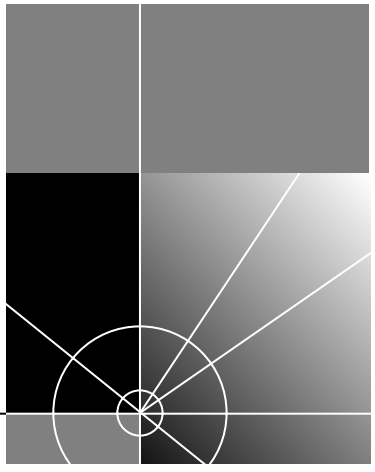
# Installing the NETBuilder II® Bridge/Router

**For EZBuilt systems and base chassis**



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Guide written by Ramona Boersma. Edited by Amy Guzules. Technical illustration by Debra Knodel. Production by Ramona Boersma.

*The following advice and subsequent warnings are given to satisfy the requirements of the United Kingdom's BABT approval of the NETBuilder II HSSI module as a host independent module.*

This module is approved only for installation in a host and with host attachments, which are either type-approved for such apparatus, or, if supplied, after March 1, 1993, are marked with or supplied with a statement that the host is supplied over General Approval Number NS/G/1234/J/100003.

This module has been designed to comply specifically with BABT and all the 3Com NETBuilder family of modules for use in the NETBuilder chassis. These considerations are outlined herein.

Except at the edge connector, which plugs into the host's expansion slot, clearance and creepage distances of Xmm and Ymm, as listed below, must be maintained between this module and other parts of the host, including any other additional modules fitted therein.

| Xmm | Ymm | Vrms/Vac |
|---|---|---|
| 4.0 | 5.0 (8.0) | up to 250 |

The creepage distances apply when installed in a normal office environment. The creepage distances shown in parentheses apply where the normal office environment within the host is subject to conductive pollution or dry non-conductive pollution, which could become conductive due to condensation.

If in doubt, advice should be sought from a competent telecom safety engineer.

Users must ensure that the power drawn by the 3Com NETBuilder II HSSI module (as described in Appendix A) together with any auxiliary apparatus, lies within the rating of the host power supply.

Failure to install the module in accordance with these instructions, invalidates the approval.

*The NETBuilder II chassis are supplied in the United Kingdom under the General Approval Number NS/G/1234/J/100003 and do not hold a BABT license in their own right. In view of this, users are reminded that when the HSSI module is installed in a chassis, it is still only the module that is approved and so the BABT license label must not be moved so that it is attached to the chassis itself.*

*The network connector HSSI is a TNV connection point as defined by EN 41 003. The bus connectors J1, J2, and J3 are SELV connections as defined by EN 60 950.*

*Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment.*

**France and Peru Only**

This unit operates under SELV conditions (Safety Extra Low Voltage) according to IEC 950, the conditions of which are maintained only if the equipment to which it is connected is also operational under SELV.

This unit cannot be powered from IT* supplies. If your supplies are of IT type, then this unit should be powered by 230V (2P+T) via an isolation transformer ration 1:1, with the secondary connection point labeled neutral, connected directly to earth (ground).

**Impedance à la tierre*

**Electromagnetic Compatibility Information**

**Classes**

Various national agencies (in the United States, The Federal Communications Commission (FCC) govern the levels of electromagnetic emissions from digital devices. Electromagnetic emissions can interfere with radio and television transmission. To reduce the risk of harmful interference these agencies have established requirements for manufacturers of digital devices

The manufacturer of a digital device must test and label a product to inform an end-user of the maximum emission level from the product when used in accordance with its instructions. The emission levels encountered are classified as Class A or Class B. A system that meets the Class A requirement can be marketed for use in an industrial or a commercial area. A system that meets the more stringent Class B requirement can be marketed for use in a residential area in addition to an industrial or a commercial area.

The end user is generally held responsible for ensuring that his system is suitable for its environment as stated in the above paragraph and bears the financial responsibility for correcting any harmful interference.

**Modifications**

Modifications or changes made to this device, and not approved by 3Com, may void the authority granted by the FCC, or other such agency, to operate this equipment.

**Shielded Cables**

Connections between 3Com equipment and other equipment and peripherals must be made using shielded cables in order to maintain compliance with FCC, and other agency, electromagnetic frequency emissions limits.

**Federal Communications Commission Notice**

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

**Canadian Notice**

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications

***Avis Canadien***

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

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Marking by the symbol CE indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

- **EN 55022** — Limits and methods of measurement of radio interference characteristics of information technology equipment.
- **EN 50082-1** — Electromagnetic compatibility — generic immunity standard part 1: residential, commercial, and light industry.

A Declaration of Conformity detailing the above standards has been made and is on file at 3Com Corporation.

# CONTENTS

## 3 NETBUILDER II 8-SLOT EXTENDED BRIDGE/ROUTER

# ABOUT THIS GUIDE

This guide dexcribes how to install and maintain the NETBuilder II® bridge/router. This system is available as a 4-Slot, 8-Slot, or 8-Slot Extended chassis.

*Audience Description*

This guide is written for network equipment installers or network managers responsible for installing and using network hardware and managing the attached networks. It assumes a working knowledge of network operations, but does not assume prior knowledge of 3Com® internetworking equipment.

Each optional I/O module has a separate installation guide that provides installation, cabling, maintenance, and troubleshooting information.

*If the information in the release notes shipped with your product differs from the information in this guide, follow the release notes.*

## Conventions

Table 1 describes notice icons that are used throughout this guide.

**Table 1** Notice Icons

| Icon | Notice Type | Alerts you to... |
|---|---|---|
|  | Information note | Important features or instructions |
|  | Caution | Risk of personal safety, system damage, or loss of data |
|  | Warning | Risk of severe personal injury |

# 1 NETBUILDER II 4-SLOT BRIDGE/ROUTER

The NETBuilder II bridge/router is a powerful, modular system designed to handle a large variety of LAN and WAN networks. I/O modules plug easily into the chassis and provide expandability and compatibility for your WANs and LANs.

The 4-Slot chassis holds up to four regular-format modules or two extended-format modules.

The NETBuilder II 4-Slot bridge/router is available as an EZBuilt system with the main processor and software preinstalled, or separately as a base chassis.

*EZBuilt System*

Your system consists of a chassis, the main processor (either the Dual Processor Engine (DPE) module or the Communications Engine Card (CEC) 20 module), and the software preloaded on an installed PC flash memory card.

- The NETBuilder II chassis with a CEC 20 module has the flash memory card installed in the internal flash memory drive. The chassis also has a floppy disk drive.
- The NETBuilder II chassis with a DPE module has the flash memory card installed in flash memory drive A on the DPE module. The DPE module does not support a floppy disk drive.

## Installing the 4-Slot Chassis

This section describes how to install your NETBuilder II 4-Slot chassis.

### Unpacking Your Chassis

After you have removed your chassis from the shipping carton, verify that you have received the following items:

- Chassis — The EZBuilt system has the main processor module and software already installed.
- Accessory box containing the following items:
  - Documentation binder and guides
  - Power cord
  - Rack-mount brackets and hardware
  - Cable strain-relief bracket
  - Software package (EZBuilt system only)

If you do not have all of these items, contact your network supplier.

If any of the items are damaged, contact the shipping company to file a report. If you need to return the chassis to your network supplier, ship it in the original carton and antistatic shielded bag. If the original carton was damaged in shipment, repack the system in a carton that provides equivalent protection.

### Verifying Electrical Requirements

Make sure that the power source for your facility meets the electrical requirements listed in Table A-3 on page A-2.

### Installing the Flash Memory Drive (Base Chassis with CEC 20 Only)

NETBuilder software runs on a PC flash memory card. If you have the base chassis and are installing the CEC 20 module, you must install the flash memory drive according to the *NETBuilder II Flash Memory Drive Installation Guide*.

The EZBuilt NETBuilder II system with CEC 20 module has the flash memory drive already installed. The DPE module has integrated flash memory drives.

### Installing the DPE or CEC 20 Module (Base Chassis Only)

The DPE or CEC 20 module is the main processor for the NETBuilder II bridge/router. If you have the base chassis, you must install either module. In the EZBuilt system, the main processor is already installed. Refer to the appropriate main processor module guide for installation instructions.

### Installing I/O Modules

You can install two types of modules in your 4-Slot chassis: regular-format and extended-format. Regular-format modules are the width of one slot in the chassis. Extended-format modules are the width of two slots. Refer to the appropriate I/O module guides for installation instructions.

### Mounting the 4-Slot Chassis

Mount the chassis on a tabletop or in a 19-inch, 2- or 4-pole rack.

#### Installing on a Tabletop

When installing your chassis on a tabletop, make sure the vents are not blocked and the cables are not pinched or restricted behind the unit.

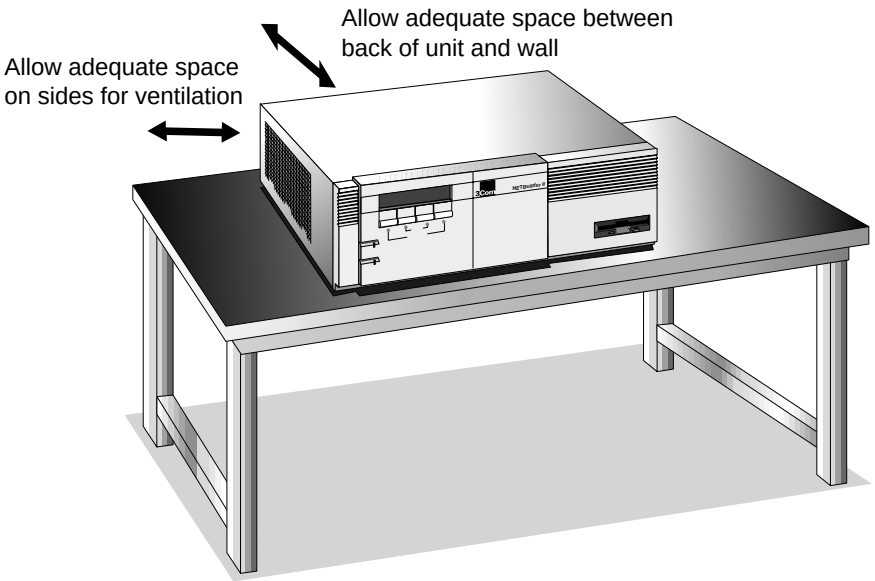



**Figure 1-1** Installing a 4-Slot Chassis on a Tabletop

### Installing in a Rack

Your chassis comes with a rack-mount kit, which consists of two brackets, 10 pan-head screws, and four locking nuts. This kit allows you to mount the chassis in a 19-inch, 2- or 4-pole rack. Make sure the kit contains all of these parts. If a part is missing, contact your network supplier.

You will need a Phillips screwdriver to mount the system in your rack. You may need two people to complete the procedure: one person to hold the system and the other person to attach it to the rack.

**CAUTION:** *Using fewer than three screws on each side of the chassis to secure the rack-mount brackets may result in bracket failure and damage that will invalidate the warranty.*

Follow the steps in Figure 1-2 to install your 4-Slot chassis in a rack.

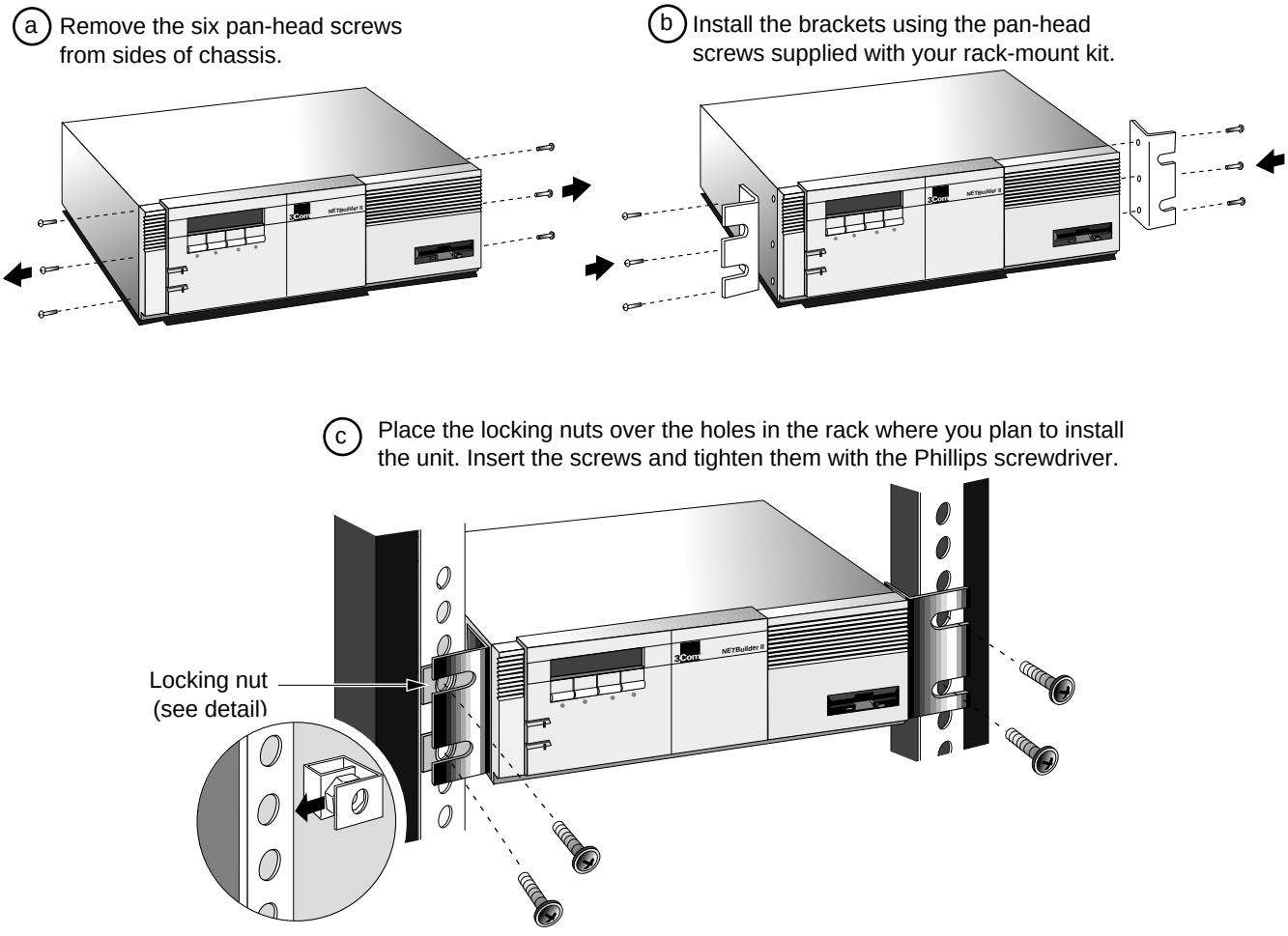



**Figure 1-2** Installing a 4-Slot Chassis in a Rack

### Attaching a PC, Terminal, or Modem

Attaching a PC, terminal, or modem to your main processor module allows you to perform the following tasks:

- Modify firmware parameters.
- Configure the bridge/router software.
- Review startup and system operation messages. Some of the messages displayed by the terminal are more detailed than the information displayed on the LCD. These detailed messages may help you troubleshoot startup or operation problems. For more information, refer to the appropriate main processor module guide.

To connect a PC, terminal, or modem to your main processor module, follow these steps:

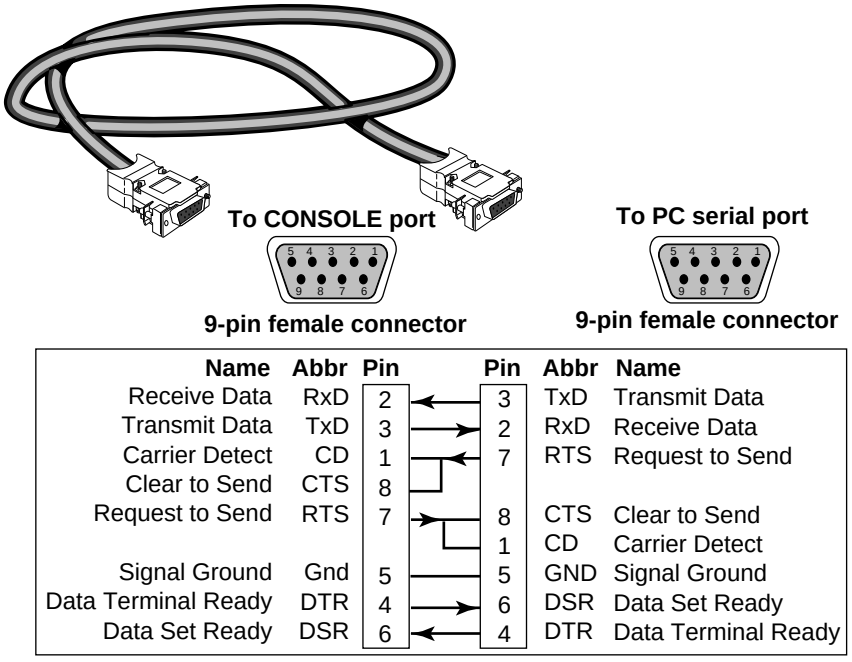
**1** Obtain a cable to connect the device to the CONSOLE port on the front panel of the main processor module.

Figure 1-3 shows the pinouts for a 9-pin female to 9-pin female PC cable. A null modem-type cable can be used.

Figure 1-4 shows the pinouts for a 9-pin female to 25-pin terminal cable. A null modem-type cable can be used.

Figure 1-5 shows the pinouts for a 9-pin female to 25-pin male modem cable. A straight-through-type cable can be used.

**WARNING:** *To eliminate cable noise emission in excess of FCC Part 15, Subpart J, and EN55022 B, this device cable should be shielded and have connectors with metallic backshells.*




| Name | Abbr | Pin | | Pin | Abbr | Name |
|---|---|---|---|---|---|---|
| Receive Data | RxD | 2 | ← | 3 | TxD | Transmit Data |
| Transmit Data | TxD | 3 | → | 2 | RxD | Receive Data |
| Carrier Detect | CD | 1 | ← | 7 | RTS | Request to Send |
| Clear to Send | CTS | 8 | | | | |
| Request to Send | RTS | 7 | → | 8 | CTS | Clear to Send |
| | | | | 1 | CD | Carrier Detect |
| Signal Ground | Gnd | 5 | — | 5 | GND | Signal Ground |
| Data Terminal Ready | DTR | 4 | → | 6 | DSR | Data Set Ready |
| Data Set Ready | DSR | 6 | ← | 4 | DTR | Data Terminal Ready |

**Figure 1-3** 9-pin to 9-pin PC Cable (Null Modem-Type)

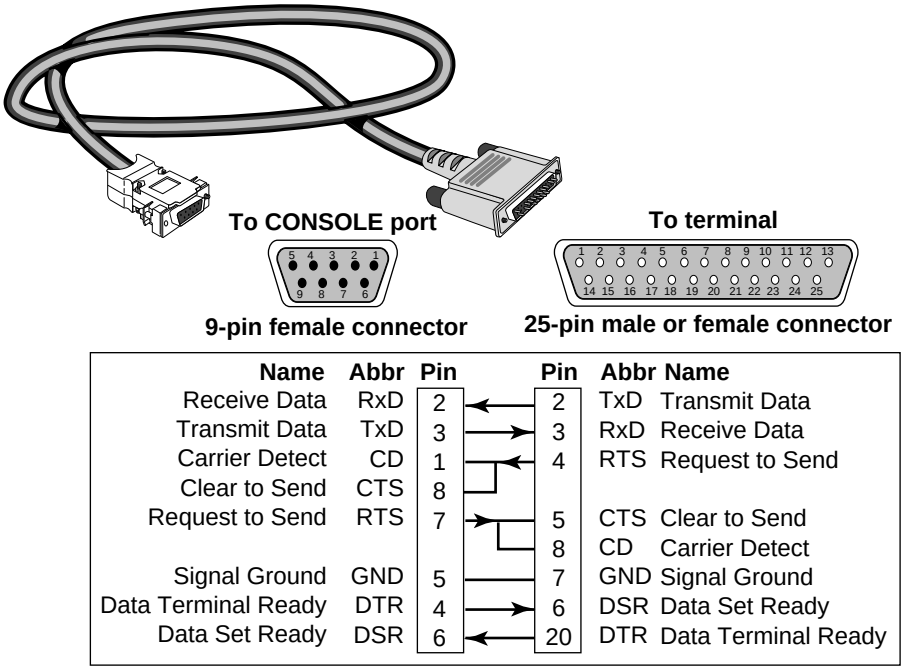



**Figure 1-4** 9-pin to 25-pin Terminal Cable (Null Modem-Type)

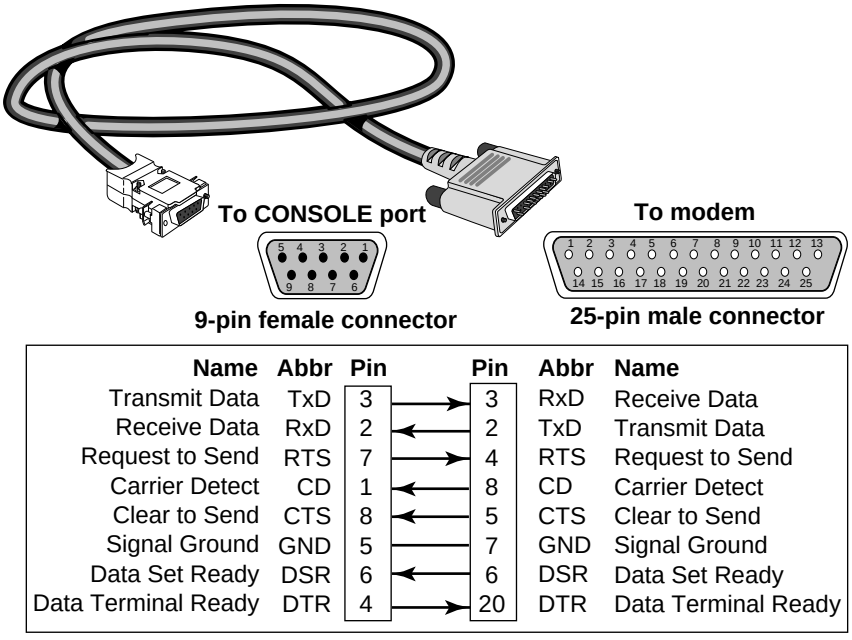



**Figure 1-5** 9-pin to 25-pin Modem Cable (Straight-Through-Type)

**2** Connect one end of the cable to the CONSOLE port on the front panel of the main processor module. Connect the other end to the serial port on the back of your device.

