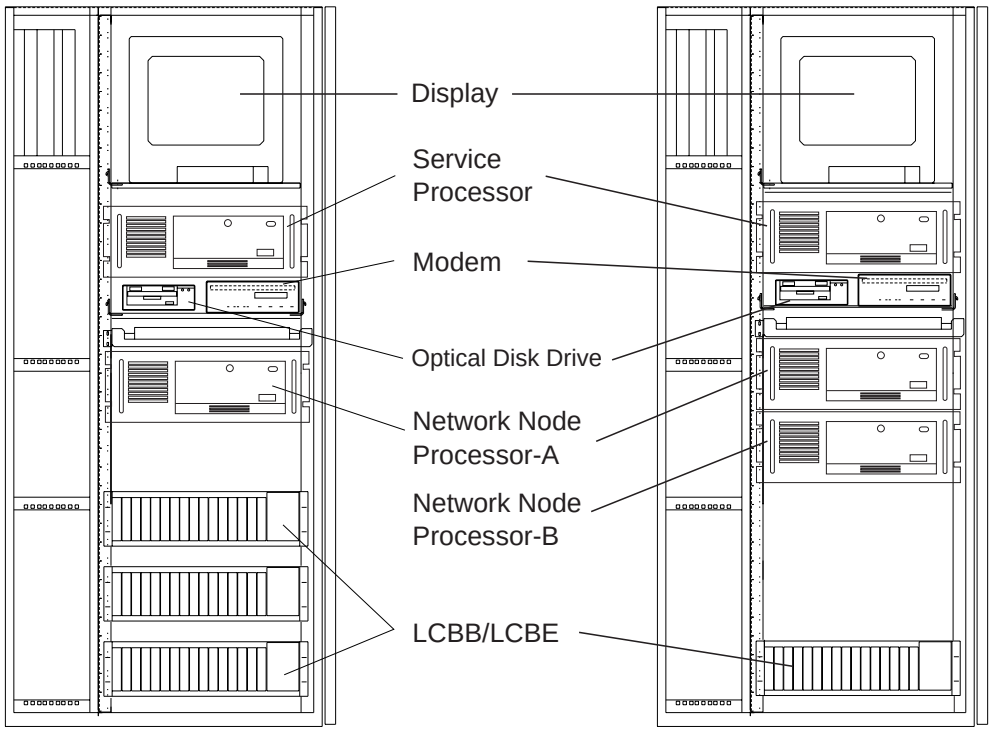


Figure D-8. Units Installation in the Controller Expansion (SP Type 7585)

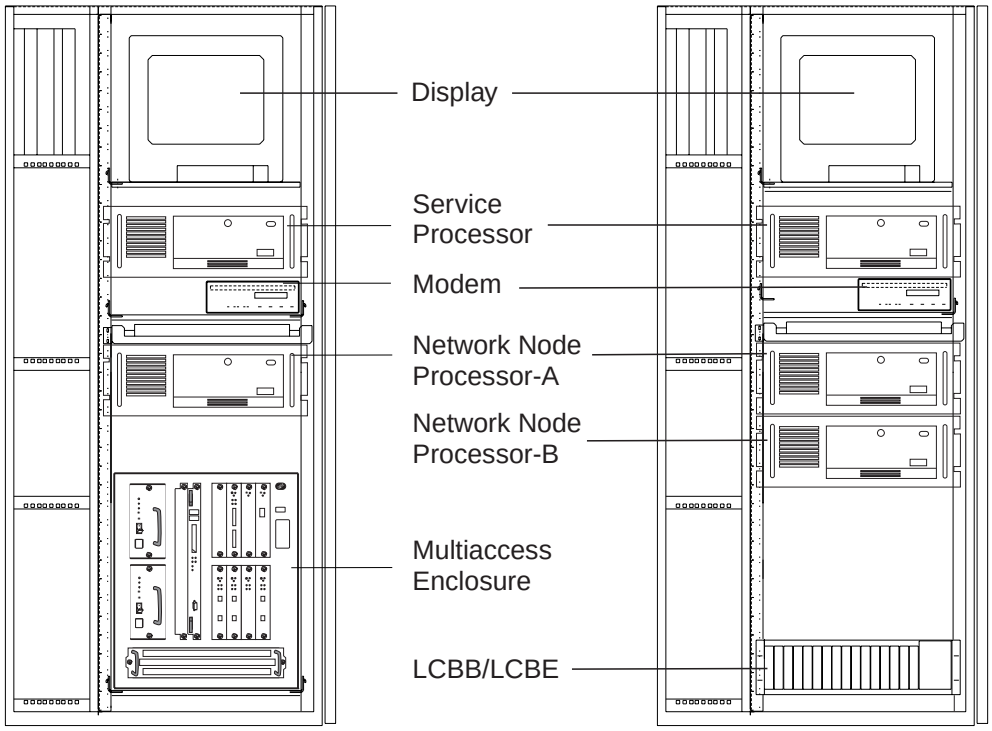


Figure D-9. Units Installation in the Controller Expansion (SP Type 7585 + MAE)

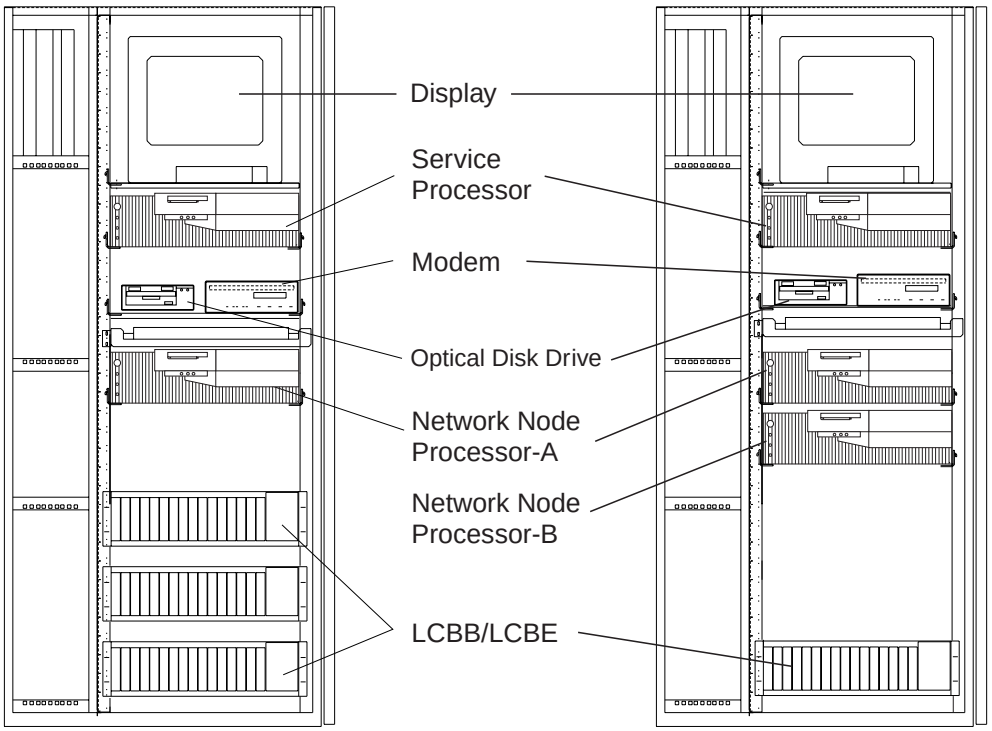


Figure D-10. Units Installation in the Controller Expansion (SP and NNP Type 6275)

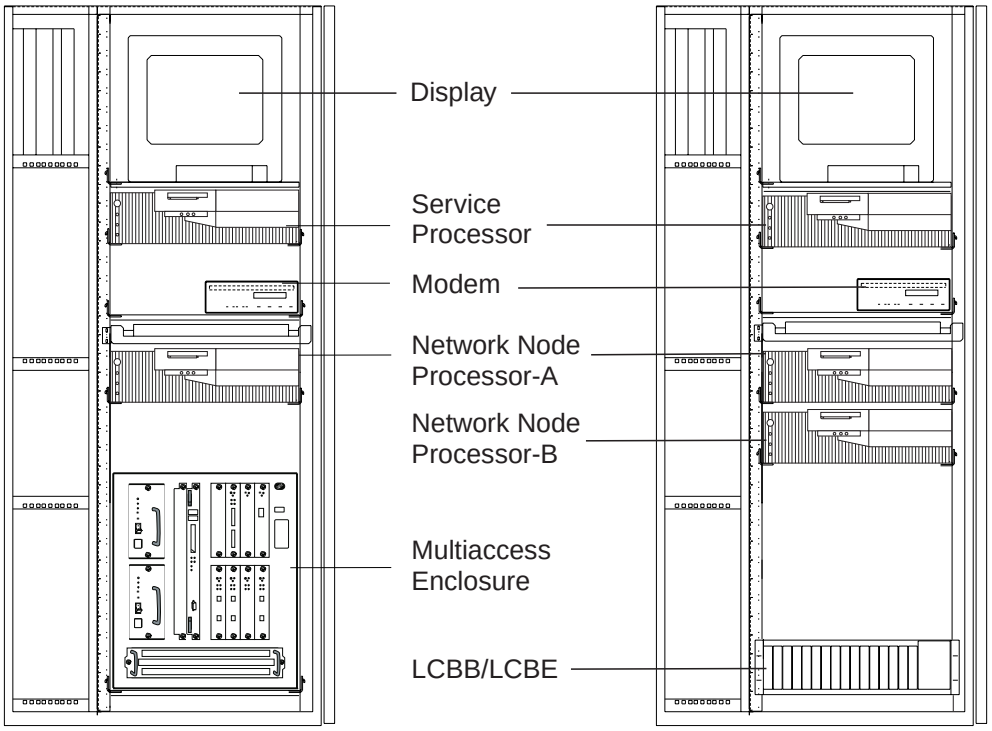


Figure D-11. Units Installation in the Controller Expansion (SP and NNP Type 6275 + MAE)

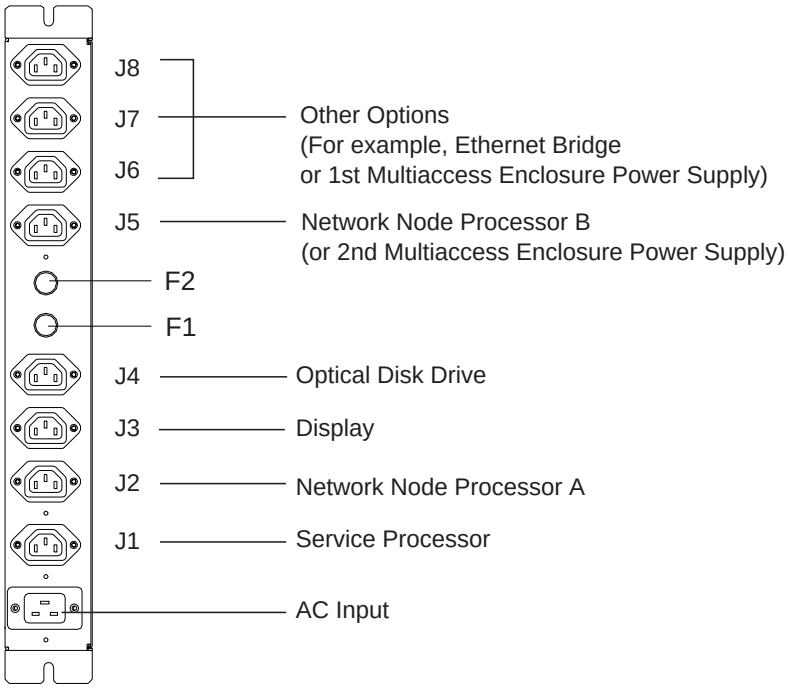


Figure D-12. Connecting the Units to the ac Outlet Distribution Box.

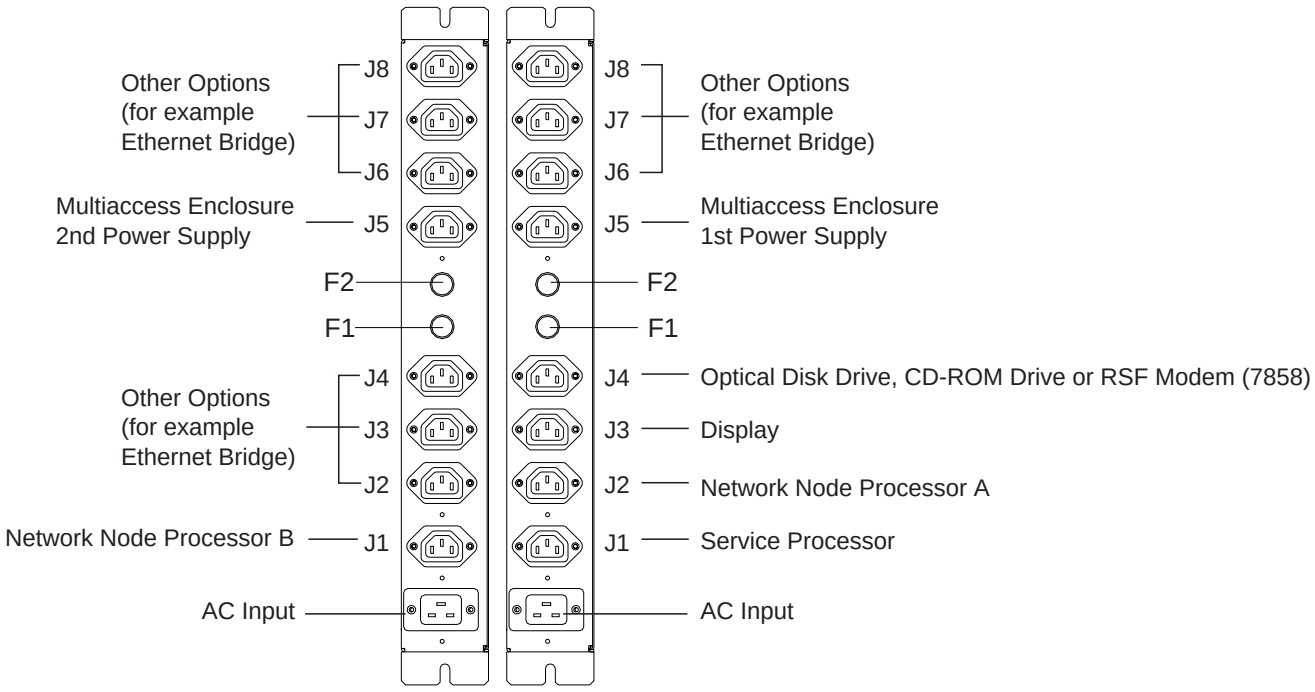


Figure D-13. Connecting the Units to the Dual ac Outlet Distribution Boxes

Appendix E. Managing Operational Code and Configuration Files

This chapter explains how to manage the operation code images and configuration files

Reconfiguring

Configuration errors are difficult to detect.
A configuration error can initially appear to be a hardware problem because the multiaccess enclosure will not start or data will not flow through a port.
In addition, problems with configuration may not result in an error initially; an error may occur only when specific conditions are encountered or when heavy network traffic occurs.

If you cannot resolve a problem after making a few changes to your configuration or after restoring the active configuration file, it is recommended that you generate a new configuration. Too many changes to a configuration often compound the problem, whereas you can usually generate and test a new configuration within a few hours.

How Software Files Are Managed

To help you manage operational software upgrades and configurations, the multiaccess enclosure has a software change management feature. This utility enables you to determine which operational software file and which configuration file is active while the multiaccess enclosure is running.

How to View the Files

To use the change management tool in the command line interface to view the operational software image and the configuration files, follow these steps:

1. From the command line interface (`*` prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42), type **talk 6** and press **Enter**. The `Config>` prompt appears.
2. Type **boot** and press **Enter**. You will see the prompt `Boot config>`.
3. Type **list** and press **Enter**. You will see a list similar to this one:

```
Boot config> list

BANK A                          BANK B
 IMAGE - ACTIVE                  IMAGE - AVAIL
  CONFIG 1 - ACTIVE               CONFIG 1 - NONE
  CONFIG 2 - NONE                 CONFIG 2 - NONE
  CONFIG 3 - NONE                 CONFIG 3 - NONE
  CONFIG 4 - NONE                 CONFIG 4 - NONE
```

Each bank represents one image of the operational code. The images stored in BANK A and BANK B are stored on the hard drive. The Configs represent the configuration files that are stored with each bank. *IMAGE* refers to the status of the operational software and *CONFIG* refers to the status of the configuration files.

The possible IMAGE and CONFIG status:

ACTIVE This file is currently loaded in active memory and is running on the multiaccess enclosure.

Note: The status of this file can be changed only by resetting the multiaccess enclosure. *If a config or an image is active, it is locked and cannot be overwritten or erased.*

AVAIL This is a good file that can be made active.

CORRUPT This file was damaged or was not loaded into the multiaccess enclosure completely.

PENDING This file will be loaded and become active the next time the multiaccess enclosure is reset.

LOCAL This file will become active at the next reset. This reset will cause the currently ACTIVE file to become PENDING. LOCAL is a status that makes a file ACTIVE only for one reset of the multiaccess enclosure.

Only one bank at a time contains an ACTIVE image. Only one configuration file is ACTIVE and it must be within the ACTIVE bank.

How to Reset the Multiaccess Enclosure

Attention: A reset interrupts the function of the multiaccess enclosure for several mintes. Be sure that the network is prepared for the interruption.

As previously stated, PENDING and LOCAL files are not loaded into active memory until you reset the multiaccess enclosure.

You can reset the multiaccess enclosure using any one of these methods:

- Press the hardware reset button.
- Start a **Selective IML** from the service processor console.

Note: A general IML on 3746-9x0 will also reset the MAE.

Migrating to a New Code level

To upgrade from any earlier release of operational code to a later level refer to the installation instructions shipped with the LIC.

A copy of the installation instructions can be obtained from the web site:

http://infodev1.lagaude.ibm.com

Installing a New User Module

1. Follow the instructions in “Updating System Firmware” on page 5-16 to update the system firmware.

2. After starting the Firmware, select the following sequence of menus:

   - Utilities menu
   - Change Management

   Then, select the TFTP Software option.

3. Respond to the prompt to select which type of load to do (a configuration file or a load image).

4. Respond to the prompt to select which bank to load.

   Note: Files to be retrieved from the server should all be in the same directory, and their permissions should be such that read is allowed for anybody.

5. After you selected 2. Load Image, you will be prompted to select the type of load image (that is, single image or modules).

   - The code load that you want to transfer consists of an LML.ld file plus other load modules ending in .ld, select **modules**.

6. When the prompt `Enter Directory Path to Remote Load Modules` appears, enter the *pathname* to retrieve all load modules belonging to this load image.

   Notes:

   a. Information boxes appear as each load module is being transferred using TFTP. Some time will transpire as each transferred load module is written to the disk. An average load may take 10-12 minutes. When the entire load has been transferred, the previous menu is displayed.

   b. The operational code comes in the form of multiple load modules, headed by LML.ld.

      - All load modules for a load must be in the same directory on the server for this transfer.

7. Select the Set Boot Information option on the Change Management menu and select:

   - The Bank to boot from
   - The Config to boot with
   - Permanent or once

You will be able to use the **tftp get load modules** option under `boot config>` to get any further load images.

If you were not able to use TFTP and instead use Xmodem to try to upgrade, select the Xmodem Software option instead of TFTP Software option. In the case of XMODEM file transfers, Xmodem does not retrieve a set of load modules. They must be transferred one by one.

Other Change Management Functions

These are the other change management commands:

- Describe load images
- Disable dumping
- Enable dumping
- Erase files

Describe Load Images

At `Boot config>`, type **describe 2216**. The Product ID, microcode version number, release number, maintenance number, PTF, Feature, and RPQ numbers and the date of the operational software image are displayed.

Disable Dumping

The multiaccess enclosure can be set up to dump the contents of memory to permanent storage in the unlikely event of a complete system failure. If dumping is enabled, using this selection will cause the multiaccess enclosure ***not*** to dump to disk.

To disable dumping, type **talk 6** or **t 6** at the (* prompt), press **Enter**, and then type **disable dump memory** or **dis dump** at the `Config>` prompt. You will see the message:

```
System memory dump function disabled successfully.
```

Enable Dumping

This command enables the dumping of memory without intervention from anyone in the event that the multiaccess enclosure has a catastrophic error. The multiaccess enclosure will dump memory onto the hard disk. Once a successful dump has been taken, the multiaccess enclosure attempts to restart. Depending upon the failure of the multiaccess enclosure, it cannot always restart. In this case, you should restart it manually and call a service person who will dial into the multiaccess enclosure to determine the nature and the causes of the failure.

Before you can enable dumping, you must first enable system rebooting.

Finally, to enable dumping, type **t 6** at the (* prompt), press **Enter**, and then type

```
enable reboot-system
enable dump-memory
```

You will see the message:

```
System memory function enabled successfully
```

The default state is to have dumping enabled.

Erase Files

The multiaccess enclosure has a DOS file system structure with user access files in the /sys0 and /sys1 banks. The contents of these banks are the operational software load images and the configuration files. Note that the following rules apply to erasing files from the multiaccess enclosure:

- Image files that are not ACTIVE can be overwritten anytime
- ACTIVE image files ***cannot*** be erased
- ACTIVE configuration files ***cannot*** be erased

To erase a file, at the `Boot config>` prompt, type **erase**. Follow the prompts. If you select a file to erase that is BROKEN or NONE, the erase option is discontinued.

Using the Copy Command

The Copy command allows you to move a file from one location in the storage area to another. This command allows you to change the status as well. The file that you move always receives the status of the storage area that it is moved to. For example, suppose that you have this scenario:

- The configuration file in BANK A CONFIG 1 is AVAIL. The configuration file in BANK B CONFIG 1 is PENDING.
- You copy the configuration in BANK A CONFIG 1 to BANK B CONFIG 1.

In this case, the original configuration file in BANK A CONFIG 1 remains unchanged and AVAIL. The configuration that was in BANK B CONFIG 1 is overwritten by a copy of the configuration file that is in BANK A CONFIG 1. This copy retains the status of the file that it overwrote, in this case, PENDING.

These are the prompts that you would use to perform this copy process.

```
Boot config> copy config

Copy FROM Bank number? A

Copy FROM Config number? 1

Copy TO Bank number? B

Copy TO Config number? 1
```

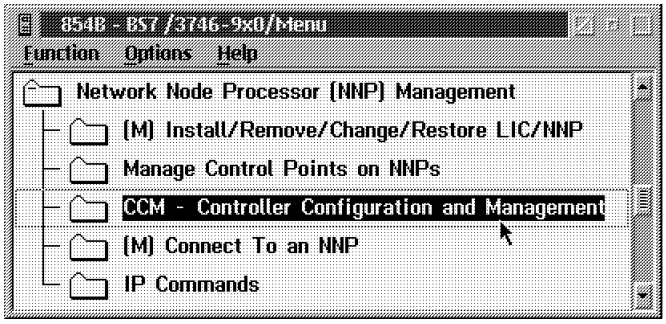
If you copy an image, the same rules apply except that image files can be copied only from Bank to Bank. These steps describe how the copy of an image affects the image that was previously in the Bank:

1. The copy overwrites the image that was previously in the Bank.
2. The copy acquires the status of the image that was previously in the Bank.

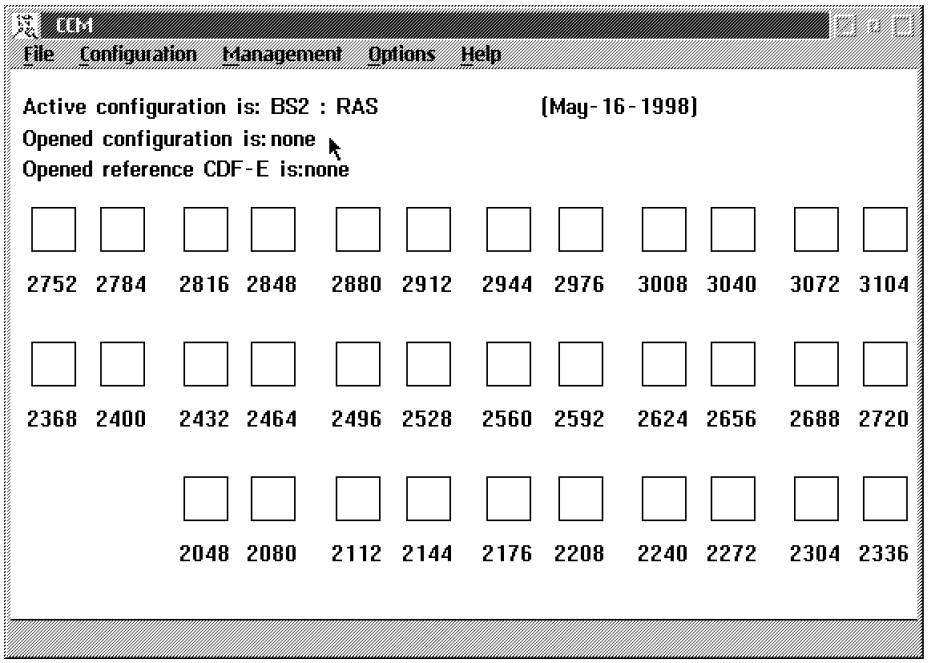
Configuring the MAE via CCM

1 In the **Main Menu** click on **Network Node Processor (NNP) Management** option.

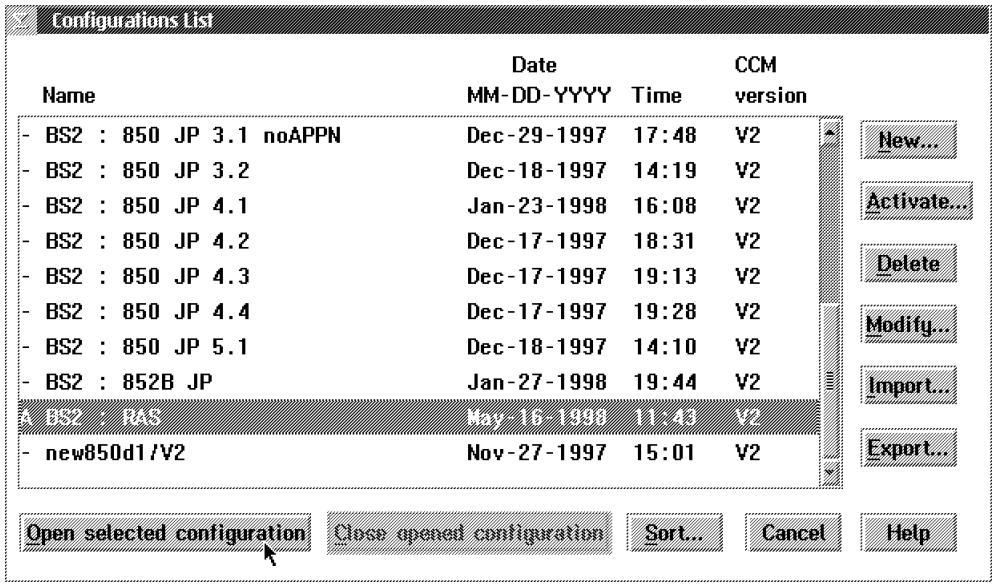
2 In the **Network Node Processor (NNP) Management** window, double click on the **Controller Configuration and Management (CCM)** option.



