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Meridian 1

# Hardware Upgrade Procedures

Upgrade to Options 51C, 61C, 81C

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Document Number: 553-3001-258

Document Release: Standard 5.00

Date: April 2000

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## Revision history

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**April 2000**

Standard 5.00. This is a global document and is up-issued for X11 Release 25.0x.

**June 1999**

Standard, release 4.00 This document is reissued for technical content and to include information on the 68060E NT5D03 Call Processor card.

**April 1998**

Standard, release 3.00. This document is reissued for technical content.

**October 1997**

Standard, release 2.00. This document is reissued for technical content and to include information on the 68060 NT5D10 Call Processor and NT5D61 IODU/C cards.

**August 1996**

Standard, release 1.00



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# General information

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## Content list

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- [Software Install Kit 18](#)
- [Security device and keycode 19](#)
- [Tools 21](#)
- [Upgrade preparation 22](#)
- [Terminal and modem connections 22](#)
- [Module backplane connections 23](#)

## Reference list

The following are the references in this section:

- *System Installation Procedures (553-3001-210)*
- *Software Conversion Procedures (553-2001-320)*
- *Circuit Card: Installation and Testing (553-3001-211)*
- *X11 Administration (553-3001-311)*
- *X11 Features and Services (553-3001-306)*
- *NT5D61 IODU/C Reference Guide*
- *FNF Reference Guide (553-3001-259)*

This document is a global document. Contact your system supplier or your Nortel Networks representative to verify that the hardware and software described is supported in your area.

**This document does not include procedures for upgrading to Fiber Network Fabric.** For Fiber Network upgrade procedures, refer to the *FNF Reference Guide* (553-3001-259).

## Upgrade strategy

X11 release 25 supports Automatic Inline Conversion from X11 release 19 and later in system Options 51C, 61C, and 81C.

When upgrading your system, the hardware upgrade and software conversion path you follow depends on the system type you are upgrading from and its current software release.

The upgrade strategy for most system types is to upgrade to the target system at the first release the target system is available.

This upgrade strategy is modified for the following upgrades to Options 51C and 61C:

- For STE and Option 21E systems at release 20 and earlier, the upgrade strategy is to remain on the current system and convert the database directly to release 21. The hardware upgrade to Option 51C or 61C is performed as part of the software upgrade to release 25. This eliminates the requirement of interim hardware.

If the customer database is release 17 or earlier, additional equipment is required for the conversion and must be ordered separately. You can convert it on-site, or send it to Nortel Networks for conversion. If you are converting it on-site, use the instructions in *Software Conversion Procedures* (553-2001-320).

## Software Install Kit

The Software Install Kit is a generic set of X11 software and utility programs that are specific to a single release and issue of X11 software. A new kit must be obtained when upgrading to a new release or issue of software.

Table 1 lists the contents of the Software Install Kit.

**Table 1**  
**Contents of the Software Install Kit**

Item	Quantity	Description
X11 software CD-ROM	1	Each CD contains all nine generics for a given release and issue of X11 software.
Install Program diskettes (2 MB media)	3	Used to launch the Install Program and to download software from the CD-ROM. Each 2 MB diskette supports one processor type (68060 or 68060E).
Database Transfer Utility diskettes (4 MB media)	3	Used to transfer the customer database from an IOP/CMDU drive onto 2 MB diskettes that can be ready by the IODU/C. Each 4 MB diskette supports one processor type (68060 or 68060E).
Distributor Keycode Application diskette (2 MB media)	1	A Windows 95 utility that supports download of keycodes from a keycode server.
Database diskettes (blank, 2 MB media)	2	Blank 2 MB diskettes that can be used to archive the customer database.
Keycode diskette (blank, 2 MB media)	1	A blank 2 MB diskette that can be used to store a back-up copy of the keycode file.

## Security device and keycode

The IODU/C card also requires a security device (a replacement for the current CMDU and IOP/CMDU security data cartridge) and keycode. The security device and keycode are used together to customize software installation for a specific system. The keycode can only be validated and “unlocked” by the security devices for which it was made. Security devices are produced as part of each software order. One security device is mounted onto each IODU/C card.

A keycode is also generated as part of the customer software order. The keycode is customized based on the following parameters:

- a specific release and issue of X11 software

- a specific software generic (representing the combination of the system type and Call Processor type)
- a specific set of feature packages and ISM limits
- a specific set of security devices

A new keycode is required whenever any of these parameters are changed.

Each software order contains the Security Device Kit. The contents of the Security Device Kit are listed in Table 1.

**Table 2**  
**Contents of the Security Device Kit**

Item	Quantity	Description
Keycode diskette (2 MB media)	1	A 2 MB diskette containing the keycode file.
Keycode acknowledgment	1	A hard-copy printout of the keycode file, including a listing of the parameters for which the keycode was created.
Security devices		The number of security devices provided is determined based on the type order and the number of security devices previously provisioned:
	0	When security devices have already been provisioned
	1	For single CPU systems
	1	For upgrades from single CPU to dual CPU systems
	1	For replacing single, lost, or damaged security devices
	2	For dual CPU systems
	2	For replacing two lost or damaged security devices
Database diskettes (2 MB media)	2	One 2 MB diskette containing the CE database and one 2 MB diskette containing CE/PE database.

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## Tools

Table 3 lists the tools that you will need for upgrading a Nortel Networks system. Special tools required in a procedure are listed in that procedure.

**Table 3**  
**List of recommended tools**

Digital Multimeter (DMM)
Pliers, needlenose
Pliers, standard
Screwdriver, 3/16" flat blade
Screwdriver, #2 Phillips
Wire cutters
Electrical insulation tape
5/16" socket wrench
Electric drill and drill bits
Hammer and sheet metal center punch
1/4" socket wrench
3/8" socket wrench
1/4" nut driver
7/16" socket driver

## Upgrade preparation

Before beginning an upgrade, read the important information on the next few pages pertaining to connection of a system monitor or modem, and backplane connections. Then perform a thorough audit of the system you are upgrading:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

## Terminal and modem connections

During an upgrade, and for continuing system operation, connect a terminal to an SDI port in a network slot to provide an I/O interface to the active CPU in the system. Connect another terminal or a modem (for remote access) to either the DTE port or the DCE port on the Core/Net module backplane to provide communication with the CP card in the system. The terminals must be RS-232 and capable of 9600 baud.

The Call Processor card serial interface ports (CPSI ports) are active only when the Core/Net associated with the CP card is active. Therefore, the CPSI ports should not be used as the only I/O connection for the system.

*Note:* When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

When the upgrade is complete, leave a terminal and/or modem connected to the system. One SDI port in a network slot must be permanently connected to a terminal or modem. On the CPSI ports you can do one of the following:

- disconnect the ports
- leave terminals connected for local monitoring
- connect modems for remote monitoring

Refer to “Terminal and modem connections” on page 933 for instructions on connecting terminals and modems to the Option 51C, 61C, and 81C.

## Module backplane connections

Module backplanes have a primary side and a secondary side. The primary side (the side that faces the front of the module) contains the primary shrouds that provide mechanical guidance for the pins of the card edge connectors. The secondary side of the backplane (the side that faces the rear of the module) contains the secondary shrouds that provide mechanical guidance for cable connectors.

The columns of secondary backplane shrouds are designated 18 through 12 from left to right (facing the rear of the backplane). This numbering matches the card slots in the front of the module. The rows of connectors on the secondary backplane shrouds are designated A through F from top to bottom.

Before you connect cables to the backplane, visually inspect the secondary shroud connectors to make sure there are no bent pins. To connect cables, do the following:

- 1 Hold the cable so that the connector is perpendicular to the backplane, with the cable extending down at a 45-degree angle.
- 2 Partially insert the cable connector so its guides mate to the corresponding backplane connector.
- 3 Apply a small amount of pressure to push the cable connector straight into the backplane connector. You will feel a distinct click when the connector seats.

### **CAUTION**

Do not push the connector in any further after you hear the click. Pins may be bent or broken if you force the cable connector or insert it at an angle.

### Using the cable extraction tool

To disconnect cables from the Core/Network module backplane, you will be required to use the extraction tool provided, located in the rear of the module (behind the I/O safety panel).

#### CAUTION

You must use the extraction tool to disconnect cables from the backplane in modules to avoid bending or breaking backplane pins. Do not improvise with common hand tools.

Follow the procedure below to remove cable connectors from the backplane. Use extreme caution to avoid bending or breaking backplane pins. Do not insert the extraction tool unless the cable connector is locked into the securing clip; a gentle tug on the cable will allow you to determine whether or not the connector is secured. Do not force the extraction tool deeper than the tab on side of the cable connector hood, and do not pry with the tool.

- 1 Grasp the cable just behind the connector hood.
- 2 Center the long flat edge at the angled end of the tool between the cable connector hood and the securing clip.

*Note:* There are two versions of the extractor tool, if the straight end of the tool is notched, use that end if the connector can be accessed straight-on. If you must approach the connector from any angle at all, use the angled end.

- 3 Gently insert the extraction tool and gradually apply pressure in the direction directly toward the backplane while gently pulling the cable away from the backplane. A gentle side-to-side rocking motion may be used on the cable if needed.

#### CAUTION

Do not pry the against the connector with the extraction tool. Simply inserting the tool between the connector and the securing clip is sufficient to unlock the connector. Prying may cause damage to the connector or the backplane pins.

- 4 Stop applying pressure as soon as the cable connector comes loose from the backplane.
- 5 Slowly remove the extraction tool and the cable connector.



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# ST and STE upgrade to Option 51C

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## Content list

The following are the topics in this section:

- [Reference list 27](#)
- [Equipment required 28](#)
- [Upgrade preparation 34](#)
- [Converting the customer database to Release 25 35](#)
- [Install the Option 51C hardware 38](#)
- [Transferring the database from 4 MB to IODU/C 40](#)
- [Installing Release 25 software 45](#)
- [Converting the ST/STE system hardware 50](#)
- [Completing the upgrade 53](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *System Installation Procedures* (553-3001-210)
- *Software Conversion Procedures* (553-2001-320)
- *X11 Administration* (553-3001-311)
- *ISDN PRI: Installation* (553-2901-201)
- “Installing external cables” on page 305

To upgrade an SL-1 ST or STE system to a Meridian 1 Option 51C X11 Release 25, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 51C next to the ST/STE cabinet
- removing the common equipment (CE) from the ST/STE cabinet
- cabling the cabinet to the Option 51C column

**IMPORTANT**

STE systems on Release 20 will remain on their current system and convert the database directly to Release 21. The hardware upgrade to Option 51C is performed as part of the software upgrade to Release 25. This eliminates the requirement of interim hardware.

Upgrading the software consists of one of the following:

- transfer the customer database from the ST/STE to extra-high-density disks
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 51C after the upgrade is complete

*Note:* It is recommended that ST system customers send the customer database diskettes to Nortel Networks for conversion; contact your Nortel Networks representative to arrange for this.

## Equipment required

Upgrading an ST or an STE system to an Option 51C requires installing the Option 51C column next to the ST/STE system cabinet. The Option 51C column provides CE and network equipment housing. The existing ST/STE system cabinet is used to support the PE cards including the PRI/DTI cards.

Table 4 and Table 5 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 51C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect network loops in the ST/STE system cabinet to the QPC414 Network cards in the Option 51C column. The number of cables required depends on the number of network cards installed. The required cables are listed below:

- NT8D86 cables connect the QPC414 Network cards to the Core/Network module I/O panels
- NT8D73 cables connect the I/O panels in the Core/Network module to the cabinet I/O panels
- NT9J98 cables connect the peripheral buffer to the cabinet I/O panels (this cable type is also used to connect the QPC414 Network cards to Meridian Mail or PRI/DTI cards)

**Table 4**  
**Hardware requirements for an AC-powered Option 51C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21AA	Core/Network module, AC
1	NT6D65AA	Core to Network Interface card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT6D81	Power Regulator card (see note 2)
1	NT7D00AA	Top Cap, AC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
1	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 3)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC

**Table 4**  
**Hardware requirements for an AC-powered Option 51C (Part 2 of 2)**

Qty	Part number	Description
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	QPC43R	Peripheral Signaling card (PS)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or QPC775E	Clock Controller Card (see note 4)
<p><b>Note 1:</b> One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required.</p> <p><b>Note 2:</b> One NT6D81 Power Regulator card is required when a QCA136 cabinet is retained as part of the upgraded system. One card is required per QCA136 and resides in any network card slot.</p> <p><b>Note 3:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 4:</b> If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.</p>		

**Table 5**  
**Hardware requirements for a DC-powered Option 51C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
1	NT6D65AA	Core to Network Interface card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT6D81	Power Regulator card (see note 2)
1	NT7D00BA	Top Cap, AC
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 1)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)

**Table 5 (Continued)**  
**Hardware requirements for a DC-powered Option 51C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D52DD	Pedestal Blower Unit, DC
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
1	QPC43R	Peripheral Signaling card (PS)
1	QPC441F	Three-Port Extender card (3PE)
1	QPC471H or QPC775E	Clock Controller Card (see note 4)
<p><b>Note 1:</b> One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required.</p> <p><b>Note 2:</b> One NT6D81 Power Regulator card is required when a QCA136 cabinet is retained as part of the upgraded system. One card is required per QCA136 and resides in any network card slot.</p> <p><b>Note 3:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 4:</b> If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the ST/STE hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 51C.
- Back up the customer database to tape or disk by doing a data dump.
- Convert the ST/STE customer database to Release 25.

### Verify power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Perform a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the ST/STE system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**Converting the customer database to Release 25**

The database can be converted on-site, or sent to Nortel Networks for conversion.

**Table 6**  
**Database conversion steps**

**Converting a Release 18 database consists of:**

- converting Release 18 to 19 on the STE system
- converting Release 19 to 21 on the STE system
- converting Release 21 to 24 on the Option 51C system

**Converting a Release 19 database consists of:**

- converting Release 19 to 21 on the Option STE system
- converting Release 21 to 24 on the Option 51C system

*Note:* You have to convert the customer database to Release 21 in the STE system before converting it to Release 25 in Option 51C.

**Converting a Release 18 and 19 database to release 21**

To use this procedure, your STE system must currently be running version 18.20 or higher.

- 1 Perform the preconversion procedure in *Software Conversion Procedures* (553-2001-320) before beginning the following conversion procedures. Remove the front covers from the STE system.
- 2 Log into the system.

- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

- 4 Set the ENB/DIS switch on the QPC742 FDI or NT9D34 EMSI card to DIS and remove the card. Replace the QMM42 cartridge for Release 18 software with the QMM42 cartridge for Release 19 software. Reinstall and enable the FDI card or EMSI card.
- 5 Remove the disks containing Release 18 software from the drives and insert floppy disks with Release 19 software into the FDU or SMDU drives. Insert disk A1 in drive A and disk B1 in drive B.
- 6 Perform a data dump. At the prompt, enter **EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 Set the ENB/DIS switch on the QPC742 FDI or NT9D34 EMSI card to DIS and remove the card. Replace the QMM42 cartridge for Release 19 software with the QMM42 cartridge for Release 21 software. Reinstall and enable the FDI card or EMSI card.
- 8 Remove the disks containing Release 19 software from the drives and insert floppy disks with Release 21 software into the FDU or SMDU drives. Insert disk A1 in drive A and disk B1 in drive B.

- 9 Perform a data dump. At the prompt, enter  
**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 10 Press the RLD button on the NTND01 CPU card to begin a sysload. System messages similar to the following will appear:

**SYS000**  
**SYSLOAD RLS: xxISSUE:x**  
**DONE**  
**INI000**

- 11 Log into the system.  
12 Perform a data dump:

**LD 43** to load the program  
**EDD** to begin the data dump

- 13 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter  
**\*\*\*\*** to exit the program

If an “EDD034” message appears when the data dump is completed, ignore the message. This message appears when SW2-4 on the NT9D34 card is OFF.

- 14 Verify the system by using the test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.  
15 Follow “Postconversion procedure” in *Software Conversion Procedures* (553-2001-320).

You will complete converting the database to Release 25 later in these procedures after you upgrade the hardware. Proceed with “Install the Option 51C hardware” to continue with the upgrade.

## Install the Option 51C hardware

Option 51C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/C and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 1 shows Option 51C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

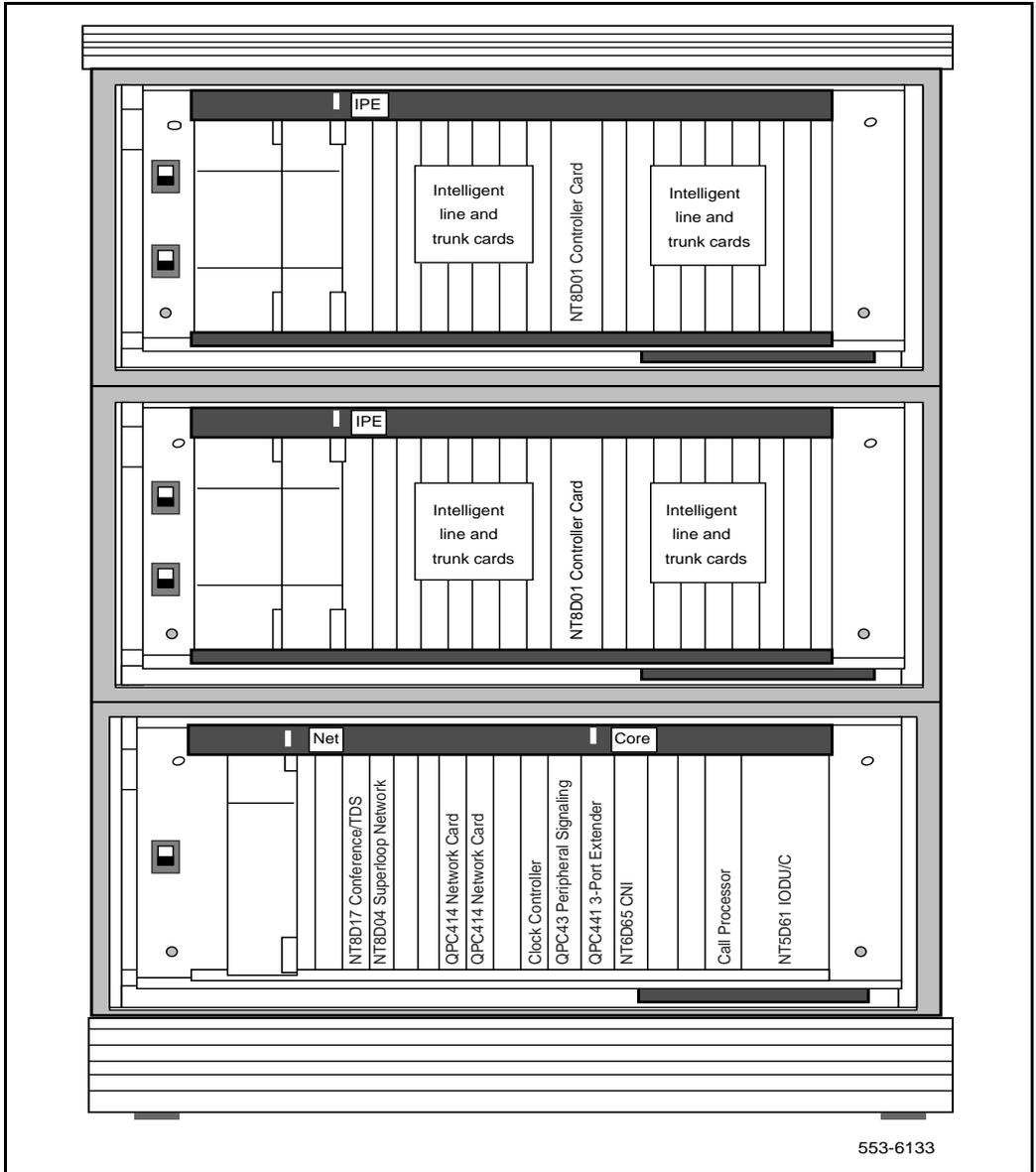
To install the Option 51C at your site, follow the procedures in *System Installation Procedures* (553-3001-210). For upgrade purposes, do not perform the following procedures during the installation process:

- do not install cabling
- do not provide power to the Option 51C
- do not perform the acceptance tests
- do not replace the covers and grills on the front and rear of the system

When the Option 51C hardware is installed, continue with the procedures on the following pages of this chapter.

**Note:** Make sure a terminal is connected to J25 on the I/O panel in the Core/Network module. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

**Figure 1**  
**Meridian 1 Option 51C**



## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the STE 4MB database to the IODUC. This is accomplished using the direct cabling method.

The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

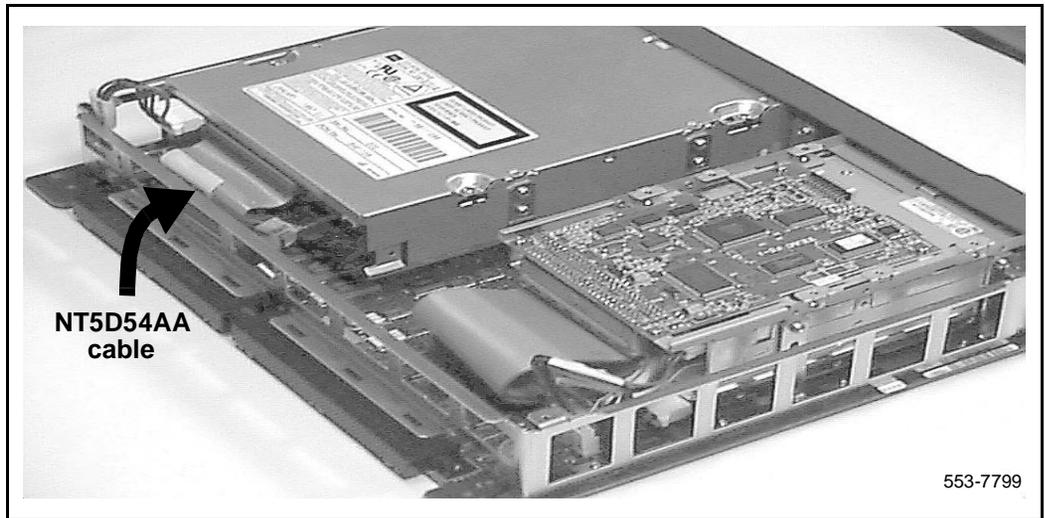
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

### IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 65, on page 394). **Do not** disconnect the cable from the IODU/C circuit board.

**Figure 2**  
**Location of NT5D54 cable on IODU/C card**



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

## MDU cabling

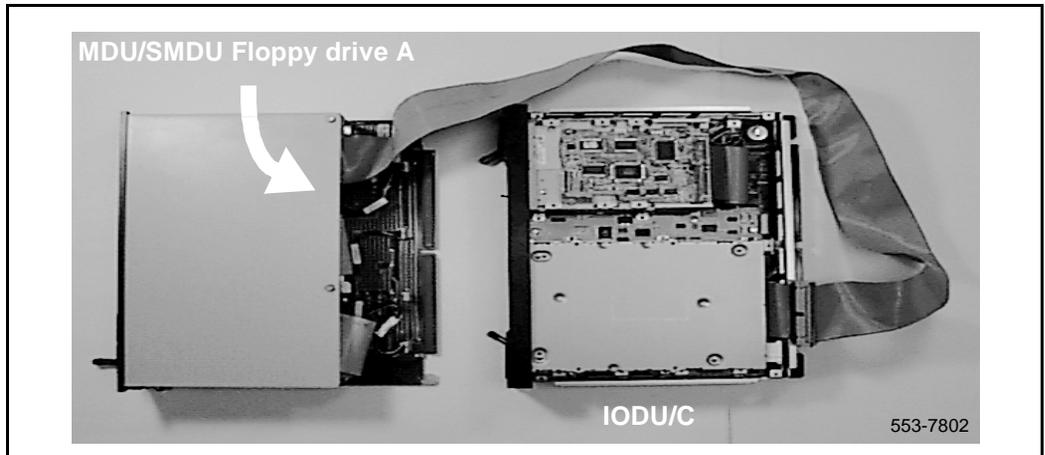
- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

### CAUTION

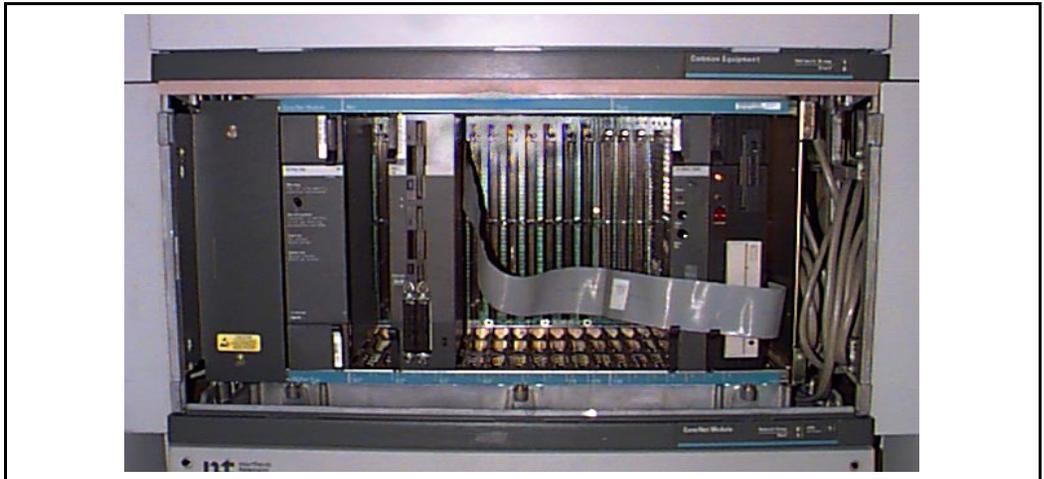
The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 42, on page 296). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 43). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

**Figure 3**  
Cabling the MDU to the IODU/C card



**Figure 4**  
IODU/C and MDU cabled in Core/Net 1



**8** Apply power to the module.

The system will load software from the floppy diskette and the terminal will display *SYSLOAD* messages during file loading. When *SYSLOAD* is completed, the NT logo appears.

- 9 Enter the time and date, when prompted.
- 10 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 11 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 12 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer
  - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y> to start installation
  - <a> Yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
  - <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
  - <cr> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
  - <q> When the Install Menu appears, select <q> to quit.  
Remove any

- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

### 13 Shut down power to the Core/Net module.

*Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage.* This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software.

## Installing Release 25 software

Before you begin:

- all cards must be installed in the Core/Net module

- the Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
- 1 Install the CD-ROM into the CD drive:
    - press the button on the CD-ROM drive to open the CD-ROM disk holder
    - place the CD-ROM disk into the holder with the disk label showing
    - use the four tabs to secure the CD-ROM in the disk holder
    - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 Enter the date and time when prompted.
  - 3 When the Main Menu appears, select the following options in sequence:
    - <u> to Install menu
  - 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
    - <a> to continue with keycode validation
    - <y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 Release 25 software is installed and is functional on the Core/Net module:
  - LD 135** to load the program
  - STAT CPU** to display the CPU status
- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
  - LD 43** to load the program
- 9 When “EDD000” appears on the terminal, enter:
  - EDD** to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:
  - \*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:
  - LD 2** to load the overlay
  - STAD** DD MM YY HR MN SC
- 12 Clear displays, major alarms, and minor alarms:
  - LD 135** to load the program
  - CDSP** to clear the display
  - CMAJ** to clear all major alarms
  - CMIN ALL** to clear all minor alarms

**CDSP** to clear the display  
**\*\*\*\*** to exit LD 135

- 13** Load overlay 137 to verify status of the CMDU and IOP:

**LD 137** to load the program  
**STAT** to get the status of the CMDU and IOP.  
**\*\*\*\*** to exit the program

- 14** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 15** Insert a B1 database disk from the software upgrade package into the IODU/C for backup.

- 16** Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43** to load the program

- 17** When “EDD000” appears on the terminal, enter

**EDD** to begin the data dump

- 18** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Converting the ST/STE system hardware

### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set the ENB/DIS switches on all cards in the ST/STE system to DIS.
- 2 Set all shelf circuit breakers to OFF.
- 3 Disconnect all network loop cables connected to the QPC414 Network cards and cables connected to the SDI cards.
- 4 Set the CAB INP circuit breaker at the front of the cabinet to OFF.
- 5 Disconnect AC power for the cabinet by setting the commercial AC power supply circuit breaker at the service panel to OFF.
- 6 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 7 Disconnect cables from the MSU faceplate, release the locking devices and remove the MSU.
- 8 Disconnect the MSU shelf alarm connector.
- 9 Remove remaining cards from the main CE shelf and store them in a safe place.
- 10 If you are using the ST/STE CE shelf for PRI/DTI cards, install the PRI/DTI cards into the CE shelf card slots. Refer to *ISDN PRI: Installation* (553-2901-201) for PRI installation procedures.
- 11 Install the NT6D81 Power Regulation card into the CE shelf of the ST/STE cabinet. The NT6D81 Power Regulation card is required only when a QCA136 cabinet is retained as part of the upgraded system. One card is required per QCA136 cabinet and resides in any network card slot.

### Moving the network cards

The following steps describe how to move the network cards from the ST/STE system to the Option 51C.

- 1 Label each card that is being transferred to a Core/Network module with loop 0–15 for the card.
- 2 If not already done, remove the network cards that are being transferred from the ST/STE system shelf to the Option 51C Core/Network module.
- 3 Install the network cards in the Option 51C Core/Network module and hook the locking devices.
- 4 Cable the network loops.

For QPC414 Network cards and associated QPC659 Dual Loop Peripheral Buffer (DLB) cards:

- a If the columns containing the network and DLB cards are in the same row, the network loop is cabled from the faceplate of the network card to the faceplate of the DLB card.
- b If the columns containing the network and DLB cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the DLB card I/O panel.

For NT8D04 Superloop Network cards and associated NT8D01 Controller cards:

- c If the columns containing the network and controller cards are in the same row, the network loop is cabled from the faceplate of the network card to the backplane for the controller card.
- d If the columns containing the network and controller cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the controller card I/O panel.

Refer to *System Installation Procedures* (553-3001-210) for more information on cabling network loops. For external cabling procedures, refer to “Installing external cables” on page 305.

- 5 Enable the faceplate switches.

### Installing external cables

After the Option 51C column is installed and the ST/STE peripheral cabinet is prepared, you must connect them with external cables.

- 1 Install network cables between the ST/STE cabinet and the Option 51C column. The network cables connect the QPC414 Network cards in the Core/Network module to a dual loop peripheral buffer (DLB) card, DTI/PRI card, or Meridian Mail.

Each QPC414 Network card connection requires three cables:

- a Connect the NT8D86 cable from the faceplate connector of the QPC414 Network card to the I/O panel connector at the rear of the Core/Network module.
  - b Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network Module to the I/O panel of the ST/STE cabinet.
  - c Connect the NT9J98 cable from the faceplate connector of the QPC659 Dual Loop Peripheral Buffer card to the I/O panel on the ST/STE cabinet (the same cable type is used to connect QPC414 Network cards to Meridian Mail and PRI/DTI cards).
- 2 Connect the system monitor in the Option 51C to the power monitor in the ST/STE cabinet.
  - 3 If you are using PRI/DTI cards, connect the PRI cables. Refer to *ISDN PRI: Installation* (553-2901-201) for PRI cabling requirements and procedures.
  - 4 Connect all external cables from the MDF to the PE shelf connectors on the cabinet I/O panels and the IPE module I/O panels. Refer to the appropriate procedure in *System Installation Procedures* (553-3001-210) for IPE module I/O panel external cabling procedures.

## Completing the upgrade

- 1 Verify that all cards in the Option 51C are enabled (all ENB/DIS switches are set to ENB) and that the MAINT/NORM switch on the CP card is set to NORM.
- 2 Perform a system reload by pressing the RLD button on the CP card. Watch the terminal for system reload (SYS) and initialization (INI) messages. Following this, the Option 51C core is operational. If the sysload or initialization fails, refer to “Troubleshooting” on page 959.
- 3 Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).
- 5 Restore power to the ST/STE system.

The Option 51C Release 25 system is now operational. Install all module covers to complete the upgrade.



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# ST and STE upgrade to Option 61C

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## Content list

The following are the topics in this section:

- [Reference list 55](#)
- [Equipment required 57](#)
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## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*
- *System Installation Procedures (553-3001-210)*
- *X11 Administration (553-3001-311)*
- “System monitor upgrade installation” on page 805
- *Circuit Card: Installation and Testing (553-3001-211)*

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an SL-1 ST or STE system to a Meridian 1 Option 61C X11 release 25, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 61C next to the SL-1 cabinet
- removing the common equipment (CE) from the SL-1 cabinet
- connecting the cabinet to the Option 61C column

**IMPORTANT**

STE systems on release 20 will remain on their current system and convert the database directly to release 21. The hardware upgrade to Option 61C is performed as part of the software upgrade to release 25. This eliminates the requirement of interim hardware.

Upgrading the software consists of one of the following:

- transfer the customer database from the ST/STE to extra-high-density disks
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 61C after the upgrade is complete

*Note:* It is recommended that ST system customers send the customer database diskette to Nortel Networks for conversion; contact your Nortel Networks representative to arrange for this.

## Equipment required

Tables 7 and 8 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used.

**Table 7**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply , AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable

**Table 7**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
1	NT8D81	Power Regulation card
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

**Table 8**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
1	NT8D81	Power Regulation card

**Table 8**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT6D42CC Ringing Generator, DC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the ST/STE hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 61C.
- Install the Option 61C hardware.
- Back up the customer database to tape or disk by doing a data dump.

### Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Installing Option 61C hardware

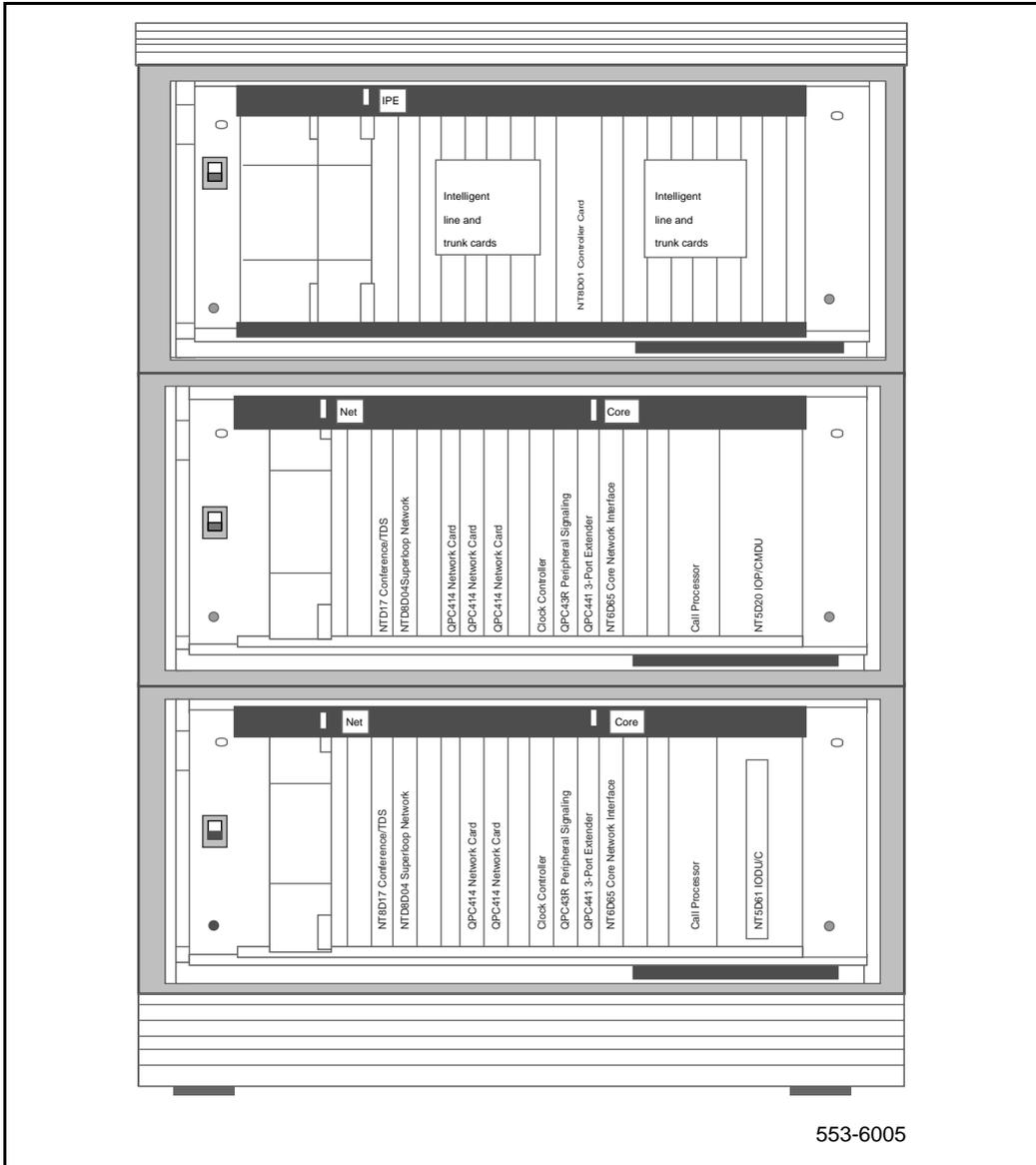
Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/C and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 5 shows Option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the Option 61C at your site, first follow the procedures in *System Installation Procedures* (553-3001-210) and then continue with the procedures on the following pages of this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 69).

Figure 5  
Meridian 1 Option 61C



553-6005

### Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the ST/STE system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Converting the customer database to release 21

If the ST/STE is running X11 release 18 or 20 software, you must convert the database to release 21 before continuing with the upgrade. You can convert the database on-site, or send it to Nortel Networks for conversion.

If your system is running release 21 software, skip this section and continue with “Converting the SL-1 hardware” on page 68.

**Note:** It is recommended that ST system customers send the customer database diskettes to Nortel Networks for conversion; contact your Nortel Networks representative to arrange for this.

You will complete converting the database to release 25 later in these procedures after you convert the software to release 21 and upgrade the hardware.

**CAUTION**

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

Perform the preconversion procedure in *Software Conversion Procedures* (553-2001-320) before beginning the following conversion procedures. During the preconversion procedure, always enter LD 43 using the source media.

**Converting release 18 and 19 database to release 21**

- 1 Remove the front covers from the CPU/Network cabinet in the STE system.
- 2 Log into the system.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

*Note:* Your system will have either a QPC584 MSI card or an NT9D34 EMSI card.

- 4 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 18 software with the QMM42 cartridge for release 19 software.
- 5 For MSI cards, set position 4 on switch SW3 to OFF. For EMSI cards, set position 4 on switch SW2 to OFF. Reinstall and enable the card.
- 6 Remove the disks containing release 18 software from the drives and insert ED floppy disks with release 19 software into the NTND16 MDU drives. Insert disk A in DRV A and disk B in DRV B.

- 7 Perform a data dump. At the prompt, enter  
**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Simultaneously press both RLD buttons on the NTND10 CMA cards. System messages similar to the following will appear:

```
SYS000  
SYSLOAD RLS: xxISSUE:x  
DONE  
INI000
```

- 9 Log into the system.
- 10 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

- 11 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 19 software with the QMM42 cartridge for release 21 software. Reinstall and enable the card.
- 12 Remove the disks containing release 19 software from the drives and insert ED floppy disks with release 21 software into the NTND16 MDU drives. Insert disk A1 in DRV A and disk B1 in DRV B.

- 13** Perform a data dump. At the prompt, enter  
**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 14** Simultaneously press both RLD buttons on the NTND10 CMA cards. When prompted, remove disk A1 from the A drive and insert disk A2. System messages similar to the following will appear:

**SYS000**  
**INSERT DISK A2 INTO DRIVE A**  
**SYSLOAD RLS: xxISSUE:x**  
**DONE**  
**INI000**

- 15** Immediately following the system initialization sequence, remove disk A2 from drive A and insert disk A1.

- 16** Log into the system.

- 17** Copy the contents of the data disks to the hard disk by entering

**LD 43** to load the program  
**RES** to copy the entire contents of the backup to the hard disk

Insert the additional system disk (A2) when requested. When the restore sequence is complete, enter

**\*\*\*\*** to exit the program

- 18** Remove disk A2 from drive A and insert disk A1.

- 19** Set the ENB/DIS switch on each MSI or EMSI card to DIS.

- 20 Remove each MSI or EMSI card. For MSI cards, set position 4 on switch SW3 to ON. For EMSI cards, set position 4 on switch SW2 to ON.
- 21 Reinstall each MSI or EMSI card and set the ENB/DIS switch to ENB.
- 22 If you are installing an MDU and the system is not configured for a hard disk drive, change the configuration record:
- |              |  |
|--------------|--|
| <b>LD 17</b> | to load the program                            |
| <b>IOTB</b>  | enter <b>YES</b> to change I/O devices         |
| <b>ADAN</b>  | enter <b>CHG HDK 0</b> to add a hard disk unit |
| <b>****</b>  | to exit the program                            |

- 23 Perform a data dump:

<b>LD 43</b>	to load the program
<b>EDD</b>	to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter

<b>****</b>	to exit the program
-------------	---------------------

### CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 24 Verify the system by using the test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.

You will continue converting the database to release 25 later in these procedures after you upgrade the hardware. Proceed with “Converting the SL-1 hardware” on page 68 to continue with the upgrade.

## Converting the SL-1 hardware

### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set the ENB/DIS switches on all CE cards to DIS.
- 2 Disconnect all network loop cables connected to the QPC414 Network cards and cables connected to the SDI cards.
- 3 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 4 Disconnect cables from the MSU faceplate, release the locking devices, and remove the MSU.
- 5 Disconnect the MSU shelf alarm connector.
- 6 Remove remaining cards from the CE shelf and store them in a safe place.
- 7 Install the NT8D81 Power Regulation card into slot 2 of the CE shelf in the ST cabinet.

## Installing external cables

After the Option 61C columns are installed and the peripheral cabinet has been prepared, you must connect them with external cables.

- 1 Install network cables between the SL-1 cabinet and the Option 61C modular column. These cables connect network cards in the Core/Network module to the peripheral buffer card in the PE shelf in the cabinet.

Each network loop connection requires three cables:

- d Connect the NT8D86 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
  - e Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the top or the side of the SL-1 cabinet. A connector housing kit is required for the cabinet to accept the cable.
  - f Connect the NT9J98 cable from the faceplate connector of the peripheral buffer to the I/O panel connector at the top or the side of the cabinet.
- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 805.
  - 3 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface.
  - 4 Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the SL-1 cabinet CE shelf.
  - 5 Install one PRI/DTI card in this module as the primary clock reference, and install the rest of the PRI/DTI cards in the peripheral cabinet CE shelf. For installation procedures, refer to *Circuit Card: Installation and Testing* (553-3001-211).
  - 6 Verify that PRI/DTI cards in the SL-1 peripheral cabinet CE shelf are connected to the MDF or network interface.
  - 7 Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to *System Installation Procedures* (553-3001-210) for the installation procedures for the IPE module I/O panel external cable.

**Note:** Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.

- 7 data bits
- 1 stop bit
- Space parity
- Full duplex
- XON protocol

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the STE 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

**Note:** The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### IODU/C cabling

- 1** Verify that Core/Net 1 is powered down.
- 2** Remove the IODU/C card from Core/Net 1.
- 3** Ensure that the round 1/2” diameter IODU/C security device is installed. If it is not installed:
  - a** Locate the IODU/C security device.
  - b** With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.

- 4 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 5 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 6 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 7 Install the IODU/C card into slot 17 of Core/Net 1.

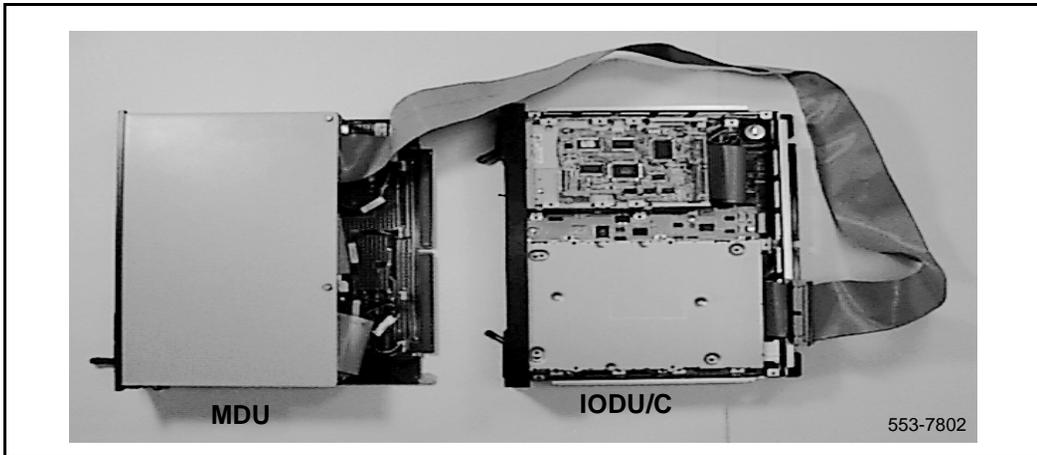
### MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:  
**LD 37**           to load the program  
**DIS MSI 0**       to disable the card
  - b Remove the floppy diskettes from the disk drives.
  - c Label and disconnect cables from the faceplate of the MDU or SMDU.
  - d Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 6). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 6**  
**Cabling the MDU to the IODU/C card**



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer

- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit. Remove any
- <y> to confirm quit
- <a> to reboot the system  
  
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

## 16 Shut down power to Core/Net 1 module.

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.

- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 25 software in Core/Net 1.

## Installing release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
  - the CP Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
  - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 When the NT logo appears, press <CR> to continue.
  - 3 Log into the system.
  - 4 Enter the date and time when prompted.

- 5 When the Main Menu appears, select the following options in sequence:
  - <u> to Install menu
  
- 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
  
- 7 When the Install Menu appears, select the following options in sequence:
  - <a> to install software, CP-BOOTROM, and IOP-ROM
  - <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

  - <y> to start installation
  - <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

  - <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

  - <CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

  - <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

  - <y> to start installation
  - <a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

  - <CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>** to quit  
**<y>** to confirm quit  
Remove the diskette from the floppy drive.  
**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 8 When the sysload is complete, log into the system.
- 9 Confirm that the X11 release 25 software is installed and is functional on Core/Net 1:

**LD 135** to load the program  
**STAT CPU** to display the CPU status

*Note:* This concludes the X11 release 25 software installation into the IODU/C in Core/Net 1.

- 10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43** to load the program

- 11 When "EDD000" appears on the terminal, enter:

**EDD** to begin the data dump

- 12 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter:

**\*\*\*\*** to exit the program

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13 Set date and time:
  - LD 2 to load the overlay
  - STAD DD MM YY HR MN SC
- 14 Set the ENB/DIS switch on all CNI cards in Core 1 to ENB.
- 15 Perform the following three steps in uninterrupted sequence:
  - a set the ENB/DIS switch on all CNI cards in Core/Net 0 to DIS
  - b press and hold the MAN INT button on the CP card in Core/Net 1
  - c release the MAN INT button

After the system initialization has finished (INI messages are no longer displayed on the system terminal), proceed with “Copying software and database to Core/Net 0” on page 78.

## Copying software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.

- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:  

<b>&lt;cr&gt; &lt;u&gt;</b>	to Install menu
-----------------------------	-----------------
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  

<b>&lt;a&gt;</b>	continue with keycode validation
<b>&lt;y&gt;</b>	to confirm that keycode matches CD-ROM release
- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:  

<b>&lt;o&gt;</b>	to copy system software from the other Core
<b>&lt;a&gt;</b>	to continue
<b>&lt;a&gt;</b>	to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<b>&lt;CR&gt;</b>	press <CR> when you are ready to continue
<b>&lt;y&gt;</b>	to start installation
<b>&lt;a&gt;</b>	to continue with ROM upgrade
<b>&lt;y&gt;</b>	to start installing CP-BOOT ROM
<b>&lt;a&gt;</b>	to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<b>&lt;CR&gt;</b>	to return to the Install Menu
-------------------	-------------------------------

When the Install Menu appears, install IOP-ROM:

<b>&lt;f&gt;</b>	to install IOP-ROM only
------------------	-------------------------

When the Installation Status Summary screen appears:

<b>&lt;y&gt;</b>	to start installation
<b>&lt;y&gt;</b>	to continue installing IOP-ROM

**<a>** to continue with ROM upgrade  
When the installation is complete, the Installation Status Summary screen appears.

**<CR>** to return to the Install Menu  
When the Install Menu appears, install the database:

**<d>** to install database only  
When the Installation Status Summary screen appears:

**<y>** to start installation

**<a>** to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

**<CR>** to return to the Install Menu  
When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

**<q>** to quit

**<y>** to confirm quit

**<a>** to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

## Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 4 In 60 seconds, the LCD will display and confirm the process:

### **RUNNING ROM OS ENTERING CP VOTE**

An "HW5134" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

**6** Perform a redundancy sanity test:

- LD 135** to load the program
- STAT CNI** to get the status of all configured CNIs
- STAT CPU** to get the status of both Cores
- TEST CPU** to test the inactive CP card and CP-to-CP cable
- TEST CNI c s** to test the CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

**7** Test the inactive Core, then switch Cores and test the other side:

- SCPU** to switch to Core 0
- TEST CPU** to test the inactive CP card and CP-to-CP cable

*Note:* Testing the CP card can take up to 20 minutes.

**8** Get the status of the CP cards and memories and of the CNIs:

- STAT CPU** to get the status of both Cores
- STAT CNI** to get the status of all configured CNIs
- \*\*\*\*** to exit LD 135

**9** Synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled:

- LD 137** to load the program
- STAT** to get the status of IODU/Cs, and redundancy (verify that IODU/C 1 is active)
- SYNC** to synchronize the hard disks
- TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 30 minutes.

**10** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

- STAT** to get the status of IODU/Cs, and redundancy
- SWAP** to switch IODU/Cs (if necessary)
- \*\*\*\*** to exit LD 137

- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 12 Insert a B1 database disk into each IODU/C for backup. Load overlay 43 and perform a data dump to the backup disks. This command creates a backup on the floppy disk in the active IODU/C.  
  
Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program
- 13 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 14 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Moving the network cards

- 1 Perform the appropriate step to turn off power in each Core/Network module:
  - a For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
  - b For DC-powered systems, set the circuit breaker (located at the rear of the pedestal) to OFF (down position).
- 2 Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3 On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.

- 4 Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.
- 5 Switch the cables at the PE end:
  - a If NT8D92 cables inside the IPE modules are not connected, connect them to the faceplates of the appropriate NT8D01 Controller cards.
- 6 Turn on power to the cabinet:
  - a Set the AC input circuit breaker on the -48V rectifier in the cabinet to ON.
  - b Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the Option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).
- 8 Follow the appropriate step below to restore power in each Core/Network module.

*Note:* If power to both Core/Network modules is restored simultaneously, the IODU/Cs should still be synchronized.

  - a For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
  - b For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).
- 9 Reenter system configuration data into the customer database, if required, in the following sequence:
  - a Balance the network loops between both Core/Network shelves. To do this, do the following:
    - Define the target loop using the Configuration Program (LD 17).
    - Move the loops using the Move Data Blocks Program (LD 25).

Refer to *X11 Administration* (553-3001-311) for instructions on using LD 17 and LD 25.

**Note:** You may have to add one or more network loops in the database for network shelf 1 (loops 16 through 31) to make the network shelf operational.