3 Verify that the configurable parameters of your device match the configuration settings of the CONSOLE port specified in Table 1-1.

**Table 1-1** CONSOLE Port Configuration Settings

| Characteristic | Setting |
|---|---|
| Baud rate | 9600 |
| Databits | 8 |
| Parity | None |
| Stop bits | 1 |
| DTR | Ignored |
| Duplex | Full |
| Echo | Off |
| Flow control | X-on/X-off |

4 Turn on the PC, terminal, or modem.

### Connecting the Power Cord

A power cord is supplied with all NETBuilder II chassis. If the power cord does not match your requirements, contact your network supplier for assistance.

The AC power switch is marked according to international I/O convention: When you press the I side, the switch is on; when you press the O side, the switch is off.

Make sure the power switch is turned off (O), and plug the power cord into the AC power receptacle on the back of the chassis.

### Installing the Cable Strain-Relief Bracket

The cable strain-relief bracket is a wire-form metal bracket. This bracket is not necessary for systems mounted on a tabletop, but it is recommended for rack-mounted systems.

To install the cable strain-relief bracket on a 4-Slot chassis, follow these steps (no tools are needed):

1 Secure the bracket to the rear of the system.

The ends of the bracket slide into four holes on the back of the chassis (see Figure 1-6).

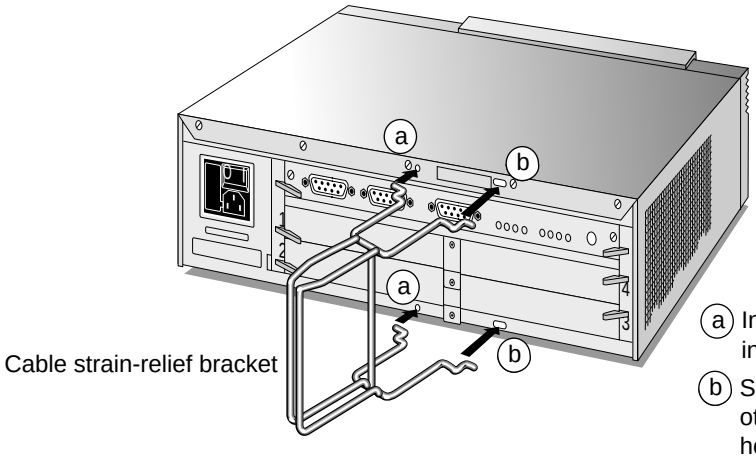



**Figure 1-6** Installing the Cable Strain-Relief Bracket on the 4-Slot Chassis

**2** Route all cables from the I/O modules through the two arms of the bracket from top to bottom, as shown in Figure 1-7.

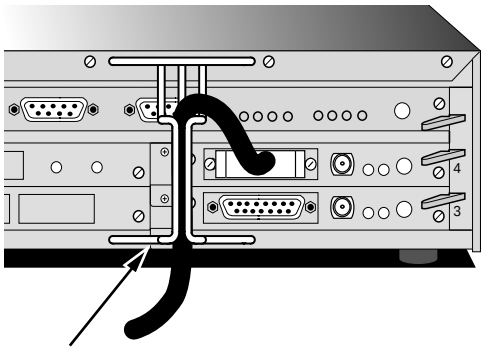



**Figure 1-7** Routing Cables through the Strain-Relief Bracket on the 4-Slot Chassis

## Chassis Description

This section describes the basic hardware and accessories of the NETBuilder II 4-Slot chassis.

### Front Panel

The front panel of the 4-Slot chassis includes:

- A 2-line, 24-character alphanumeric LCD and an LCD control panel.
- Two LEDs, one labeled POWER and the other labeled STATUS.
- A floppy disk drive (for use with the CEC 20 module only).

Figure 1-8 shows the front panel of the 4-Slot chassis.

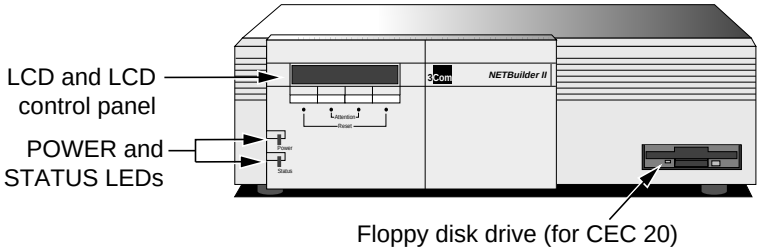



**Figure 1-8** 4-Slot Chassis Front Panel

#### LCD and LCD Control Panel

The 2-line, 24-character, alphanumeric LCD displays startup and status messages.

The LCD control panel consists of four buttons located under the LCD. These buttons allow you to perform a reset and, for the CEC 20 module, to access the Diagnostic Main Menu.

*Performing a reset*

To perform a reset, simultaneously press the outer buttons, which are marked Reset.

*Accessing the Diagnostic Main Menu (CEC 20 only)*

To access the Diagnostic Main Menu, simultaneously press the two inner buttons, which are marked ATTENTION. The menu is displayed on the LCD. For complete information on the Diagnostic Main Menu, refer to the *NETBuilder II CEC 20 Module Installation Guide.* The DPE module does not support the Diagnostic Main Menu.

### POWER and STATUS LEDs

Below and to the left of the LCD control panel are two LEDs marked POWER and STATUS. The POWER LED indicates whether the system is on or off and is the same as the POWER LED on the main processor module.

If you are using a DPE module, the STATUS LED on the chassis is the same as the POWER/FAULT LED on the DPE module. Refer to the DPE module guide for more information about this LED.

If you are using a CEC 20 module, the STATUS LED on the chassis is the same as the STATUS LED on the CEC 20 module. Refer to the CEC 20 module guide for more information about this LED.

**Back Panel**

The 4-Slot chassis has four I/O slots and one main processor slot.

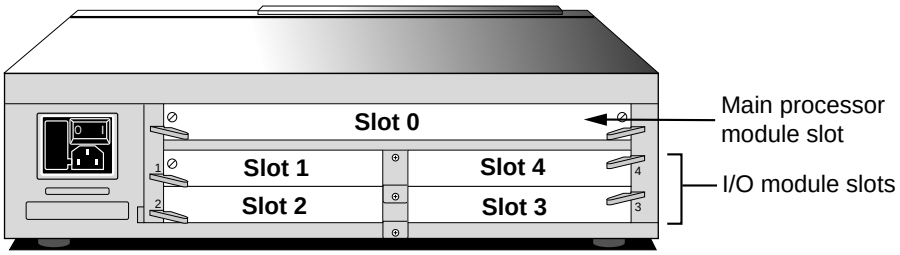



**Figure 1-9** 4-Slot Chassis I/O Module Slot Numbering Sequence

**WARNING:** *Remove the filler panel only from I/O slots that will house an I/O module. All unused I/O slots require the filler panels to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II system and will invalidate the warranty.*

**Floppy Disk Drive**

The 4-Slot chassis includes a 3.5 inch, 135 tracks per inch (TPI), 4 MB floppy disk drive that supports 1.4 MB and 2.8 MB DOS-formatted floppies. The drive is located on the right side of the front panel.

*The DPE module does not support the floppy disk drive.*

Press the eject button on the disk drive front panel to eject diskettes. The LED on the front panel lights when a floppy diskette is being formatted, read, or written. Do not attempt to eject the diskette when the LED is lit.

For information on replacing the floppy disk drive, see page 1-13.

**Backplane**

The backplane consists of a bus that is mounted vertically against the back of the card cage. When installed, the modules rest inside the card cage. Connectors on the backplane engage connectors on the edges of the modules.

The backplane has a peak data rate of 800 Mbps.

The backplane allows you to hot-swap an I/O module, which means that you can install, or remove and reinstall, an I/O module without turning off power to the chassis.

Figure 1-10 shows the location of the backplane, connectors, and power supply in the 4-Slot chassis.

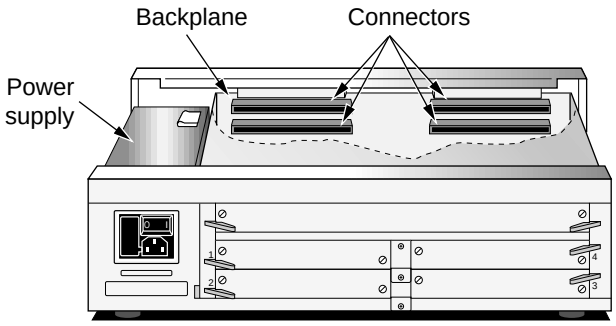



**Figure 1-10** 4-Slot Chassis Backplane and Connectors

## Power Supply Module

The power supply module (see Figure 1-10) consists of the power supply, two fans, and a switch/fuseholder/receptacle assembly.

The autoranging power supply automatically adjusts the supply voltage to the chassis for 115 and 230 VAC operation.

*Switch/fuseholder/ receptacle assembly location*

The switch/fuseholder/receptacle assembly is accessible from the back of the 4-Slot chassis.

The fuseholder cartridge provides access for fuse replacement: One fuse is mounted in a removable cartridge. See page 1-12 for information on replacing the fuse.

The international CEE-22 AC power receptacle is approved for 6 amp operation. The connector has three prongs with chassis ground on the middle prong. All systems are shipped with power cords; if your power cord does not match your requirements, contact your network supplier for assistance.

The power supply module can be removed and replaced easily. See page 1-10 for details on removing and replacing it.

## Chassis Cover

The chassis cover is secured with five screws on the back of the chassis and six screws on each side (three for rack-mounting and three that secure the cover).

**CAUTION:** *Before turning the system on, make sure that the cover is properly secured. Turning on a system without the cover in place can result in overheating of the system and will invalidate the warranty.*

## Maintenance and Repair

This section includes maintenance and repair information for the 4-Slot chassis.

### Preventive Maintenance

3Com recommends the following procedures for preventive maintenance:

- Observe the environmental requirements listed in Appendix A. Temperatures outside the recommended range can impair reliability and cause diskette access errors.
- Observe ESD guidelines whenever handling modules.
- Keep the area around the NETBuilder II system clean. Avoid accumulated dust, especially around the air intake vents.
- If the system fails, an immediate memory dump may help diagnose the problem. Contact 3Com Technical Support for memory dump information.

### Replacing a Power Supply

If any component other than a fuse fails in the power supply, you must replace the entire power supply.

You will need two Phillips screwdrivers: one that fits a #10-32 screw (to remove the system from the rack) and one that fits a #6-32 screw (to remove and replace the cover and the power supply).

To replace the power supply in the 4-Slot chassis, follow these steps:

**WARNING:** *Do not open the power supply. It contains hazardous voltages. There are no user-serviceable parts inside.*

**VORSICHT:** *Öffnen sie niemals das Netzteil. Hochspannung! Es sind keine zu wartenden Teile enthalten.*

**AVERTISSEMENT:** *Ne pas ouvrir ce bloc d'alimentation. Tensions dangereuses à l'intérieur. Ne contient aucune pièce que l'utilisateur puisse rèparer.*

**PELIGRO:** *No abra fuente de alimentación. Contiene alta tensión. No hay partes para reemplazar adentro.*

1. Turn off the system and unplug the power cord from the outlet and the power supply.
2. If your system is mounted in a rack, remove it from the rack and remove the rack-mount brackets from the chassis.
3. Remove the cover from the chassis.
   a. Remove the screws from the back and sides of the chassis.
   b. Slide the cover toward the back of the chassis and lift it off.

**4** Disconnect the cables that connect the power supply to the backplane and to the floppy disk drive, and remove the chassis screw as shown in Figure 1-11.

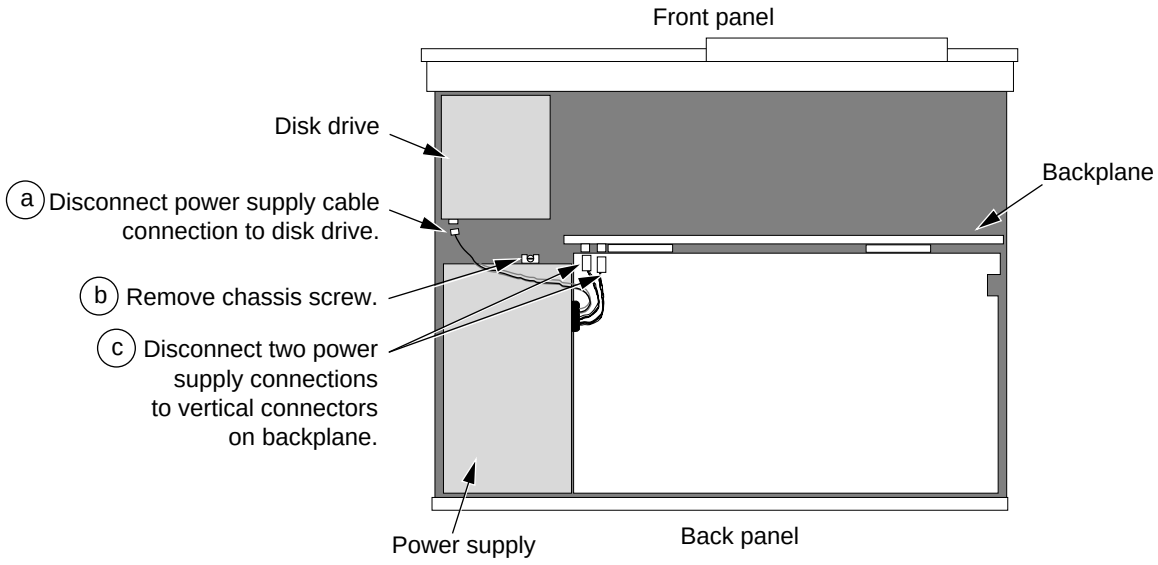



**Figure 1-11** Disconnecting Power Supply Cables in the 4-Slot Chassis

**5** Slide the power supply toward the front of the chassis, and lift it out.

**6** Slide the new power supply in place and secure it with the chassis screw.

**7** Reconnect the cables to the backplane and the floppy disk drive.

As you are reconnecting the cables, make sure you keep the connector keys aligned.

**8** Reinstall the cover.

**a** Position the cover slightly behind the front of the chassis.

**b** Lower the cover and slide it toward the front of the chassis so that it engages the front panel.

**c** Secure the cover with the screws you removed earlier from the back and sides of the chassis.

**9** If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.

**10** Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and the outlet.

**11** Turn on the system.

## Replacing a Fuse

This section explains how to replace the fuse located in the power supply module in your 4-Slot chassis.

A single fuse mounted in a removable cartridge is located inside the AC power switch/fuseholder/receptacle assembly on the rear of the chassis.

***WARNING:*** *If your system persistently blows fuses, there may be a problem with either your power supply or your facility's supply voltage. Contact your network supplier for assistance.*

*For continued protection against fire hazard, replace the fuse only with a fuse of the same type and rating. Using an incorrect fuse can subject your system to overcurrent conditions, resulting in damage or unsafe operating conditions.*

To change the fuse in the power supply, follow these steps. You will need a small, flat-head screwdriver.

1. Turn the system off and unplug the power cord from the outlet and the power supply.
2. Pry the fuseholder cartridge loose from the switch/fuseholder/receptacle assembly using the screwdriver. It should pop out easily.

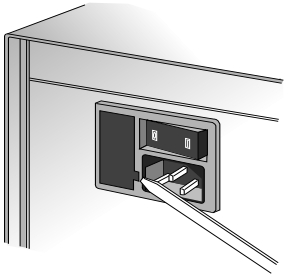


**Figure 1-12** Prying the Fuseholder Cartridge Loose

3. Slide the fuseholder cartridge completely out of the power supply.

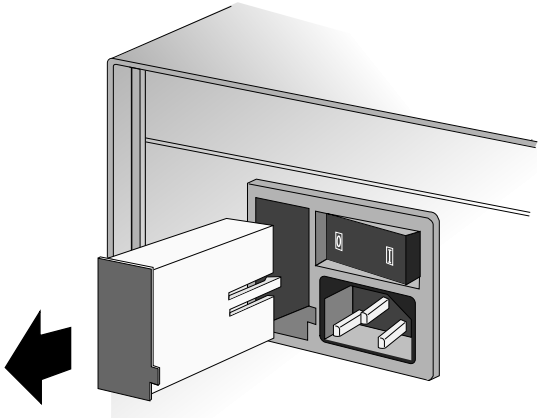


**Figure 1-13** Removing the Fuseholder Cartridge from the Power Supply

4 Pull the plastic retainer on the fuseholder cartridge out toward you and slide the fuse clip insert out of the cartridge.

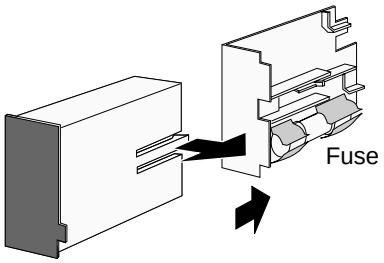



**Figure 1-14** Removing the Fuse Clip Insert from the Cartridge

5 Pry the spent fuse from the fuse clip using the screwdriver.

6 Replace the old fuse with a new 4 A, 250 V, fast-blow fuse, 5 mm by 20 mm in size.

7 Reinstall the fuse clip insert in the cartridge so that the plastic retainer locks it in place.

8 Reinstall the fuseholder cartridge into the switch/fuseholder/receptacle assembly.

9 Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and the outlet.

10 Turn on the system.

### Replacing a Floppy Disk Drive

To replace the floppy disk drive in the 4-Slot chassis, follow these steps. You will need Phillips screwdrivers of various sizes.

1 Turn off the system and unplug the power cord from the outlet and from the power supply.

2 If your system is mounted in a rack, remove it from the rack and remove the rack-mount brackets from the chassis.

3 Remove the cover from the chassis.

**a** Remove the screws from the back and sides of the chassis.

**b** Slide the cover toward the back of the chassis and lift it off.

**4** Remove the front panel.

**a** From inside the chassis, remove the two screws from the panel.

**b** Gently tip the panel forward.

**c** Lift the panel out of the hinges at the bottom of the chassis.

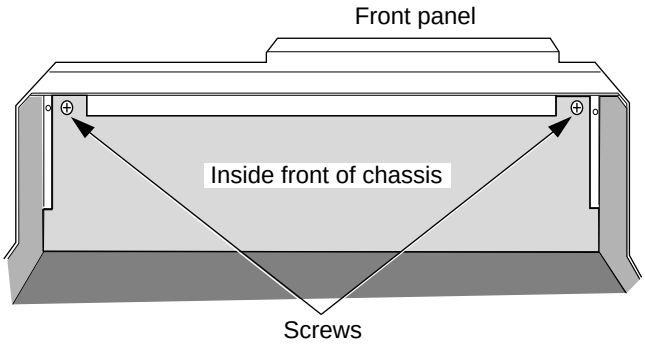



**Figure 1-15** Front Panel Screws in the 4-Slot Chassis

**5** Disconnect the power wiring harness and the ribbon cable from the connectors on the back of the floppy disk drive.

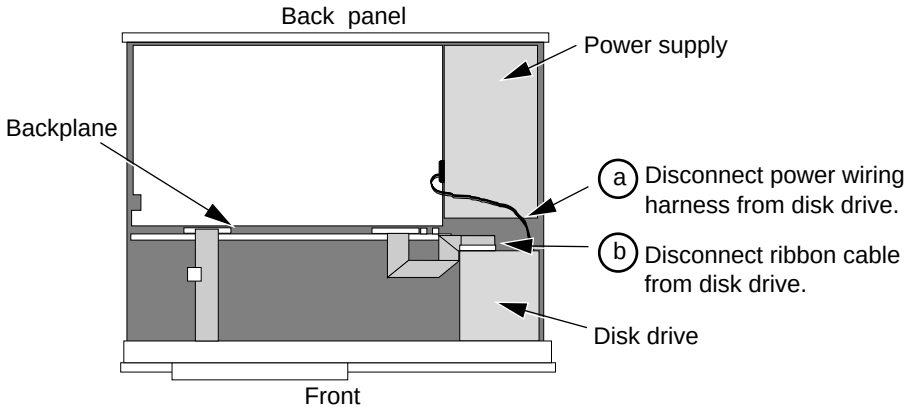



**Figure 1-16** Disconnecting Cables from the Floppy Disk Drive in the 4-Slot Chassis

**6** Remove the floppy disk drive and its bracket from the chassis.

**a** From the front of the chassis, remove the two screws that secure the bracket.

**b** From inside the chassis, remove the screw from the back of the bracket.

**c** Slide the bracket toward the back of the chassis and lift it and the floppy disk drive out of the chassis.

**7** Transfer the bracket from the original floppy disk drive to the new one.

**a** Remove the four screws from the sides of the bracket (two on each side).

**b** Slide the floppy disk drive out of the bracket.

**c** Slide the new floppy disk drive into the bracket.

**d** Reinstall the four screws.

8. Reinstall the bracket containing the new floppy disk drive in the chassis.
   a. The two keyhole slots in the bottom of the bracket align with two locking pins on the bottom of the chassis. Slip the wide part of the keyhole slots over the pins.
   b. Slide the bracket toward the front of the chassis until it locks in place.
   c. From the front of the chassis, reinstall the two screws that secure the bracket to the chassis.
   d. From inside the chassis, reinstall the screw on the back of the bracket.
9. Reconnect the ribbon cable and the power wiring harness to the connectors on the back of the floppy disk drive.
10. Reinstall the front panel.
    a. Tip the top edge of the panel slightly away from the chassis, and align the tabs on the bottom with the hinges at the bottom of the chassis.
    b. Push the front panel against the chassis.
    c. From inside the chassis, reinstall the two screws that secure the panel to the chassis.
11. Reinstall the cover.
    a. Position the cover slightly behind the front of the chassis.
    b. Lower the cover and slide it toward the front of the chassis so that it engages the front panel.
    c. Secure the cover with the screws you removed earlier from the back and sides of the chassis.
12. If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.
13. Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and the outlet.
14. Turn on the system.