3 The following window is displayed.



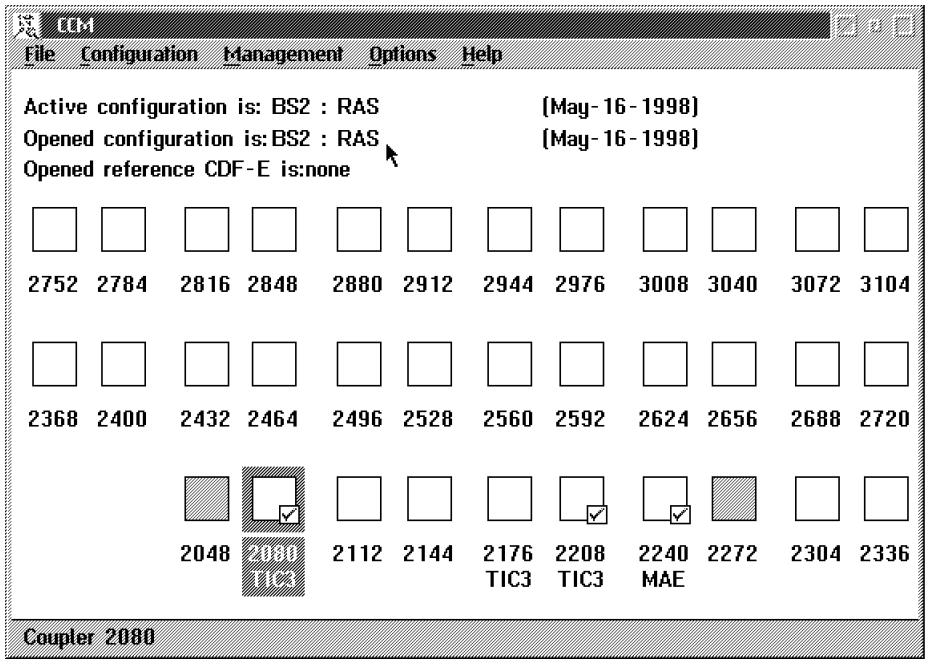
4 Click on **File** in the title bar, then select **Open** The **Configuration List** window is displayed.



5 Select the name of the configuration that you want to modify, then click on **Open Selected Configuration**.

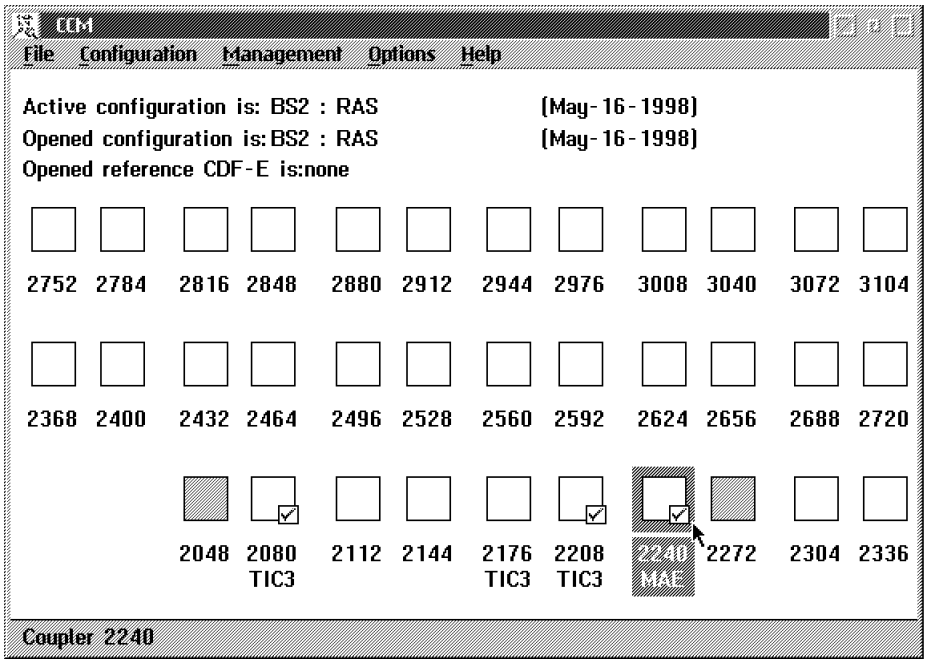
6 A message may appear saying: "MAE configuration is updated".

7 The following window is displayed.



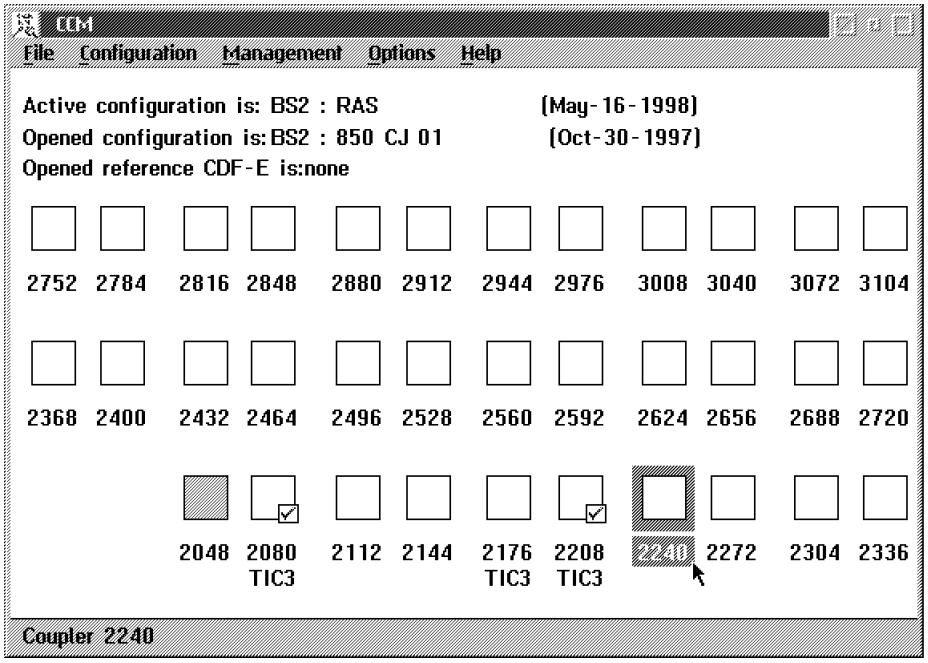
8 Two cases must be considered:

a. If the MAE is already installed and shown in the window:



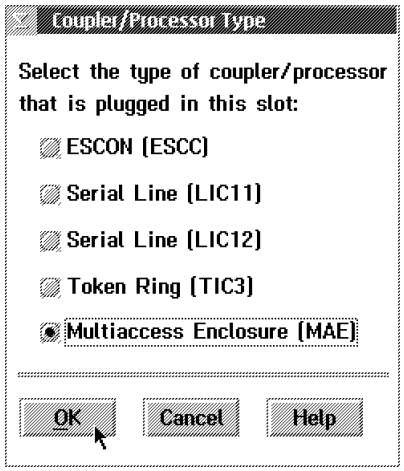
double click on the MAE address range and continue with Step 11 on page E-9.

b. If the MAE is not yet shown in the window:



double click on the address range where you intend to install and configure the MAE. Continue with Step 9.

9 The following window is displayed:

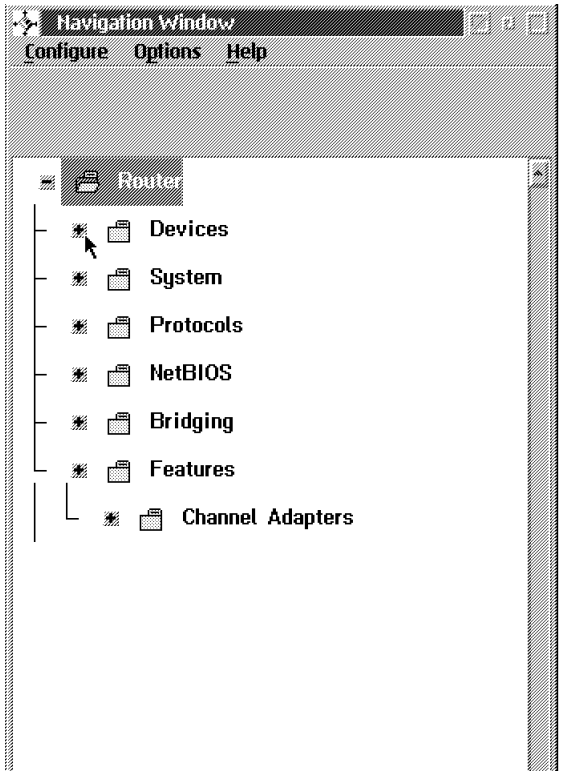


Select **Multiaccess Enclosure (MAE)**, then click on **OK**.

10 Wait until the **Nothing Selected** window is displayed.

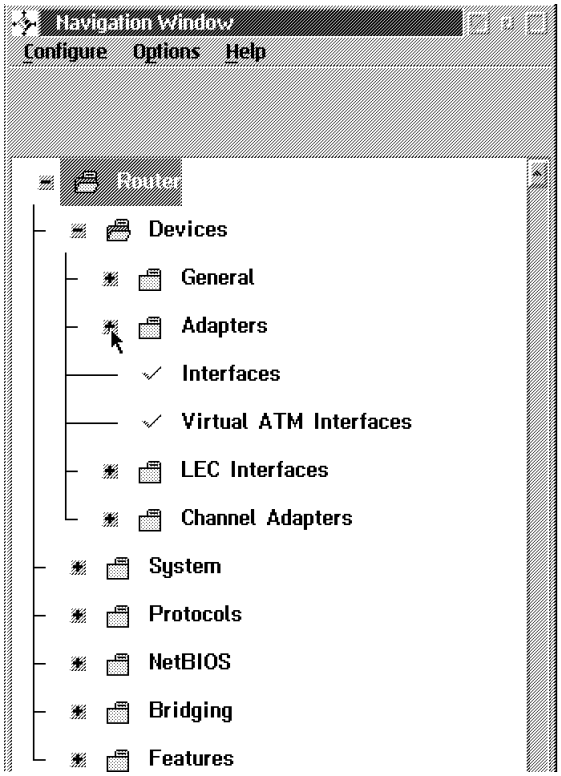
11 Press **Ctrl/Esc**.

12 The **Window List** is displayed. Double click on the **Navigation Window**.The **Navigation Window** is displayed.

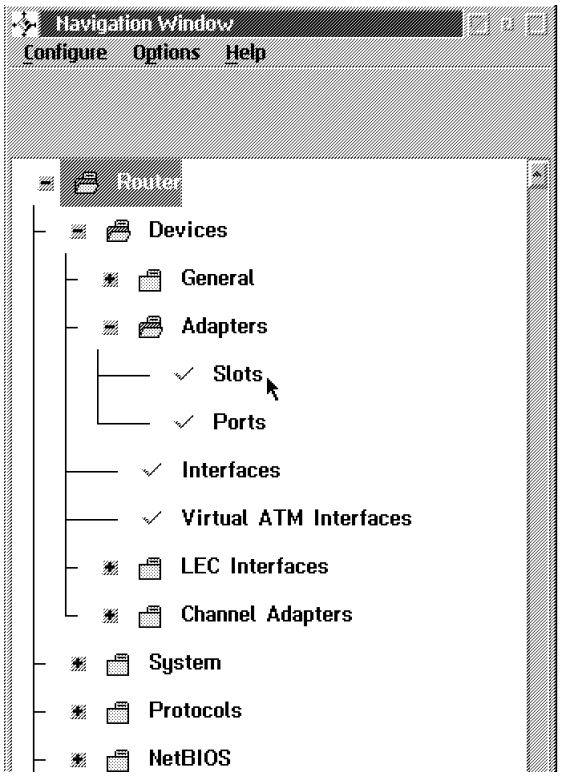


Note: By clicking on the + on the left side of the icon the view is expanded.

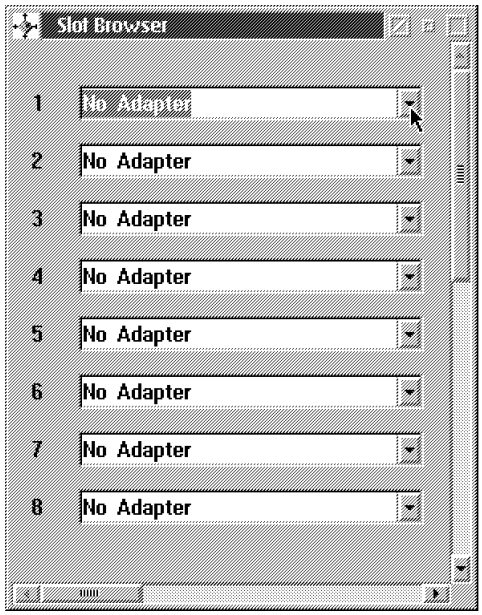
13 Expand the **Devices**. The following window is displayed:



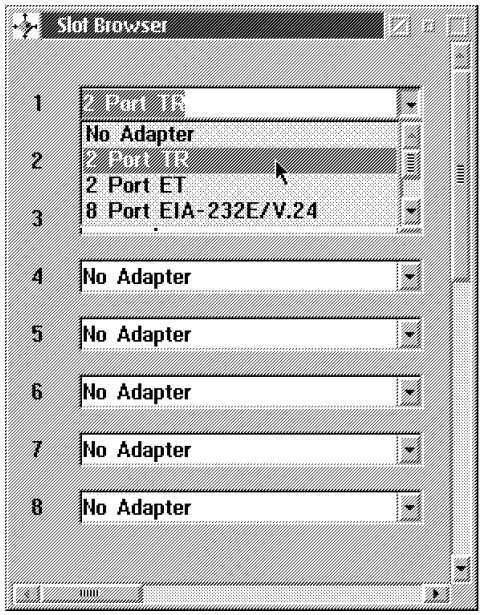
14 Expand the **Adapters**. The following window is displayed:



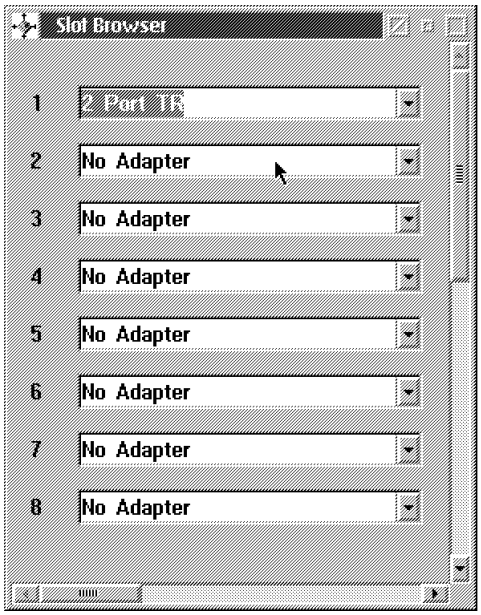
15 Click on the **Slots** option. The **Slot Browser** window similar to the following is displayed.



16 Select the slot where you want to add or remove an adapter by clicking on the desired position. A new window appears with a choice.

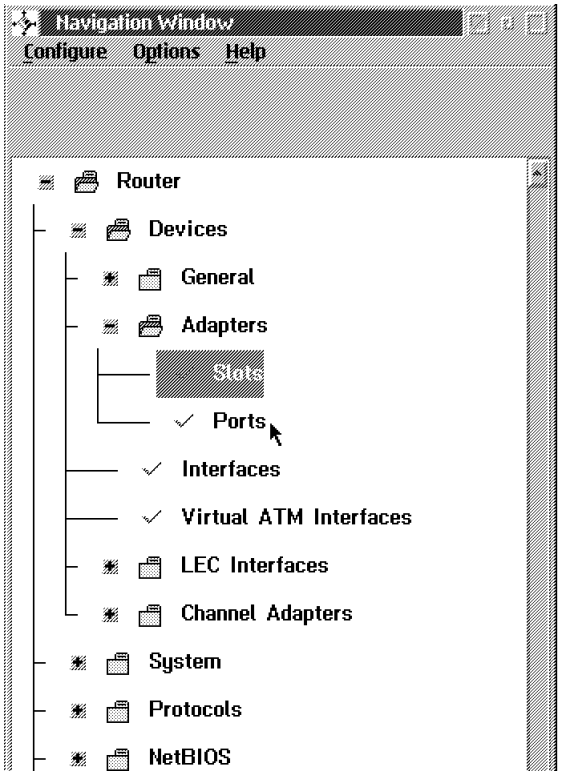


17 If you are removing an adapter click on the **No Adapter** option. Otherwise click on the appropriate adapter. The **Slot Browser** window is again displayed with the change.

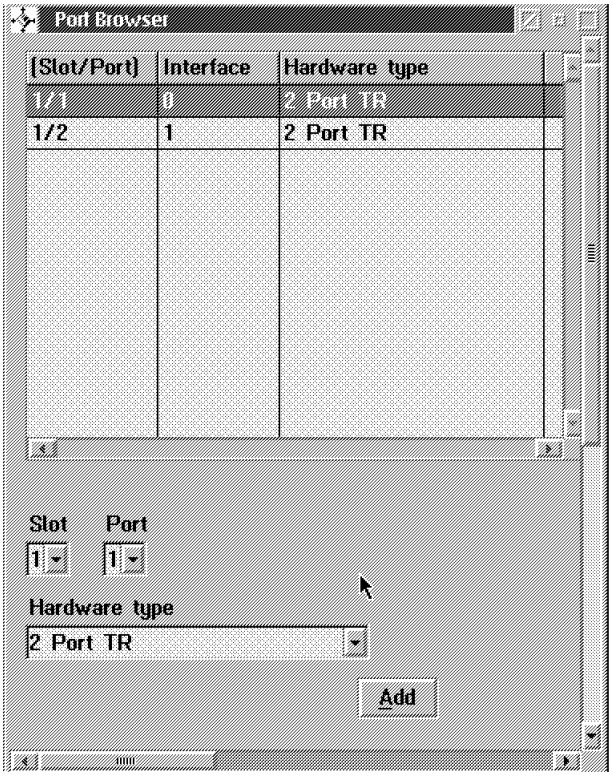


18 Press **Ctrl/Esc**.

19 The **Window List** is displayed. Click on the **Navigation Window**.The **Navigation Window** is displayed.



20 If you have several ports on the adapter click on **Ports** option. Windows are displayed to help you.



21 Press **Ctrl/Esc** to return to the **Navigation Window**.

22 Modify all the other needed options using a similar process. For more details about configuration refer to the *3745 Communication Controller Models A and 3746 Models 900 and 950: Multiaccess Enclosure Planning*, GA27-4240, manual.

23 When the needed options have been modified

24 Press **Ctrl/Esc** to return to the **Navigation Window**.

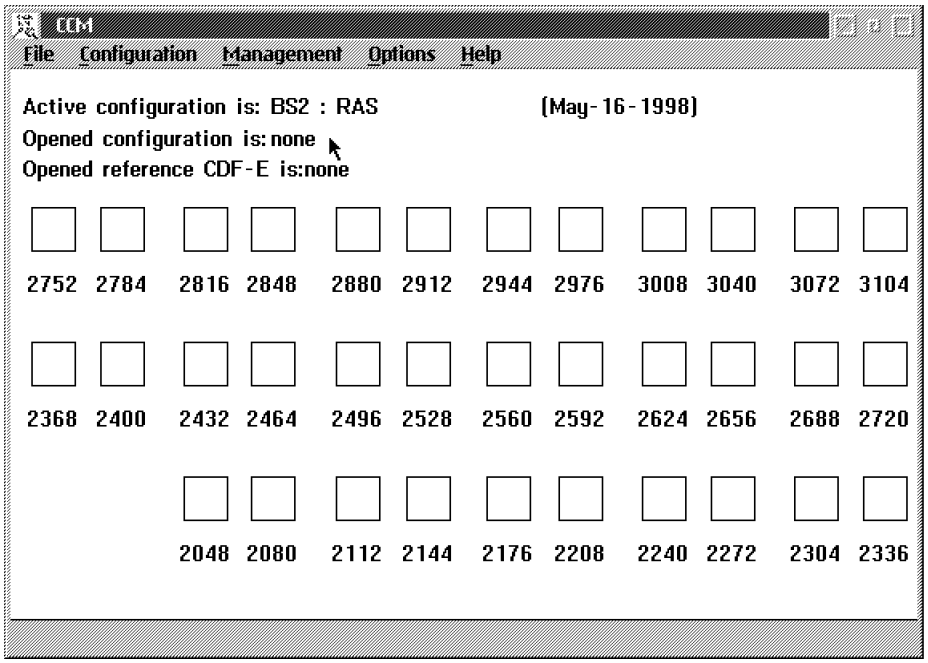
25 In **Navigation Window** Click on **Configure** to exit MAE and return to 3746 resources. Click on **Yes** to save the changes.

26 Activate the ressources (refer to “Activate MAE Configuration Via CCM” on page E-14).

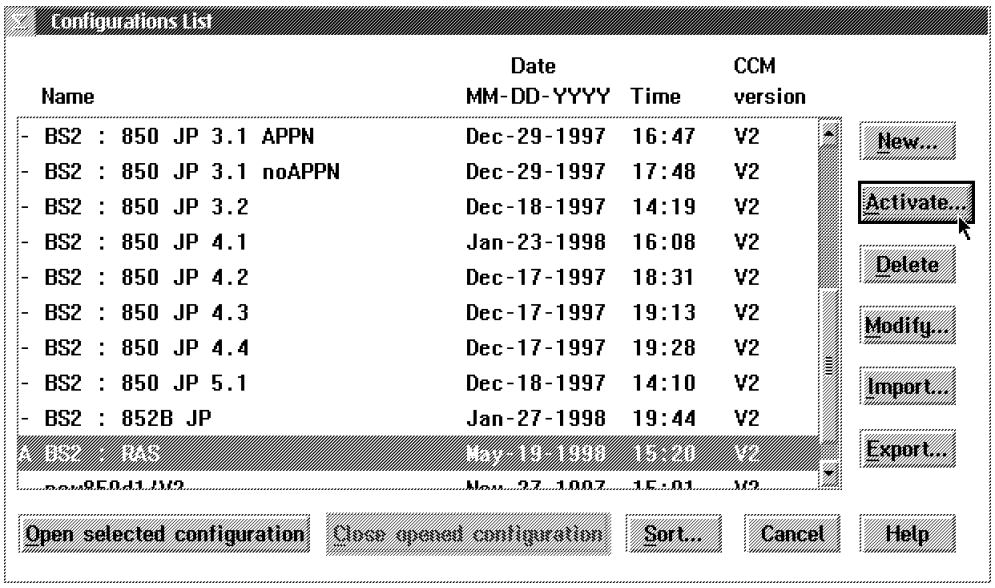
Activate MAE Configuration Via CCM

You should be logged ON on the service processor console.

- Click on the 3746-9x0 on which you want to work.
- The **3746-9x0 menu** window is displayed.
- Click on the **Network Node Processor (NNP) Management** option.
- Double click on the **CCM Controller Configuration and Management** option.
- The **CCM** window is displayed:



- Click on **File** in the title bar, then select **Open**. The **Configuration List** window is displayed:



- Select the name of the configuration that you want activate, then click on **Activate**.
- Follow the prompts and wait until the following window is displayed.

  Click on **OK**.
- The MAE is rebooting.
- Wait for the MAE IML complete. Be sure that the 3746 icon comes green.

Appendix F. Common Tasks

This appendix provides a series of questions and answers dealing with common multiaccess enclosure installation, operation, and maintenance tasks, with suggestions as to where to find further help in performing them.

LED States / Adapter Status

Question How do I check the state of the adapters in my multiaccess enclosure?

Answer The LED state on the front of the adapters indicate the status of the adapter. (See “Adapter Card Status” on page 3-3.)

The Firmware Interface

Question What is the firmware interface? How do I access it?

Answer The firmware is the microcode lying underneath the operational code running on the multiaccess enclosure. It is used primarily by service personnel in problem determination. The firmware is accessed by booting the multiaccess enclosure and stopping the boot process with the **F1** key. It displays a menu with a number of options.

See “Accessing the Firmware from the Service Processor” on page 5-3 for more information.

Command Line Interface

Question How do I access the command line interface (the operating code) from within the firmware?

Answer From within the **firmware menu system** (System Management Services), press **F9**. The (* prompt) is displayed after the system boots.

The command line interface is described in the *Nways Multiprotocol Access Services Software User, SC30-3886*.

Displaying List of Configured Interfaces

Question How do I display a list of active interfaces?

Answer

1. Access the command line interface (* prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42).
2. Type **talk 6** and press **Enter** twice to reach the `Config>` prompt.
3. Enter **list dev**.
4. Press **Ctrl-p** to return to the command line interface (* prompt).

Displaying the Operational State of the Interfaces

Question How do I display the state (up, down, disabled, etc.) of an interface?

Answer

1. Access the command line interface (* prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Enter **configuration**.
4. Press **Ctrl-p** to return to the command line interface (* prompt).

Verifying Connectivity

Question How do I verify that a given IP address is online?

Answer

1. Access the command line interface (* prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Type **protocol** and press **Enter**.
4. Type **ip** and press **Enter**. The prompt changes to IP>.
5. Type **ping** *IP address value* and press **Enter**. Press **Enter** to stop the ping process.
6. Type **exit** at the IP> prompt and press **Enter**. The prompt changes to +.
7. Press **Ctrl-p** and **Enter** to return to the command line interface (* prompt).

Viewing Vital Software Data

Question How do I view vital software data?

Answer

1. At the * prompt, type **talk 6** and press **Enter** twice. The Config> prompt appears.
2. Enter **boot**.
3. Enter **describe**. The vital software data is displayed.
4. Press **Ctrl-p** to return to the command line interface (* prompt).

Viewing Vital Hardware Data

Question How do I view vital hardware data?

Answer

1. Access the firmware main menu: During boot-up, press **F1** at the `Prematurely terminate boot sequence` prompt.
2. Select **4. Utilities**.
3. Select **9. View or Set Vital Product Data**.
4. Select **Hardware Vital Product Data**.
5. Select the **Card Vital Product Data**. The vital hardware data is displayed.
6. Return to the firmware main menu.
7. Press **F9** to load the operating software.

Adding/Removing an Adapter Using CCM

Refer to “Configuring the MAE via CCM” on page E-6.

Suspend Traffic on an Adapter Port

Question How do I disable a configured adapter port to remove or test an adapter?

Answer

1. Access the command line interface (* prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Enter the **interface** command.
4. Make a note of the slot number of the adapter that you want to disable.
5. Enter **disable** *slot number*.

Resume Traffic on an Adapter Port

Question How do I enable a configured adapter port (that was disabled using the **talk 5 disable** command in “Suspend Traffic on an Adapter Port”) to resume traffic?

Answer

1. Access the command line interface (* prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Enter the **configuration** command.

4. Make a note of the network number of the adapter you wish to enable.
5. Enter **test** *number*.
   Example:

   ```
   test 1
   ```

   Note: If you use the **test** command to enable an interface that has been configured at the `Config>` prompt (from **talk 6**) as disabled, when you reboot the multiaccess enclosure the interface will be disabled again.