- b** Move the network cards from the ST/STE system to the network card slots previously defined.
  - c** Configure I/O devices to reflect the current configuration.
  - d** Reenter customer data blocks. System options and features must reflect the current configuration.
  - e** Configure station data blocks.
  - f** Configure route data blocks.
  - g** Configure trunk data blocks.
  - h** Configure remaining system configuration records.
  - i** Verify system operation before adding new equipment.
  - j** Configure new equipment and functions, if any.
- 10** Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 11** Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Option 61C X11 release 25 system is now operational. Install all module covers to complete the upgrade.

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# RT upgrade to Option 61C

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## Content list

The following are the topics in this section:

- [Reference list 85](#)
- [Equipment required 87](#)
- [Upgrade preparation 92](#)
- [Converting the RT hardware 95](#)
- [Installing external cables 96](#)
- [Transferring the database from 4 MB to IODU/C 98](#)
- [Installing release 25 software in Core/Net 1 103](#)
- [Copying the software and database to Core/Net 0 106](#)
- [Returning the system to redundant mode 108](#)
- [Moving network cards 111](#)
- [Completing the upgrade 112](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *System Installation Procedures* (553-3001-210)
- *Circuit Card: Installation and Testing* (553-3001-211)
- “Installing external cables” on page 125
- “System monitor upgrade installation” on page 805

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

This section describes how to upgrade an SL-1RT system to a Meridian 1 Option 61C running on X11 release 25.

To upgrade an RT system, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 61C cabinet next to the RT cabinet
- cabling the cabinet to the Option 61C column
- removing the common equipment (CE) from the RT cabinet

Upgrading the software consists of one of the following:

- transfer the customer database on the RT to extra-high-density disks
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 61C after the upgrade is complete

## Equipment required

Tables 9 and 10 list the items required to upgrade an AC- or DC-powered RT system to a Meridian 1 Option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect peripheral shelves in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D86AC cables that connect the network card and the peripheral buffer card to the I/O panel
- NT9J96 cables that connect the I/O panel in the Core/Network module to the cabinet I/O panel

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 9**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

**Table 9**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

**Table 10**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

**Table 10**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the RT hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 61C.
- Back up the customer database to disk by doing a data dump.
- Convert the customer database to release 25 compatibility.
- Install the Option 61C hardware.

### Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Installing Option 61C hardware

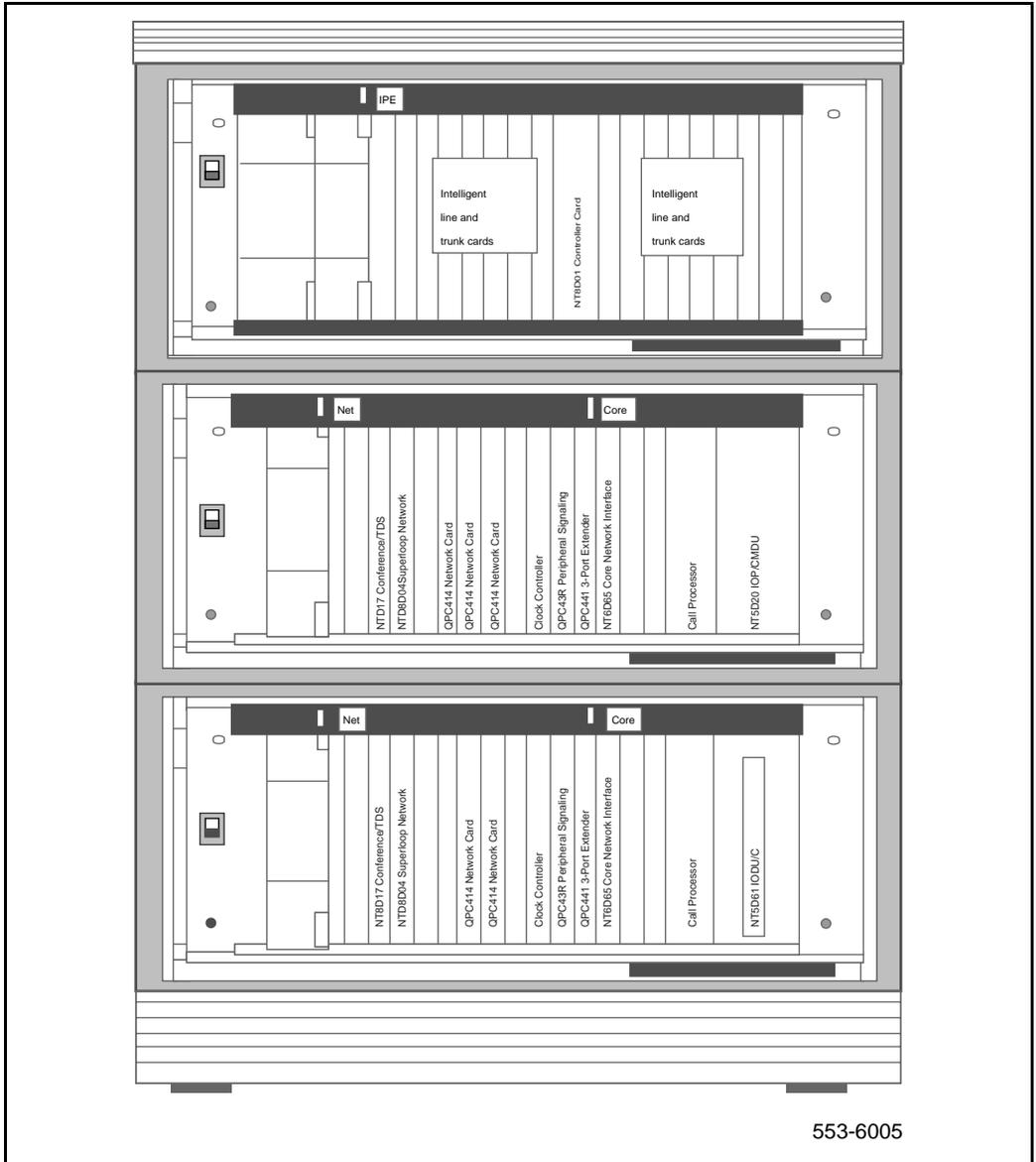
The Option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as MDUs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 7 shows the Option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the Option 61C at your site, first follow the procedures in *System Installation Procedures* (553-3001-210) and then continue with the procedures in this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 125).

**Figure 7**  
**Meridian 1 Option 61C**



553-6005

### Performing a data dump

Before beginning the upgrade, you must perform a data dump to your current tapes or disks.

- 1 On the RT system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

---

## Converting the RT hardware

### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Remove the covers from the front and rear of the cabinet.
- 2 Set ENB/DIS switches to DIS.
- 3 Set all shelf circuit breakers to OFF.
- 4 Disconnect all network loop cables connected to QPC414 Network cards and the cables connected to QPC139 SDI cards.
- 5 Set the CAB INP circuit breaker at the front of the cabinet to OFF.
- 6 Disconnect the AC power for the cabinet by setting the commercial AC power supply circuit breaker at the service panel to OFF.
- 7 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 8 Disconnect cables from the MSU faceplate, release the locking devices, and remove the MSU.
- 9 Disconnect the MSU shelf alarm connector.
- 10 Remove remaining cards from the main CE shelf and store them in a safe place.
- 11 If you are using the CE shelf for PRI/DTI cards, do the following:
  - a Install PRI/DTI cards into card slots 3, 5, 7, 9, and 11 of the CE shelf.
  - b Install at least one PRI/DTI card, as a primary clock reference, in the Core/Network module of the Option 61C column. This provides the clock reference for the PRI/DTI cards. For installation procedures, refer to *Circuit Card: Installation and Testing* (553-3001-211).

- 12 Do the following, if you are not going to use the CE shelf for PRI/DTI cards:
  - a Tag and disconnect power connectors and alarm connectors from the QSD18, QSD19, or QSD2 shelf, if equipped. Tape all exposed power leads with electrical insulation tape.

*Note:* If the cabinet is equipped with an expansion CE shelf (a second CE shelf), disconnect and remove the wiring between the +5V, +12V, -12V, and LGND connections on the CE shelf.
  - b Tag and disconnect all CE alarm connectors.
  - c Remove the QPC84 Power Monitor and set the switches to disable power monitoring in the CE shelf. A QPC84 Power Monitor vintage S or later is required. Refer to *Circuit Card: Installation and Testing* (553-3001-211) for switch setting information.
  - d Install the QPC84S Power Monitor.

## Installing external cables

Now that the Option 61C column is installed and the peripheral cabinet has been prepared, you must connect them with external cables.

- 1 Install network cables between the peripheral cabinet and the new modular column. This connects network cards in the Core/Network module to the peripheral buffer card in the PE shelf of the cabinet.

Each network loop connection requires that three cables be installed:

  - a Connect the NT8D86 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
  - b Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the top or the side of the peripheral cabinet.
  - c Connect the NT9J98 cable from the faceplate connector of the peripheral buffer to the I/O panel connector at the top or the side of the cabinet.
- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 805.

- 3 Connect the external cable from the Core/Network module I/O panel connector (labeled “PRI/DTI”) to the network interface.
- 4 Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the peripheral cabinet CE shelf. For installation procedures, refer to *Circuit Card: Installation and Testing* (553-3001-211).
- 5 Verify that the PRI/DTI cards in the peripheral cabinet CE shelf are connected to the MDF.
- 6 Connect all external cables from the MDF to the PE shelf connectors on the cabinet I/O panels and the IPE module I/O panels. Refer to the appropriate procedure in *System Installation Procedures* (553-3001-210) for IPE module cabling procedures.
- 7 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface. Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the existing cabinet CE shelf.
- 8 Verify that PRI/DTI cards in the existing peripheral cabinet CE shelf are connected to the cross connect or network interface.

Connect all external cables from the cross connect to the PE shelf connectors on cabinet I/O panels and IPE module I/O panels. Refer to the appropriate procedure in *System Installation Procedures* (553-3001-210) for IPE module I/O panel external cable installation procedures.

**Note:** Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data, 1 stop bit, space parity, full duplex, XON protocol.

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the RT 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### IODU/C cabling

- 1 Verify that Core/Net 1 is powered down.
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Verify that the round 1/2” diameter IODU/C security device is installed. If the security device is not installed:
  - a Locate the IODU/C security device.
  - b With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.

- 4 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 5 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 6 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 7 Install the IODU/C card into slot 17 of Core/Net 1.

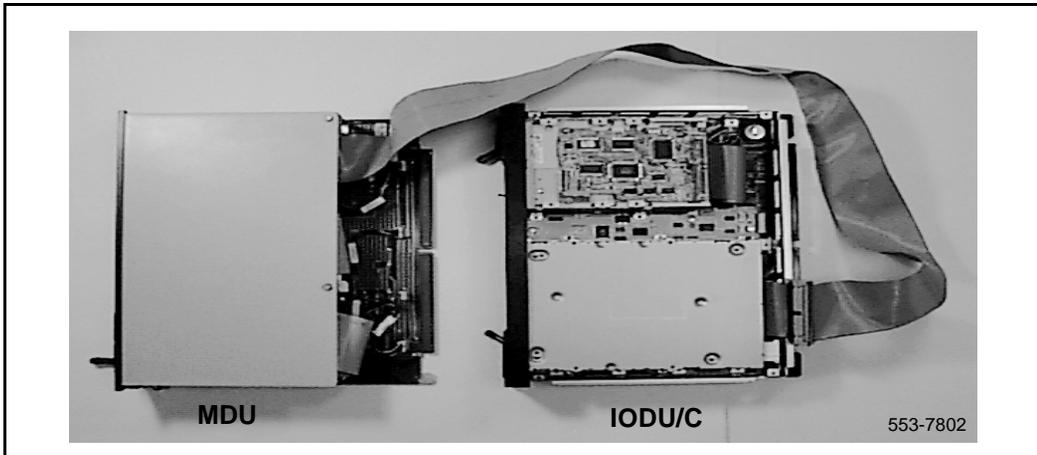
### MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:  
**LD 37**           to load the program  
**DIS MSI 0**       to disable the card
  - b Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
  - c Remove the floppy diskettes from the disk drives.
  - d Label and disconnect cables from the faceplate of the MDU or SMDU.
  - e Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 8). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 8**  
**Cabling the MDU to the IODU/C card**



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).

- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following Options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer
  - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y> to start installation
  - <a> yes, transfer the database  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
  - <CR> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

**<CR>** Press return to return to the Install Menu.

Remove any diskettes from the floppy drive.

**<q>** When the Install Menu appears, select <q> to quit.

**<y>** to confirm quit

**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

## **16 Shut down power to Core/Net 1 module.**

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.

- 21 Reinstall the MDU/SMDU into CPU 0:
  - a Connect the cable(s) to the faceplate of the MDU.
  - b Install the floppy diskette in the MDU
  - c Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
  - d Software enable the MSI, EMSI, or FDI card:  
**LD 37** to load the program  
**ENB MSI 0** to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 25 software in Core/Net 1.

## Installing release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive

- the module must be powered on
  - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 Enter the date and time when prompted.
  - 3 When the Main Menu appears, select the following options in sequence:
    - <u> to Install menu
  - 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
    - <a> to continue with keycode validation
    - <y> to confirm that the keycode matches the CD-ROM release
  - 5 When the Install Menu appears, select the following options in sequence:
    - <a> to install software, CP-BOOTROM, and IOP-ROM
    - <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

    - <y> to start installation
    - <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

    - <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

    - <CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

**<a>** to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

**<y>** to start installation

**<a>** to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

**<CR>** to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>** to quit

**<y>** to confirm quit

Remove the diskette from the floppy drive.

**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 release 25 software is installed and is functional on Core/Net 1:

**LD 135** to load the program

**STAT CPU** to display the CPU status

*Note:* This concludes the X11 release 25 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43** to load the program

- 9 When “EDD000” appears on the terminal, enter:  
**EDD** to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:  
**LD 2** to load the overlay  
**STAD** DD MM YY HR MN SC

## Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>` to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>` continue with keycode validation  
`<y>` to confirm that keycode matches CD-ROM release
- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:  
`<o>` to copy system software from the other Core  
`<a>` to continue  
`<a>` to continue  
When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.  
`<CR>` press <CR> when you are ready to continue  
`<y>` to start installation  
`<a>` to continue with ROM upgrade  
`<y>` to start installing CP-BOOT ROM  
`<a>` to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation

<y> to continue installing IOP-ROM

<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

## Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**

- 4 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

- 6 Perform a redundancy sanity test:

<b>LD 135</b>	to load the program
<b>STAT CNI</b>	to get the status of all configured CNIs
<b>STAT CPU</b>	to get the status of both Cores
<b>TEST CPU</b>	to test the inactive CP card and CP-to-CP cable
<b>TEST CNI c s</b>	to test the CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Test the inactive Core, then switch Cores and test the other side:

<b>SCPU</b>	to switch to Core 0
<b>TEST CPU</b>	to test the inactive CP card and CP-to-CP cable

*Note:* Testing the CP can take up to 20 minutes.

- 8 Get the status of the CP cards and memories and of the CNIs:

<b>STAT CPU</b>	to get the status of both Cores
<b>STAT CNI</b>	to get the status of all configured CNIs
<b>****</b>	to exit LD 135

- 9 Load overlay 137 and synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled:

**LD 137** to load the program  
**STAT** to get the status of IODU/Cs, and redundancy (verify that IODU/C 1 is active)  
**SYNC** to synchronize the hard disks  
**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 30 minutes.

- 10 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

**STAT** to get the status of IODU/Cs, and redundancy  
**SWAP** to switch IODU/Cs (if necessary)  
**\*\*\*\*** to exit LD 137

- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 12 Insert a B1 database disk into each IODU/C for backup. Load overlay 43 and perform data dump. This creates a backup on the floppy disk in the active IODU/C:

**LD 43** to load the program  
**EDD** to begin the data dump

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Moving network cards

- 1** Follow the appropriate step below to turn off power in each Core/Network module:
  - a** With AC power, set the circuit breaker on the MPDU in the module to OFF (down position).
  - b** With DC power, set the circuit breaker (located at the rear of the pedestal) to OFF (down position).
- 2** Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3** On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4** Connect all cables to the cards (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Enable the faceplate switches.
- 5** Switch the cables at the PE end:
  - a** If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.
- 6** Turn on power to the cabinet:
  - a** Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
  - b** Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7** In the Option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).
- 8** Follow the appropriate step below to restore power in each Core/Network module.

**Note:** If power to both Core/Network modules is restored simultaneously, the CMDUs should still be synchronized.

- a For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
- b For DC-powered systems, simultaneously set the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).

## Completing the upgrade

- 1 After the system initializes, reenter system configuration data into the customer database, if required, in the following sequence:
  - a Configure network loops to match loop types and loop numbers of the current configuration.
  - b Configure I/O devices to reflect the current configuration.
  - c Reenter customer data blocks. System options and features must reflect the current configuration.
  - d Configure station data blocks.
  - e Configure route data blocks.
  - f Configure trunk data blocks.
  - g Configure remaining system configuration records.
  - h Verify system operation before adding new equipment.
  - i Configure new equipment and functions, if any.
- 2 Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 3 Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Meridian 1 X11 release 25 Option 61C is now operational. Install all module covers to complete the upgrade.

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# NT upgrade to Option 61C

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## Content list

The following are the topics in this section:

- [Reference list 113](#)
- [Equipment required 115](#)
- [Upgrade preparation 120](#)
- [Installing the connector housings 122](#)
- [Converting the SL-1 hardware 123](#)
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- [Transferring the database from 4 MB to IODU/C 127](#)
- [Installing Release 25 software in Core/Net 1 131](#)
- [Copying the software and database to Core/Net 0 134](#)
- [Returning the system to redundant mode 137](#)
- [Moving network cards 139](#)
- [Completing the upgrade 140](#)

## Reference list

The following are the references in this section:

- *Product Compatibility (553-3001-156)*
- *System Installation Procedures (553-3001-210)*
- *Circuit Card: Installation and Testing (553-3001-211)*

- *X11 Administration* (553-3001-311)
- *Software Conversion Procedures* (553-2001-320)

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an NT system to an Option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 61C cabinet next to the NT cabinet
- installing new connector housings on the NT cabinet
- cabling the cabinet to the Option 61C column
- removing the common equipment (CE) from the NT cabinet

Upgrading the software consists of one of the following:

- transfer the customer database from the NT to extra-high-density disks
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 61C after the upgrade is complete

## Equipment required

Tables 11 and 12 list the items required to upgrade an AC- or DC-powered system to an X11 Release 25 Meridian 1 Option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect peripheral shelves in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D86AC cables that connect QPC414 network cards to the Core/Net I/O panel
- NT8D73 cables that connect the I/O panel in the Core/Network module to the cabinet I/O panel
- NT9J96 cables that connect the peripheral buffer card to the cabinet I/O panel

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 11**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

**Table 11**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

**Table 12**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 1)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

**Table 12**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
1	NT8D80	CPU/MDU Interface Cable (Note 2)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	

**Note 1:** Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.

**Note 2:** One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.

**Note 3:** If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

## Upgrade preparation

Some preparation is required before the conversion of the NT hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 61C.
- Back up the customer database to disk by doing a data dump
- Convert the NT system database to X11 Release 25 compatibility.
- Install the Option 61C hardware.

### Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Installing Option 61C hardware

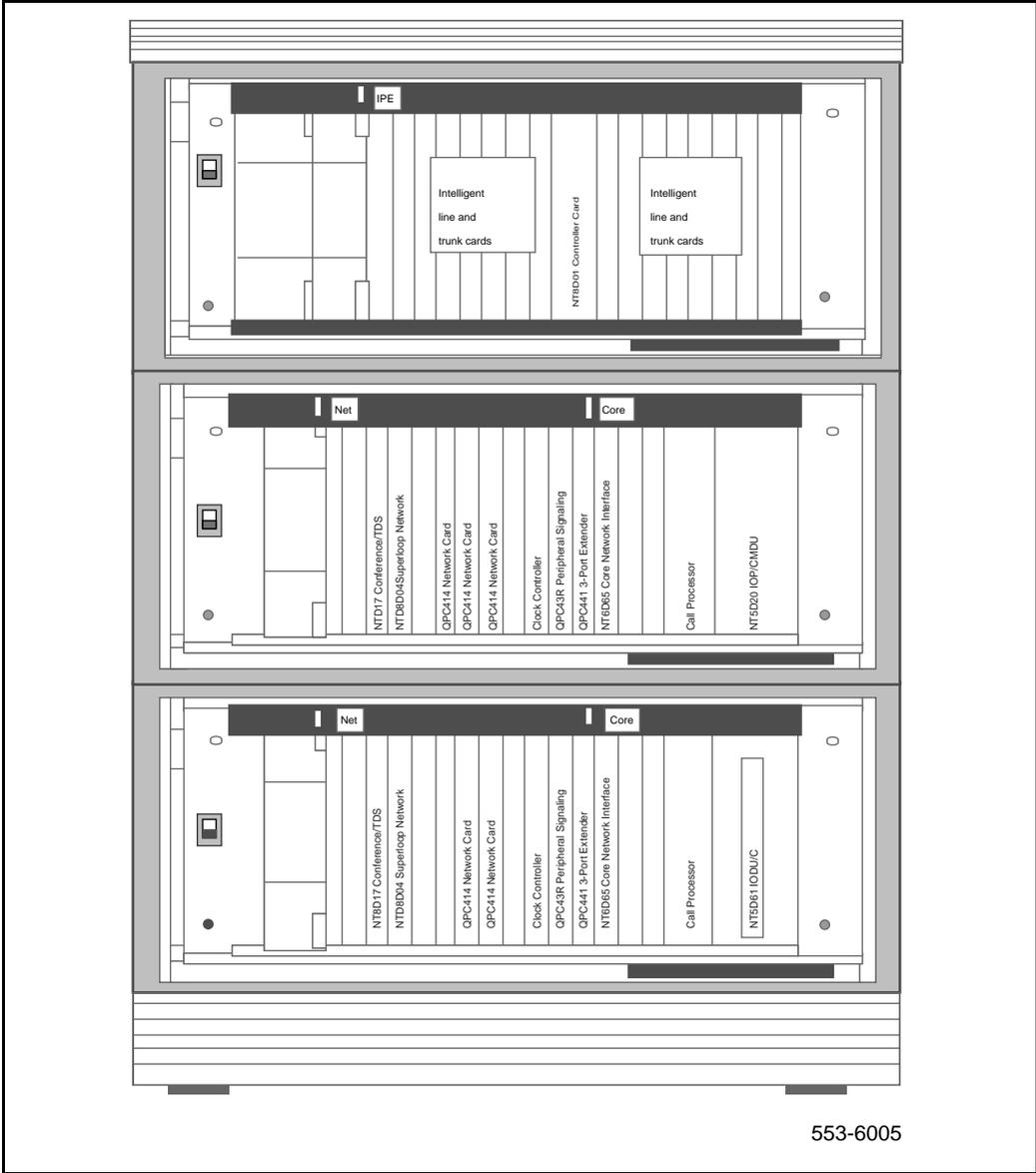
The Option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 9 shows the Option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the Option 61C at your site, first follow the procedures in *System Installation Procedures* (553-3001-210) and then continue with the procedures in this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing the connector housings” on page 122).

Figure 9  
Meridian 1 Option 61C



### Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks.

- 1 On the NT system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.

- 3 When "EDD000" appears on the terminal, enter **EDD** to begin the data dump
- 4 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Installing the connector housings

The connector housings connect cables in the peripheral cabinets to cables from the Option 61C, while also reducing electromagnetic interference (EMI). Housings are installed on the peripheral cabinet: on cabinets with a top I/O panel, the housing is installed on top of the cabinet; On cabinets with cover plates on the cabinet side panel, the housing is installed on the side panel. Both housings can accommodate six cables. These are the connector housing kits:

- P0696547 side-mounted connector housing
- P0702380 top-mounted connector housing

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## Converting the SL-1 hardware

### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

To prepare an NT system for conversion to an Option 61C:

- 1 Set all shelf circuit breakers to OFF.
- 2 Set the CAB INP circuit breaker on the QSP43 power control shelf in the QCA58 cabinet and all other shelf circuit breakers to OFF.
- 3 Set the AC input circuit breaker on the -48V rectifier in the QCA58 cabinet to OFF.
- 4 Disconnect all network loop cables connected to QPC414 Network cards and cables connected to QPC139 SDI cards.
- 5 Set the ENB/DIS switch on the faceplate of the QPC33 Tape Unit Interface (TUI) card located in the CPU/MEM shelf to DIS. If equipped with a mass storage unit, repeat this step for the mass storage unit interface card.
- 6 Remove the tape and set the power switch on the faceplate of the tape unit to OFF or 0. If equipped with a mass storage unit, repeat this step by removing the disks and turning the MSU power switch to OFF.
- 7 Disconnect and remove the cable from the faceplate of the QPC33 card to the tape unit. If equipped with a mass storage unit, disconnect the cable between the MSU and the MSI or EMSI faceplates.
- 8 Disconnect cables from the faceplate connectors on cards located in the CPU/MEM and network shelves.
- 9 Remove cards from the CPU/MEM shelf and store them in a safe place.

- 10** Disconnect power and alarm connections:
  - a** Disconnect all alarm connectors from the harness to the CPU/MEM shelf.
  - b** Unplug all power converter cards and all common equipment cards from the CPU/MEM shelf.
  - c** Disconnect power connections and the power monitor connector from the cabinet power distribution harness of the backplane on the QSP41 shelf.
  - d** Tape all exposed power leads with electrical insulation tape.
  - e** Remove the QPC84 Power Monitor and set switches to disable power monitoring in the CPU/MEM shelf. A QPC84 Power Monitor vintage S or later is required. Refer to *Circuit Card: Installation and Testing* (553-3001-211) for switch setup.
  - f** Reinstall the QPC84S Power Monitor.
- 11** Remove cards from network shelves and store them in a safe place.
- 12** Disconnect the tape unit or the mass storage unit power monitor and alarm connectors. To do this, you must first remove the tape unit or the mass storage unit and then disconnect the connectors. Tape all exposed power leads with electrical insulation tape.
- 13** If you are using network shelves for PRI/DTI cards, do the following:
  - a** Install the PRI/DTI cards in network shelf card slots 2, 4, 6, 8, 10, and 12.
  - b** Plan to install at least one PRI/DTI card, as a master card with clock reference, in the Core/Network module of the Option 61C column to obtain clock reference for the PRI/DTI cards.

- 14 If you are not going to use network shelves for PRI/DTI cards, do the following:
  - a Disconnect alarm connectors from the harness to network shelves.
  - b Unplug all power converter cards from each network shelf.
  - c Disconnect power connections and the power monitor connector from the cabinet power distribution harness to the backplane on QSD39 and QSD40 shelves.
  - d Tape all exposed power leads with electrical insulation tape.

## Installing external cables

Now that the Option 61C column is installed and the peripheral cabinet has been prepared, you must connect them with external cables.

- 1 Install network cables between the peripheral cabinet and the new modular column. This connects network cards in the Core/Network module to the peripheral buffer card in the PE shelf of the cabinet.

Each network loop connection requires that three cables be installed:

- a Connect the NT8D86AC cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
  - b Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the top or the side of the peripheral cabinet. A connector housing kit is required for the cabinet to accept the cable connector.
  - c Connect the NT9J96 cable from the faceplate connector of the peripheral buffer to the I/O panel connector at the top or the side of the cabinet.
- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 805.

- 3 Connect the external cable from the Core/Network module I/O panel connector (labeled “PRI/DTI”) to the network interface.
- 4 Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the peripheral cabinet CE shelf. For installation procedures, refer to *Circuit Card: Installation and Testing* (553-3001-211).
- 5 Verify that the PRI/DTI cards in the peripheral cabinet CE shelf are connected to the MDF.
- 6 Connect all external cables from the MDF to the PE shelf connectors on the cabinet I/O panels and the IPE module I/O panels. Refer to *System Installation Procedures* (553-3001-210) for IPE module cabling procedures.
- 7 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface. Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the existing cabinet CE shelf.
- 8 Verify that PRI/DTI cards in the existing peripheral cabinet CE shelf are connected to the cross connect or network interface.

Connect all external cables from the cross connect to the PE shelf connectors on cabinet I/O panels and IPE module I/O panels. Refer to *System Installation Procedures* (553-3001-210) for the installation procedures for the IPE module I/O panel external cable.

**Note:** Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data, 1 stop bit, space parity, full duplex, XON protocol.

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the NT 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### IODU/C cabling

- 1 **Verify that the Core/Net module is powered down.**
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.
- 4 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 5 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 6 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 7 Install the IODU/C card into slot 17 of Core/Net 1.

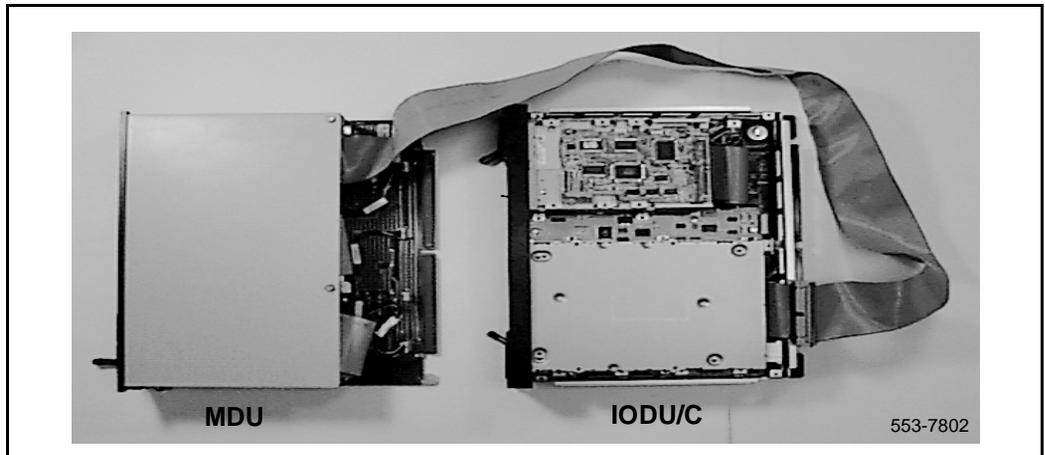
## MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:  
**LD 37** to load the program  
**DIS MSI 0** to disable the card
  - b Remove the floppy diskettes from the disk drives.
  - c Label and disconnect cables from the faceplate of the MDU or SMDU.
  - d Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 10). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).

**Figure 10**  
**Cabling the MDU to the IODU/C card**



- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 10 When the NT logo appears, CP Install Program diskette press <CR> to continue.
- 11 Enter the date and time, when prompted.
- 12 When the Main Menu appears, select the following command from the menu:

<u> to Install menu

**13** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

- <a>** to continue with keycode validation
- <y>** to confirm that the keycode matches the CD-ROM release and return to the Install Menu

**14** Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 1.

**15** When the Install Menu appears, select the following options in sequence:

- <d>** to install customer database only
- <f>** to transfer the customer database from the MDU
- <a>** to continue the database transfer
- <a>** to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr>** to continue  
The Installation Status Summary menu appears to confirm database transfer
- <y>** to start installation
- <a>** Yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr>** Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

Remove any diskettes from the floppy drive.

- <q>** When the Install Menu appears, select <q> to quit.
- <y>** to confirm quit
- <a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal.

**16** Shut down power to Core/Net 1 module.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## Installing Release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
  - the CP Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

- 2 Enter the date and time when prompted.
- 3 When the Main Menu appears, select the following options in sequence:
  - <u> to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 5 When the Install Menu appears, select the following options in sequence:
  - <a> to install software, CP-BOOTROM, and IOP-ROM
  - <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

  - <y> to start installation
  - <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

  - <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

  - <CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

  - <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

  - <y> to start installation
  - <a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

  - <CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>** to quit

**<y>** to confirm quit

Remove the diskette from the floppy drive.

**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal.

- 6** When the sysload is complete, log into the system.
- 7** In Core/Net 1, faceplate enable the CNI card.
- 8** Confirm that the X11 Release 25 software is installed and functional on Core/Net 1:
  - LD 135** to load the program
  - STAT CPU** to display the CPU status
- 9** Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
  - LD 43** to load the program
- 10** When “EDD000” appears on the terminal, enter:
  - EDD** to begin the data dump

- 11 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 12 Set date and time:

**LD 2** to load the overlay  
**STAD** DD MM YY HR MN SC

## Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
- 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Verify that the MAINT/NNORM switch on the CP card in Core 0 is set to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.

- 3 Insert the remaining Core/Net cards and faceplate enable them, but leave the CNI card in Core/Net 0 faceplate disabled.
- 4 Apply power to the module.
- 5 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 When the NT logo appears, press <CR> to continue.
- 7 When the Main Menu appears, select the following options in sequence:
  - <u> to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release

- 9 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

<o> to copy system software from the other core  
<a> to copy /p partition from Core1 to Core 0  
<a> to continue with upgrade

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR> press <CR> when you are ready to continue  
<y> to start installation  
<a> to continue with ROM upgrade  
<y> to start installation  
<a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation  
<y> to continue installing IOP-ROM  
<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only  
<d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation  
<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

**<y>** to confirm quit

**<a>** to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 10 Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

## Returning the system to redundant mode

- 1 Connect a terminal to the J25 CPSI or SDI port in Core/Net 0
- 2 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 3 In Core/Net 0, press and release the MAN RST button.
- 4 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 5 In 60 seconds, the LCD will display and confirm the process:

### **RUNNING ROM OS**

### **ENTERING CP VOTE**

An "HWI534" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an "HWI533" message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 6 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 7 Perform a redundancy sanity test:

**LD 135** to load the program

**STAT CNI** to get the status of the CNI card

**STAT CPU** to get the status of both Cores

**TEST CPU** to test the inactive CP card and CP-to-CP cable

**TEST CNI c s** to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 8 Switch Cores and test the other CPU:
- SCPU** to switch to Core 0
  - TEST CPU** to test the inactive CP card and CP-to-CP cable

*Note:* Testing the CP can take up to 20 minutes.

- 9 Get the status of the CP cards and memories and of the CNIs:
- STAT CPU** to get the status of both Cores
  - STAT CNI** to get the status of all configured CNIs
  - SCPU** to swap to Core/Net 1 active
  - \*\*\*\*** to exit LD 135

- 10 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

- LD 137** to load the program
- STAT** to get the status of IODU/Cs and redundancy
- SYNC** synchronize the hard disk drives
- TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 11 Get the status of the IODU/Cs and be sure IODU/C is active. Switch IODU/Cs if necessary:

- STAT** to get the status of IODU/Cs and redundancy
- SWAP** to switch IODU/Cs (if necessary)
- \*\*\*\*** to exit the program

- 12 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 13 Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump to the backup disks.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

- LD 43** to load the program

- 14 When "EDD000" appears on the terminal, enter

- EDD** to begin the data dump

- 15** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Moving network cards

- 1** Follow the appropriate step below to turn off power in each Core/Network module:
  - a** With AC power, set the circuit breaker on the MPDU in the module to OFF (down position).
  - b** With DC power, set the switch on the module power supply to OFF (down position).
- 2** Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3** On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4** Connect all cables to the cards (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Enable the faceplate switches.
- 5** Switch the cables at the PE end:
  - a** If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.

- 6 Turn on power to the cabinet:
  - a Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
  - b Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the Option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).

## Completing the upgrade

- 1 Follow the appropriate step below to restore power in each Core/Network module.

*Note:* If power to both Core/Network modules is restored simultaneously, the IODU/Cs should still be synchronized.

  - a For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
  - b For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).

- 2 After the system initializes, reenter system configuration data into the customer database, if required, in the following sequence:
  - a Configure network loops to match loop types and loop numbers of the current configuration.
  - b Configure I/O devices to reflect the current configuration.
  - c Reenter customer data blocks. System options and features must reflect the current configuration.
  - d Configure station data blocks.
  - e Configure route data blocks.
  - f Configure trunk data blocks.
  - g Configure remaining system configuration records.
  - h Verify system operation before adding new equipment.
  - i Configure new equipment and functions, if any.
- 3 Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Meridian 1 X11 Release 25 Option 61C is now operational. Install all module covers to complete the upgrade.



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# XT and Option 71 Core/Net module upgrade to Option 81C

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## Content list

The following are the topics in this section:

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- [Preparing the new column\(s\) 177](#)
- [Transferring call processing to CPU 0 in XT and Option 71 188](#)
- [Transferring the database from 4 MB to IODU/C 191](#)
- [Installing Release 25 software in Core/Net 1 195](#)
- [Configuring the system 199](#)
- [Transferring call processing to Core/Net 1 204](#)
- [Upgrading the software and ROMs on Core/Net 0 206](#)
- [Completing the upgrade 213](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *Installation Planning* (553-3001-120)

- *Power Engineering* (553-3001-152)
- *Software Conversion Procedures* (553-2001-320)
- *Hardware Replacement* (553-3001-520)
- *System Installation Procedures* (553-3001-210)
- *X11 Administration* (553-3001-311)
- *Capacity Engineering* (553-3001-149)
- “Network hybrid installation” on page 895
- “Option 71 card cage upgrade to Option 81C” on page 621

This section describes how to upgrade an XT/71 system, housed in QCA55 and QCA108 cabinets, to an Option 81C. This procedure also applies to Option 71 systems housed in QCA55 and QCA108 cabinets. For Option 71 systems housed in modules, use the upgrade procedure “Option 71 card cage upgrade to Option 81C” on page 621.

The Core/Net module upgrade is a “CPU only” upgrade. The network equipment and junctor remain in the cabinets, and existing peripheral equipment cabinets remain cabled to the network shelves in QCA55 and QCA108 common equipment cabinets. The Core/Net modules, which are installed in the Meridian 1 column(s) next to the QCA55 cabinet, functionally replace the CPU shelves in the QCA55.

The upgrade can take the form of one of two basic configurations. Each Core/Net module may be installed in its own column (see Figure 11), or for customers with limited space, both Core/Net modules may be installed in one column (see Figure 12). This single-column configuration still provides the redundancy of two CPUs, but not the redundancy of two power distribution units; failure of the PDU will bring down the entire system.

This upgrade consists of:

- 1 Installing two NT5D21 Core/Net modules in one or two columns.
  - a Additional columns may be installed optionally.
  - b One or more columns may contain NT8D37 Intelligent Peripheral Equipment (IPE) modules.
- 2 Installing Core/Net to Network module cabling.

**Note:** During the upgrade procedures, transient calls, CDR information, PRI service, and traffic report information may be lost.

The hardware required for this upgrade is provided in the Core/Net module Upgrade Package. All existing equipment that will be retained must be compatible with X11 Release 25. Order replacements for all equipment that does not comply.

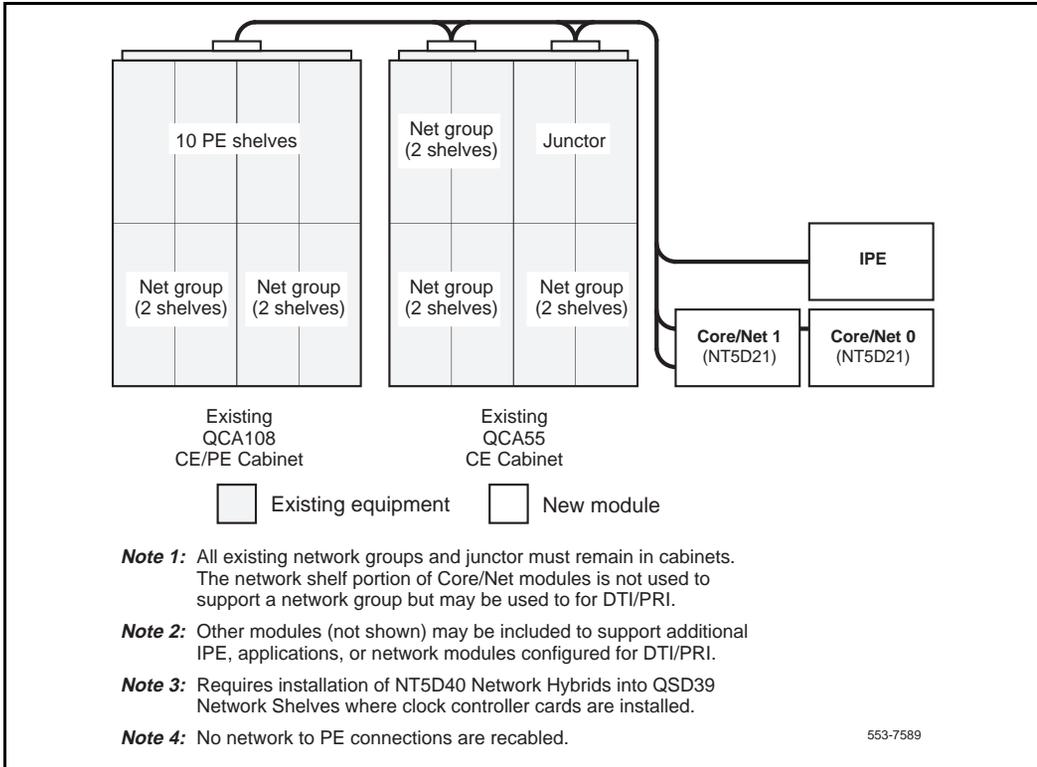
Verify that any existing QPC441 3-Port Extender cards in the system are 'F' or later, for Release 25. If any 3PE card in the system is not one of these vintages, replace it with a card of acceptable vintage. All 3PE cards in the system must be of the same vintage.

**Note:** Refer to *Product Compatibility* (553-3001-156) for vintage requirements.

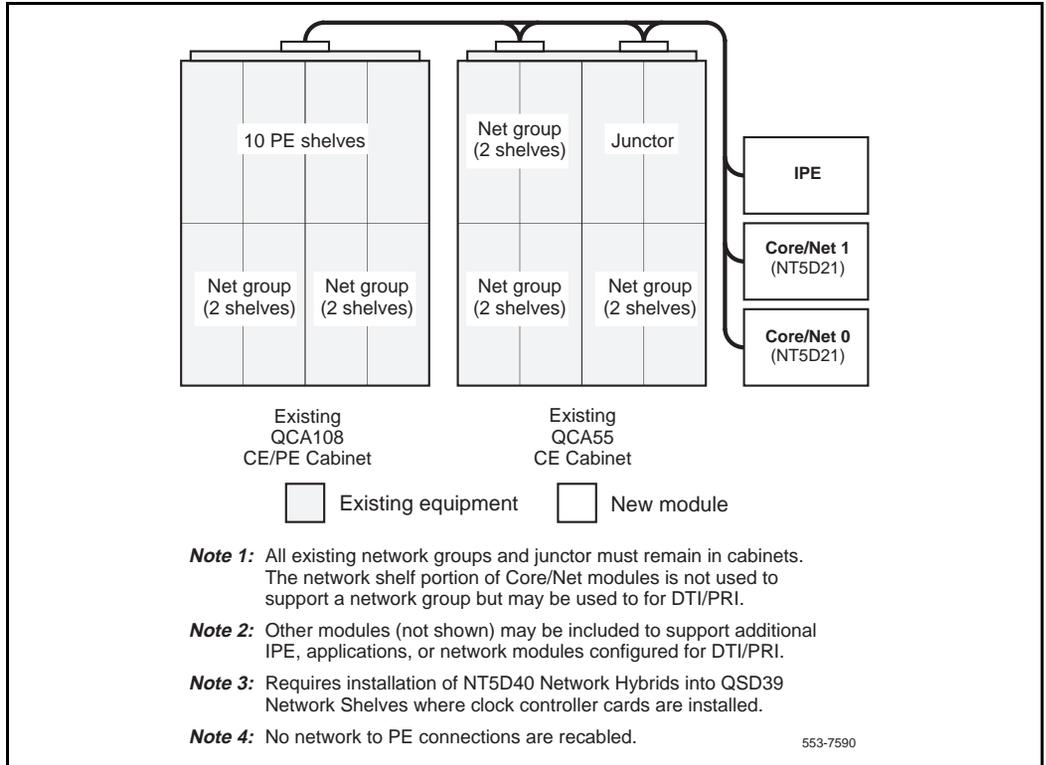
Before you begin the upgrade, perform an inventory to ensure that all required equipment is available on site.

Figure 11 shows the upgrade from XT/Option 71 to Option 81C in a multi-column installation. Figure 12 shows the upgrade in a single-column installation.

**Figure 11**  
**Core/Net module upgrade, multi-column installation**



**Figure 12**  
**Core/Net module upgrade, single-column installation**



## Equipment required

Tables 13 and 14 list the items required to upgrade an AC- or DC-powered XT system or Option 71 to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 13**  
**Hardware requirements for an AC-powered Option 81C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21AA	Core/Network Module AC
1	NT5D40AA	Hybrids Kit
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00AA	Top Cap AC
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D22AC	System Monitor
2	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
1	NT8D37BA	Intelligent Peripheral Equipment Module AC

**Table 13**  
**Hardware requirements for an AC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
1	NT8D46AD	System Monitor to SDI Cable (60 In.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 In.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 In.)
2	NT8D52AB	Pedestal Blower Unit AC
2	NT8D53BB	Power Distribution Unit AC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 In.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core Cabinet Upgrade Cable Kit, Group 0
1	NTND33CC	Core Cabinet Upgrade Cable Kit, Groups 1–4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel

**Table 13**  
**Hardware requirements for an AC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841C	Four-port SDI
<p><b>Note:</b> QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note 1:</b> This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.</p>		

**Table 14**  
**Hardware requirements for a DC-powered Option 81C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21DA	Core/Network Module DC
1	NT5D40AA	Hybrids Kit
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00BA	Top Cap DC
2	NT7D09CA	Pedestal DC
2	NT7D10CA	System Monitor Panel
2	NT7D67CB	Power Distribution Unit DC

**Table 14**  
**Hardware requirements for a DC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module DC
1	NT8D46AD	System Monitor to SDI Cable (60 In.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 In.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 In.)
2	NT8D52DD	Pedestal Blower Unit DC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 In.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core-Cabinet Upgrade Kit, Group 0
1	NTND33CC	Core-Cabinet Upgrade Cable Kit 1-4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel

**Table 14**  
**Hardware requirements for a DC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841	Four-port SDI
<p><b>Note:</b> QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note 1:</b> This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.</p>		

## Upgrade planning

Before beginning an upgrade, make sure there is sufficient room to position the new Meridian 1 column(s). Make sure the floor can handle the additional weight of the new column(s), and make sure a sufficient power source is available and can be accessed by the new column(s).

**Note:** Specifications for Meridian 1 column(s) are provided in *Installation Planning* (553-3001-120). Specifications for Meridian 1 power requirements are provided in *Power Engineering* (553-3001-152).

Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment. Check the tool list in this document. Check that all the tools you will need are on hand.

- 1 The Core/Net module upgrade is physically compatible with QCA55 and QCA108 cabinets only. Systems with other cabinet types must install Meridian 1 Core/Net and Network module columns to upgrade to Option 81C.
- 2 Install all ground packages prior to the upgrade. All older vintage cabinets required ground isolation packages installed.

- 3 There must be one or more mounting locations available on the top of the QCA55 and QCA108 cabinets for the connector housings used for Core/Net to network cabling:
  - a For a one-group system, one mounting location is required on top of the QCA55.
  - b For a two or three group system, two mounting locations are required on top of the QCA55.
  - c For a four or five group system, one more mounting location is required on top of the QCA108, for a total of three connector housings (two on the QCA55 and one on the QCA108).
  
- 4 If the XT/71 customer database is Release 18 or earlier, it must be converted to Release 25 compatibility before continuing. You can convert it on-site, or send it to Nortel Networks for conversion. If you convert it on-site, use the instructions in “Procedure 3: Convert from one X11 release to a later release” located in *Software Conversion Procedures* (553-2001-320). If the database is Release 17 or earlier, additional equipment is required for the conversion and must be ordered separately.
  
- 5 Cable path length from the I/O panel at the rear of each Core/Net module to any connector housing on either XT/71 cabinet must be no more than 6.7 m (22 ft).

### **Installing NTND33CC cable kits**

The equipment in the cable kits provides the intercabinet cabling between the Core/Net modules and the existing common equipment cabinets. The intercabinet cabling provides clock controller to junctor connections, CNI to 3PE connections, and PRI to clock controller reference connections (when present).

The NTND33CC cable kit is provided in the Core/Net module upgrade package and contains cables for 2 network groups. One additional cable kit is required for every additional 2 groups.

A label kit is also provided in the upgrade package. This kit contains a pair of preprinted labels for each cable in the cable kit(s).

**Note:** There are also labels that do not apply to this upgrade. There are labels in the kit that you will not use at all.

There are detailed instructions for labeling the cables as you separate them by kit and by function. (For example, as you label them, keep the cables for Core/Net 0 separate from the intercabinet cables.) Using the label kit, label and install cables for only the groups equipped.

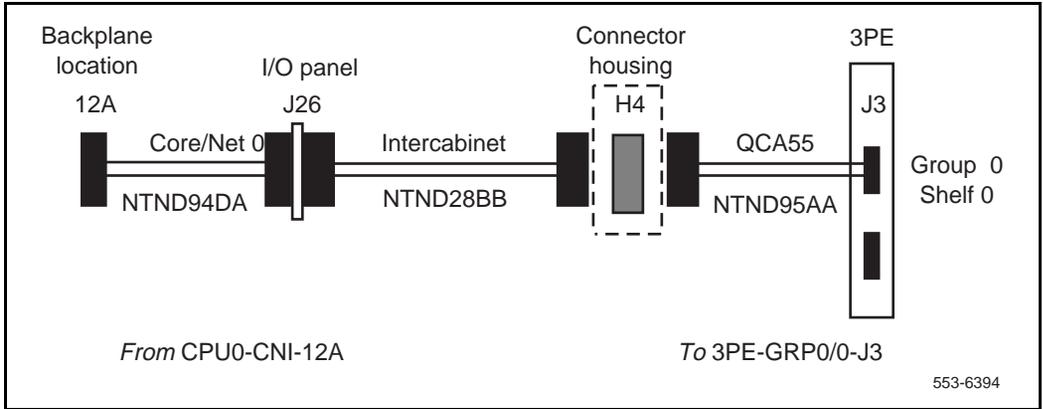
The cable labels indicate the “from” and “to” ends of the entire cabling path, not the ends of the individual cables. For example, the three following cables will each be labeled CPU0-CNI-12A to 3PE-GRP0/0-J3 (see the example in Figure 13):

- An NTND94DA cable (from CPU0-CNI-12A) in Core/Net 0 connects to the following:
  - a CNI port at backplane position 12A
  - the inside of the I/O panel at connector J26
- An NTND28BB cable connects to the following:
  - the outside of the I/O panel at connector J26
  - position H4 on the connector housing on the QCA55 cabinet
- An NTND95AA cable (to 3PE-GRP0/0-J3) connects to the following:
  - position H4 on the connector housing
  - faceplate connector J3 on the 3PE card for Group 0, Network Shelf 0

**CAUTION**

Read through all of the procedures for this upgrade before you begin. Also, before you begin, perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

**Figure 13**  
**Cabling path for cables labeled CPU0-CNI-12A to 3PE-GRP0/0-J3**



### Installing network hybrids

The XT to Option 81C upgrade procedures will also require you to replace the QPC477 BTUs in the QSD39 Network shelf with network hybrids while upgrading the hardware. This consists of removing the two BTUs in Network shelf 0, Group 0, and installing four network hybrids to provide mechanical clearance in the network shelf. The installation of network hybrids is performed in QSD39 Network shelves only.

Most XT systems contain one QSD39 Network shelf (left side) and one QSD40 Network shelf (right side), and will require the installation of network hybrids in Network shelf 0, Group 0 only. However, a few XT systems contain two QSD39 Network shelves (right side and left side) and will require the installation of network hybrids in both network shelves for Group 0.