**Replacing the Backplane**

To replace the backplane in the 4-Slot chassis, follow these steps. You will need a short #1 Phillips screwdriver.

1. Turn off the system and unplug the power cord from the outlet and power supply.
2. If your system is mounted in a rack, remove it from the rack and remove the rack-mount brackets from the chassis.
3. Remove the cable strain-relief bracket, if it is installed.
4. Remove the main processor module and all I/O modules from the chassis.

   Loosen the thumbscrews and push the ejector levers open to remove the modules.
5. Remove the cover from the chassis.
   a. Remove the screws from the back of the chassis and sides of the chassis.
   b. Slide the cover toward the back of the chassis and lift it off.

6 Disconnect the display board ribbon cable and floppy disk drive ribbon cable from connectors on top of the backplane. Press down on the handles on the cable connectors to release the cables.

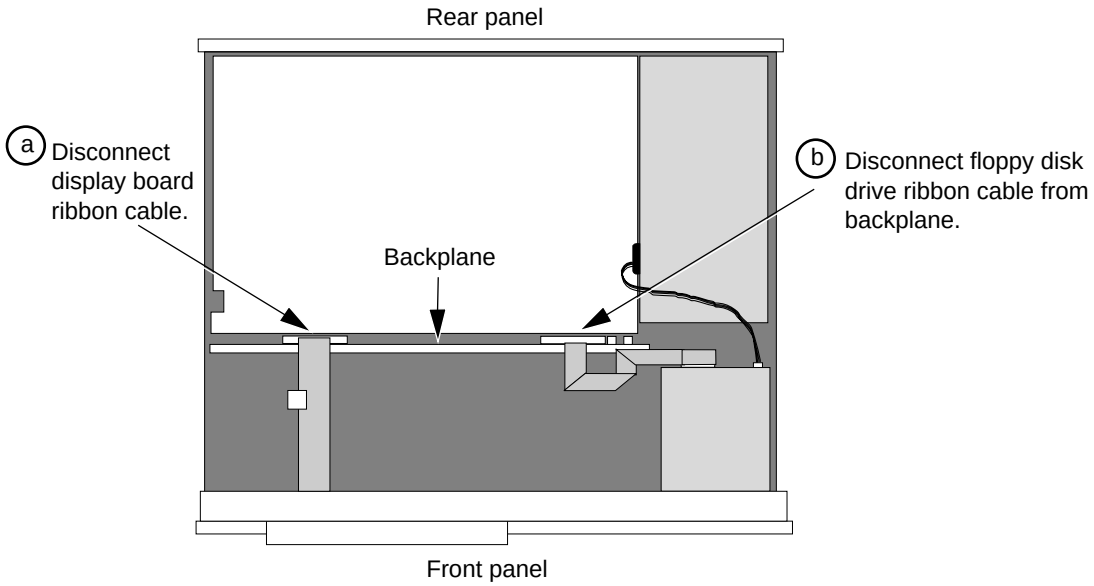



**Figure 1-17** Disconnecting Cables from the Backplane in the 4-Slot Chassis

7 Remove the backplane.

- **a** Using the short Phillips screwdriver, remove the eight screws from the backplane.
- **b** Pull the backplane away from the card cage (toward the front of the chassis) and disconnect the power supply cable from the backplane connectors.

8 Install the new backplane.

- **a** Reconnect the power supply cable to the backplane connectors.

  Route the cable through the rectangular opening in the card cage bracket.
- **b** Seat the backplane against the card cage.
- **c** Reinstall the eight screws that secure the backplane to the card cage.

9 Reconnect the display board cable and floppy disk drive cable.

10 Reinstall the cover.

- **a** Position the cover slightly behind the front of the chassis.
- **b** Lower the cover and slide it toward the front of the chassis so that it engages the front panel.
- **c** Secure the cover with the screws you removed earlier from the back and sides of the chassis.

11 Reinstall the main processor module and I/O modules into the chassis.

12 Reinstall the cable strain-relief bracket, if necessary.

13 If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.

14 Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and outlet.

15 Turn on the system.

**Replacing the Display Board**

To replace the display board in the 4-Slot chassis, follow these steps. You will need a #1 Phillips screwdriver.

1. Turn off the system and unplug the power cord from the outlet and power supply.
2. If your system is mounted in a rack, remove it from the rack, and remove the rack-mount brackets from the chassis.
3. Remove the cover from the chassis.
   - **a** Remove the screws from the back and sides of the chassis.
   - **b** Slide the cover toward the back of the chassis and lift it off.
4. Remove the front panel.
   - **a** From inside the chassis, remove the two screws from the front panel.
   - **b** Gently tip the panel forward.
   - **c** Lift the panel out of the hinges at the bottom of the chassis.

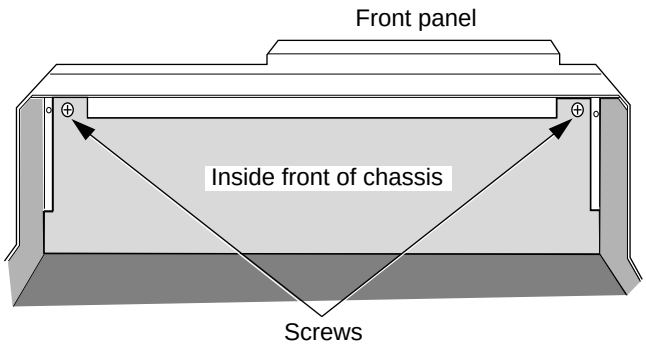



**Figure 1-18** Front Panel Screws on 4-Slot Chassis

5. Slide the display board ribbon cable out of the cable clamp on the bottom of the chassis.
6. Remove the display board.
   - **a** Remove the four screws that secure the display board to the front of the chassis.
   - **b** Gently pull the card away from the front panel and disconnect the ribbon cable from the connector on the card.
7. Reinstall the display board.
   - **a** Reconnect the display board ribbon cable.
   - **b** Align the screw holes on the card with the guide posts.
   - **c** Reinstall the four screws.
8. Slide the display board ribbon cable into the cable clamp.
9. Reinstall the front panel.
   - **a** Tip the top edge of the panel slightly away from the chassis, and align the tabs on the bottom with the hinges at the bottom of the chassis.
   - **b** Push the front panel against the chassis. From inside the chassis, reinstall the two screws that secure the panel to the chassis.

**10** Reinstall the cover.

**a** Position the cover slightly behind the front of the chassis.

**b** Lower the cover and slide it toward the front of the chassis so that it engages the front panel.

**c** Secure the cover with the screws you removed earlier from the back and sides of the chassis.

**11** If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.

**12** Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and power outlet.

**13** Turn on the system.

# 2 NETBUILDER II 8-SLOT BRIDGE/ROUTER

The NETBuilder II bridge/router is a powerful, modular system designed to handle a large variety of LAN and WAN networks. I/O modules plug easily into the chassis and provide expandability and compatibility for your WANs and LANs.

The 8-Slot chassis holds up to eight regular-format modules or four extended-format modules

The NETBuilder II 8-Slot bridge/router is available as an EZBuilt system with the main processor and software preinstalled, or separately as a base chassis.

*EZBuilt System*

Your system consists of a chassis, the main processor (either the Dual Processor Engine (DPE) module or the Communications Engine Card (CEC) 20 module), and the software preloaded on an installed PC flash memory card.

- The NETBuilder II chassis with a CEC 20 module has the flash memory card installed in the internal flash memory drive. The chassis also has a floppy disk drive.
- The NETBuilder II chassis with a DPE module has the flash memory card installed in flash memory drive A on the DPE module. The DPE module does not support a floppy disk drive.

## Installing the 8-Slot Chassis

This section describes how to install your NETBuilder II 8-Slot chassis.

### Unpacking Your Chassis

After you have removed your chassis from the shipping carton, verify that you have received the following items:

- Chassis — The EZBuilt system has the main processor module and software already installed.
- Accessory box containing the following items:
  - Documentation binder and guides
  - Power cord
  - Rack-mount brackets and hardware
  - Cable strain-relief bracket
  - Software package (EZBuilt system only)

If you do not have all of these items, contact your network supplier.

If any of the items are damaged, contact the shipping company to file a report. If you need to return the chassis to your network supplier, ship it in the original carton and antistatic shielded bag. If the original carton was damaged in shipment, repack the system in a carton that provides equivalent protection.

### Verifying Electrical Requirements

Make sure that the power source for your facility meets the electrical requirements listed in Table A-7 on page A-3.

### Installing the Flash Memory Drive (Base Chassis with CEC 20 Only)

NETBuilder software runs on a PC flash memory card. If you have the base chassis and a CEC 20 module, you must install the flash memory drive according to the *NETBuilder II Flash Memory Drive Installation Guide*.

The EZBuilt NETBuilder II system with CEC 20 module has the flash memory drive already installed. The DPE module has integrated flash memory drives.

### Installing the DPE or CEC 20 Module (Base Chassis Only)

The DPE or CEC 20 module is the main processor for the NETBuilder II bridge/router. If you have the base chassis, you must install either module. In the EZBuilt system, the main processor is already installed. Refer to the appropriate main processor module guide for installation instructions.

### Installing I/O Modules

You can install two types of modules in your 8-Slot chassis: regular-format and extended-format. Regular-format modules are the width of one slot in the chassis. Extended-format modules are the width of two slots. Refer to the appropriate I/O module guides for installation instructions.

### Mounting the 8-Slot Chassis

Mount the chassis on a tabletop or in a 19-inch, 2- or 4-pole rack.

#### Installing on a Tabletop

When installing your chassis on a tabletop, make sure the vents are not blocked and the cables are not pinched or restricted behind the unit.

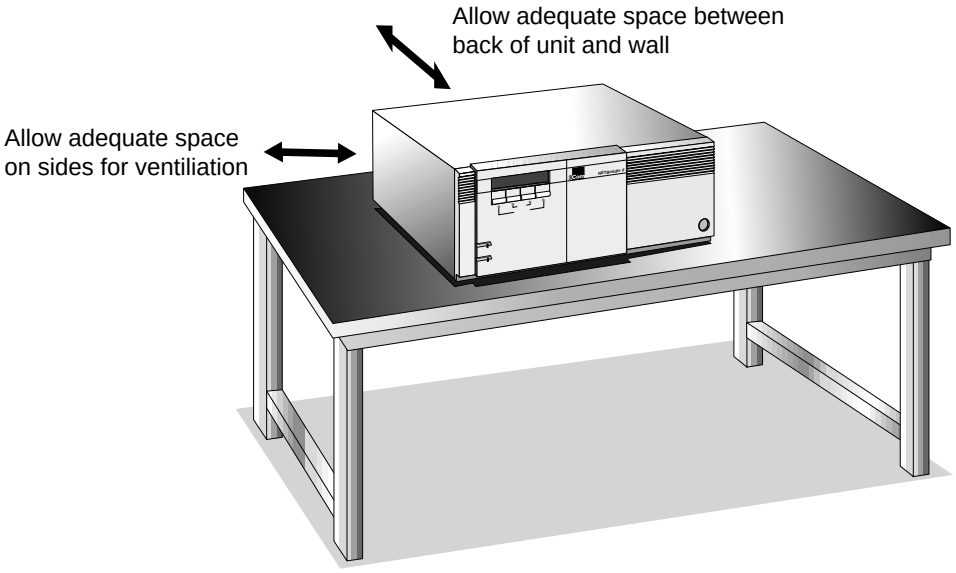



**Figure 2-1** Installing an 8-Slot Chassis on a Tabletop

### Installing in a Rack

Your chassis comes with a rack-mount kit, which consists of two brackets, 10 pan-head screws, and four locking nuts. This kit allows you to mount the chassis in a 19-inch, 2- or 4-pole rack. Make sure the kit contains all of these parts. If a part is missing, contact your network supplier.

You will need a Phillips screwdriver to mount the system in your rack. You will probably need two people to complete the procedure: one person to hold the system and the other person to attach it to the rack.

**CAUTION:** *Using fewer than three screws on each side of the NETBuilder II chassis to secure the rack-mount brackets may result in bracket failure and damage that will invalidate the warranty.*

Follow the steps in Figure 2-2 to install your 8-Slot chassis in a rack.

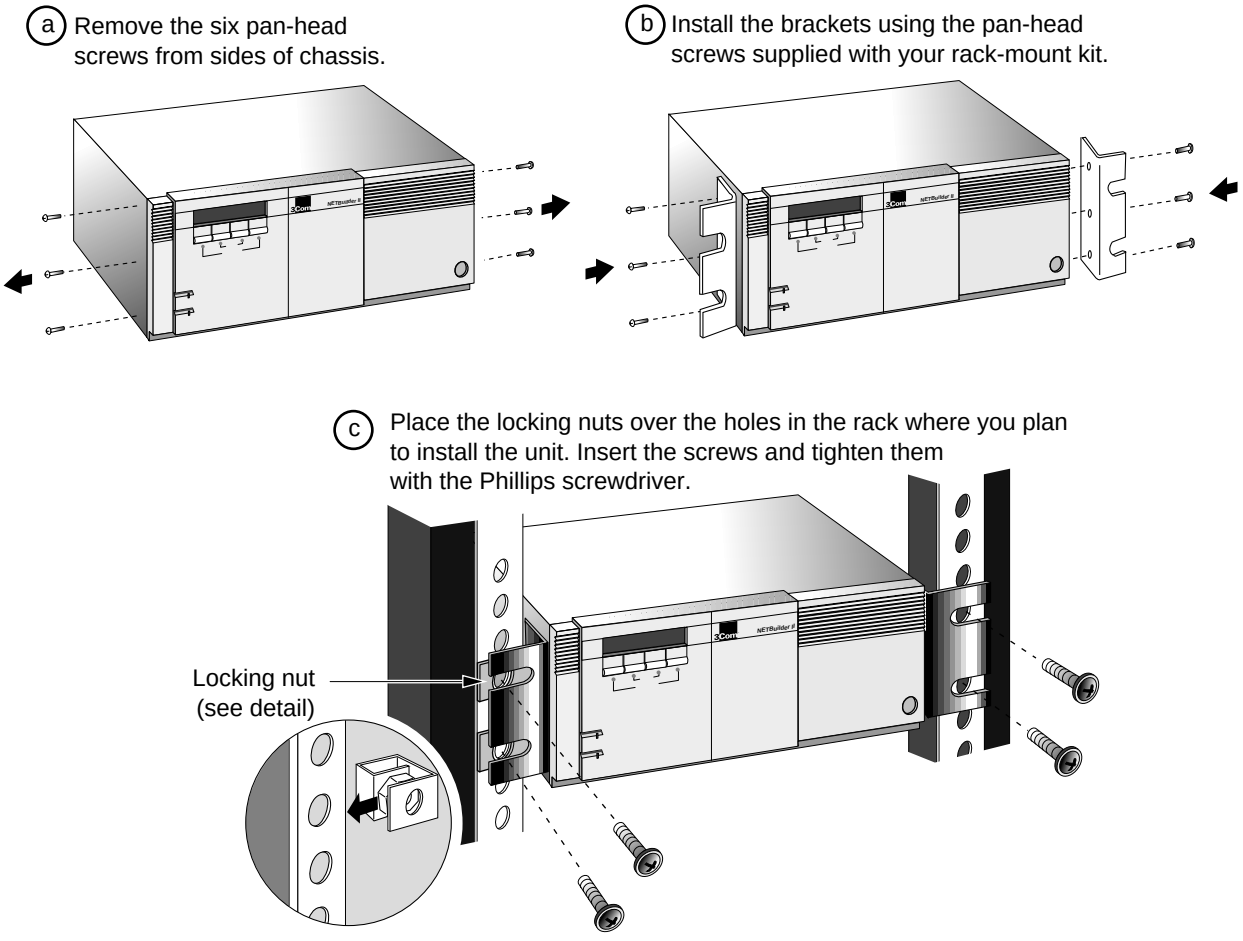



**Figure 2-2** Installing an 8-Slot Chassis in a Rack

### Attaching a PC, Terminal, or Modem

Attaching a PC, terminal, or modem to your main processor module allows you to perform the following tasks:

- Modify firmware parameters.
- Configure the bridge/router software.
- Review startup and system operation messages. Some of the messages displayed by the terminal are more detailed than the information displayed on the LCD. These detailed messages may help you troubleshoot startup or operation problems. For more information, refer to the appropriate main processor module guide.

To connect a PC, terminal, or modem to your main processor module, follow these steps:

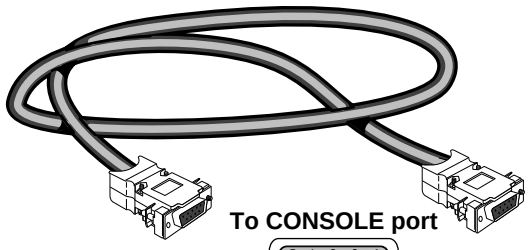
**1** Obtain a cable to connect the device to the CONSOLE port on the front panel of the main processor module.

Figure 2-3 shows the pinouts for a 9-pin female to 9-pin female PC cable. A null modem-type cable can be used.

Figure 2-4 shows the pinouts for a 9-pin female to 25-pin terminal cable. A null modem-type cable can be used.

Figure 2-5 shows the pinouts for a 9-pin female to 25-pin male modem cable. A straight-through-type cable can be used.

**WARNING:** *To eliminate cable noise emission in excess of FCC Part 15, Subpart J, and EN55022 B, this device cable should be shielded and have connectors with metallic backshells.*




| Name | Abbr | Pin | | Pin | Abbr | Name |
|---|---|---|---|---|---|---|
| Receive Data | RxD | 2 | ← | 3 | TxD | Transmit Data |
| Transmit Data | TxD | 3 | → | 2 | RxD | Receive Data |
| Carrier Detect | CD | 1 | ← | 7 | RTS | Request to Send |
| Clear to Send | CTS | 8 | | | | |
| Request to Send | RTS | 7 | → | 8 | CTS | Clear to Send |
| | | | | 1 | CD | Carrier Detect |
| Signal Ground | Gnd | 5 | — | 5 | GND | Signal Ground |
| Data Terminal Ready | DTR | 4 | → | 6 | DSR | Data Set Ready |
| Data Set Ready | DSR | 6 | ← | 4 | DTR | Data Terminal Ready |

**Figure 2-3** 9-pin to 9-pin PC Cable (Null Modem-Type)

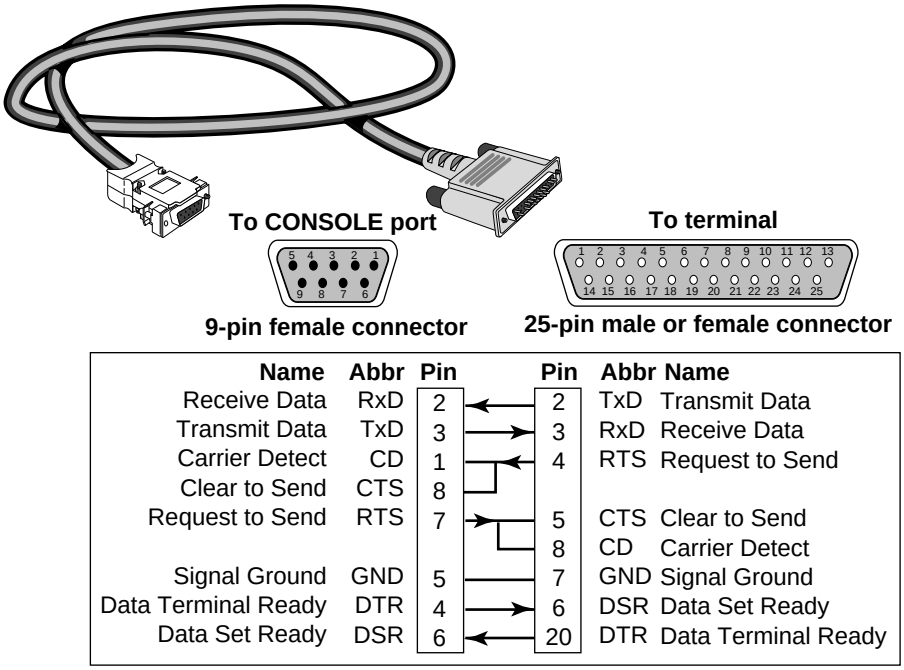



**Figure 2-4** 9-pin to 25-pin Terminal Cable (Null Modem-Type)

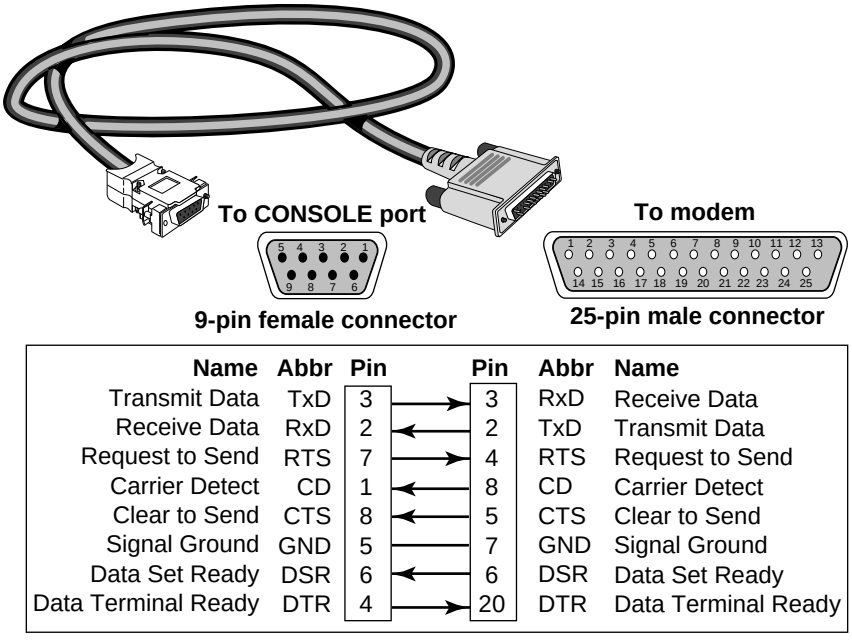



**Figure 2-5** 9-pin to 25-pin Modem Cable (Straight-Through-Type)

**2** Connect one end of the cable to the CONSOLE port on the front panel of the main processor module. Connect the other end to the serial port on the back of your device.