   Therefore, you should also use the `Config>` **enable interface** command to ensure that the interface is enabled the next time a reboot does occur.

For details of this procedure, refer to the *Nways Multiprotocol Access Services Software User, SC30-3886*.

Up-to-Date multiaccess enclosure Information

Question How can I find out the most current information about the multiaccess enclosure?

Answer Point your web browser to:
http://www.networking.ibm.com/216/216prod.html for the multiaccess enclosure.
or
http://www.networking.ibm.com/376/376prod.html for the 3746.

Disabling Interfaces that Have WAN Reroute Enabled

Question How do I ensure that WAN Reroute does not try to automatically enable an alternate interface that is on an adapter about to be removed?

Answer

1. Access the command line interface (`*` prompt) (see "Accessing the Operational Diagnostics from the Service Processor" on page 5-42).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Type **disable slot** *slot#* or **disable** *interface#* for each interface on the adapter. For example:

```
+ disable slot 4
Interface 4 is enabled as a WAN Reroute alternate circuit and should be
disabled as an alternate circuit if you will be removing the adapter

Do you want to disable WAN Reroute on this interface? (Yes, No): [No] Yes

Interface 4 has been disabled as a WAN Reroute alternate circuit

(adapter is removed and replaced)
```

Enabling WAN Reroute after You Have Disabled it

Question How do I enable WAN Reroute to automatically enable an alternate interface that is on an adapter that has be replaced?

Answer

1. Access the command line interface (* prompt) (see “Accessing the Operational Diagnostics from the Service Processor” on page 5-42).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Type **enable slot** *slot#* to start a self-test for each interface on the adapter ***or*** type **test** *interface#* for each interface that you want to bring up.

   If you start a self-test for an alternate interface and the self-test is successful, the alternate interface will remain up even though it may not be needed to back-up a primary interface. If this happens, you can issue the talk 5 **disable** *interface#* command to put the alternate interface back into the standby (disabled) state.

   The following is a sample:

```
+ enable slot 4

Interface 4 is configured as a WAN Reroute alternate circuit.
Do you want to enable WAN Reroute on this interface? (Yes, No):[No] Yes

Interface 4 is enabled as a WAN Reroute alternate circuit.
Are you sure that you want to test this interface? (Yes, No): [No] Yes
Testing net 4 ATM/0...successful
+
```

Spare Interfaces

Question Can I move traffic from a defective adapter to another adapter without restarting the multiaccess enclosure?

Answer Yes. Use the spare interface function of the multiaccess enclosure. See "Configuring Spare Interfaces" in the *Nways Multiprotocol Access Services Software User, SC30-3886*.

Appendix G. Hardware Error Codes

The error log that is displayed when you use the Displaying the Error Log firmware utility (see “Displaying the Event / Error Log” on page 5-23) contains error codes. This appendix contains explanations for those error codes.

Error Code	Physical Location	Software Subsystem	Explanation
00010000	Processor	Processor	Processor Test Failure
00011000	PPC Board	NVRAM	128KB Non-volatile RAM Test Failure
00015001	PPC Board	Flash	An error occurred while erasing the system firmware.
00015002	PPC Board	Flash	An error occurred while updating the system firmware.
00015500	PPC Board	Interrupts	PPC board interrupt test failure.
00015501	PPC Board	Interrupts	Interrupt test of the processor’s timing register failed.
00015502	PPC Board	Interrupts	Interrupt test of the PPC board clock failed.
00015503	PPC Board	Interrupts	Interrupt test of the PPC board programmable timer failed.
00016002	PPC Board	RTC-NVRAM	Read/Write test failure for PPC board clock.
00017001	PPC Board	Security	CMOS Battery drained. Replace RTC/8KB NVRAM.
00017002	PPC Board	Security	CMOS Error—data is gone. Replace RTC/8KB NVRAM.
00017003	PPC Board	Security	Power Interruption during last boot sequence update.
00017007	PPC Board	Security	Maximum unsuccessful attempts to enter password was reached. Time and date are logged.
00020000	Memory	Memory	Memory test error; run further tests.
000210y0	SIMM slot y	Memory	Memory error with SIMM slot y (where y=1 or 2); 1=U13 2=U14.
01291000	L2 Cache	L2 Cache	For later release
1msceddd	PPC Board	Octal Uart	Octal Uart error.
2msceddd	PPC Board	I^2C	I^2C controller, bus, or device error
3msceddd	PPC Board	GCOM	GCOM controller error
30002000	System Card	—	Hard disk error. Format hard disk.
5msceddd	PPC Board	PCMCIA	PCMCIA controller error
50000000	PPC Board	PCMCIA	PCMCIA controller error
80001300	—	Flash	Firmware update file is at the same level as current firmware. Update canceled.
80001400	—	Flash	Firmware update file does not support this system. Update canceled.
80001500	—	Flash	The firmware update file is corrupted. Update canceled.
80001600	—	Flash	The firmware update file is corrupted. Update canceled.
80001700	—	Flash	See 80001500.
80001700	—	Flash	See 80001500.
80001800	—	Flash	A valid firmware update file cannot be located. Update canceled.
80001900	—	Flash	See 80001500.
80002100	—	Flash	The firmware update file cannot be loaded. Update canceled.
80002400	—	Flash	See 80001400
80002500	—	Flash	See 80001400
90001600	—	Copy Utility	Not enough VDISK space. Unable to copy files.

Appendix H. Parts Listing

This parts listing contains reference drawings and a corresponding index for all field-replaceable parts. The index provides the part number, the quantity required (units), and a description of the part.

Listed below is additional information about the parts assembly index.

SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts specific to one or the other of the assemblies are listed separately and identified by description.

AR: (As Required) in the Units column indicates that the quantity is not the same for all machines.

NP: (Non-Procurable) in the Units column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

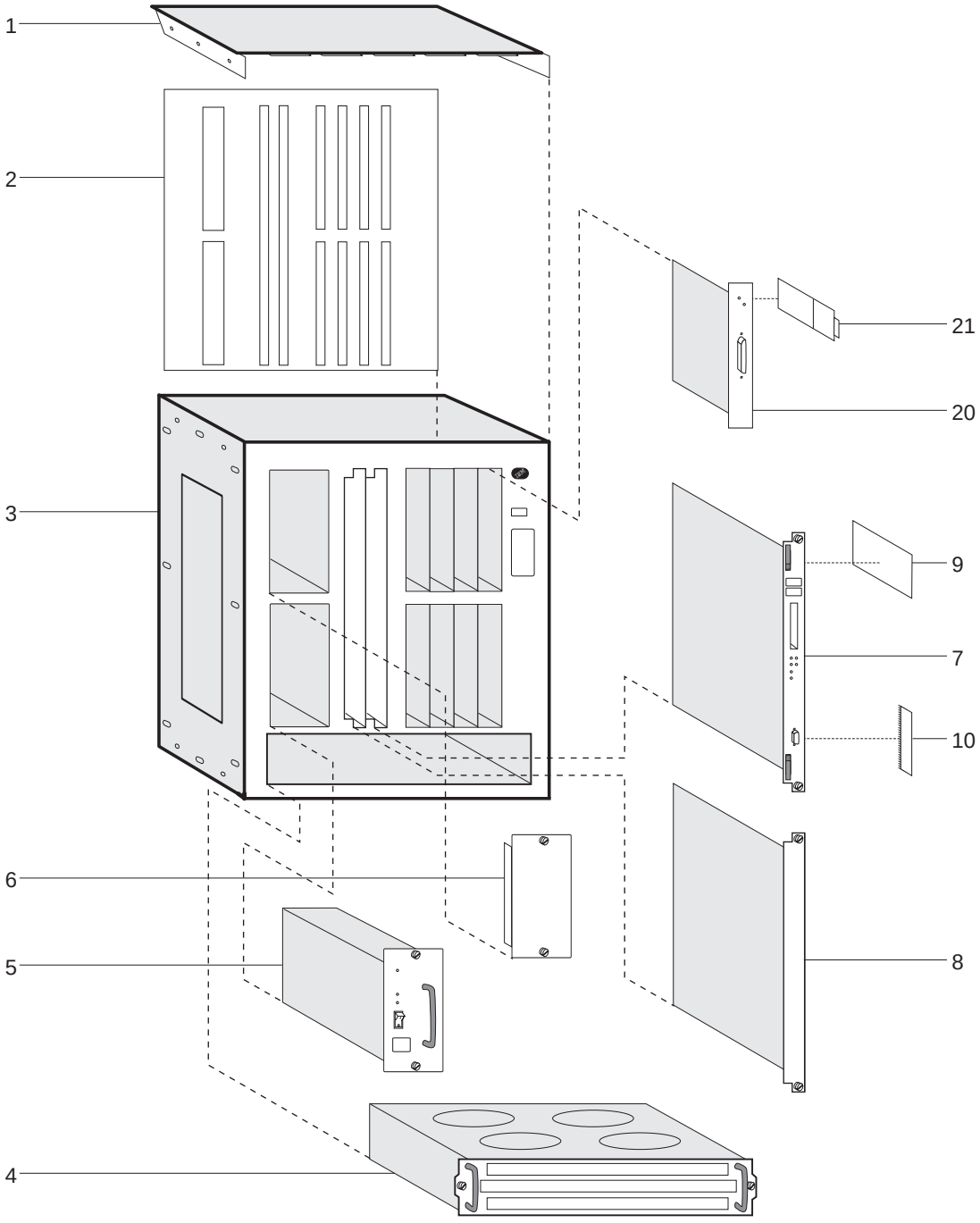
NR: (Not Recommended) in the Units column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.

R: (Restricted) in the Units column indicates that the part has a restricted availability.

INDENTURE: The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture	**Relationship of Parts**
(No dot)	MAIN ASSEMBLY
(One dot)	• Detail parts of a main assembly
(One dot)	• Subassembly of the main assembly
(Two dot)	• • Detail part of a one-dot subassembly
(Two dot)	• • Subassembly of a one-dot subassembly
(Three dots)	• • • Detail part of a two-dot subassembly

Assembly 1: Final Assembly, Multiaccess Enclosure



Asm–Index	Part Number	Units	Description
1–		NP	Final Assembly
–1	13H4931	1	• Cover, Top
–2	85H7860	1	• Backplane multiaccess enclosure
–3	72H5099	1	• Enclosure
–4	85H6840	1	• Fan Tray Assembly
–5	72H5081	1	• Power Supply -- FC 3871
–6	41H7701	1	• Power Supply Filler Plate
–7	85H9682	1	• System Card (hods up to 256-MB of memory)-- FC 3855
–	25L5177	1	• System Card (hods up to 256-MB of memory)-- FC 3855
–	25L4784	1	• System Card (hods up to 256-MB of memory)-- FC 3855
–	31L4338	1	• System Card (hods up to 512-MB of memory)-- FC 3855
–8	02L2460	1	• SAC
–	72H5098	1	• Filler Plate (system slot)
–9	85H7917	1	• Hard Drive (2.5 Hardfile)
–10	85H9688	1	• 64-MB DIMM Memory
–	25L4575	1	• 128-MB DIMM Memory
–	30L7395	1	• 256-MB DIMM Memory
–20	02L1873	1	• LIC 280 (Not Illustrated) 2 Port Token Ring -- FC 3280
–	02L1872	1	• LIC 281 (Not Illustrated) 2 Port Ethernet -- FC 3281
–	85H4872	1	• LIC 282 (Not Illustrated) 8 Port RS-232 -- FC 3282
–	02L2065	1	• LIC 283 (Not Illustrated) 1 Port ISDN Pri (T1) -- FC 3283
–	85H4894	1	• LIC 284 (Not Illustrated) 1 Port 155Mbps (MMF ATM) -- FC 3284
–	86H0967	1	• LIC 286 (Not Illustrated) 1 Port FDDI
–	85H4878	1	• LIC 287 (Not Illustrated) 1 Port ESCON Channel -- FC 3287
–	86H1005	1	• LIC 288 (Not Illustrated) 1 Port 100Mbps Ethernet -- FC 3288
–	85H9703	1	• LIC 289 (Not Illustrated) 1 Port HSSI -- FC 3289
–	85H4874	1	• LIC 290 (Not Illustrated) 6 Port V.35/V.36) -- FC 3290
–	85H4876	1	• LIC 291 (Not Illustrated) 8 Port X.21 -- FC 3291
–	02L2066	1	• LIC 292 (Not Illustrated) 1 Port ISDN Pri (E1) -- FC 3292
–	85H6834	1	• LIC 293 (Not Illustrated) 1 Port 155Mbps (SMF ATM) -- FC 3293
–	86H0986	1	• LIC 294 (Not Illustrated) 1 Port 155Mbps (MMF ATM) -- FC 3294
–	86H0993	1	• LIC 295 (Not Illustrated) 1 Port 155Mbps (SMF ATM) -- FC 3295
–	02L2331	1	• LIC 297 (Not Illustrated) 4 Port ISDN Pri (T1/J1) -- FC 3297
–	02L2333	1	• LIC 298 (Not Illustrated) 4 Port ISDN Pri (E1) -- FC 3298
–	02L2337	1	• LIC 299 (Not Illustrated) 1 Port Parallel Channel -- FC 3299
–21	02L2120	1	• Daugther Card (Not Illustrated) 4 Port ISDN Pri (T1/J1) -- FC 3252 used on LIC 297
–	02L2123	1	• Daughter Card (Not Illustrated) 4 Port ISDN Pri (E1) -- FC 3251 used on LIC 298
–25	30L6123	1	• Wrap Plug Service Kit multiaccess enclosure (Not Illustrated)
–26	25L4749	1	• Wrap Plug for LIC 297 and 298 (Not Illustrated)
–27	25L4747	1	• Terminator for LIC299 (Not Illustrated)
–28	71F1184	1	• Wrap Plug for LIC 299 (Not Illustrated)
–29	10H5569	1	• Serial cable 9-pin to 25-pin (Not Illustrated)
–30	10H5570	1	• Null modem adapter (Not Illustrated)

Appendix I. Multiaccess Enclosure Cables

Cables Between the Multiaccess Enclosure, 3746 Models 900/950 and Service Processor (based on 6275)

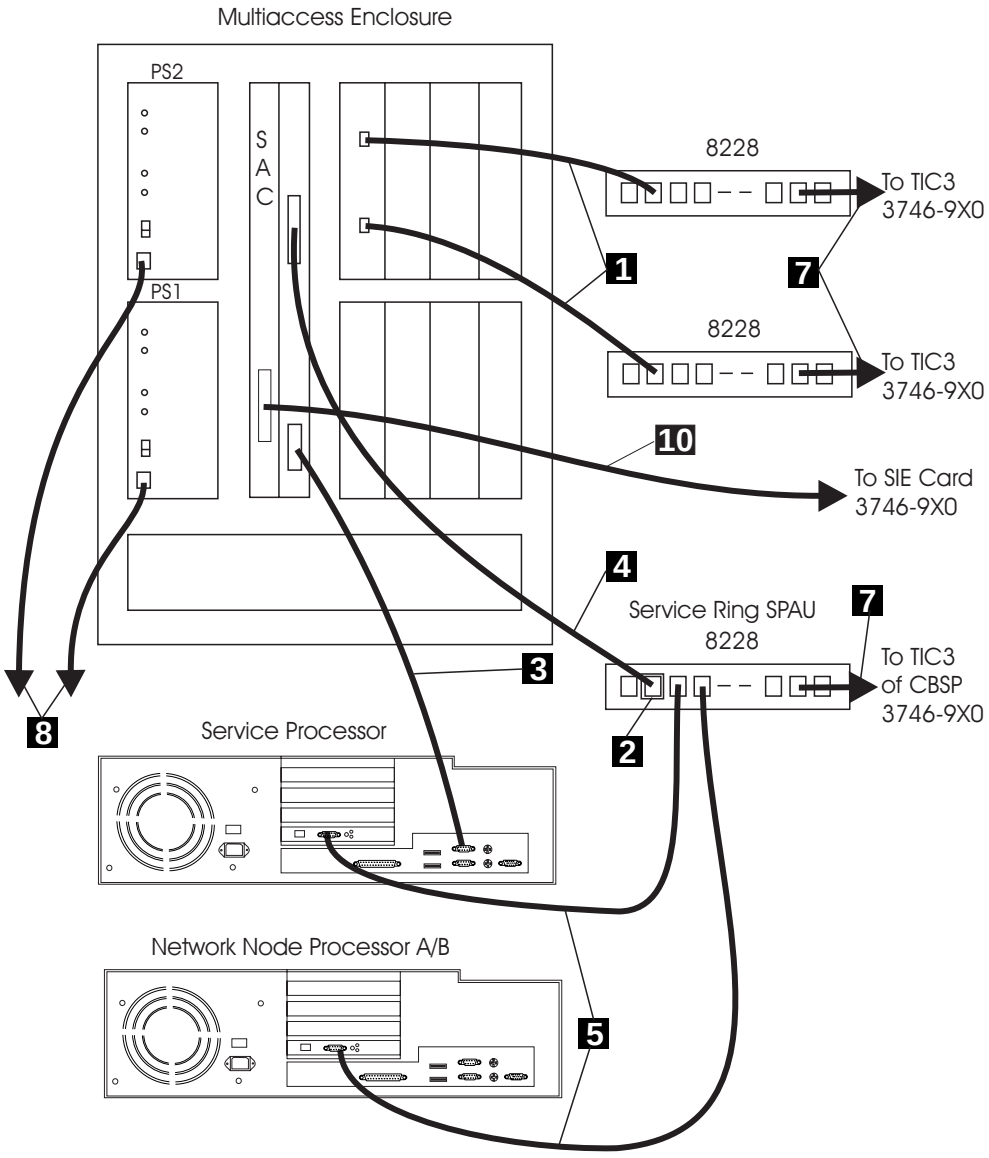


Figure I-1. Cables for Connection Between the Multiaccess Enclosure, 3746 Models 900/950, and to Service Processor (based on 6275)

Cables Between the Multiaccess Enclosure, 3746 Models 900/950 and Service Processor (based on 7585)

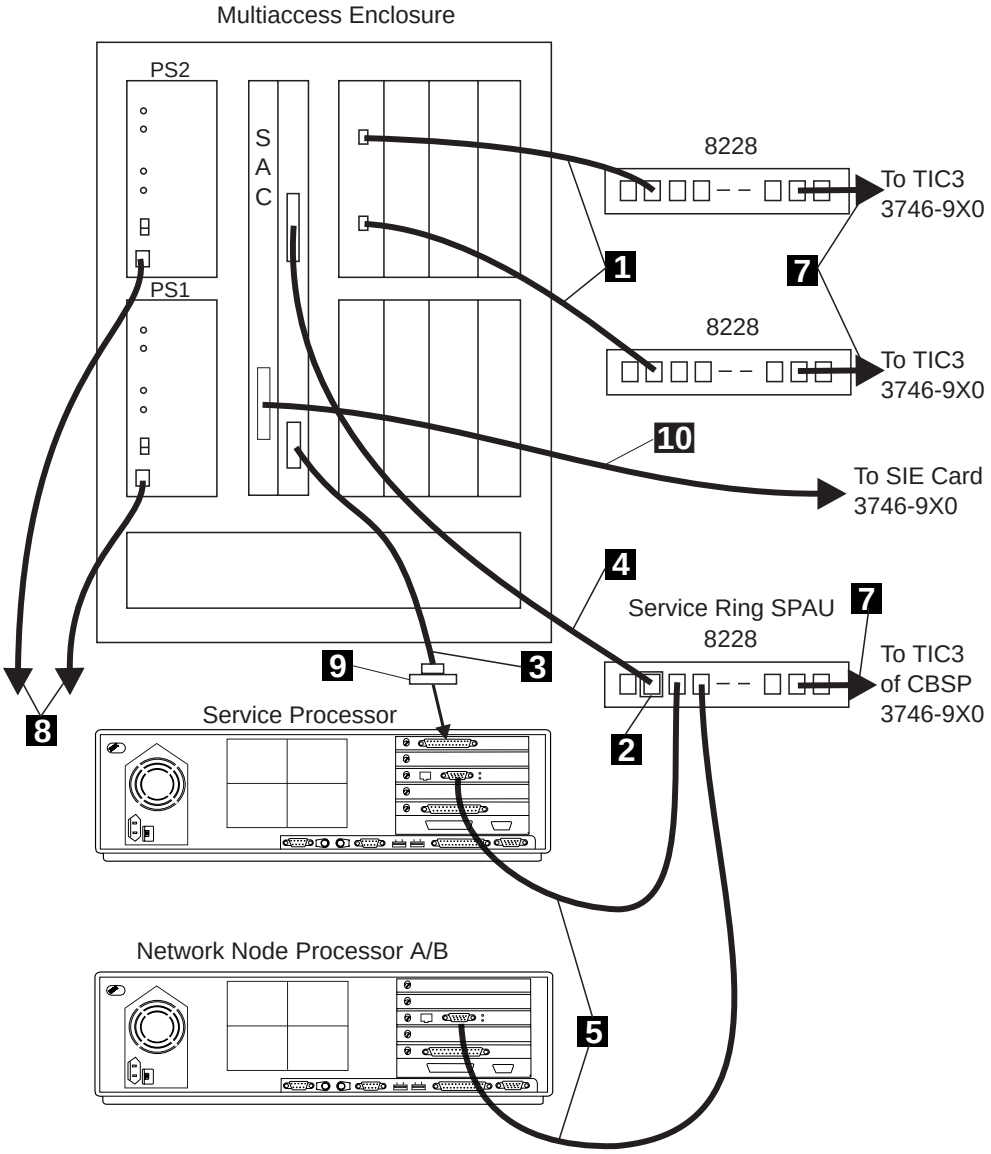


Figure I-2. Cables for Connection Between the Multiaccess Enclosure, 3746 Models 900/950, and to Service Processor (based on 7585)

Cable From the Multiaccess Enclosure Lan Adapter to the 8228

Refer to Figure I-2 on page I-2 reference **1**.

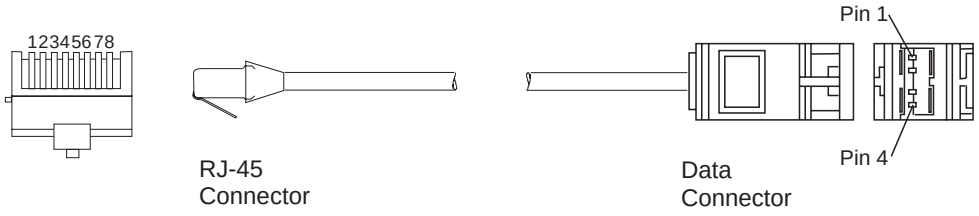


Figure I-3. Cable (Part Number 43G3953)

Pin Assignment

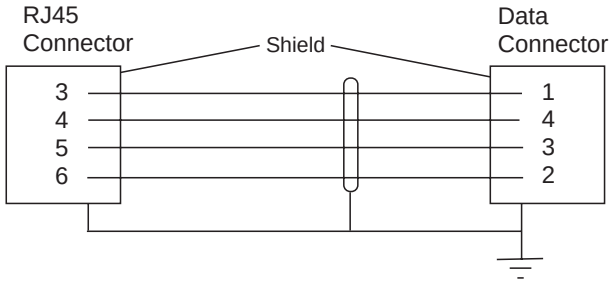


Figure I-4. Cable Pin Assignment (Part Number 43G3953)

Table I-1. Cable from the Multiaccess Enclosure Lan Adapter to a 8228

Cable Type	Length, m (ft)	Cable Part Number
Standard Fixed	9 m (27)	43G3953

Cable from the Multiaccess Enclosure System Card PCMCIA Token-Ring Adapter to Service Processor

Refer to Figure I-2 on page I-2, reference **4** and **2**. The cable **4** needs a Balun assembly **2** for connecting to the 8228 (Service Ring).

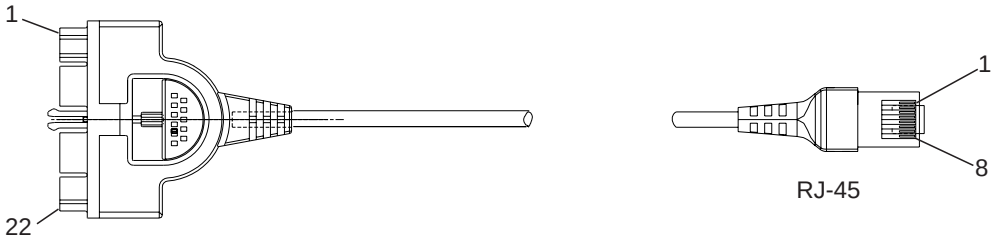


Figure I-5. Cable between the Multiaccess Enclosure PCMCIA Card and the Service Processor

Interchange Circuits for the Cable between the Multiaccess Enclosure and the Service Processor

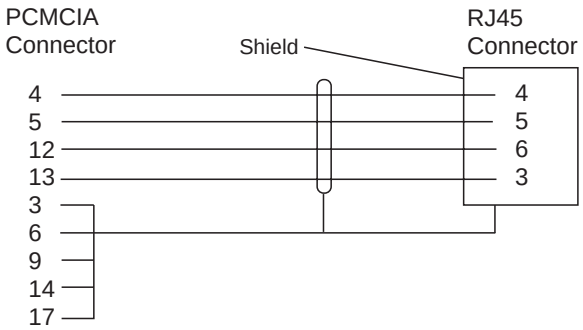


Figure I-6. Cable Pin Assignment (Part Number 782960)

Table I-2. Cable between the Multiaccess Enclosure and the Service Processor

Cable Type	Length	Part Number
Standard Fixed	9 m (27 ft.)	782960

Balun

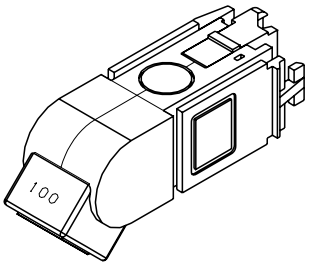


Figure I-7. Balun for Connecting Cable with RJ45 Connector to 8228 (Part Number 73G8314)

Balun Pin Assignment

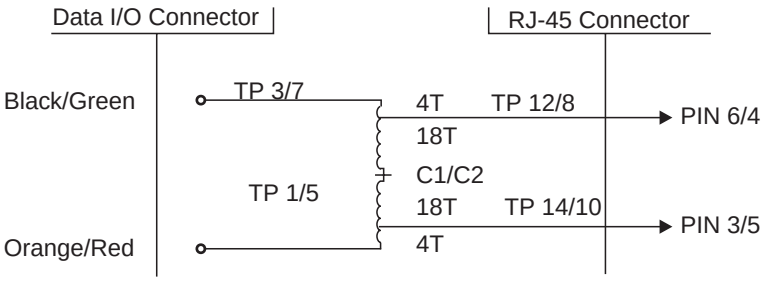


Figure I-8. Balun Pin Assignment

Cable from the Multiaccess Enclosure EIA-232 Connector to the Service Processor

Refer to Figure I-2 on page I-2 reference **3** . An adapter cable **9** is necessary for connection to the service processor (see “Adapter Cable” on page I-7).