### CAUTION

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

## Upgrade preparation

Before proceeding with the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

### CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 In the tape shelf of the XT system CE cabinet, set the ENB/DIS switch on the QPC173 Power Monitor card to DIS.
- 6 Unplug the Power Monitor card but do not remove it from the slot.

**Note:** If QPC471 Clock controller cards in the XT/71 system are not minimum vintage H, or if the QPC775 Clock controller cards are not minimum vintage E, replace them before the upgrade.

- 7 If necessary, install a new clock controller card in CPU 1 (if your system is equipped with Clock controller cards of the minimum vintage, go to step 10 on page 161):

*Note:* Use the new clock controller cards provided in the upgrade kit.

- a If CPU 1 is active, switch to CPU 0:

**LD 35**           to load the program  
**TEST CPU**       to test the CPUs  
**SCPU**           to switch to CPU 0 (if necessary)  
**\*\*\*\***           to exit the program

- b If clock controller 1 is active, switch to clock controller 0:

**LD 60**           to load the program  
**SSCK 1**         to get the status of clock controller 1  
**SWCK**           to switch to clock controller 0

- c Make sure clock controller 0 is active, and if it is, disable clock controller 1:

**SSCK 0**         to get the status of clock controller 0  
**DIS CC 1**       to disable clock controller 1

- d Set the ENB/DIS switch on clock controller 1 to DIS.

- e Disconnect the NT1R04AA clock controller to junctor cable from connector J12 on the junctor panel.

- f Label all the cables to the clock controller card, disconnect them, and remove the card.

- g Set the ENB/DIS switch to DIS on the replacement clock controller card. Set the switches on the replacement card. Add together the lengths of the two clock controller to junctor cables. Set SW4 on the replacement card according to this total length (see Table 15).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- h** Install the replacement clock controller card and reconnect the cables to the card.
- i** Connect the NT1R04AA clock controller to junctor cable to connector J12 on the junctor panel.
- j** Set the ENB/DIS switch on the Clock controller card to ENB.
- k** Software enable the card.

**ENL CC 1**      to enable clock controller 1  
**\*\*\***              to exit LD 60

**Note:** Do not issue the tracking (TRCK) or status (SSCK) commands at this time. If you do issue these commands, the system may respond with an inaccurate error condition.

**Table 15**  
**Clock controller card switch settings for XT/71**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	off	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	off	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	off	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	off	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Switches must be set the same on both clock controller cards.

- 8 If necessary, install a new clock controller card in CPU 0:
  - a If CPU 0 is active, switch to CPU 1:
    - LD 35** to load the program
    - TEST CPU** to test the CPUs
    - SCPU** to switch to CPU 1 (if necessary)
    - \*\*\*\*** to exit the program
  - b Make clock controller 1 active:
    - LD 60** to load the program
    - SSCK 0** to get the status of clock controller 0
  - c If clock controller 0 is active, switch clocks:
    - SWCK** to switch to clock controller 1
  - d Make sure clock controller 1 is active:
    - SSCK 1** to get the status of clock controller 1
  - e Disable clock controller 0:
    - DIS CC 0** to disable clock controller 0
  - f Set the ENB/DIS switch on clock controller 0 to DIS.
  - g Disconnect the NT1R04AA clock controller to junctor cable from connector J11 on the junctor panel.
  - h Label all the cables to the clock controller card, disconnect them, and remove the card.
  - i Set the ENB/DIS switch to DIS on the replacement clock controller card. Set the switches on the replacement card. Add together the lengths of the two clock controller to junctor cables. Set SW4 on the replacement card according to this total length (see Table 15).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- j** Install the replacement clock controller card, and reconnect the cables to the card.
- k** Connect the NT1R04AA clock controller to junctor cable to connector J11 on the junctor panel.
- l** Set the ENB/DIS switch on the Clock controller card to ENB.
- m** Software enable the card.

**ENL CC 0**      to enable clock controller 0  
**\*\*\***              to exit LD 60

- 9** Verify clock switchover and tracking for each CPU (issue tracking commands if required):

- a** Check the status of clock controller 1:

**SSCK 1**              to get the status of clock controller 1  
**\*\*\*\***                  to exit LD 60

- b** Switch CPUs:

**LD 35**                to load the program  
**TEST CPU**          to test CPU 0  
**SCPU**                to switch to CPU 0  
**\*\*\*\***                  to exit LD 35

- c** Check the status of clock controller 0:

**LD 60**                to load the program  
**SWCK**                to switch to clock controller 0  
**SSCK 0**              to get the status of clock controller 0  
**\*\*\*\***                  to exit the program

- 10 Check the vintage of the QPC441 3PE cards in network shelf 1 of groups 0 and 1; they must be minimum vintage F. Replace any that are not vintage F. (Refer to *Hardware Replacement* (553-3001-520) for card replacement procedures.) Set the switches and jumper on each card (see Table 16). **Make sure Jumper RN27 at location E35 is set to A.**

**Table 16**  
**Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 1 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off

**Note:** Jumper RN27 at location E35: set to A

- 11 Check the vintage of the QPC441 3PE cards in shelf 0 of groups 0 and 1; they must be minimum vintage F. Replace any that are not vintage F. (Refer to *Hardware Replacement* (553-3001-520) for card replacement procedures.) Set the switches and jumper on each card (see Table 17). **Make sure Jumper RN27 at location E35 is set to A.**

**Table 17**  
**Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 0 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on

**Note:** Jumper RN27 at location E35: set to A

- 12 Follow Procedure 1: “Pre-conversion procedure,” *Software Conversion Procedures* (553-2001-320) and print configuration records. Check the configuration record printouts to identify all configured I/O ports.

**Note:** When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

- 13 If the XT/71 database is Release 18 or lower, upgrade the database to Release 21. For conversion instructions, refer to “Procedure 3: Convert from one X11 release to a later release” in *Software Conversion Procedures* (553-2001-320). You will complete converting the software to Release 25 later in this upgrade.

## Installing intermodule cables and connector housings

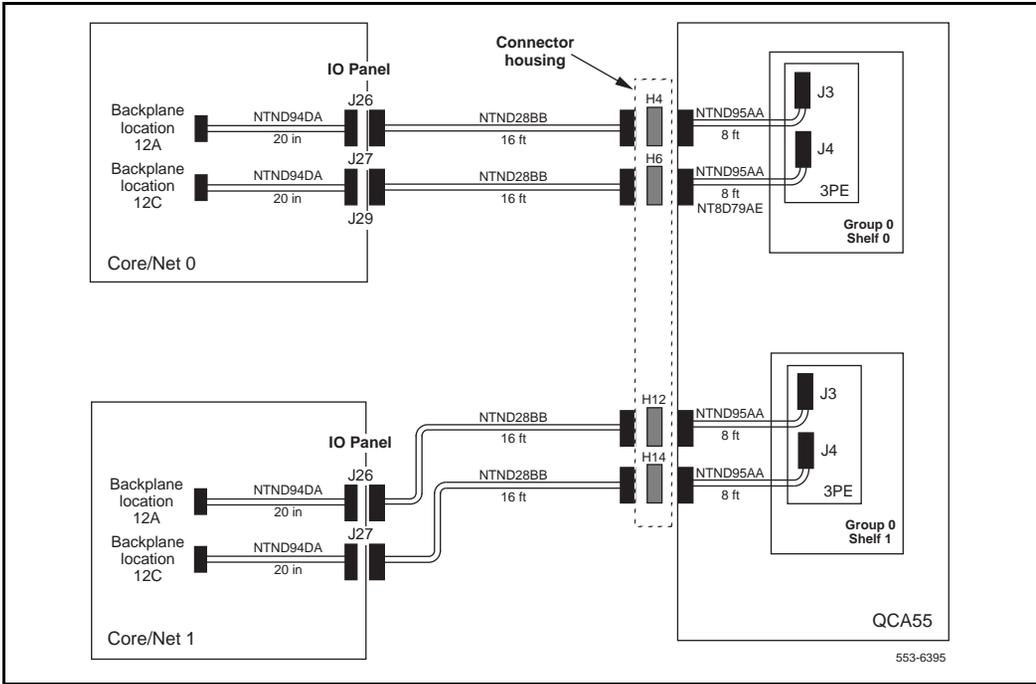
New cables must be installed to connect the new modules to the cabinets. The first step is to organize the cables by type and label each cable.

- 1** For Group 0, label cables in the NTND33CD cable kit (see Figure 14 for cable paths):
  - a** Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA55 cabinet cables (see Table 18).
  - b** Label each cable as listed in Table 18. For each cable, label both ends the same.

**Table 18**  
**NTND33CD Group 0 cable labels**

<b>Core/Net 0 cable:</b>	<b>Label both ends:</b>
NTND94DA	CPU0-CNI-12A to 3PE-GRP0/0-J3
NTND94DA	CPU0-CNI-12C to 3PE-GRP0/0-J4
<b>Core/Net 1 cable:</b>	<b>Label both ends:</b>
NTND94DA	CPU1-CNI-12A to 3PE-GRP0/1-J3
NTND94DA	CPU1-CNI-12C to 3PE-GRP0/1-J4
<b>Intercabinet cable:</b>	<b>Label both ends:</b>
NTND28BB	CPU0-CNI-12A to 3PE-GRP0/0-J3
NTND28BB	CPU0-CNI-12C to 3PE-GRP0/0-J4
NTND28BB	CPU1-CNI-12A to 3PE-GRP0/1-J3
NTND28BB	CPU1-CNI-12C to 3PE-GRP0/1-J4
<b>QCA55 cabinet cable:</b>	<b>Label both ends:</b>
NTND95AA	CPU0-CNI-12A to 3PE-GRP0/0-J3
NTND95AA	CPU0-CNI-12C to 3PE-GRP0/0-J4
NTND95AA	CPU1-CNI-12A to 3PE-GRP0/1-J3
NTND95AA	CPU1-CNI-12C to 3PE-GRP0/1-J4

**Figure 14**  
**NTND33CD Group 0 cable paths**



- 2 For Groups 1 and 2 (if equipped), label cables in the NTND33CC cable kit (see Figure 15 for cable paths):
  - a Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA55 cabinet cables (see Table 19).
  - b Label each cable as listed in Table 19. For each cable, label both ends the same.

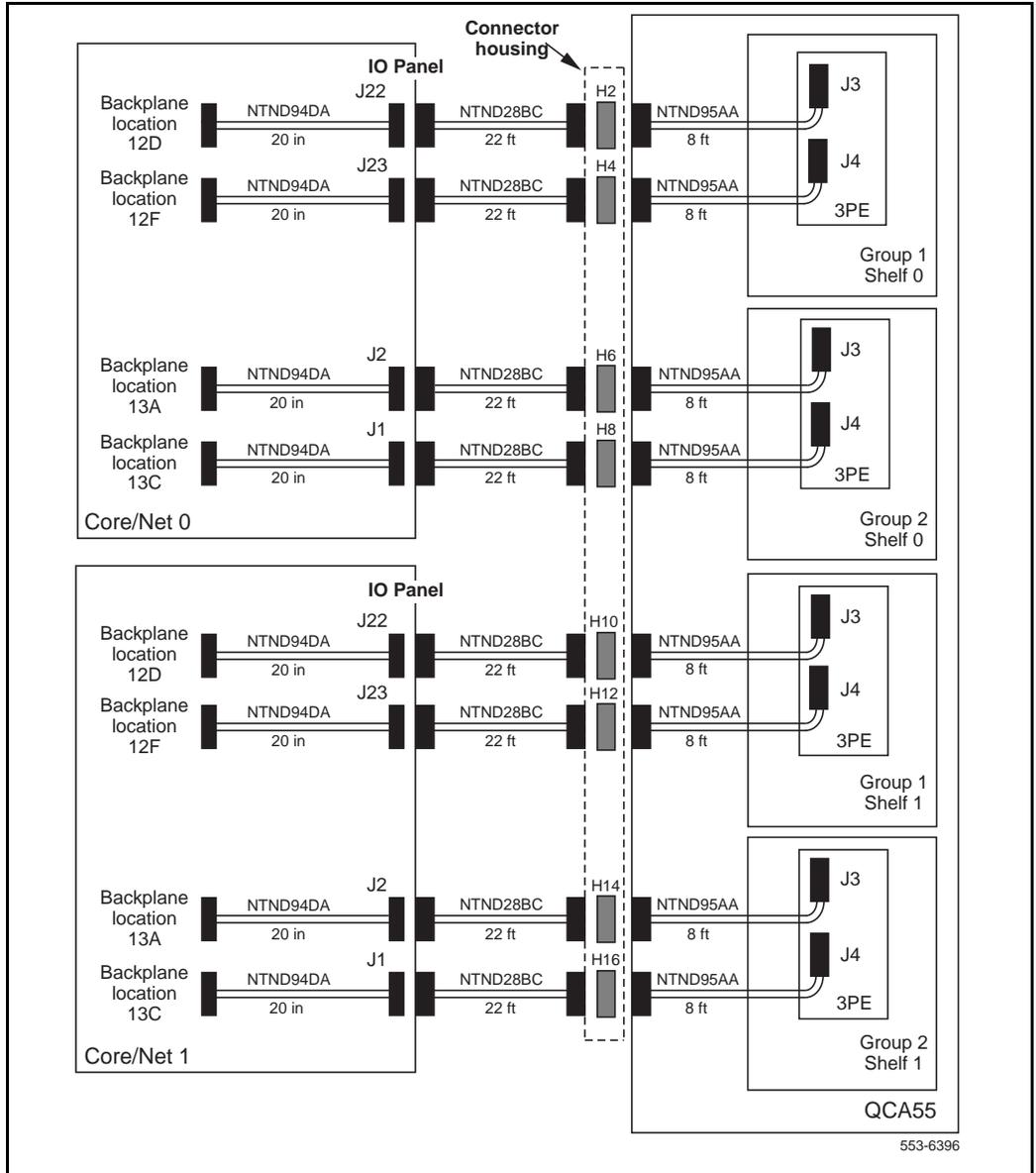
**Table 19**  
**NTND33CC Groups 1 and 2 cable labels (Part 1 of 2)**

<b>Core/Net 0 cable</b>	<b>Label both end:</b>
NTND94DA	CPU0-CNI-12D to 3PE-GRP1/0-J3
NTND94DA	CPU0-CNI-12F to 3PE-GRP1/0-J4
NTND94DA	CPU0-CNI-13A to 3PE-GRP2/0-J3
NTND94DA	CPU0-CNI-13C to 3PE-GRP2/0-J4
<b>Core/Net 1 cable</b>	<b>Label both end:</b>
NTND94DA	CPU1-CNI-12D to 3PE-GRP1/1-J3
NTND94DA	CPU1-CNI-12F to 3PE-GRP1/1-J4
NTND94DA	CPU1-CNI-13A to 3PE-GRP2/1-J3
NTND94DA	CPU1-CNI-13C to 3PE-GRP2/1-J4
<b>Intercabinet cable</b>	<b>Label both end:</b>
NTND28BC	CPU0-CNI-12D to 3PE-GRP1/0-J3
NTND28BC	CPU0-CNI-12F to 3PE-GRP1/0-J4
NTND28BC	CPU0-CNI-13A to 3PE-GRP2/0-J3
NTND28BC	CPU0-CNI-13C to 3PE-GRP2/0-J4
NTND28BC	CPU1-CNI-12D to 3PE-GRP1/1-J3
NTND28BC	CPU1-CNI-12F to 3PE-GRP1/1-J4
NTND28BC	CPU1-CNI-13A to 3PE-GRP2/1-J3
NTND28BC	CPU1-CNI-13C to 3PE-GRP2/1-J4

**Table 19**  
**NTND33CC Groups 1 and 2 cable labels (Part 2 of 2)**

<b>QCA55 cabinet cable</b>	<b>Label both ends:</b>
NTND95AA	CPU0-CNI-12D to 3PE-GRP1/0-J3
NTND95AA	CPU0-CNI-12F to 3PE-GRP1/0-J4
NTND95AA	CPU0-CNI-13A to 3PE-GRP2/0-J3
NTND95AA	CPU0-CNI-13C to 3PE-GRP2/0-J4
NTND95AA	CPU1-CNI-12D to 3PE-GRP1/1-J3
NTND95AA	CPU1-CNI-12F to 3PE-GRP1/1-J4
NTND95AA	CPU1-CNI-13A to 3PE-GRP2/1-J3
NTND95AA	CPU1-CNI-13C to 3PE-GRP2/1-J4

**Figure 15**  
**NTND33CC Group 1 and Group 2 cable paths**



- 3 For Groups 3 and 4 (if equipped), label cables in the NTND33CC cable kit (see Figure 16 for cable paths):
  - a Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA108 cabinet cables (see Table 20).
  - b Label each cable as listed in Table 20. For each cable, label both ends the same.

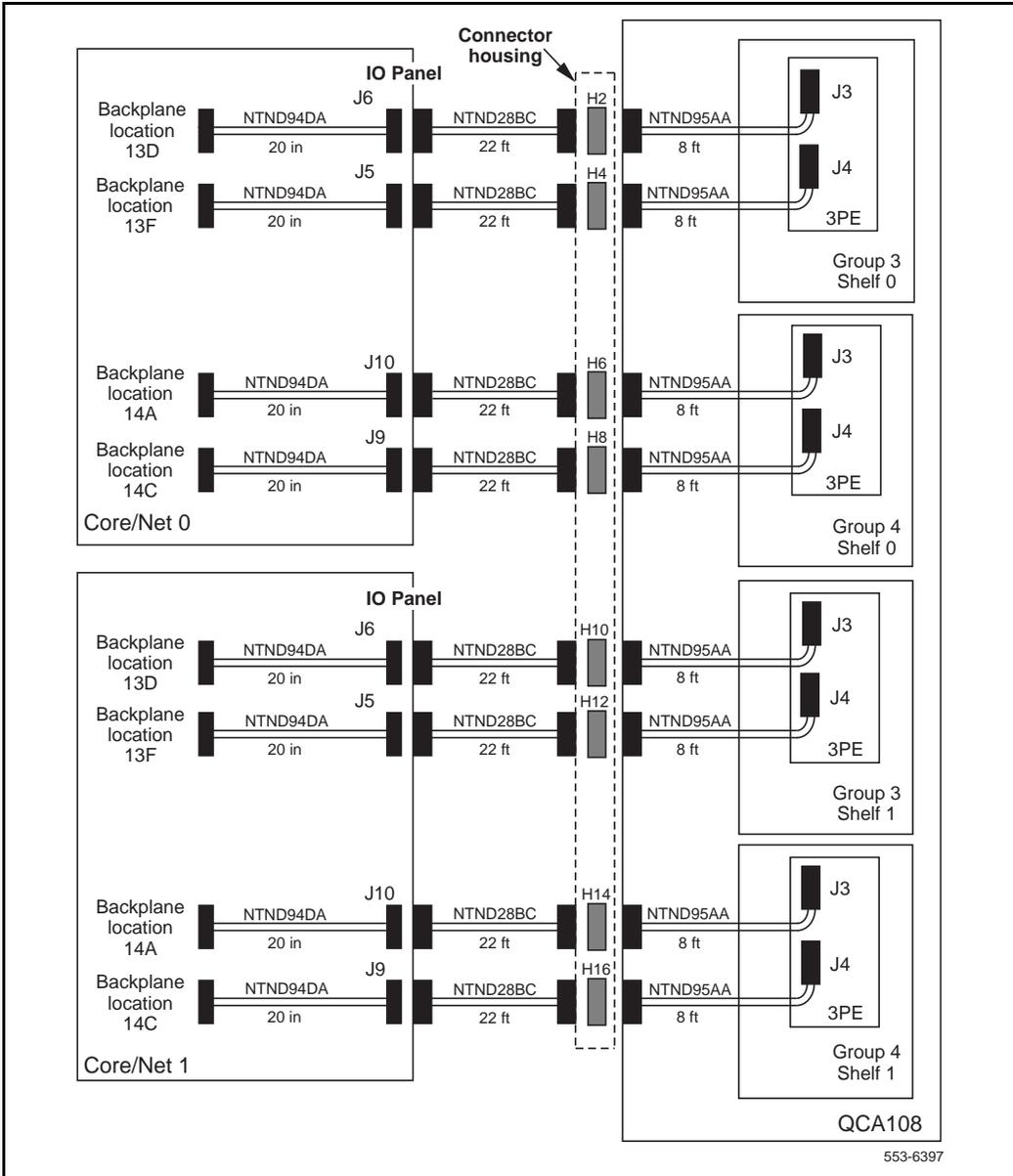
**Table 20**  
**NTND33CC Groups 3 and 4 cable labels (Part 1 of 2)**

<b>Core/Net 0 cable</b>	<b>Label both ends:</b>
NTND94DA	CPU0-CNI-13D to 3PE-GRP3/0-J3
NTND94DA	CPU0-CNI-13F to 3PE-GRP3/0-J4
NTND94DA	CPU0-CNI-14A to 3PE-GRP4/0-J3
NTND94DA	CPU0-CNI-14C to 3PE-GRP4/0-J4
<b>Core/Net 1 cable</b>	<b>Label both ends:</b>
NTND94DA	CPU1-CNI-13D to 3PE-GRP3/1-J3
NTND94DA	CPU1-CNI-13F to 3PE-GRP3/1-J4
NTND94DA	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND94DA	CPU1-CNI-14C to 3PE-GRP4/1-J4
<b>Intercabinet cable</b>	<b>Label both ends:</b>
NTND28BC	CPU0-CNI-13D to 3PE-GRP3/0-J3
NTND28BC	CPU0-CNI-13F to 3PE-GRP3/0-J4
NTND28BC	CPU0-CNI-14A to 3PE-GRP4/0-J3
NTND28BC	CPU0-CNI-14C to 3PE-GRP4/0-J4
NTND28BC	CPU1-CNI-13D to 3PE-GRP3/1-J3
NTND28BC	CPU1-CNI-13F to 3PE-GRP3/1-J4
NTND28BC	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND28BC	CPU1-CNI-14C to 3PE-GRP4/1-J4

**Table 20**  
**NTND33CC Groups 3 and 4 cable labels (Part 2 of 2)**

QCA108 cabinet cable	Label both ends:
NTND95AA	CPU0-CNI-13D to 3PE-GRP3/0-J3
NTND95AA	CPU0-CNI-13F to 3PE-GRP3/0-J4
NTND95AA	CPU0-CNI-14A to 3PE-GRP4/0-J3
NTND95AA	CPU0-CNI-14C to 3PE-GRP4/0-J4
NTND95AA	CPU1-CNI-13D to 3PE-GRP3/1-J3
NTND95AA	CPU1-CNI-13F to 3PE-GRP3/1-J4
NTND95AA	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND95AA	CPU1-CNI-14C to 3PE-GRP4/1-J4

**Figure 16**  
**NTND33CC Groups 3 and 4 cable paths**



### **Installing the connector housing**

In this step, you will choose a mounting location for the connector housing on the QCA108 and QCA55 cabinets, install the connector housing and bracket, and route cables from within the cabinets to the connector housing.

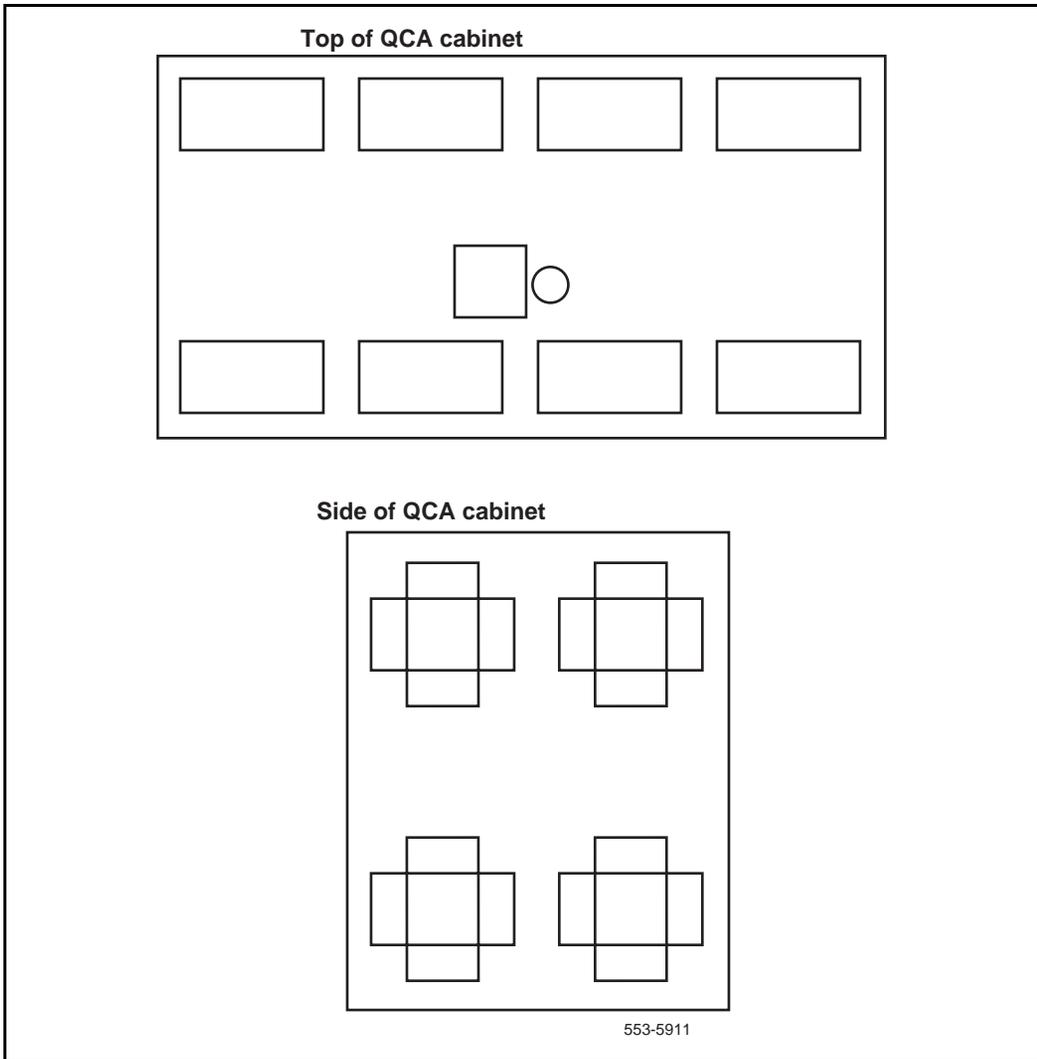
There are several possible mounting locations (see Figure 17) for the housings. The housing may be mounted at one of nine locations on the top of the cabinet:

- horizontally, with the bracket mounted on either the top or front of the housing
- vertically (on its end), with the bracket mounted on one side of the housing

The housing may also be mounted at one of four locations on either side of the cabinet:

- parallel to the floor, with the bracket mounted on one of the sides of the housing
- **perpendicular to the floor, with the bracket mounted on one of the sides of the housing**

**Figure 17**  
**Possible mounting locations for connector housing**



- 4 For each group, assemble the connector bracket and the connector housing from the NTND33CC cable kit, mount the connector housing to the cabinet, and route the cables from within the cabinet to the connector housing.
  - a Locate and remove an available access cover from the cabinet.
  - b If you are installing the connector housing horizontally on the top of the cabinet, remove the four screws and the access cover from the cabinet.
  - c If you are installing the connector housing vertically on the top of the cabinet, remove the eight nuts and the small access cover from the cabinet, and remove the four screws and the cover plate from the end of the housing.
  - d If you are installing the connector housing on the side of the cabinet, remove the two screws and the access cover from the cabinet.
  - e Mount the connector housing to the cabinet.
  - f If you are installing the connector housing horizontally on the top of the cabinet, reuse the four screws to secure the housing to the cabinet.
  - g If you are installing the connector housing vertically on the top of the cabinet, reuse six of the eight nuts to secure the housing to the cabinet—there is insufficient room to use two of the nuts. If there is another housing already installed adjacent to this position, first install the cover plate with the connector designations label on the front of the housing—there will be insufficient room to do this after the housing is mounted to the cabinet.
  - h If you are installing the connector housing on the side of the cabinet, center the housing over the opening, and mark and drill four holes in the cabinet corresponding to four holes in the housing. You may either use four machine screws from the inside of the cabinet mating with the four pem nuts on the housing, or use four self-tapping screws securing to the cabinet from the inside of the housing.

**CAUTION**

Use caution when drilling holes in the cabinet. Do not drill into cables or equipment located directly inside the cabinet.

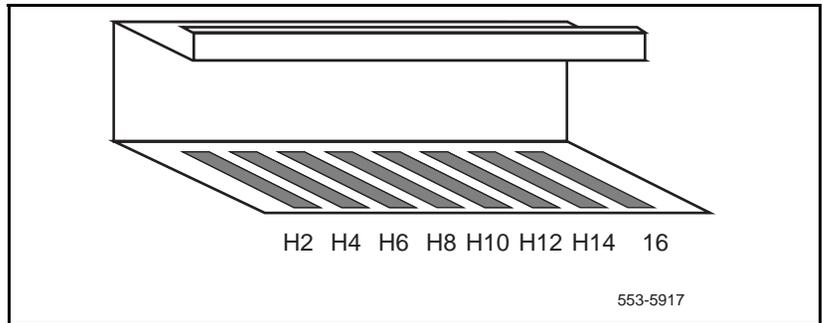
- i Mount the connector bracket to the connector housing using the screws provided.
- j If you are installing the connector housing horizontally on the top of the cabinet, mount the bracket to either the top (connector designation label facing up) or the front of the housing (label facing away from the center of the cabinet), whichever is appropriate for your installation.
- k If you are installing the connector housing vertically on the top of the cabinet, mount the bracket on the side of the housing that will be opposite the conduit access hole in the top of the cabinet.
- l If you are installing the connector housing on the side of the cabinet, mount the bracket on whichever side of the housing that is appropriate for your installation.
- m Route the cables for Group 0 (listed in Table 21) from within the QCA55 cabinet to the connector housing (as shown in Figure 18). Secure all NTND95 cables with bail locks.
- n Route the cables for Groups 1 and 2 (listed in Table 22) and for Groups 3 and 4 (listed in Table 23) from within the QCA55 cabinet to the connector housing (as shown in Figure 18). Secure all cables with bail locks.
- o Mount the remaining cover plates to the connector housing.
- p If you are installing the bracket on the top of the connector housing (cables entering from above), mount the cover plate with the connector designations label on the side of the housing nearest the edge of the cabinet so that it is visible from the floor.
- q If you are installing the bracket on the front of the connector housing (cables entering from the front), mount the cover plate with the connector designations label to the top of the housing.

**Note:** Mount the connector housing and bracket so that only one of the connector designation labels is visible.

**Table 21**  
**Group 0 internal cabinet cables**

Cable	Cable label	Connector housing position
NTND95AA	CPU0-CNI-12A to 3PE-GRP0/0-J3	H4
NTND95AA	CPU0-CNI-12C to 3PE-GRP0/0-J4	H6
NTND95AA	CPU1-CNI-12A to 3PE-GRP0/1-J3	H12
NTND95AA	CPU1-CNI-12C to 3PE-GRP0/1-J4	H14

**Figure 18**  
**Connector positions on the connector bracket**



**Table 22**  
**Group 1 and Group 2 internal cabinet cables**

<b>Cable</b>	<b>Cable label</b>	<b>Connector housing position</b>
NTND95AA	CPU0-CNI-12D to 3PE-GRP1/0-J3	H2
NTND95AA	CPU0-CNI-12F to 3PE-GRP1/0-J4	H4
NTND95AA	CPU0-CNI-13A to 3PE-GRP2/0-J3	H6
NTND95AA	CPU0-CNI-13C to 3PE-GRP2/0-J4	H8
NTND95AA	CPU1-CNI-12D to 3PE-GRP1/1-J3	H10
NTND95AA	CPU1-CNI-12F to 3PE-GRP1/1-J4	H12
NTND95AA	CPU1-CNI-13A to 3PE-GRP2/1-J3	H14
NTND95AA	CPU1-CNI-13C to 3PE-GRP2/1-J4	H16

**Table 23**  
**Group 3 and Group 4 internal cabinet cables**

<b>Cable</b>	<b>Cable label</b>	<b>Connector housing position</b>
NTND95AA	CPU0-CNI-13D to 3PE-GRP3/0-J3	H2
NTND95AA	CPU0-CNI-13F to 3PE-GRP3/0-J4	H4
NTND95AA	CPU0-CNI-14A to 3PE-GRP4/0-J3	H6
NTND95AA	CPU0-CNI-14C to 3PE-GRP4/0-J4	H8
NTND95AA	CPU1-CNI-13D to 3PE-GRP3/1-J3	H10
NTND95AA	CPU1-CNI-13F to 3PE-GRP3/1-J4	H12
NTND95AA	CPU1-CNI-14A to 3PE-GRP4/1-J3	H14
NTND95AA	CPU1-CNI-14C to 3PE-GRP4/1-J4	H16

## Preparing the new column(s)

This section contains instructions for connecting the XT/71 cabinets to the system monitor and for cabling the Core/Net modules. Network loops are already cabled in the XT/71 cabinets and are not covered here. Procedures for powering up the system are provided later in the chapter, after the Core/Net module cables are installed.

**Note:** Leave one SDI port and system terminal configured on a network shelf in the XT/71.

- 1** Install the new column(s). Refer to *System Installation Procedures* (553-3001-210) as needed for procedures covering installation of column equipment.
  - a** Prepare equipment for installation.
  - b** Place a fourth module on a column (if needed).
  - c** Position and level equipment.
  - d** Install overhead cable tray kits (if needed).
- 2** Install the module power supply in each module:
  - a** Make sure the system is disconnected from any power source.
  - b** Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
  - c** Insert the power supply and hook the lock latches.
- 3** Set the ENB/DIS switch on the NT5D61AA IODU/C card to DIS and remove the card. Verify that the Security Device is installed onto the card, if not installed, install it now. Reinstall the card and set the ENB/DIS switch to ENB.
- 4** Install an IODU/C in slot 17 of each Core/Net module, but do not seat the card.
- 5** Install AC or DC power equipment.
- 6** Make changes at the MDF to accommodate equipment in the new column(s) and system monitor connections.
- 7** Install PFTUs (if needed).

- 8 Configure the system monitor. Use the tables in *System Installation Procedures* (553-3001-210) with these exceptions:
  - a For the master, set SW1 positions 1, 2, and 8 to ON.
  - b For slaves, set SW1 positions 1 and 8 to ON.
- 9 If IPE cards are added in the column(s), cable the lines and trunks.
- 10 Remove the eight screws that secure the right and left I/O panels. Keep the screws for reuse.

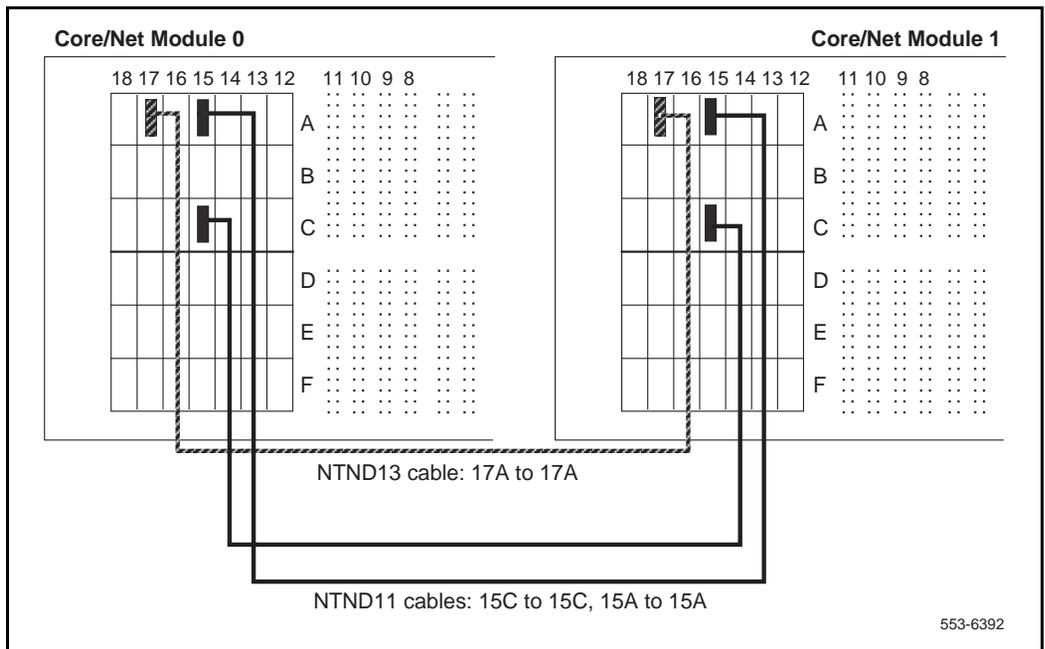
**Note:** If only Group 0 and Group 1 are equipped, you do not need to remove the right I/O panel. If you remove the right I/O panel, replace it with a P0745713 I/O panel from the upgrade package.
- 11 Remove the I/O panels.
- 12 Connect system monitor cables with the following exception in Core/Net 0:
  - a Attach a P0369107 Filter Adapter to the inside of location J11 on the right I/O panel.
  - b Connect the narrow ribbon on the NT8D46AD cable from connector J2 to location J11 on the right I/O panel.

**Note:** Use the extraction tool to disconnect cables from the connectors on the rear of the backplane.
- 13 Using the extraction tool, temporarily disconnect the NT7D90 Ethernet and NT7D89 RS-232 cables from backplane connector positions 17F and 15D, respectively.
- 14 In the rear of the Core/Net modules, install the following cables between Core/Net 0 and Core/Net 1 (see Figure 19).

**Note:** The following cables may already be connected in one of the modules. If so, leave them connected and attach the loose end.

- 15 Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 17A in Core/Net 0 to backplane connector position 17A in Core/Net 1.
- 16 Connect one NTND11 CP-to-CP Cable from backplane connector position 15C in Core/Net 0 to backplane connector position 15C in Core/Net 1.
- 17 Connect another NTND11 cable from backplane connector position 15A in Core/Net 0 to backplane connector position 15A in Core/Net 1.

**Figure 19**  
**NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables**



- 18 For Group 0, attach adapters and cables from the NTND33CC cable kit to the inside of the left I/O panel for each Core/Net module.

**Note:** When installing the left I/O panel, make sure the word LEFT faces the outside of the module. The connector locations listed below correspond to the designations on the outside of the panel.

- 19 Connect the NTND94DA CNI cables to the inside of the left I/O panel (as viewed from the rear) as listed in Table 24.
- 20 For Group 1 (if equipped), connect the NTND94DA cables from the NTND33CC cable kit to the inside of the left I/O panel for each Core/Net module as listed in Table 24.

**Table 24**  
**NTND94DA cable connections on the Core/Net I/O panels**

Group	Core/Net 0 cable labels	Core/Net 1 cable labels	I/O panel location	Backplane location
0	CPU0-CNI-12A to 3PE-GRP0/0-J3	CPU1-CNI-12A to 3PE-GRP0/1-J3	J26 on left panel	12A
0	CPU0-CNI-12C to 3PE-GRP0/0-J4	CPU1-CNI-12C to 3PE-GRP0/1-J4	J27 on left panel	12C
1	CPU0-CNI-12D to 3PE-GRP1/0-J3	CPU1-CNI-12D to 3PE-GRP1/1-J3	J22 on left panel	12D
1	CPU0-CNI-12F to 3PE-GRP1/0-J4	CPU1-CNI-12F to 3PE-GRP1/1-J4	J23 on left panel	12F
2	CPU0-CNI-13A to 3PE-GRP2/0-J3	CPU1-CNI-13A to 3PE-GRP2/1-J3	J2 on right panel	13A
2	CPU0-CNI-13C to 3PE-GRP2/0-J4	CPU1-CNI-13C to 3PE-GRP2/1-J4	J1 on right panel	13C
3	CPU0-CNI-13D to 3PE-GRP3/0-J3	CPU1-CNI-13D to 3PE-GRP3/1-J3	J6 on right panel	13D
3	CPU0-CNI-13F to 3PE-GRP3/0-J4	CPU1-CNI-13F to 3PE-GRP3/1-J4	J5 on right panel	13F
4	CPU0-CNI-14A to 3PE-GRP4/0-J3	CPU1-CNI-14A to 3PE-GRP4/1-J3	J10 on right panel	14A
4	CPU0-CNI-14C to 3PE-GRP4/0-J4	CPU1-CNI-14C to 3PE-GRP4/1-J4	J9 on right panel	14C

- 21 Install the left I/O panel in each of the Core/Net modules and route the cables:

- Feed the cables attached to the I/O panel through the panel opening.
  - While holding the panel in place, connect the NT7D90 and NT7D89 cables to backplane connectors 17F and 15D, respectively.
- 22** Install the eight I/O panel screws removed earlier.
- 23** Connect the cables to the backplane connector locations indicated on the cable label (refer to Table 24).
- 24** For Group 2, Group 3, and Group 4 (if equipped), attach adapters and cables from the NTND33CC cable kits to the inside of the right I/O panel for each Core/Net module.

**Note:** When installing the right I/O panel, use a P0745713 panel from the upgrade package. Make sure the word RIGHT faces the outside of the module. The connector locations listed below correspond to the designations on the outside of the panel.

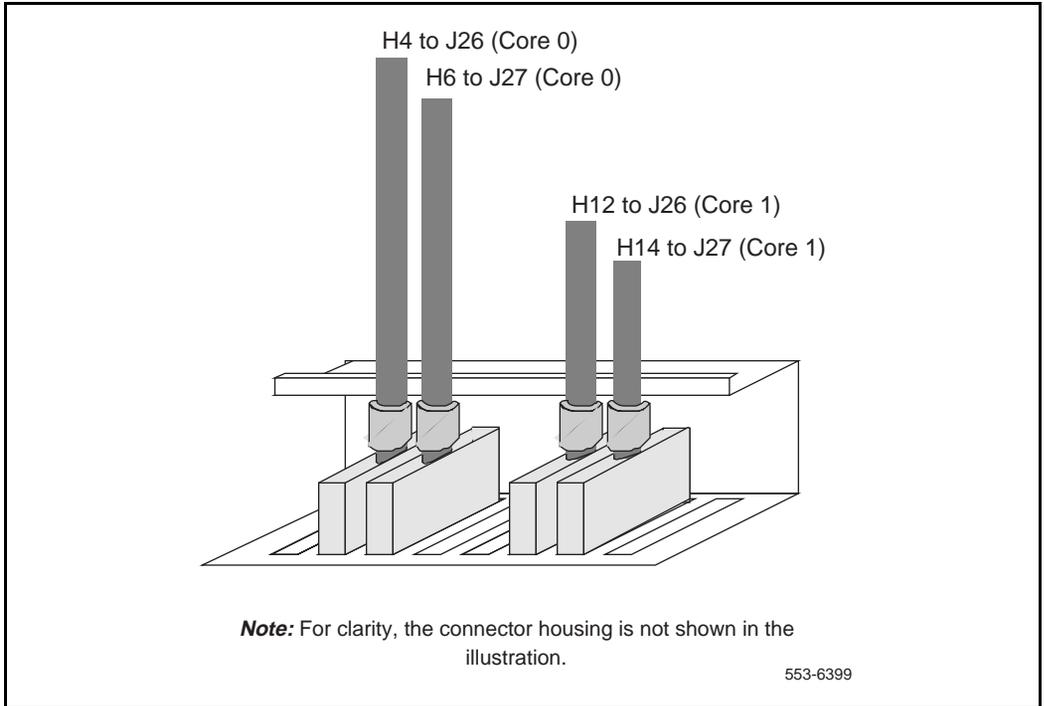
- 25** For each group, connect the NTND94DA cables to the right I/O panel as indicated by Table 24.
- 26** Install the right I/O panel in each of the Core/Net modules and route the cables:
- a** Feed the cables attached to the I/O panel through the panel opening.
  - b** While holding the panel in place, connect the NT7D90 and NT7D89 cables to backplane connectors as indicated by the label on the cable, and Table 24.
- 27** Install the eight I/O panel screws removed earlier.
- 28** Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal:
- 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

- 29** For Group 0, connect the intercabinet cables from the NTND33CC cable kit:
- a** Mount and screw-lock the intercabinet cables listed in Table 25 to the Group 0 connector housing on the top of the QCA55 cabinet (see Figure 20). Using a screwdriver, you can access the rear screw locks through the access hole in the strain relief bracket.
  - b** Route the cables along the overhead cable racks to the Core/Net modules. Connect the cables to the outside of the left I/O panels as listed in Table 25, and secure the cables with the screw-locks.

**Table 25**  
**Group 0 intercabinet cables**

<b>Cable</b>	<b>Cable label</b>	<b>Connector housing location</b>	<b>I/O panel location</b>
NTND28BB	CPU0-CNI-12A to 3PE-GRP0/0-J3	H4	Core/Net 0—J26
NTND28BB	CPU0-CNI-12C to 3PE-GRP0/0-J4	H6	Core/Net 0—J27
NTND28BB	CPU1-CNI-12A to 3PE-GRP0/1-J3	H12	Core/Net 1—J26
NTND28BB	CPU1-CNI-12C to 3PE-GRP0/1-J4	H14	Core/Net 1—J27

**Figure 20**  
**Group 0 cables connecting to the connector bracket**

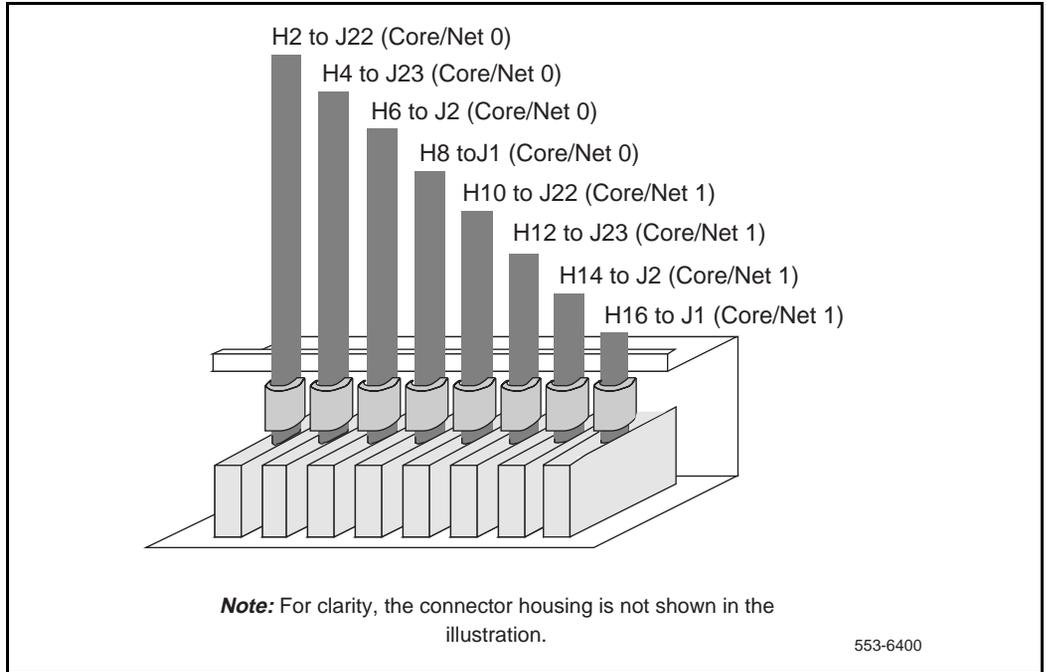


- 30 For Group 1 and Group 2 (if equipped), connect the intercabinet cables from the NTND33CC cable kit:
  - a Mount and screw-lock the intercabinet cables listed in Table 26 to the connector housing on the top of the QCA55 cabinet (see Figure 21).
  - b Route the cables along the overhead cable racks to the Core/Net modules. Connect the cables to the outside of the I/O panels as listed in Table 26, and secure the cables with the screw-locks.

**Table 26**  
**Groups 1 and 2 intercabinet cables**

Cable	Cable label	Connector housing location	I/O panel location
NTND28BC	CPU0-CNI-12D to 3PE-GRP1/0-J3	H2	Core/Net 0—J22
NTND28BC	CPU0-CNI-12F to 3PE-GRP1/0-J4	H4	Core/Net 0—J23
NTND28BC	CPU0-CNI-13A to 3PE-GRP2/0-J3	H6	Core/Net 0—J2
NTND28BC	CPU0-CNI-13C to 3PE-GRP2/0-J4	H8	Core/Net 0—J1
NTND28BC	CPU1-CNI-12D to 3PE-GRP1/1-J3	H10	Core/Net 1—J22
NTND28BC	CPU1-CNI-12F to 3PE-GRP1/1-J4	H12	Core/Net 1—J23
NTND28BC	CPU1-CNI-13A to 3PE-GRP2/1-J3	H14	Core/Net 1—J2
NTND28BC	CPU1-CNI-13C to 3PE-GRP2/1-J4	H16	Core/Net 1—J1

**Figure 21**  
**Group 1 and 2 cables connecting to the connector bracket**

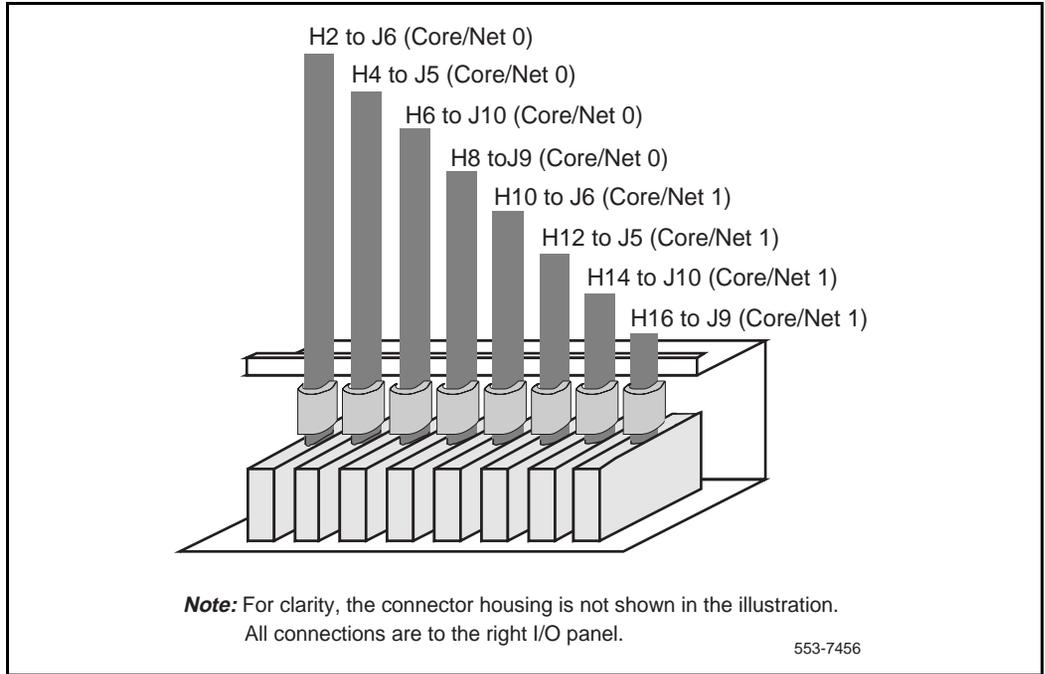


- 31 For Group 3 and Group 4 (if equipped), connect the intercabinet cables from the NTND33CC cable kit:
  - a Mount and screw-lock the intercabinet cables listed in Table 27 to the connector housing on the top of the QCA108 cabinet (see Figure 22).
  - b Route the cables along the overhead cable racks to the Core/Net modules. Connect the cables to the outside of the right I/O panels as listed in Table 27, and secure the cables with the screw-locks.