3 Verify that the configurable parameters of your device match the configuration settings of the CONSOLE port specified in Table 2-1.

**Table 2-1** CONSOLE Port Configuration Settings

| Characteristic | Setting |
|---|---|
| Baud rate | 9600 |
| Databits | 8 |
| Parity | None |
| Stop bits | 1 |
| DTR | Ignored |
| Duplex | Full |
| Echo | Off |
| Flow control | X-on/X-off |

4 Turn on the PC, terminal, or modem.

### Connecting the Power Cord

A power cord is supplied with all NETBuilder II chassis. If the power cord does not match your requirements, contact your network supplier for assistance.

The AC power switch is marked according to international I/O convention: When you press the I side, the switch is on; when you press the O side, the switch is off.

Make sure the power switch is turned off (O), and plug the power cord into the AC power receptacle on the back of the unit.

## Installing the Cable Strain-Relief Bracket

The cable strain-relief bracket is a wire-form metal bracket. This bracket is not necessary for systems mounted on a tabletop, but it is recommended for rack-mounted systems.

To install the cable strain-relief bracket on an 8-Slot chassis, follow these steps (no tools are needed):

**1** Secure the bracket to the rear of the system.

The ends of the bracket slide into four holes on the back of the chassis (see Figure 2-6).

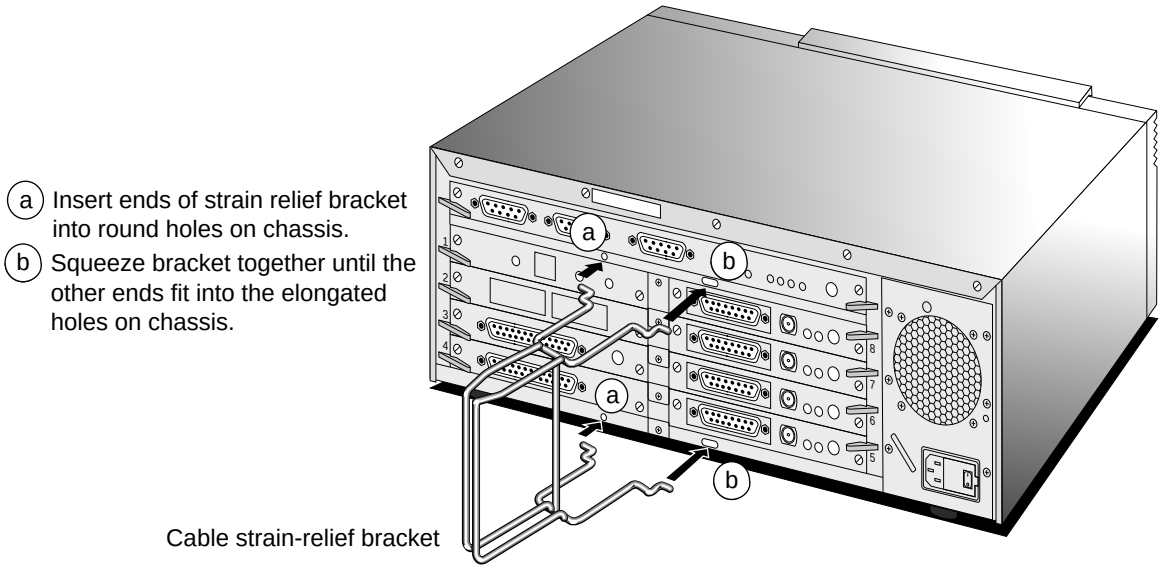



**Figure 2-6** Installing the Cable Strain-Relief Bracket on the 8-Slot Chassis

**2** Route all cables from the I/O modules through the two arms of the bracket from top to bottom, as shown in Figure 2-7.

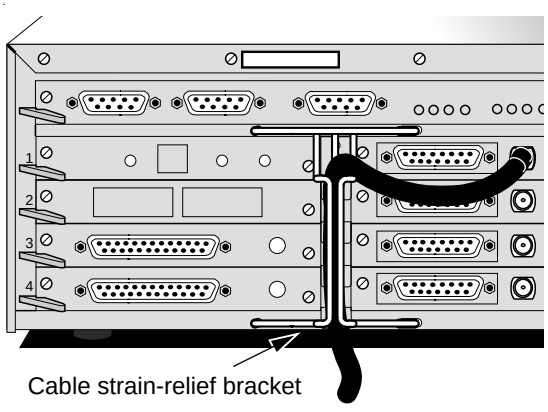



**Figure 2-7** Routing Cables through the Strain-Relief Bracket on the 8-Slot Chassis

## Chassis Description

This section describes the basic hardware and accessories of the NETBuilder II 8-Slot chassis.

### Front Panel

The front panel of the 8-Slot chassis includes:

- A 2-line, 24-character alphanumeric LCD and an LCD control panel.
- Two LEDs, one labeled POWER and the other labeled STATUS.
- A floppy disk drive (for use with the CEC 20 module only).

Figure 2-8 shows the front panel of the 8-Slot chassis.

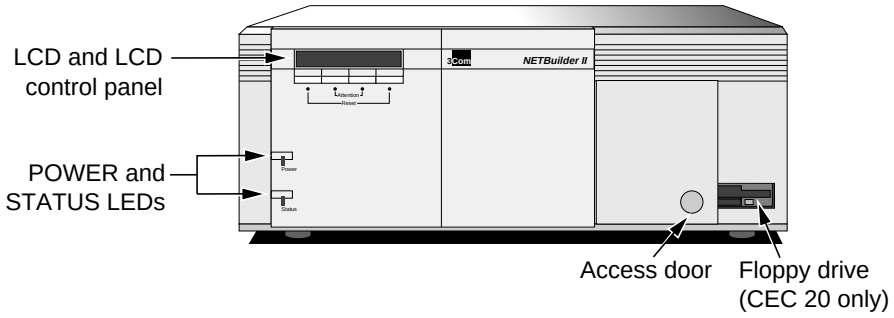



**Figure 2-8** 8-Slot Chassis Front Panel

#### LCD and LCD Control Panel

The 2-line, 24-character, alphanumeric LCD displays startup and status messages.

The LCD control panel consists of four buttons located under the LCD. These buttons allow you to perform a reset and, for the CEC 20 module, to access the Diagnostic Main Menu.

*Performing a reset*

To perform a reset, simultaneously press the outer buttons, which are marked Reset.

*Accessing the Diagnostic Main Menu (CEC 20 only)*

To access the Diagnostic Main Menu, simultaneously press the two inner buttons, which are marked ATTENTION. The menu is displayed on the LCD. For complete information on the Diagnostic Main Menu, refer to the *NETBuilder II CEC 20 Module Installation Guide.* The DPE module does not support the Diagnostic Main Menu.

#### POWER and STATUS LEDs

Below and to the left of the LCD control panel are two LEDs marked POWER and STATUS. The POWER LED indicates whether the system is on or off and is the same as the POWER LED on the main processor module.

If you are using a DPE module, the STATUS LED on the chassis is the same as the POWER/FAULT LED on the DPE module. Refer to the DPE module guide for more information about this LED.

If you are using a CEC 20 module, the STATUS LED on the chassis is the same as the STATUS LED on the CEC 20 module. Refer to the CEC 20 module guide for more information about this LED.

**Back Panel** The 8-Slot chassis has eight I/O slots and one main processor slot.

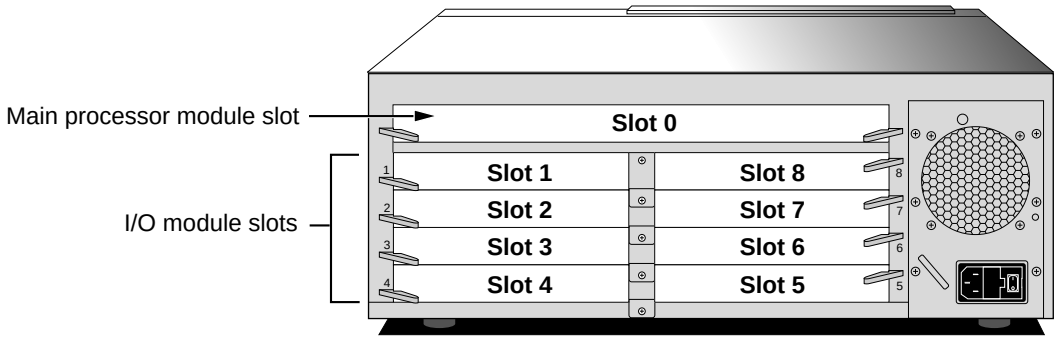



**Figure 2-9** 8-Slot Chassis I/O Slot Numbering Sequence

**WARNING:** *Remove the filler panel only from I/O slots that will house an I/O module. All unused I/O slots require the filler panels to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II system and will invalidate the warranty.*

**Floppy Disk Drive** The 8-Slot chassis includes a 3.5 inch, 135 tracks per inch (TPI), 4 MB floppy disk drive that supports 1.4 MB and 2.8 MB DOS-formatted floppies. The drive is located on the right side of the front panel.

*The DPE module does not support the floppy disk drive.*

Press the eject button on the disk drive front panel to eject diskettes. The LED on the front panel lights when a floppy diskette is being formatted, read, or written. Do not attempt to eject the diskette when the LED is lit.

For information on replacing the floppy disk drive, see page 2-12.

**Backplane** The backplane consists of a bus that is mounted vertically against the back of the card cage. When installed, the modules rest inside the card cage. Connectors on the backplane engage connectors on the modules.

The backplane has a peak data rate of 800 Mbps.

The backplane allows you to hot-swap an I/O module, which means that you can install, or remove and reinstall, an I/O module without turning off the power to the chassis.

Figure 2-10 shows the location of the backplane, connectors, and power supply in the 8-Slot chassis.

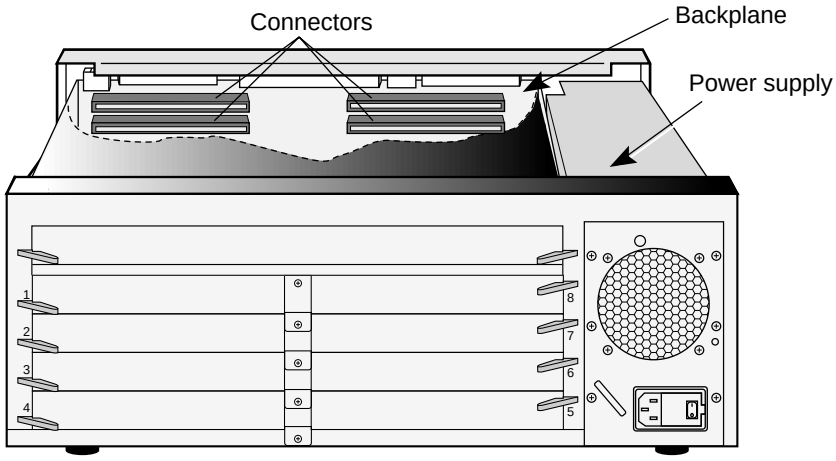



**Figure 2-10** 8-Slot Chassis Backplane and Connectors

## Power Supply Module

The power supply module (see Figure 2-10) consists of the power supply, a fan, and a switch/fuseholder/receptacle assembly.

The autoranging power supply automatically adjusts the supply voltage to the chassis for 115 and 230 VAC operation.

*Switch/fuseholder/ receptacle assembly location*

The switch/fuseholder/receptacle assembly is accessible from the lower right-hand corner of the power supply on the 8-Slot chassis.

The AC power switch is marked according to international I/O convention: When you press the I side, the switch is on; when you press the O side, the switch is off.

The fuseholder cartridge provides access for fuse replacement. One fuse is mounted in a removable cartridge. See page 2-12 for information on replacing the fuse.

The international CEE-22 AC power receptacle is approved for 6 amp operation. The connector has three prongs with chassis ground on the middle prong. All systems are shipped with power cords; if your power cord does not match your requirements, contact your network supplier for assistance.

The power supply module LED indicates that all power supply outputs are within acceptable limits.

The power supply module has a handle that makes it easy to remove and replace. See page 2-11 for details on removing and replacing it.

## Chassis Cover

The chassis cover is secured with five screws on the back of the chassis, and six screws on each side (three for rack-mounting and three that secure the cover).

**CAUTION:** *Before turning the system on, make sure that the cover is properly secured. Turning on a system without the cover in place can result in overheating of the system and will invalidate the warranty.*

## Maintenance and Repair

This section includes maintenance and repair information for the 8-Slot chassis.

### Preventive Maintenance

3Com recommends the following procedures for preventive maintenance:

- Observe the environmental requirements listed in Appendix A. Temperatures outside the recommended range can impair reliability and cause diskette access errors.
- Observe ESD guidelines whenever handling modules.
- Keep the area around the NETBuilder II system clean. Avoid accumulated dust, especially around the air intake vents.
- If the system fails, an immediate memory dump may help diagnose the problem. Contact 3Com Technical Support for memory dump information.

### Replacing the Power Supply

If any component other than the fuse fails in the power supply, you must replace the entire power supply.

You will need a Phillips screwdriver that fits a #6-32 screw.

To replace the power supply in the 8-Slot chassis, follow these steps:

**WARNING:** *Do not open the power supply. It contains hazardous voltages. There are no user-serviceable parts inside.*

**VORSICHT:** *Öffnen sie niemals das Netzteil. Hochspannung! Es sind keine zu wartenden Teile enthalten.*

**AVERTISSEMENT:** *Ne pas ouvrir ce bloc d'alimentation. Tensions dangereuses à l'intérieur. Ne contient aucune pièce que l'utilisateur puisse rèparer.*

***PELIGRO:*** *No abra fuente de alimentación. Contiene alta tensión. No hay partes para reemplazar adentro.*

1. Turn off the system and unplug the power cord from the outlet and from the power supply.

*It is not necessary to take your chassis out of the rack if it is rack-mounted because the power supply can be removed from the back panel.*

2. Remove the six screws that secure the power supply module to the back of the chassis.
3. Grasp the handle on the power supply module and pull it out of the chassis. You may feel a slight resistance as the power supply connector disconnects from the backplane.
4. Slide the new power supply into the chassis and press it firmly to make sure the power supply connector engages the backplane connector.
5. Reinstall the six screws to secure the new power supply module in the chassis.
6. Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and the outlet.
7. Turn on the system.

## Replacing a Fuse

This section explains how to replace the fuse located in the power supply module in your 8-Slot chassis.

A single fuse mounted in a removable cartridge is located inside the AC power switch/fuseholder/receptacle assembly on the rear of the 8-Slot chassis.

***WARNING:*** *If your system persistently blows fuses, there may be a problem with either your power supply or your facility's supply voltage. Contact your network supplier for assistance.*

*For continued protection against fire hazard, replace the fuse only with a fuse of the same type and rating. Using an incorrect fuse can subject your system to overcurrent conditions, resulting in damage or unsafe operating conditions.*

To change the fuse in the power supply, follow these steps. You will need a small, flat-head screwdriver.

1. Turn off the system and unplug the power cord from the outlet and the power supply.
2. Pry the fuseholder cartridge loose from the power switch/fuseholder/receptacle assembly using a small screwdriver.

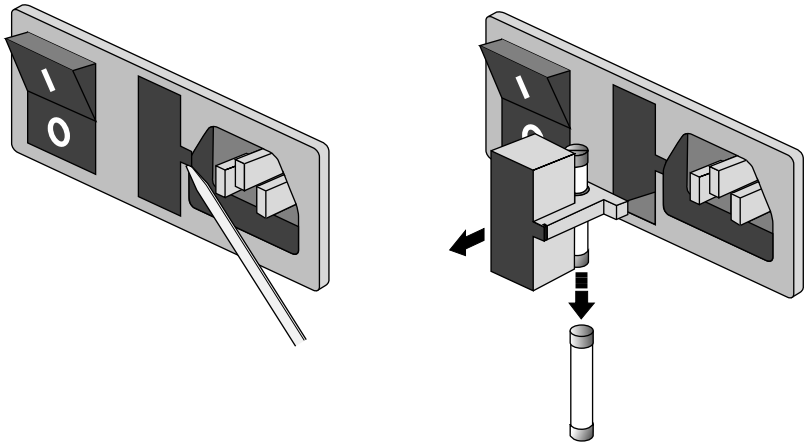



**Figure 2-11** Replacing the Fuse in an 8-Slot Chassis

3. Remove the spent fuse from the fuseholder cartridge.
4. Replace the old fuse with a new 6.3 A, 250 V, fast-blow fuse, 5 mm by 20 mm in size.
5. Reinstall the fuseholder cartridge into the power switch/fuseholder/receptacle assembly.
6. Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and an outlet.
7. Turn on the system.

## Replacing a Floppy Disk Drive

To replace the floppy disk drive in the 8-Slot chassis, follow these steps. You will need Phillips screwdrivers of various sizes.

1. Turn off the system and unplug the power cord from the outlet and the power supply.
2. If your system is mounted in a rack, remove it from the rack and remove the rack-mount brackets from the chassis.
3. Remove the cover from the chassis.
   a. Remove the screws from the back and sides of the chassis.
   b. Slide the cover toward the back of the chassis and lift it off.

**4** Open the sliding door in the front panel that covers the floppy disk drive.

**5** Remove the floppy disk drive from the chassis.

A bracket encloses the floppy disk drive and is secured to the front of the chassis by two retaining screws. Remove the two screws from the floppy disk faceplate. Pull the disk drive bracket from the faceplate and lift up to remove it.

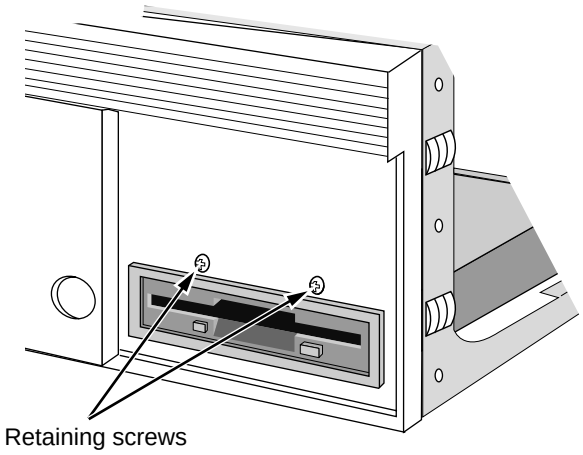



**Figure 2-12** Floppy Disk Drive Retaining Screws in the 8-Slot Chassis

**6** Disconnect the power wiring harness ribbon cable and the floppy disk drive ribbon cable from the connectors on the back of the floppy disk drive.