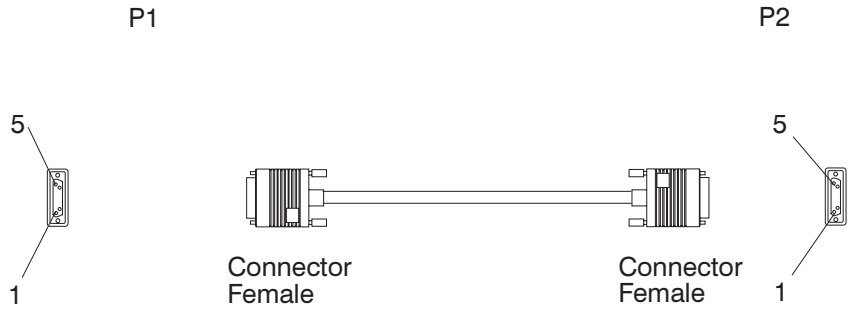


Figure I-9. Cable Pin (Part Number 782958)

Interchange Circuits for the Cable between the Multiaccess Enclosure and the Service Processor

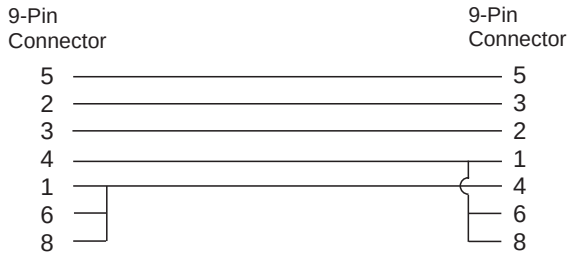


Figure I-10. Cable Pin Assignment (Part Number 782958)

Table I-3. Cable from the Multiaccess Enclosure EIA-232 Connector to the Service Processor

Cable Type	Length, m (ft)	Cable Part Number
Standard Fixed	9 m (27)	782958

Adapter Cable

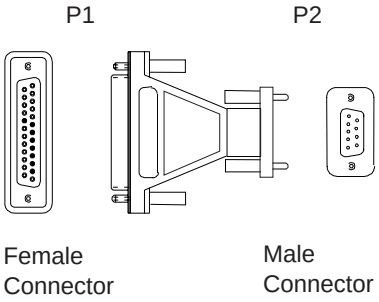


Figure I-11. Adapter cable (Part Number 782982)

Cable From the Service Processor or Network Node Processor to the 8228

Refer to Figure I-2 on page I-2, reference **5** and Figure I-14 on page I-10 for details.

Note: Some LAN adapter cards (with a RJ45 connector) need an additional adapter cable **6** (part number 60G1066) to connect the standard LAN cable.

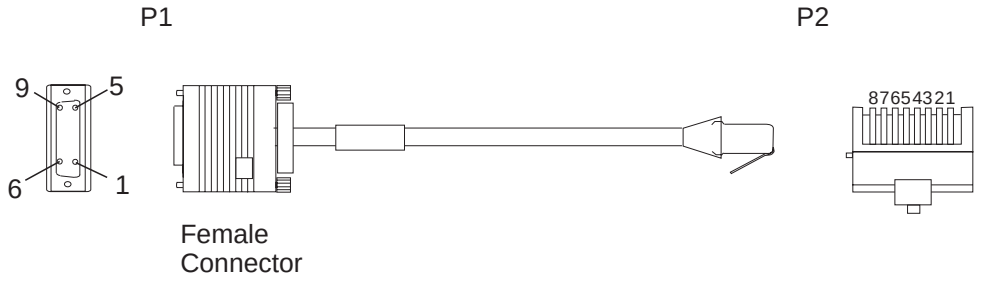


Figure I-12. Adapter Cable (Part Number 60G1066)

Pin Assignment

Table I-4. Adapter Cable Pin Assignment

9 Pin D Connector (P1)	RJ45 Connector (P2)	Wire color
9	6	ORN
5	3	BLK
1	4	RED
6	5	GRN

Table I-5. Standard Cable from a Service Processor to a 8228

Cable Type	Length, m (ft)	Cable Part Number
Standard Fixed	9 m (27)	782959

Multiaccess Enclosure Unit Power Cables

Special power cables are provided to connect power units of the Multiaccess Enclosure to the ac outlet distribution box of the Controller Expansion. Refer to Figure I-2 on page I-2 reference **8** for details.

IEC-320-C-14 IEC-320-C-13/15

Figure I-13. Power Cable for Units Connected to the ac Outlet Distribution Box

Table I-6. Power Cable for Units Installed in the Controller Expansion Connected to the ac Outlet Distribution Box

Cable Type	Length	Cable PN
Standard Fixed	2.5 m (8 ft.)	58G5783

Local Area Network Cable

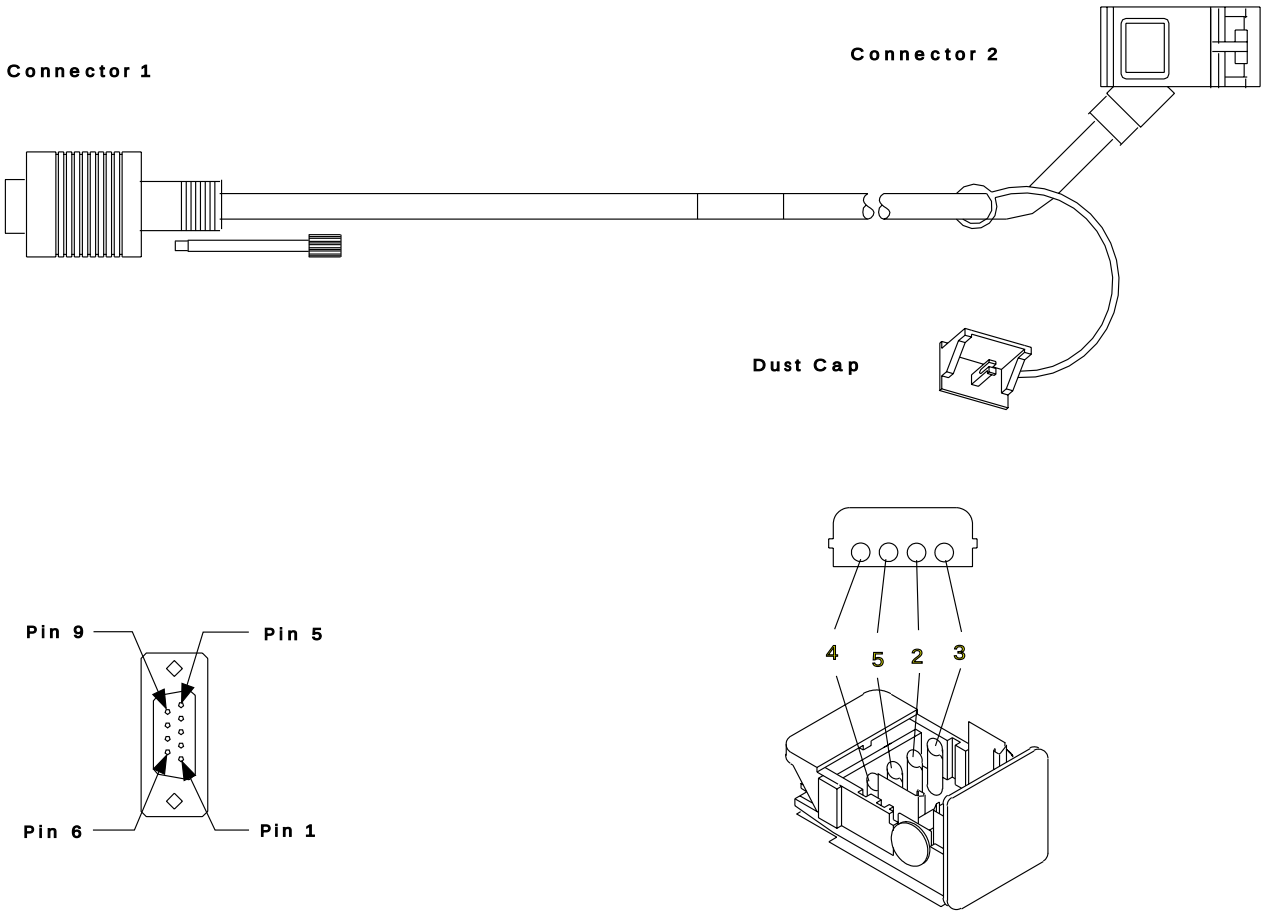


Figure I-14. LAN Cable

Table I-7. LAN Cable Pin Assignment			
Wire Nbr	**Wire Color**	**Connector 1 Position**	**Connector 2 Position**
1	SHIELD	GND	SHIELD
2	ORN	9	ORN
3	BLACK	5	BLACK
4	RED	1	RED
5	GREEN	6	GREEN

Table I-8. Cable Length Ordering Information for EMEA		
Part Number	**Feature Code**	**Length (Meters/Feet)**
72F1236	5601	9/30 Fixed length
72F1236	5601	9/30 (max) Custom length
72F1236	5601	44/144 (max) Custom length

Table I-9. Cable Length Ordering Information for U.S		
Part Number	**Feature Code**	**Length (Meters/Feet)**
72F1236	5601	22/70 Fixed length
72F1242	5601	22/70 Plenum Fixed length
72F1236	5601	22/70 (max) Custom length
72F1242	5601	22/70 (max) Plenum Custom length
72F1236	5601	44/144 (max) Custom length
72F1242	5601	44/144 (max) Plenum Custom length

Cable Between the 3746 SIE Cassette and the MAE SAC Card

Refer to Figure I-2 on page I-2, reference **10** .

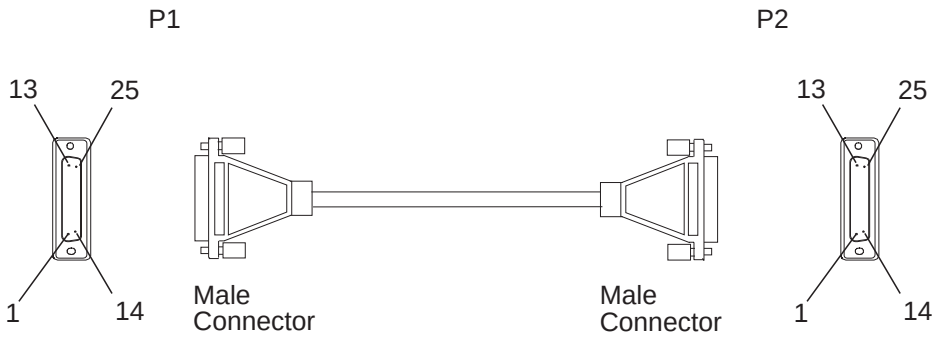


Figure I-15. SIE/SAC Cable

Table I-10. Cable Between the 3746 SIE Cassette and the Multiaccess Enclosure SAC Card		
Part Number	**Feature Code**	**Length (Meters/Feet)**
02L2764	none	10/33 Fixed length

Interchange Circuit

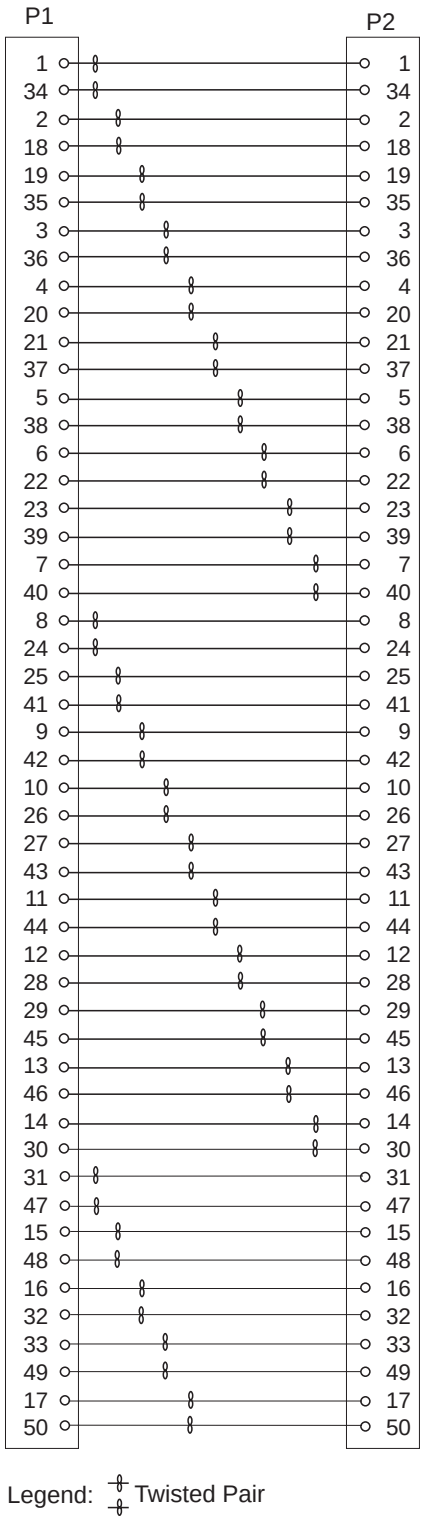


Figure I-16. SIE/SAC Cable Pin Assignment

Multiaccess Enclosure LIC Cables

V.24 / EIA-232 Fanout Cable

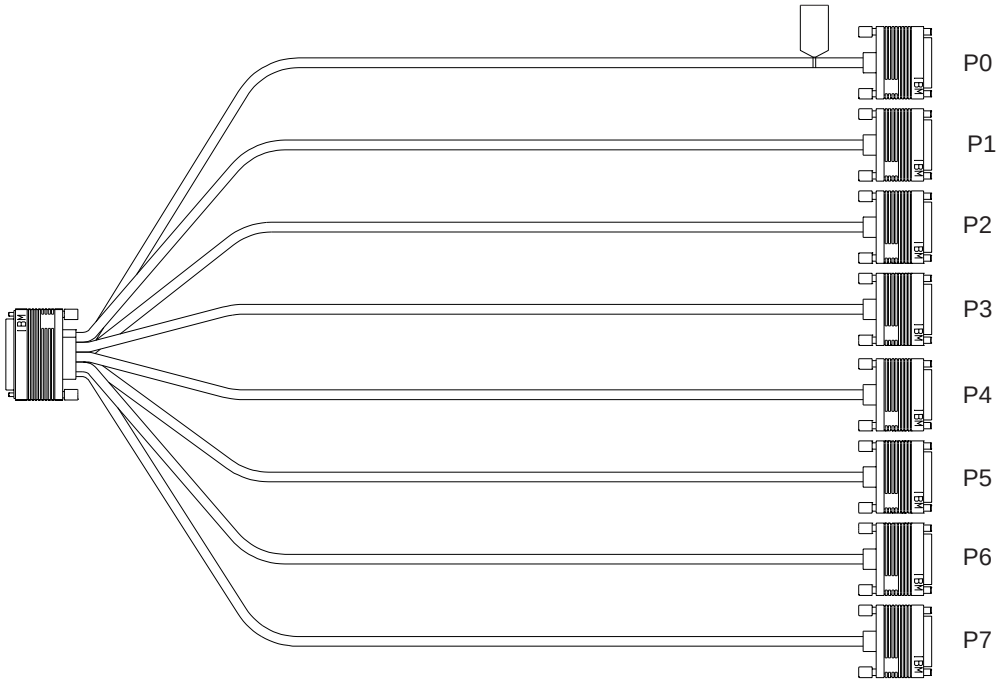


Figure I-17. V.24 / EIA-232 Fanout Cable

Interchange Circuits

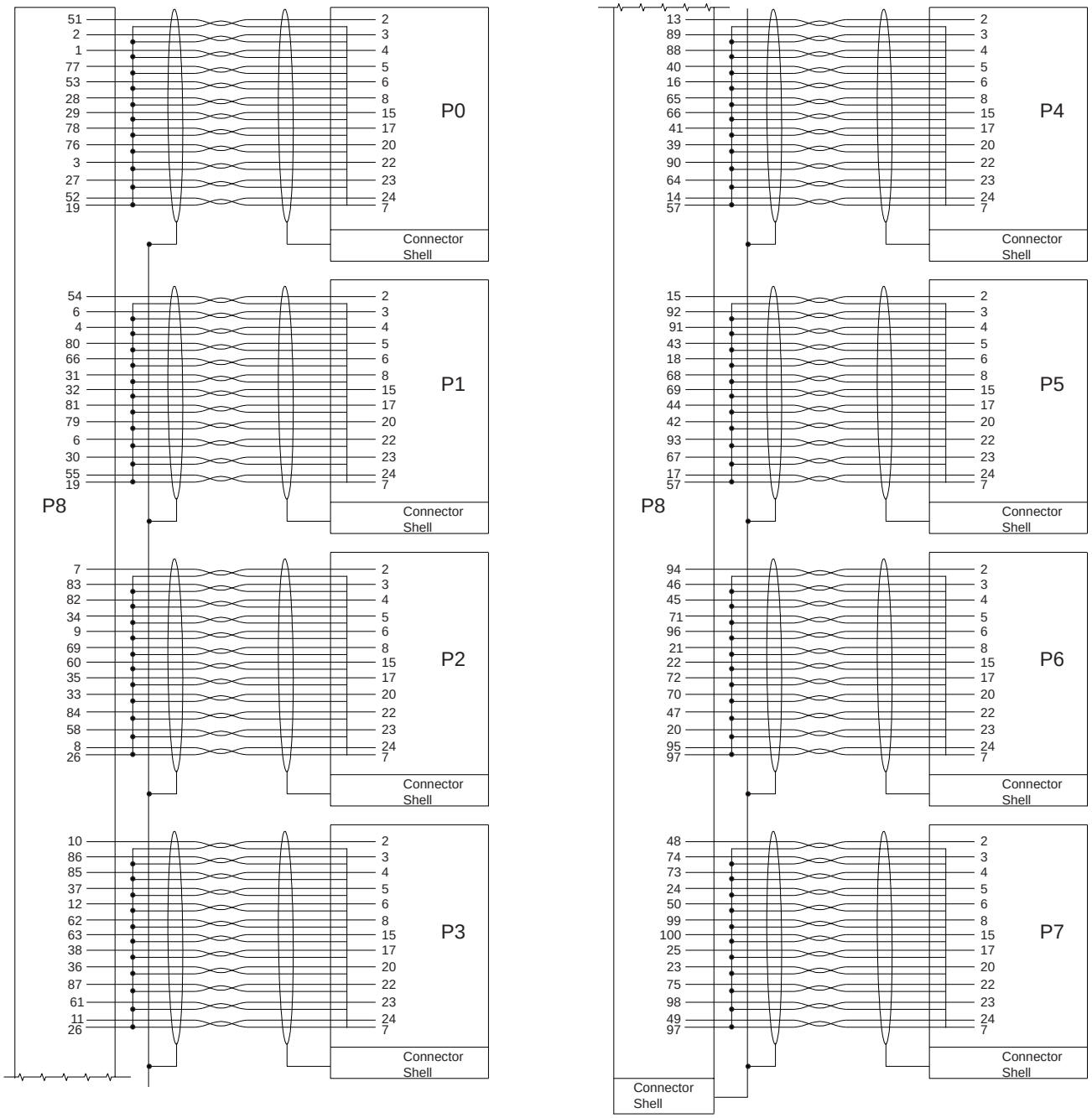


Figure I-18. V.24 / EIA-232 Fanout Cable Pin Assignment

Cable List

Table I-11. V.24/EIA-232 Fanout Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	1.8 (6)	3701	71G3496

V.35 Fanout Cable

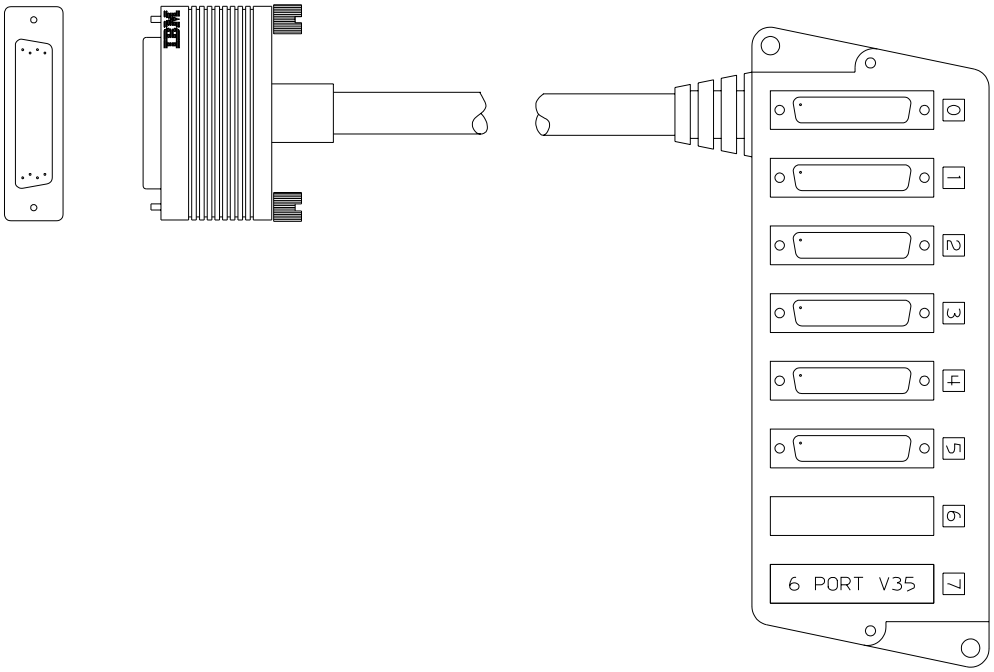


Figure I-19. V.35 Fanout Cable

Interchange Circuits

CABLE PAIRS NBER	SIGNAL NAME	100 PIN CONNECTOR	25 PIN "D" CONNECTORS	
		CONNECTOR PIN NO.	CONN. NO.	PIN NO.
1	TXDA	94	0	02
	TXDB	70	0	14
2	RDA	8	0	03
	RDB	33	0	16
3	TCLKA	76	0	15
	TCLKB	52	0	12
4	RCLKA	20	0	17
	RCLKB	45	0	09
5	EXTCKA	24	0	24
	EXTCKB	49	0	11
6	DSR	66	0	06
	GND	34	0	07
7	DTR	18	0	20
	CTS	15	0	05
8	RTS	42	0	04
	CD	89	0	08

CABLE PAIRS NBER	SIGNAL NAME	100 PIN CONNECTOR	25 PIN "D" CONNECTORS	
		CONNECTOR PIN NO.	CONN. NO.	PIN NO.
1	TXDA	71	3	02
	TXDB	95	3	14
2	RDA	29	3	03
	RDB	04	3	16
3	TCLKA	56	3	15
	TCLKB	80	3	12
4	RCLKA	19	3	17
	RCLKB	44	3	09
5	EXTCKA	25	3	24
	EXTCKB	50	3	11
6	DSR	64	3	06
	GND	67	3	07
7	DTR	68	3	20
	CTS	87	3	05
8	RTS	93	3	04
	CD	61	3	08

CABLE PAIRS NBER	SIGNAL NAME	100 PIN CONNECTOR	25 PIN "D" CONNECTORS	
		CONNECTOR PIN NO.	CONN. NO.	PIN NO.
1	TXDA	21	1	02
	TXDB	46	1	14
2	RDA	54	1	03
	RDB	78	1	16
3	TCLKA	06	1	15
	TCLKB	31	1	12
4	RCLKA	41	1	17
	RCLKB	16	1	09
5	EXTCKA	73	1	24
	EXTCKB	97	1	11
6	DSR	90	1	06
	GND	17	1	07
7	DTR	91	1	20
	CTS	65	1	05
8	RTS	43	1	04
	CD	40	1	08

CABLE PAIRS NBER	SIGNAL NAME	100 PIN CONNECTOR	25 PIN "D" CONNECTORS	
		CONNECTOR PIN NO.	CONN. NO.	PIN NO.
1	TXDA	72	4	02
	TXDB	96	4	14
2	RDA	28	4	03
	RDB	3	4	16
3	TCLKA	27	4	15
	TCLKB	2	4	12
4	RCLKA	32	4	17
	RCLKB	7	4	09
5	EXTCKA	99	4	24
	EXTCKB	75	4	11
6	DSR	60	4	06
	GND	01	4	07
7	DTR	14	4	20
	CTS	59	4	05
8	RTS	37	4	04
	CD	35	4	08

CABLE PAIRS NBER	SIGNAL NAME	100 PIN CONNECTOR	25 PIN "D" CONNECTORS	
		CONNECTOR PIN NO.	CONN. NO.	PIN NO.
1	TXDA	47	2	02
	TXDB	22	2	14
2	RDA	58	2	03
	RDB	82	2	16
3	TCLKA	77	2	15
	TCLKB	53	2	12
4	RCLKA	38	2	17
	RCLKB	13	2	09
5	EXTCKA	98	2	24
	EXTCKB	74	2	11
6	DSR	88	2	06
	GND	63	2	07
7	DTR	69	2	20
	CTS	86	2	05
8	RTS	92	2	04
	CD	62	2	08

CABLE PAIRS NBER	SIGNAL NAME	100 PIN CONNECTOR	25 PIN "D" CONNECTORS	
		CONNECTOR PIN NO.	CONN. NO.	PIN NO.
1	TXDA	23	5	02
	TXDB	48	5	14
2	RDA	57	5	03
	RDB	81	5	16
3	TCLKA	55	5	15
	TCLKB	79	5	12
4	RCLKA	30	5	17
	RCLKB	05	5	09
5	EXTCKA	26	5	24
	EXTCKB	51	5	11
6	DSR	85	5	06
	GND	83	5	07
7	DTR	12	5	20
	CTS	09	5	05
8	RTS	39	5	04
	CD	84	5	08

Figure I-20. V.35 Fanout Cable Pin Assignment

Cable List

Table I-12. V.35 Fanout Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	1.2 (4)	3702	05F2044