**Table 27**  
**Group 3 and Group 4 intercabinet cables**

Cable	Cable label	Connector housing position	I/O panel connector
NTND28BC	CPU0-CNI-13D to 3PE-GRP3/0-J3	H2	Core/Net 0—J6
NTND28BC	CPU0-CNI-13F to 3PE-GRP3/0-J4	H4	Core/Net 0—J5
NTND28BC	CPU0-CNI-14A to 3PE-GRP4/0-J3	H6	Core/Net 0—J10
NTND28BC	CPU0-CNI-14C to 3PE-GRP4/0-J4	H8	Core/Net 0—J9
NTND28BC	CPU1-CNI-13D to 3PE-GRP3/1-J3	H10	Core/Net 1—J6
NTND28BC	CPU1-CNI-13F to 3PE-GRP3/1-J4	H12	Core/Net 1—J5
NTND28BC	CPU1-CNI-14A to 3PE-GRP4/1-J3	H14	Core/Net 1—J10
NTND28BC	CPU1-CNI-14C to 3PE-GRP4/1-J4	H16	Core/Net 1—J9

**Figure 22**  
**Groups 3 and 4 cables connecting to the connector bracket**



## Transferring call processing to CPU 0 in XT and Option 71

Before proceeding with the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 On the XT/71 system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\*** to exit the program

### CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Verify system operation in the XT/71, then split the system so CPU 1 is inactive and all call processing is handled by CPU 0:

- 5 Get the status of the CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled.  
**LD 35** to load the program  
**STAT CPU** to get the status of both CPUs  
**STAT CMA** to get CMA or OCMA status  
**STAT EXT** to get the extender status  
**STAT MEM** to get the memory status

**6** Test and switch CPUs:

**TEST CPU** to test the CPUs  
**SCPU** to switch the CPUs

**7** Disable clock controller 1:

**LD 60** to load the program  
**SSCK 0** to get the status of clock 0  
**SSCK 1** to get the status of clock 1  
**SWCK** if necessary, to switch to clock controller 0  
**DIS CC 1** to disable clock controller 1  
**\*\*\*\*** to exit the program

Set the ENB/DIS switch to DIS on the clock controller card in CPU 1. Label and disconnect the cable at the junctor board. Then label and disconnect the cable at the faceplate of the clock controller card. If primary and secondary clock reference cables are equipped, label and disconnect them last.

**8** Get the status of the other CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled.

**STAT CPU** to get the status of both CPUs  
**STAT CMA** to get CMA or OCMA status  
**STAT EXT** to get the extender status  
**STAT MEM** to get the memory status

**9** Verify that CPU 0 is enabled (CPU 1 is idle).

**10** Set the NORM/MAINT switch on the CMA or OCMA card in CPU 0 to MAINT.

**11** List the enabled memories. Then disable the memories and CMA or OCMA in CPU 1:

**LENL** to list enabled memories  
**DIS 10** to disable CPU 1 memory (10, 11, 12 if equipped)  
**DIS CMA 1** to disable CMA or OCMA 1  
**\*\*\*\*** to exit LD 35

- 12 Set the QPC215 Segmented Bus Extenders (SBE) ENB/DIS switch to DIS in CPU 1.
- 13 Software disable the QPC742 FDI, QPC584 MSI, or NT9D34 EMSI card in CPU 0.  
**DIST** to disable the card
- 14 Set the ENB/DIS switch to DIS on the QPC584 or QPC742 card in CPU 0.
- 15 Set the NORM/MAINT switch in CPU 1 to MAINT. This splits the CPUs and will cause a sysload. If the sysload does not begin, press the RLD button on CMA 1 only. Wait for the sysload to complete to verify the sanity of CPU 1 before proceeding with the upgrade.

The CMA and SDI lights will go out and the disk drives will run. The following messages will print out (they may differ slightly depending on the X11 release). Check for dial tone following the DONE and INI000 messages:

```
SYS000  
SYS092  
SYS093  
SYS511  
SYS091  
SYS090  
SYSLOAD RLS: xx  
ISSUE: x  
DONE  
  
INI000
```

*Note 1:* When the sysload is complete, midnight routines will begin. You can log into the system, which will interrupt the midnight routines, and continue with the upgrade.

*Note 2:* If the system fails to load or messages indicate data corruption, do not proceed with the upgrade until all problems have been cleared.

The new column(s) are installed and powered on. The XT/71 system is operating in split-mode with call processing on CPU 0.

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the XT/71 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### **CAUTION**

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### **IODU/C cabling**

- 1 Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

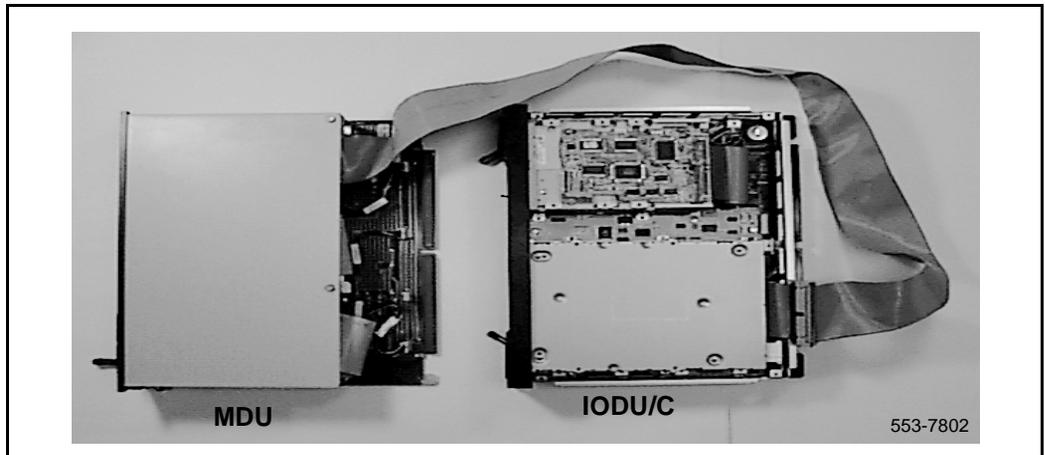
## MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:  
**LD 37** to load the program  
**DIS MSI 0** to disable the card
  - b Remove the floppy diskettes from the disk drives.
  - c Label and disconnect cables from the faceplate of the MDU or SMDU.
  - d Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 23, on page 193). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.

**Figure 23**  
**Cabling the MDU to the IODU/C card**



- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive (68030, 68040, 68060 or 68060E).
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the Nortel Networks logo to appear after SYSLOAD has been completed.

- 11 When the Nortel Networks logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu

- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation  
<y> to confirm that the keycode matches the CD-ROM release

- 15 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only  
<f> to transfer the customer database from the MDU  
<a> to continue the database transfer  
<a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)  
<cr> to continue  
the Installation Status Summary menu appears to confirm database transfer  
<y> to start installation  
<a> yes, transfer the database  
Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.  
<cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.  
<cr> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.  
<q> When the Install Menu appears, select <q> to quit.  
Remove any  
<y> to confirm quit  
<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

- 16 Shut down power to Core/Net 1 module.

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21** Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22** Verify that the CP card faceplate switch is set to MAINT.
- 23** Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## **Installing Release 25 software in Core/Net 1**

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive

- the module must be powered on
  - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 When the Nortel Networks logo appears, press <CR> to continue.
  - 3 Log into the system.
  - 4 Enter the date and time when prompted.
  - 5 When the Main Menu appears, select the following options in sequence:
    - <u> to Install menu
  - 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
    - <a> to continue with keycode validation
    - <y> to confirm that the keycode matches the CD-ROM release

7 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 8 When the sysload is complete, log into the system.
- 9 Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

**LD 135** to load the program

**STAT CPU** to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

- 10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43** to load the program

- 11 When “EDD000” appears on the terminal, enter:

**EDD** to begin the data dump

- 12 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13 Set date and time:

**LD 2** to load the overlay

**STAD** DD MM YY HR MN SC

Continue with “Configuring the system” on page 199.

## Configuring the system

- 1 Configure networks as CNI groups, based on the number of CNI cards in the system. In a typical configuration, there are three CNI cards for five network groups (see Table 28). See *X11 Administration* (553-3001-311) for a complete description of the Configuration Record (LD 17).

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
...		
CEQU	YES	
•		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
...		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
...		

**Note:** If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See the *X11 Administration* (553-3001-311) for procedures describing adding and removing groups.

**Table 28**  
**Typical CNI configurations**

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 2 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

*Note:* The History File requires a dedicated I/O port.

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG	x = terminal number (0–15)
...	terminal x	
GRP	g	g = network group (0–4)
...		

- 3 Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.
- 4 Print the Configuration Record to verify the above changes:

<b>LD 22</b>	to load the program
<b>REQ PRT</b>	to select the print option
<b>TYPE CFN</b>	to print the configuration
<b>****</b>	to exit the program

- 5 Verify the changes, and then load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43**                    to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD**                    to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 If slot 13 in Group 0, Network Shelf 1 and slot 2 in Group 0, Network Shelf 0 are not empty, remove the cards currently in these slots and move them to any available slot of other groups.

*Note:* If the XT system is equipped with two QSD39 Network shelves for Group 0 (left side and right side), ensure that slot 2 is empty in both Group 0, Network Shelf 1, and Group 0, Network Shelf 0.

- 7 If you are installing clock controller 1 in a QSD40 Network shelf, skip this step and continue with step 8. However, if you are installing clock controller 1 in a QSD39 Network shelf, you must replace the QPC477 BTUs with network hybrids before continuing with the upgrade. Refer to “Network hybrid installation” on page 895 for installation procedures.

**CAUTION**

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

When the network hybrids are installed, continue with step 8.

- 8 Set the switches on clock controller 1 (see Table 29). Set the ENB/DIS switch set to DIS and install the card in slot 13 of Group 1, Shelf 1 module. Leave the ENB/DIS switch set to DIS.

*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**Table 29**  
**Clock controller card 1 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 9 Reroute the cables from the primary and secondary clock reference cards and connect them to the faceplate of clock controller card 1 in its new location.
- 10 Reroute the cable from the junctor board and connect them to the faceplate of clock controller card 1.
- 11 Connect the NT1R04AA cable first to the connector on the controller card, then to the connector on the junctor panel.

**CAUTION**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 12 On the QPC441 3PE cards in network Shelf 1 of all groups, tag and disconnect the cables connected to QPC215 SBE cards.
- 13 As listed in Table 30, connect NTND95AA cables to the 3PE faceplates in network Shelf 1 of all equipped network groups.
- 14 Set the ENB/DIS switch to ENB on the clock controller card in slot 13 of Group 1, Shelf 1.

**Table 30**  
**Network Shelf 1: NTND95AA cable connections to 3PE cards**

Network group	Cable label	Connector housing	Connector position	3PE connector
0	CPU1-CNI-12A to 3PE-GRP0/1-J3	Group 0	H12	J3
0	CPU1-CNI-12C to 3PE-GRP0/1-J4	Group 0	H14	J4
1	CPU1-CNI-12D to 3PE-GRP1/1-J3	Groups 1 & 2	H10	J3
1	CPU1-CNI-12F to 3PE-GRP1/1-J4	Groups 1 & 2	H12	J4
2	CPU1-CNI-13A to 3PE-GRP2/1-J3	Groups 1 & 2	H14	J3
2	CPU1-CNI-13C to 3PE-GRP2/1-J4	Groups 1 & 2	H16	J4
3	CPU1-CNI-13D to 3PE-GRP3/1-J3	Groups 3 & 4	H10	J3
3	CPU1-CNI-13F to 3PE-GRP3/1-J4	Groups 3 & 4	H12	J4
4	CPU1-CNI-14A to 3PE-GRP4/1-J3	Groups 3 & 4	H14	J3
4	CPU1-CNI-14C to 3PE-GRP4/1-J4	Groups 3 & 4	H16	J4

## Transferring call processing to Core/Net 1

- 1 Set the ENB/DIS switch to ENB on all CNI cards in Core/Net 1.
- 2 Enable each CNI card in Core/Net 1:  
**LD 135** to load the program  
**ENL CNI 1 slot (12, 13 or 14)** to enable the CNI card (repeat for each CNI card)  
**\*\*\*\*** to exit the program

### CAUTION

Call processing will be interrupted. Perform the next steps carefully. This is the point at which your service will be interrupted. Calls in process will be interrupted.

- 3 Perform the next 3 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from CPU 0 to Core/Net 1.
  - a Set the ENB/DIS switch to DIS on all SBE cards in CPU 0.
  - b Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
  - c Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process. Make sure the faceplate LEDs go out on the CNI, 3PE, and IGS cards.

- 4** Check for dial tone. If there is no dial tone, the system is inoperable. If you cannot afford downtime, switch the loops back to CPU 0 in the XT/71:
  - a** Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS. Set the ENB/DIS switch on each SBE card on CPU 0 to ENB.
  - b** Initialize CPU 0 by pressing the MAN INT button.
  - c** Troubleshoot the new modules off-line.
  - d** If you can afford downtime, troubleshoot the new modules on-line:
  - e** Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
  - f** Verify that all cables are properly and securely connected in the front and rear of the module.
  - g** Check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
  - h** If any CNI cards are disabled, enable them in LD 135, perform a data dump with LD 43, and initialize the system by pressing the MAN INT button. Otherwise, proceed directly to step .
  - i** Again, check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
  - j** Check for dial tone.

Following a successful dial tone test, perform the following basic sanity tests:

- a** Make sure intra-group and inter-group calls can be placed.
- b** Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

The upgrade of CPU 1 is complete. The system is operating in split-mode with call processing on Core/Net 1.

Check the remaining equipment from the upgrade package. Make sure you have enough equipment to upgrade CPU 0 and for troubleshooting, if needed.

## Upgrading the software and ROMs on Core/Net 0

**Note:** Connect the terminal (or set the switch on the switch box) to J25 on Core/Net 0.

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Insert the CP Install Program diskette into active IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the Nortel Networks logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>>` to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>` continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:  
`<0>` to copy system software from the other Core
- 7 When the software is installed successfully, press `<CR>` to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.

- 8** From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

<b>&lt;f&gt;</b>	to install IOP-ROM only
<b>&lt;cr&gt; &lt;a&gt;</b>	to install the IOP-ROM from hard disk
<b>&lt;y&gt;</b>	Yes, start installation
<b>&lt;cr&gt; &lt;a&gt;</b>	to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9** From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:

<b>&lt;d&gt;</b>	to go to the Database menu
<b>&lt;d&gt;</b>	to copy the database from Core 1 to Core 0
<b>&lt;y&gt;</b>	to confirm the installation status summary
<b>&lt;a&gt;</b>	to confirm database copy

- 10** From the Main Menu, select the following options to quit and reload the system:

<b>&lt;q&gt;</b>	to quit
<b>&lt;y&gt;</b>	to confirm quit

- 11** Reboot the Core/Net 0 CPU:

<b>&lt;a&gt;</b>	to reboot the system
------------------	----------------------

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12** Set the ENB/DIS switch to DIS on the clock controller card in CPU 0. Label and disconnect the cable at the junctor board. Then label and disconnect the cable at the faceplate of the clock controller card. If primary and secondary clock reference cables are equipped, label and disconnect them last.
- 13** Remove the clock controller in CPU 0.

- 14 Replace the QPC477 BTUs in the QCA39 Network shelf with the network hybrids provided in the Network Hybrid Installation Kit before continuing with the upgrade. Refer to “Network hybrid installation” on page 895 for installation procedures.

**CAUTION**

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

When the network hybrids are installed, continue with step 15.

- 15 Set switches on clock controller 0 as shown in Table 31.
- 16 Set the ENB/DIS switch on the clock controller card to DIS and install the card in slot 2 of the Group 0, Network Shelf 0 module.

*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**Table 31**  
**Clock controller card 0 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on

*Note:* Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 17 Connect the cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.

- 18** Route the cable from the junctor board to the clock controller card. Connect the cable first to the controller card, then to the connector on the junctor panel.
- 19** Verify that the ENB/DIS switch on the clock controller cards is set to DIS.

**CAUTION**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 20** On the QPC441 3PE cards in network Shelf 0 of all groups, label and disconnect the cables connected to QPC215 SBE cards.
- 21** As listed in Table 32, connect NTND95AA cables to the 3PE faceplates in network Shelf 0 of all equipped network groups.

**Table 32**  
**Network Shelf 0: NTND95AA cable connections to 3PE cards**

Network group	Cable label	Connector housing	Connector location	3PE card connector
0	CPU0-CNI-12A to 3PE-GRP0/0-J3	Group 0	H4	J3
0	CPU0-CNI-12C to 3PE-GRP0/0-J4	Group 0	H6	J4
1	CPU0-CNI-12D to 3PE-GRP1/0-J3	Groups 1 & 2	H2	J3
1	CPU0-CNI-12F to 3PE-GRP1/0-J4	Groups 1 & 2	H4	J4
2	CPU0-CNI-13A to 3PE-GRP2/0-J3	Groups 1 & 2	H6	J3
2	CPU0-CNI-13C to 3PE-GRP2/0-J4	Groups 1 & 2	H8	J4
3	CPU0-CNI-13D to 3PE-GRP3/0-J3	Groups 3 & 4	H2	J3
3	CPU0-CNI-13F to 3PE-GRP3/0-J4	Groups 3 & 4	H4	J4
4	CPU0-CNI-14A to 3PE-GRP4/0-J3	Groups 3 & 4	H6	J3
4	CPU0-CNI-14C to 3PE-GRP4/0-J4	Groups 3 & 4	H8	J4

22 Check the status of all configured CNI cards:

**LD 135** to load the program  
**STAT CNI** to get the status of all configured CNIs  
**\*\*\*\*** to exit the program

23 Set the ENB/DIS switch on all CNI cards in Core/Net 0 to ENB.

24 **Set the MAINT/NORM switch on the CP card in Core/Net 0 to NORM.**

An “HW1534” message from the CPSI (Core/Net 1) or SDI port indicates the start of memory synchronization. After 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized.

25 **Set the NORM/MAINT switch to NORM on the CP card in Core/Net 1.**

26 Perform a redundancy sanity test:

**LD 135** to load the program  
**STAT CNI** to get the status of all configured CNIs  
**STAT CPU** to get the status of both Cores  
**TEST CPU** to test the inactive CP card and CP-to-CP cable  
**TEST IPB** to test the backplane protocol on the inactive side  
**TEST CNI c s** to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

27 Test the inactive Core, then switch Cores and test the other side:

**SCPU** to switch to Core/Net 0  
**TEST CPU** to test the inactive CP card and CP-to-CP cable  
**TEST IPB** to test the backplane protocol on the inactive side

28 Get the status of the CP cards and memories and of the CNIs:

**STAT CPU** to get the status of both Cores  
**STAT CNI** to get the status of all configured CNIs  
**\*\*\*\*** to exit LD 135

- 29** Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

**LD 137**           to load the program  
**STAT**           to get the status of IODU/Cs, and redundancy  
**SWAP**           to switch IODU/Cs (if necessary)  
**SYNC**           to synchronize the hard disks  
**TEST CMDU**   Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 30** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

**STAT**           to get the status of IODU/Cs, and redundancy  
**SWAP**           to switch IODU/Cs (if necessary)  
**\*\*\*\***           to exit LD 137

- 31** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected

- 32** Check the status of the clocks, swap clocks, and verify status:

**LD 60**           to load the program  
**SSCK 0**         to get the status of clock 0  
**SSCK 1**         to get the status of clock 1  
**SWCK**           to swap active clocks  
**SSCK 0**         to verify that clock 0 is active  
**SSCK 1**         to verify that clock 1 is inactive  
**\*\*\*\***           to exit the program

- 33** Insert a B1 database diskette into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C:

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

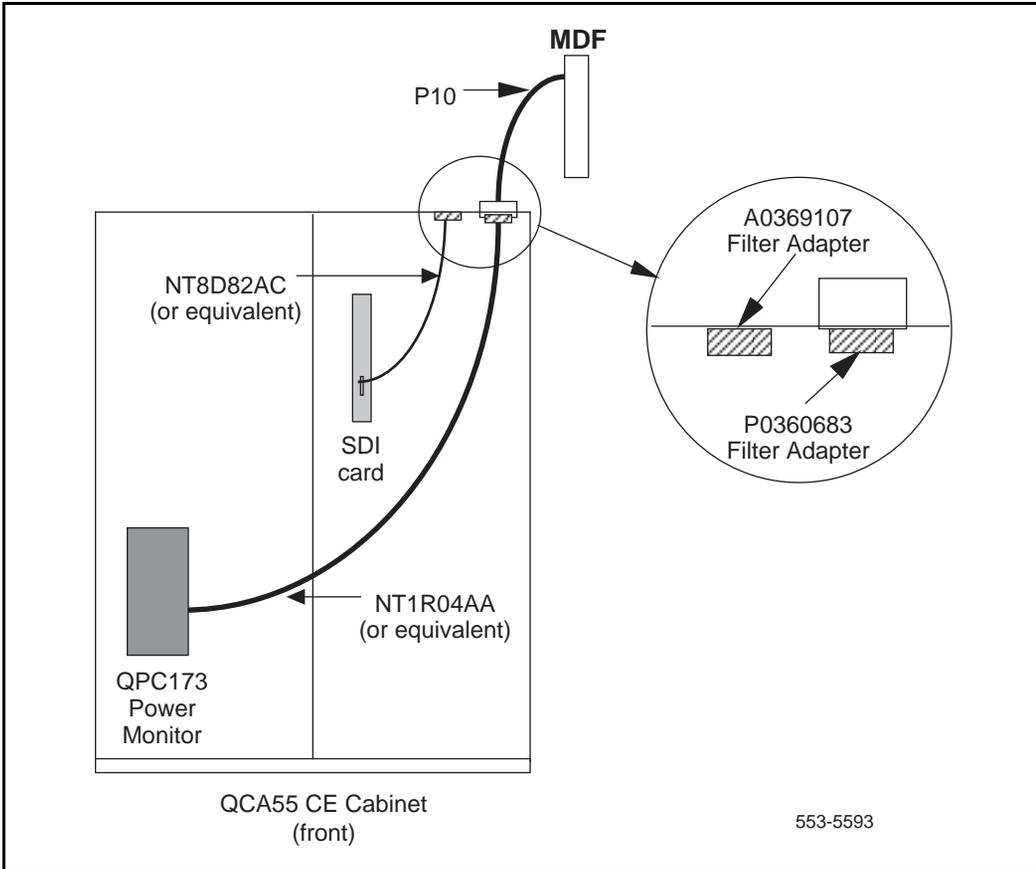
If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

At this stage, the system is operating in dual CPU mode with redundant hard disks. To confirm system operation, continue with the final upgrade steps.

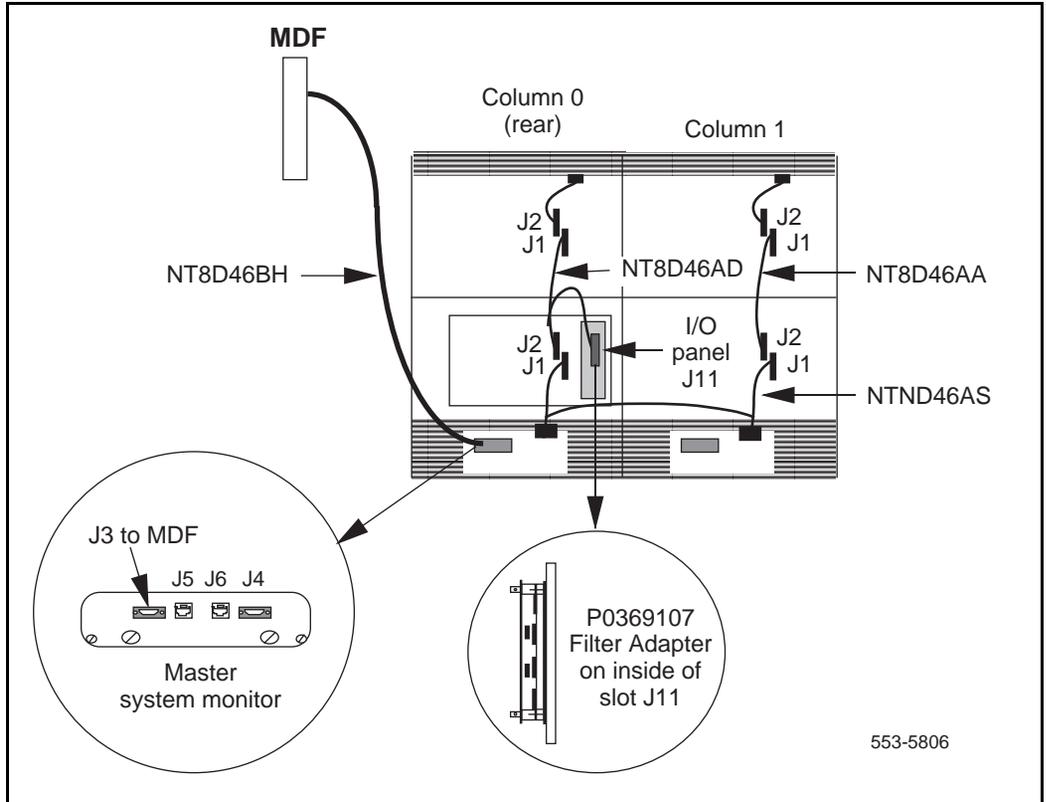
## Completing the upgrade

- 1** Install two alarm termination plugs (P0623569) in the QCA55 cabinet:
  - a** Install one plug at a convenient location on the cabinet frame near each CPU.
  - b** Disconnect the power monitor cable from each CPU shelf and plug it into a termination plug.
- 2** Power down the CPU shelves in the XT/71 cabinet by turning the CPU shelf input breaker to OFF.
- 3** In the XT/71 cabinets, verify that the following connections are in place, or install the equipment required (see Figure 24):
  - a** Connect the power monitor in the cabinet to a P0360683 Filter Adapter on the top of the cabinet. Use a new NT1R04AA cable or an existing QCAD117A, QCAD193A, or QCAD199A cable.
  - b** Connect the P0360683 Filter Adapter to the MDF with a P10 cable.
  - c** Connect an SDI card in a network shelf to an A0369107 Filter Adapter on the top of the cabinet. Use a new NT8D82AC or NT8D82AD cable, or an existing QCAD120A cable.
- 4** For Core/Net 0 (see Figures 25 and 26):
  - a** Verify that an NT8D46 cable from J3 on the master system monitor is connected to the MDF.
  - b** Verify that the narrow ribbon on the NT8D46AD cable from connector J2 is connected to location J11 on the right I/O panel.
- 5** Connect an NT8D95BJ cable to the A0369107 Filter Adapter on the XT/71 cabinet (see Figures 27 and 28).
- 6** Connect the NT8D95BJ cable to location J11 on the right I/O panel in Core/Net 0.

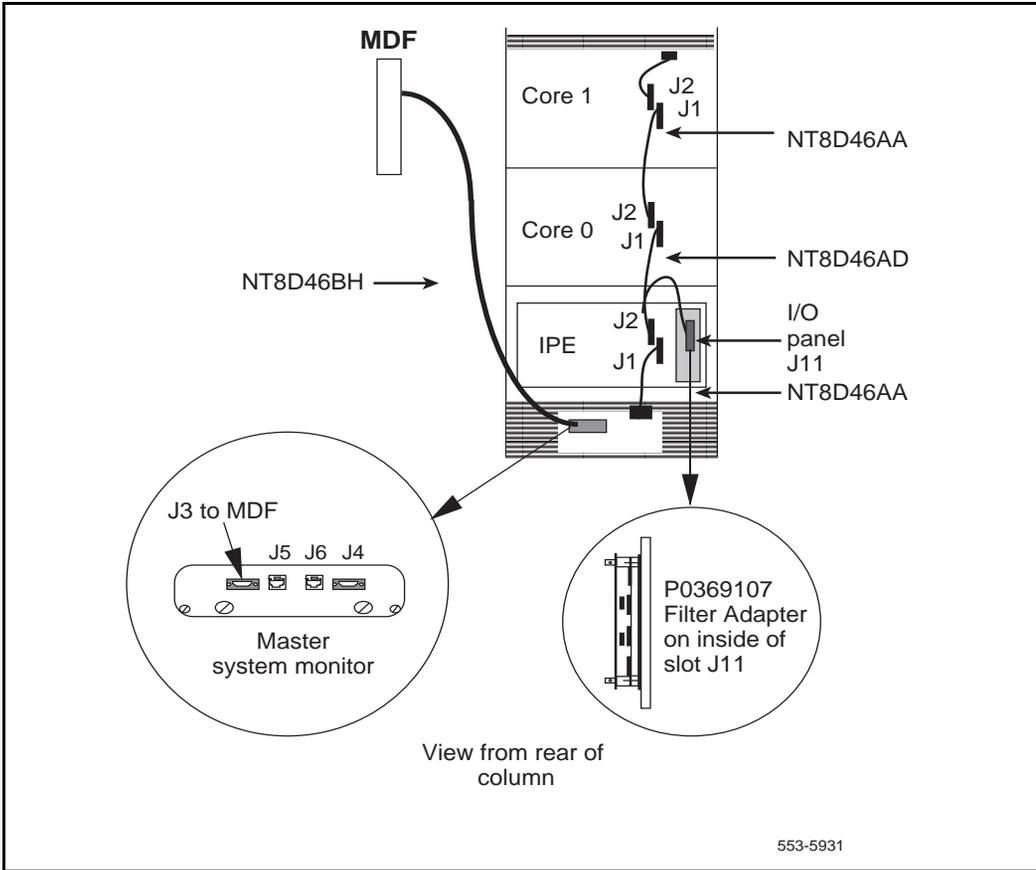
**Figure 24**  
**Power monitor and SDI connections in the QCA55 cabinet**



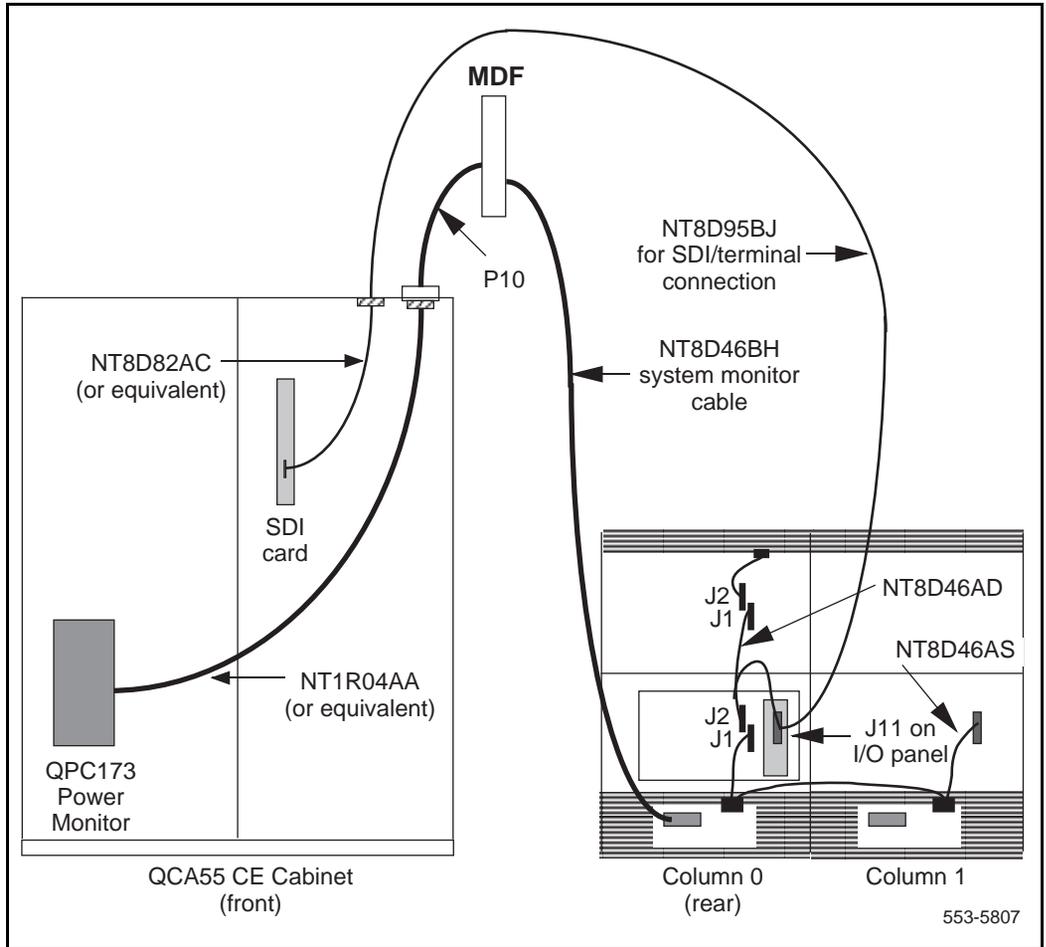
**Figure 25**  
**System monitor and SDI filter adapter connections in dual-column installations**



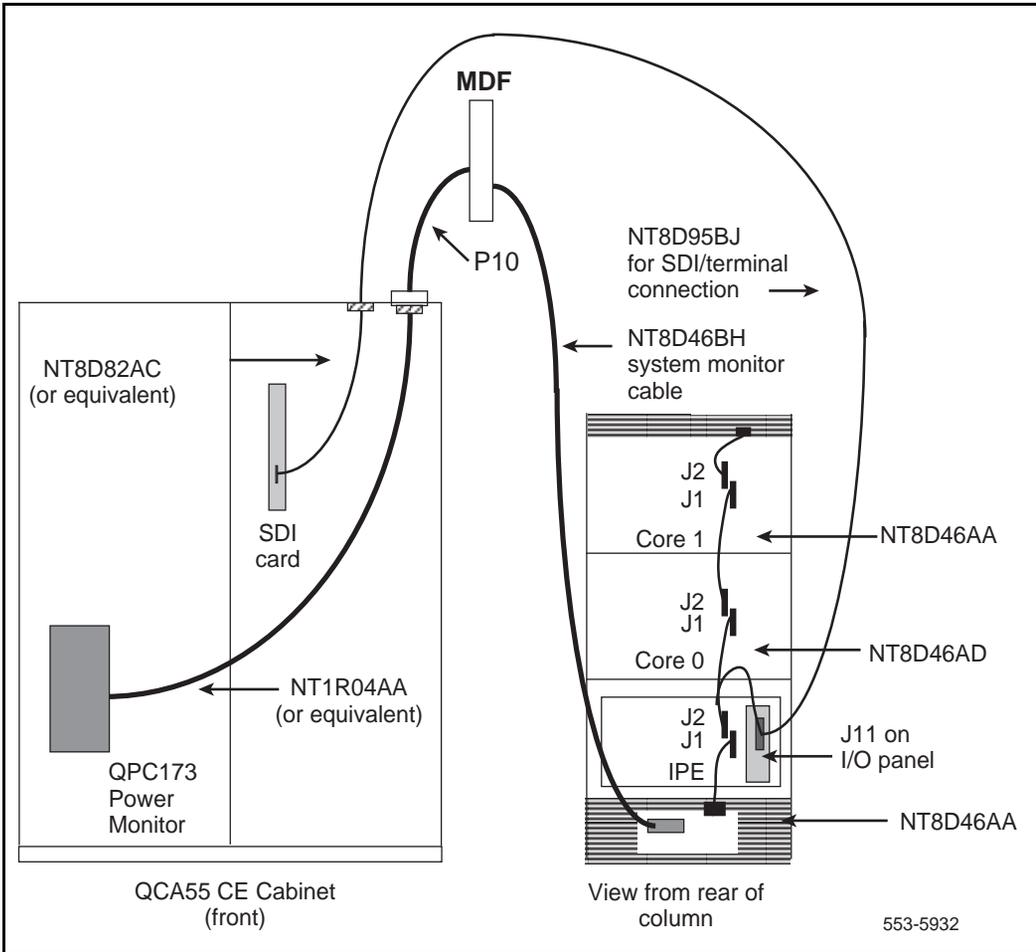
**Figure 26**  
**System monitor and SDI filter adapter connections in single-column installations**



**Figure 27**  
**System monitor and SDI connections between XT/71 and Core/Net modules**  
**in dual-column installations**

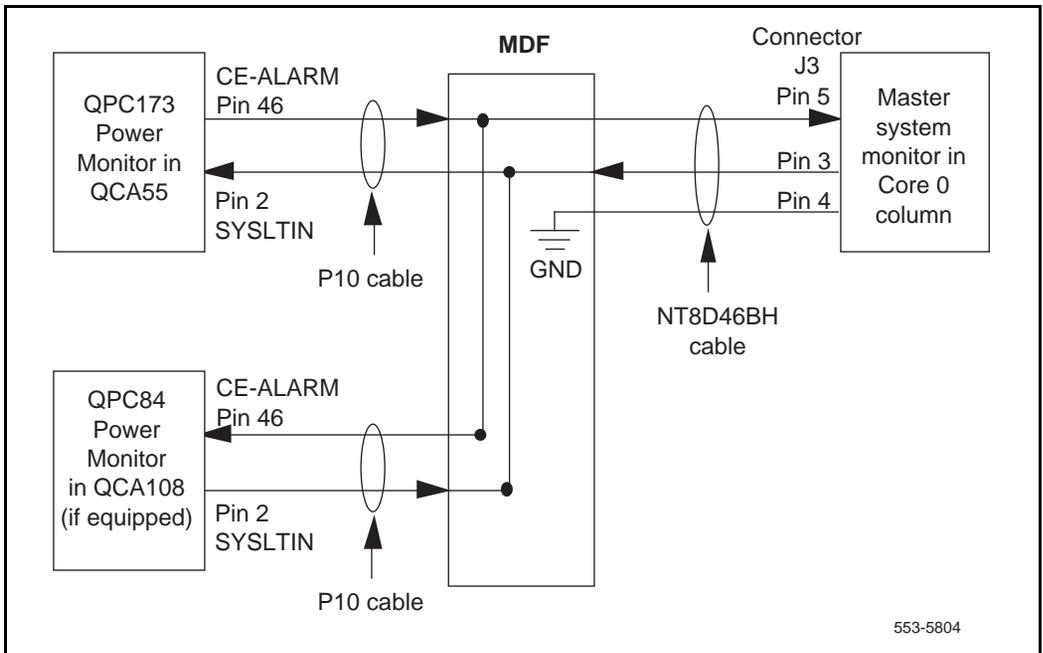


**Figure 28**  
**System monitor and SDI connections between XT/71 and Core/Net modules**  
**in single-column installations**



- 7 To enable a system monitor connection between the cabinets and column(s), cross-connect the NT8D46BH (or DH, or EH) cable from J3 on the master system monitor to the P10 cable from the XT/71 cabinets (see Figures 27, 28, and 29):
  - a Pin 5 (slate/white wire) of the NT8D46BH cable must terminate to Pin 46 (violet/blue wire) of the P10 cable.
  - b Pin 3 (green/white wire) of the NT8D46BH cable must terminate to Pin 2 (orange/white wire) of the P10 cable.
  - c Pin 4 (brown/white wire) of the NT8D46BH cable must terminate to MDF0/GND.

**Figure 29**  
**System monitor cross-connections at the MDF**



- 8 In the tape shelf of the XT system CE cabinet, verify that the ENB/DIS switch on the QPC173 Power Monitor card is set to DIS and seat the card in the slot.

- 9 Using the terminal connected to the network SDI port, confirm the SDI and system monitor connections by checking the system monitor status:
- LD 37** to load the program
  - STAT XSM** to check the system monitors
  - \*\*\*\*** to exit the program
- 10 Test the IOP to IOP SCSI connection and test the IODU/Cs:
- LD 137** to load the program
  - TEST SCSI** to check the IOP to IOP connection and access to the IODU/Cs
  - TEST CMDU** to test the hard and floppy disk drives (a floppy diskette must be installed)
  - \*\*\*\*** to exit the program
- 11 Clear displays, major alarms, and minor alarms:
- CDSP** to clear the display
  - CMAJ** to clear all major alarms
  - CMIN ALL** to clear all minor alarms
  - SCPU** to switch to the other Core
  - CDSP** to clear the display
  - CDSP** to clear the display
  - \*\*\*\*** to exit LD 135
- 12 Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The XT/71 Core/Net module upgrade to Option 81C is complete.

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# XT Core/Net and Network module upgrade to Option 81C

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## Content list

The following are the topics in this section:

- [Reference list 221](#)
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- [Core/Net and Network module installation 233](#)
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## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*

- *Capacity Engineering* (553-3001-149)
- *Power Engineering* (553-3001-152)
- *Product Compatibility* (553-3001-156)
- *System Installation Procedures* (553-3001-210)
- *Circuit Card: Installation and Testing* (553-3001-211)
- *X11 Administration* (553-3001-311)
- *Hardware Replacement* (553-3001-520)

This section covers Core/Net and Network module upgrades from XT systems to Option 81C. The Core/Net and Network module upgrade consists of:

- 1** Installing two Core/Net module columns.
  - a** One column will contain an NT8D36 InterGroup module.
  - b** At least one column will contain NT8D35 Network modules.
  - c** Additional columns may be installed optionally.
  - d** One or more columns may contain NT8D37 Intelligent Peripheral Equipment (IPE) modules for new, expanded IPE.
- 2** Installing network to peripheral equipment cabling.
- 3** Moving network components into Network modules.

The hardware required for this upgrade is provided in the Core/Net and Network module upgrade package. All existing equipment that will be retained must meet minimum vintage requirements and be compatible with X11 release 25. Order replacements for equipment that does not comply. Refer to *Product Compatibility* (553-3001-156) for vintage requirements.

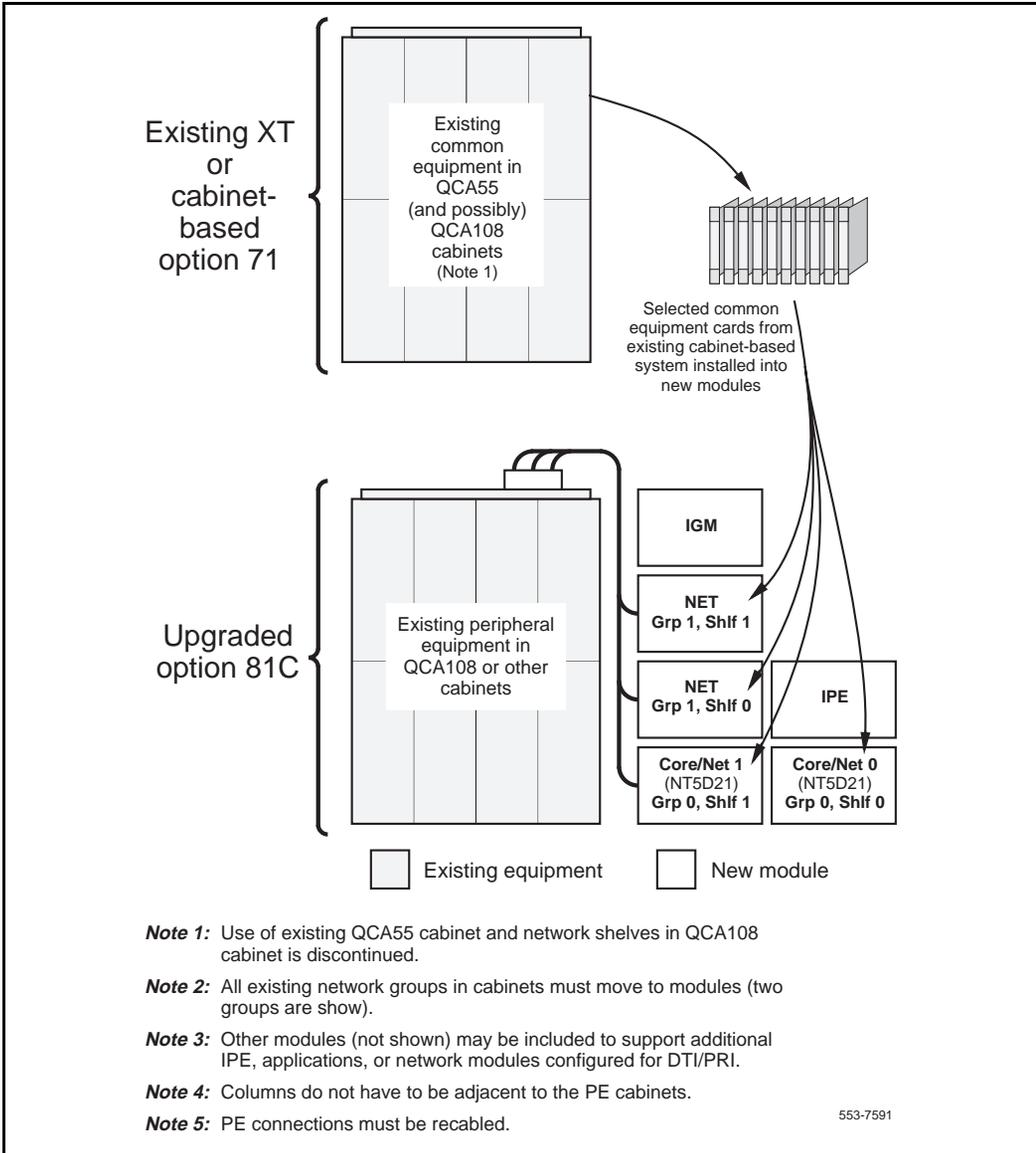
Verify that any existing QPC441 3-Port Extender cards in the system are vintage 'F' or later and that all 3PE cards in the system are the same vintage. Replace any 3PE card that is not vintage 'F' or later.

Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Hardware Replacement (553-3001-520)* for Clock Controller card replacement procedures.

**Note:** QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

Figure 30 shows the upgrade from an XT system to Option 81C.

**Figure 30**  
**Upgrade from an XT system to an Option 81C**



553-7591

Before you switch call processing from the XT system to the Option 81C, the columns should be powered up and all cables that can be pre-routed should be in place. At this point, there are two methods for performing the upgrade:

- If the system can be out of service for the time it will take to move the cards, you can shut down the existing system and move all of the network cards at one time. (If existing cabinets are being removed and replaced by the columns, this method will take longer, but this extra time may be unavoidable.)
- If the system must remain in operation, you can move one network card at a time. This will take longer than moving all of the cards at one time, but will cause limited, localized interruptions in service rather than taking the system completely out of service. Note that even with this phased transfer of service, there will be no telephone connections between the old and new systems.

When the upgrade is complete, all CPU and network functionality will reside in the Meridian 1 columns. Existing peripheral equipment is retained and cabled to the network cards now located in the modules in the Option 81C.

## Equipment required

Tables 33 and 34 list the items required to upgrade an AC- or DC-powered XT system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 33**  
**Hardware requirements for a AC-powered Option 81C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21AA	Core/Network Module AC
1	NT5D40AA	Hybrids Kit
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00AA	Top Cap AC
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D22AC	System Monitor
2	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
1	NT8D37BA	Intelligent Peripheral Equipment Module AC
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 in.)
2	NT8D52AB	Pedestal Blower Unit AC
2	NT8D53BB	Power Distribution Unit AC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)

**Table 33**  
**Hardware requirements for a AC-powered Option 81C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 in.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core Cabinet Upgrade Cable Kit, Group 0
1	NTND33CC	Core Cabinet Upgrade Cable Kit, Groups 1–4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841C	Four-port SDI

**Note:** QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note 1:** This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.

**Table 34**  
**Hardware requirements for an DC-powered Option 81C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21DA	Core/Network Module DC
1	NT5D40AA	Hybrids Kit
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00BA	Top Cap DC
2	NT7D09CA	Pedestal DC
2	NT7D10CA	System Monitor Panel
2	NT7D67CB	Power Distribution Unit DC
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module DC
1	NT8D46AD	System Monitor to SDI Cable (60 In.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 In.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 In.)
2	NT8D52DD	Pedestal Blower Unit DC
2	NT8D80BZ	CPU Interface Cable (5 ft.)

**Table 34**  
**Hardware requirements for an DC-powered Option 81C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 In.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core-Cabinet Upgrade Kit, Group 0
1	NTND33CC	Core-Cabinet Upgrade Cable Kit 1–4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841	Four-port SDI

**Note:** QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note 1:** This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.

## Upgrade planning

- 1 Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Hardware Replacement* (553-3001-520) for Clock Controller card replacement procedures.

**Note:** QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

- 2 Install the new module-based common equipment. This equipment can be installed, powered up, and tested before the upgrade activities.
- 3 Install new network-to-PE intercabinet cabling to connect the network equipment in modules to the existing peripheral equipment in cabinets:
  - a The cables needed must be identified and obtained before the upgrade. This cabling generally consists of sets of NT8D86, NT8D73, and NT9J96 cables, along with an appropriate number of connector housings that mount to the tops or sides of the existing PE cabinets. for additional information on engineering these cables.
  - b There must be available mounting locations for all required connector housings on PE cabinets. Modifications to the existing equipment may be necessary.
  - c If any PRI or DTI cards will remain in the cabinets, they must be recabled to the corresponding QPC414 Network cards that are moved to the modules. The cables required for the connections must be identified and ordered separately.
  - d If any PRI or DTI cards are to be transferred to the Core/Net modules, the cables required for the connections must be identified and ordered separately.

- 4 The XT upgrade procedures to Option 81C also include steps for performing the automatic inline conversion procedure supported by X11 release 19 to release 25. If the database is release 18 or earlier, the database can be sent to Nortel Networks for conversion, or converted on-site. If you choose to convert the database on-site, the database conversion requires intermediate steps during which hardware and software are upgraded incrementally. Additional hardware and software is not included in the upgrade package, and must be ordered separately.
- 5 Transfer the network cards from the network shelves in the cabinets to new Core/Net or Network modules. In the new modules, the first network group is always equipped as a functional network group, so it already contains IGS, 3PE, and PS cards and is ready to accept network cards. Additional groups may be engineered in several ways:
  - a Additional network groups may be ordered as pairs of empty Network modules. With this option, all necessary cards from the existing network shelves are transferred to the network modules. This method reuses the greatest number of existing cards, but may result in a lengthier upgrade process and greater downtime.
  - b Additional network groups may be ordered as pairs of Network modules already equipped with the network common cards (such as IGS, 3PE, PS). With this option, only the actual network cards need to be transferred. This method is recommended due to its minimal impact on system performance, and is the option documented in this procedure.

## Upgrade preparation

Read through the entire procedure before you begin this upgrade. Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

- 1 Make sure there is room to position all the Meridian 1 columns. Check the cabling requirements. All columns must be positioned to accommodate the cable lengths provided.
- 2 Make sure the floor can handle the additional weight of the new columns.
- 3 Make sure a sufficient power source is available and can be accessed by the new columns.

*Note:* Specifications for Meridian 1 columns are provided in *Hardware Replacement* (553-3001-520). Specifications for Meridian 1 power requirements are provided in *Power Engineering* (553-3001-152).

- 4 Make sure there are open connector positions on existing connector housings, or available positions for installing new connector housings on the PE cabinets.
- 5 Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Hardware Replacement* (553-3001-520) for Clock Controller card replacement procedures.
- 6 Check the contents of the upgrade package. Make sure all of the items on the order form are on the packing slip that comes with the equipment.
- 7 Label both ends of all network-to-PE cables with its loop number. Label one of each cable (NT8D86, NT8D73, and NT9J96) with the same loop number.
- 8 Log into the system.
- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program
- 10 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 11 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 12 On the XT system, print the configuration records. Refer to Procedure 1: “Pre-conversion procedure,” *Software Conversion Procedures* (553-2001-320) for instructions. Check the configuration record printouts to identify all configured I/O ports.