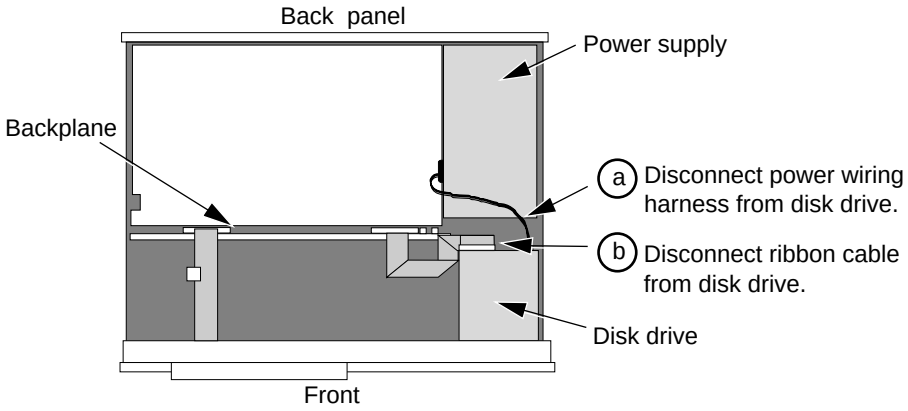



**Figure 2-13** Disconnecting Cables from the Floppy Disk Drive in the 8-Slot Chassis

**7** Transfer the bracket from the original floppy disk drive to the new one.

**a** Remove the four screws and insulating washers from the sides of the bracket (two on each side) that secure the original floppy disk drive to the bracket.

**b** Slide the floppy disk drive out of the bracket.

**c** Slide the new floppy disk drive into the bracket, being careful not to dislodge the insulators that are secured inside the bracket.

**d** Reinstall the insulating washers and screws.

*Failure to reinstall the insulating washers may result in disk-copying problems.*

**8** Reconnect the floppy disk drive cable and the power wiring harness to the connectors located on the back of the floppy disk drive.

9 Reinstall the bracket containing the new floppy disk drive in the chassis.

   **a** The three locking pins on the bottom of the bracket align with three keyhole slots on the bottom of the chassis. Slip the pins into the wide part of the keyhole slots.

   **b** Slide the bracket toward the front of the chassis.

   **c** Reinstall the two screws that secure the disk drive bracket to the faceplate.

10 Reinstall the cover.

   **a** Position the cover slightly behind the front of the chassis.

   **b** Lower the cover and slide it toward the front of the chassis so that it engages the back of the front panel.

   **c** Secure the cover with the screws you removed earlier from the back and sides of the chassis.

11 If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.

12 Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and the outlet.

13 Turn on the system.

**Replacing the Backplane**

To replace the backplane in the 8-Slot chassis, follow these steps. You will need a short #1 Phillips screwdriver and Phillips screwdriver to fit a #6-32 screw.

1 Turn off the system and unplug the power cord from the outlet and the power supply.

2 If your system is mounted in a rack, remove it from the rack and remove the rack-mount brackets from the chassis.

3 Remove the cable strain-relief bracket, if it is installed.

4 Remove the main processor module and all I/O modules from the chassis.

   Loosen the thumbscrews and push the ejector levers open to remove the modules.

5 Remove the power supply from the chassis.

   **a** Remove the six screws that secure the power supply to the chassis.

   **b** Grasp the handle on the power supply and pull it out of the chassis. You may feel slight resistance as the power supply connector disconnects from the backplane.

6 Remove the cover from the chassis.

   **a** Remove the screws from the back and sides of the chassis.

   **b** Slide the cover toward the back of the chassis and lift it off.

**7** Disconnect the display board ribbon cable, the floppy disk drive ribbon cable, and the floppy disk drive power wiring harness from connectors on top of the backplane. To release the cables, press down on the cable connector handles.

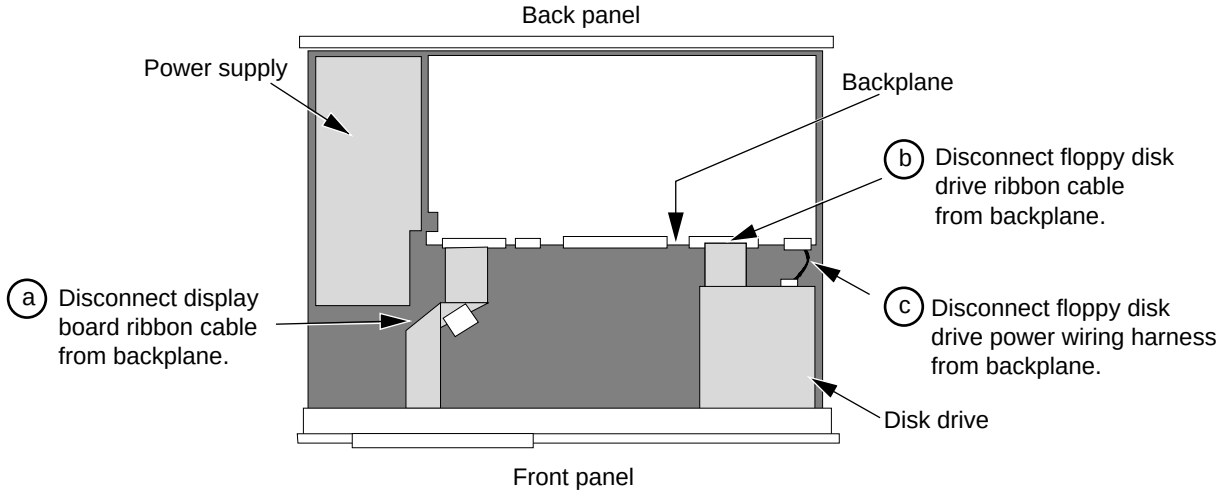



**Figure 2-14** Disconnecting Cables from the Backplane in the 8-Slot Chassis

**8** Remove the backplane.

**a** Using the short Phillips screwdriver, remove the eight screws from the backplane.

**b** Pull the backplane away from the card cage (toward the front of the chassis).

**9** Install the new backplane.

**a** Seat the new backplane against the card cage.

**b** Reinstall the eight screws that secure the backplane to the card cage.

**10** Reconnect the display board ribbon cable, the floppy disk drive ribbon cable, and the power wiring harness. Secure the front panel card cable under the cable clamp.

**11** Reinstall the cover.

**a** Position the cover slightly behind the front of the chassis.

**b** Lower the cover and slide it toward the front of the chassis so that it engages the front panel.

**c** Secure the cover with the screws you removed earlier from the back and sides of the chassis.

**12** Reinstall the power supply.

**a** Slide the power supply into the chassis and press it firmly to make sure the power supply connector engages the backplane connector.

**b** Secure the power supply in the chassis with the six screws.

**13** Reinstall the main processor and I/O modules in the chassis.

**14** Reinstall the cable strain-relief bracket, if necessary (see page 2-7).

**15** If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.

**16** Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and outlet.

**17** Turn on the system.

## Replacing the Display Board

To replace the display board in the 8-Slot chassis, follow these steps. You will need a #1 Phillips screwdriver.

1. Turn off the system and unplug the power cord from the outlet and power supply.
2. If your system is mounted in a rack, remove it from the rack and remove the rack-mount brackets from the chassis.
3. Remove the cable strain-relief bracket, if it is installed.
4. Remove the cover from the chassis.
   a. Remove the screws from the back and sides of the chassis.
   b. Slide the cover toward the back of the chassis and lift it off.
5. Remove the front panel.
   a. From inside the chassis, press down on the locking tabs to release them (see Figure 2-15).
   b. Gently tip the panel forward.
   c. Lift the panel out of the hinges at the bottom of the chassis.

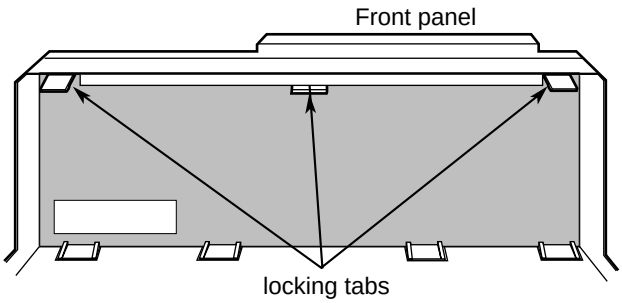



**Figure 2-15** Locking Tabs for the Front Panel on the 8-Slot Chassis

6. Slide the display board ribbon cable out of the cable clamp on the bottom of the chassis.

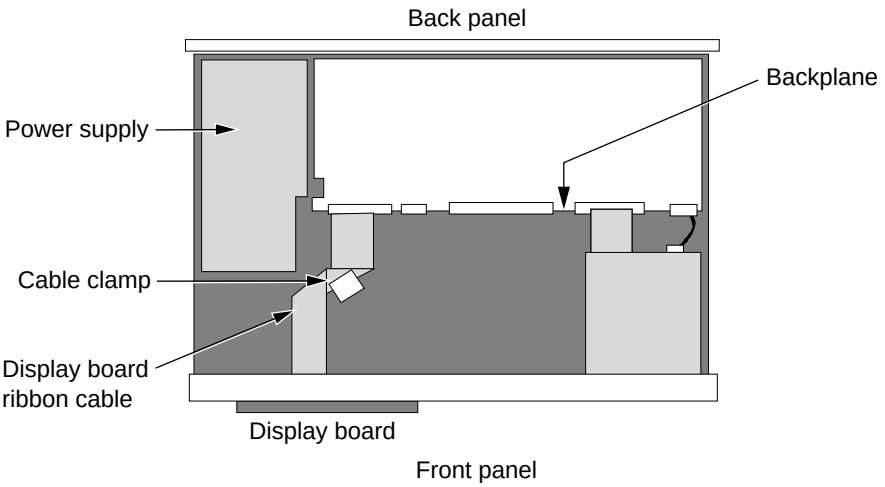



**Figure 2-16** Display Board Cable on 8-Slot Chassis

**7** Remove the display board.

**a** Remove the five screws that secure the display board to the front of the chassis.

**b** Gently pull the board away from the front panel and disconnect the ribbon cable from the connector on the board.

**c** Remove the shroud behind the display board.

**8** Reinstall the display board.

**a** Align the holes on the shroud with the holes on the guide posts.

**b** Reconnect the display board ribbon cable.

**c** Align the holes on the board with the holes on the shroud.

**d** Reinstall the five screws that secure the display board to the guide posts.

**9** Slide the display board ribbon cable into the cable clamp.

**10** Reinstall the front panel.

**a** Tip the top edge of the front panel slightly away from the chassis, and align the tabs on the bottom with the hinges at the bottom of the chassis.

**b** Push the front panel against the chassis until the locking tabs snap into place.

**11** Reinstall the cover.

**a** Position the cover slightly behind the front of the chassis.

**b** Lower the cover and slide it toward the front of the chassis so that it engages the front panel.

**c** Secure the cover with the screws you removed earlier from the back and sides of the chassis.

**12** If your system was previously mounted in a rack, reinstall the rack-mount brackets on the chassis and remount the system.

**13** Make sure the power switch is off (O is pressed down). Plug the power cord into the power supply and outlet.

**14** Turn on the system.

# 3 NETBUILDER II 8-SLOT EXTENDED BRIDGE/ROUTER

The NETBuilder II bridge/router is a powerful, modular system designed to handle a large variety of LAN and WAN networks. I/O modules plug easily into the chassis and provide expandability and compatibility for your WANs and LANs.

The Extended chassis holds up to eight regular- or extended-format modules

The NETBuilder II Extended bridge/router is available as an EZBuilt system with the main processor and software preinstalled, or separately as a base chassis.

*EZBuilt System*

Your system consists of a chassis, the main processor (either the Dual Processor Engine (DPE) module or the Communications Engine Card (CEC) 20 module), and the software preloaded on an installed PC flash memory card.

- The NETBuilder II chassis with a CEC 20 module has the flash memory card installed in the internal flash memory drive. The chassis also has a floppy disk drive.
- The NETBuilder II chassis with a DPE module has the flash memory card installed in flash memory drive A on the DPE module. The DPE module does not support a floppy disk drive.

## Installing the Extended Chassis

The following sections describe how to install your NETBuilder II Extended chassis.

### Unpacking Your Chassis

After you have removed your chassis from the carton, verify that you have received all of the following items:

- Chassis — The EZBuilt system has the main processor module and software already installed.
- Accessory box containing the following items:
  - Documentation binder and guides
  - Power cord
  - Rack-mount brackets and hardware
  - Cable strain-relief brackets
  - Software package (EZBuilt system only)

If you do not have all of these items, contact your network supplier.

If any of the items are damaged, contact the shipping company to file a report. If you need to return the chassis to your network supplier, ship it in the original carton and antistatic shielded bag. If the original carton was damaged in shipment, repack the system in a carton that provides equivalent protection.

### Verifying Electrical Requirements

Make sure that the power source for your facility meets the electrical requirements listed in Table A-11 on page A-4.

### Installing the Flash Memory Drive (Base Chassis with CEC 20 Only)

NETBuilder software runs on a PC flash memory card. If you have the base chassis and a CEC 20 module, you must install the flash memory drive according to the *NETBuilder II Flash Memory Drive Installation Guide*.

The EZBuilt NETBuilder II system with CEC 20 module has the flash memory drive already installed. The DPE module has integrated flash memory drives.

### Installing the DPE or CEC 20 Module (Base Chassis Only)

The DPE or CEC 20 module is the main processor for the NETBuilder II bridge/router. If you have the base chassis, you must install either module. The EZBuilt system has the main processor already installed. Refer to the appropriate main processor module guide for installation instructions.

### Installing I/O Modules

You can install two types of modules in your Extended chassis: regular-format and extended-format. Regular-format modules are half as wide as one module slot and can be installed using a card carrier. Extended-format modules are the entire width of one slot. Refer to the appropriate I/O module guides for installation instructions.

### Mounting the Extended Chassis

Mount the Extended chassis on a tabletop or in a 19-inch, 2- or 4-pole rack.

#### Installing on a Tabletop

If you set up your Extended chassis on a tabletop, first install the four black plastic feet provided. Insert the spine of the foot into the hole on the bottom of the chassis, then push the locking pin through the middle of the foot until it snaps into place on the chassis.

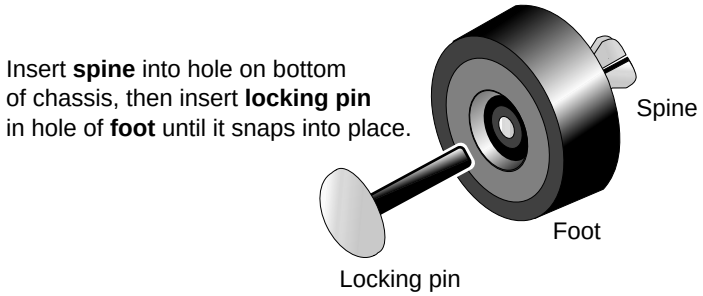



**Figure 3-1** Installing Feet on the Extended Chassis

When installing your Extended chassis on a tabletop, make sure there is adequate space on the right side and back of the unit for ventilation.

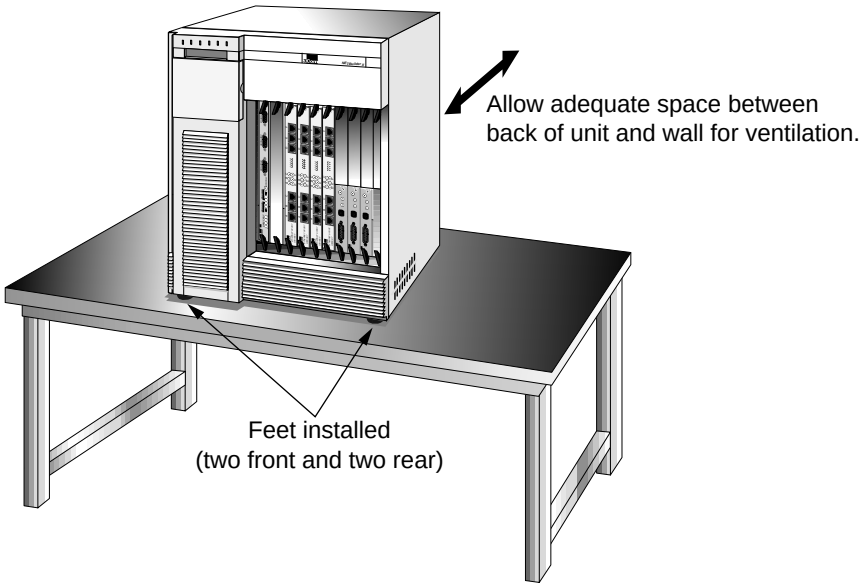



**Figure 3-2** Installing an Extended Chassis on a Tabletop

### Installing in a Rack

Your Extended chassis comes with a rack-mount kit which consists of two brackets, 14 pan-head screws, and eight locking nuts. This kit allows you to mount the chassis in a 19-inch, 2- or 4-pole rack. Make sure the kit contains all of these parts. If a part is missing, contact your network supplier.

You will need a Phillips screwdriver to mount the chassis in the rack. Because of the weight of the Extended chassis, you will need at least two people to complete the procedure. The unit will be more secure if installed toward the bottom of the rack.

*Using fewer than four screws on each side of the Extended chassis to secure the brackets to the rack may result in bracket failure and damage that will invalidate the warranty.*

To install your Extended chassis in a rack, follow the steps in Figure 3-3.

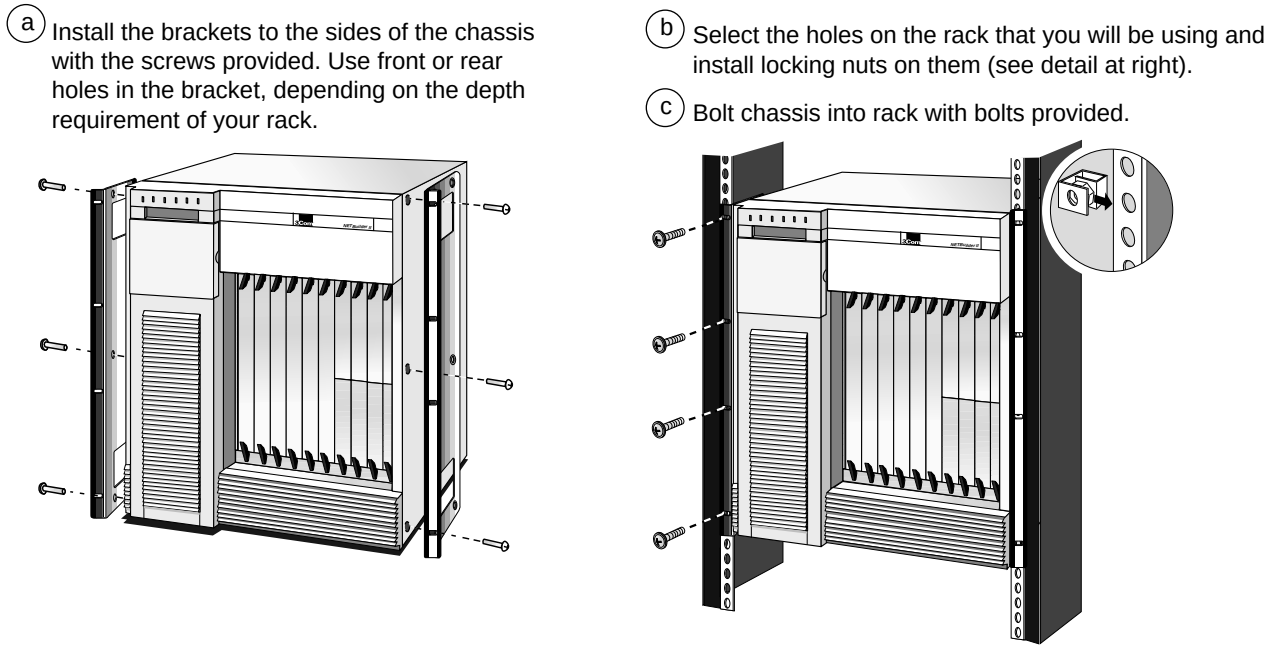



**Figure 3-3** Installing an Extended Chassis in a Rack

**Attaching a PC, Terminal, or Modem**

Attaching a PC, terminal, or modem to your main processor module allows you to perform the following tasks:

- Modify firmware parameters.
- Configure the bridge/router software.
- Review startup and system operation messages. Some of the messages displayed by the terminal are more detailed than the information displayed on the LCD. These detailed messages may help you troubleshoot startup or operation problems. For more information, refer to the appropriate main processor module guide.

To connect a PC, terminal, or modem to your main processor, follow these steps:

**1** Obtain a cable to connect the device to the CONSOLE port on the front panel of the main processor module.

Figure 3-4 shows the pinouts for a 9-pin female to 9-pin female PC cable. A null modem-type cable can be used.

Figure 3-5 shows the pinouts for a 9-pin female to 25-pin terminal cable. A null modem-type cable can be used.

Figure 3-6 shows the pinouts for a 9-pin female to 25-pin male modem cable. A straight-through-type cable can be used.