V.36 Fanout Cable

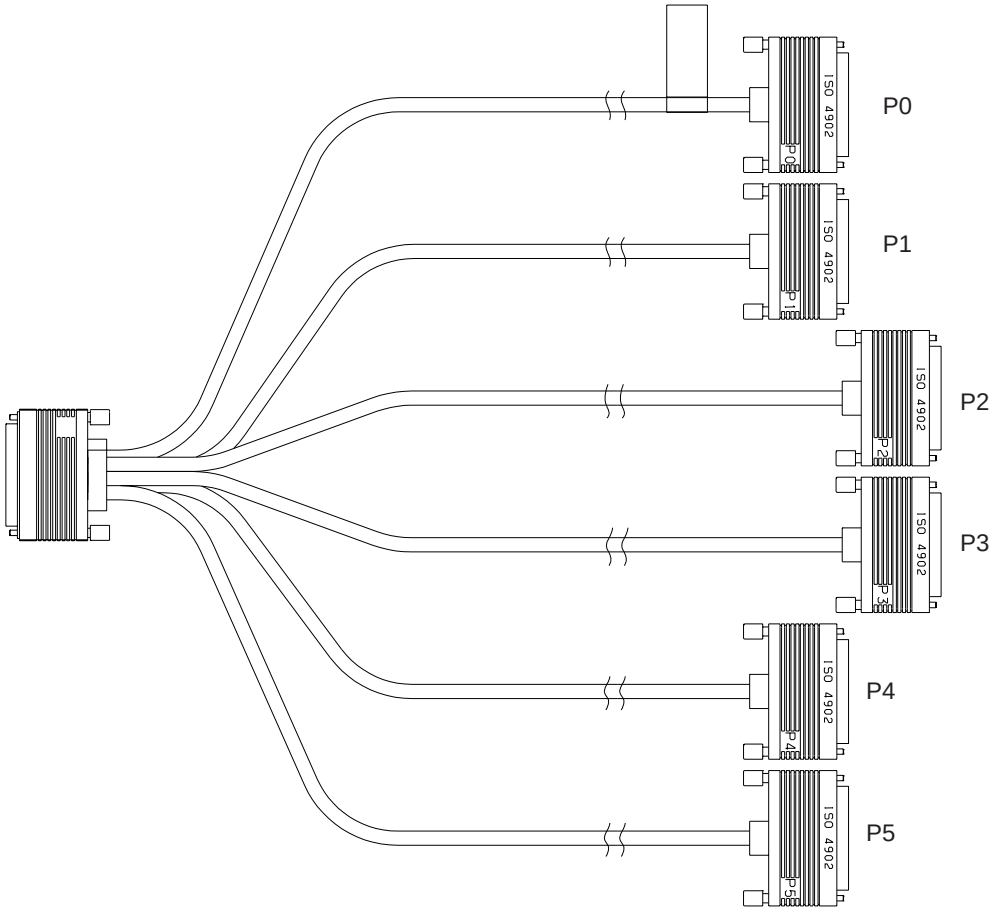


Figure I-21. V.36 Fanout Cable

Interchange Circuits

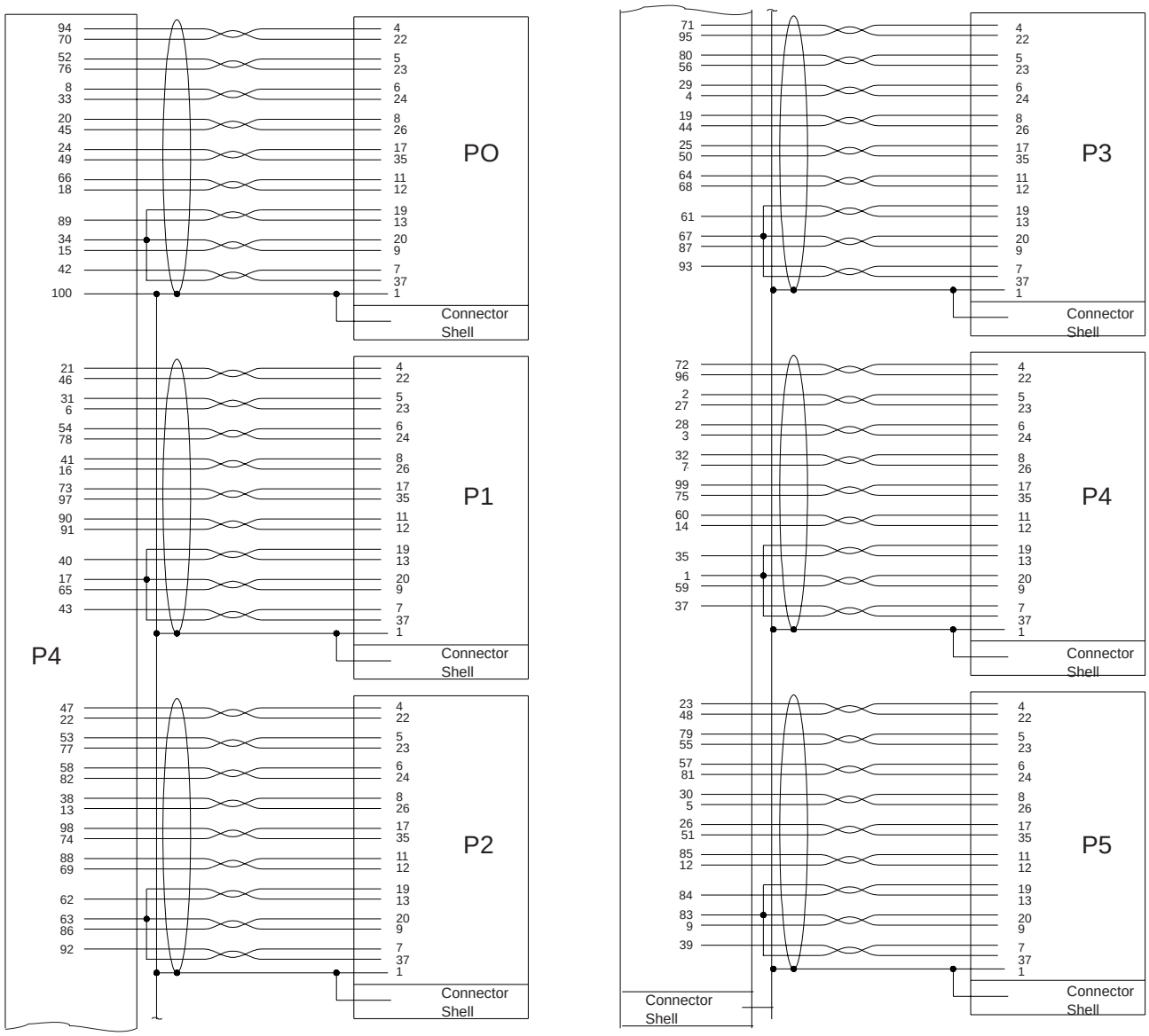


Figure I-22. V.36 Fanout Cable Pin Assignment

Cable List

Table I-13. V.36 Fanout Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3703	37H2507

X.21 Fanout Cable

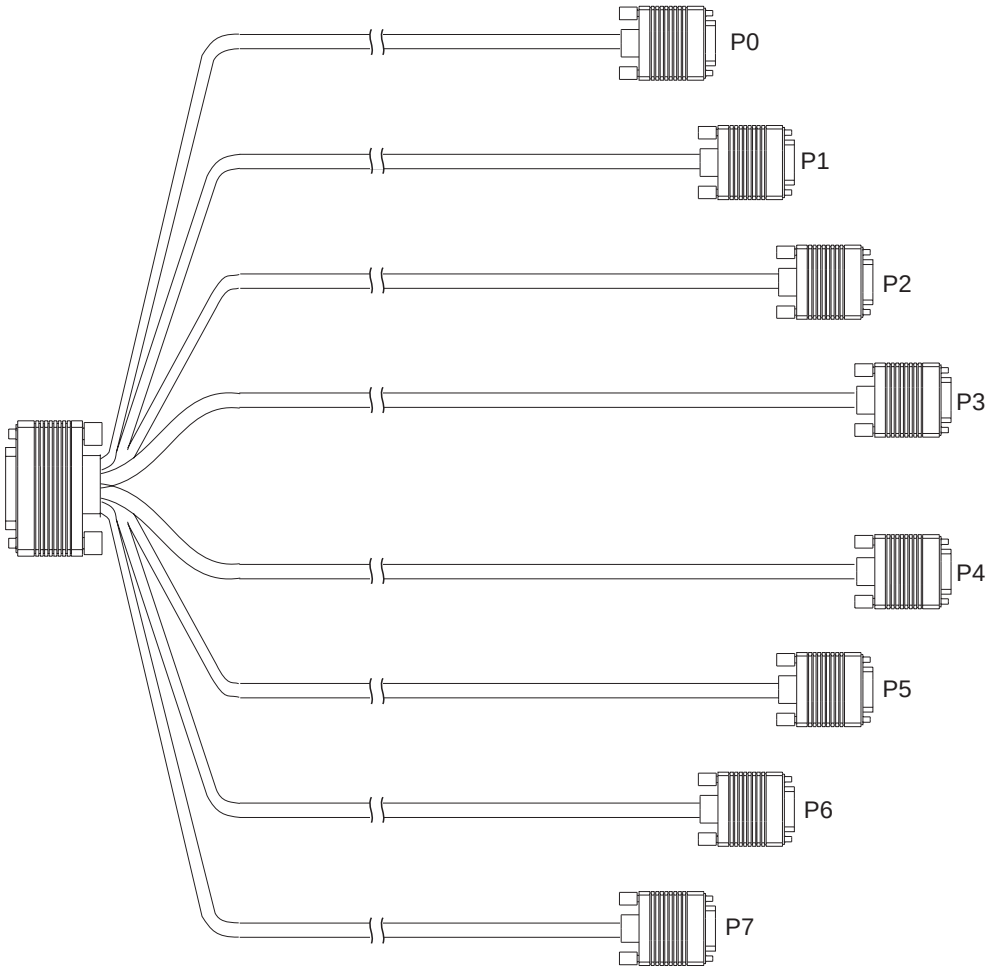


Figure I-23. X.21 Fanout Cable

Interchange Circuits

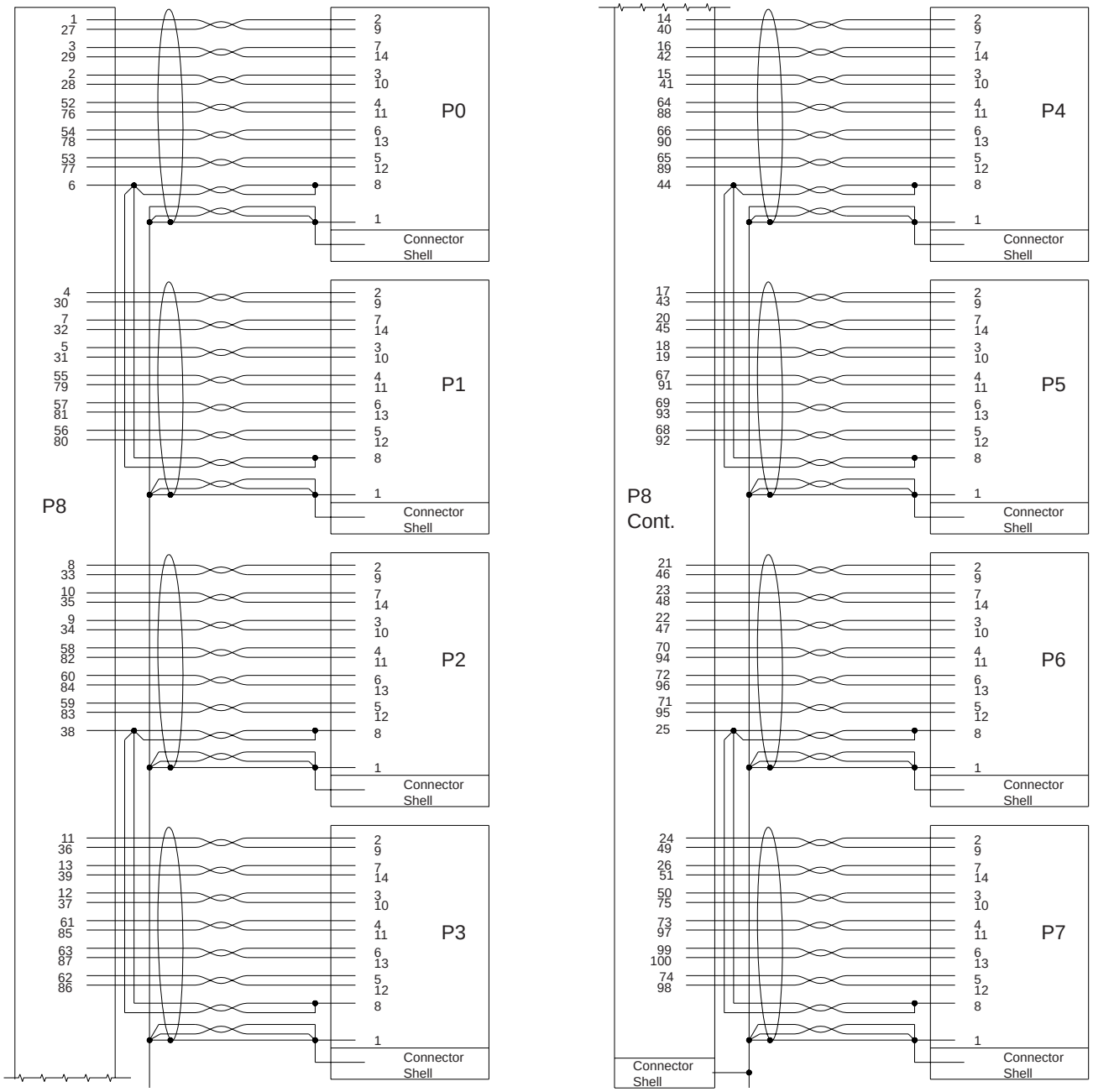


Figure I-24. X.21 Fanout Cable Pin Assignment

Cable List

Table I-14. X.21 Fanout Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	1.8 (6)	3704	06H4648

V.24 / EIA-232 Serial Cable

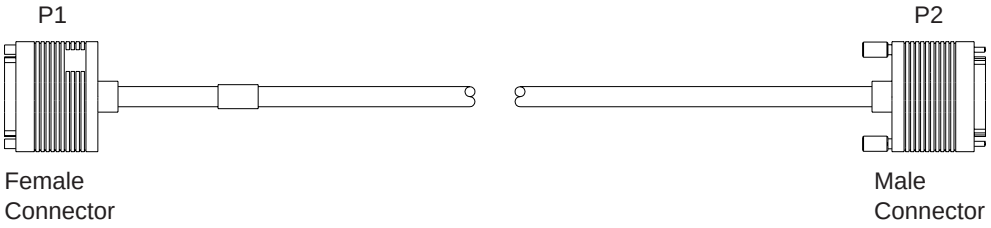


Figure I-25. V.24 / EIA-232 Serial Cable

Interchange Circuits

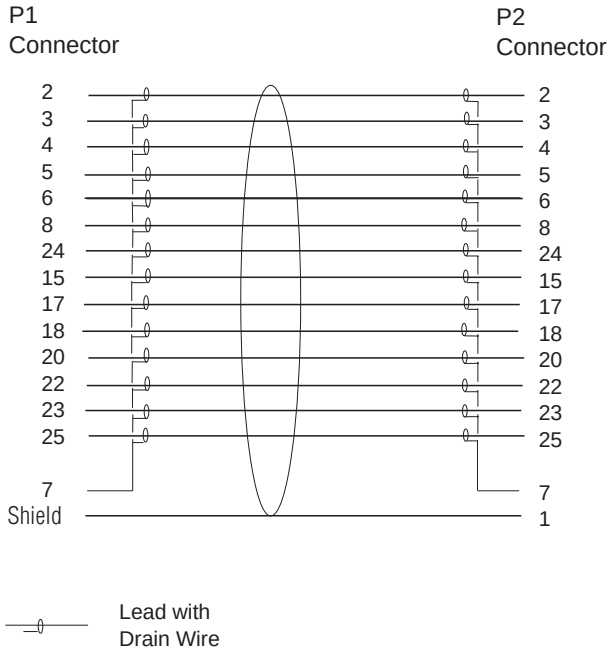


Figure I-26. V.24 / EIA-232 Serial Cable Pin Assignment

Cable List

Table I-15. V.24/EIA-232 Serial Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3705	38H7071

V.24 / EIA-232 Direct Attachment Cable

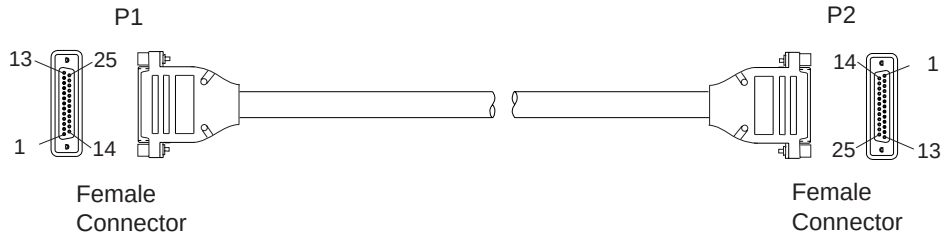


Figure I-27.

Interchange Circuits

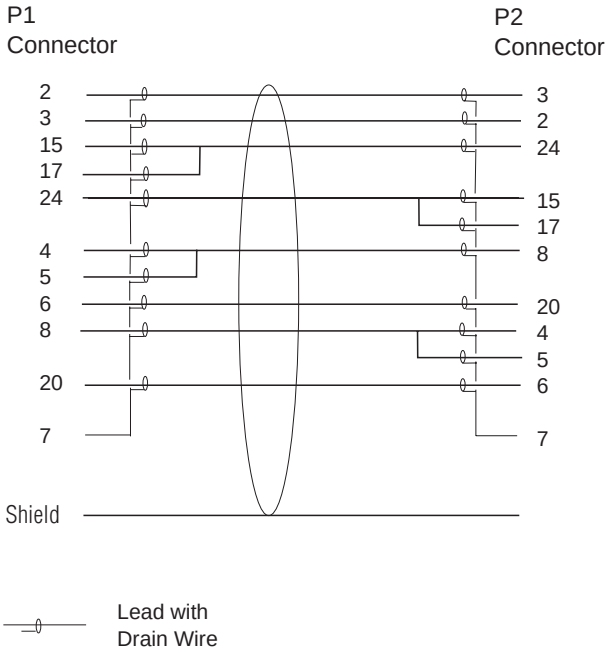


Figure I-28.

Cable List

Table I-16. V.24/EIA-232 Direct Attachment Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3706	59G7195

V.35 Serial Cable

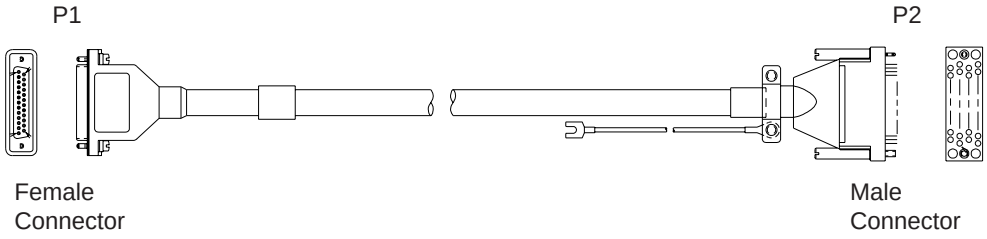


Figure I-29. V.35 Serial Cable

Interchange Circuits

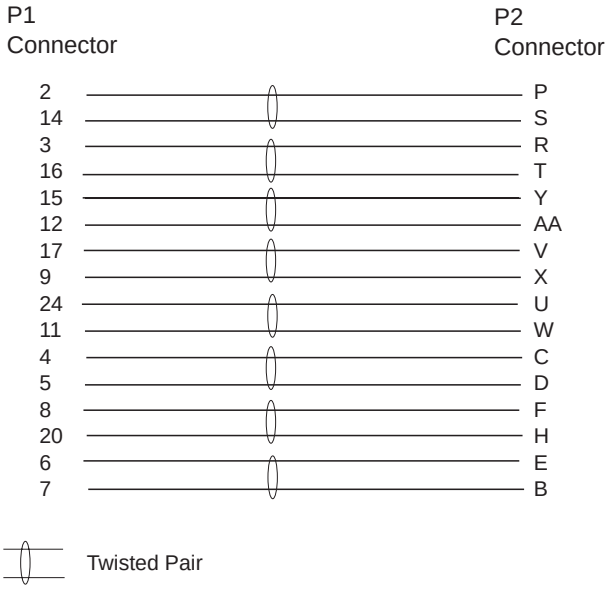


Figure I-30. V.35 Serial Cable Pin Assignment

Cable List

Table I-17. V.35 Serial Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	2 (6)	3707	11H4958

V.35 Direct Attachement Cable

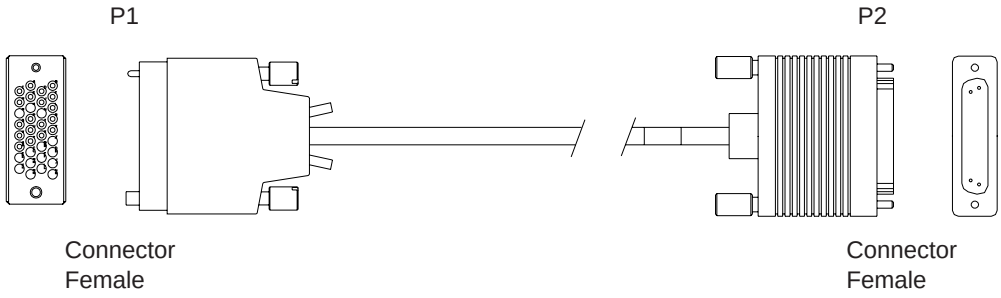


Figure I-31. V.35 Direct Attachement Cable

Interchange Circuits

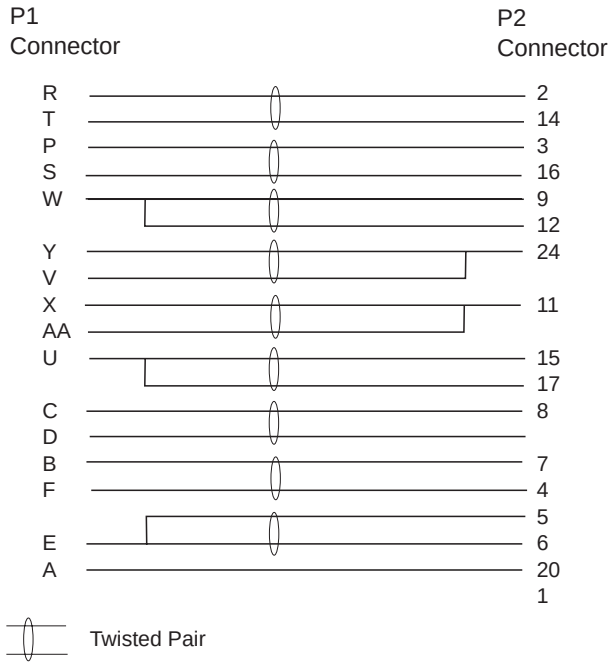


Figure I-32. V.35 Direct Attachement Cable Pin Assignment

Cable List

Table I-18. V.35 Direct Attachment Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3708	38H7075

V.36 Serial Cable

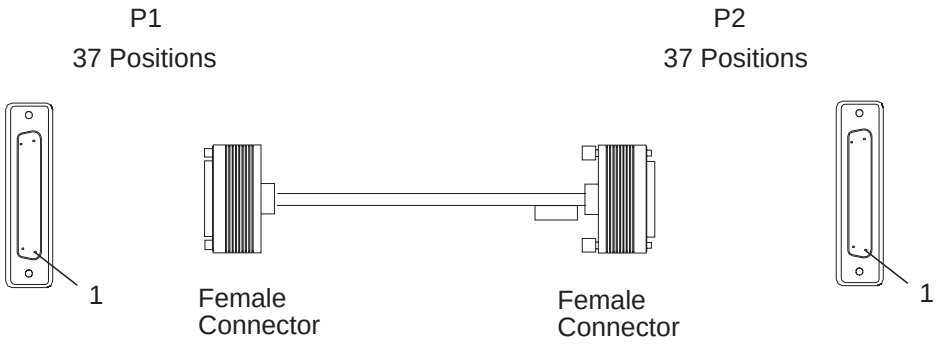


Figure I-33. V.36 Serial Cable

Interchange Circuits

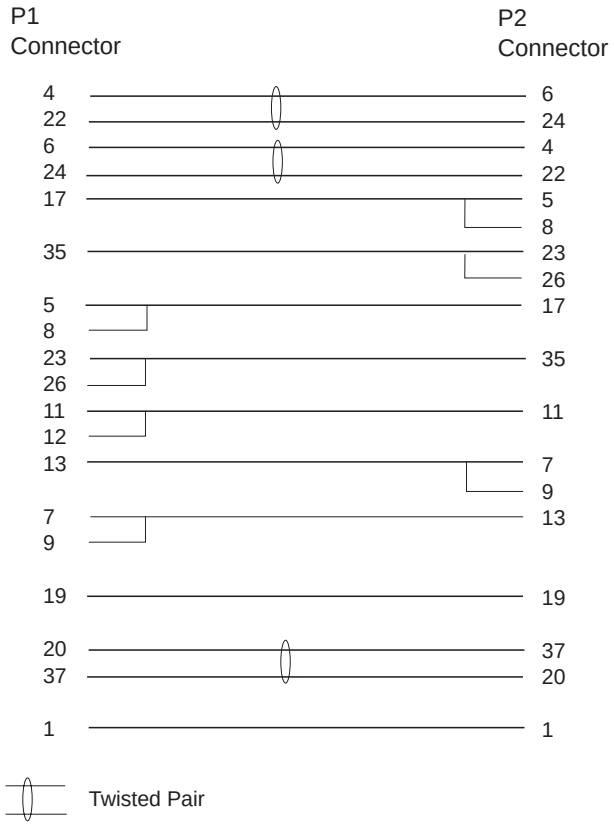


Figure I-34. V.36 Serial Cable Pin Assignment

Cable List

Table I-19. V.36 Serial Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3709	38H7079

V.36 Direct Attachment Cable

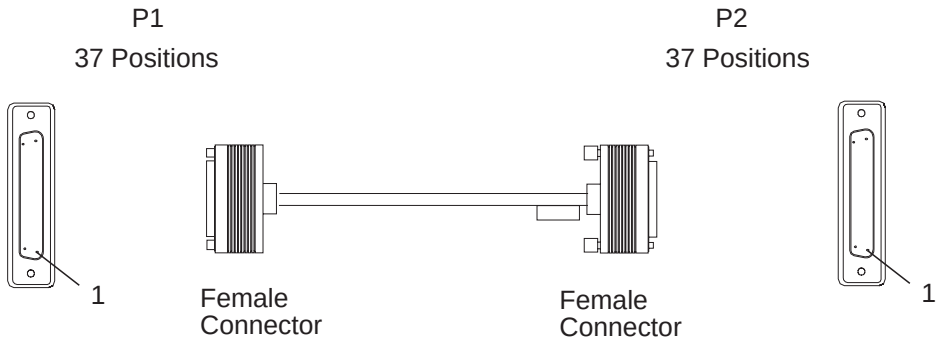


Figure I-35. V.36 Direct Attachement Cable

Interchange Circuits

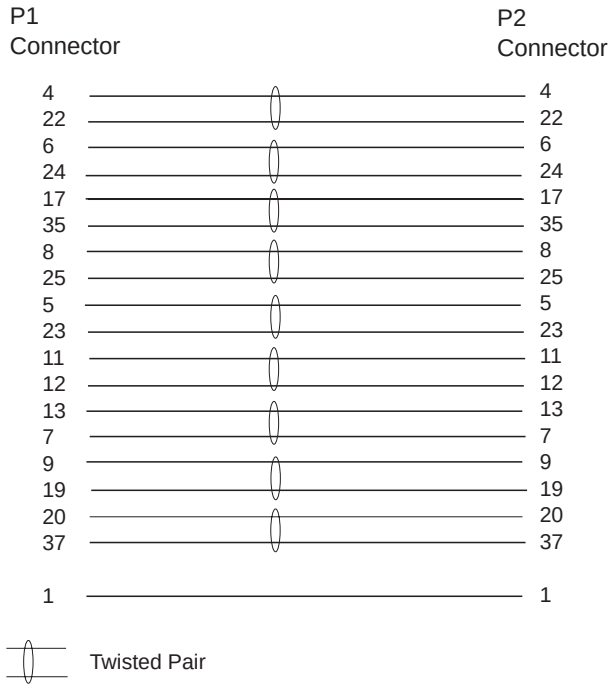


Figure I-36. V.36 Direct Attachement Cable Pin Assignment

Cable List

Table I-20. V.36 Direct Attachment Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3710	38H7077