**Note:** When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

## Core/Net and Network module installation

This section contains procedures to install the Meridian 1 columns that contain the Core/Net and Network modules and any other optional columns that are to be installed, and to transfer the customer database to the Option 81C CPU. Existing lines and trunks in the PE shelves are already cabled to the MDF. You will connect the XT cabinets to the system monitor during the final upgrade steps. These are covered later in this chapter.

- 1 Install the Core/Net and Network module columns. Use the procedures (as required for the system configuration) in *System Installation Procedures* (553-3001-210), as needed.
  - a Prepare equipment for installation.
  - b Place a fourth module on a column (if required).
  - c Position and level equipment.
- 2 Install the module power supply in each module:
  - a Make sure the system is disconnected from any power source.
  - b Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
  - c Insert the power supply and engage the lock latches.
- 3 Install an IODU/C in each Core/Net module, **but leave the cards unseated.**
- 4 Install a CP card in each Core/Net module, **but leave the cards unseated.**
- 5 Configure the switch and jumper settings on the QPC441F 3PE card for Core/Net 1 and 0 (refer to Tables 35 and 36).

- 6 Install a QPC441F 3PE card in slot 11 of each Core/Net module, **but leave the cards unseated.**

**Table 35**  
**QPC441F 3PE card switch settings for Core/Net 1**

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	off
Group 1					on	on	off	off
Group 2					on	off	on	off
Group 3					on	off	off	off
Group 4					off	on	on	off
<b>Note:</b> RN27 jumper at E35: set to "A" for all modules								

**Table 36**  
**QPC441F 3PE card switch settings for Core/Net 0**

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	on
Group 1					on	on	off	on
Group 2					on	off	on	on
Group 3					on	off	off	on
Group 4					off	on	on	on
<b>Note:</b> RN27 jumper at E35: set to "A" for all modules								

- 7 Install AC or DC power equipment.
- 8 Make changes at the MDF as required to accommodate equipment in the new columns and system monitor connections.

- 9 Install PFTUs (if required).
- 10 Configure the system monitor. Use the tables in *System Installation Procedures* (553-3001-210) with these exceptions:
  - a For the master, set SW1 positions 1, 2, and 8 to ON.
  - b For slaves, set SW1 positions 1 and 8 to ON.
- 11 Configure an SDI port on a QSDI card in the Option 81C. Refer to *Circuit Card: Installation and Testing* (553-3001-211) for appropriate switch settings. Connect a terminal to the J25 CPSI port on the I/O panel of Core/Net 1.
- 12 Install common equipment cabling (refer to *System Installation Procedures* (553-3001-210) for instructions):
  - a Cable all Core/Net module equipment.
  - b Cable Network modules.
- 13 If IPE cards are added in the columns, cable the lines and trunks.
- 14 Set switches in all MPDUs to ON (up position) in all UEM and Network modules in both columns.

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the XT 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

**Note:** The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### **CAUTION**

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### **IODU/C cabling**

- 1 Verify that Core/Net 1 is powered down.
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

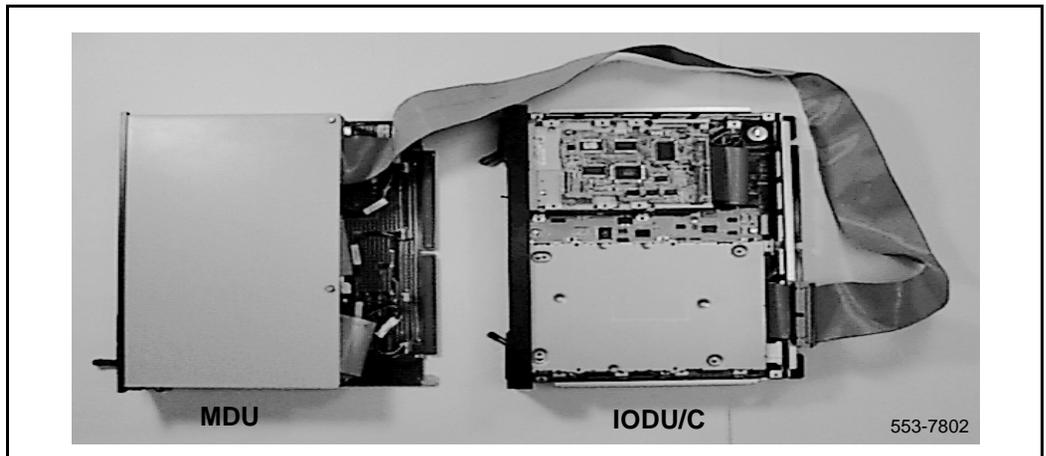
### **MDU cabling**

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:  
**LD 37** to load the program  
**DIS MSI 0** to disable the card
  - b Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
  - c Remove the floppy diskettes from the disk drives.
  - d Label and disconnect cables from the faceplate of the MDU or SMDU.
  - e Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

**Note:** When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 31). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 31**  
**Cabling the MDU to the IODU/C card**



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).

- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer
  - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y> to start installation
  - <a> yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.

  - <CR> Press Return to display the Installation Status Summary,  
> which shows that the database was successfully transferred.

<CR> Press return to return to the Install Menu.  
>

Remove any diskettes from the floppy drive.

<q> When the Install Menu appears, select <q> to quit.

<y> to confirm quit

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

## **16 Shut down power to Core/Net 1 module.**

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.

- 21 Reinstall the MDU/SMDU into CPU 0:
  - a Connect the cable(s) to the faceplate of the MDU.
  - b Install the floppy diskette in the MDU
  - c Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
  - d Software enable the MSI, EMSI, or FDI card:  
  
**LD 37** to load the program  
**ENB MSI 0** to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 25 software in Core/Net 1.

## Installing release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

- 1 Install the CD-ROM into the CD drive:
  - a press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b place the CD-ROM disk into the holder with the disk label showing
  - c use the four tabs to secure the CD-ROM in the disk holder
  - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  
- 2 Enter the date and time when prompted.
  
- 3 When the Main Menu appears, select the following options in sequence:
  - <u> to Install menu
  
- 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
  
- 5 When the Install Menu appears, select the following options in sequence:
  - <a> to install software, CP-BOOTROM, and IOP-ROM
  - <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

  - <y> to start installation
  - <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

  - <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

  - <CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

**<a>** to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

**<y>** to start installation

**<a>** to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

**<CR>** to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>** to quit

**<y>** to confirm quit

Remove the diskette from the floppy drive.

**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 release 25 software is installed and is functional on Core/Net 1:

**LD 135** to load the program

**STAT CPU** to display the CPU status

**Note:** This concludes the X11 release 25 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43** to load the program

- 9** When “EDD000” appears on the terminal, enter:  
           **EDD**                  to begin the data dump
- 10** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:  
           **\*\*\*\***                  to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11** Set date and time:  
           **LD 2**                  to load the overlay  
           **STAD**              DD MM YY HR MN SC
- 12** Continue with “Configuring the system” on page 243.

## Configuring the system

In the Option 81C, CNI cards reside in slots 12, 13, and 14 of the Core/Net module. Following database conversion, the Option 81C assigns a default configuration to the CNI network groups. The Option 81C default CNI configuration is listed in Table 37.

**Table 37**  
**Option 81C CNI network group default configuration**

CNI card slot	Port	Network group
12	0	0
12	1	1
13	0	2
13	1	3
14	0	4

**If the Option 81C CNI default configuration does not match your network group configuration, you must remove and add network groups to match your desired configuration.**

Use the worksheet in Table 38 to assist you in configuring the CNI network groups.

**Table 38**  
**Option 81C CNI network group configuration worksheet**

<b>CNI card slot</b>	<b>Port</b>	<b>Network group</b> <i>(enter your Option 81C configuration in this column)</i>
12	0	
12	1	
13	0	
13	1	
14	0	
14	1	
<b>Note:</b> CNI card slot 12, port 0 is the network group with the Core/Net module.		

- 1 To reconfigure the Option 81C network groups, first disable all CNI cards in Core/Net 0 and Core/Net 1 using LD 135:

**LD 135** to load the program  
**STAT CNI** to get the status of all CNI cards  
**DIS CNI c s p** c = core (0 or 1)  
s = card slot (12-14)  
p = port (0 or 1)  
**STAT CNI** to confirm that CNI cards are disabled  
**\*\*\*\*** to exit the program

- 2 When the CNI cards are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

<b>Prompt</b>	<b>Response</b>	<b>Comments</b>
<b>LD 17</b>		to load the program
<b>REQ</b>	<b>CHG</b>	
<b>TYPE</b>	<b>CFN</b>	
<b>CEQU</b>	<b>YES</b>	
<b>EXT0</b>	<b>3PE</b>	Core/Net 0 extended to 3PE
<b>_CNI</b>	<b>s p xg</b> <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
<b>_CNI</b>	<b>s p g</b> <i>to "add" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
<b>EXT1</b>	<b>3PE</b>	Core/Net 1 extended to 3PE
<b>_CNI</b>	<b>s p xg</b> <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
<b>_CNI</b>	<b>s p g</b> <i>to "add the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
<b>MCFN</b>	<b>4 4 4 4 16 16</b> <i>(this prompt appears only in systems equipped with NT6D66 CP cards)</i>	to set the memory configuration
<b>REQ</b>	<b>****</b>	to exit the program

- 3 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG aaa x	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
GRP	g	g = network group (0-4)
...		

- 4 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
PARAM	YES	
...		
500 B	1000	use 1000 as a minimum value
...		
NCR	2000	use 2000 as a minimum value
...		
.	****	to exit the program

- 5 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print option
TYPE CFN	to print the configuration
****	to exit the program

- 6 Insert an unused B1 database diskette from the target software upgrade package into the IODU/C drive.
- 7 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## **Upgrading the software and ROMs in Core/Net 0**

*Note:* Connect the terminal (or set the switch on the switch box) to J25 on Core/Net 0.

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Install the remaining circuit cards in Core/Net 0 and faceplate enable all cards except the CNI cards. **Leave the CNI cards disabled.**
- 2 Verify that the CP card is in MAINT.
- 3 Insert the CP Install Program that corresponds with the installed CP card diskette (68030, 68040, 68060 or 68060E) into active IODU/C floppy drive in Core/Net 0.
- 4 Apply power to the module.

- 5 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 When the NT logo appears, press <CR> to continue.
- 7 When the Main Menu appears, select the following options in sequence:
  - <u> to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 9 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:
  - <o> to copy system software from the other core
  - <a> to copy /p partition from Core1 to Core 0
  - <a> to continue with upgradeWhen the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.
  - <CR> press <CR> when you are ready to continue
  - <y> to start installation
  - <a> to continue with ROM upgrade
  - <y> to start installation
  - <a> to continue with ROM upgrade.When the installation is complete, the Installation Status Summary screen appears.
  - <CR> to return to the Install MenuWhen the Install Menu appears, install IOP-ROM:
  - <f> to install IOP-ROM onlyWhen the Installation Status Summary screen appears:
  - <y> to start installation

<y> to continue installing IOP-ROM

<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

<d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 10** Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.
- 11** Power down Core/Net 0.
- 12** Connect a terminal to the J25 port CPSI on Core/Net 1.
- 13** Verify that Core/Net 1 is set to MAINT.
- 14** Enable the CNIs in Core/Net 1.
- 15** Verify that the 3PE card in Core/Net 1 is enabled (if installed).
- 16** Press MAN RST on the CP card in Core/Net 1.  
Wait for the “DONE” and “INI” messages to be displayed before continuing.
- 17** Verify that the CP card in Core/Net 0 is set to MAINT.

- 18 Verify that the CNI and 3PE cards are set to disable in Core/Net 0.
- 19 Connect a terminal to the J25 port on Core/Net 0.
- 20 Apply power to Core/Net 0.  
Wait for the “DONE” and “INI” messages to be displayed before continuing.
- 21 Connect a terminal to the J25 CPSI on Core/Net 1.
- 22 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 23 In Core/Net 0, faceplate enable the 3PE card.
- 24 In Core/Net 0, press and release the MAN RST button.
- 25 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 26 In 60 seconds, the LCD will display and confirm the process:  
**RUNNING ROM OS**  
**ENTERING CP VOTE**  
  
An “HWI534” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.
- 27 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

## Testing the Cores

- 1 Perform a redundancy sanity test:
  - LD 135** to load the program
  - STAT CNI** to get the status of all configured CNIs
  - STAT CPU** to get the status of both Cores
  - TEST CPU** to test the inactive CP card and CP-to-CP cable
  - TEST CNI c s** to test the CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 2 Test the inactive Core, then switch Cores and test the other side:

**SCPU** to switch to Core 0

**TEST CPU** to test the inactive CP card and CP-to-CP cable

- 3 Get the status of the CP cards and memories and of the CNIs:

**STAT CPU** to get the status of both Cores

**STAT CNI** to get the status of all configured CNIs

**\*\*\*\*** to exit LD 135

- 4 Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

**LD 137** to load the program

**STAT** to get the status of IODU/Cs, and redundancy. Verify that IODU/C 1 is active

**SYNC** to synchronize the hard disks

**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 5 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

**STAT** to get the status of IODU/Cs, and redundancy

**SWAP** to switch IODU/Cs (if necessary)

**\*\*\*\*** to exit LD 137

- 6 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 7 Insert a B1 database disk into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43** to load the program

- 8 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 9 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

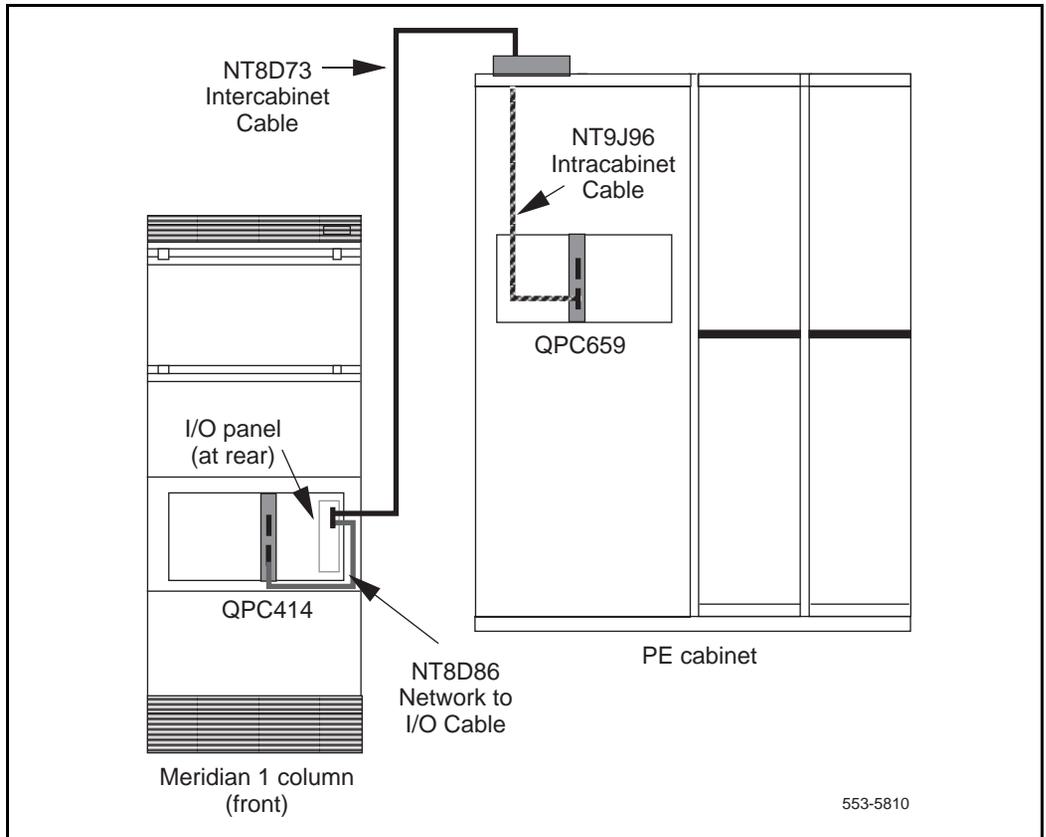
## Installing network-to-PE cabling and connector housings

There are three cables for each network-to-PE connection (see Figure 32):

- Cables from the QPC414 Network cards in the Network modules are routed internally from the faceplate of the cards to the I/O panels in the rear of the module.
- Cables from the I/O panels are routed externally to connector housings on the PE cabinets.
- Cables from the connector housings are routed internally to the faceplate of the QPC659 Dual Loop Peripheral Buffer card in the PE cabinets.

If connector housings for network-to-PE cabling are already installed on the cabinets, the same housings can be used for the new cables from the Network modules when the existing cables are disconnected.

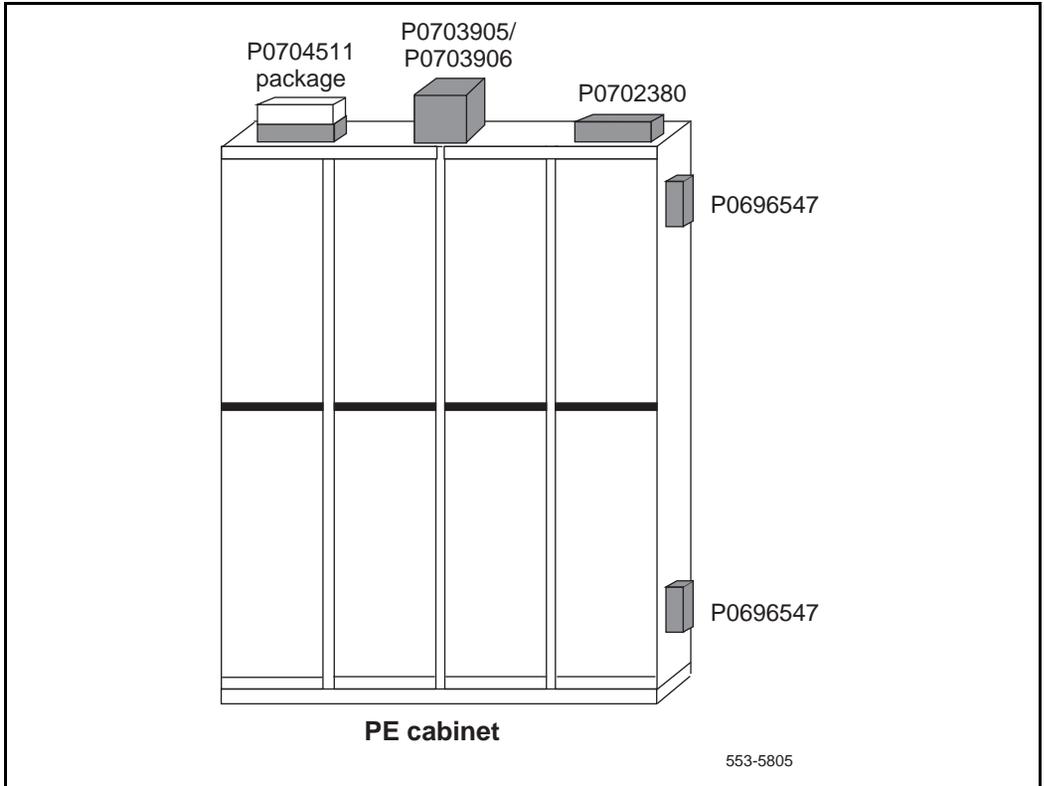
**Figure 32**  
**Cabling path for network-to-PE connections**



If connector housings are not already installed on the cabinets, you will need to install them now. The following connector housings are available (see Figure 33):

- 1** P0696547 Connector Housing
  - a** mounts on the side of the cabinet
  - b** provides six connectors
- 2** covers a rectangular opening (up to two housings per opening) and round opening (one housing per opening)
- 3** P0702380 Connector Housing
  - a** mounts on the top of the cabinet
  - b** provides six connectors
  - c** covers a rectangular opening
- 4** P0703905 Adapter Panel and P0703906 Connector Housing unit
  - a** mounts on the top of the cabinet
  - b** provides ten connectors
  - c** covers a square opening
- 5** P0704511 Connector Housing Package includes P0703846 Connector Housing and P0703847 Adapter Panel
  - a** mounts on the top of the cabinet under another housing
  - b** provides three connectors
  - c** covers a rectangular opening

**Figure 33**  
**Connector housing positions**



## Installing external cables and connector housings

- 1 Label both ends of all network-to-PE cables.
- 2 In the rear of the modules, remove the eight screws that secure the I/O panels in the Core/Net or Network modules. Keep the screws for reuse. Remove the I/O panels but keep them on hand for immediate reuse.
- 3 Connect NT8D86 cables, one per loop, to the inside of any opening on the I/O panel (the inside of the panel faces the backplane).
- 4 Route the NT8D86 cables to the front of the module. If the QPC414 Network cards are installed, connect the faceplate connectors. If the network cards are not installed, leave the cables in position to be connected later in the upgrade.

Because of the MPDUs in AC-powered systems, the cables can route through only the right side (as viewed from the front) of the module. For easier access, first route the cables from the right I/O panel to the front of the module, then route the cables from the left I/O panel.

In DC-powered systems, you can route the cables around both sides of the module.

- 5 Reinstall all I/O panels and screws.
- 6 Connect the NT8D73 intercabinet cables to the outside of the I/O panel.
- 7 Route the NT8D73 cables to the PE cabinets (stow any excess cable length at the cabinet end):
- 8 If connector housings are already installed on the cabinets and cables currently connecting the network and PE cards together, leave those cables in place. Route the NT8D73 cables to the PE cabinets, but leave them disconnected at this point.

- 9** If all connector housings are already installed on the XT PE cabinet(s), skip this entire section and proceed to “Transferring service to the Option 81C” on page 266. If connector housings are not installed, perform the steps in the appropriate procedure(s) below to connect NT9J96 cables to the inside of the housings, install the housings, and connect the NT8D73 cables to the outside of the housings:
- a** P0696547 Connector Housing: refer to “Mounting the P0696547 Connector Housing,” below.
  - b** P0702380 Connector Housing: refer to “Mounting the P0702380 Connector Housing” on page 260
  - c** P0703905 / P0703906 Connector Housing unit: refer to “Mounting the P0703905/P0703906 Connector Housing” on page 262
  - d** P0704511 Connector Housing Package: refer to “Mounting the P0704511 Connector Housing Package” on page 264

**CAUTION**

While mounting connector housings, do not drop screws or other hardware through the openings in the top panel.

**Mounting the P0696547 Connector Housing**

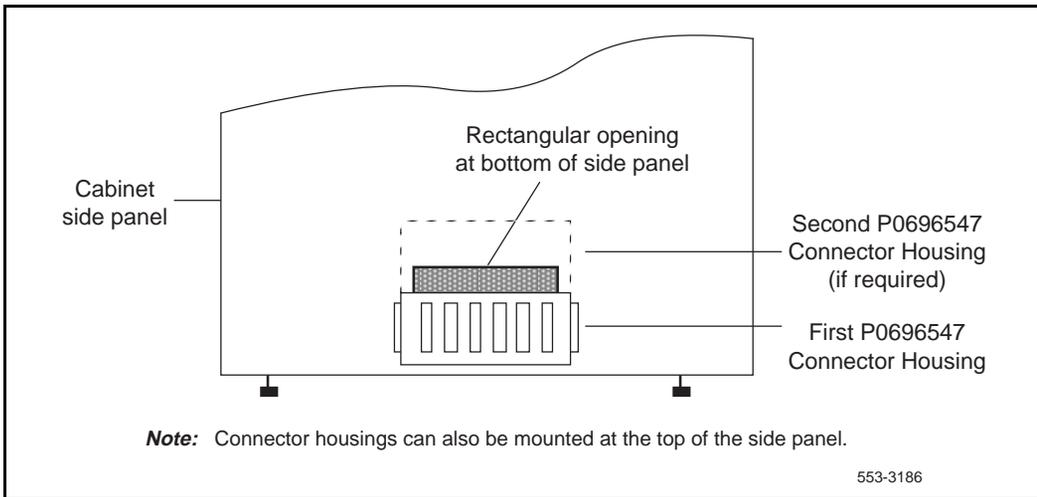
The following tools are required for drilling holes in the side panels when mounting the P0696547 Connector Housing:

- a drill with a #31 (.120 in.) bit capable of piercing sheet metal
- a center punch and hammer

Refer to Figures 34 and 35 when installing the housings.

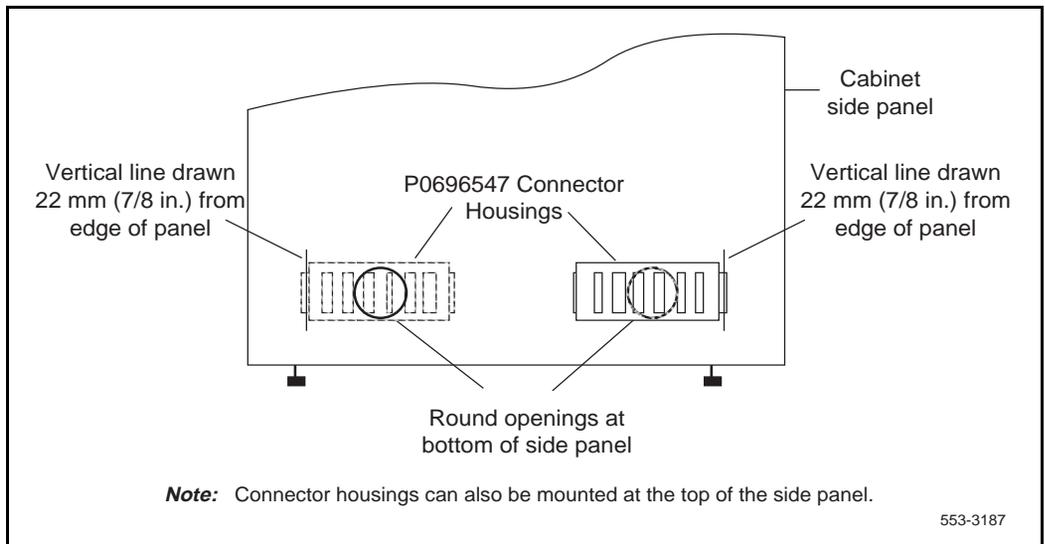
- 1 Remove the sliding cover or square cover (whichever is equipped) over the cable opening on the side panel of the cabinet.
- 2 Perform this step only if the opening is rectangular:
  - a Center the P0696547 Connector Housing over the cutout area on the side panel.
  - b If the opening is to be equipped with two housings, lower the housing until its upper edge falls in the horizontal center of the cutout. One inch of the upper part of the cutout should be visible (see Figure 34).
  - c Mark the hole centers using the housing holes as a pattern. Center punch and drill the holes.
  - d If the opening is to be equipped with two housings, temporarily mount the first housing and rest the second one on top of the first.
  - e Center punch and drill the holes for the second housing.
  - f Remove the housings from the cabinet.

**Figure 34**  
**P0696547 Connector Housing—rectangular access opening**



- 3 Perform this step only if the opening is round:
  - a Measure a point 22 mm (7/8 in.) from the edge of the panel at the front and rear ends of the side panel.
  - b Mark a vertical line 64 mm (2 1/2 in.) long starting at 75 mm (3 in.) from the bottom edge of the panel.
  - c Center the P0696547 Connector Housing over the cable access opening. Gently move the housing until the pencil line is located in the center of one set of the housing mounting holes.
  - d Level the housing and mark the hole centers using the housing mounting holes as a pattern. Center punch and drill the holes (see Figure 35).

**Figure 35**  
**P0696547 Connector Housing—round access openings**



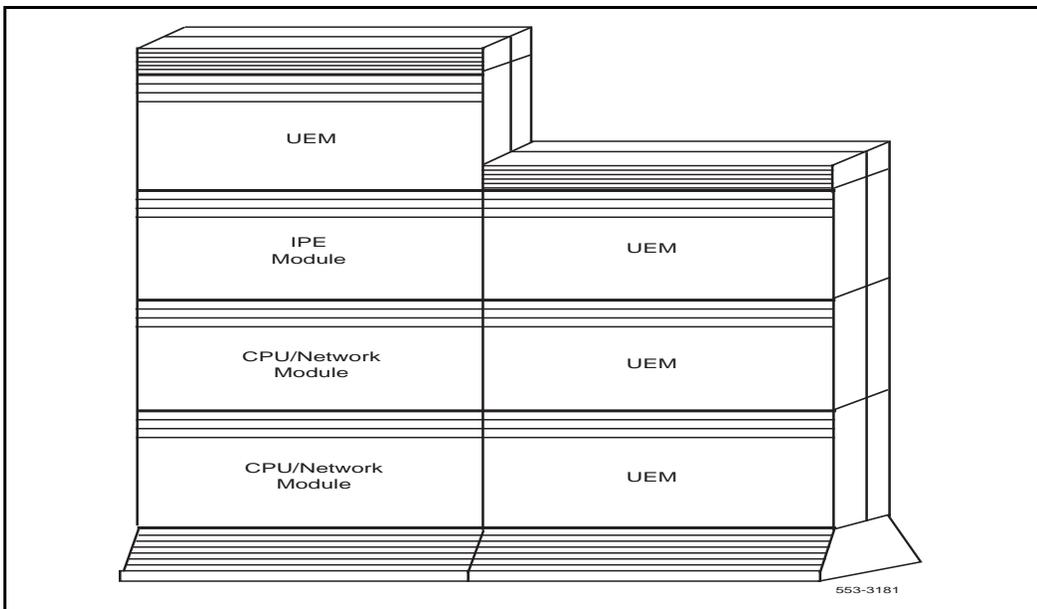
- 4 Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0696547 Connector Housing.
- 5 Route the NT9J96 cables through the cabinet opening to the inside of the cabinet.  
*Note:* Leave the cables disconnected inside the cabinet. They will be connected later in the upgrade.
- 6 Mount the housing(s) and secure it to the side panel with four #6 sheet metal screws.
- 7 Connect the NT8D73 cables from the Network modules to the outside of the P0696547 Connector Housing.

### Mounting the P0702380 Connector Housing

Refer to Figure 36 and Figure 37 while performing these steps:

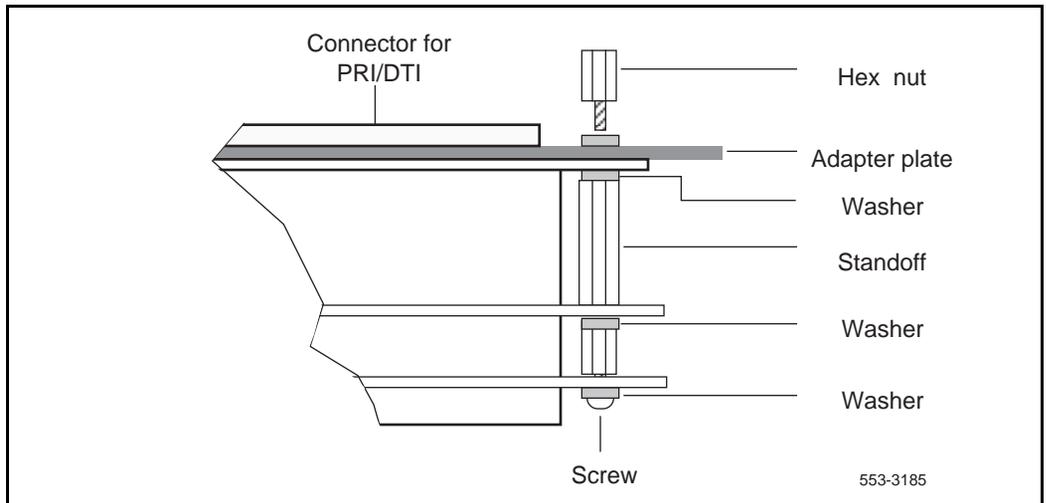
- 1 On the top of the PE cabinet, remove the cover from the selected opening on the I/O panel. Keep the four screws for reuse.

**Figure 36**  
**P0702380 Connector Housing**



- 2 Perform this step only if there are PRI/DTI cables connected to the cover:
  - a If possible, move the PRI/DTI cables to another connector housing on the top panel.
  - b If the PRI/DTI cables cannot be relocated and so must be connected to the housing you are installing, install a P0703960 adapter plate kit on the cable and mount it in the new housing (see Figure 37).

**Figure 37**  
**Adapter plate mounting bracket for PRI/DTI connectors**



- 3 Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0702380 Connector Housing.
- 4 Route the NT9J96 cables through the cabinet opening to the inside of the cabinet.
 

*Note:* Leave the cables hanging. They will be connected later in the upgrade.
- 5 Using the screws you removed from the opening cover, secure the P0702380 Connector Housing to the top of the cabinet.
- 6 Connect the NT8D73 cables from the Network modules to the outside of the P0702380 Connector Housing.

### **Mounting the P0703905/P0703906 Connector Housing**

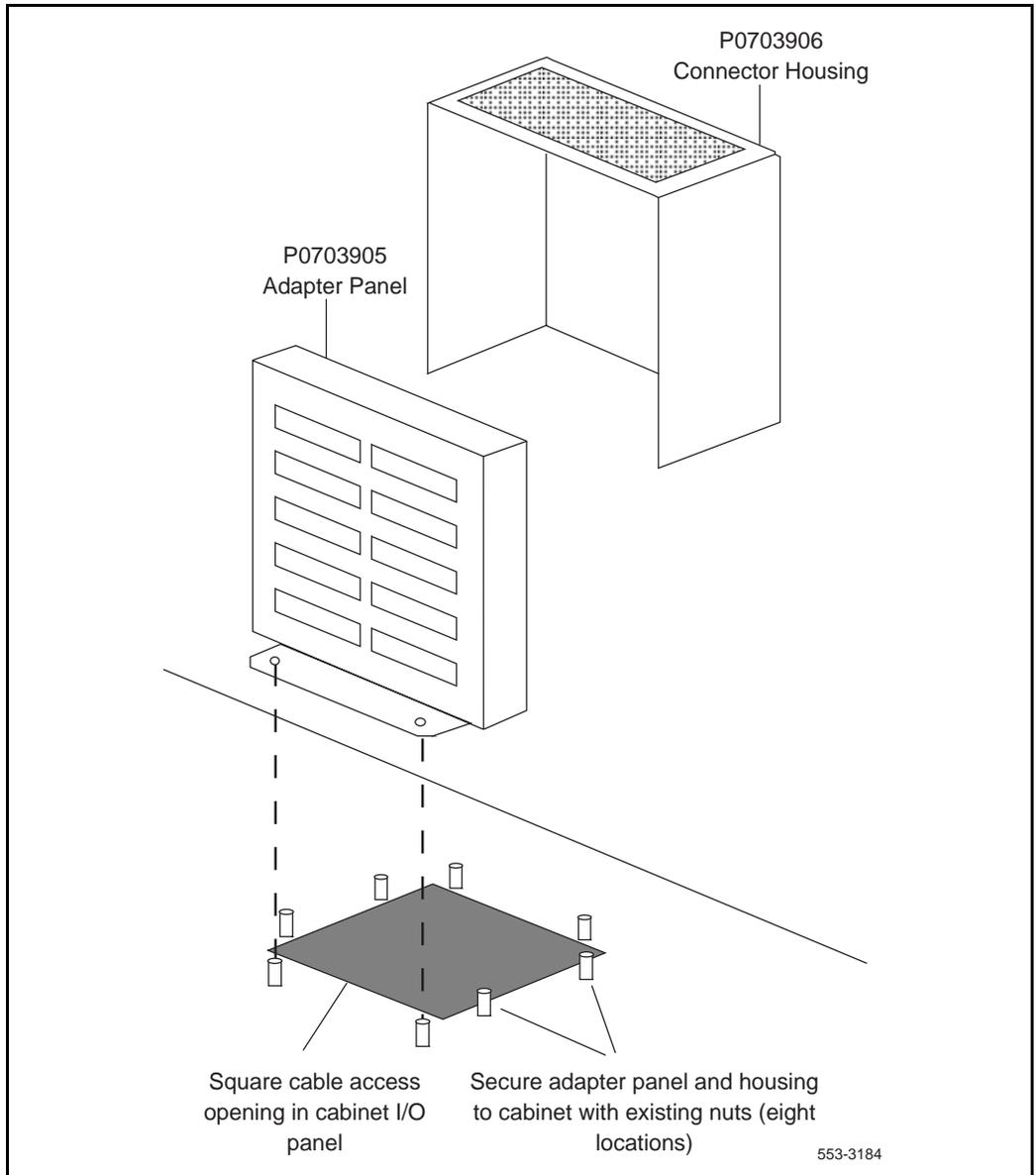
This unit is composed of the P0703905 Adapter Panel and P0703906 Connector Housing. Refer to Figure 38.

- 1** On the top of the PE cabinet, remove the cover from the square opening on the I/O panel. Keep the nuts and washers for reuse.
- 2** Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0703905 Adapter Panel.
- 3** Route the NT9J96 cables through the cabinet opening to the inside of the cabinet.

*Note:* Leave the cables hanging. They will be connected later in the upgrade.

- 4** Secure the P0703905 Adapter Panel to the two studs closest to the center of the cabinet top panel.
- 5** Slide the P0703906 Connector Housing into place and secure it with two nuts and washers.
- 6** Connect the NT8D73 cables from the Network modules to the outside of the P0703905 Adapter Panel.

**Figure 38**  
**P0703905/P0703906 Connector Housing Unit**



### **Mounting the P0704511 Connector Housing Package**

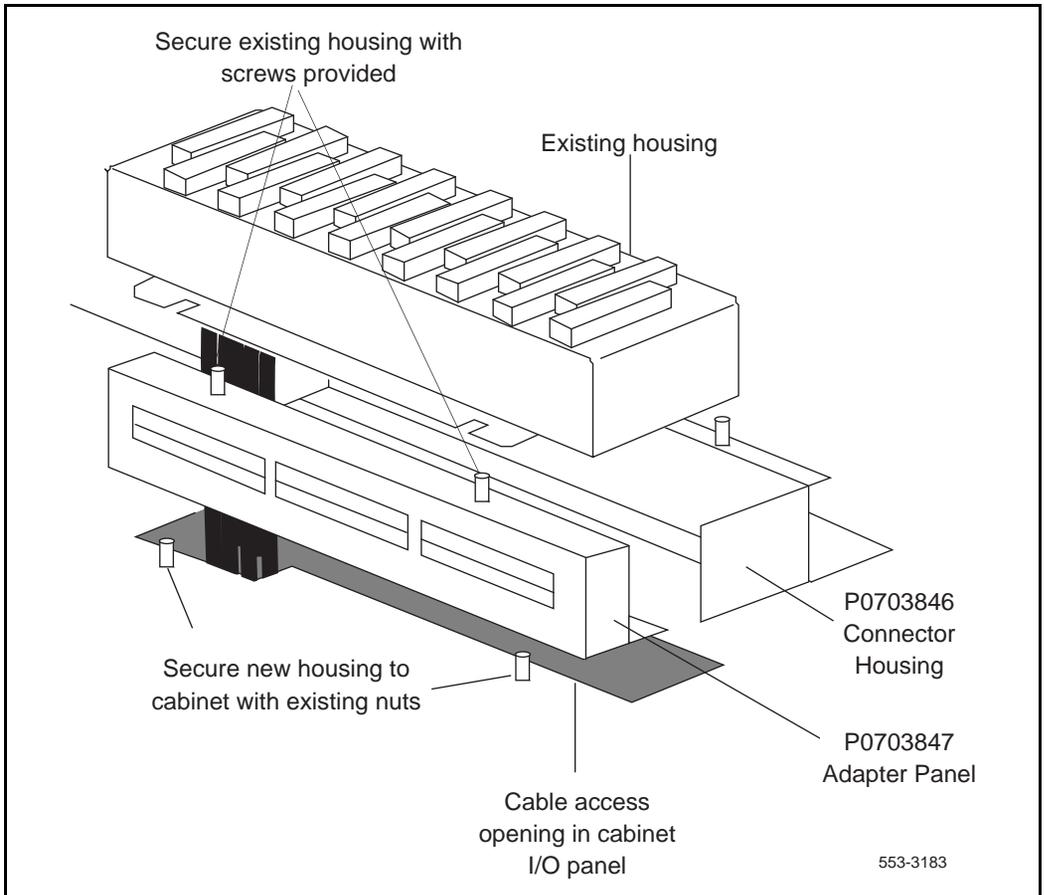
This package is composed of the P0703846 Connector Housing and P0703847 Adapter Panel. The P0704511 Connector Housing Package is placed underneath an existing connector housing. Refer to Figure 39 while performing these steps.

- 1** The existing connector housing will be raised approximately 75 mm (3 in.) to install the P0704511 Connector Housing Package. Make sure there is sufficient slack in the cables to the existing housing. If necessary, remove the tie wraps securing the cables.
- 2** Remove the screws that secure the existing connector housing. Keep the screws for reuse.
- 3** Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0703847 Adapter Panel.
- 4** Raise the existing connector housing and place the P0703847 Adapter Panel under it. Along with the cables from the existing housing, route the NT9J96 cables through the cabinet opening to the inside of the cabinet.

*Note:* Leave the cables hanging. They will be connected later in the upgrade.

- 5** Using the screws for the original housing, secure the P0703847 Adapter Panel to the top of the cabinet.
- 6** Slide the P0703846 Connector Housing into place. Using screws for the original housing, secure the housing to the top of the cabinet.
- 7** Place the original connector housing on the studs on the tops of the P0703846 housing and P0703847 panel and secure it with the nuts and washers provided.
- 8** Connect the NT8D73 cables from the Network modules to the outside of the P0703847 Adapter Panel.

**Figure 39**  
**P0704511 Connector Housing Package**



## Transferring service to the Option 81C

There are two options of moving the network cards to the Option 81C. If the system can be out of service for the time it will take to move the cards, shut down the XT system and move all of the network cards at one time. If you choose to move all network cards at one time, follow the instructions in “Moving all network cards”, located below. If the system must remain in operation, move one network card at a time. Note that even with this phased transfer of service, there will be some service interruption, and there will be no telephone connections between the old and new systems. If you choose to move only one network shelf at a time, proceed to “Moving network cards one network shelf at a time” on page 270.

### Moving all network cards

Even though the system will not be operating, we recommend that you move the cards one network shelf at a time to limit confusion. If any cards are moved to a different group, or any other configuration change is made, be sure to check the switch and jumper settings on all affected cards.

- 1 Perform the appropriate step to turn off power in each Core/Net module:
  - a For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
  - b For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 2 Set the ENB/DIS switch on clock controller 1 in the XT system to DIS. Label and remove all cables from the faceplate of the card and remove the card.
- 3 Set the switches on clock controller 1 (see Table 39). Set the ENB/DIS switch set to DIS and install the card:
  - a in systems with 2 groups, place the clock controller in slot 13 of Group 1, Shelf 1.
  - b in systems with 3 or more groups, place the clock controller in slot 13 of Group 2, Shelf 1.

Leave the ENB/DIS switch on the clock controller card set to DIS.

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 39**  
**Clock controller card 1 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
<b>Note:</b> Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 4 In the XT system, remove the NT1R04 cables from the junctor board. Install them in the Option 81C between Junctor module connector J12 and the faceplate of clock controller card 1.
- 5 Set the ENB/DIS switch on clock controller 0 in the XT system to DIS. Label and remove all cables from the faceplate of the card and remove the card.
- 6 Set the switches on clock controller 0 (see Table 40). Set the ENB/DIS switch set to DIS and install the card in slot 13 of Group 1, Shelf 0. Leave the ENB/DIS switch on the clock controller card set to DIS.

**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 40**  
**Clock controller card 0 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
<b>Note:</b> Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 7 In the XT system, remove the NT1R04 cables from the junctor board. Install them in the Option 81C between Junctor module connector J11 and the faceplate of clock controller card 0.
- 8 Label each card that is being transferred to a Core/Net or Network module with the group (0–4), shelf (0 or 1), and loop (0–159) of the card. Disable the faceplate switch, disconnect all cables, and remove the card.
- 9 Transfer all of the cards that are being moved to the new Network module(s). Verify that the cards are installed in the correct slots (check group, shelf, and loop numbers as well as the slot location) according to Table 41.
- 10 Connect all cables to the cards (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Set the ENB/DIS switch on each network card to ENB.

**Table 41**  
**Card placement in Option 81C**

Card	Card location	
	Group 0	All other groups
QPC441 3PE card	Slot 11	Slot 1
QPC412 IGS cards	8–9	2–3
QPC43 PS card	10	4
QPC414 Network card	0–7	5–12
NT8D17 Conference/TDS card	0–7	5–12
SDI-type cards	0–7	5–12
MSDL card	0–7	5–12
MISP card	0–7	5–12
PRI/DTI cards	0–6	5–11
PRI/DTI cards	see note	13–14
SDI-type cards	see note	slot 13
<b>Note:</b> Cards moved from slots 13 and 14 of XT Group 0 must be relocated to a group other than Group 0 in the Option 81C.		

- 11** Switch the cables at the PE end:
  - a** If cables from network cabinets are still connected to the connector housings, disconnect those cables and replace them with the NT8D73 cables from the Network modules.
  - b** If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.

**12** Restore power in each Core/Net module:

**Note:** To maintain synchronization between the IODU/Cs, set the power switches simultaneously.

- a** For AC-powered systems, simultaneously set the power switch in the MPDU in both Core/Net modules to ON (up position).
- b** For DC-powered systems, set the switch on the pedestal in both Core/Net modules to ON (up position).

Proceed with “Completing the upgrade” on page 274.

### **Moving network cards one network shelf at a time**

This procedure will cause limited, localized interruptions in service. You will move two loops at a time. To expedite the changeover, before you start, make sure you will have the ability to check for dial tone on each loop.

If any cards are moved to a different group, or any other configuration change is made, be sure to check the switch and jumper settings on all affected cards.

#### **CAUTION**

To minimize service interruptions, disable and move only one QPC414 Network card (and associated cards) at a time.

- 1 Set the ENB/DIS switch on clock controller 1 in the XT system to DIS.** Label and remove all cables from the faceplate of the card and remove the card.
- 2 Set the switches on a new clock controller 1 (see Table 42). Set the ENB/DIS switch set to DIS and install the card:**
  - a** in systems with 2 groups, place the clock controller in slot 13 of Group 1, Shelf 1.
  - b** in systems with 3 or more groups, place the clock controller in slot 13 of Group 2, Shelf 1.

Leave the ENB/DIS switch on the clock controller card set to DIS.

**Note:** Install a new clock controller card; do not use one of the clock controller cards from the XT system.

**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 42**  
**Clock controller card 1 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
<b>Note:</b> Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 3 Install new NT1R04 cables between Junctor module connector J12 and the faceplate of clock controller card 1.
- 4 Set the ENB/DIS switch on a new clock controller 0 to DIS.
- 5 Set the switches on a new clock controller 0 (see Table 43). Set the ENB/DIS switch set to DIS and install the card in slot 13 of Group 1, Shelf 0. Leave the ENB/DIS switch on the clock controller card set to DIS.

**Note:** Install a new clock controller card; do not use one of the clock controller cards from the XT system.

**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 43**  
**Clock controller card 0 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 6 Install new NT1R04 cables between Junctor module connector J11 and the faceplate of clock controller card 0.
- 7 In the Network module that will house the transferred cards, verify that network common cards (IGS, 3PE, and PS cards) are properly installed and cabled (see Table 44).
- 8 Label each card that is being transferred to the Network module with the group (0–4), shelf (0 or 1), and loop (0–159) for the card.

**Table 44**  
**Card placement in Option 81C**

Card	Card location	
	Group 0	All other groups
QPC441 3PE card	Slot 11	Slot 1
QPC412 IGS cards	8–9	2–3
QPC43 PS card	10	4
QPC414 Network card	0–7	5–12
NT8D17 Conference/TDS card	0–7	5–12
SDI-type cards	0–7	5–12
MSDL card	0–7	5–12
MISP card	0–7	5–12
PRI/DTI cards	0–6	5–11
PRI/DTI cards	see note	13–14
SDI-type cards	see note	slot 13
<b>Note:</b> cards moved from slots 13 and 14 of XT Group 0 must be relocated to a group other than Group 0 in the Option 81C.		

**9** Disable the QPC414 Network card (two loops):

**LD 32**           to load the program  
**DISN loop**    even or odd loop number disables the card  
**\*\*\*\***           to exit the program

**10** On each card that is being transferred to the Core/Net or Network module, disable the faceplate switch, disconnect all cables, and remove the card.

**11** Install the card in the destination module. Verify that the cards are installed in the correct slots as indicated in Table 44. Check group, shelf, and loop numbers as well as the slot location.

**12** Connect all cables to the card (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Set the ENB/DIS switch to ENB.

- 13 Switch the cables at the PE end:
  - a If cables from network cabinets are still connected to the connector housings, disconnect those cables and replace them with the NT8D73 cables from the Network modules.
  - b If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.
- 14 On the Option 81C, enable the network card:  
**LD 32** to load the program  
**ENLN loop** even or odd loop number enables the card  
**\*\*\*\*** to exit LD 32
- 15 Test for dial tone on both loops.
- 16 Repeat step 8 through step 15 for all network shelves.

## Completing the upgrade

- 1 Install alarm termination plugs (P0623569):
  - a Install one plug at a convenient location on the cabinet frame near each CPU.
  - b Disconnect the power monitor cable from each CPU shelf and plug it into a termination plug.
- 2 Turn off power to the CPU shelves in the cabinet:
  - a Set the ENB/DIS switch on the power monitor to DIS.
  - b Power down the CPU shelf input breaker.
- 3 Clear all shelf alarms in the cabinets.
- 4 Connect the cabinets to the system monitor. See “System monitor upgrade installation” on page 805.

**5** Perform a redundancy sanity test:

- LD 135** to load the program
- STAT CNI** to get the status of all configured CNIs
- STAT CPU** to get the status of both Cores
- TEST CPU** to test the inactive CP card and CP-to-CP cable
- TEST CNI c s** to test the CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

**6** Test the inactive Core, then switch Cores and test the other side:

- SCPU** to switch to Core 0
- TEST CPU** to test the inactive CP card and CP-to-CP cable

**7** Get the status of the CP cards and memories and of the CNIs:

- STAT CPU** to get the status of both Cores
- STAT CNI** to get the status of all configured CNIs
- \*\*\*\*** to exit LD 135

**8** Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

- LD 137** to load the program
- STAT** to get the status of IODU/Cs, and redundancy. Verify that IODU/C 1 is active
- SYNC** to synchronize the hard disks
- TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

**9** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

- STAT** to get the status of IODU/Cs, and redundancy
- SWAP** to switch IODU/Cs (if necessary)
- \*\*\*\*** to exit LD 137

- 10 Check the status of the clocks, swap clocks, and verify status:
  - LD 60** to load the program
  - SSCK 0** to get the status of clock 0
  - SSCK 1** to get the status of clock 1
  - SWCK** to swap active clocks
  - SSCK 0** to verify that clock 0 is active
  - SSCK 1** to verify that clock 1 is inactive
  - \*\*\*\*** to exit the program
  
- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
  
- 12 Insert a B1 database disk into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C.  
  