**WARNING:** *To eliminate cable noise emission in excess of FCC Part 15, Subpart J, and EN55022 B, this device cable should be shielded and have connectors with metallic backshells.*

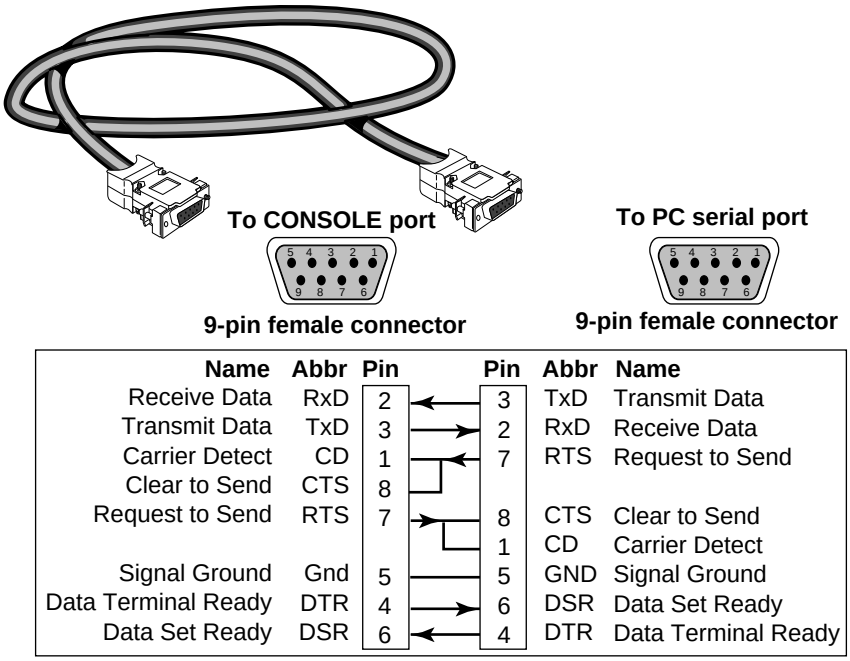



**Figure 3-4** 9-pin to 9-pin PC Cable (Null Modem-Type)

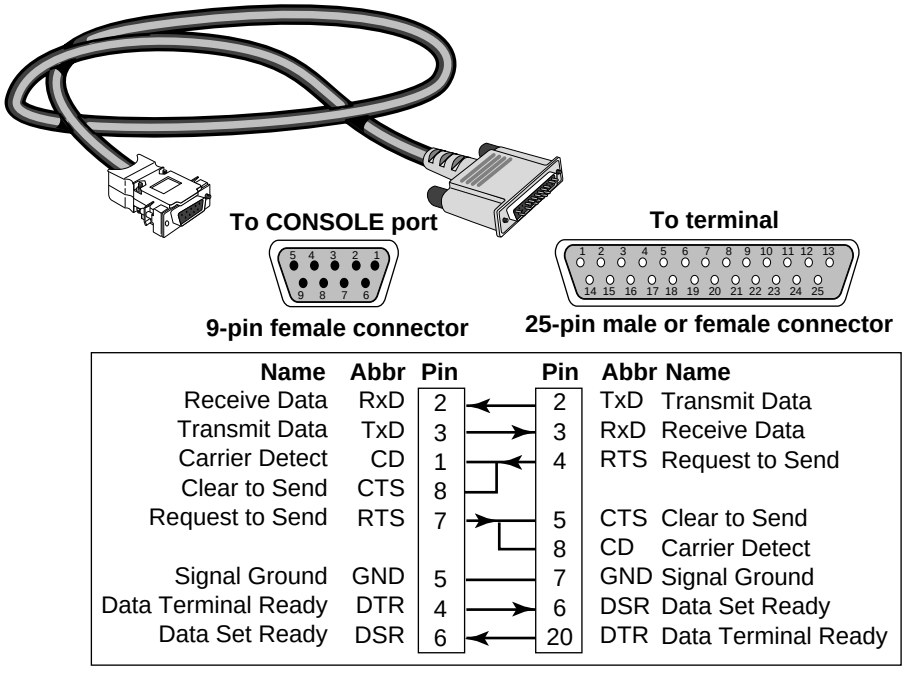



**Figure 3-5** 9-pin to 25-pin Terminal Cable (Null Modem-Type)

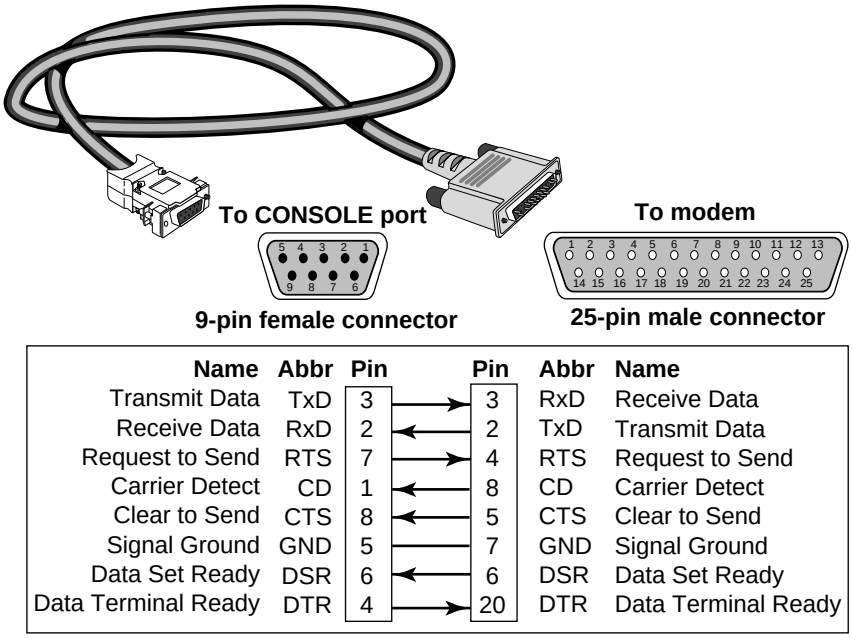



**Figure 3-6** 9-pin to 25-pin Modem Cable (Straight-Through-Type)

2 Connect one end of the cable to the CONSOLE port on the front panel of the main processor module. Connect the other end to the serial port on the back of your device.

3 Verify that the configurable parameters of your device match the configuration settings of the CONSOLE port specified in Table 3-1.

**Table 3-1** CONSOLE Port Configuration Settings

| Characteristic | Setting |
|---|---|
| Baud rate | 9600 |
| Databits | 8 |
| Parity | None |
| Stop bits | 1 |
| DTR | Ignored |
| Duplex | Full |
| Echo | Off |
| Flow control | X-on/X-off |

4 Turn on the PC, terminal, or modem.

### Connecting the Power Cord

A power cord is supplied with your Extended chassis. If the power cord does not match your requirements, contact your network supplier for assistance.

The AC power switch is marked according to international I/O convention: When you press the I side, the switch is on; when you press the O side, the switch is off.

Make sure the power switch is turned off (O), and plug the power cord into the AC power receptacle on the back of the unit.

Before you can connect the power cord, you must remove the vertical front panel. Figure 3-7 shows how to remove the panel and Figure 3-8 shows how to install the power cord.

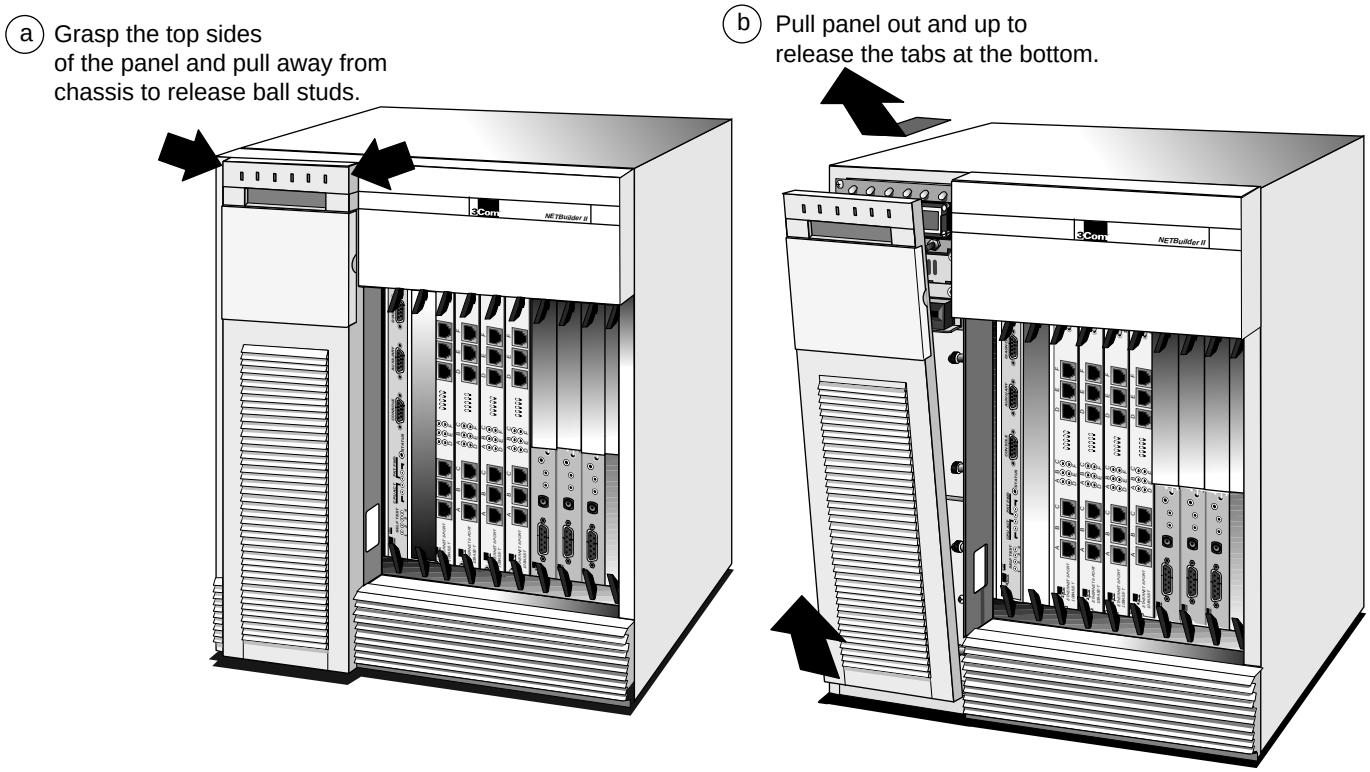



**Figure 3-7** Removing the Front Panel from the Extended Chassis

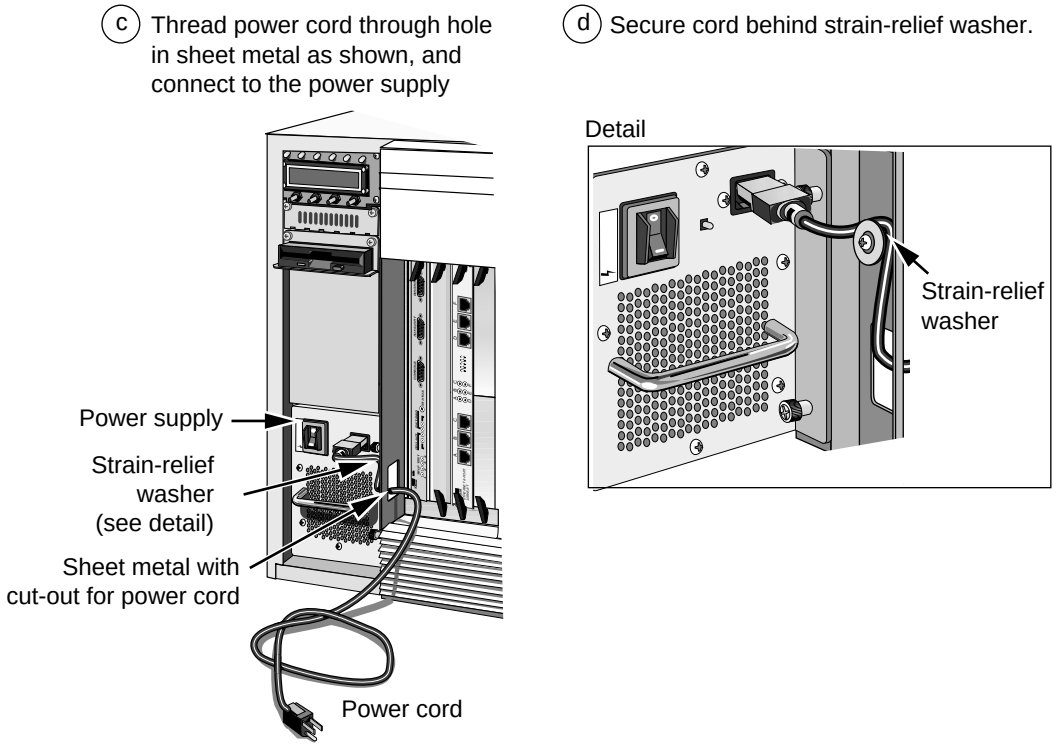



**Figure 3-8** Connecting a Power Cord to the Extended Chassis

### Installing the Cable Strain-Relief Brackets

The Extended chassis comes with two cable strain-relief brackets, which must be mounted above and below the module slots. Figure 3-9 shows how to install these brackets. Always use the cable strain-relief brackets with the Extended chassis.

Align thumbscrews on strain-relief brackets with holes in chassis at top and bottom of module slots, then tighten brackets to chassis.

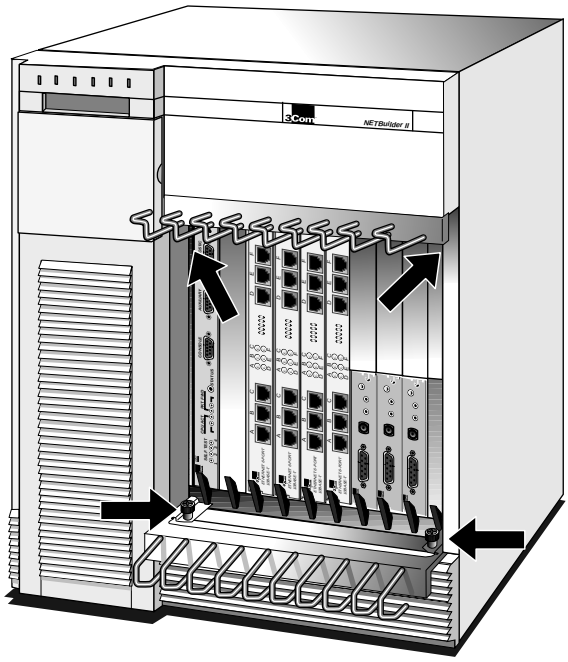



**Figure 3-9** Installing the Cable Strain-Relief Brackets on the Extended Chassis.

## Chassis Description

This section describes the basic hardware and accessories of the NETBuilder II Extended chassis.

### Front Panel

The Extended chassis front panel includes:

- A 2-line, 24-character alphanumeric LCD.
- 6 status LEDs.
- An access door to the floppy disk drive and the LCD control panel.

Figure 3-10 shows the front panel of the Extended chassis with the access door open to show the floppy disk drive and the LCD control panel.

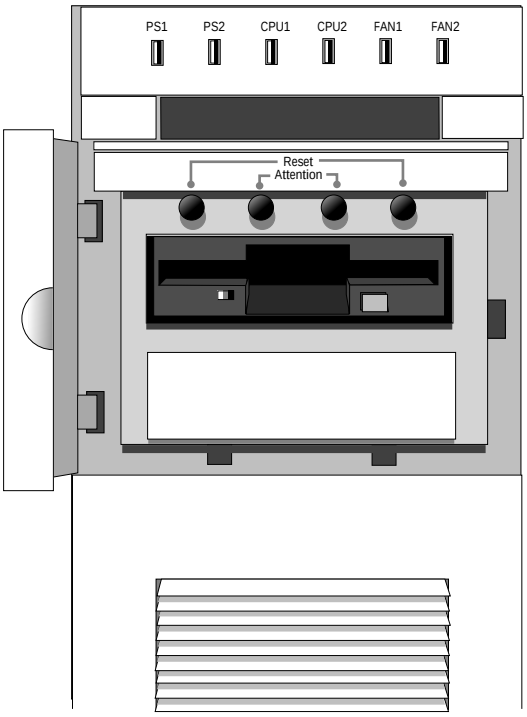



**Figure 3-10** Extended Chassis Front Panel (Access Door Open)

### LCD and LCD Control Panel

The 2-line, 24-character alphanumeric LCD displays startup and status messages.

The LCD control panel consists of four buttons located under the LCD and behind the access door. These buttons allow you to perform a reset and, for the CEC 20 module, to access the Diagnostic Main Menu.

*Performing a reset*

To perform a reset, simultaneously press the outer buttons, which are marked Reset.

*Access the Diagnostic Main Menu (CEC 20 only)*

To access the Diagnostic Main Menu, simultaneously press the two inner buttons, which are marked ATTENTION. The menu is displayed on the LCD. For complete information on the Diagnostic Main Menu, refer to the *NETBuilder II CEC 20 Module Installation Guide.* The DPE module does not support the Diagnostic Main Menu.

### LEDs

There are six LEDs on the front panel of the Extended chassis. Table 3-2 describes these LEDs and their functions.

**Table 3-2** LEDs on Extended Chassis Front Panel

| LED Name | Color | Normal Behavior | Meaning |
|---|---|---|---|
| PS1* (upper power supply | Green | On continuously | On as long as the system is turned on. |
| PS2 (lower power supply) | | | |
| | Yellow | | Indicates a fault condition with a power supply. |
| CPU1† | Tricolored | | See the appropriate main processor module guide for descriptions of this LED. |
| CPU2 (unused) | | | |
| FAN1 (left fan tray) | Green | On continuously | On as long as the system is turned on. |
| FAN2 (right fan tray) | | | |
| | Yellow | | Indicates a fan is not operating properly. |

* This LED is the same as the POWER LED on your main processor module.

† If you are using a DPE module, this LED is the same as the POWER/FAULT LED on the DPE module. Refer to the DPE module guide for more information about this LED. If you are using a CEC 20 module, this LED is the same as the STATUS LED on the CEC 20 module. Refer to the CEC 20 module guide for more information about this LED.

### Main Processor and I/O Module Slots

The Extended chassis has two main processor module slots and eight I/O module slots. The two slots on the far left are for the main processor modules, and the eight remaining slots are for I/O modules.

The chassis is shipped with one open main processor slot and the second slot covered by a filler panel. Install your main processor module in the open slot and leave the filler panel in place over the second slot. If you have an EZBuilt system, the main processor module is already installed.

*The Extended chassis currently supports one main processor module.*

All eight I/O slots are covered with card carriers, which also serve as filler panels. The card carriers allow you to install regular-format I/O modules into the extended-format slots. Remove the filler panels when you install I/O modules in the slots. Keep a filler panel in any slot where you do not plan to install an I/O module. For information on installing regular-format modules in the Extended chassis slots, refer to the appropriate I/O module guide.

***WARNING:*** *Remove the filler panel only from I/O slots that will house an I/O module. All unused I/O slots require the filler panels to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II system and will invalidate the warranty.*

Figure 3-11 shows the position and numbering sequence of the Extended chassis slots.

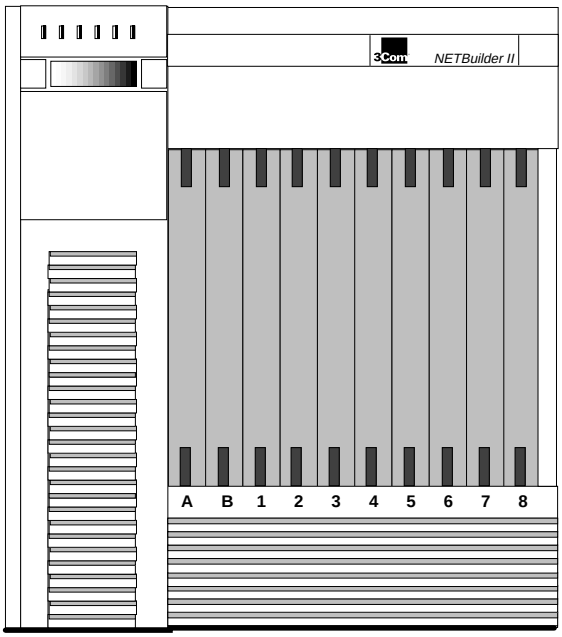



**Figure 3-11** Extended Chassis I/O Module Slot Numbering Sequence

**Floppy Disk Drive**

The Extended chassis includes a 3.5 inch, 135 tracks per inch (TPI), 4 MB floppy disk drive that supports 1.4 MB and 2.8 MB DOS-formatted floppies. The drive is located behind the access door on the front panel.

*The DPE module does not support the floppy disk drive.*

Press the eject button on the disk drive front panel to eject diskettes. The LED on the front panel lights when a floppy diskette is being formatted, read, or written. Do not attempt to eject the diskette when the LED is lit.

For information on replacing the floppy disk drive, see page 3-16.

**Flash Memory Drive Option**

A flash memory drive can be installed in the slot immediately above the floppy drive. If you have an EZBuilt system with CEC 20 module, the flash memory drive is already installed. The DPE module has integrated flash memory drives. Refer to the documentation shipped with the flash memory for installation information.

**Power Supply**

The Extended chassis comes with one power supply. An additional power supply can be added as a backup. An A/C power switch and a power cord receptacle are located on the front panel of the power supply.

The autoranging power supply automatically adjusts the supply voltage to the Extended chassis for 110 and 230 VAC operation.

The AC power switch is marked according to international I/O convention: When you press the I side, the switch is on; when you press the O side, the switch is off.

The international CEE-22 AC power receptacle is approved for 10 amp operation. The connector has three prongs with chassis ground on the middle prong. All systems are shipped with power cords; if your power cord does not match your requirements, contact your network supplier for assistance.

For information on replacing or installing the power supply, see page 3-13.

**Fan Assemblies**

Two fan assemblies are located in the chassis immediately above the module slots. For information on removing and replacing the fan assemblies, refer to "Replacing the Fan Assemblies" on page 3-19.

**Backplane**

The backplane consists of a bus that is mounted vertically against the back of the card cage. When installed, modules rest inside the card cage. Connectors secured on the backplane engage connectors secured to the edges of the modules.

The backplane has a peak data rate of 800 Mbps.