X.21 Serial Cable

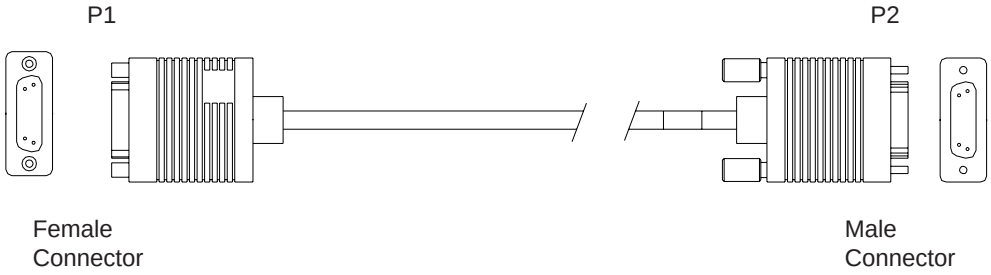


Figure I-37. X.21 Serial Cable

Interchange Circuits

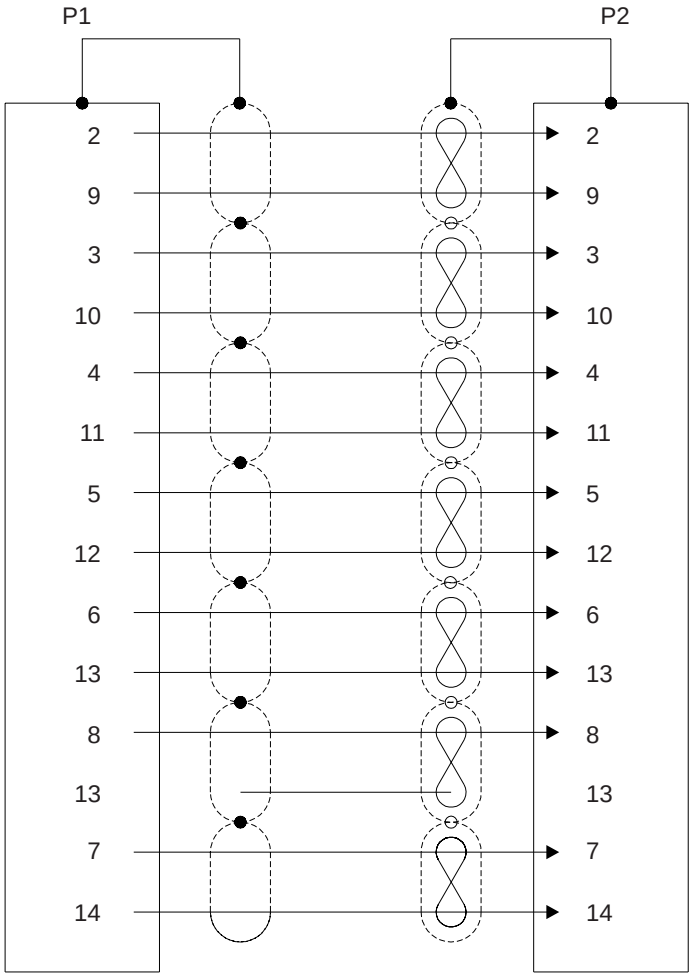


Figure I-38. X.21 Serial Cable Pin Assignment

Cable List

Table I-21. X.21 Serial Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3711	38H7070

X.21 Direct Attachement Cable

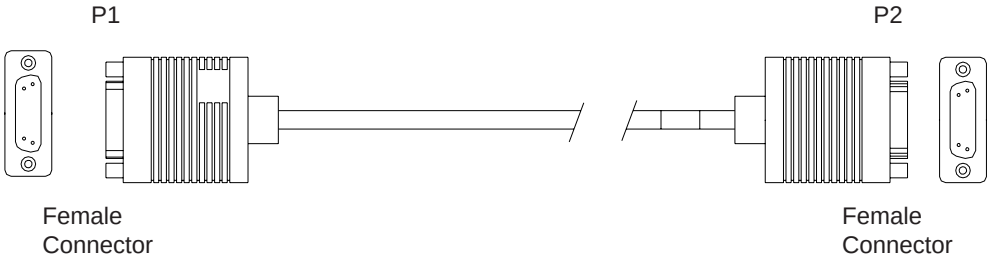


Figure I-39. X.21 Direct Attachement Cable

Interchange Circuits

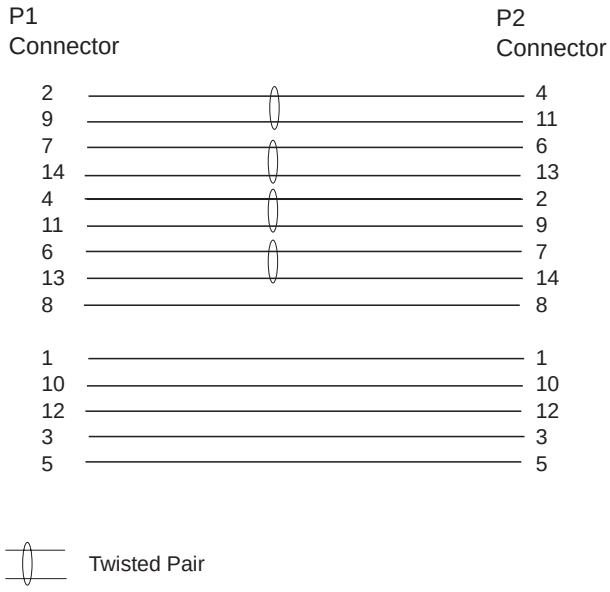


Figure I-40. X.21 Direct Attachement Cable Pin Assignment

Cable List

Table I-22. X.21 Direct Attachment Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	3 (10)	3712	38H7073

Multi-Purpose RJ-45 Cable

Figure I-41. Multi-Purpose RJ-45 Cable

Interchange Circuits

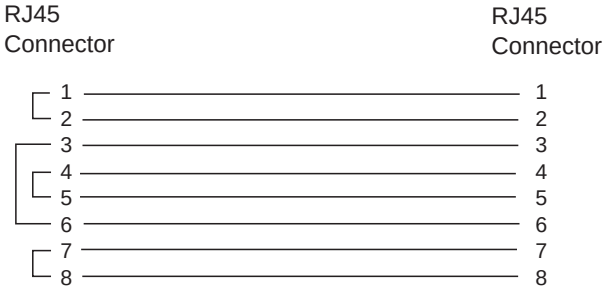


Figure I-42. Multi-Purpose RJ-45 Cable Pin Assignment

Cable List

Table I-23. Multi-pupose RJ-45 Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	8 (25)	3713	41H9082

RJ-48 T1 ISDN Pri Cable

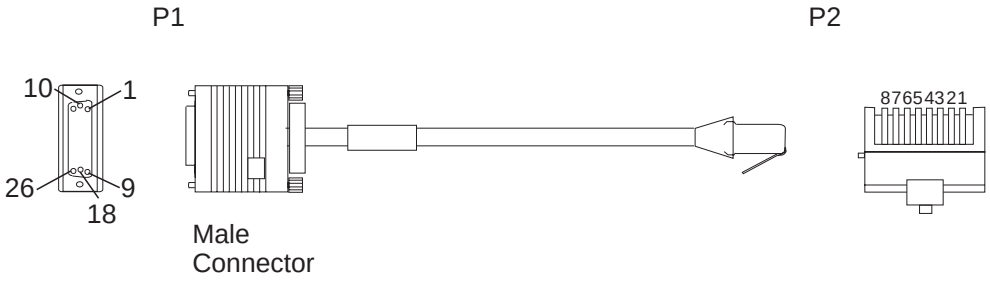


Figure I-43. RJ-48 T1 ISDN Pri Cable

Interchange Circuits

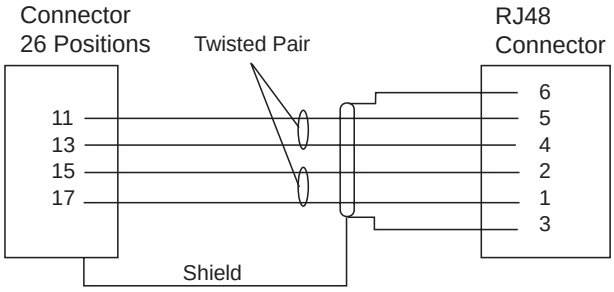


Figure I-44. RJ-48 T1 ISDN Pri Cable Pin Assignment

Cable List

Table I-24. RJ-48 T1 ISDN Pri Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	15 (50)	3714	85H3509

E1 ISDN Pri Cable

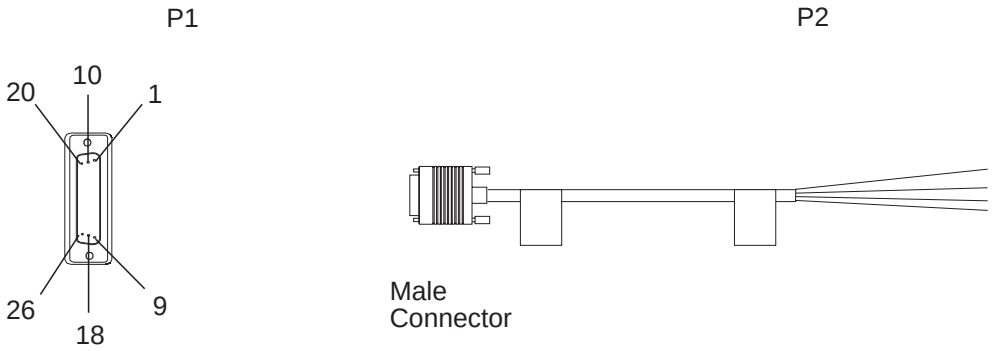


Figure I-45. E1 ISDN Pri Cable

Interchange Circuits

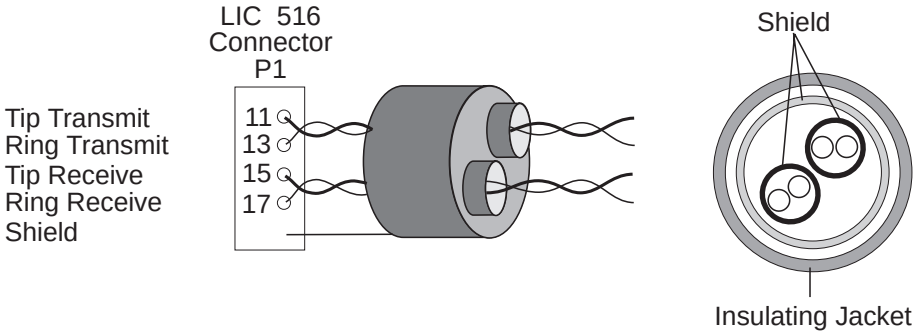


Figure I-46. E1 ISDN Pri Cable Pin Assignment

Cable List

Table I-25. E1 ISDN Pri Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	30 (100)	3715	80G3984

RJ-45 J1 ISDN Pri Cable

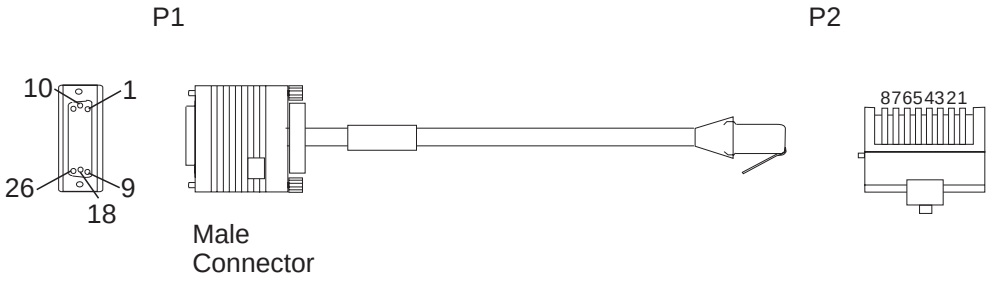


Figure I-47. RJ-45 J1 ISDN Pri Cable

Interchange Circuits

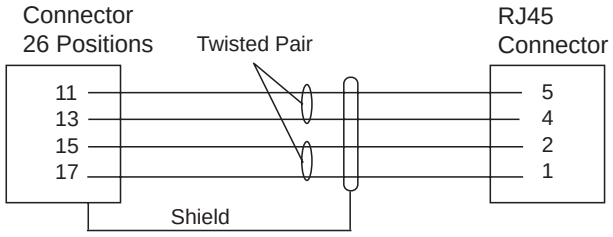


Figure I-48. RJ-45 J1 ISDN Pri Cable Pin Assignment

Cable List

Table I-26. RJ-45 J1 ISDN Pri Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	15 (50)	3716	57G8042

V.35 Serial Cable - France

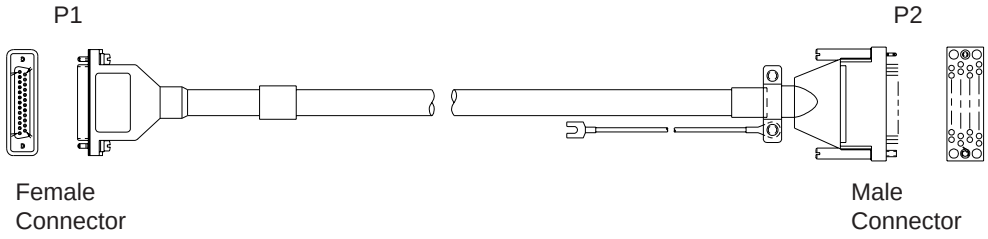


Figure I-49. Cable (PN 11H4958)

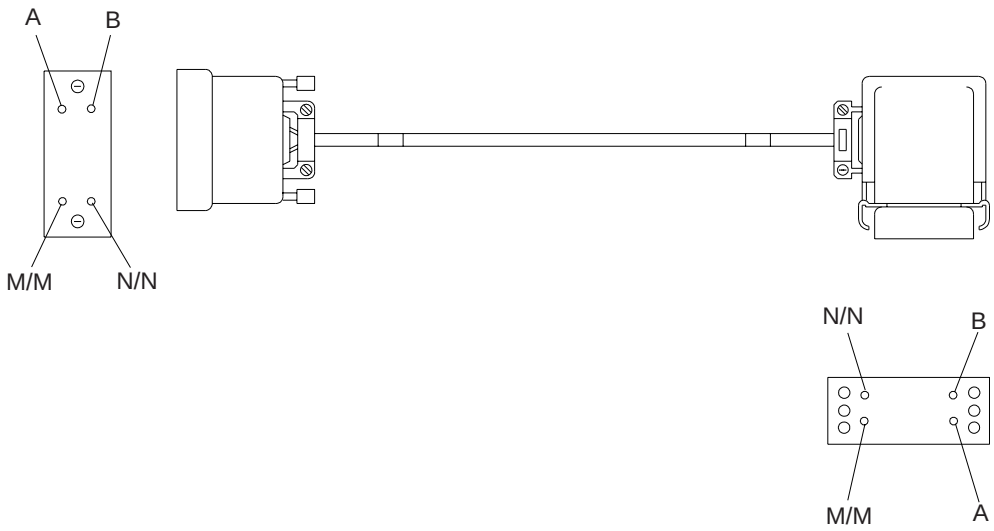


Figure I-50. Extension Cable (PN 1749352)

Interchange Circuits

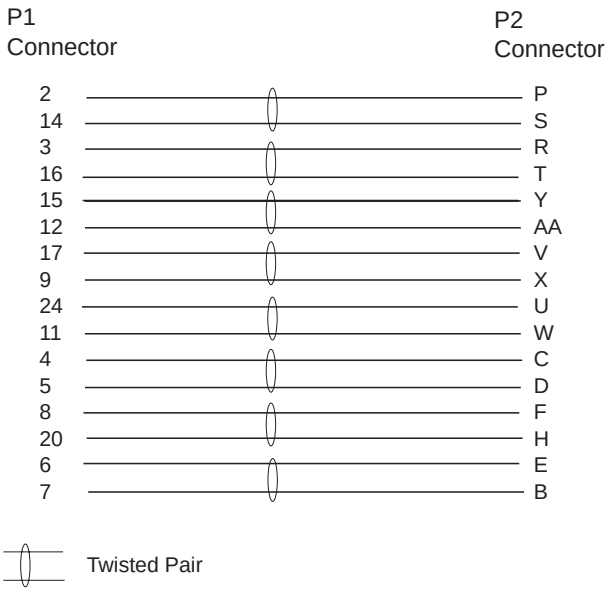


Figure I-51. Interchange Circuit for Cable (PN 11H4958)

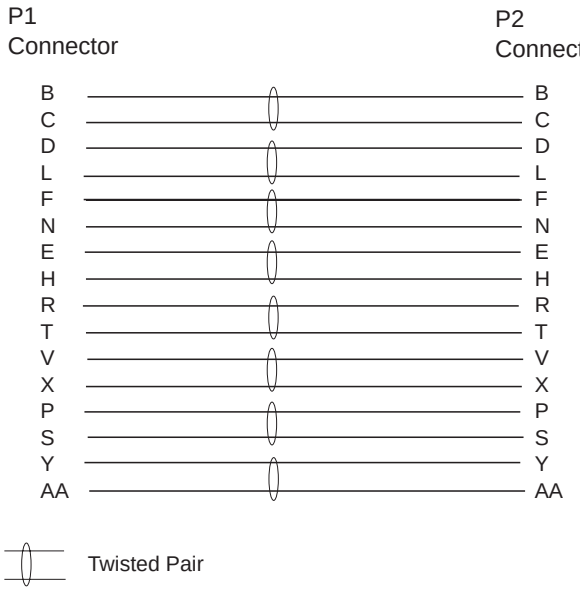


Figure I-52. Interchange Circuit for Extension Cable (PN 1749352)

Cable List

Table I-27. V.35 Serial Cable - France

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	2 (6)	3799	11H4958
Extension Cable	0.3 (1)	3799	1749352

MMF ATM External Cable

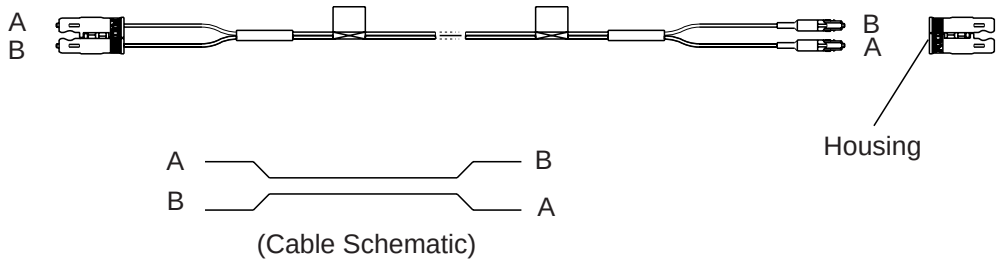


Figure I-53. MMF ATM External Cable

Cable List

Table I-28. MMF ATM External Cable

Cable Type	Length m (ft)	Feature code	Part Number
Optical Cable	10 (40)	5710	19G4866
Optical Cable	40 (131)	5715	19G4868

SFM ATM External Cable

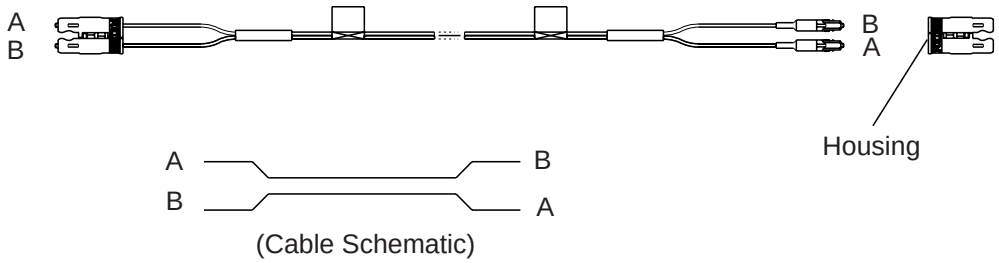


Figure I-54. SFM ATM External Cable

Cable List

Table I-29. SFM ATM External Cable

Cable Type	Length m (ft)	Feature code	Part Number
Optical Cable	10 (40)	5720	19G4757
Optical Cable	40 (131)	5725	19G4759

HSSI DTE/DCE Cable

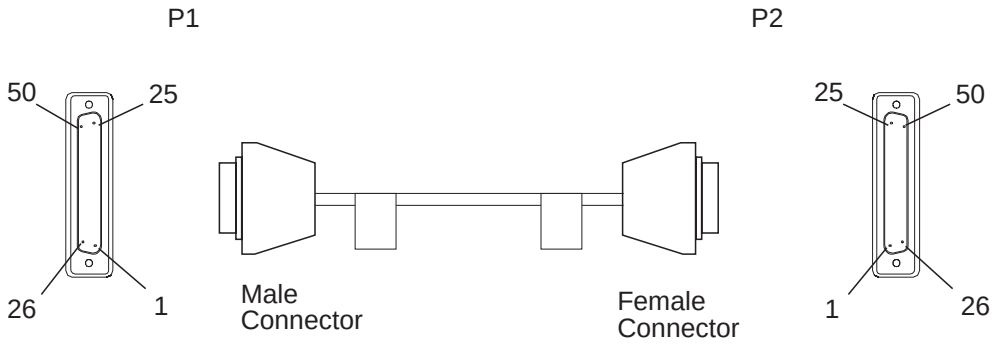


Figure I-55. HSSI DTE/DCE Cable

Interchange Circuits

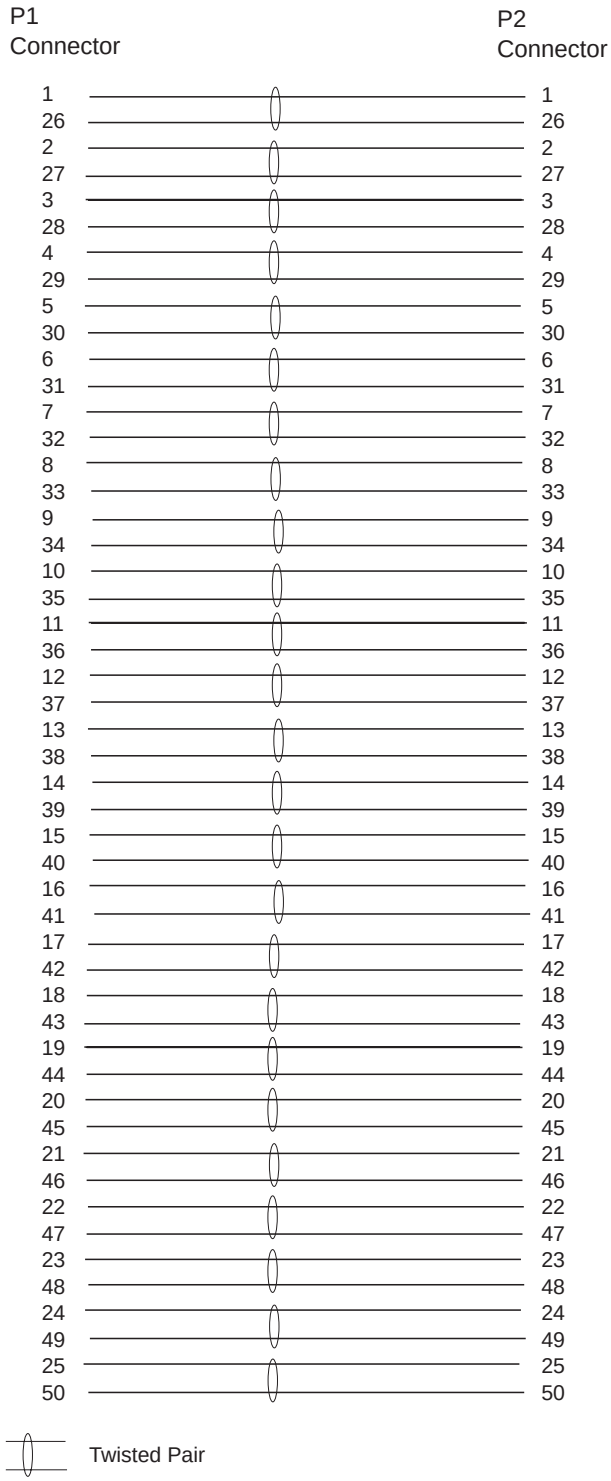


Figure I-56. Interchange Circuit for Cable (PN 86H0971)

Cable List

Table I-30. HSSI DTE/DCE Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	5 (17)	No feature code	86H0971

HSSI Null Modem Cable

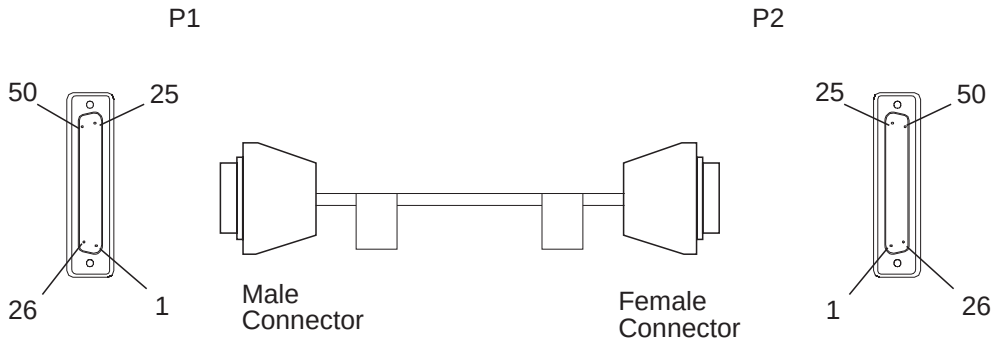


Figure I-57. HSSI Null Modem Cable

Interchange Circuits

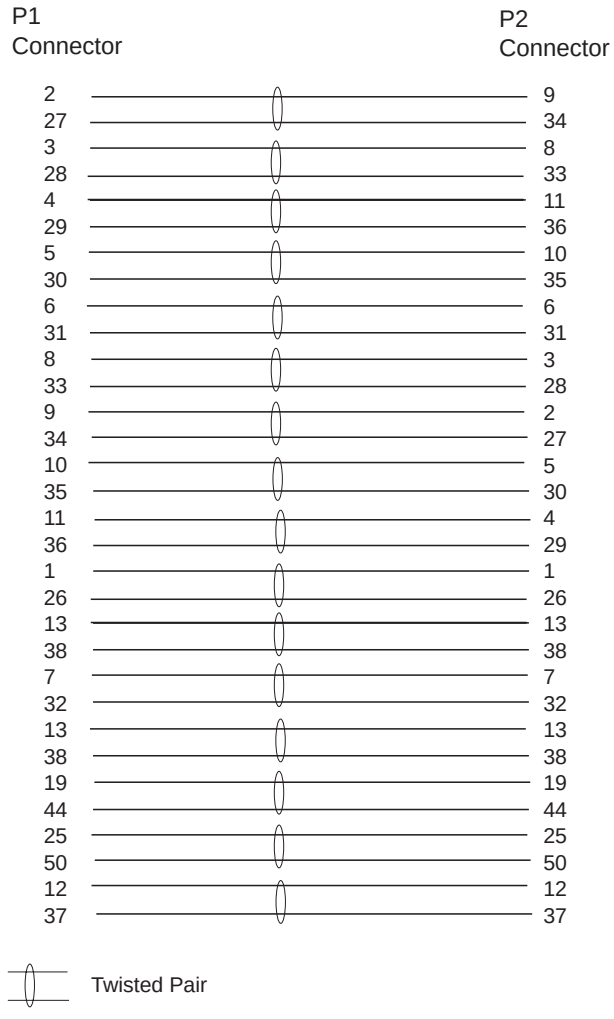


Figure I-58. Interchange Circuit for Cable (PN 86H0970)