Load the Equipment Data Dump Program (LD 43). At the prompt, enter
  - LD 43** to load the program
  
- 13 When “EDD000” appears on the terminal, enter
  - EDD** to begin the data dump
  
- 14 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
  - \*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 15 Test the IOP to IOP SCSI connection and test the IODU/Cs:
  - LD 137** to load the program
  - TEST SCSI** to check the IOP to IOP connection and access to the IODU/Cs

**TEST CMDU** to test the hard and floppy disk drives (a floppy  
diskette must be installed)  
**\*\*\*\*** to exit the program

**16** Clear displays, major alarms, and minor alarms:

**LD 135** to load the program  
**CDSP** to clear the display  
**CMAJ** to clear all major alarms  
**CMIN ALL** to clear all minor alarms  
**SCPU** to switch to the other Core  
**CDSP** to clear the display  
**\*\*\*\*** to exit LD 135

**17** Remove any remaining cables that are no longer used.

**18** Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.

**19** Perform the post-conversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The XT Core/Net and Network module upgrade to Option 81C is complete.



# Option 21/21E module upgrade to Option 51C

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## Content list

The following are the topics in this section:

- [Reference list 279](#)
- [Equipment required 280](#)
- [Upgrade preparation 286](#)
- [Converting the customer database to Release 21 287](#)
- [Installing Option 51C hardware 290](#)
- [Transferring the database from 4 MB to IODU/C 292](#)
- [Installing Release 25 software 299](#)
- [Defining the Option 51C system software 303](#)
- [Moving the network cards 304](#)
- [Moving the peripheral equipment cards 305](#)
- [Installing external cables 305](#)
- [Completing the upgrade 306](#)

## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*
- *ISDN PRI: Installation (553-2901-201)*
- *Product Compatibility (553-3001-156)*

- *System Installation Procedures* (553-3001-210)
- *X11 Administration* (553-3001-311)

A module upgrade from an Option 21/21E system to an Option 51C X11 Release 25 consists of upgrading both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 51C next to the Option 21/21E
- removing the common equipment (CE) from the Option 21/21E
- cabling the Option 21/21E to the Option 51Cn

**IMPORTANT**

Option 21E systems on Release 20 will remain on their current system and convert the database directly to Release 21. The hardware upgrade to Option 51C is performed as part of the software upgrade to Release 25. This eliminates the requirement of interim hardware.

Upgrading the software consists of one of the following:

- convert the customer database to X11 Release 25 on-site
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 51C after the upgrade is complete

**Note:** It is recommended that Option 21 customers send the customer database diskettes to Nortel Networks for conversion; contact your Nortel Networks representative to arrange for this.

## Equipment required

Tables 45 and 46 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 51C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

If the Option 21E and Option 51C columns are positioned side-by-side, you must install column spacer kits and route cables between the columns as outlined in *System Installation Procedures* (553-3001-210). If the columns are not adjacent to each other, installing external cables between the Option 21E and Option 51C is required to connect network loops in the Option 21E to network cards in the Option 51C column. The number of cables required depends on the number of network cards installed. The required cables are listed below.

For NT8D04 Superloop Network cards:

- NT8D88 cables connect the Option 51C network cards to the Core/Network module I/O panels
- NT8D98 cables connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables connect the peripheral controller to the IPE module I/O panels

For QPC414 Network cards:

- NT8D86 cables connect the Option 51C network cards to the Core/Network module I/O panels
- NT8D73 cables connect the I/O panels in the Core/Network module to the IPE/PE module I/O panels
- NT8D86 cables connect the peripheral controller to the IPE module I/O panels (this cable type is also used to connect the QPC414 Network card to Meridian Mail or DTL/PRI cards)

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 45**  
**Hardware requirements for an AC-powered Option 51C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21AA	Core/Network Module, AC
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
1	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment Module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

**Table 45**  
**Hardware requirements for an AC-powered Option 51C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	QPC441F	Three-Port Extender Card (3PE )
2	QPC471H or QPC775E	Clock Controller (see note 3)

**Note 1:** One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required.

**Note 2:** One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.

**Note 3:** If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.

**Table 46**  
**Hardware requirements for a DC-powered Option 51C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21DA	Core/Network Module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D00BA	Top Cap, DC
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board

**Table 46 (Continued)**  
**Hardware requirements for a DC-powered Option 51C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
1	NT8D77	FDI/FDU Interface cable (Note 2)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC441F	Three-Port Extender Card (3PE)
1	QPC471H or QPC775	Clock Controller Card (see note 3)
<p><b>Note 1:</b> One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the Option 21E hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 51C.
- Back up the customer database to tape or disk by doing a data dump.
- Convert the customer database to Release 25 compatibility.

*Note:* Obtain extra-high-density floppy disks containing system software from your Nortel Networks representative.

### Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) to install new power equipment and to provide a good ground for the equipment.

### Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the Option 21E.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program  
Always enter LD 43 from the source (current) media.
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 Exit the program. At the prompt, enter **\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**Converting the customer database to Release 21**

*Note:* It is recommended that Option 21 customers send the customer database diskettes to Nortel Networks for conversion; contact your Nortel Networks representative to arrange for this. For Option 21 conversion procedures, refer to *Software Conversion Procedures* (553-2001-320)

If the Option 21E is running on X11 Release 19 or 20 software, you must convert it to Release 21 before continuing. You can convert the database on-site, or send it to Nortel Networks for conversion. All on-site database conversions are performed on the Option 21E system.

If your system is running Release 21 software, skip this section and continue with “Installing Option 51C hardware” on page 290.

You will complete converting the database to Release 25 later in these procedures after you upgrade the hardware.

**CAUTION**

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

### ***Converting a Release 18 and 19 database to Release 21***

To use this procedure, your Option 21/21E must currently be running version 18.20 or higher.

**Note:** If your system is already running Release 21, you do not have to perform these conversion procedures. Skip this section and continue with “Installing Option 51C hardware” on page 290.

- 1 Remove the front cover from the CE/PE Module on the Option 21E.
- 2 On the Option 21/21E, set the ENB/DIS switch on the QPC742 FDI card to DIS and remove the card from the CPU/MEM shelf.
- 3 Install the QMM42 data cartridge for Release 19 onto the QPC742 FDI card and reinstall the card.
- 4 Set the ENB/DIS switch on the QPC742 FDI card to ENB.
- 5 Insert the floppy disks with X11 Release 19 software into the disk drives in the Option 21/21E. Insert disk A in drive A and disk B in drive B.
- 6 Perform a data dump. At the prompt, enter  
**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 On the Option 21/21E, set the ENB/DIS switch on the QPC742 FDI card to DIS and remove the card from the CPU/MEM shelf.
- 8 Install the QMM42 data cartridge for Release 21 onto the QPC742 FDI card and reinstall the card.
- 9 Set the ENB/DIS switch on the QPC742 FDI card to ENB.
- 10 Insert the floppy disks with X11 Release 21 software into the disk drives in the Option 21/21E. Insert disk A in drive A and disk B in drive B.

- 11 Perform a data dump. At the prompt, enter  
**EDD** to begin the data dump
- 12 In the Option 21E, press the RST button on the NTND02 MSPS card to begin a sysload. System messages similar to the following will appear:  
**SYS000**  
**SYSLOAD RLS: xxISSUE:x**  
**DONE**  
**INI000**
- 13 Install disks A2 and A3 when you are prompted to do so.
- 14 When the software installation is complete, install disk A1.
- 15 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program  
**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

If an “EDD034” message appears when the data dump is complete, ignore this message. This message appears when SW2-4 on the NT9D34 card is OFF.

- 16 Verify the system by using the test procedures described in *System Installation Procedures (553-3001-210)* and *X11 Administration (553-3001-311)*. Clear any faults discovered during testing.
- 17 Follow “Postconversion procedure” in *Software Conversion Procedures (553-2001-320)*

You will complete converting the database to Release 25 later in these procedures after you upgrade the hardware.

## Installing Option 51C hardware

Option 51C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/Cs and power supplies, are shipped in separate packages to prevent damage to the cards.

Before installing the Option 51C, disable the system monitor in the Option 21/21E using the Input/Output Diagnostic (LD 37).

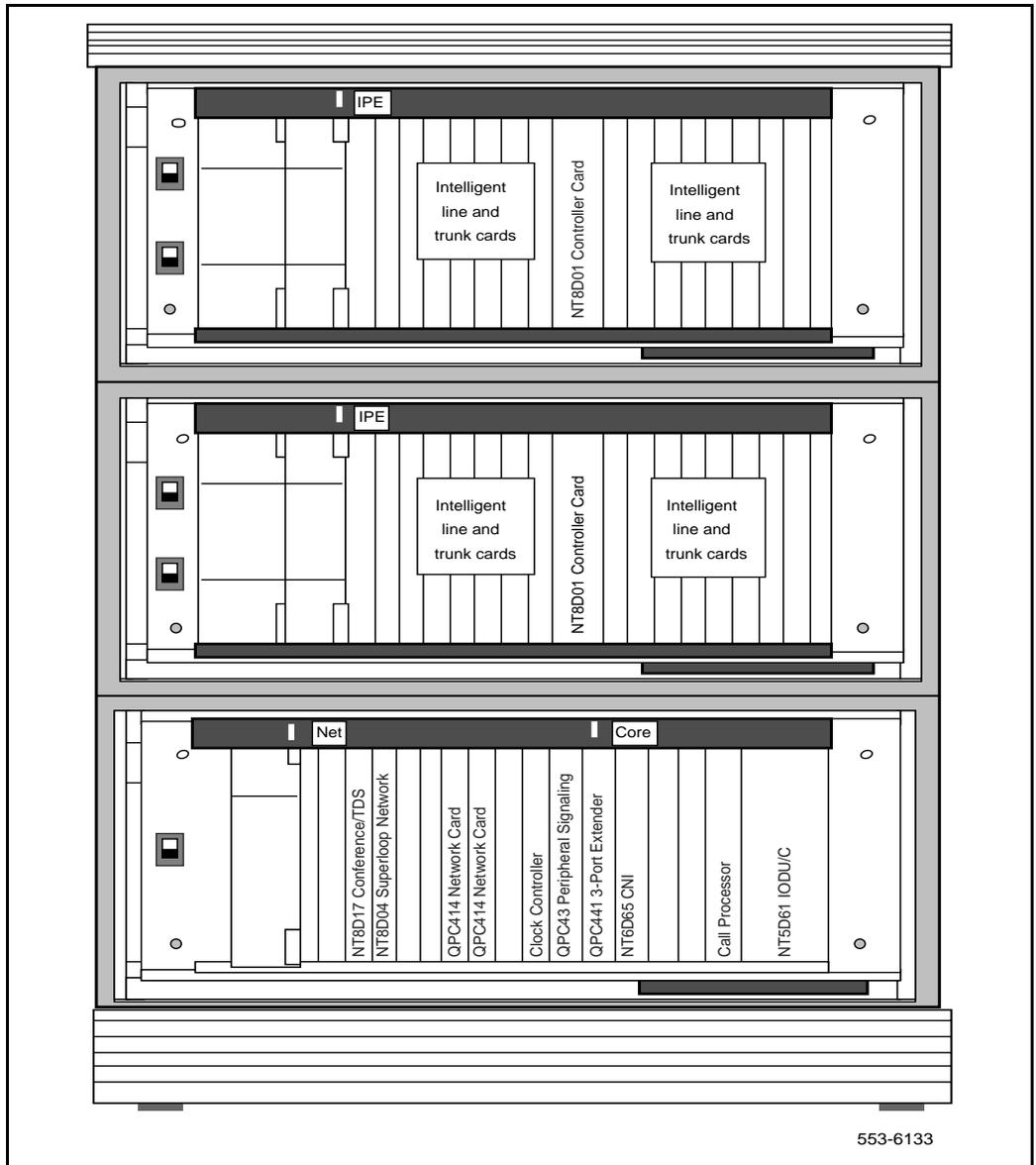
- 1 Log into the Option 21/21E.
- 2 Load the Input/Output Diagnostic (LD 37):
  - LD 37** to load the program
  - DIS TTY x** to disable the system monitor and TTY port
- 3 Exit the program. At the prompt, enter
  - \*\*\*\*** to exit the program

Figure 40 shows Option 51C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots. To install the Option 51C at your site, follow the procedures in *System Installation Procedures* (553-3001-210). For upgrade purposes, do not complete the following procedures during the installation process:

- a When configuring the system monitor, ensure that the Option 51C is configured as the master and any additional columns (including the Option 21/21E) are configured as slaves.
- b Do not install cabling.
- c Do not provide power to the Option 51C.
- d Do not perform the acceptance tests.
- e Do not replace the covers and grills on the front and rear of the system.

When the Option 51C hardware is installed, continue with the procedures on the following pages of this chapter.

**Figure 40**  
**Meridian 1 Option 51C**



**Note:** Make sure a terminal is connected to J25 on the I/O panel at the rear of the Core/Network module. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

## Transferring the database from 4 MB to IODU/C

To use the following procedures, the Option 21E database must be at Release 21. Before beginning the database conversion procedure, obtain all of the system software disks required.

To convert the database to Release 25, you will move the data for loop 28 in the Option 21E, transfer the customer database to a 2 MB format, and then install Release 25 software on the Option 51C.

### Move loop 28

- 1 Remove the front cover from the CE/PE Module on the Option 21.
- 2 Disable loop 28 using the Network and Peripheral Equipment Diagnostic Program (LD 32). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 32.
- 3 Configure a new superloop and controller using configuration record 2 (LD 97). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 97.

**Note:** When configuring superloops, assign loop numbers beginning with 0, 4, 8, or 12. Then configure each superloop for either a left or right slot location. The remaining slot (right or left of the superloop) may contain only DTI, PRI, or I/O cards.

- 4 Move the data for loop 28 to the newly configured superloop using the Move Data Blocks Program (LD 25). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 25.
- 5 After the data for loop 28 has been moved to the new loop, remove loop 28 using configuration record 2 (LD 97). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 97.

- 6** Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- LD 43** to load the program
  - EDD** to begin the data dump

When “DATABASE BACKUP COMPLETE” or “DATADUMP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7** Remove the database diskettes from the disk drives in the Option 21E.
- 8** In the Option 51C, connect a terminal to the CPSI port in the Core/Net module to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
- 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

**Note:** The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

**CAUTION**

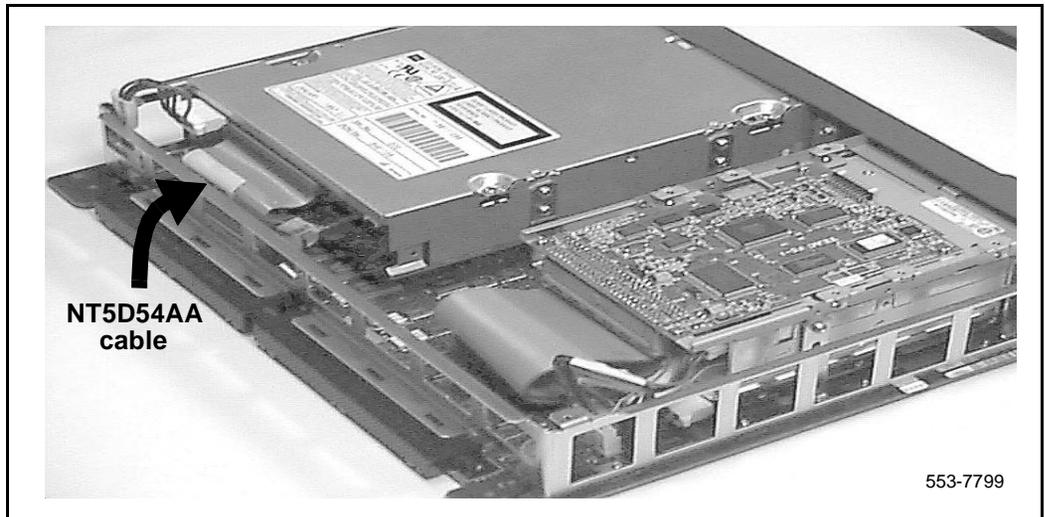
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

**IODU/C cabling**

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 65, on page 394). **Do not** disconnect the cable from the IODU/C circuit board.
- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

**Figure 41**  
Location of NT5D54 cable on IODU/C card



### MDU cabling

- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

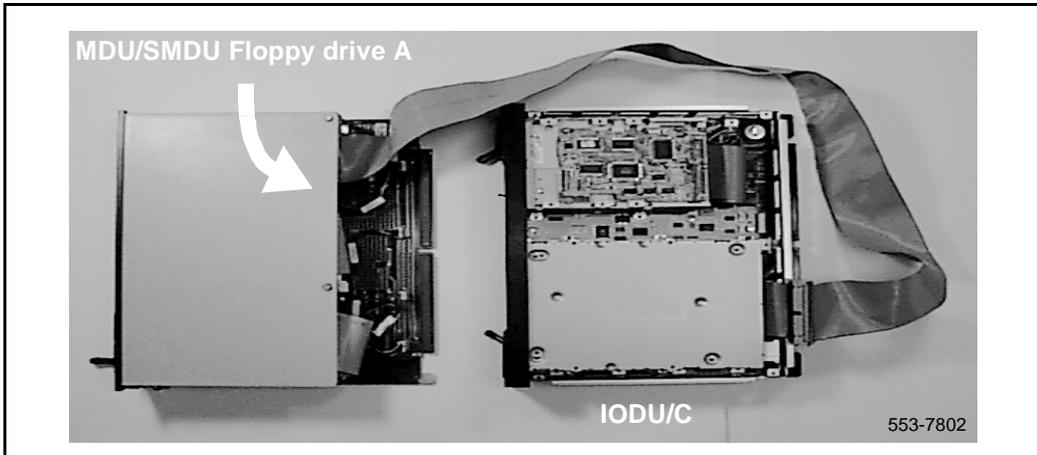
#### CAUTION

The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.

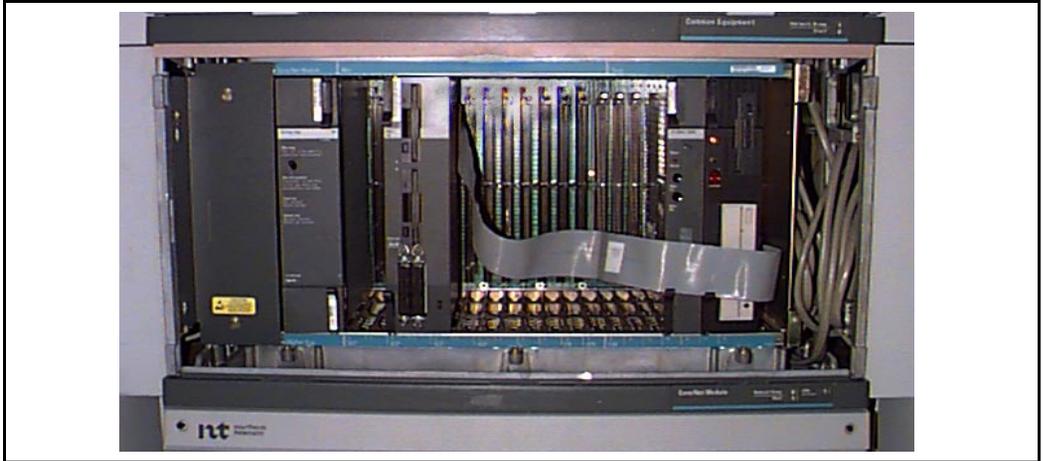
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 42). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 42**  
**Cabling the MDU to the IODU/C card**



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 43). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

**Figure 43**  
**IODU/C and MDU cabled in Core/Net 1**



- 8** Apply power to the module.  
The system will load software from the floppy diskette and the terminal will display *SYSLOAD* messages during file loading. When *SYSLOAD* is completed, the NT logo appears.
- 9** Enter the time and date, when prompted.
- 10** Initiate the database installation by selecting the following command from the menu:  
`<u>` to Install menu
- 11** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>` to continue with keycode validation  
`<y>` to confirm that the keycode matches the CD-ROM release
- 12** When the Install Menu appears, select the following options in sequence:  
`<d>` to install customer database only  
`<f>` to transfer the customer database from the MDU  
`<a>` to continue the database transfer

- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> Yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit.  
Remove any
- <y> to confirm quit
- <a> to reboot the system  
  
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

### 13 Shut down power to the Core/Net module.

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.

- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software.

## Installing Release 25 software

Before you begin:

- all cards must be installed in the Core/Net module
  - the Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 Enter the date and time when prompted.
  - 3 When the Main Menu appears, select the following options in sequence:
    - <u> to Install menu

- 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

- <a> to continue with keycode validation
- <y> to confirm that the keycode matches the CD-ROM release

- 5 When the Install Menu appears, select the following options in sequence:

- <a> to install software, CP-BOOTROM, and IOP-ROM
- <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

- <y> to start installation
- <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

- <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

- <CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

- <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

- <y> to start installation
- <a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

- <CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

- <q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for “DONE” and “INI” messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 Release 25 software is installed and is functional:
  - LD 135** to load the program
  - STAT CPU** to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in the Core/Net module.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
  - LD 43** to load the program
- 9 When “EDD000” appears on the terminal, enter:
  - EDD** to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:
  - \*\*\*\*** to exit the program

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:
  - LD 2** to load the overlay
  - STAD** DD MM YY HR MN SC

- 12** Clear displays, major alarms, and minor alarms:
- LD 135** to load the program
  - CDSP** to clear the display
  - CMAJ** to clear all major alarms
  - CMIN ALL** to clear all minor alarms
  - CDSP** to clear the display
  - \*\*\*\*** to exit LD 135
- 13** Load overlay 137 to verify status of the IODU/C:
- LD 137** to load the program
  - STAT** to get the status of the IODU/C.
  - \*\*\*\*** to exit the program
- 14** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 15** Insert a B1 database disk (from the Release 25 disk set) into the IODU/C for backup.
- 16** Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- LD 43** to load the program
- 17** When “EDD000” appears on the terminal, enter
- EDD** to begin the data dump
- 18** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
- \*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Defining the Option 51C system software

The following steps describe how to define the Option 51C software configuration.

- 1** Reassign the configuration data from the network loops in the Option 21/21E to the appropriate loops in the Option 51C.
  - a** Define the target Controller card using the Configuration Record 2 (LD 97).
  - b** Define the network loops using the Configuration Record 2 (LD 97) and the Configuration Record (LD 17).

Refer to *X11 Administration* (553-3001-311) for instructions on using LD 97 and LD 17.

- 2** Move the network loops using the Move Data Blocks Program (LD 25).  
Refer to *X11 Administration* (553-3001-311) for instructions on using LD 25.
- 3** Configure the I/O devices to reflect the current configuration (if required).
- 4** Reenter customer data blocks (if required). System Options and features must reflect the current configuration.
- 5** Configure station data blocks (if required).
- 6** Configure route data blocks (if required).
- 7** Configure trunk data blocks (if required).
- 8** Configure remaining system configuration records (if required).
- 9** Verify system operation before adding new equipment (if required).

## Moving the network cards

The following steps describe how to move the network cards from the Option 21E to the Option 51C.

### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set all Option 21E circuit breakers to OFF.
- 2 Label each card that is being transferred to a Core/Network module with loop 0–15 for the card.
- 3 On all network cards that are being transferred from the Option 21/21E to the Core/Network module, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Install the network cards in the Option 51C Core/Network module and hook the locking devices.
- 5 Cable the network loops.

For QPC414 Network cards and associated QPC659 Dual Loop Peripheral Buffer (DLB) Cards:

- a If the columns containing the network and DLB cards are in the same row, the network loop is cabled from the faceplate of the network card to the faceplate of the DLB card.
- b If the columns containing the network and DLB cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the DLB card I/O panel.
- c For NT8D04 Superloop Network cards and associated NT8D01 Controller cards:
  - d If the columns containing the network and controller cards are in the same row, the network loop is cabled from the faceplate of the network card to the backplane for the controller card.

- e If the columns containing the network and controller cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the controller card I/O panel.

Refer to *System Installation Procedures* (553-3001-210) for more information on cabling network loops. For external cabling procedures, refer to “Installing external cables” on page 305.

- 6 If you are using the Option 21E for PRI/DTI cards, install the PRI/DTI cards into the NT8D11 Common/Peripheral Equipment Module card slots. Refer to *IISDN PRI: Installation* (553-2901-201) for PRI installation procedures.
- 7 Enable the faceplate switches.

## Moving the peripheral equipment cards

- 1 Remove the IPE cards from the Option 21E CE/PE module.
- 2 Transfer the IPE cards to the Option 51C intelligent peripheral equipment modules.
- 3 Install the IPE cards in the Option 51C corresponding slots and hook the locking devices.

## Installing external cables

Installing external cables between the Option 21E and Option 51C columns is required if the two columns are not positioned side-by-side.

- 1 Install network cables between the Option 21E and Option 51C columns. The network cables connect network cards in the Core/Network module to the IPE/PE module of the Option 21E.

Each NT8D04 Superloop connection requires three cables:

- a Connect the NT8D88 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
- b Connect the NT8D98 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.

- c    Connect the NT8D92 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module.
  - d    Each QPC414 Network card connection requires three cables:
  - e    Connect the NT8D86 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
  - f    Connect the NT8D73 cable from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.
  - g    Connect the NT8D86 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module (the same cable type is used to connect to Meridian Mail and PRI/DTI cards).
- 2    If not already done, daisy-chain the slave system monitors to the master. Refer to *System Installation Procedures* (553-3001-210) for cabling procedures.
  - 3    If you are using PRI/DTI cards, connect the PRI cables. Refer to *ISDN PRI: Installation* (553-2901-201) for PRI cabling requirements and procedures.
  - 4    Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to the appropriate procedure in *System Installation Procedures* (553-3001-210) for IPE module I/O panel external cabling procedures.

## Completing the upgrade

- 1    Verify that all cards in the Option 51C are enabled (all ENB/DIS switches are set to ENB) and the MAINT/NORM switch on the CP card is set to NORM.
- 2    Perform a system reload by pressing the RLD button on the CP card. Watch the terminal for system reload (SYS) and initialization (INI) messages. If the sysload or initialization fails, refer to “Troubleshooting” on page 959.

- 3 Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).
- 5 Restore power to the Option 21/21E.

The Option 51C X11 Release 25 system is now operational. Install all module covers to complete the upgrade.



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# Option 21E card cage upgrade to Option 51C

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## Content list

The following are the topics in this section:

- [Reference list 309](#)
- [Equipment required 310](#)
- [Upgrade preparation 312](#)
- [Converting the customer database to Release 21 317](#)
- [Removing and installing the card cage 319](#)
- [Transferring the database from 4 MB to IODU/C 331](#)
- [Installing Release 25 software 336](#)
- [Completing the upgrade 340](#)

## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*
- *Capacity Engineering (553-3001-149)*
- *Product Compatibility (553-3001-156)*
- *System Installation Procedures (553-3001-210)*
- *X11 Administration (553-3001-311)*

A card cage upgrade from an Option 21E to a Meridian 1 Option 51C consists of upgrading both the hardware and the software. Upgrading the hardware consists of the following:

- removing the card cage from the Option 21E
- installing the Option 51C card cage
- installing new CPU cards in the card cage

**IMPORTANT**

Option 21E systems on Release 20 will remain on their current system and convert the database directly to Release 21. The hardware upgrade to Option 51C is performed as part of the software upgrade to Release 25. This eliminates the requirement of interim hardware.

Upgrading the software consists of one of the following:

- convert the customer database to X11 Release 25 on-site
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 51C after the upgrade is complete

Figure 44 shows an Option 51C as typically configured.

## Equipment required

Tables 47 and 48 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 51C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect network loops in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one Ringing Generator must be installed.

**Table 47**  
**Hardware requirements for an AC-powered Option 51C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R90BA	Upgrade Kit
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D89CA	CP to I/O Panel RS-232 Cable
1	NT7D90CA	IODU/C to I/O Panel Ethernet Cable
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card (see note 2)
1	NT8D06AA	Peripheral Equipment Power Supply, AC (see note 3)

**Table 47 (Continued)**  
**Hardware requirements for an AC-powered Option 51C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment Module, AC (see note 3, note 4)
1	NT8D40AU	MDPU to CEPS Cable Harness (see note 4)
1	NT8D56AA	Common Equipment Module Power Distribution Unit
1	NT9D91AE	Network to Controller Cable (8 ft.)
2	NT9D17AA	Module Side Cover
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC441F	Three-Port Extender Card (3PE )
1	QPC471H or QPC775E	Clock Controller (see note 5)
<p><b>Note 1:</b> One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> These items are included to provide replacement card slot availability for the existing IPE cards located in the unused NT8D11 module.</p> <p><b>Note 4:</b> Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately.</p> <p><b>Note 5:</b> If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the Option 21 or Option 21E hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.

**Table 48**  
**Hardware requirements for a DC-powered Option 51C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R90BA	Upgrade Kit
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT6D40AB	Peripheral Equipment Power Supply DC
1	NT6D41AB	Common Equipment Power Supply DC
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D11AG	Power Harness to Backplane Cable
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IODU/C to I/O Panel Ethernet Cable
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card (see note 2)
1	NT8D37EC	Intelligent Peripheral Equipment Module, DC (see note 2, note 4)
1	NT8D40AU	MDPU to CEPS Cable Harness (see note 3)
1	NT9D91AE	Network to Controller Cable (8 ft.)
2	NT9D17AA	Module Side Cover
1	QPC43R	Peripheral Signaling Card (PS)

**Table 48 (Continued)**  
**Hardware requirements for a DC-powered Option 51C (Part 2 of 2)**

Qty	Part number	Description
1	QPC441F	Three-Port Extender Card (3PE )
1	QPC471H or QPC775E	Clock Controller (see note 5)
<p><b>Note 1:</b> One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> These items are included to provide replacement card slot availability for the existing IPE cards located in the unused NT8D11 module.</p> <p><b>Note 4:</b> Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately.</p> <p><b>Note 5:</b> If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.</p>		

- Back up the customer database to tape or disk by doing a data dump.
- Convert the customer database to Release 25 compatibility

**Note:** Obtain extra-high-density floppy disks containing system software from your Nortel Networks representative.

**Performing a data dump**

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the Option 21E.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.

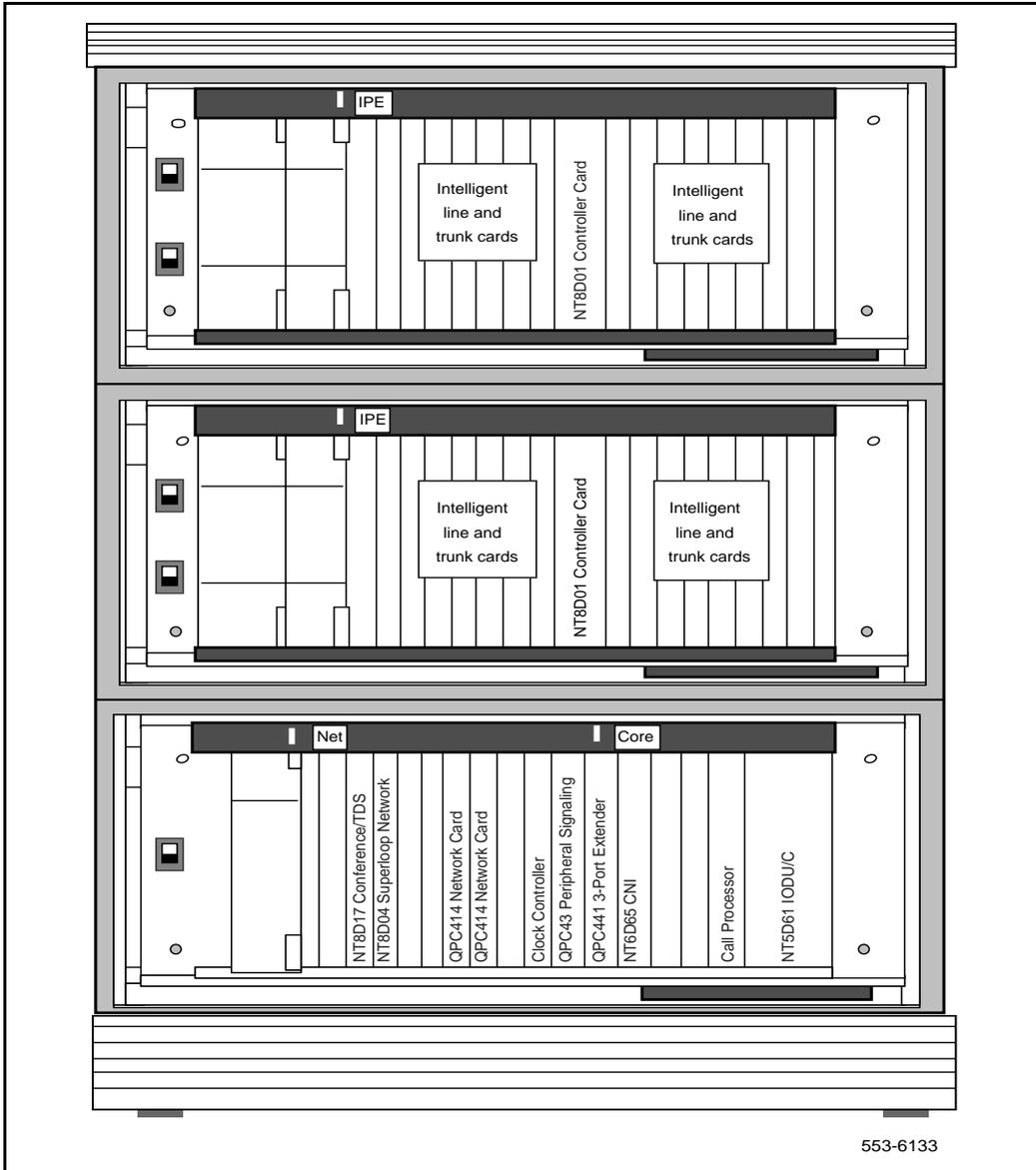
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump

- 4 Exit the program. At the prompt, enter  
\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Figure 44  
Meridian 1 Option 51C



553-6133

## Converting the customer database to Release 21

**Note:** It is recommended that Option 21 customers send the customer database diskettes to Nortel Networks for conversion; contact your Nortel Networks representative to arrange for this. For Option 21 conversion procedures, refer to *Software Conversion Procedures* (553-2001-320).

If the Option 21E is running on X11 Release 18 or 20 software, you must convert it to Release 21 before continuing. You can convert the database on-site, or send it to Nortel Networks for conversion. All on-site database conversions are performed on the Option 21E system.

If your system is running Release 21 software, skip this section and continue with “Removing and installing the card cage” on page 319.

You will complete converting the database to Release 25 later in these procedures after you upgrade the hardware.

### CAUTION

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

### **Converting a Release 18 and 19 database to Release 21**

To use this procedure, your Option 21/21E must currently be running version 18.20 or higher.

**Note:** If your system is already running Release 21, you do not have to perform these conversion procedures. Skip this section and continue with “Installing Option 51C hardware” on page 290.

- 1 Remove the front cover from the CE/PE Module on the Option 21E.
- 2 On the Option 21/21E, set the ENB/DIS switch on the QPC742 FDI card to DIS and remove the card from the CPU/MEM shelf.
- 3 Install the QMM42 data cartridge for Release 19 onto the QPC742 FDI card and reinstall the card.
- 4 Set the ENB/DIS switch on the QPC742 FDI card to ENB.

- 5 Insert the floppy disks with X11 Release 19 software into the disk drives in the Option 21/21E. Insert disk A in drive A and disk B in drive.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 Perform a data dump. At the prompt, enter  
**EDD** to begin the data dump
- 7 In the Option 21E, press the RST button on the NTND02 MSPS card to begin a sysload. System messages similar to the following will appear:  
**SYS000**  
**SYSLOAD RLS: xxISSUE:x**  
**DONE**  
**INI000**
- 8 Log into the system.
- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program  
  
Always enter LD 43 from the source (current) media. Do not exit LD 43. When "EDD000" appears on the terminal, proceed to the next step.
- 10 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for Release 19 software with the QMM42 cartridge for Release 21 software. Reinstall and enable the card.
- 11 Remove the disks containing Release 19 software from the drives and insert ED floppy disks with Release 21 software into the NTND16 MDU drives. Insert disk A1 in DRV A and disk B1 in DRV B.
- 12 Install disks A2 and A3 when you are prompted to do so.
- 13 When the software installation is complete, install disk A1.

- 14** Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43**           to load the program  
**EDD**            to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

If an “EDD034” message appears when the data dump is complete, ignore this message. This message appears when SW2-4 on the NT9D34 card is OFF.

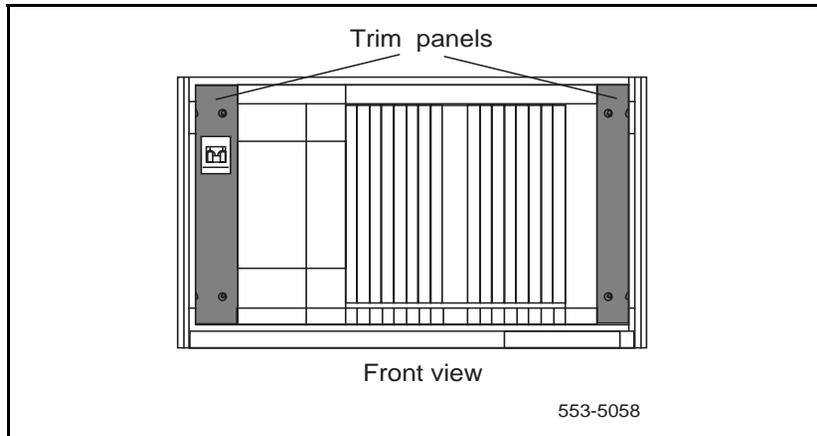
- 15** Verify the system by using the test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 16** Follow “Postconversion procedure” in *Software Conversion Procedures* (553-2001-320)

You will continue converting the database to Release 25 after you upgrade the hardware. Proceed with “Removing and installing the card cage”.

## Removing and installing the card cage

- 1** Perform the appropriate step below to turn off power to the column:
  - a** For AC-powered systems, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.
  - b** For DC-powered systems, set the circuit breaker for the module to OFF (down) in the rear of the pedestal.
- 2** Remove the trim panels on both sides of the module (see Figure 58). Keep the screws for reuse.

**Figure 45**  
**Location of the trim panels**



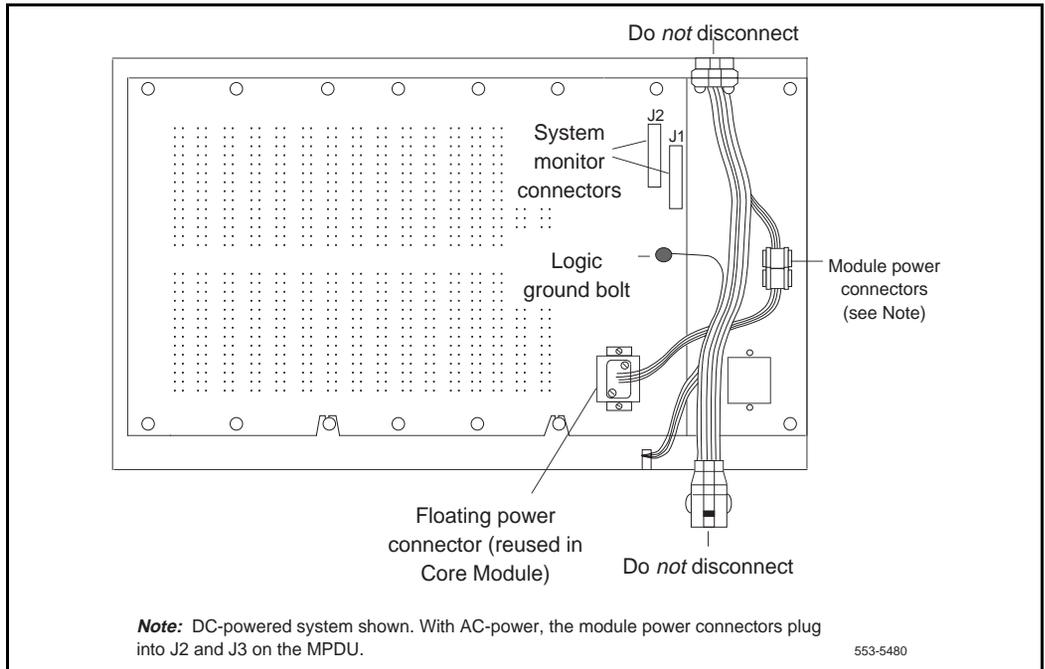
- 3 Tag and disconnect all cables connected to the front of each card in the CE/PE module. Note the exact positions of the cables connected to cards on the network side of the card cage; they must connect to the same cards when the card cage is reassembled. Tape over the cable connector contacts to avoid accidental grounding. Tape or tie all cables out of the way so that the working area in front of the card cage is totally clear.
- 4 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 5 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

**WARNING**

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards back into the same slots after the screws have been removed.

- 6 Remove the I/O safety panel that covers the rear of the backplane, and tag and disconnect all cables connecting from the inside and outside of the left I/O panel.

- 7 Tag and disconnect the system monitor ribbon cables from J1 and J2 on the backplane (see Figure 59).

**Figure 46****Power connectors on the rear of the AC CE/PE module backplane**

- 8 If one or more NT8D41 Paddle Boards are installed in connectors at the rear of the backplane, tag and disconnect all cables from them and remove them from the backplane.

- 9 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**WARNING**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 10 Pull the card cage forward until it is halfway out of the module.

**WARNING**

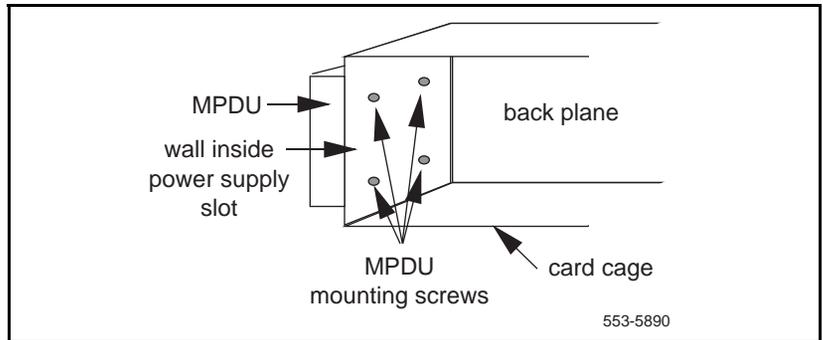
Do not disconnect the main power connectors (the large orange connectors) at the top and bottom of the module.

- 11 Remove the logic ground (orange) wire from the backplane bolt. Be careful to not drop the nut or lock washer into the pedestal (see Figure 59).
- 12 Tag and disconnect the module power connectors. These are the small orange connectors plugged into the module power distribution unit (MPDU) with AC power, or connected to each other with DC power.
- 13 Remove the card cage from the module.

*Note:* For AC-powered systems: If the new NT5D21 Core/Network module did not come with a Module Power Distribution Unit (MPDU), remove the MPDU from the CE/PE card cage and reinstall it on the new Core/Network card cage after the CE/PE card cage has been removed from the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 60).

- 14 Remove the left I/O panel and install the new I/O panel from the upgrade package. Orient the new panel so that the word "LEFT" is located at the top and facing you.

**Figure 47**  
**Location of the screws for the Module Power Distribution Unit (MPDU)**



- 15** Remove the existing floating power connector (the black connector) from the rear of the CPU card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Network card cage. Orient the connector so that pin 1 is at the bottom.

*Note:* Check the orientation of the connector. Viewed from the rear of the card cage, the upper left corner position should be empty (no wire) and the lower right corner position should have a wire installed. The green wire should be up.

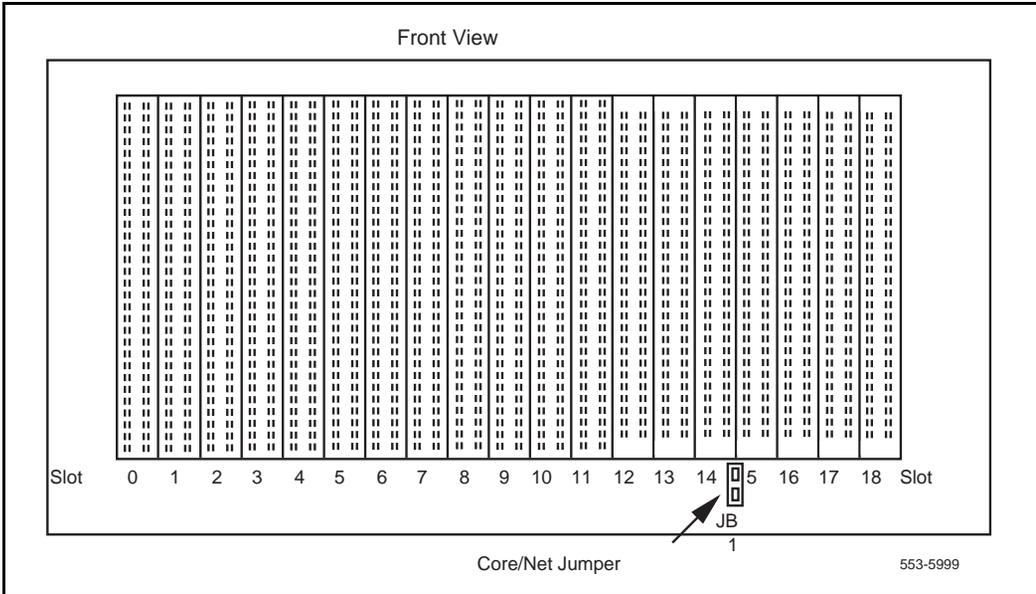
- 16** Check the backplane jumper in the Core/Network card cage. The jumper is located near the bottom of the front side of the backplane, between slots 14 and 15 (see Figure 61). Verify that the jumper is installed on the pins.

### **CAUTION**

If the Core/Net module jumpers are set incorrectly, the system will not load or operate correctly.

- 17** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

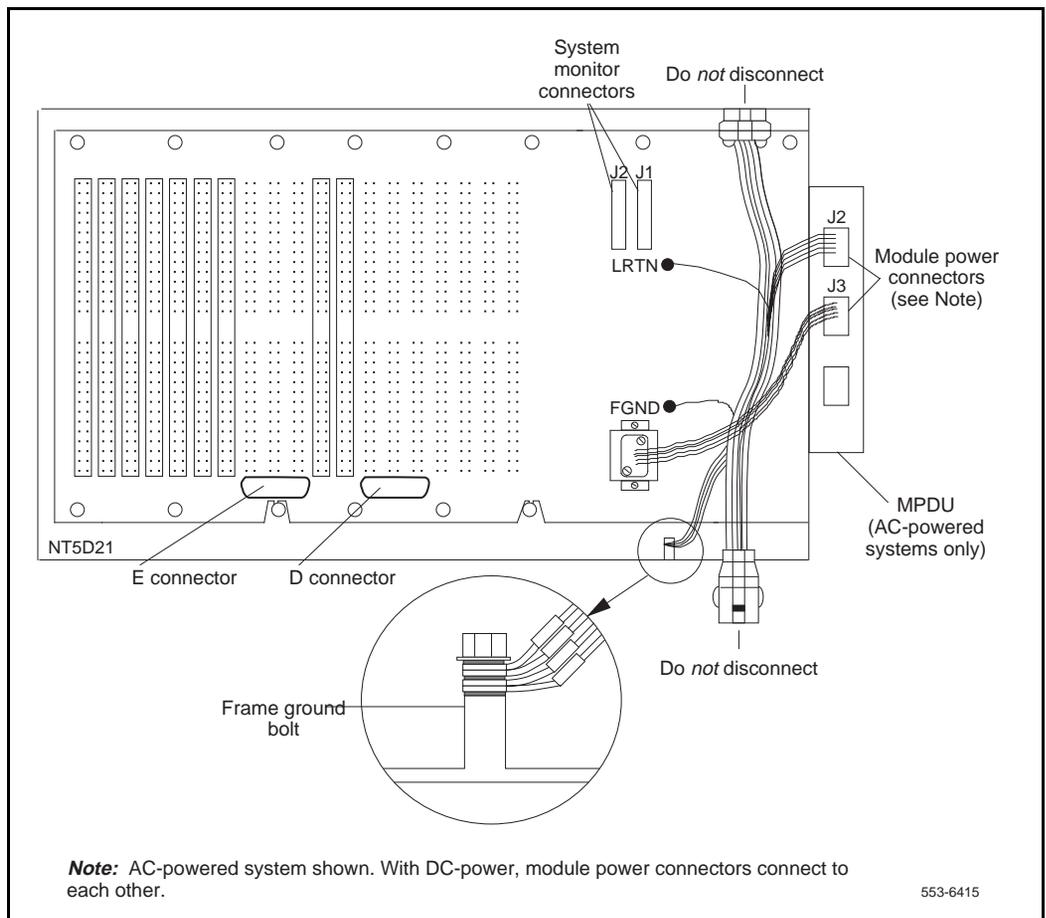
**Figure 48**  
Location of the jumper on the NT5D21 backplane



- 18** Slide the new card cage about halfway into the module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 62):
  - a** Attach the new frame ground (green) wire to the frame ground post in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the post. Put the frame ground connector over the post. Reinstall the top lock washer and the nut, then tighten the nut.

**Note:** For all of the terminal lugs to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third, or the third and fourth terminal lugs.

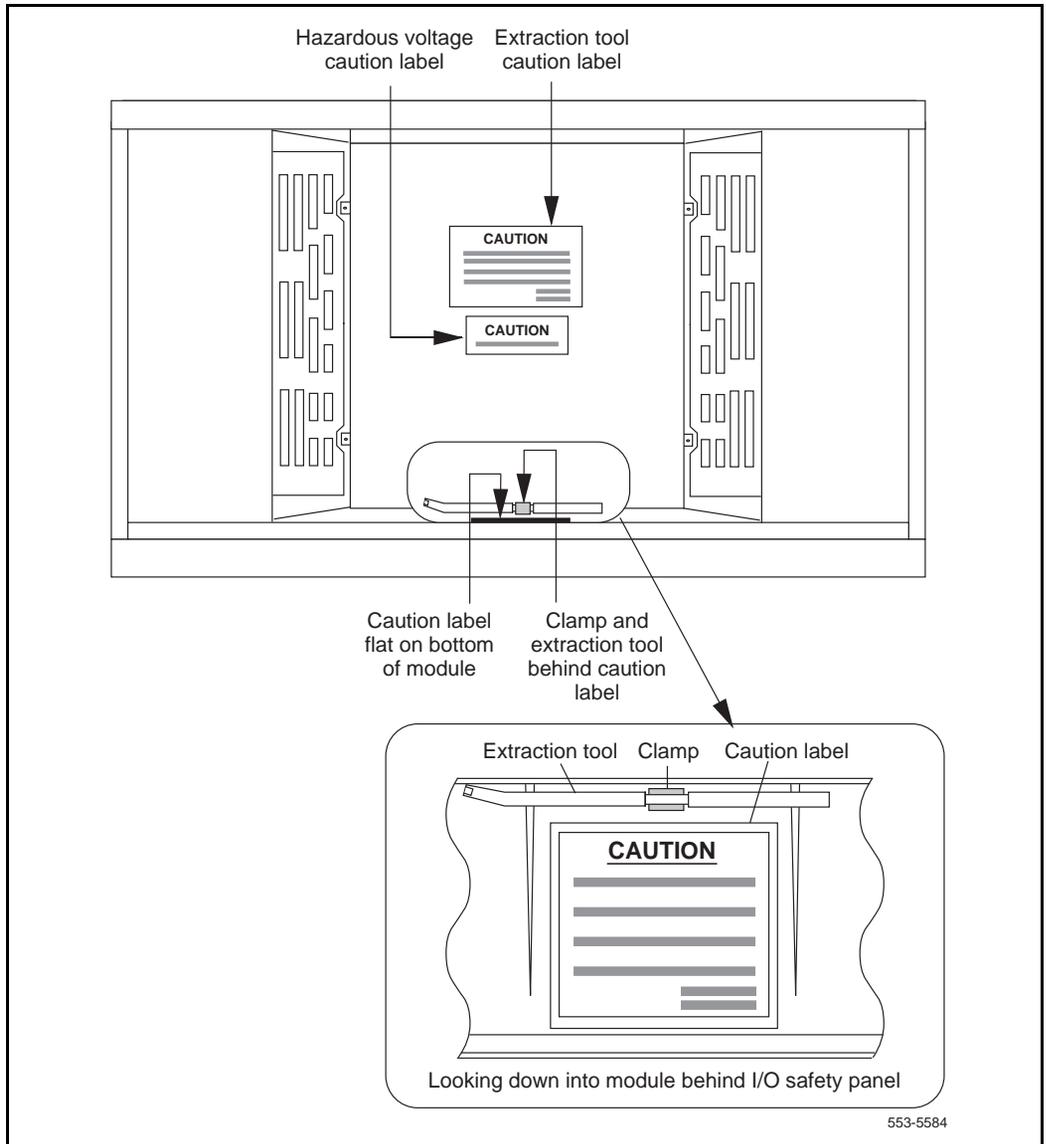
**Figure 49**  
Power connectors on the rear of the NT5D21 Core/Network Module



- b** Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the connector over the post, reinstall the lock washer and nut, then tighten the nut down. (A 3/8" socket wrench is

- needed for this operation.)
- c** Connect the module power connectors to the MPDU for AC power, or to each other for DC power.
  - d** Attach the system monitor ribbon cables. Connect the cable from the pedestal to connector J1; connect the cable from the module above to connector J2.
- 19** Slide the card cage all the way into the module.
  - 20** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
  - 21** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
  - 22** On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 63).
  - 23** In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
  - 24** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
  - 25** Snap the extraction tool into the clamp.
  - 26** Attach the Core/Network module designation labels, provided in the upgrade package, at the front and rear of the module (see Figure 63). Attach the large label on top of the existing label. Attach the smaller label at the rear of the module.
  - 27** Install the module power supply (removed from the CPU card cage) in the slot labeled “CE pwr sup.”