The backplane allows you to hot-swap an I/O module, which means that you can install, or remove and reinstall, an I/O module without turning the power off to the chassis. For details on installing and replacing the backplane, see page 3-17.

**Intake and Exhaust Vents**

Intake vents are located on the lower right side panel, and exhaust vents are located on the back panel of the chassis. Make sure that these vents are not blocked or covered when you install your unit.

***CAUTION:*** *Overheating due to improper ventilation can result in system failure and may void the hardware warranty.*

## Maintenance and Repair

This section includes maintenance and repair information for the Extended chassis.

**Preventive Maintenance**

3Com recommends the following procedures for preventive maintenance:

- Observe the environmental requirements listed in Appendix A. Temperatures outside the recommended range can impair reliability and cause diskette access errors.
- Observe ESD guidelines whenever handling modules.
- Keep the area around the NETBuilder II system clean. Avoid accumulated dust, especially around the air intake vents.
- If the system fails, an immediate memory dump may help diagnose the problem. Contact 3Com Technical Support for memory dump information.

## Replacing the Power Supply

The Extended chassis comes with one power supply. A second power supply can be installed as a backup. To replace the original power supply in your chassis, follow the steps in Figure 3-12 and Figure 3-13.

***CAUTION:*** *The following procedure is provided only for qualified service personnel. There are no user serviceable parts inside the power supply.*

***WARNING:*** *Do not open the power supply. It contains hazardous voltages. There are no user-serviceable parts inside.*

**VORSICHT:** *Öffnen sie niemals das Netzteil. Hochspannung! Es sind keine zu wartenden Teile enthalten.*

**AVERTISSEMENT:** *Ne pas ouvrir ce bloc d'alimentation. Tensions dangereuses à l'intérieur. Ne contient aucune pièce que l'utilisateur puisse rèparer.*

**PELIGRO:** *No abra fuente de alimentación. Contiene alta tensión. No hay partes para reemplazar adentro.*

It is not necessary to remove the chassis if it is mounted in a rack.

**CAUTION:** *Installing a new power supply with the power switch in the on position can result in arcing at the connectors, which can cause damage to the power supply or the chassis.*

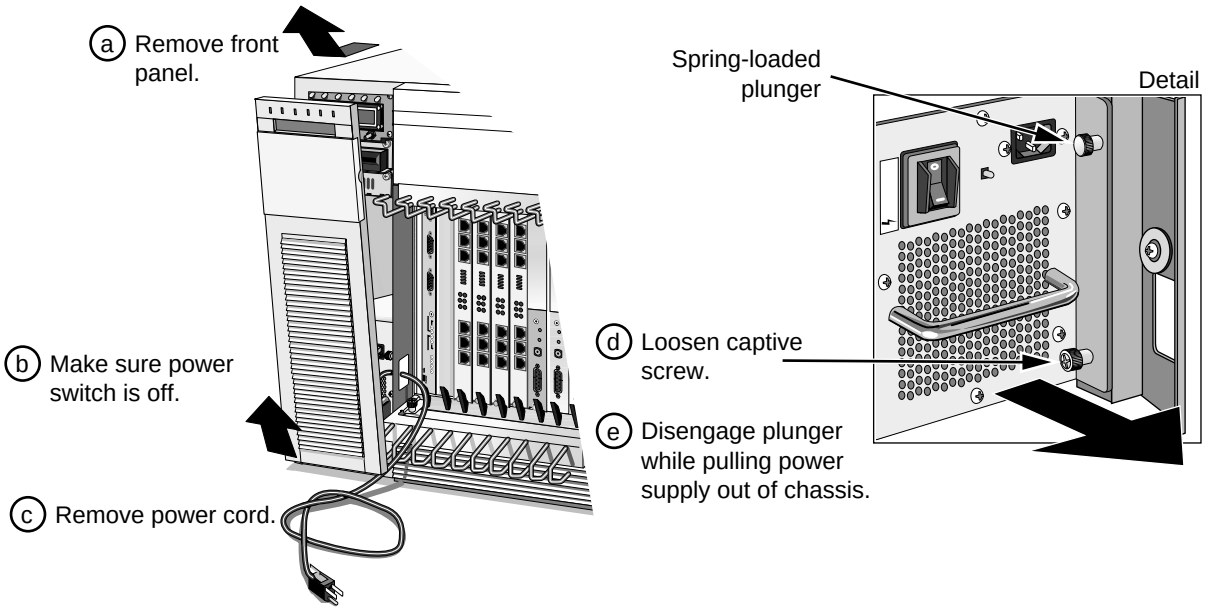



**Figure 3-12** Removing the Power Supply in the Extended Chassis

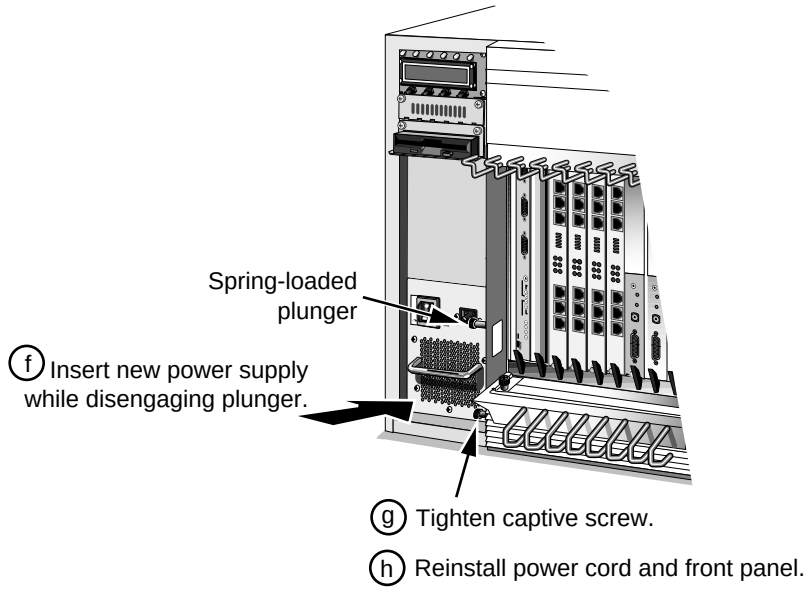



**Figure 3-13** Inserting a New Power Supply in the Extended Chassis

### Installing a Second Power Supply

To install a second power supply in the Extended chassis, follow the steps in Figure 3-14, Figure 3-15, and Figure 3-16. It is not necessary to turn off the power when installing a second power supply.

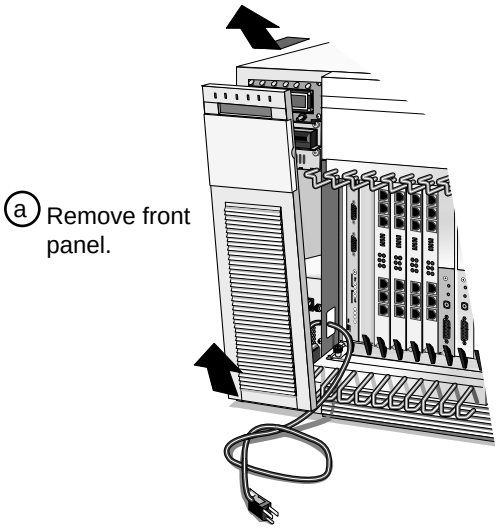



**Figure 3-14** Removing the Front Panel

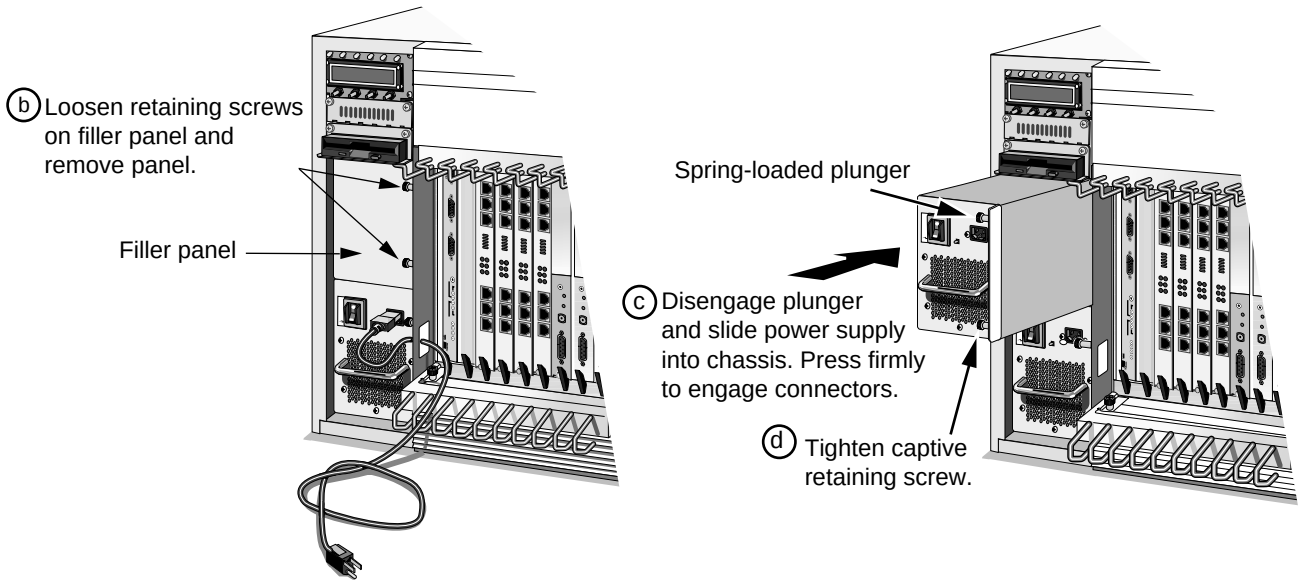



**Figure 3-15** Installing a Second Power Supply in the Extended Chassis

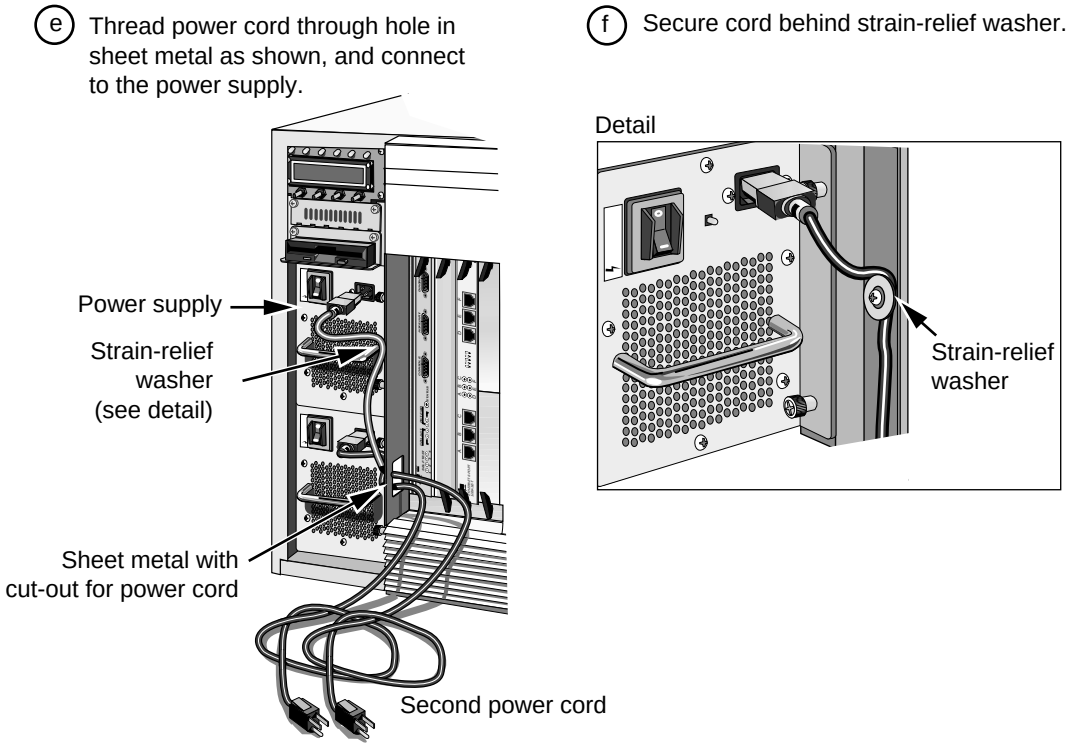



**Figure 3-16** Connecting the Power Cord to the Second Power Supply

**Replacing a Floppy Disk Drive**

To replace the floppy disk drive in your Extended chassis, follow these steps:

1. Make sure the power switch is off (O is pressed down).
2. Remove the vertical front panel.

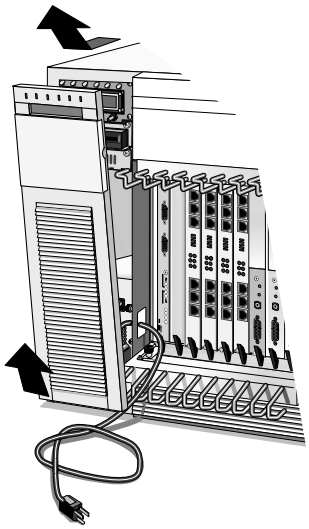


**Figure 3-17** Removing the Front Panel from the Extended Chassis

3. Loosen the captive screws on the front of the disk drive mounting plate.
4. Pull the disk drive mounting bracket out of the chassis.

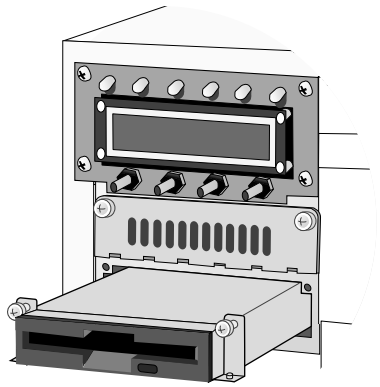


**Figure 3-18** Removing the Disk Drive Mounting Bracket from the Extended Chassis

5. Remove the four screws on the bottom of the bracket that secure the floppy disk drive to the bracket.
6. Install the new disk drive onto the bracket with the four screws.
7. Insert the bracket into the chassis and tighten the captive screws.
8. Turn on the system.

**Replacing the Backplane** To replace the backplane in the Extended chassis, follow these steps:

***CAUTION:*** *The following procedure is provided only for qualified service personnel. There are no user serviceable parts inside the backplane.*

1. Disconnect all power cords from the power supplies and power outlets.
2. Remove the main processor module, all I/O modules, the front panel, floppy disk drive, flash memory drive, and power supplies that are installed in the chassis.
3. Loosen the two captive screws in the back panel, and remove the back panel. Then remove the 20 mounting screws on the backplane and remove the backplane.

   The screws are identified in Figure 3-19 by small arrows on the backplane.

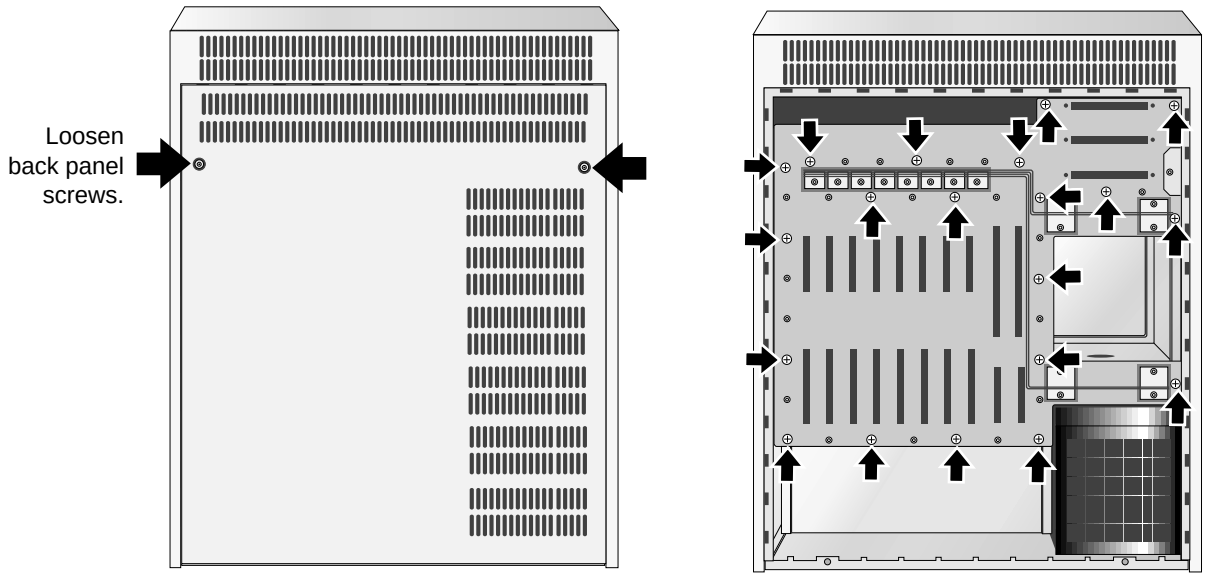



**Figure 3-19** Replacing the Backplane in the Extended Chassis

4. Install the replacement backplane with the same screws.
5. Reinstall the back panel, and reinstall all I/O modules, the main processor module, floppy disk drive, front panel card, flash memory drive, and power supplies.
6. Reconnect the power cords.

## Replacing the Display Board and Assembly

The display assembly on the Extended chassis consists of a display board and an extended board that connects to the backplane. You can replace either the display board, or the entire display assembly.

To replace the display board in the Extended chassis, follow the steps in Figure 3-20. You will need a Phillips screwdriver.

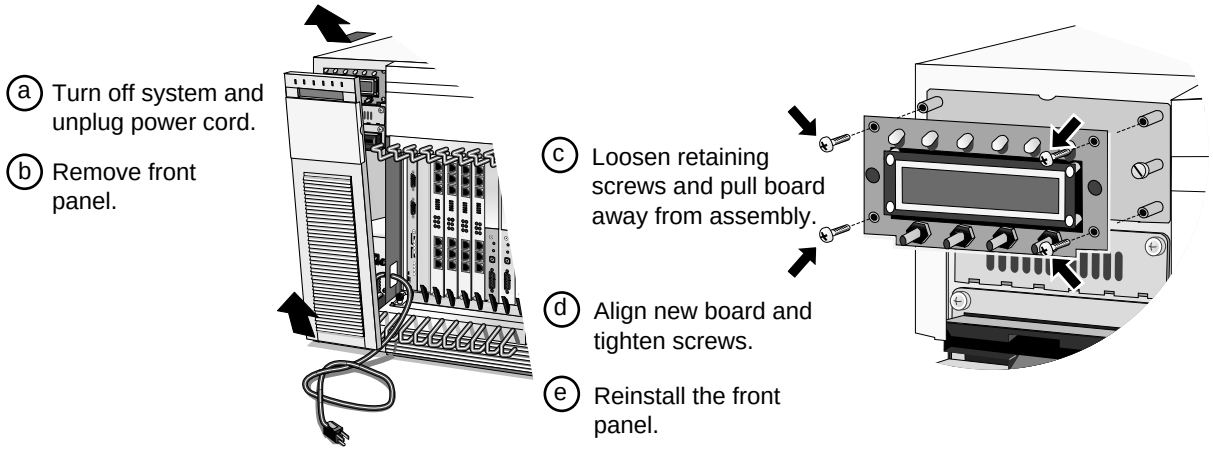



**Figure 3-20** Replacing the Display Board on the Extended Chassis

To replace the entire display assembly, follow the steps in Figure 3-21.

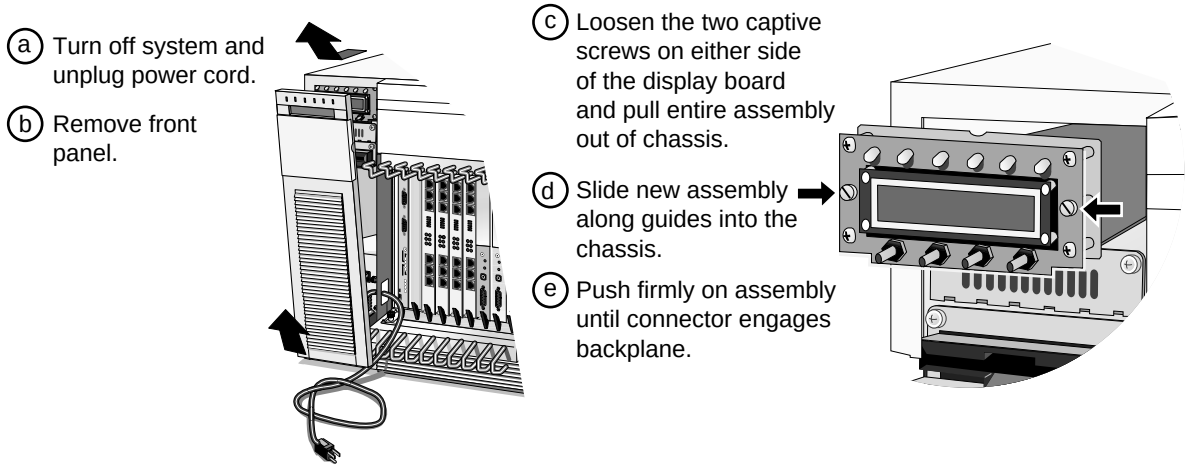



**Figure 3-21** Replacing the Display Assembly

**Replacing the Fan Assemblies**

To replace the fan assemblies in an Extended chassis, follow the steps in Figure 3-22. It is not necessary to turn off the power to replace a fan assembly.