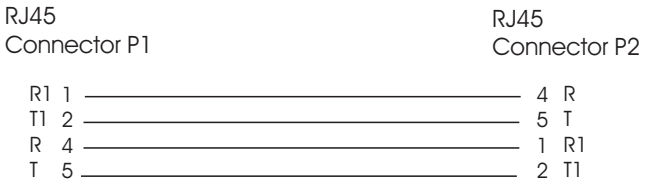
Cable List

Table I-31. HSSI Null Modem Cable

Cable Type	Length m (ft)	Feature code	Part Number
Standard Fixed	5 (17)	No feature code	86H0970

RJ-48 Cable for Multiport T1

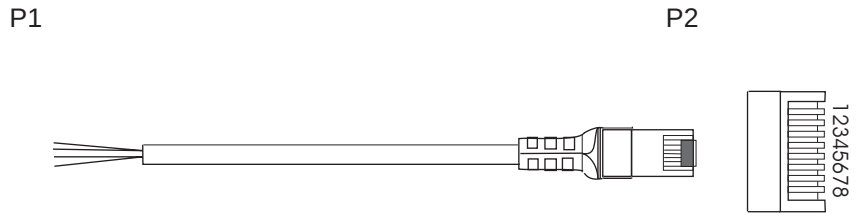
Interchange Circuits



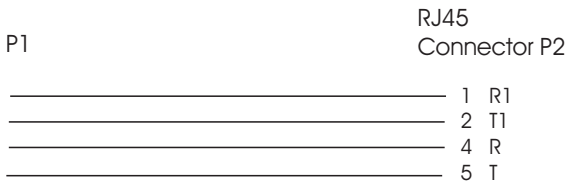
Cable List

Cable Type	Length m(ft)	Feature code	Part Number
Standard Fixed	15 (50)	3717	25L4750

RJ-48 Cable for Multiport E1



Interchange Circuits

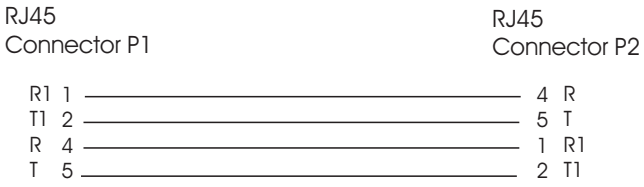


Cable List

Cable Type	Length m(ft)	Feature code	Part Number
Standard Fixed	15 (50)	3718	25L4751

Keyed RJ-48 Cable for Multiport J1

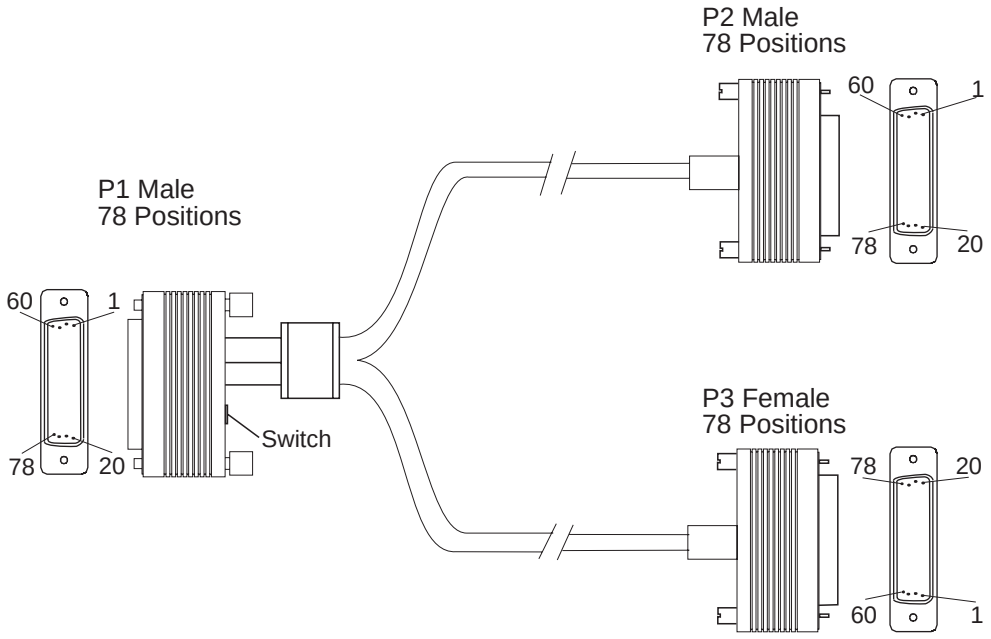
Interchange Circuits



Cable List

Cable Type	Length m(ft)	Feature code	Part Number
Standard Fixed	15 (50)	3719	25L4755

Channel Interface V-Cables



Cable List

.

Cable Type	Feature Code	Part Number
Standard Fixed	Shipped with LIC299 FC 3299	02L2074

Switch Cable

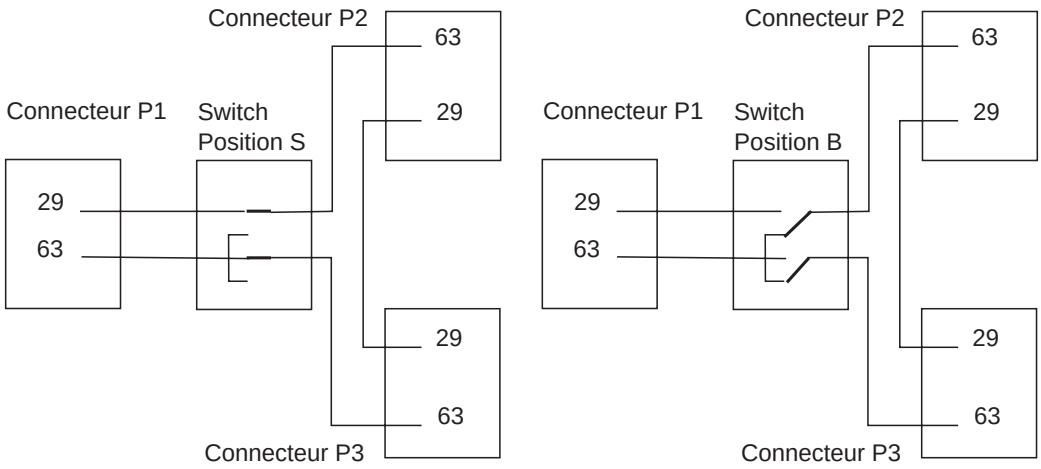


Figure I-59. Wiring Diagram for Switch

Interchange Circuits

Connector P1 Pin	Connector P2 Pin	Connector P3 Pin
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
(Note)	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39

Connector P1 Pin	Connector P2 Pin	Connector P3 Pin
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
(Note)	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
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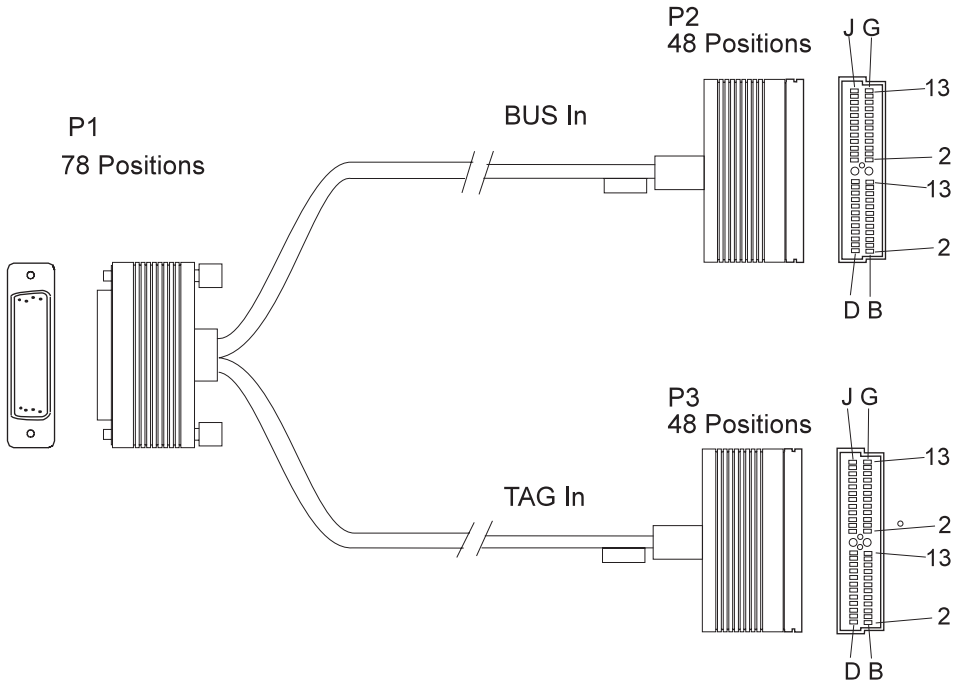
76	76	76
77	77	77
78	78	78

Note: See Figure I-59 on page I-44 to have more details about switch function.

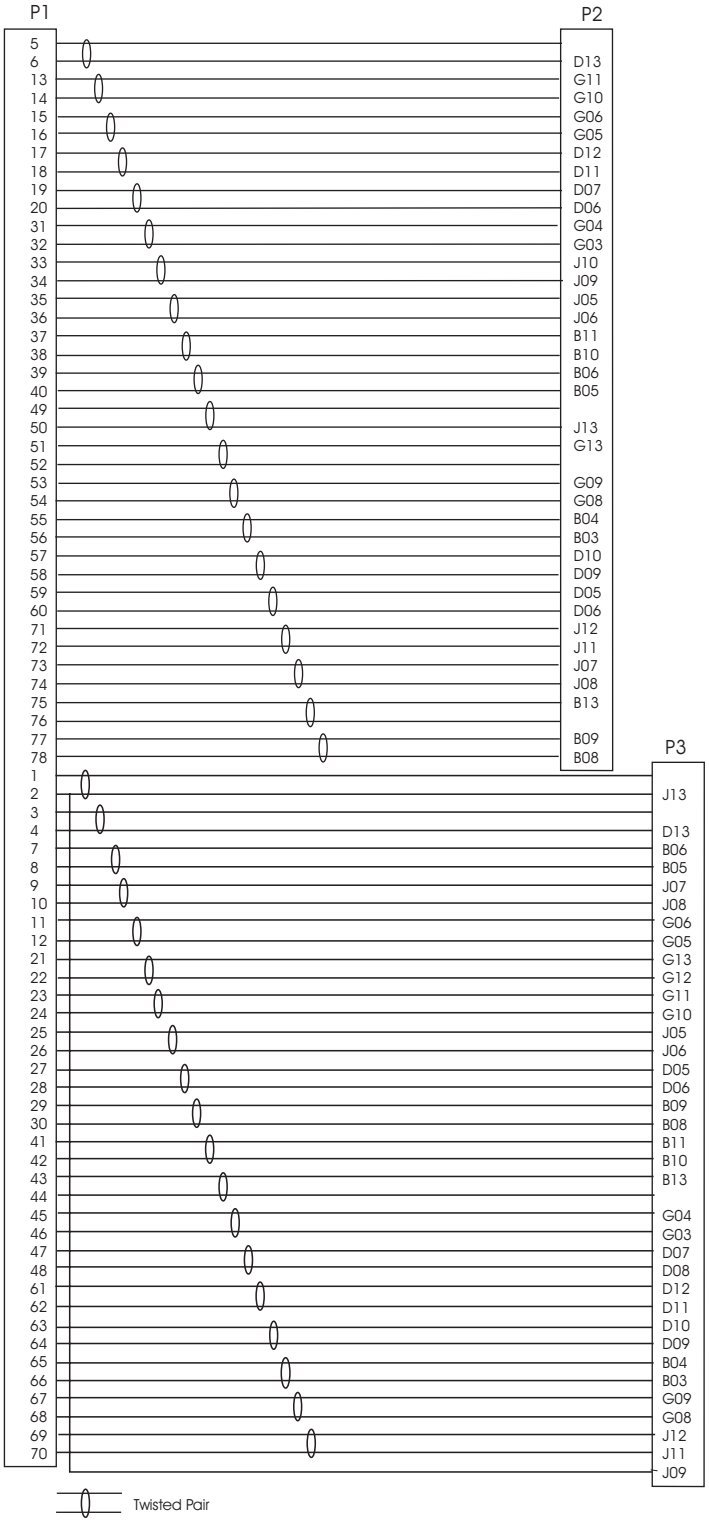
Bus and Tag Upstream Cable



Cable List

Cable Type	Length m(ft)	Feature code	Part Number
Standard Fixed	0.45 (1.5)	3720	02L3380

Interchange Circuits


P1
5
6
13
14
15
16
17
18
19
20
31
32
33
34
35
36
37
38
39
40
49
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74
75
76
77
78
P2
D13
G11
G10
G06
G05
D12
D11
D07
D06
G04
G03
J10
J09
J05
J06
B11
B10
B06
B05
J13
G13
G09
G08
B04
B03
D10
D09
D05
D06
J12
J11
J07
J08
B13
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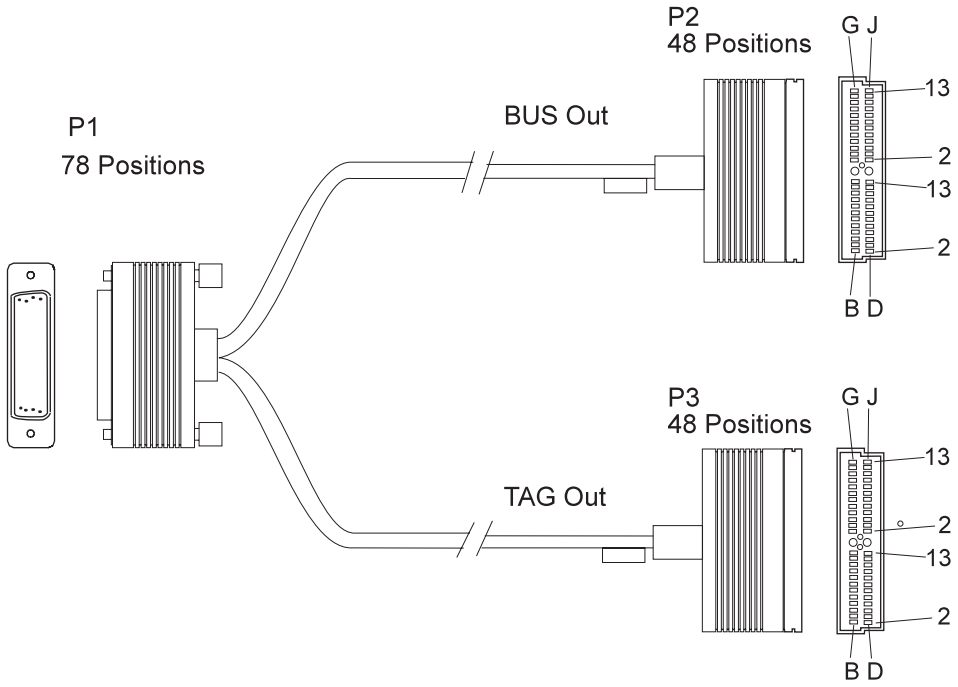
69
70
P3
J13
D13
B06
B05
J07
J08
G06
G05
G13
G12
G11
G10
J05
J06
D05
D06
B09
B08
B11
B10
B13
G04
G03
D07
D08
D12
D11
D10
D09
B04
B03
G09
G08
J12
J11
J09
Twisted Pair

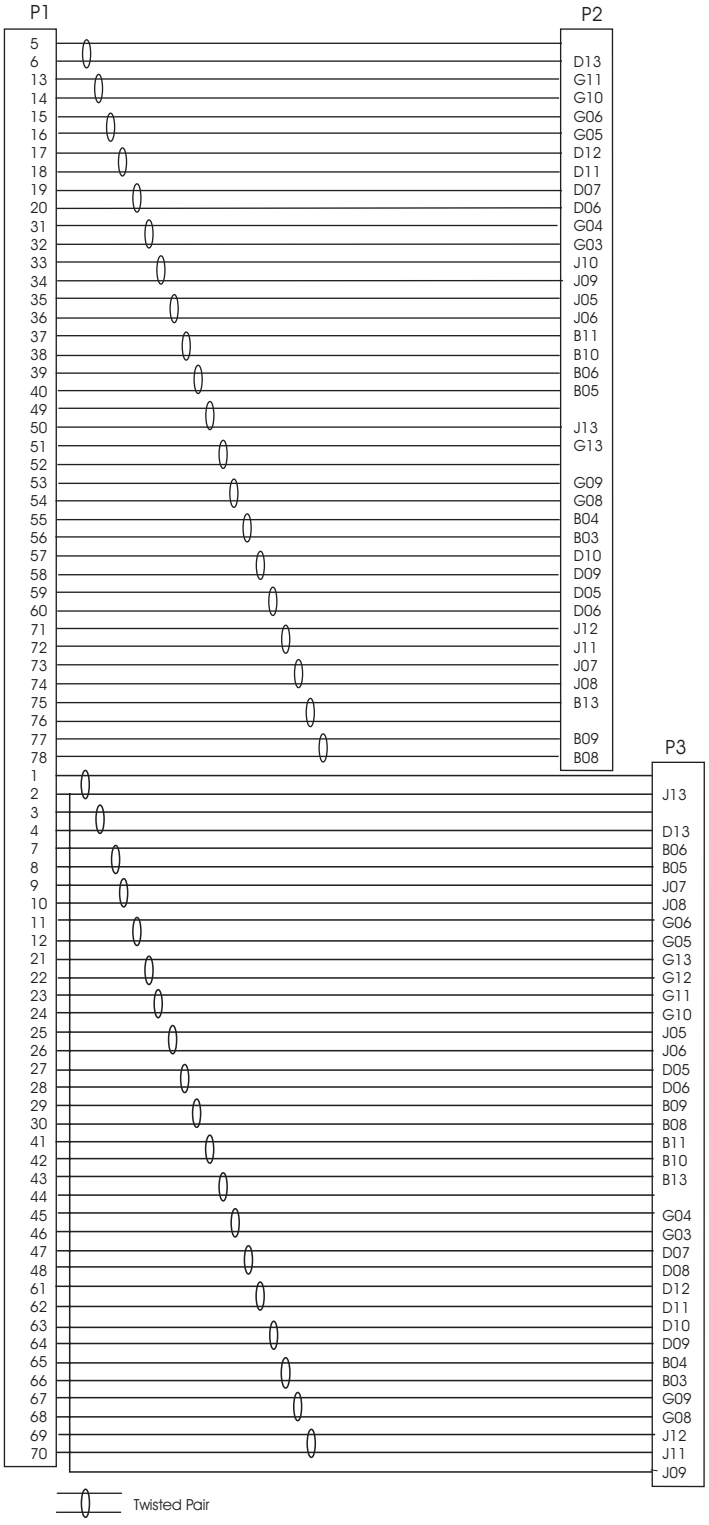
Bus and Tag Downstream Cable



Cable List

Cable Type	Length m(ft)	Feature code	Part Number
Standard Fixed	0.45 (1.5)	3721	02L3381

Interchange Circuits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70
P2
D13
G11
G10
G06
G05
D12
D11
D07
D06
G04
G03
J10
J09
J05
J06
B11
B10
B06
B05
J13
G13
G09
G08
B04
B03
D10
D09
D05
D06
J12
J11
J07
J08
B13
B09
B08
P3
J13
D13
B06
B05
J07
J08
G06
G05
G13
G12
G11
G10
J05
J06
D05
D06
B09
B08
B11
B10
B13
G04
G03
D07
D08
D12
D11
D10
D09
B04
B03
G09
G08
J12
J11
J09
Twisted Pair

Other Cables

For cables not documented in this appendix see the *3746 Nways Multiprotocol Controller Models 900 and 950 External Cable References*, SY33-2117

Appendix J. Bibliography

Customer Documentation for the 3746 Model 950

Table J-1 (Page 1 of 5). Customer Documentation for the 3746 Model 950

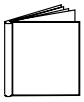
This customer documentation has the following formats:

Finding Information

3745 Models A and 3746 Books

All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the machine.

Preparing for Operation



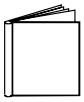
GA33-0400

IBM 3745 Communication Controller All Models[1]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Safety Information[2]

Provides general safety guidelines.

Evaluating and Configuring

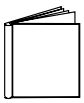


GA33-0180

IBM 3745 Communication Controller Models A and 170[3]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Overview

Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.



GA27-4234

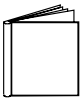
IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Overview, Installation, and Integration

Provides information for:

- Overall 3746 planning
- Installation and upgrade scenarios
- Controller and service processor network integration
- Related MOSS-E and CCM worksheets for these tasks.

Table J-1 (Page 2 of 5). Customer Documentation for the 3746 Model 950



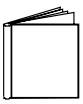
GA27-4235

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Serial Line Adapters

Provides information for:

- Serial line adapter descriptions
- Serial line adapter line weights and connectivity
- Types of SDLC support
- Configuring X.25 lines
- Performance tuning for frame-relay, PPP, X.25, and NCP lines.
- ISDN adapter description and configuration.



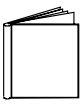
GA27-4236

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Token Ring and Ethernet

Provides information for:

- Token-ring adapter description and configuration
- Ethernet adapter description and configuration.



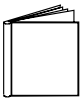
GA27-4237

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
ESCON Channels

Provides information for:

- ESCON adapter descriptions
- ESCON configuration and tuning information
- ESCON configuration examples.



GA27-4238

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Physical Planning

Provides information for:

- 3746 and MAE physical planning details
- 3746 and MAE cable information
- Explanation of installation sheets
- 3746 plugging sheets.

Table J-1 (Page 3 of 5). Customer Documentation for the 3746 Model 950

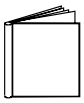
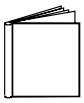
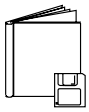
	GA27-4239	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Management Planning*** Provides information for: • Overview for 3746 • 3746 APPN/HPR, IP router, and X.25 • NetView Performance Monitor (NPM), remote consoles, and RSF • MAE APPN/HPR management.
	GA27-4240	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Multiaccess Enclosure Planning*** Provides information for: • MAE adapters details • MAE ESCON planning and configuration • ATM and ISDN support.
	GA27-4241	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Protocols Description*** Provides information for: • Overview and details about APPN/HPR and IP.
	On-line information	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Controller Configuration and Management Worksheets*** Provides planning worksheets for ESCON, Multiaccess Enclosure, serial line, and token-ring definitions.

Table J-1 (Page 4 of 5). Customer Documentation for the 3746 Model 950

Operating and Testing



SA33-0356

IBM 3746 Nways Multiprotocol Controller
Model 950

User's Guide[2]

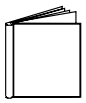
Explains how to:

- Carry out daily routine operations on Nways controller
- Install, test, and customize the Nways controller after installation
- Configure user's workstations to remotely control the service processor using:
  - DCAF program
  - Telnet client program
  - Java Console support.

On-line information

Controller Configuration and Management Application

Provides a graphical user interface for configuring and managing a 3746 APPN/HPR network node and IP Router, and its resources.
It is also available as a stand-alone application, using an OS/2 workstation.
Defines and explains all the 3746 Network Node and IP Router configuration parameters through its on-line help.

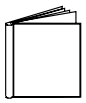


SH11-3081

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Controller Configuration and Management: User's Guide[2]

Explains how to use CCM and gives examples of the configuration process.



GA33-0479

IBM 3745 Communication Controller Models A
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

NetView Console
APPN Command Reference Guide

Explains how to use the RUN COMMAND from the NetView S/390 Program and gives examples.

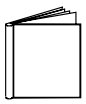
Managing Problems

On-line information

Problem Analysis Guide

An on-line guide to analyze alarms, events, and control panel codes on:

- IBM 3745 Communication Controller Models A[3]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.



SA33-0175

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Alert Reference Guide

Provides information about events or errors reported by alerts for:

- IBM 3745 Communication Controller Models A[3]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

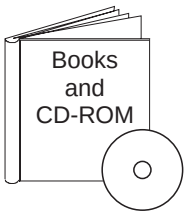
Table J-1 (Page 5 of 5). Customer Documentation for the 3746 Model 950

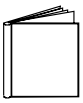
[1] Models 130 to 61A.
[2] Documentation shipped with the 3746-950
[3] 3745 Models 17A to 61A.

Service Documentation for the IBM 3746 Model 950

Table J-2 (Page 1 of 3). Service Documentation for the 3746 Model 950

This service documentation has the following formats:



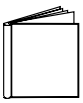


SY33-2107

IBM 3746 Nways Multiprotocol Controller Model 950

Installation Guide[1]

Provides instructions for installing or relocating the Nways Controller.

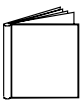


SY33-2108

IBM 3746 Nways Multiprotocol Controller Model 950

Service Guide[1]

Provides procedures for isolating and fixing the IBM 3746-950 problems.

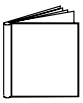


SY33-2115

IBM 3745 Communication Controller Models A[2]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[3]
(Based on the 7585, 3172, 9585, or 9577)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, 9585, or 9577. Can be for systems with microcode that has up to and including EC D46130 (any level) installed.

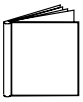


SY33-2120

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 7585, 3172, or 9585)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, or 9585. Can be for systems with microcode EC F12380 or higher installed.



SY33-2125

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on 6275)

Provides information on installing and maintaining the service processor based on PS/2 Type 6275. Can be for systems with microcode EC F12380 or higher installed.

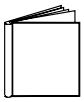
Table J-2 (Page 2 of 3). Service Documentation for the 3746 Model 950

SY33-2118

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

***Multiaccess Enclosure Installation and Maintenance*[4]**

Provides information on installing and maintaining the Multiaccess Enclosure (MAE).

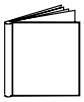


SY33-2124

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

***Multiaccess Enclosure Installation and Maintenance*[4]**
(Starting from EC F12430 and Above)

Provides information on installing and maintaining the Multiaccess Enclosure (MAE). For systems with microcode EC F12430 or higher installed.



SY33-2112

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

***Network Node Processor Installation and Maintenance*[3]**
(Based on the 7585 or 3172)

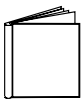
Provides information on installing and maintaining the network node processor based on the PS/2 Type 7585 or 3172.

SY33-2126

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

***Network Node Processor Installation and Maintenance*[3]**
(Based on 6275)

Provides information on installing and maintaining the network node processor based on the PS/2 Type 6275.