**Figure 50**  
**Positioning the extraction tool and caution labels**



- 28 Turn on power to the module. With AC power, set the main circuit breaker to ON (up) in the rear of the pedestal. With DC power, set the breaker to ON (up) in the pedestal.
- 29 Check the LED on the hybrid terminators located between slots 11 and 12. All LEDs must be off. The LEDs are set by the jumper on the backplane. If any LEDs are on, check the jumper on the backplane (see Figure 61 on page 386).
- 30 Shut down power to the module again. With AC power, set the power supply breaker for the module to OFF (down). With DC power, set the breaker to OFF (down) in the pedestal.
- 31 Check the vintage of the QPC441 3PE Card—it must be minimum vintage F. Set the front panel ENB/DIS switch to ENB. Set the option switches and jumper on the card (see Table 49). Place the card in slot 11.

**Table 49**  
**QPC441F 3PE Card—option settings**

D20 switch							
1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	on
RN27 jumper at E35: set to "A"							

- 32 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to ENB.

- 33** Set the option switches on the QPC471 Clock Controller (must be vintage H or later) or QPC775 Clock Controller (must be vintage E or later) card as shown in Table 50. Set the front panel ENB/DIS switch to ENB. Place the clock controller card in slot 9.

**Table 50**  
**QPC471 Clock Controller Card switch settings**

<b>Switch</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
SW1	On	On	On	On
SW2	Off	Off	Off	Off
SW4	Off	On	Off	Off

- 34** Remove the network cards from the CE/PE card cage and reinstall them in the new Core/Network card cage. Install the cards in slot numbers indicated in Table 51. Notice that although the slot numbers have changed, the relative positions of the cards in the modules have not.

**Table 51**  
**Slot number translation for network cards**

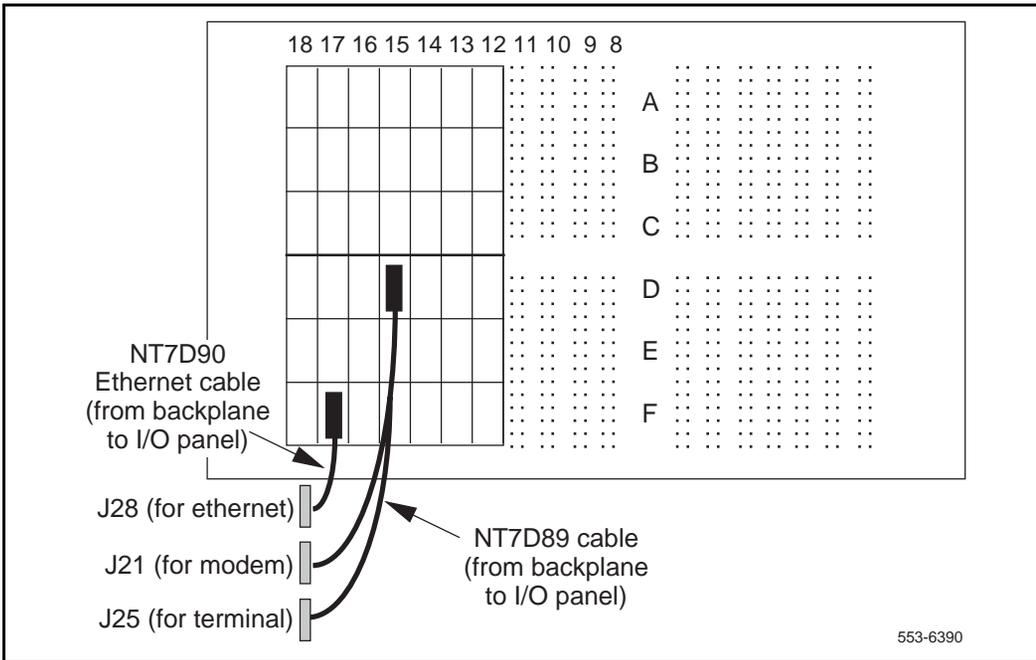
<b>NT8D11 CE/PE Slot Number</b>	<b>NT5D21 Core/Net Slot Number</b>
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

- 35 Follow the steps below to install the NT7D89 RS-232 Y-cable. The cable connects one connector on the backplane to two connectors on the left I/O panel (see Figure 51).

**Note:** Verify that the left I/O panel is correctly installed: The word “LEFT” faces you at the top of the panel. The connector numbers listed below match the designations on the outside of the left I/O panel.

- a On the inside of the I/O panel, connect port A (DTE) to J21 (modem port).
- b On the inside of the I/O panel, connect port B (DCE) to J25 (terminal port).
- c Connect the single connector end of the cable to backplane connector position 15D.

**Figure 51**  
**NT5D21 Core/Network Module (rear)—RS-232 cable connections for CPSI ports**



**36** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 51).

**37** Connect any remaining network and serial cables to the network cards installed in slots 0 through 7. The cables should go to exactly the same connector that they were connected to on the old CPU module.

*Note:* You may have cables left over after completing this step. You should leave these cables installed until the new Option 51C switch has been tested and is working correctly. They will be removed later in this procedure.

**38** Connect a terminal to the J25 (DCE) port on the I/O panel. You must use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

*Note:* Refer to “Terminal and modem connections” on page 933 before connecting the terminal.

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the Option 21E 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### **CAUTION**

Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

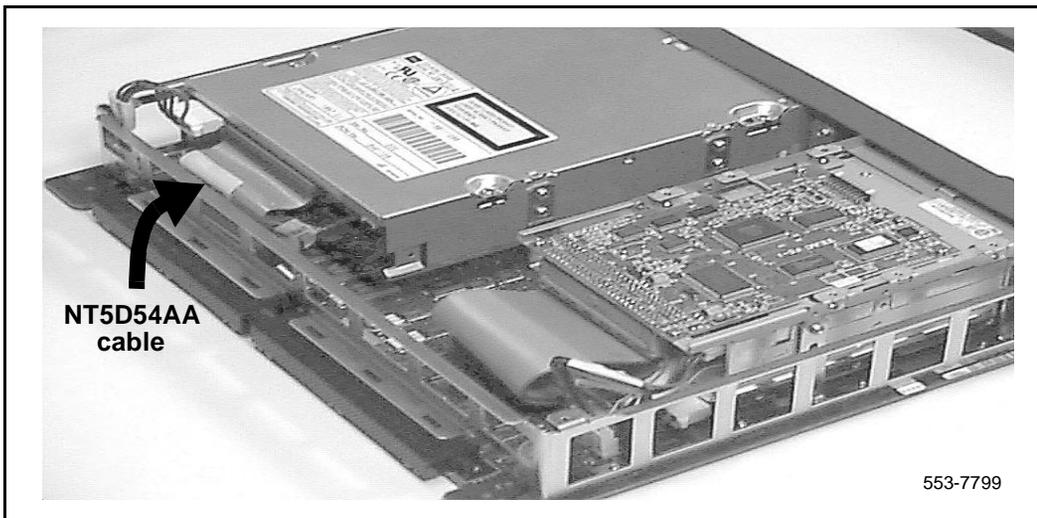
- 1** Verify that the Core/Net module is powered down.
- 2** Locate the IODU/C card and round 1/2” diameter IODU/C security device.

- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

### IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 65, on page 394). **Do not** disconnect the cable from the IODU/C circuit board.

**Figure 52**  
Location of NT5D54 cable on IODU/C card



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

**MDU cabling**

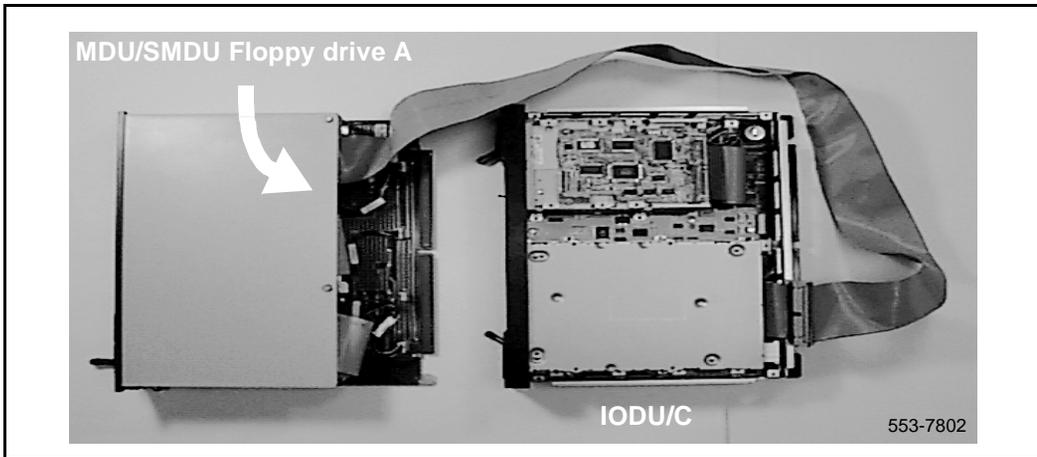
- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

**CAUTION**

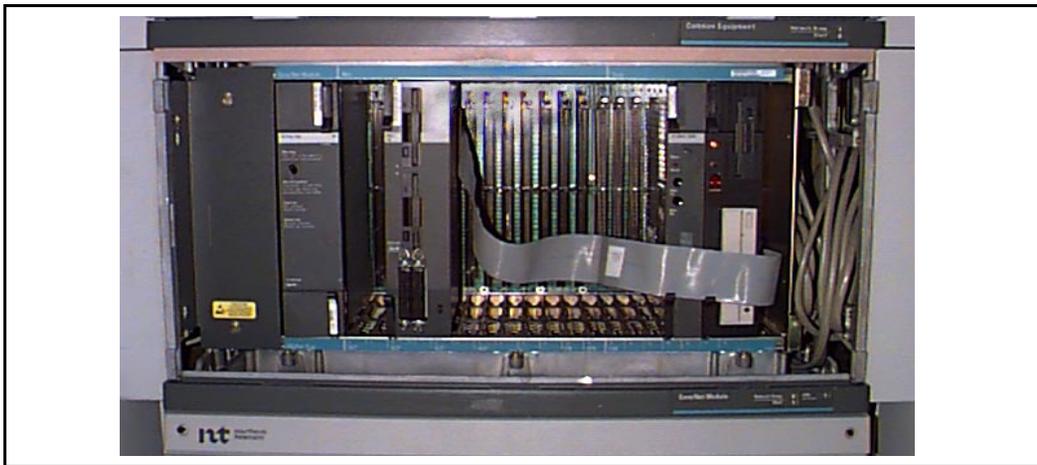
The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 53, on page 334). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 54, on page 334). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

**Figure 53**  
Cabling the MDU to the IODU/C card



**Figure 54**  
IODU/C and MDU cabled in Core/Net 1



**8** Apply power to the module.

The system will load software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.

- 9 Enter the time and date, when prompted.
- 10 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 11 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 12 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer
  - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y> to start installation
  - <a> Yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.
  - <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
  - <cr> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
  - <q> When the Install Menu appears, select <q> to quit.  
Remove any

- <y>    to confirm quit
- <a>    to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

### 13 Shut down power to the Core/Net module.

*Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage.* This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software.

## Installing Release 25 software

Before you begin:

- all cards must be installed in the Core/Net module

- the CP Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 Enter the date and time when prompted.
  - 3 When the Main Menu appears, select the following options in sequence:
    - <u> to Install menu
  - 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
    - <a> to continue with keycode validation
    - <y> to confirm that the keycode matches the CD-ROM release
  - 5 When the Install Menu appears, select the following options in sequence:
    - <a> to install software, CP-BOOTROM, and IOP-ROM
    - <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

    - <y> to start installation
    - <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

    - <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 Release 25 software is installed and is functional:
  - LD 135** to load the program
  - STAT CPU** to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in the Core/Net module.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
  - LD 43** to load the program

- 9** When “EDD000” appears on the terminal, enter:  
**EDD** to begin the data dump
- 10** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11** Set date and time:  
**LD 2** to load the overlay  
**STAD** DD MM YY HR MN SC
- 12** Clear displays, major alarms, and minor alarms:  
**LD 135** to load the program  
**CDSP** to clear the display  
**CMAJ** to clear all major alarms  
**CMIN ALL** to clear all minor alarms  
**CDSP** to clear the display  
**\*\*\*\*** to exit LD 135
- 13** Load overlay 137 to verify status of the IODU/C:  
**LD 137** to load the program  
**STAT** to get the status of the IODU/C.  
**\*\*\*\*** to exit the program
- 14** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 15** Insert a B1 database disk (from the Release 25 disk set) into the IODU/C for backup.

- 16 Load the Equipment Data Dump Program (LD 43). This command creates backups on both the hard disk and the floppy disk in the IODU/C if a floppy disk is installed. At the prompt, enter  
**LD 43**            to load the program
  
- 17 When “EDD000” appears on the terminal, enter  
**EDD**            to begin the data dump
  
- 18 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\***            to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Completing the upgrade

- 1 Reenter system configuration data into the customer database, if required, in the following sequence:
  - a To reassign configuration data previously moved from loop 28 to an appropriate loop in the Option 51C, do the following:
    - Define the target loop using the Configuration Program (LD 17).
    - Move the loops using the Move Data Blocks Program (LD 25).Refer to *X11 Administration* (553-3001-311) for instructions on using LD 17 and LD 25.
  - b Move the network cards from the Option 21/21E to the network card slots previously defined.
  - c Configure I/O devices to reflect the current configuration.

- d** Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 1000 and 500, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.
  - e** Reenter customer data blocks. System options and features must reflect the current configuration.
  - f** Configure station data blocks.
  - g** Configure route data blocks.
  - h** Configure trunk data blocks.
  - i** Configure remaining system configuration records.
  - j** Verify system operation before adding new equipment.
  - k** Configure new equipment and functions, if any.
- 2** Load overlay 22 and print the Configuration Record to verify the above changes:
- |                 |                            |
|-----------------|----------------------------|
| <b>LD 22</b>    | to load the program        |
| <b>REQ PRT</b>  | to set the print option    |
| <b>TYPE CFN</b> | to print the configuration |
- After verifying the changes, enter
- |             |                     |
|-------------|---------------------|
| <b>****</b> | to exit the program |
|-------------|---------------------|
- 3** Insert the Release 25 B1 disk into the IODU/C.

- 4 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 Verify that the ENB/DIS switch is set to ENB on all of the cards in the network area of the Core/Network module.
- 6 Press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)
- 7 Check for dial tone. If there is no dial tone, do the following:
  - a Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
  - b Verify that all cables are properly and securely connected in the front and rear of the module.
  - c Check the status of the CNI card with LD 135 “STAT CNI” and ensure that it is software enabled.
  - d If the CNI card is software disabled, test the card with LD 135 “TEST CNI c s.”
  - e If the test is successful, enable the card in LD 135, perform a data dump with LD 43, and recheck the CNI status in LD 135.
  - f Check for dial tone again.





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# Option 21E upgrade to Option 61C

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## Content list

The following are the topics in this section:

- [Reference list 345](#)
- [Equipment required 346](#)
- [Upgrade preparation 352](#)
- [Converting the customer database to Release 21 354](#)
- [Converting the SL-1 hardware 359](#)
- [Installing external cables 359](#)
- [Transferring the database from 4 MB to IODU/C 360](#)
- [Installing Release 25 software in Core/Net 1 367](#)
- [Copying the software and database to Core/Net 0 369](#)
- [Returning the system to redundant mode 371](#)
- [Moving network cards 373](#)
- [Completing the upgrade 374](#)

## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*
- *Product Compatibility (553-3001-156)*
- *System Installation Procedures (553-3001-210)*

- *Circuit Card: Installation and Testing* (553-3001-211)
- *X11 Administration* (553-3001-311)

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an Option 21E to a Meridian 1 Option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 61C next to the Option 21E column
- removing the common equipment (CE) from the Option 21E column
- connecting the cabinet to the Option 61C column

Upgrading the software consists of one of the following:

- convert the customer database to X11 Release 25 on-site
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 61C after the upgrade is complete.

**IMPORTANT**

Option 21E systems on Release 20 will remain on their current system and convert the database directly to Release 21. The hardware upgrade to Option 61C is performed as part of the software upgrade to Release 25. This eliminates the requirement of interim hardware.

## Equipment required

Tables 59 and 53 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number may represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect network loops in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

An NT8D01 Controller Card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one Ringing Generator must be installed.

**Table 52**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network Module, AC
2	NT6D65AA	Core to Network Interface Card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment Module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)

**Table 52**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NT5D21AA	Core/Network Module, AC
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling Card (PS)
2	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately.</p> <p><b>Note 4:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

**Table 53**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network Module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface Card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap DC
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC

**Table 53**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
2	NT8D80BZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP/CMDU to IOP/CMDU SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling Card (PS)
1	NT8D80	CPU/MDU Interface Cable
2	QPC441F	Three-Port Extender Card (3PE )
2	QPC471H or	Clock Controller cards (see note 4)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT6D42CC Ringing Generator, DC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately.</p> <p><b>Note 4:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the Option 21 or Option 21E hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 61C.
- Install the Option 61C hardware.
- Back up the customer database to tape or disk by doing a data dump.

**Note:** Obtain extra-high-density floppy disks containing system software from your Nortel Networks representative.

### Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Installing Option 61C hardware

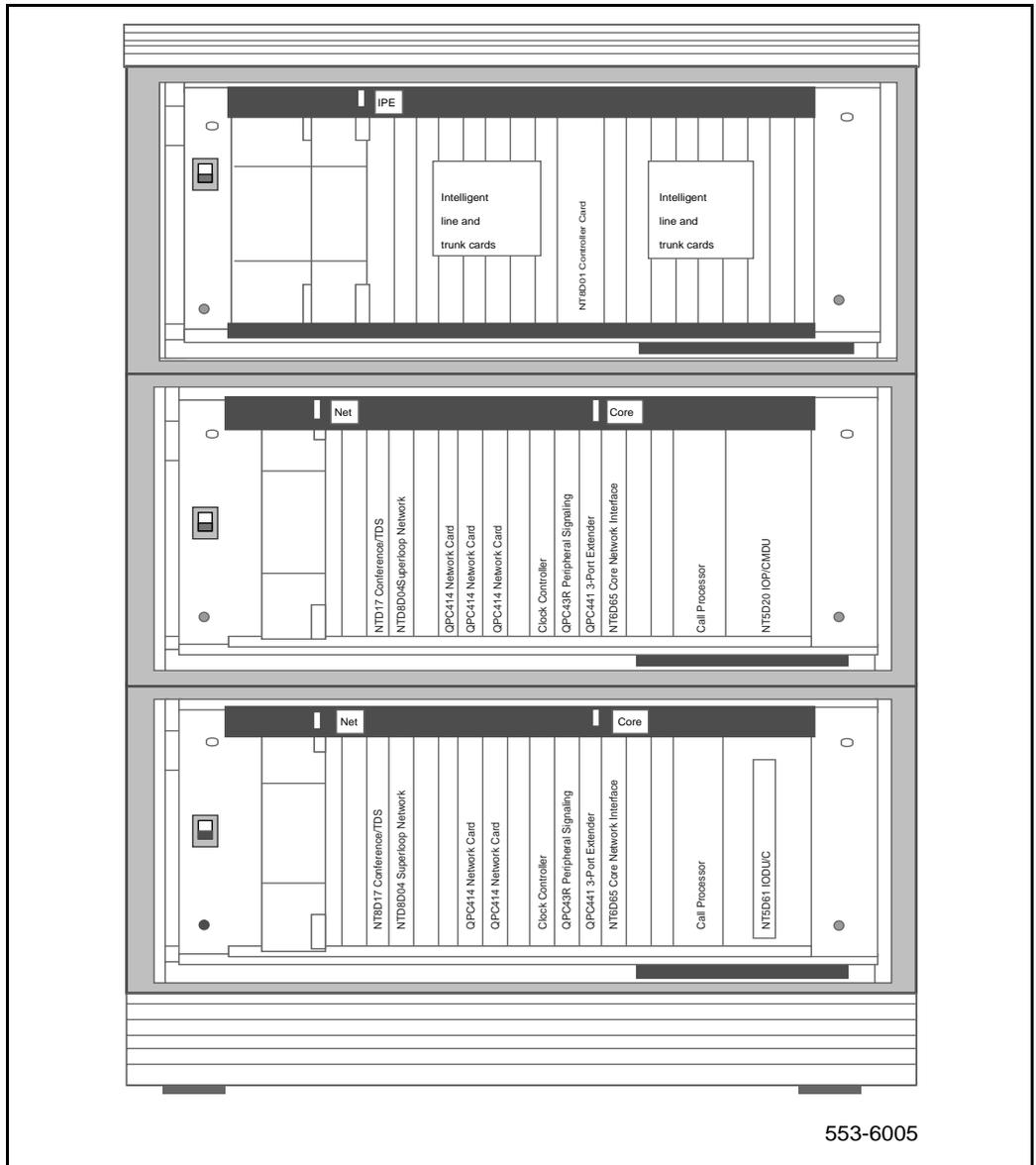
Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IOP/CMDUs and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 68 shows Option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the Option 61C at your site, first follow the procedures in *System Installation Procedures* (553-3001-210) and then continue with the procedures on the following pages of this section.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 415).

**Figure 55**  
**Meridian 1 Option 61C**



553-6005

### Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the Option 21E.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 Exit the program. At the prompt, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Converting the customer database to Release 21

If the Option 21E is running X11 Release 18 or 19 software, you must convert the database to Release 21 before continuing. You can convert the database on-site, or send it to Nortel Networks for conversion.

*Note:* If your system is running Release 21 software, skip this section and continue with “Converting the SL-1 hardware” on page 359.

You will complete converting the database to Release 25 later in these procedures after you convert the software to Release 21 and upgrade the hardware.

**CAUTION**

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

### Converting the database from Release 18 and 19 to Release 21

- 1 Remove the front covers from the CPU/Network cabinet in the 21E system.
- 2 Log into the system.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

*Note:* Your system will have either a QPC584 MSI card or an NT9D34 EMSI card.

- 4 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for Release 18 software with the QMM42 cartridge for Release 19 software.
- 5 For MSI cards, set position 4 on switch SW3 to OFF. For EMSI cards, set position 4 on switch SW2 to OFF. Reinstall and enable the card.
- 6 Remove the disks containing Release 18 software from the drives and insert ED floppy disks with Release 19 software into the NTND16 MDU drives. Insert disk A in DRV A and disk B in DRV B.
- 7 Perform a data dump. At the prompt, enter **EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Simultaneously press both RLD buttons on the NTND10 CMA cards. System messages similar to the following will appear:  
**SYS000**  
**SYSLOAD RLS: xxISSUE:x**  
**DONE**  
**INI000**
- 9 Log into the system.
- 10 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program  
  
Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.
- 11 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for Release 19 software with the QMM42 cartridge for Release 21 software. Reinstall and enable the card.
- 12 Remove the disks containing Release 19 software from the drives and insert ED floppy disks with Release 21 software into the NTND16 MDU drives. Insert disk A1 in DRV A and disk B1 in DRV B.

- 13** Perform a data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 14** Simultaneously press both RLD buttons on the NTND10 CMA cards. When prompted, remove disk A1 from the A drive and insert disk A2. System messages similar to the following will appear:

```
SYS000  
INSERT DISK A2 INTO DRIVE A  
SYSLOAD RLS: xxISSUE:x  
DONE  
INI000
```

- 15** Immediately following the system initialization sequence, remove disk A2 from drive A and insert disk A1.
- 16** Log into the system.
- 17** Copy the contents of the data disks to the hard disk by entering

**LD 43** to load the program  
**RES** to copy the entire contents of the backup to the hard disk

Insert the additional system disk (A2) when requested. When the restore sequence is complete, enter

**\*\*\*\*** to exit the program

- 18** Remove disk A2 from drive A and insert disk A1.
- 19** Set the ENB/DIS switch on each MSI or EMSI card to DIS.

- 20 Remove each MSI or EMSI card. For MSI cards, set position 4 on switch SW3 to ON. For EMSI cards, set position 4 on switch SW2 to ON.
- 21 Reinstall each MSI or EMSI card and set the ENB/DIS switch to ENB.
- 22 If you are installing an MDU and the system is not configured for a hard disk drive, change the configuration record:
  - LD 17 to load the program
  - IOTB enter **YES** to change I/O devices
  - ADAN enter **CHG HDK 0** to add a hard disk unit
  - \*\*\*\* to exit the program

- 23 Perform a data dump:
  - LD 43 to load the program
  - EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter  
\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 24 Verify the system by using the test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 25 Follow “Postconversion procedure” in *Software Conversion Procedures* (553-2001-320).

You will continue converting the database to Release 25 later in these procedures after you upgrade the hardware. Proceed with “Converting the SL-1 hardware”.

## Converting the SL-1 hardware

### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set ENB/DIS switches on all CE cards to DIS.
- 2 Set all shelf circuit breakers to OFF.
- 3 Disconnect all network loop cables connected to the NT8D04 Network Cards and cables connected to the SDI cards.
- 4 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 5 Remove remaining cards from the CE shelf and store them in a safe place.

## Installing external cables

After the Option 61C columns are installed and the Option 21E column has been prepared, you must connect them with external cables.

**Note:** Installing external cables between the Option 21E and Option 61C columns is required only if the two columns are not positioned side-by-side. If these columns are adjacent to each other, you must install column spacer kits and route cables between the columns as outlined in *System Installation Procedures* (553-3001-210).

- 1 Install network cables between the Option 21E column and the Option 61C column. These cables connect network cards in the Core/Network module to the IPE controller card in the IPE shelf of the Option 21.

Each network loop connection requires three cables:

- a Connect the NT8D88 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.



**Note:** The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

To use the following procedures, the Option 21E database must be at Release 21.

- 1** Remove the front cover from the CE/PE Module on the Option 21.
- 2** Disable loop 28 using the Network and Peripheral Equipment Diagnostic Program (LD 32). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 32.
- 3** Configure a new superloop and controller using configuration record 2 (LD 97). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 97.

**Note:** When configuring superloops, assign loop numbers beginning with 0, 4, 8, or 12. Then configure each superloop for either a left or right slot location. The remaining slot (right or left of the superloop) may contain only DTI, PRI, or I/O cards.

- 4** Move the data for loop 28 to the newly configured superloop using the Move Data Blocks Program (LD 25). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 25.
- 5** After the data for loop 28 has been moved to the new loop, remove loop 28 using configuration record 2 (LD 97). Refer to *X11 Administration* (553-3001-311) for instructions on using LD 97.

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program  
**EDD** to begin the data dump

When “DATABASE BACKUP COMPLETE” or “DATADUMP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 Remove the database diskettes from the disk drives in the Option 21E.

**IODU/C cabling**

**CAUTION**

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that Core/Net 1 is powered down.
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).

- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

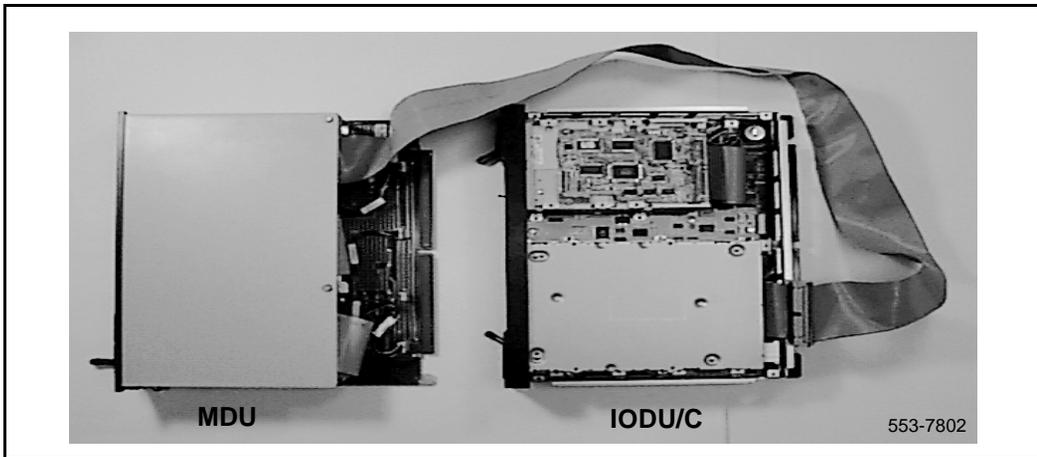
### MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:  
**LD 37** to load the program  
**DIS MSI 0** to disable the card
  - b Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
  - c Remove the floppy diskettes from the disk drives.
  - d Label and disconnect cables from the faceplate of the MDU or SMDU.
  - e Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 56). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 56**  
**Cabling the MDU to the IODU/C card**



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer
  - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y> to start installation
  - <a> yes, transfer the database  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
  - <CR> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
  - <CR> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
  - <q> When the Install Menu appears, select <q> to quit.
  - <y> to confirm quit
  - <a> to reboot the system  
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

**16 Shut down power to Core/Net 1 module.**

*Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage.* This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Reinstall the MDU/SMDU into CPU 0:
  - a Connect the cable(s) to the faceplate of the MDU.
  - b Install the floppy diskette in the MDU
  - c Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
  - d Software enable the MSI, EMSI, or FDI card:  
  
    **LD 37**            to load the program  
    **ENB MSI 0**    to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## Installing Release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

**1** Install the CD-ROM into the CD drive:

- a** press the button on the CD-ROM drive to open the CD-ROM disk holder
- b** place the CD-ROM disk into the holder with the disk label showing
- c** use the four tabs to secure the CD-ROM in the disk holder
- d** press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

**2** Enter the date and time when prompted.

**3** When the Main Menu appears, select the following options in sequence:

**<u>** to Install menu

**4** Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

**<a>** to continue with keycode validation

**<y>** to confirm that the keycode matches the CD-ROM release

**5** When the Install Menu appears, select the following options in sequence:

**<a>** to install software, CP-BOOTROM, and IOP-ROM

**<a>** to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

**<y>**    to start installation

**<a>**    to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

**<a>**    to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

**<CR>**    to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

**<a>**    to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

**<y>**    to start installation

**<a>**    to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

**<CR>**    to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>**    to quit

**<y>**    to confirm quit

Remove the diskette from the floppy drive.

**<a>**    to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

- 6    When the sysload is complete, log into the system.
- 7    Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

**LD 135**    to load the program

**STAT CPU**    to display the CPU status

**Note:** This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:  
**LD 43** to load the program
- 9 When “EDD000” appears on the terminal, enter:  
**EDD** to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:  
**\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:  
**LD 2** to load the overlay  
**STAD** DD MM YY HR MN SC

## **Copying the software and database to Core/Net 0**

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1    Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2    Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 3    Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4    Initiate the installation by selecting the following prompt from the menu:  
          <cr> <u>            to Install menu
- 5    Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
          <a>                continue with keycode validation  
          <y>                to confirm that keycode matches CD-ROM release
- 6    Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 7    When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:  
          <o>                to copy system software from the other Core  
          <a>                to continue  
          <a>                to continue  
          When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.  
          <CR>              press <CR> when you are ready to continue  
          <y>                to start installation  
          <a>                to continue with ROM upgrade  
          <y>                to start installing CP-BOOT ROM

**<a>** to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

**<CR>** to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

**<f>** to install IOP-ROM only

When the Installation Status Summary screen appears:

**<y>** to start installation

**<y>** to continue installing IOP-ROM

**<a>** to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

**<CR>** to return to the Install Menu

When the Install Menu appears, install the database:

**<d>** to install database only

When the Installation Status Summary screen appears:

**<y>** to start installation

**<a>** to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

**<CR>** to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

**<q>** to quit

**<y>** to confirm quit

**<a>** to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

## Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**

- 4 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

- 6 Perform a redundancy sanity test:

**LD 135** to load the program  
**STAT CNI** to get the statu of the CNI card  
**STAT CPU** to get the status of both Cores  
**TEST CPU** to test the inactive CP card and CP-to-CP cable  
**TEST CNI c s** to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Switch Cores and test the other CPU:

**SCPU** to switch to Core 0  
**TEST CPU** to test the inactive CP card and CP-to-CP cable

- 8 Get the status of the CP cards and memories and of the CNIs:

**STAT CPU** to get the status of both Cores  
**STAT CNI** to get the status of all configured CNIs  
**SCPU** to swap to Core/Net 1 active  
**\*\*\*\*** to exit LD 135

- 9 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

**LD 137** to load the program  
**STAT** to get the status of IODU/Cs, and redundancy  
**SYNC** synchronize the hard disk drives  
**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 10 Get the status of the IODU/Cs and be sure IODU/C is active. Switch IODU/Cs if necessary:
 

<b>STAT</b>	to get the status of IODU/Cs and redundancy
<b>SWAP</b>	to switch IODU/Cs (if necessary)
<b>****</b>	to exit the program
  
- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
  
- 12 Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump to the backup disks.
 

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

<b>LD 43</b>	to load the program
--------------	---------------------
  
- 13 When “EDD000” appears on the terminal, enter
 

<b>EDD</b>	to begin the data dump
------------	------------------------
  
- 14 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
 

<b>****</b>	to exit the program
-------------	---------------------

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## **Moving network cards**

- 1 Perform the appropriate step to turn off power in each Core/Network module:
  - a For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
  - b For DC-powered systems, set the switch on the circuit breaker (located at the rear of the pedestal) to OFF (down position).

- 2 Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0-31) for the card.
- 3 On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.
- 5 Switch the cables at the PE end:
  - a If NT8D92 cables inside the IPE modules are not connected, connect them to the faceplates of the appropriate NT8D01 Controller cards.
- 6 Turn on power to the cabinet:
  - a Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
  - b Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the Option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).

## Completing the upgrade

- 1 Follow the appropriate step below to restore power in each Core/Network module.

*Note:* If power to both Core/Network Modules is restored simultaneously, the IODU/Cs should still be synchronized.

  - a For AC-powered systems, simultaneously set the MPDU in both Core/Network Modules to ON (up position).
  - b For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).

- 2 Reenter system configuration data into the customer database, if required, in the following sequence:
  - a Reassign configuration data previously moved from loop 28 to an appropriate loop in the Option 61C, and balance the network loops between both Core/Network shelves. To do this, do the following:
    - Define the target loop using the Configuration Program (LD 17).
    - Move the loops using the Move Data Blocks Program (LD 25).  
Refer to *X11 Administration* (553-3001-311) for instructions on using LD 17 and LD 25.
  - b Move the network cards from the Option 21E to the network card slots previously defined.
  - c Configure I/O devices to reflect the current configuration.
  - d Reenter customer data blocks. System options and features must reflect the current configuration.
  - e Configure station data blocks.
  - f Configure route data blocks.
  - g Configure trunk data blocks.
  - h Configure remaining system configuration records.
  - i Verify system operation before adding new equipment.
  - j Configure new equipment and functions, if any.
- 3 Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Option 61C X11 Release 25 system is now operational. Install all module covers to complete the upgrade.

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# Option 51 upgrade to Option 51C

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## Content list

The following are the topics in this section:

- [Equipment required 378](#)
- [Upgrade preparation 381](#)
- [Removing and installing the card cage 382](#)
- [Transferring the database from 4.0 MB to IODU/C 393](#)
- [Installing Release 25 software 399](#)
- [Completing the upgrade 401](#)

## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*
- *Capacity Engineering (553-3001-149)*
- *Product Compatibility (553-3001-156)*
- *System Installation Procedures (553-3001-210)*

This section describes upgrading a Meridian 1 Option 51 to an Option 51C X11 Release 25. Upgrading requires powering down the Option 51, removing the NT6D39 CPU/Network card cage, installing the NT5D21 Core/Network card cage, and upgrading the customer database.

**CAUTION**

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. Read this procedure thoroughly before you begin the upgrade.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Verify that all equipment needed for the upgrade has been identified and is available.
- Check for minimum vintage requirements on all circuit cards that will be used in the upgraded system.
- Resolve any existing operational problems, error messages, or other problems.

**CAUTION**

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Power to the entire column must be shut off to perform this upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to the telephone users will be minimal.

## Equipment required

The hardware required for this upgrade is provided in the Core/Net Card Cage Upgrade Package. All existing equipment that will be retained must be compatible with X11 Release 25. You must order replacements for equipment that does not comply.

Additional equipment may also be needed to meet site requirements. Verify that all equipment needed for the upgrade has been identified.

Table 54 lists the equipment required to upgrade a Meridian 1 Option 51 system to a Meridian 1 Option 51C system.

**Table 54**  
**Hardware required to upgrade an Option 51 system to Option 51C**

Quantity	Part Number	Description
1	NT1R90AB	Trim Panel Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IOU/C)
1	NT5D2103	Core/Network Card Cage
1	NT6D65AA	Core to Network Interface card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D89CA	CP to I/O Panel RS-232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	QPC471H or QPC775E	Clock Controller card (see note 2)

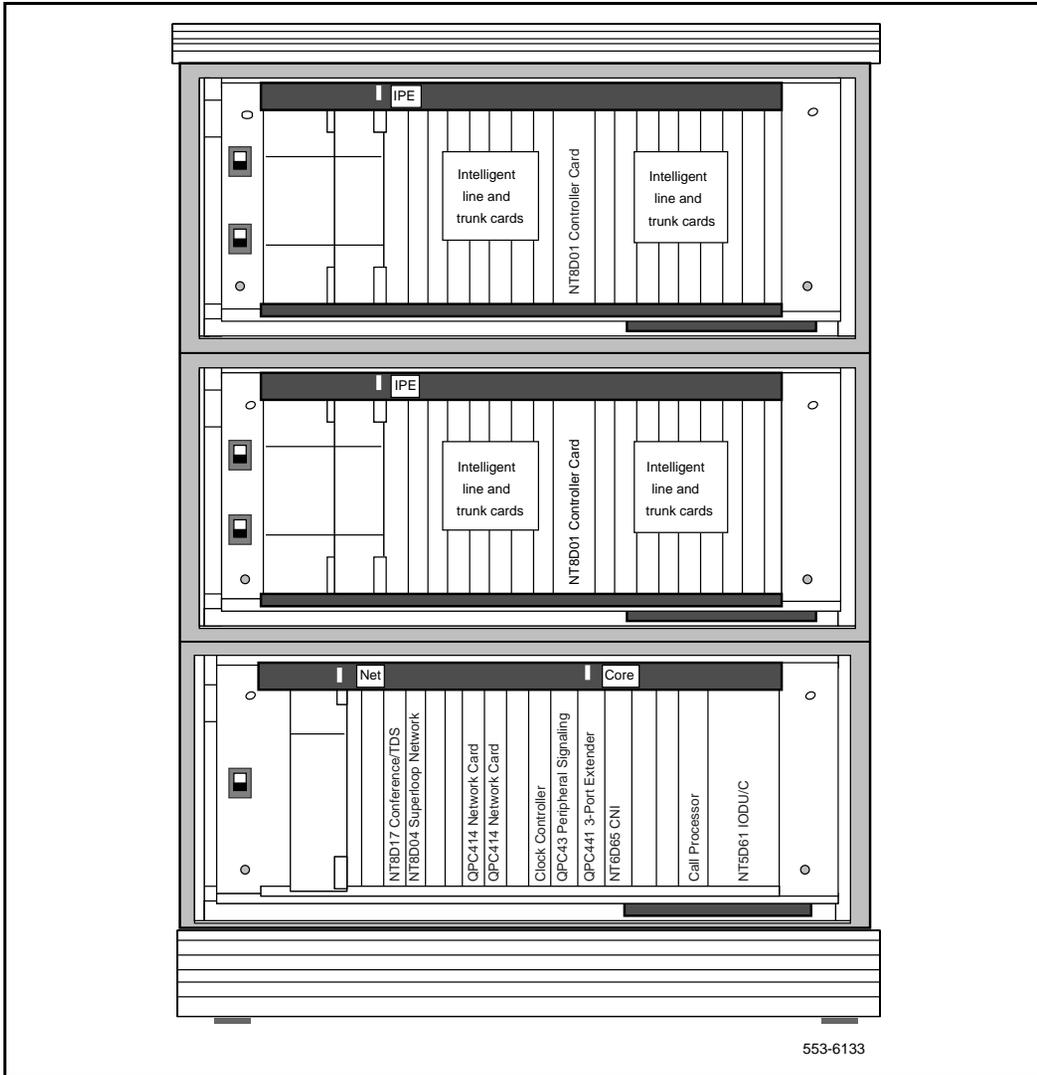
**Note 1:** One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E)CP card is required.

**Note 2:** If PRI or DTI cards are installed in the Option 51C, you must have one QPC471 Clock Controller card (vintage H) or oneQPC775 (vintage E) Clock Controller card to perform this upgrade.

Figure 57 shows Option 51C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

In addition, verify that the QPC441 3PE card installed in your current Option 51 is revision F or higher and that the QPC471 Clock Controller card is revision H or higher. Revisions earlier than these will not work in an Option 51C.

Figure 57  
Meridian 1 Option 51C



## Upgrade preparation

The following summarizes the steps you must perform before beginning the upgrade:

- 1 Check equipment required for the upgrade.
- 2 Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.
- 3 Check the tool list in “Tools” on page 21. Make sure all the tools are on hand.
- 4 Check the cards that you will be reusing to ensure that they can be used in the 51C. Refer to *Product Compatibility* (553-3001-156) for specific compatibility information.
- 5 Prepare cables for the installation. Separate the cables in the upgrade package. Label both ends of all cables.
- 6 If the QPC471 Clock Controller card in the Option 51 is not minimum vintage H, you must replace it before the upgrade. (This requirement does not apply to QPC775 Clock Controller cards.)
- 7 Convert the Option 51 customer database to Release 25 compatibility.
- 8 Follow “Procedure 1: Preconversion procedure,” *Software Conversion Procedures* (553-2001-320), and print configuration records.

Check the configuration record printouts to identify all configured I/O ports. When you switch service to the Core/Network module, one I/O address must be available for a CPSI port. Refer to “Terminal and modem connections” on page 933 for specific information regarding the terminal and modem settings.

- a If only one address is available, the CPSI port for a terminal connection is automatically assigned to it.
- b If more than one address is available, the CPSI port for a terminal connection is automatically assigned to the first available address (the lowest number). If more than one address is available, the I/O port for a modem connection is also assigned automatically.
- c If there is no address available, the device assigned to I/O address 15 is automatically replaced by the CPSI port for a terminal connection.

### Performing a data dump

Before starting the upgrade, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the Option 51.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program  
  
Always enter LD 43 from the source (current) media.
- 3 Insert the source B1 disk into the NTND16 MDU.
- 4 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 5 Exit the program. At the prompt, enter **\*\*\*\*** to exit the program

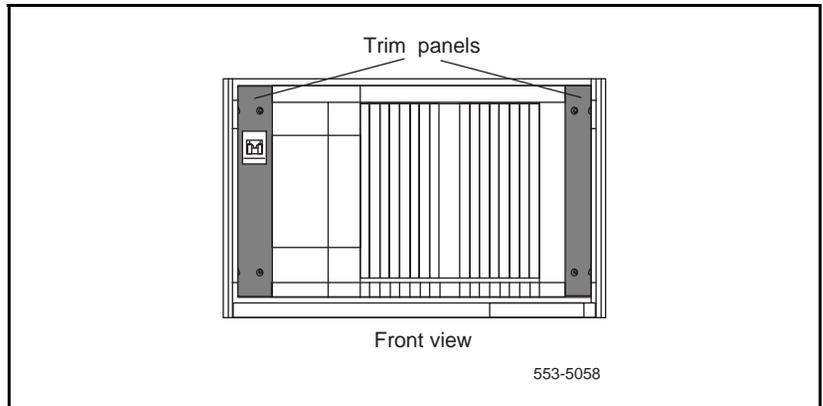
#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Removing and installing the card cage

- 1 Perform the appropriate step below to turn off power to the column:
  - a For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
  - b For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the module (see Figure 58). Keep the screws for reuse.

**Figure 58**  
**Location of the trim panels**



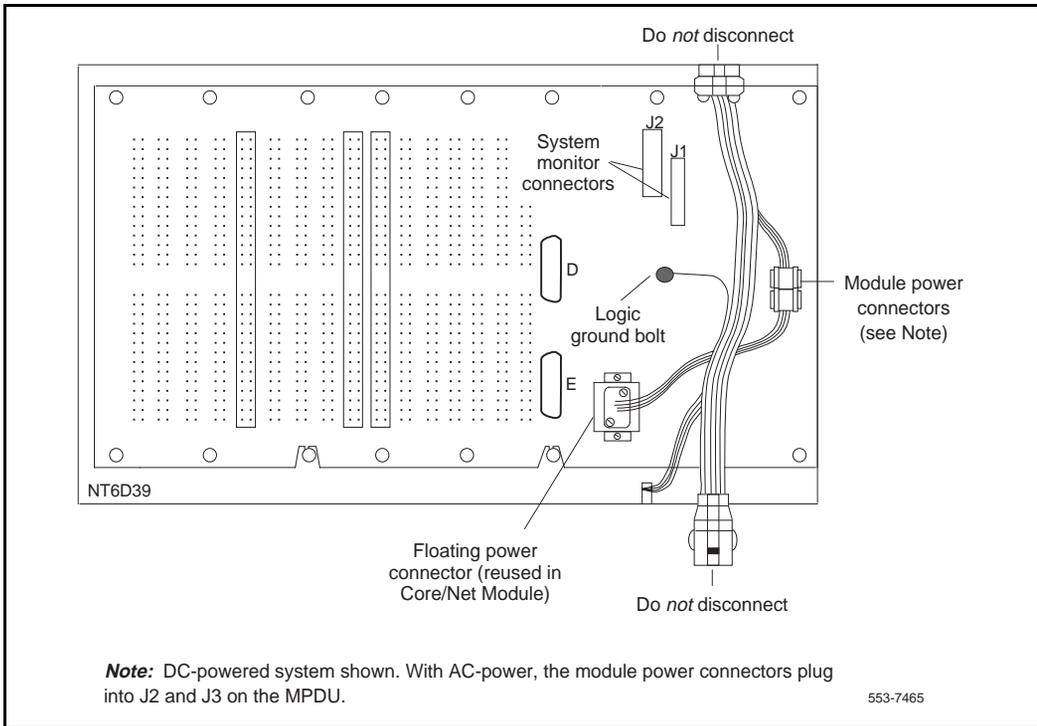
- 3 Tag and disconnect all cables connected to the front of each card in the CPU/Network module. Note the exact positions of the cables connected to cards on the network side of the card cage; they must connect to the same cards when the module is reassembled. Tape over the cable connector contacts to avoid accidental grounding. Tape or tie all cables out of the way so that the working area in front of the card cage is totally clear.
- 4 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 5 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

**WARNING**

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards back into the same slots after the screws have been removed.

- 6 Tag and disconnect all cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 7 Tag and disconnect the system monitor ribbon cables to J1 and J2 (see Figure 59).

**Figure 59**  
**Power connectors on the rear of the CPU/Network module backplane**



**Note:** DC-powered system shown. With AC-power, the module power connectors plug into J2 and J3 on the MPDU.

- 8 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**WARNING**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- Pull the card cage forward until it is halfway out of the module.

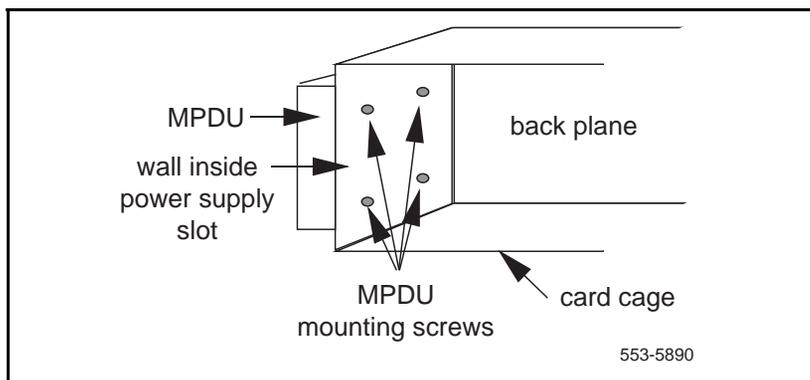
**WARNING**

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- Remove the logic ground (orange) wire from the backplane bolt. Be careful to not drop the nut or lock washer into the pedestal (see Figure 59).
- Tag and disconnect the module power connectors. These are the small orange connectors plugged into the module power distribution unit (MPDU) with AC power or connected to each other with DC power.
- Remove the card cage from the module.

**Note:** For AC-powered systems: If the new NT5D21 Core/Network module did not come with a module Power Distribution Unit (MPDU), you must remove the MPDU from the CPU/Network card cage and reinstall it on the new Core/Network card cage after the CPU/Network card cage is out of the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 60).

**Figure 60**  
**Location of the screws for the Module Power Distribution Unit (MPDU)**



- 13 Remove the existing floating power connector (the black connector) from the rear of the CPU card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Network card cage.