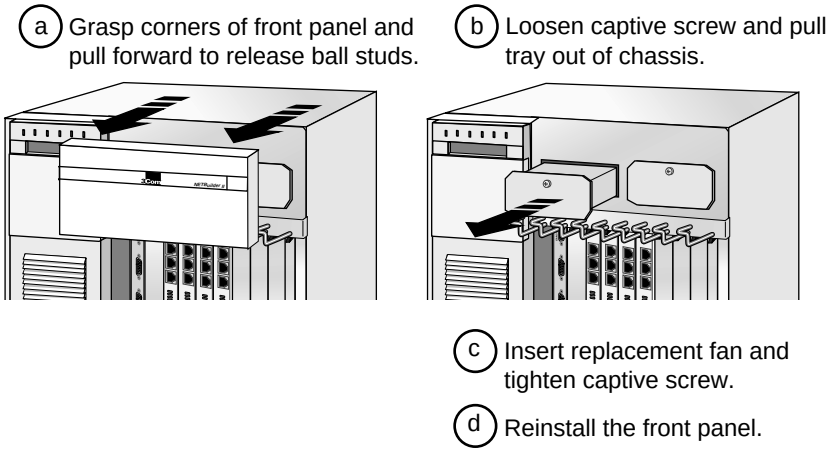



**Figure 3-22** Replacing the Fan Assembly in the Extended Chassis

# A

# FEATURE SUMMARY AND SPECIFICATIONS

This appendix provides a summary of features, and lists the electrical and environmental specifications of the NETBuilder II bridge/router.

## Feature Summary

Table A-1 summarizes the features of the system.

**Table A-1** NETBuilder II Bridge/Router Features

| Feature | Summary |
|---|---|
| Modular platform | Allows you to build a bridge or bridge/router platform that conforms to your present local and wide area networking needs. Also allows you to update or expand your present platform as your networking needs change. |
| 4-Slot chassis | Supports up to four regular-format, or two extended-format I/O modules. |
| 8-Slot chassis | Supports up to eight regular-format, or four extended-format I/O modules. |
| Extended chassis | Supports eight regular-format or extended-format I/O modules. |
| Supports most commonly used network interfaces | Supports many local area networking interfaces, including: Ethernet, Token Ring, Fast Ethernet, FDDI and ATM. Supports many wide area networking interfaces, including: V.35, RS-232, RS-449, G.703, and HSSI. |
| High-performance processing and reliability | Combines the power of RISC processing, custom Application-Specific Integrated Circuits (ASICs), and an 800 Mbps backplane for high-performance processing and reliability. |
| "Hot-swappable" I/O modules | Allow you to install or remove and reinstall any I/O module without shutting down the system. |
| LCD and LCD control panel | LCD displays startup and status messages. The LCD control panel allows you to reset your NETBuilder II system and, for the CEC 20 module, access the Diagnostic Main menu. (For complete information on the Diagnostic Main menu, refer to the *NETBuilder II CEC Module Installation Guide*.) |
| Front panel LEDs | Allow you to monitor the power and operational status of the system. |
| Flash memory drive | Solid state drive available on all models. |
| Autoranging power supply | Automatically adjusts the internal supply voltage to the NETBuilder II bridge/router intervention switch between 115 and 230 VAC operation. |
| Dual power supply (Extended chassis only) | The Extended chassis comes with one power supply, but allows for the addition of a second power supply. |
| Tabletop or rack mountable | Can be set on a tabletop or mounted in a 19-inch, 2- or 4-pole rack. |
| Cable strain-relief bracket | Enables you to route all cables from the installed I/O modules to a central location. Restraining the cables allows for easier access to I/O modules. |

## Specifications

This section lists the specifications for each NETBuilder II chassis.

### 4-Slot Chassis

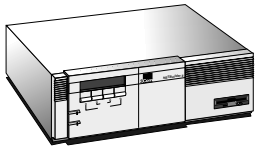


Table A-2, Table A-3, and Table A-4 provide a physical description and electrical and environmental requirements for the NETBuilder II 4-Slot chassis. Table A-5 lists the maximum current consumption for the floppy disk drive.

**Table A-2** Physical Description of the 4-Slot Chassis

| Length* | Width | Height | Weight† |
|---|---|---|---|
| 17.0 in | 17.4 in | 5.4 in | 26 lbs |
| 43.2 cm | 44.2 cm | 13.7 cm | 11.8 kg |

* With ejector handles in closed position and without cable strain-relief bracket installed.
† Weight includes installed CEC module and four I/O modules.

**Table A-3** Electrical Requirements for the 4-Slot Chassis

| Parameter | Requirement | |
|---|---|---|
| Input voltage | 115/230 VAC | 47 to 63 Hz |
| Input voltage ranges | 90 to 132 VAC or 180 to 264 VAC | Either range accepted without user switching |
| Maximum current consumption | 2.1 A @ 115 VAC<br>1.0 A @ 230 VAC | Fuse: 4 A, 250 V, fast-blow, 5 mm x 20 mm |
| Input power | 242 W | |
| Maximum power dissipation | 125 W | |
| Heat dissipation | 826 BTU/hr | |

**Table A-4** Environmental Requirements for the 4-Slot Chassis

| | Requirement | |
|---|---|---|
| **Parameter** | **Minimum** | **Maximum** |
| **Temperature:** | | |
| Operating | 41˚F (5˚C) | 104˚F (40˚C) |
| Nonoperating | –4˚F (–20˚C) | 140˚F (60˚C) |
| **Altitude:** | | |
| Operating | Sea level | 15,000 ft. (4,572 m) |
| Nonoperating | Sea level | 40,000 ft. at 32˚F (12,191 m at 0˚C) |
| **Relative humidity:** | | |
| Operating | 20% noncondensing | 80% noncondensing |
| Nonoperating | 10% noncondensing | 90% noncondensing |

**Table A-5** Maximum Current Consumption of the 4-Slot Chassis Floppy Disk Drive

| +5 Volts | –5 Volts | +12 Volts | –12 Volts |
|---|---|---|---|
| 0.92 A | 0.0 A | 0.0 A | 0.0 A |

To determine the total load on the 4-Slot chassis power supply, add the maximum current consumption of the floppy disk drive, the main processor module, and each installed I/O module. For the maximum current consumption of the main processor module and each installed I/O module, refer to each installation guide.

### 8-Slot Chassis

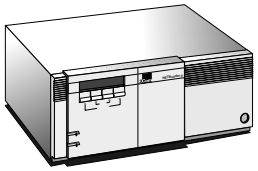


Table A-10, Table A-11, and Table A-12 provide a physical description and electrical and environmental requirements for the 8-Slot chassis. Table A-13 lists the maximum current consumption for the floppy disk drive.

**Table A-6** Physical Description of the 8-Slot Chassis

| Length* | Width | Height | Weight† |
|---|---|---|---|
| 18.5 in | 17.4 in | 7.3 in | 50 lbs |
| 47.0 cm | 44.2 cm | 18.5 cm | 22.7 kg |

* With ejector handles in closed position and without cable strain-relief bracket installed.
† Weight includes installed CEC module and eight I/O modules.

**Table A-7** Electrical Requirements for the 8-Slot Chassis

| Parameter | Requirement | |
|---|---|---|
| Input voltage | 115/230 VAC | 47 to 63 Hz |
| Input voltage ranges | 90 to 132 VAC or 180 to 264 VAC | Either range accepted without user switching |
| Maximum current consumption | 3.25 A @ 115 VAC<br>1.62 A @ 230 VAC | Fuse: 6.3 A, 250 V, fast-blow, 5 mm x 20 mm |
| Input power | 374 W | |
| Power dissipation | 204 W | |
| Heat dissipation | 1,276 BTU/hr | |

**Table A-8** Environmental Requirements for the 8-Slot Chassis

| | Requirement | |
|---|---|---|
| **Parameter** | **Minimum** | **Maximum** |
| **Temperature:** | | |
| Operating | 41˚F (5˚C) | 104˚F (40˚C) |
| Nonoperating | –4˚F (–20˚C) | 140˚F (60˚C) |
| **Altitude:** | | |
| Operating | Sea level | 15, 000 ft. (4,572 m) |
| Nonoperating | Sea level | 40,000 ft. at 32˚F (12,191 m at 0˚C) |
| **Relative Humidity:** | | |
| Operating | 20% noncondensing | 80% noncondensing |
| Nonoperating | 10% noncondensing | 90% noncondensing |

**Table A-9** Maximum Current Consumption of the 8-Slot Chassis Floppy Disk Drive

| +5 Volts | –5 Volts | +12 Volts | –12 Volts |
|---|---|---|---|
| 0.92 A | 0.0 A | 0.0 A | 0.0 A |

To determine the total load on the 8-Slot chassis power supply, add the maximum current consumption of the floppy disk drive, the main processor module, and each installed I/O module. For the maximum current consumption of the main processor module and each installed I/O module, refer to each installation guide.

### Extended Chassis

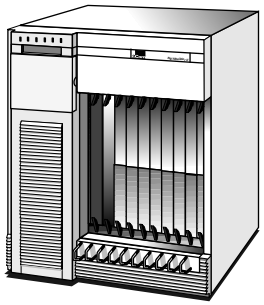


Table A-10, Table A-11, and Table A-12 provide a physical description and electrical and environmental requirements for the Extended chassis. Table A-13 lists the maximum current consumption for the floppy disk drive.

**Table A-10** Physical Description of the Extended Chassis

| Length* | Width | Height | Weight† |
|---|---|---|---|
| 49.2 cm/19.4 in | 44.2 cm/17.4 in | 55.3 cm/21.0 in | 42 kg/91 lbs (one power supply<br>50 kg/109 lbs (two power supplies) |

* Without cable strain-relief bracket installed.
† Weight includes installed CEC module and eight I/O modules.

**Table A-11** Electrical Requirements for the Extended Chassis

| Parameter | Requirement | |
|---|---|---|
| Input voltage | 120 - 230 VAC | 47 - 63 Hz |
| Input voltage ranges | 90 - 132 VAC, or 180 - 264 VAC | Either range accepted without user configuration. |
| Maximum current consumption | 10 A @ 120 VAC,<br>5 A @ 230 VAC | Breaker: 13.0 A, 250 V |
| Input power | 1092.5 W @ 120 VAC | |
| Power dissipation | 700 W | |
| Heat dissipation | 3,730 BTU/hr | |

**Table A-12** Environmental Requirements for the Extended Chassis

| | Requirement | |
|---|---|---|
| **Parameter** | **Minimum** | **Maximum** |
| **Temperature:** | | |
| Operating | 32˚F (0˚C) | 122˚F (50˚C) |
| Nonoperating | –4˚F (–20˚C) | 140˚F (60˚C) |
| **Altitude:** | | |
| Operating | Sea level | 15,000 ft (4,572 m) |
| Nonoperating | Sea level | 40,000 ft at 32˚F (12,191 m at 0˚C) |
| **Relative Humidity:** | | |
| Operating | 10% noncondensing | 80% noncondensing |
| Nonoperating | 10% noncondensing | 90% noncondensing |
| **Acoustic noise** | 55 db(A) | |

**Table A-13** Maximum Current Consumption of the Extended Chassis Floppy Disk Drive

| +5 Volts | –5 Volts | +12 Volts | –12 Volts |
|---|---|---|---|
| 0.92 A | 0.0 A | 0.0 A | 0.0 A |

To determine the total load on the Extended chassis power supply, add the maximum current consumption of the floppy disk drive, the main processor module, and each installed I/O module. For the maximum current consumption of the main processor module and each installed I/O module, refer to each installation guide.

# B

# EMC CONFORMANCE

This appendix contains information on how to ensure that your NETBuilder II configuration conforms with EMC requirements.

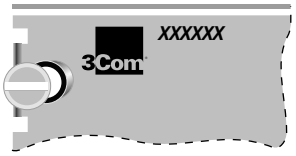
The NETBuilder II platform is modular. A complete system consists of a chassis, a main processor module, and I/O modules. For a complete system to be compliant, each of these components must comply with the rules described in the sections that follow. Additionally, some combinations of I/O modules will not meet EMC standards, as noted in the "Exceptions" section.

## Chassis

All NETBuilder II chassis accompanied by this guide are EMC-compliant. Your system has the CE mark on the upper rear portion of the top cover of the chassis.

## Main Processor and I/O Modules

Older versions of the CEC and I/O modules cannot be used in a system if compliance is a requirement. The main processor module and all I/O modules have been revised to meet these more stringent emissions standards. Compliant main processor and I/O modules can be identified by the artwork on the I/O panel face. All compliant modules bear the 3Com block logo on the front panel, as shown here:




Older, non-compliant NETBuilder II I/O modules are marked "3Com" and do not have the 3Com block logo.

## Exceptions

The following page, if present, lists specific configurations of I/O modules that do not meet EMC requirements.

Each module package includes release notes with configuration exceptions as well as other compliance guidelines. Replace page B-2 with the most current version of these release notes, which are included with every module 3Com ships.

## NETBuilder II EMC Configuration Exceptions

Replace this page with the most current version from your NETBuilder II I/O module packages. If there is no date on your release notes, a higher part number indicates a later version.

# C

# TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Information contained in this appendix is correct at time of publication. For the very latest, we recommend that you access 3Com Corporation's World Wide Web site as described below.

## Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com Bulletin Board Service (3ComBBS)
- 3ComFacts℠ automated fax service
- 3ComForum on CompuServe® online service

### World Wide Web Site

Access the latest networking information on 3Com Corporation's World Wide Web site by entering our URL into your Internet browser:

**`http://www.3Com.com/`**

This service features the latest information about 3Com solutions and technologies, customer service and support, news about the company, *NetAge*® Magazine, and more.

### 3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available through analog modem or digital modem (ISDN) 24 hours a day, 7 days a week.

### Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

| Country | Data Rate | Telephone Number |
|---|---|---|
| Australia | up to 14400 bps | 61 2 9955 2073 |
| Brazil | up to 14400 bps | 55 11 547 9666 |
| France | up to 14400 bps | 33 1 6986 6954 |
| Germany | up to 28800 bps | 4989 62732 188 |
| Hong Kong | up to 14400 bps | 852 2537 5608 |
| Italy (fee required) | up to 14400 bps | 39 2 27300680 |
| Japan | up to 14400 bps | 81 3 3345 7266 |
| Mexico | up to 28800 bps | 52 5 520 7853 |
| P. R. of China | up to 14400 bps | 86 10 684 92351 |
| Singapore | up to 14400 bps | 65 534 5693 |
| Taiwan | up to 14400 bps | 886 2 377 5840 |
| U.K. | up to 28800 bps | 44 1442 438278 |
| U.S.A. | up to 28800 bps | 1 408 980 8204 |

### Access by Digital Modem

ISDN users can dial in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, use the following number:

**408 654 2703**

## 3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, 7 days a week.

Call 3ComFacts using your Touch-Tone telephone using one of these international access numbers:

| Country | Telephone Number |
|---|---|
| Hong Kong | 852 2537 5610 |
| U.K. | 44 1442 438279 |
| U.S.A. | 1 408 727 7021 |

Local access numbers are available within the following countries:

| Country | Telephone Number | Country | Telephone Number |
|---|---|---|---|
| Australia | 1800 678 515 | Netherlands | 06 0228049 |
| Belgium | 0800 71279 | New Zealand | 0800 446 398 |
| Denmark | 800 17319 | Norway | 800 11062 |
| Finland | 98 001 4444 | Portugal | 0505 442 607 |
| France | 05 90 81 58 | Russia (Moscow only) | 956 0815 |
| Germany | 0130 81 80 63 | Singapore | 800 6161 463 |
| Hong Kong | 800 933 486 | Spain | 900 964 445 |
| Italy | 1678 99085 | Sweden | 020 792954 |
| Malaysia | 1800 801 777 | U.K. | 0800 626403 |

### 3ComForum on CompuServe Online Service

3ComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

1. Log on to CompuServe.
2. Type **`go threecom`**
3. Press [Return] to see the 3ComForum main menu.

## Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

## Support from 3Com

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

Contact your local 3Com sales office to find your authorized service provider using one of these numbers:

| Regional Sales Office | Telephone Number |
|---|---|
| **3Com Corporation** | |
| P.O. Box 58145<br>5400 Bayfront Plaza<br>Santa Clara, California<br>95052-8145<br>U.S.A. | 800 NET 3Com *or* 1 408 764 5000<br>408 764 5001 (fax) |
| **3Com Asia Limited** | |
| Australia | 61 2 9937 5000 (Sydney)<br>61 3 9866 8022 (Melbourne) |
| China | 8610 68492568 (Beijing)<br>86 21 63740220 Ext 6115 (Shanghai) |
| Hong Kong | 852 2501 1111 |
| India | 91 11 644 3974 |
| Indonesia | 6221 572 2088 |
| Japan | 81 6 536 3303 (Osaka)<br>81 3 3345 7251 (Tokyo) |
| Korea | 822 2 319 4711 |
| Malaysia | 60 3 732 7910 |
| New Zealand | 64 9 366 9138 |
| Phillippines | 632 892 4476 |
| Singapore | 65 538 9368 |
| Taiwan | 886 2 377 5850 |
| Thailand | 662 231 8151 4 |
| **3Com Benelux B.V.** | |
| Belgium | 32 2 725 0202 |
| Netherlands | 31 30 6029700 |
| **3Com Canada** | |
| Calgary | 403 265 3266 |
| Montreal | 514 683 3266 |
| Ottawa | 613 566 7055 |
| Toronto | 416 498 3266 |
| Vancouver | 604 434 3266 |
| **3Com European HQ** | 49 89 627320 |
| **3Com France** | 33 1 69 86 68 00 |

| Regional Sales Office | Telephone Number |
|---|---|
| **3Com GmbH** | |
| Austria | 43 1 513 4323 |
| Czech Republic/Slovak Republic | 420 2 21845 800 |
| Germany<br>(Central European HQ) | 49 30 34 98790 (Berlin)<br>49 89 627320 (Munich) |
| Hungary | 36 1 250 83 41 |
| Poland | 48 22 6451351 |
| Switzerland | 41 31 996 14 14 |
| **3Com Ireland** | 353 1 820 7077 |
| **3Com Latin America** | |
| U.S. Headquarters | 408 326 2093 |
| Northern Latin America | 305 261 3266 (Miami, Florida) |
| Argentina | 541 312 3266 |
| Brazil | 55 11 546 0869 |
| Chile | 562 633 9242 |
| Colombia | 571 629 4110 |
| Mexico | 52 5 520 7841/7847 |
| Peru | 51 1 221 5399 |
| Venezuela | 58 2 953 8122 |
| **3Com Mediterraneo** | |
| Italy | 39 2 253011 (Milan)<br>39 6 5279941 (Rome) |
| Spain | 34 1 383 17 00 |
| **3Com Middle East** | 971 4 349049 |
| **3Com Nordic AB** | |
| Denmark | 45 39 27 85 00 |
| Finland | 358 0 435 420 67 |
| Norway | 47 22 18 40 03 |
| Sweden | 46 8 632 56 00 |
| **3Com Russia** | 007 095 258 09 40 |
| **3Com Southern Africa** | 27 11 807 4397 |
| **3Com UK Ltd.** | 44 131 220 8228 (Edinburgh)<br>44 161 873 7717 (Manchester)<br>44 162 889 7000 (Marlow) |

## Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain a Return Materials Authorization (RMA) number. Products sent to 3Com without RMA numbers will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

| Country | Telephone Number | Fax Number |
|---|---|---|
| U.S.A. and Canada | 1 800 876 3266, option 2 | 408 764 7120 |
| Latin America | 1 408 326 2927 | 408 764 7120 |
| Europe, South Africa, and Middle East | 44 1442 438125 | 44 1442 435822 |
| Outside Europe, U.S.A., and Canada | 1 408 326 2926 | 1 408 764 7120 |

# INDEX

## 3Com Corporation LIMITED WARRANTY

For purposes of this warranty, the **NETBuilder II bridge/router** is considered an **Internetworking product**.

### HARDWARE

3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

| | |
|---|---|
| Internetworking products | One year |
| Network adapters | Lifetime |
| Ethernet stackable hubs and Unmanaged Ethernet fixed port repeaters | Lifetime*<br>(One year if not registered) |
| *Power supply and fans in the stackable hubs and unmanaged repeaters | One year |
| Other hardware products | One year |
| Spare parts and spares kits | 90 days |

If a product does not operate as warranted above during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

### SOFTWARE

3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its Authorized Reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation with respect to this express warranty shall be (at 3Com's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to 3Com's applicable published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third-party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the noncompatibility is caused by a "bug" or defect in the third party's product.

### STANDARD WARRANTY SERVICE

Standard warranty service for *hardware* products may be obtained by delivering the defective product, accompanied by a copy of the dated proof of purchase, to 3Com's Corporate Service Center or to an Authorized 3Com Service Center during the applicable warranty period. Standard warranty service for *software* products may be obtained by telephoning 3Com's Corporate Service Center or an Authorized 3Com Service Center, within the warranty period. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after receipt of the defective product by 3Com.

### WARRANTIES EXCLUSIVE

IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND SATISFACTORY QUALITY. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

### LIMITATION OF LIABILITY

TO THE FULL EXTENT ALLOWED BY LAW, 3COM ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers, so the above limitations and exclusions may be limited in their application to you. This warranty gives you specific legal rights which may vary depending on local law.

### GOVERNING LAW

This Limited Warranty shall be governed by the laws of the state of California.

**3Com Corporation**, 5400 Bayfront Plaza, Santa Clara, CA 95052-8145 (408) 764-5000

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