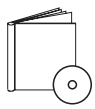


SY33-2127

***IBM 3745 Communication Controller Models A*[3]**
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

***Service Processor and Network Node Processor*[4]**
Service User's Guide

Provides information on installing and maintaining the operational code on service processor, or network node processor.
Can be for systems with microcode EC F12380 or higher installed.

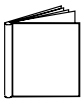


SY33-2117

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

***External Cable Reference*[4]**

Provides references to console and line cables used for connecting the IBM 3746 Models 900 and 950.



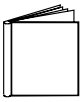
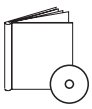
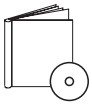
S135-2015

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

***Parts Catalog*[4]**

Provides reference information for ordering parts for the IBM 3746 Models 900 and 950.

Table J-2 (Page 3 of 3). Service Documentation for the 3746 Model 950

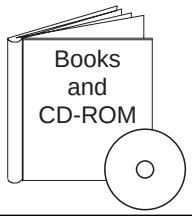
	S135-2014	***IBM Controller Expansion*** ***Parts Catalog*** Provides reference information for ordering parts for the controller expansion attached to the IBM 3745 Models A[2], and 3746 Models 900 and 950.
CD-ROM Bibliography		
	ZK2T-8214	***IBM Networking*** ***Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. EMEA version.
	ZK2T-8187	***IBM Networking*** ***Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. US version.

[1] Documentation shipped with the 3746 Model 950
[2] 3745 Models 17A to 61A
[3] Documentation shipped with the processor
[4] Documentation shipped with the 3746 Models 900 and 950

Customer Documentation for the 3745 (All Models), and 3746 (Model 900)

Table J-3 (Page 1 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

This customer documentation has the following formats:

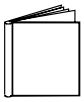


Finding Information

3745 Models A and 3746 Books

All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the machine.

Evaluating and Configuring



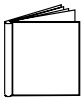
GA33-0092

IBM 3745 Communication Controller
Models 210, 310, 410, and 610

Introduction

Gives an introduction of the IBM Models 210 to 610 capabilities.

For Models A, refer to the *Overview*, GA33-0180.

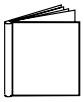


GA33-0180

IBM 3745 Communication Controller Models A and 170[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Overview

Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.



GA27-4234

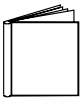
IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Overview, Installation, and Integration

Provides information for:

- Overall 3746 planning
- Installation and upgrade scenarios
- Controller and service processor network integration
- Related MOSS-E and CCM worksheets for these tasks.

Table J-3 (Page 2 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900



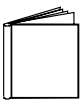
GA27-4235

IBM 3745 Communication Controller Models A²
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Serial Line Adapters

Provides information for:

- Serial line adapter descriptions
- Serial line adapter line weights and connectivity
- Types of SDLC support
- Configuring X.25 lines
- Performance tuning for frame-relay, PPP, X.25, and NCP lines.
- ISDN adapter description and configuration.



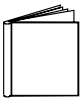
GA27-4236

IBM 3745 Communication Controller Models A²
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Token Ring and Ethernet

Provides information for:

- Token-ring adapter description and configuration
- Ethernet adapter desription and configuration.



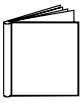
GA27-4237

IBM 3745 Communication Controller Models A²
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
ESCON Channels

Provides information for:

- ESCON adapter descriptions
- ESCON configuration and tuning information
- ESCON configuration examples.



GA27-4238

IBM 3745 Communication Controller Models A²
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Physical Planning

Provides information for:

- 3746 and MAE physical planning details
- 3746 and MAE cable information
- Explanation of installation sheets
- 3746 plugging sheets.

Table J-3 (Page 3 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

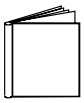
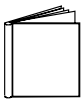
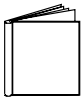
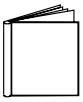
	GA27-4239	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Management Planning*** Provides information for: • Overview for 3746 • 3746 APPN/HPR, IP router, and X.25 • NetView Performance Monitor (NPM), remote consoles, and RSF • MAE APPN/HPR management.
	GA27-4240	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Multiaccess Enclosure Planning*** Provides information for: • MAE adapters details • MAE ESCON planning and configuration • ATM and ISDN support.
	GA27-4241	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Protocols Description*** Provides information for: • Overview and details about APPN/HPR and IP.
	On-line information	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Controller Configuration and Management Worksheets*** Provides planning worksheets for ESCON, Multiaccess Enclosure, serial line, and token-ring definitions.
Preparing Your Site		
	GC22-7064	***IBM System/360™, System/370™, 4300 Processor*** ***Input/Output Equipment Installation Manual-Physical Planning*** (Including Technical News Letter GN22-5490) Provides information for physical installation for the 3745 Models 130 to 610. For 3745 Models A and 3746 Model 900, refer to the *Planning Guide*, GA33-0457.

Table J-3 (Page 4 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900



GA33-0127

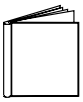
IBM 3745 Communication Controller
Models 210, 310, 410, and 610

Preparing for Connection

Helps for preparing the 3745 Models 210 to 610 cable installation.

For 3745 Models A refer to the *Connection and Integration Guide*, SA33-0129.

Preparing for Operation

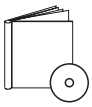


GA33-0400

IBM 3745 Communication Controller All Models[3]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Safety Information[1]

Provides general safety guidelines.

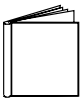


SA33-0129

IBM 3745 Communication Controller All Models[3]
IBM 3746 Nways Multiprotocol Controller Model 900

Connection and Integration Guide[1]

Contains information for connecting hardware and integrating network of the 3745 and 3746-900 after installation.

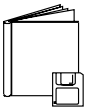


SA33-0416

Line Interface Coupler Type 5 and Type 6
Portable Keypad Display

Migration and Integration Guide

Contains information for moving and testing LIC types 5 and 6.



SA33-0158

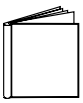
IBM 3745 Communication Controller All Models[3]
IBM 3746 Nways Multiprotocol Controller Model 900

Console Setup Guide[1]

Provides information for:

- Installing local, alternate, or remote consoles for 3745 Models 130 to 610
- Configuring user workstations to remotely control the service processor for 3745 Models A and 3746 Model 900 using:
  - DCAF program
  - Telnet Client program
  - Java Console support.

Customizing Your Control Program



SA33-0178

Guide to Timed IPL and Rename Load Module

Provides VTAM procedures for:

- Scheduling an automatic reload of the 3745
- Getting 3745 load module changes transparent to the operations staff.

Operating and Testing

Table J-3 (Page 5 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

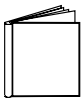
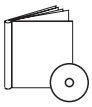
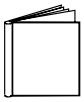
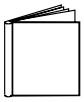
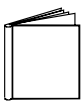
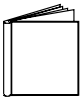
	SA33-0098	***IBM 3745 Communication Controller*** ***All Models***[4] ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 130 to 610.
	SA33-0177	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 17A to 61A, and 3746 Model 900 operating as an SNA node (using NCP), APPN/HPR Network Node, and IP Router.
	SA33-0097	***IBM 3745 Communication Controller*** ***All Models***[3] ***Advanced Operations Guide***[1] Provides instructions for advanced operations and testing, using the 3745 MOSS console.
	On-line Information	***Controller Configuration and Management Application*** Provides a graphical user interface for configuring and managing a 3746 APPN/HPR Network Node and IP Router, and its resources. It is also available as a stand-alone application, using an OS/2 workstation. Defines and explains all the 3746 Network Node and IP Router configuration parameters through its online help.
	SH11-3081	***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Controller Configuration and Management: User's Guide***[5] Explains how to use CCM and gives examples of the configuration process.
	GA33-0479	***IBM 3745 Communication Controller Models A*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***NetView Console*** ***APPN Command Reference Guide*** Explains how to use the RUN COMMAND from the NetView S/390 Program and gives examples.
Managing Problems		
	SA33-0096	***IBM 3745 Communication Controller*** ***All Models***[3] ***Problem Determination Guide***[1] A guide to perform problem determination on the 3745 Models 130 to 61A.

Table J-3 (Page 6 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

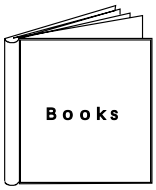
	On-line Information	***Problem Analysis Guide*** An online guide to analyze alarms, events, and control panel codes on: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.
	SA33-0175	***IBM 3745 Communication Controller Models A[2]*** ***IBM 3746 Expansion Unit Model 900*** ***IBM 3746 Nways Multiprotocol Controller Model 950*** ***Alert Reference Guide*** Provides information about events or errors reported by alerts for: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

[1] Documentation shipped with the 3745.
[2] 3745 Models 17A to 61A.
[3] 3745 Models 130 to 61A.
[4] Except 3745 Models A.
[5] Documentation shipped with the 3746-900.

Additional Customer Documentation for the 3745 Models 130, 150, 160, 170, and 17A

Table J-4. Additional Customer Documentation for the 3745 Models 130 to 17A

This customer documentation has the following format:

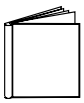


Finding Information

3745 Models A and 3746 Books

All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the machine.

Evaluating and Configuring



GA33-0138

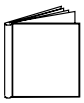
IBM 3745 Communication Controller Models 130, 150, 160, and 170

Introduction

Gives an introduction about the IBM Models 130 to 170 capabilities, including Model 160.

For Model 17A refer to the *Overview*, GA33-0180.

Preparing Your Site



GA33-0140

IBM 3745 Communication Controller Models 130, 150, 160, and 170

Preparing for Connection

Helps for preparing the 3745 Models 130 to 170 cable installation.

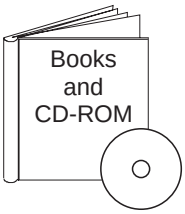
For 3745 Model 17A refer to the *Connection and Integration Guide*, SA33-0129.

[1] Documentation shipped with the 3745.

Service Documentation for the IBM 3745 (Models 210, 21A, 310, 31A, 410, 41A, 610, and 61A) and 3746 (Model 900)

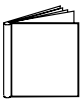
Table J-5 (Page 1 of 4). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

This service documentation has the following formats:



3745 Models A and 3746 Books

All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the Machine.

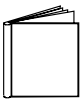


SY33-2057

IBM 3745 Communication Controller
Models 210 to 61A

Installation Guide[1]

Provides instructions for installing or relocating the IBM 3745 Models X10 and X1A.

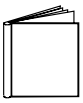


SY33-2114

IBM 3746 Nways Multiprotocol Controller
Model 900

Installation Guide[2]

Provides instructions for installing or relocating a 3746-900.

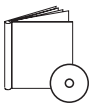


SY33-2116

IBM 3746 Nways Multiprotocol Controller
Model 900

Service Guide[2]

Provides procedures for isolating and fixing the IBM 3746-900 problems.



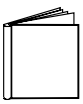
SY33-2055

IBM 3745 Communication Controller
Models 210, 310, 410, and 610

IBM 3746 Expansion Units
Models A11, A12, L13, L14, and L15

Service Functions[1]

Describes MOSS functions using the IBM 3745 Models X10 and X1A consoles.



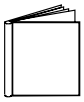
SY33-2054

IBM 3745 Communication Controller
Models 210 to 61A

Maintenance Information Procedures[1]

Provides procedures for isolating and fixing the IBM 3745 Models X10 and X1A problems.

Table J-5 (Page 2 of 4). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

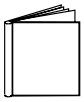


SY33-2115

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 7585, 3172, 9585, or 9577)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, 9585, or 9577.
Can be for systems with microcode that has up to and including EC D46130 (any level) installed.

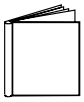


SY33-2120

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 7585, 3172, or 9585)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, or 9585.
Can be for systems with microcode EC F12380 or higher installed.

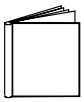


SY33-2125

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 6275)

Provides information on installing and maintaining the service processor based on PS/2 Type 6275.
Can be for systems with microcode EC F12380 or higher installed.

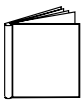


SY33-2127

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor and Network Node Processor[4]
Service User's Guide

Provides information on installing and maintaining the operational code on service processor, or network node processor.
Can be for systems with microcode EC F12380 or higher installed.



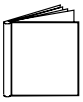
SY33-2118

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Multiaccess Enclosure Installation and Maintenance[4]

Provides information on installing and maintaining the Multiaccess Enclosure (MAE).

Table J-5 (Page 3 of 4). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

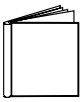


SY33-2124

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Multiaccess Enclosure Installation and Maintenance[4]
(Starting from EC F12430 and Above)

Provides information on installing and maintaining the Multiaccess Enclosure (MAE). For systems with microcode EC F12430 or higher installed.

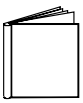


SY33-2112

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Network Node Processor Installation and Maintenance[4]
(Based on the 7585 or 3172)

Provides information on installing and maintaining the network node processor based on the PS/2 Type 7585 or 3172.

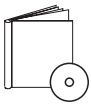


SY33-2126

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Network Node Processor Installation and Maintenance[4]
(Based on 6275)

Provides information on installing and maintaining the network node processor based on the PS/2 Type 6275.

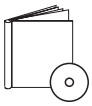


SY33-2056

IBM 3745 Communication Controller Models 210 to 61A

Maintenance Information Reference[1]

Provides in-depth hardware reference information on the IBM 3745 Models X10 and X1A.

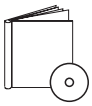


SY33-2075

IBM 3745 Communication Controller All Models[5]

External Cable References[1]

Provides references to console and line cables used for connecting the IBM 3745 Models 130 to 61A.

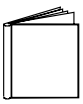


SY33-2117

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

External Cable Reference[6]

Provides references to console and line cables used for connecting the IBM 3746 Models 900 and 950.



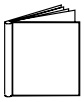
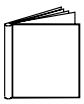
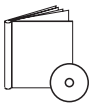
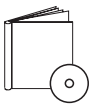
S135-2015

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Parts Catalog[6]

Provides reference information for ordering parts for the IBM 3746 Models 900 and 950.

Table J-5 (Page 4 of 4). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

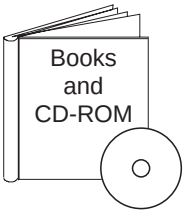
 S135-2010	***IBM 3745 Communication Controller Models 210 to 61A*** ***Parts Catalog***[1] Provides reference information for ordering IBM 3745 Models X10 and X1A parts.
 S135-2014	***IBM Controller Expansion*** ***Parts Catalog*** Provides reference information for ordering parts for the controller expansion attached to the IBM 3745 Models A[3], and 3746 Models 900 and 950.
CD-ROM Bibliography	
 ZK2T-8214	***IBM Networking Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. EMEA version.
 ZK2T-8187	***IBM Networking Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. US version.

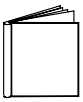
[1] Documentation shipped with the 3745.
[2] Documentation shipped with the 3746-900.
[3] 3745 Models 17A to 61A.
[4] Documentation shipped with the processor.
[5] 3745 Models 130 to 61A.
[6] Documentation shipped with the 3746 Models 900 and 950.

Additional Service Documentation for the IBM 3745 Models 130, 150, 160, 170, and 17A

Table J-6. Additional Service Documentation for the 3745 Models 1x0 and 17A

This service documentation has the following formats:



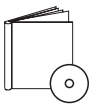


SY33-2067

IBM 3745 Communication Controller Models 130, 150, 160, 170, and 17A

Installation Guide[1]

Provides instructions for installing or relocating the IBM 3745 Models 1X0 and 17A.

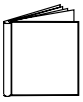


SY33-2069

IBM 3745 Communication Controller Models 130, 150, 160, and 170

Service Functions[1]

Describes MOSS functions using the IBM 3745 Models 1x0 and 17A consoles.

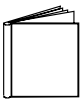


SY33-2070

IBM 3745 Communication Controller Models 130 to 17A

Maintenance Information Procedures[1]

Provides procedures for isolating and fixing the IBM 3745 Models 1X0 and 17A problems.

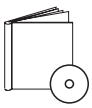


S135-2012

IBM 3745 Communication Controller Models 130 to 17A

Parts Catalog[1]

Provides reference information for ordering IBM 3745 Models 1X0 and 17A parts.



SY33-2066

IBM 3745 Communication Controller Models 130, 150, 160, and 170

Hardware Maintenance Reference[1]

Provides in-depth hardware reference information on the IBM 3745 Models 1X0 and 17A.

[1] Documentation shipped with the 3745.

Glossary

ac. alternating current

ACPW. AC power (box)

AFD. airflow detector

alarm. A message sent to the MOSS console. In case of an error a reference code identifies the nature of the error.

alert. A message sent to the host console. In case of an error a reference code identifies the nature of the error.

AMD. air moving device

APPN. advanced peer-to-peer networking

ARC. active remote connector

ARC1A1. ARC V.24 DCE attachment with 5 meter tethered cable

ARC1A2. ARC V.24 DCE attachment with 15 meter tethered cable

ARC1B. ARC V.24 DTE attachment with 15 meter tethered cable

ARC1C. ARC V.24 DCE 3745 interface with 5 meter tethered cable

ARC1D. ARC V.24 DTE 3745 interface with 5 meter tethered cable

ARC1E. ARC V.24 3174 AEA interface (1)

ARC1F. ARC V.24 3174 PCA EIA interface (1)

ARC2A. ARC V.25 autocall interface with 5 meter tethered cable

ARC2C. ARC V.25 autocall interface 3745 with 5 meter tethered cable

ARC3A1. ARC V.35 DCE attachment with 5 meter tethered cable

ARC3A2. ARC V.35 DCE attachment with 15 meter tethered cable

ARC3B. ARC V.35 DTE attachment with 15 meter tethered cable

ARC3C. ARC V.35 DCE 3745 interface with 5 meter tethered cable

ARC3D. ARC V.35 DTE 3745 interface with 5 meter tethered cable

ARC4A1. ARC X.21 DCE attachment with 5 meter tethered cable

ARC4A2. ARC X.21 DCE attachment with 15 meter tethered cable

ARC4B. ARC X.21 DTE attachment with 15 meter tethered cable

ARC4C. ARC V.21 DCE 3745 interface with 5 meter tethered cable

ARC4D. ARC V.21 DTE 3745 interface with 5 meter tethered cable

ARC5A. Reserved

ARC5B. Reserved

ARC5C. ARC RS-422 3708 interface (or RJ-11 connection) (1)

ARC5D. ARC RS-422 IBM Cabling System interface (1)

ARC6A. ARC V.25 autocall interface with 15 meter tethered cable

ARC6C. ARC V.25 autocall 3745 interface with 15 meter tethered cable

BA. basic access

BAS. basic board

BATS. basic assurance tests

BER. box event record

BLPU. basic level packaging unit

BMI. bit multiplex interface

box event record (BER). Information about an event detected by the controller. It is recorded on the disk/diskette and can be displayed on the operator console for event analysis.

bps. bits per second

BSC. binary synchronous communication

BSI. bus synchronism interface

C. Celsius

C&SM. customer and service information

CA. channel adapter

cache. A high-speed buffer storage that contains frequently accessed instructions and data; it is used to reduce access time.

CB. circuit breaker

CBA. controller bus adapter

CBC. controller bus coupler

CBR. circuit burst request

CBSA. controller bus and service adapter (CBSP+CBC+TIC3)

CBSP. controller bus and service processor

CBTRA. controller bus and token-ring adapter (TRP+CBC+TIC3)

CBTRM. cable terminator (IOC and DMA buses)

CCITT. Comite Consultatif International Telephonique et telegraphique

CCU. central control unit

CDF. configuration data file (3745)

CDF-E. configuration data file extended (37CS)

CE. customer engineer

CEPT. Comite Europeen des Postes et Telecommunications

CLA. communication line adapter (CLP+LICnn)

CLDP. controller load/dump program

clear channel. Mode of data transmission where the data passes through the DCE and network, and arrives at the receiving communication controller (for example, the IBM 3745) unchanged from the data transmitted. The DCE or network can modify the data during transmission because of certain network restrictions, but must ensure the received data stream is the same as the transmitted data stream.

CLP. communication line processor

CMIP. common management interface protocol

CNM. communication network management

CP. 1.communication processor 2.control program 3.circuit protector 4.control point

CPLR. coupler

CPN. customer problem number

CPx. FRU name of circuit protector

CRC. cyclic redundancy check character

CS. connectivity switch

CSA. common subassembly

CSB. connectivity switch bus

CSC. connectivity switch cable

CSCE. connectivity switch cable extension

CSM. centralized support module

CSP. central service point

CSS. control subsystem (3745)

CTDA. configuration target device (processor) address

dc. direct current

DCAF. Distributed Console Access Facility (licensed program)

DCCS. DC to connectivity subsystem

DCE. data circuit-terminating equipment

DCDP. DC distribution and protection (box)

DCM. diagnostic control monitor

DCPW. DC power box

DICO. DMA IOC connection card

DM. distribution manager

DMA. direct memory access

DS. data storage

DSB. data storage bus

DSI. data storage interface

DSM. data storage manager

DSS. data storage interface for SBA

DSU. data service unit (DCE-like for high-speed communication lines)

DTE. data terminal equipment

EC. engineering change

EE. extended edition

EIA. Electronic Industries Association

EPO. emergency power-off

EPROM. eraseable PROM

ESCA. ESCON adapter

ESCC. ESCON coupler

ESCON*. Enterprise Systems Connection

ESCP. ESCON processor

ESD. electrostatic discharge

EXP. expansion enclosure

EXP1. first expansion enclosure

EXP2. second expansion enclosure

FCS. frame check sequence

FRU. field-replaceable unit

HCS. Hardware Central Service

HDLC. high-level data link control

hex. hexadecimal

host processor. (1) A processor that controls all or part of a user application network. (2) In a network, the processing unit in which the access method for the network resides. (3) In an SNA network, the processing unit that contains a system services control point (SSCP). (4) A processing unit that executes the access method for attached communication controllers. Also called *host.*

HPPB. high-performance parallel bus

HSC. hardware support center

HSF. hardware service facility

Hz. Hertz

IBM service representative. An individual in IBM who performs maintenance services for IBM products or systems.

IEEE. Institute of Electrical and Electronics Engineers

IML. initial microcode load

initial microcode load (IML). The process of loading the microcode into a scanner or into MOSS.

initial program load (IPL). The initialization procedure that causes the 3745 control program to commence operation.

IO. input/output

IOC. input/output control

IOCB. input/output control bus

IPL. initial program load

IRAM. instruction random access memory

ISO. International Organization for Standardization

kbps. kilobits per second

LA. line adapter

LAN. local area network

LCB. line connection box

LED. light-emitting diode

LIC. line interface coupler

LICx. FRU name of line interface coupler type x (3745)

LLC. logical link control

LS. local storage

LSA. link service architecture

LSCT. LIM software configuration table

LSM. local storage manager

LSSD. level-sensitive scan design (total hardware latches chain collection)

LU. logical unit

MAC. medium access control

MAE. Multiaccess enclosure

MAP. maintenance analysis-procedure

MAU. multistation access unit

MB. megabyte; 1 048 576 bytes

MCF. microcode fix

MCL. microcode change level

MES. miscellaneous equipment specification

MG. motor generator

MI. maskable interrupt

microcode. A program, that is loaded in a processor (for example, the MOSS processor)

MLA. MOSS LAN adapter

MMIO. memory mapped input/output

maintenance and operator subsystem (MOSS). The part of the controller that provides operating and servicing facilities to the customer's operator and the IBM service representative.

MOSS. maintenance and operator subsystem (3745)

MOSS-E. maintenance and operator subsystem extended (37CS)

NA. network addressable

NCP. Network Control Program

NDM. netview distribution manager

NetView. An IBM licensed program used to monitor a network, manage it, and diagnose its problems.

Network Control Program (NCP). An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability.

NMI. non-maskable interrupt

NMVT. network management vector transport

NNP. network node processor

NODA. next origin device (processor) address

NPM. NetView performance monitor

NTDA. next target device (processor) address

OEMI. original equipment manufacturer's interface

OLT. online test

online tests. Testing of a remote data station concurrently with the execution of the user's programs (that is, with only minimal effect on the user's normal operation).

OSI. open system interconnect

PA. primary access

PBC. packet burst control

PBG. packet burst grant

PCR. 1.pico-processor command register 2.power check reset

PICA. process and intertask communication architecture

PMH. problem management hardware

PN. part number

PNL. control panel

POR. power-ON reset

PP. pico-processor

PPB. primary power box

PPC. PowerPC (system card of MAE)

PRC. processor

PRDA. packet request device (processor) address

PROM. programable read-only memory

PS. power supply

PSI. packet switch interface

PSN. public switched network

PTCE. product-trained CE

PTF. program temporary fix

PTT. Post, Telephone and Telegraph (agency)

PU. physical unit

RETAIN. Remote Technical Assistance Information Network

RNR. receiver not ready

RPL. remote program load

RPO. remote power-off

RSC. remote service center

RSF. remote support facility

RVX. stands for RS232, RS422, V.24-35, X.21-2x connections

SAC. switch adapter card

SATS. specific assurance tests

SBA. switch bus adapter

SBI. switch bus interface

SC. switch control

SDLC. synchronous data link control

SIE. switch interface extender

SL. service logic

SNA. Systems Network Architecture

SNMP. Simple network management protocol

SPD1. signal and power distribution type 1

SPD2. signal and power distribution type 2

SPDL. signal and power distribution card in LCB

SPS. service and power support

SQL. structured query language

SRC. system reference code

SSA. system service architecture

SSCP. system services control point

STCn. signal transfer card n

SSS. subsystem support service

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information through a user application network. The structure of SNA allows the users to be independent of specific telecommunication facilities.

TB. terminator block

TDM. time division multiplexing

TDR. technical data record

TERC. terminator card

TIC1. token-ring interface coupler type 1 (3745) running at speed of 4 Mbits

TIC2. token-ring interface coupler type 2 (3745) running at speed of 4 or 16 Mbits

TIC3. token-ring interface coupler type 3 (37CS) running at speed of 4 or 16 Mbits

time out. The time interval allotted for certain operations to occur.

TPS. two-processor switch

TR. token-ring

TRA. token-ring adapter (TRP+TIC3)

TRFM. transformer

TRP. token-ring processor

TRS. transmitter/receiver subassembly

UEPO. unit emergency power-off

URSF. universal remote support facility

UTP. Unshielded twisted pair cable

V. volt

V.24. CCITT V.24 recommendation

V.25. CCITT V.25 recommendation

V.28. CCITT V.28 recommendation

V.35. CCITT V.35 recommendation

VPD. vital product data

VTAM*. Virtual Telecommunications Access Method

VTL. vendor technology logic

W. watt

X.21. CCITT X.21 recommendation

X.25. CCITT X.25 recommendation

YZxxx. wiring diagram

Index

O

P

R

S

T

U

V

W

X

Y

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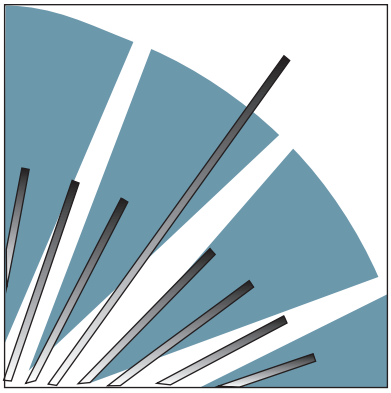

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