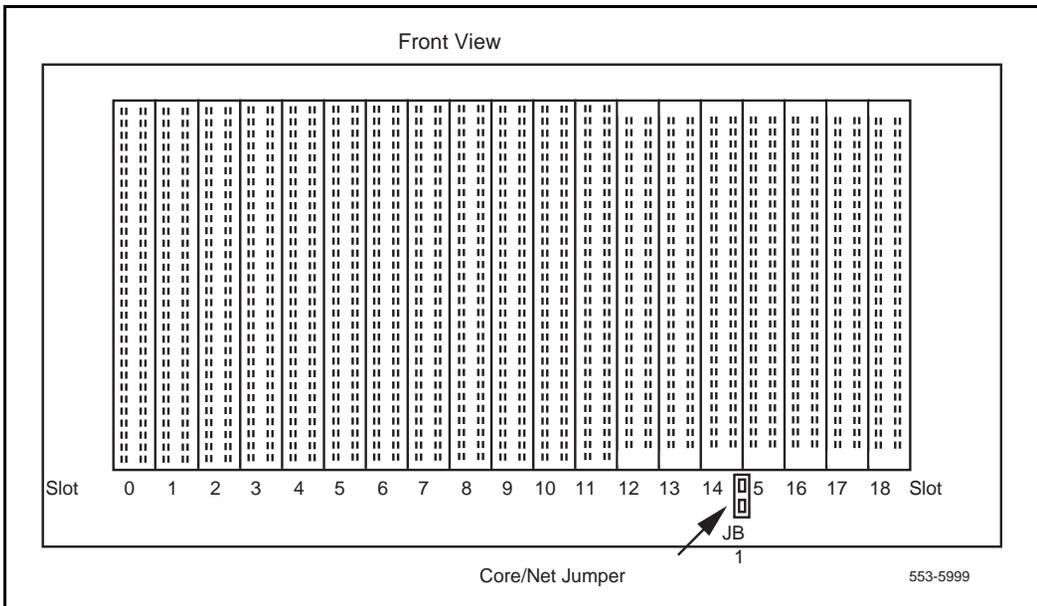
*Note:* Check the orientation of the connector. Viewed from the rear of the card cage, the upper left corner position should be empty (no wire) and the lower right corner position should have a wire installed. The green wire should be up.

- 14 Check the backplane jumper in the Core/Network card cage. The jumper is located near the bottom of the front side of the backplane, behind slot 14 (see Figure 61). Verify that the jumper is installed on the pins.

**CAUTION**

If the Core/Net module jumpers are set incorrectly, the system will not load or operate correctly.

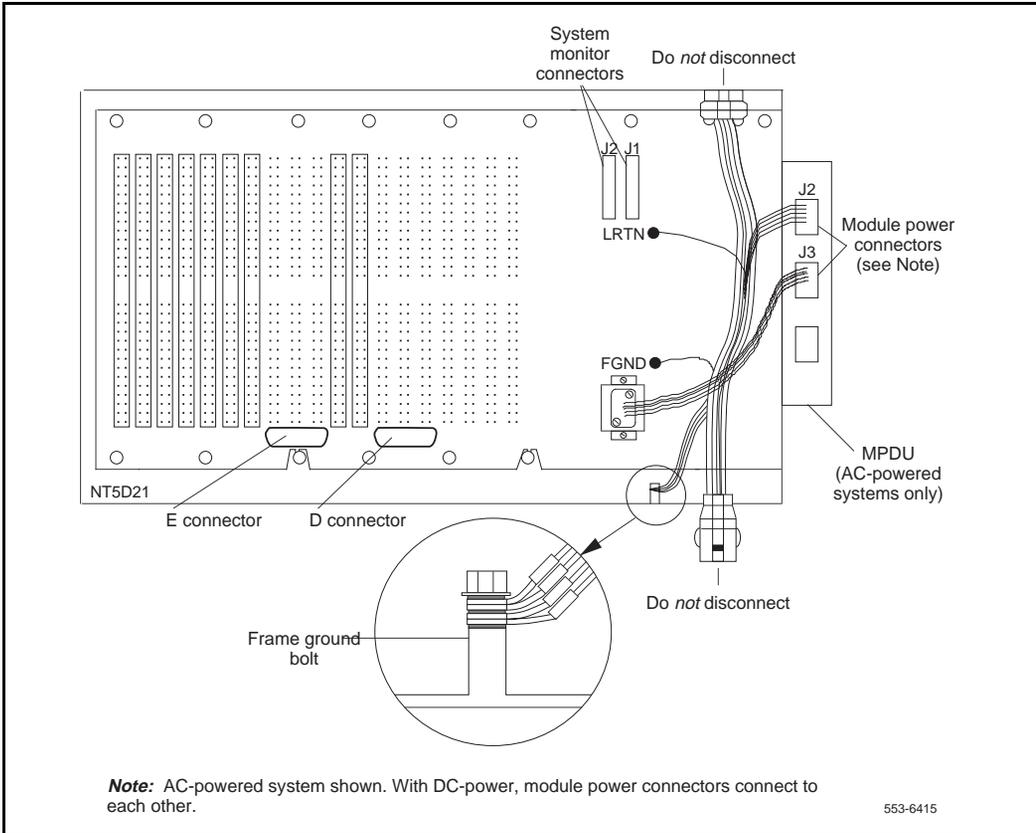
**Figure 61**  
Location of the jumper on the NT5D21 backplane



- 15 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 16 Slide the new card cage about halfway into the module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 62):
  - a Attach the new frame ground (green) wire to the frame ground post in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the post. Put the frame ground connector over the post. Reinstall the top lock washer and the nut, then tighten the nut.

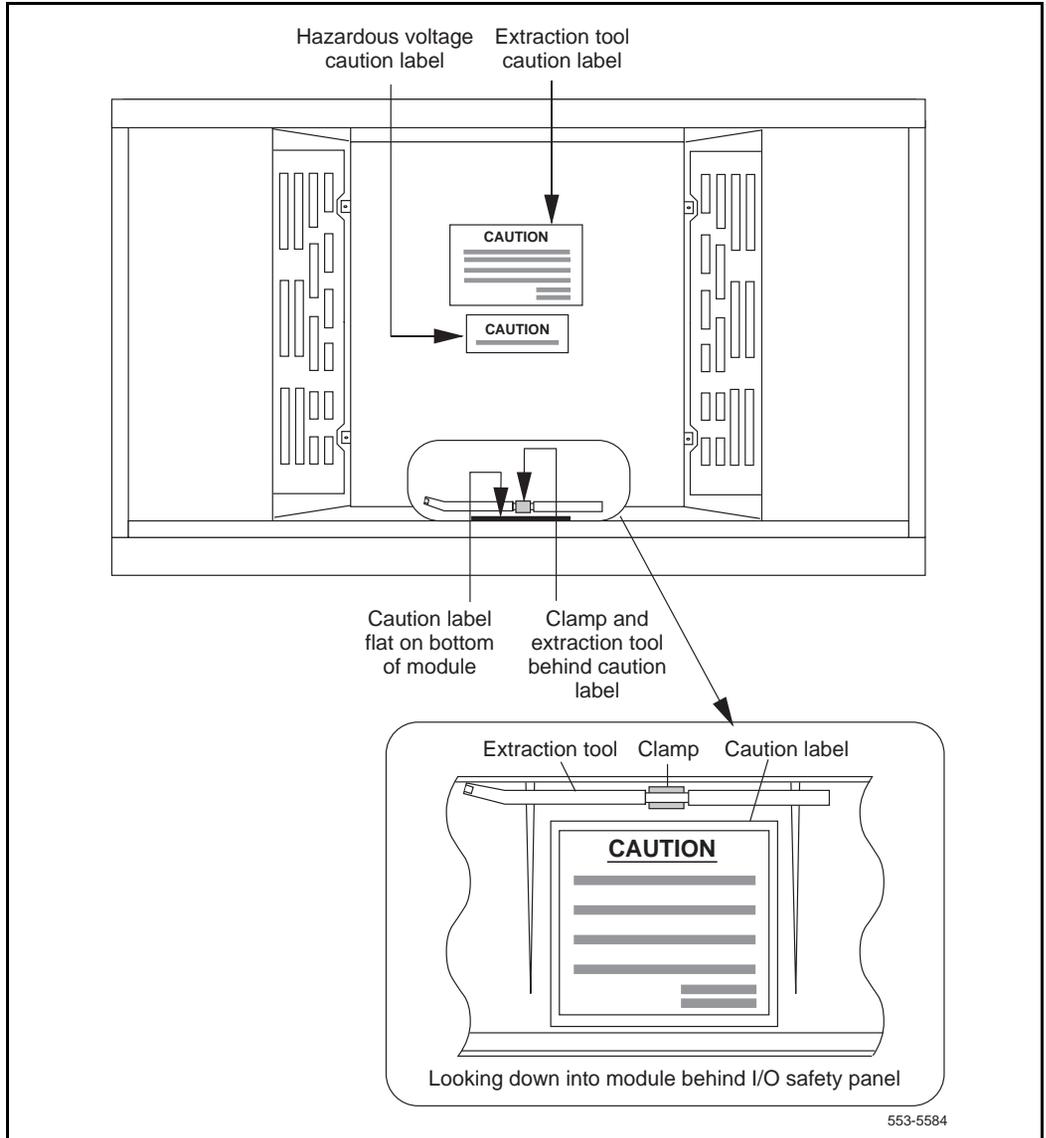
*Note:* For all of the terminal lugs to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third or the third and fourth terminal lugs.
  - b Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the connector over the post, reinstall the lock washer and nut, then tighten the nut down. (A 3/8" socket wrench is needed for this operation.)
  - c Connect the module power connectors to the MPDU for AC power or to each other for DC power.
  - d Attach the system monitor ribbon cables. Connect the cable from the pedestal to connector J1; connect the cable from the module above to connector J2.
- 17 Slide the card cage all the way into the module.
- 18 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 19 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 20 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 63).
- 21 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.

**Figure 62**  
**Power connectors on the rear of the NT5D21 Core/Network module**



- 22 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 23 Snap the P0741489 extraction tool into the clamp.
- 24 Attach the Core/Network module designation labels, provided in the upgrade package, at the front and rear of the module (see Figure 63). Attach the large label on top of the existing label. Attach the smaller label at the rear of the module.
- 25 Install the module power supply (removed from the CPU card cage) in the slot labeled “CE pwr sup.”

**Figure 63**  
**Positioning the extraction tool and caution labels**



- 26 Turn on power to the module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 27 Check the LEDs on the hybrid terminators located between slots 11 and 12 in the Core/Net module. All LEDs must be off. The LEDs are determined by the jumper setting on the backplane. If any LEDs are on, check the jumper on the backplane (see Figure 61 on page 386).
- 28 Shut down power to the module again. With AC power, set the power supply breaker for the module to OFF (down position). With DC power, set the breaker to OFF (down position) in the pedestal.
- 29 Place the NT6D65 CNI card in slot 12. Set the front panel ENB/DIS switch to ENB.
- 30 Check the vintage of the QPC441 3PE card—it must be minimum vintage F. Set the front panel ENB/DIS switch to ENB. Set the option switches and jumper on the card (see Table 55). Place the card in slot 11.

**Table 55**  
**QPC441F 3PE card—option settings**

D20 switch							
1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	on
RN27 jumper at E35: set to "A"							

- 31 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to ENB.

- 32 Set the option switches on the QPC471 Clock Controller card as shown in Table 56. Set the front panel ENB/DIS switch to ENB. Place the clock controller card in slot 9.

**Table 56**  
**QPC471 Clock Controller card switch settings**

Switch	1	2	3	4
SW1	On	On	On	On
SW2	Off	Off	Off	Off
SW4	Off	On	Off	Off

- 33 Remove the network cards from the old CPU card cage and reinstall them into exactly the same position on the new Core/Network card cage.

**WARNING**

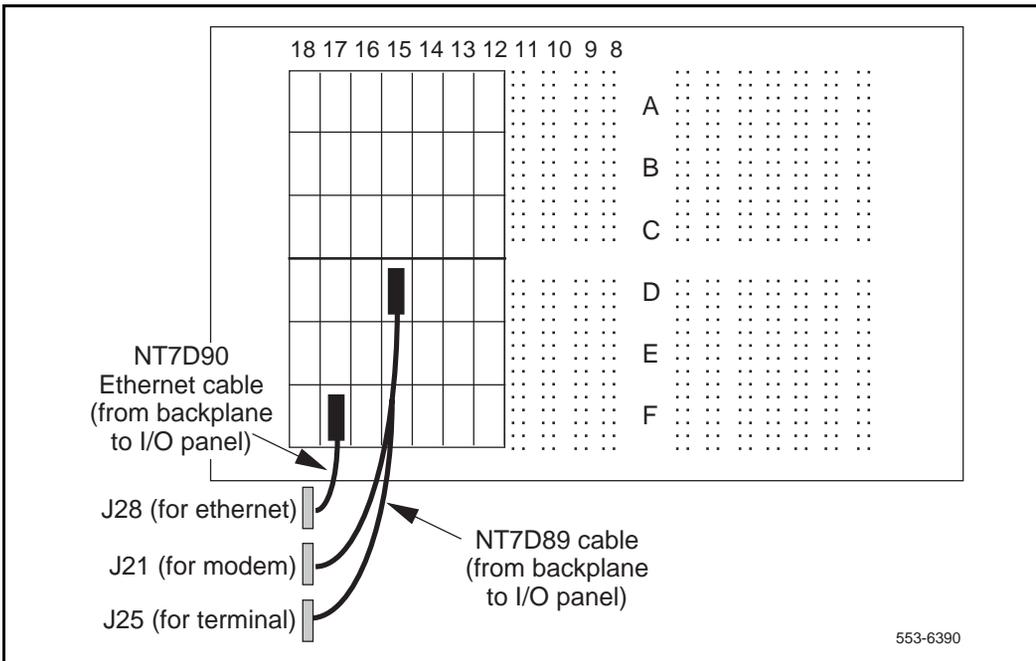
The slot-numbering system is different for the NT6D39 CPU/Network module and the NT5D21 Core/Network module. A network card removed from CPU/Network module slot 3 is placed into Core/Network module slot 2. While the slot numbers have changed, the relative positions of the cards have not.

- 34** Follow the steps below to install the NT7D89 RS-232 cable that connects the CPSI ports on the CP card to the left I/O panel. The Y-cable connects one backplane connector to two connectors on the I/O panel (see Figure 64).

**Note:** The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.

- a** On the inside of the I/O panel, connect port A (for connecting a modem) to J21.
- b** On the inside of the I/O panel, connect port B (for connecting a terminal) to J25.
- c** Connect the single connector end of the cable to backplane location 15D.

**Figure 64**  
**NT5D21 Core/Network module (rear)—RS-232 cable connections for CPSI ports**



- 35** At the rear of the Core/Net module, connect the NT7D90 Ethernet Cable from backplane location 17F to J28 on the I/O panel.

*Note:* Route these cables as perpendicular as possible to nearby power cables.

- 36** Connect any remaining network and serial cables to the network cards installed in slots 0 through 7. The cables should go to exactly the same connector that they were connected to on the old CPU module.

*Note:* You may have cables left over after completing this step. You should leave these cables installed until the new Option 51C switch has been tested and is working correctly. They will be removed later in this procedure.

- 37** Connect a terminal to the J25 (DCE) port on the I/O panel. You must use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

*Note:* Refer to “Terminal and modem connections” on page 933 before connecting the terminal.

## Transferring the database from 4.0 MB to IODU/C

In this procedure you will transfer the Option 51 4.0 MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

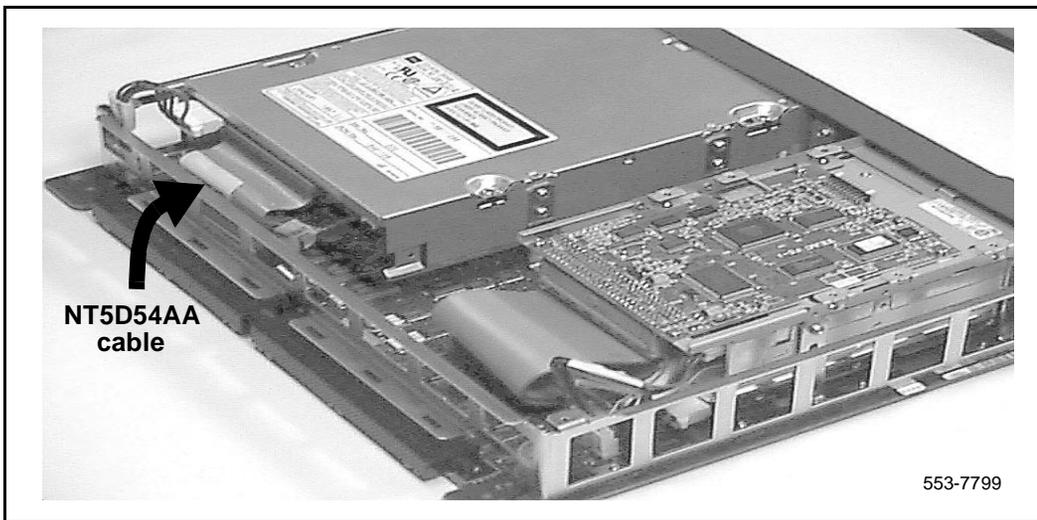
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2" diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

### IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 65, on page 394). **Do not** disconnect the cable from the IODU/C circuit board.

**Figure 65**  
Location of NT5D54 cable on IODU/C card



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).

- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

### **MDU cabling**

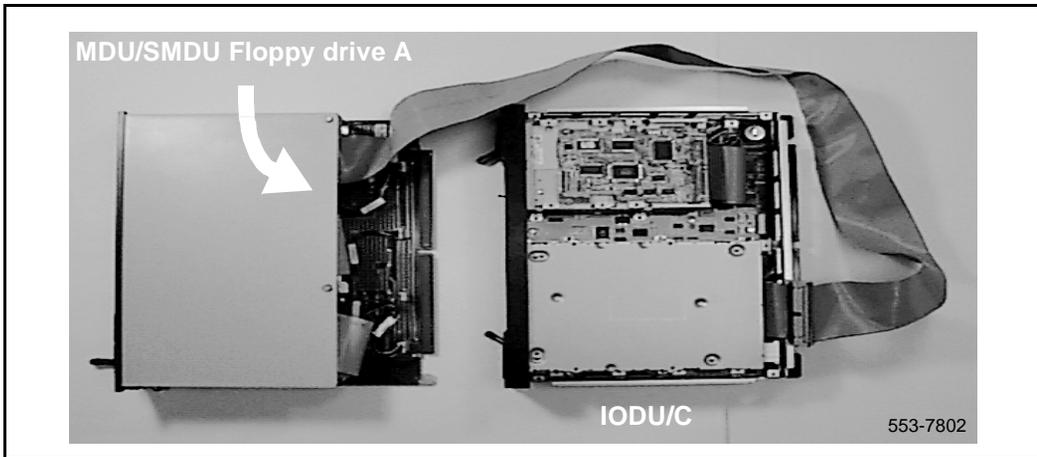
- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

#### **CAUTION**

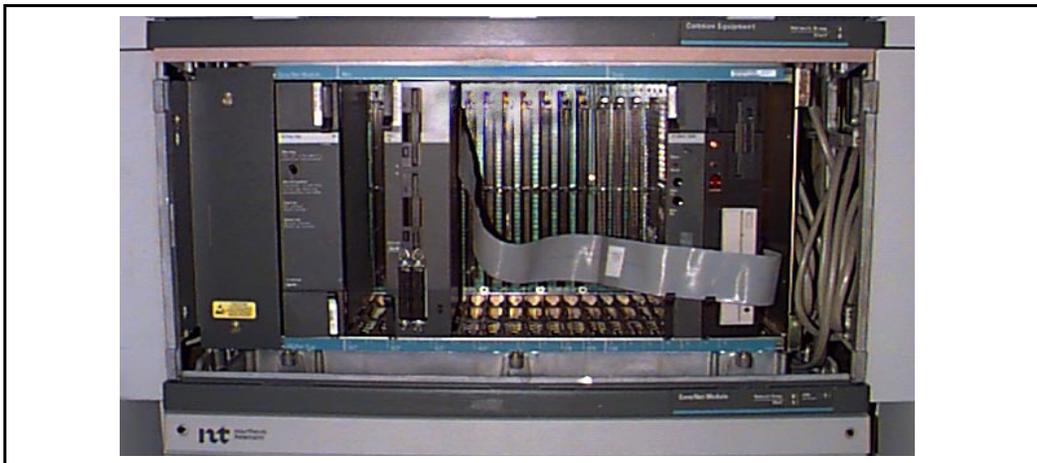
The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 66, on page 396). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 67, on page 396). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).

**Figure 66**  
Cabling the MDU to the IODU/C card



**Figure 67**  
IODU/C and MDU cabled in Core/Net 1



- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

- 8** Apply power to the module.

The system will load software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.

- 9** Enter the time and date, when prompted.

- 10** Initiate the database installation by selecting the following command from the menu:

**<u>** to Install menu

- 11** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

**<a>** to continue with keycode validation

**<y>** to confirm that the keycode matches the CD-ROM release

- 12** When the Install Menu appears, select the following options in sequence:

**<d>** to install customer database only

**<f>** to transfer the customer database from the MDU

**<a>** to continue the database transfer

**<a>** to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)

**<cr>** to continue  
the Installation Status Summary menu appears to confirm database transfer

**<y>** to start installation

**<a>** Yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".

**<cr>** Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

**<cr>** Press return to return to the Install Menu.

Remove any diskettes from the floppy drive.

- <q>    When the Install Menu appears, select <q> to quit.  
Remove any
- <y>    to confirm quit
- <a>    to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

### 13 Shut down power to the Core/Net module.

*Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage.* This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software.

## Installing Release 25 software

Before you begin:

- all cards must be installed in the Core/Net module
- the Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on

**1** Install the CD-ROM into the CD drive:

- a** press the button on the CD-ROM drive to open the CD-ROM disk holder
- b** place the CD-ROM disk into the holder with the disk label showing
- c** use the four tabs to secure the CD-ROM in the disk holder
- d** press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

**2** Enter the date and time when prompted.

**3** When the Main Menu appears, select the following options in sequence:

**<u>** to Install menu

**4** Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

**<a>** to continue with keycode validation

**<y>** to confirm that the keycode matches the CD-ROM release

**5** When the Install Menu appears, select the following options in sequence:

**<a>** to install software, CP-BOOTROM, and IOP-ROM

**<a>** to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

**<y>** to start installation

**<a>** to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a>    to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR>    to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a>    to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y>    to start installation

<a>    to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR>    to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q>    to quit

<y>    to confirm quit

Remove the diskette from the floppy drive.

<a>    to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

- 6    When the sysload is complete, log into the system.
- 7    Confirm that the X11 Release 25 software is installed and is functional:
  - LD 135**            to load the program
  - STAT CPU**        to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in the Core/Net module.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:  
**LD 43** to load the program
- 9 When “EDD000” appears on the terminal, enter:  
**EDD** to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:  
**LD 2** to load the overlay  
**STAD** DD MM YY HR MN SC

## Completing the upgrade

- 1 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 1000 and 500, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.
- 2 Load overlay 22 and print the Configuration Record to verify the above changes:  
**LD 22** to load the program  
**REQ PRT** to set the print option  
**TYPE CFN** to print the configuration

After verifying the changes, enter  
**\*\*\*\*** to exit the program

- 3** Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 4** Verify that the ENB/DIS switch is set to ENB on all of the cards in the network area of the Core/Network module.
- 5** Press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)
- 6** Check for dial tone. If there is no dial tone, do the following:
  - a** Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
  - b** Verify that all cables are properly and securely connected in the front and rear of the module.
  - c** Check the status of the CNI card with LD 135 “STAT CNI” and ensure that it is software enabled.
  - d** If the CNI card is software disabled, test the card with LD 135 “TEST CNI c s.”

- 
- e If the test is successful, enable the card in LD 135, perform a data dump with LD 43, and recheck the CNI status in LD 135.
  - f Check for dial tone again.
  - g If dial tone is still not present, press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)
- 7 Following a successful dial tone test, perform the following basic sanity tests:
- a Make sure calls can be placed internally and externally.
  - b Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.
- 8 Clear displays, major alarms, and minor alarms:
- |                 |                           |
|-----------------|---------------------------|
| <b>LD 135</b>   | to load the program       |
| <b>CDSP</b>     | to clear the display      |
| <b>CMAJ</b>     | to clear all major alarms |
| <b>CMIN ALL</b> | to clear all minor alarms |
| <b>CDSP</b>     | to clear the display      |
| <b>****</b>     | to exit LD 135            |
- 9 Load overlay 60 and software enable clock controller cards and any PRI/DTI cards in the Core/Network module:
- |                  |  |
|------------------|--|
| <b>LD 60</b>     | to load the program  |
| <b>ENL CC x</b>  | to enable clock controller card 0 or 1                           |
| <b>TRCK aaa</b>  | if necessary, to set tracking                                    |
| <b>ENLL loop</b> | to enable the specified network loop and associated PRI/DTI card |
| <b>****</b>      | to exit the program  |
- 10 Install the appropriate trim panels from the upgrade package to the Core/Network module.
- 11 Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).



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# Option 51 upgrade to Option 61C

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## Content list

The following are the topics in this section:

- [Reference list 405](#)
- [Equipment required 406](#)
- [Upgrade preparation 407](#)
- [Converting the hardware 414](#)
- [Installing external cables 415](#)
- [Transferring the database from 4.0 MB to IODU/C 416](#)
- [Installing Release 25 software in Core/Net 1 421](#)
- [Copying the software and database to Core/Net 0 424](#)
- [Returning the system to redundant mode 426](#)
- [Moving the network cards 428](#)
- [Completing the upgrade 429](#)

## Reference list

The following are the references in this section:

- *Software Conversion Procedures (553-2001-320)*
- *Power Engineering (553-3001-152)*
- *Product Compatibility (553-3001-156)*
- *System Installation Procedures (553-3001-210)*

- *Circuit Card: Installation and Testing* (553-3001-211)
- *X11 Administration* (553-3001-311)

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an Option 51 to a Meridian 1 Option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 Option 61C next to the Option 51
- removing network equipment from the Option 51
- connecting the Option 51 to the Option 61C

Upgrading the software consists of one of the following:

- convert the customer database to X11 Release 25 on-site
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 61C after the upgrade is complete

## Equipment required

Tables 57 and 58 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade. Whenever a new column is installed, you must also provide NT8D49AA Column Spacer Kits and P0699724 Modular Side Covers.

Letters at the end of the part number may represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect the network cards in the new Core/Net module to the IPE Controller card in the IPE shelf of the Option 51. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

## Upgrade preparation

Some preparation is required before the conversion of the Option 51 hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 61C.
- Install the Option 61C hardware.
- Back up the customer database to disk by doing a data dump.
- Convert the customer database to Release 25 compatibility.

## Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Power Engineering* (553-3001-152) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

**Table 57**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT6D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)

**Table 57**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
1	NT8D75BD	Clock Controller to Clock Controller Cable
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 4)
2	QPC775	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary, and order separately.</p> <p><b>Note 4:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

**Table 58**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT6D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)

**Table 58**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D52DD	Pedestal Blower Unit, DC
1	NT8D75BD	Clock Controller to Clock Controller Cable
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 4)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 3:</b> Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary, and order separately.</p> <p><b>Note 4:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

### **Installing Option 61C hardware**

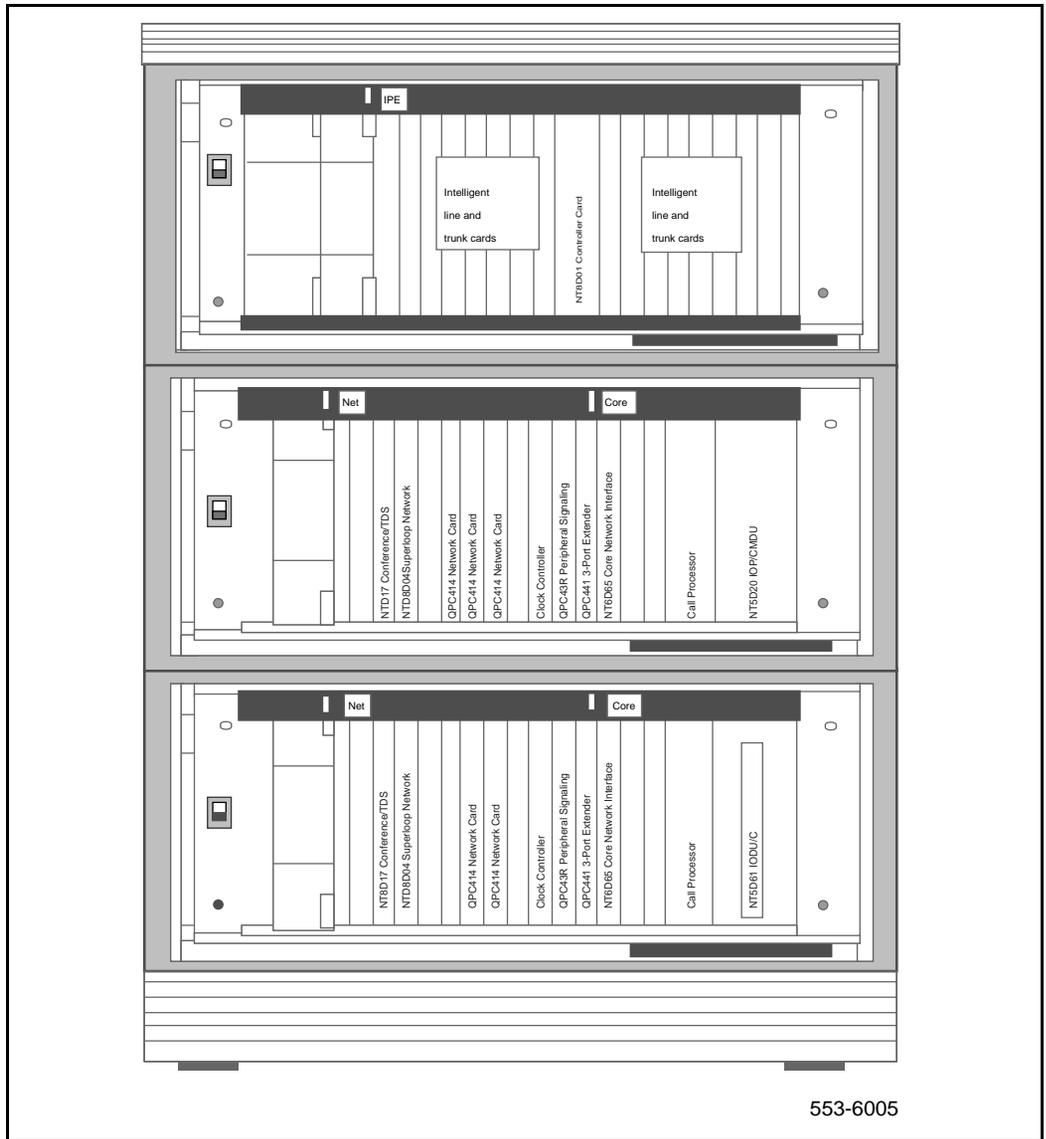
The Option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 68 shows the Option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the Option 61C at your site, first follow the procedures in *System Installation Procedures* (553-3001-210) and then continue with the procedures in this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 415).

**Figure 68**  
**Meridian 1 Option 61C**



### Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks.

- 1 On the Option 51, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

#### CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Converting the hardware

#### CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set ENB/DIS switches on all CE cards to DIS.
- 2 Set all shelf circuit breakers to OFF.
- 3 Disconnect all network loop cables connected to the NT8D04 Network cards and cables connected to the SDI cards.

- 4 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 5 Remove remaining cards from the CE shelf and store them in a safe place.

## Installing external cables

After the Option 61C columns are installed and the Option 51 column has been prepared, you must connect them with external cables.

**Note:** Installing external cables between the Option 51 and Option 61C columns is required only if the two columns are not positioned side-by-side. If these columns are adjacent to each other, you must install column spacer kits and route cables between the columns as outlined in *System Installation Procedures* (553-3001-210).

- 1 Install network cables between the Option 51 column and the Option 61C column. These cables connect network cards in the Core/Network module to the IPE Controller card in the IPE shelf of the Option 51.

Each network loop connection requires three cables:

- a Connect the NT8D88 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
  - b Connect the NT8D98 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.
  - c Connect the NT8D92 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module.
- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 805.
  - 3 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface.
  - 4 Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the Option 51 CPU/Network shelf.

- 5    Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the Option 51 CPU/Network shelf. For installation procedures, refer to *Circuit Card: Installation and Testing* (553-3001-211).
- 6    Verify that PRI/DTI cards in the Option 51 CPU/Network shelf are connected to the MDF or network interface.
- 7    Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to *System Installation Procedures* (553-3001-210) for IPE module I/O panel external cable installation procedures.

**Note:** Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

## Transferring the database from 4.0 MB to IODU/C

In this procedure you will transfer the Option 51 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

**Note:** The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1    **Verify that Core/Net 1 is powered down.**
- 2    Remove the IODU/C card from Core/Net 1.
- 3    Locate the IODU/C card and round 1/2” diameter IODU/C security device.

- 4 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.

### **IODU/C cabling**

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of Core/Net 1.

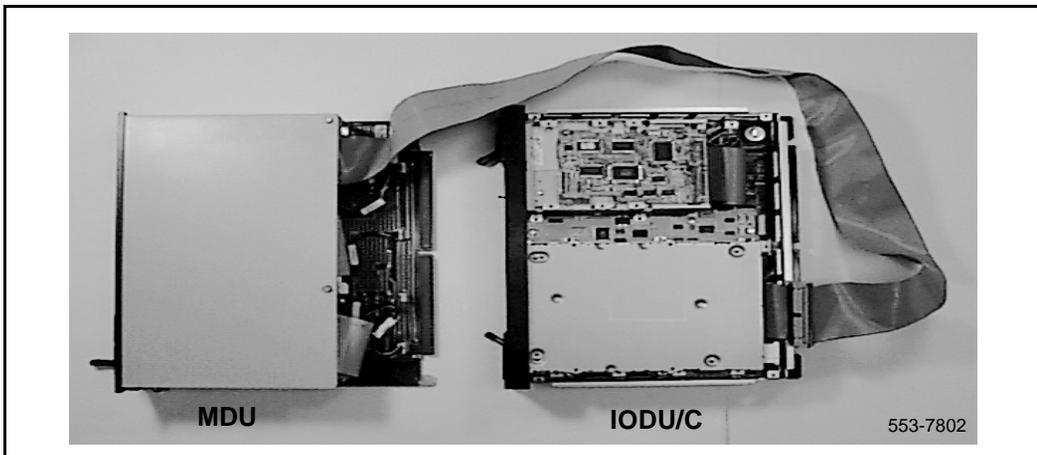
### **MDU cabling**

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:  
**LD 37**           to load the program  
**DIS MSI 0**       to disable the card
  - b Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
  - c Remove the floppy diskettes from the disk drives.
  - d Label and disconnect cables from the faceplate of the MDU or SMDU.
  - e Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

**Note:** When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 69, on page 418). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 69**  
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.

- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <f> to transfer the customer database from the MDU
  - <a> to continue the database transfer
  - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y> to start installation

- <a>    yes, transfer the database  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
  - <CR>    Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
  - <CR>    Press return to return to the Install Menu.
- Remove any diskettes from the floppy drive.
- <q>    When the Install Menu appears, select <q> to quit.
  - <y>    to confirm quit
  - <a>    to reboot the system
- The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

**16 Shut down power to Core/Net 1 module.**

*Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage.* This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21** Reinstall the MDU/SMDU into CPU 0:
  - a**    Connect the cable(s) to the faceplate of the MDU.
  - b**    Install the floppy diskette in the MDU

- c Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
  - d Software enable the MSI, EMSI, or FDI card:
    - LD 37** to load the program
    - ENB MSI 0** to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## Installing Release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
  - the CP Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
  - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 Enter the date and time when prompted.

- 3    When the Main Menu appears, select the following options in sequence:
  - <u>    to Install menu
  
- 4    Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a>    to continue with keycode validation
  - <y>    to confirm that the keycode matches the CD-ROM release
  
- 5    When the Install Menu appears, select the following options in sequence:
  - <a>    to install software, CP-BOOTROM, and IOP-ROM
  - <a>    to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

  - <y>    to start installation
  - <a>    to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

  - <a>    to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

  - <CR>    to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

  - <a>    to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

  - <y>    to start installation
  - <a>    to continue with ROM upgrade (IOP-ROM is installed)

The Installation Statu Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

  - <CR>    to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>** to quit

**<y>** to confirm quit

Remove the diskette from the floppy drive.

**<a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

**LD 135** to load the program

**STAT CPU** to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43** to load the program

- 9 When "EDD000" appears on the terminal, enter:

**EDD** to begin the data dump

- 10 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter:

**\*\*\*\*** to exit the program

### CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

11 Set date and time:

**LD 2**            to load the overlay  
**STAD**            DD MM YY HR MN SC

## Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.

- 7 data bits
- 1 stop bit
- Space parity
- Full duplex
- XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:  
**<cr> <u>**            to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
**<a>**                    continue with keycode validation  
**<y>**                    to confirm that keycode matches CD-ROM release

- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

**<o>** to copy system software from the other Core  
**<a>** to continue  
**<a>** to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

**<CR>** press **<CR>** when you are ready to continue  
**<y>** to start installation  
**<a>** to continue with ROM upgrade  
**<y>** to start installing CP-BOOT ROM  
**<a>** to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

**<CR>** to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

**<f>** to install IOP-ROM only

When the Installation Status Summary screen appears:

**<y>** to start installation  
**<y>** to continue installing IOP-ROM  
**<a>** to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

**<CR>** to return to the Install Menu

When the Install Menu appears, install the database:

**<d>** to install database only

When the Installation Status Summary screen appears:

**<y>** to start installation  
**<a>** to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

**<CR>** to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

- <q>                to quit
- <y>                to confirm quit
- <a>                to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

## Returning the system to redundant mode

- 1    In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2    In Core/Net 0, press and release the MAN RST button.
- 3    When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 4    In 60 seconds, the LCD will display and confirm the process:

### **RUNNING ROM OS ENTERING CP VOTE**

An "HW5134" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5    In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 6    Perform a redundancy sanity test:

- LD 135**            to load the program
- STAT CNI**        to get the statu of the CNI card
- STAT CPU**        to get the status of both Cores
- TEST CPU**        to test the inactive CP card and CP-to-CP cable
- TEST CNI c s**    to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Switch Cores and test the other CPU:
- SCPU** to switch to Core 0
  - TEST CPU** to test the inactive CP card and CP-to-CP cable
- 8 Get the status of the CP cards and memories and of the CNIs:
- STAT CPU** to get the status of both Cores
  - STAT CNI** to get the status of all configured CNIs
  - SCPU** to swap to Core/Net 1 active
  - \*\*\*\*** to exit LD 135
- 9 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:
- LD 137** to load the program
  - STAT** to get the status of IODU/Cs, and redundancy
  - SYNC** synchronize the hard disk drives
  - TEST CMDU** Performs hard and floppy disk test.
- Note:* Synchronization may take up to 50 minutes.
- 10 Get the status of the IODU/Cs and be sure IODU/C is active. Switch IODU/Cs if necessary:
- STAT** to get the status of IODU/Cs and redundancy
  - SWAP** to switch IODU/Cs (if necessary)
  - \*\*\*\*** to exit the program
- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 12 Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump.
- Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- LD 43** to load the program

- 13 When “EDD000” appears on the terminal, enter  
**EDD**                    to begin the data dump
  
- 14 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\***                    to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Moving the network cards

- 1 Perform the appropriate step to turn off power in each Core/Network module:
  - a For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
  - b For DC-powered systems, set the switch on the circuit breaker (located at the rear of the pedestal) to OFF (down position).
- 2 Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3 On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.
- 5 Switch the cables at the PE end:
  - a If NT8D92 cables inside the IPE modules are not connected, connect them to the faceplates of the appropriate NT8D01 Controller cards.

- 6 Turn on power to the cabinet:
  - a Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
  - b Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the Option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).
- 8 Follow the appropriate step below to restore power in each Core/Network module.

*Note:* If power to both Core/Network modules is restored simultaneously, the CMDUs should still be synchronized.

  - a For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
  - b For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).

## Completing the upgrade

- 1 Reenter system configuration data into the customer database, if required, in the following sequence:
  - a To improve system performance, balance the network loops between both Core/Network shelves. To do this, do the following:
    - Define the target loop using the Configuration Program (LD 17).
    - Move the loops using the Move Data Blocks Program (LD 25).Refer to *X11 Administration* (553-3001-311) for instructions on using LD 17 and LD 25.

*Note:* You may have to add one or more network loops in the database for network shelf 1 (loops 16 through 31) to make the network shelf operational.
  - b Move the network cards from the Option 51 to the network card slots previously defined.

- c    Configure I/O devices to reflect the current configuration.
  - d    Reenter customer data blocks. System options and features must reflect the current configuration.
  - e    Configure station data blocks.
  - f    Configure route data blocks.
  - g    Configure trunk data blocks.
  - h    Configure remaining system configuration records.
  - i    Verify system operation before adding new equipment.
  - j    Configure new equipment and functions, if any.
- 2    Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *X11 Administration* (553-3001-311). Clear any faults discovered during testing.
  - 3    Perform the postconversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Option 61C X11 Release 25 system is now operational.

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# Option 51C upgrade to Option 61

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## Content list

The following are the topics in this section:

- [Reference list 431](#)
- [Equipment required 432](#)
- [Upgrade preparation 438](#)
- [Converting the database to Release 25 441](#)
- [Installing intermodule cables 444](#)
- [Upgrading the software in Core/Net 0 446](#)
- [Completing the upgrade 448](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *System Engineering* (553-3001-151)
- *System Installation Procedures* (553-3001-210)

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an Option 51C system to an Option 61C system, you must upgrade both the hardware and the software. Upgrading the hardware consists of:

- installing a Core/Network module next to the existing Option 51C column
- installing an IPE module on top of the existing Option 51C column
- installing new cables

Upgrading the software consists of one of the following:

- convert the customer database to X11 Release 25 on-site
- send the customer database disks to Nortel Networks for conversion
- reenter the customer database on the Option 61C after the upgrade is complete

## Equipment required

Tables 59 and 60 list the minimum items required to upgrade an AC-powered or DC-powered system to an Option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade. Whenever a new column is installed, you must also provide NT8D49AA Column Spacer Kits and P0699724 Modular Side Covers.

Letters at the end of the part number may represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment to network cards in the new network modules. The number of cables required depends on the number of network cards installed. These cables are:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

An NT8D01 Controller Card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one Ringing Generator must be installed.

**Table 59**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61	Input-Output Disk Unit w/ CDROM (IODU/C)
1	NT5D21AA	Core/Network module, AC
1	NT6D65AA	Core to Network Interface Card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply, AC

**Table 59**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 3)**

<b>Qty</b>	<b>Part number</b>	<b>Description</b>
1	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 3)
1	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
2	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

**Table 59**  
**Hardware requirements for an AC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AD	CPU to Network Cable (6 ft.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
2	NTND21AA	Module Side Cover (see note 4)
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC84S	Power Monitor
1	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H or	Clock Controller cards (see note 5)
2	QPC775E	
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> Two NT9D19AA/AB (48 MB), NT9D19CA/CB (64 MB), NT9D19DA/DB (96 MB), NT9D19EA/EB (112 MB); or NT5D10AA (48 MB), NT5D10CA (64 MB), NT5D10DA (96 MB), NT5D10EA (112 MB); or two NT5D03AA (48 MB), NT5D03CA (64 MB), NT9D03DA (96 MB); NT5D03EA (112 MB), NT5D03FA (128 MB) CP cards are required.</p> <p><b>Note 3:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 4:</b> Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately.</p> <p><b>Note 5:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

**Table 60**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61	Input-Output Disk Unit w/ CDROM (IODU/C)
1	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
1	NT6D65AA	Core to Network Interface Card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D17FA	Conference/TDS Card

**Table 60**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 3)
1	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
2	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AD	CPU to Network Cable (6 ft.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
2	NTND21AA	Module Side Cover (see note 4)
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC84S	Power Monitor
1	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H	Clock Controller cards (see note 5)
2	QPC775E	

**Table 60**  
**Hardware requirements for a DC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p> <p><b>Note 2:</b> Two NT9D19AA/AB (48 MB), NT9D19CA/CB (64 MB), NT9D19DA/DB (96 MB), NT9D19EA/EB (112 MB); or NT5D10AA (48 MB), NT5D10CA (64 MB), NT5D10DA (96 MB), NT5D10EA (112 MB); or two NT5D03AA (48 MB), NT5D03CA (64 MB), NT9D03DA (96 MB); NT5D03EA (112 MB), NT5D03FA (128 MB) CP cards are required.</p> <p><b>Note 3:</b> One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.</p> <p><b>Note 4:</b> Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately.</p> <p><b>Note 5:</b> If the Option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the Option 51C hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the Option 61C.
- Back up the customer database to disk by doing a data dump.
- Convert the customer database to Release 25 compatibility.
- Install the Option 61C hardware.

**Note:** Obtain extra-high-density floppy disks containing system software from your Nortel Networks representative.

## **Power and ground**

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *System Engineering* (553-3001-151) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

## **Transferring the customer database to 2MB diskettes**

Use this procedure to transfer the customer database to 2MB diskettes using the Transfer Utility.

**Note:** You can also transfer the customer database from a CMDU to a IODU/C using the CP Install Program method. This is possible only after Core 1 has been upgraded to Core/Net 1 with an IODU/C. This procedure is described in “Database transfer” on page 743 of this document.

To be compatible with the IODU/C, you must transfer the customer database from 4MB diskettes used in IOP/CMDUs to 2MB diskettes used in IODU/Cs.

- 1** The Cores are split and Core 0 is processing calls.
- 2** Install the Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3** Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

### **CAUTION**

**When using the Database Transfer Utility, only select options <t> Tools Menu and <s> To archive existing database. Selecting any other options can result in operating system corruption.**

- 4 From the installation menu select:
  - <t> to go to the Tools menu
  - <s> to archive existing database
  - <cr> <a> to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
  - <cr> <a> diskette is now in floppy drive in side 1

The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

### Installing Option 61C hardware

Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/Cs and power supplies, are shipped in separate packages to prevent damage to the cards.

To install the Option 61C, first follow the procedures in *System Installation Procedures* (553-3001-210). This requires that you remove the new IPE module from on top of the new Core/Net module, as shipped. Remove the top cap from the existing Option 51C column, and install the new IPE module on top of this column. Install the top cap on the new module. Install the new Core/Net module and top cap to the left of the column.

When you have installed the new modules and cables, return to this procedure and continue with “Performing a data dump” on page 441.

**Note:** When installing the new Core/Net module, verify the backplane jumpers in both Core/Net card cages to identify Core/Net 0 and Core/Net 1. The jumpers are located on the bottom, front side of the backplane near slot 14: Core/Net 0 = jumper plug installed, Core/Net 1 = jumper plug not installed.

### Performing a data dump

Before converting your customer database to Release 25, you must perform a data dump to your current disks using the Equipment Data Dump Program (LD 43).

- 1 Log into the Option 51C.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program  
  
Always enter LD 43 from the source (current) media. Do not exit LD 43.
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 Exit the program. At the prompt, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Converting the database to Release 25

Use the following procedures to install the software and convert the database to Release 25.

- 1 Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

- 2    Make sure that the Security Device is installed in the IODU/C.
- 3    Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4    Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).
- 5    Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6    Enter time and date, when prompted.
- 7    Initiate the installation by selecting the following prompt from the menu:  
          <cr > <u>            to Install menu
- 8    Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
          <a>                continue with keycode validation
- 9    Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
  - a    press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b    place the CD-ROM disk into the holder with the disk label showing
  - c    use the four tabs to secure the CD-ROM in the disk holder
  - d    press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 10    When the install screen appears, select the following options in sequence when you are prompted to do so.
  - <b>    to install software, database, CP-ROM, and IOP-ROM
  - <a>    to verify that the CD-ROM is now in drive
  - <y>    Yes, start the installation
  - <a>    continue with upgrade

- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:

- <a> to install customer database
- <a> to continue with the database install
- <a> to transfer the database from floppy to hard disk
- <y> Yes, to start installation
- <a> Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12 When the ROM installation screen appears, select the prompts in the following sequence:

- <cr> <a> to install CP-ROM from hard disk
- <cr> <a> to continue with ROM upgrade
- <a> to install the IOP-ROM from hard disk
- <y> Yes, start installation
- <a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13 From the main menu select prompts in the following sequence to quit and sysload the system:

- <q> to quit
- <y> Yes, to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- a Verify that the following message appears on the system terminal:

**DATA CONVERSION**  
**X11 RELEASE xx.xx TO Release 25.xx**

- 14 Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

<b>LD 135</b>	to load the program
<b>STAT CPU</b>	to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

## Installing intermodule cables

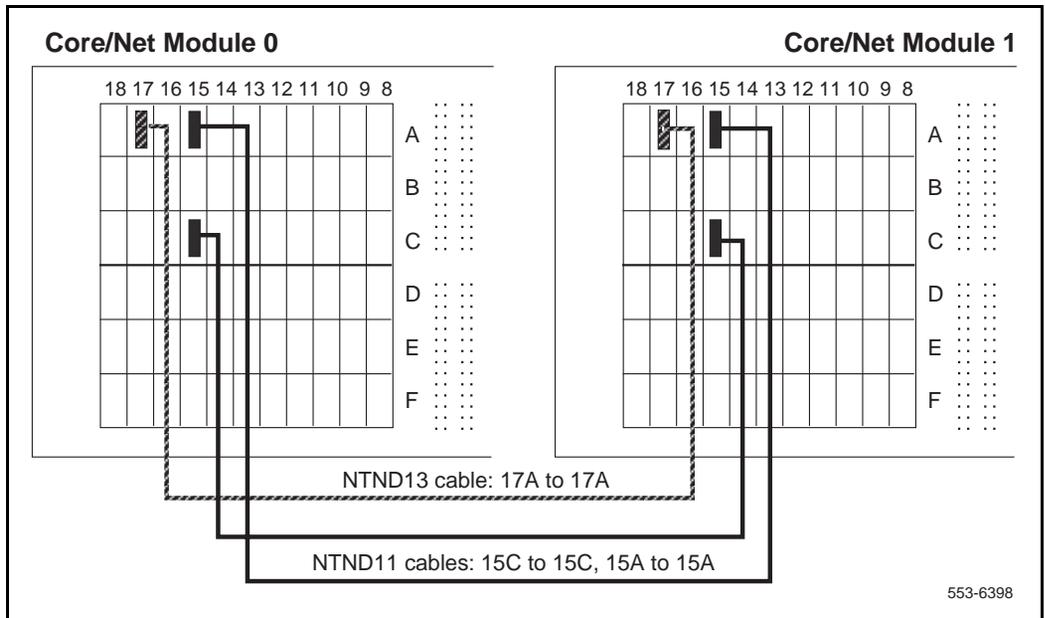
- 1 Install NT8D99AD cables between the D connectors on the backplane of each Core/Net module. Install another NT8D99AD cable between the E connectors on the backplane of each Core/Net module.
- 2 Install an NT8D80AZ cable between the J3 connector on the 3PE card in Core/Net 0 and the J3 connector on the 3PE card in Core/Net 1. Install another cable between the J4 connectors on the 3PE cards.
- 3 Set the ENB/DIS switch on the IODU/C card in Core/Net 0 to DIS.
- 4 Set the ENB/DIS switch on the CNI card in Core/Net 0 to DIS.
- 5 Set the ENB/DIS switch on the CNI card in Core/Net 1 to ENB.
- 6 Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process; INI messages will appear on the display. Make sure the faceplate LEDs on CNI, 3PE, and IGS cards go out.
- 7 Check for dial tone. If there is no dial tone (i.e., the system is inoperable) and you cannot afford downtime, switch the loops back to Core/Net 0.
  - a Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS.
  - b Set the ENB/DIS switch on each CNI card on Core/Net 0 to ENB.
  - c Press the MAN INT button in Core/Net 0.
  - d Troubleshoot Core/Net 1 offline.

If you can afford downtime, troubleshoot Core/Net 1 online:

- e Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
- f Verify that all cables are properly and securely connected in the front and rear of the module.
- g Check the status of the CNI cards with LD 135 (“STAT CNI”) and ensure all configured CNIs are software enabled.
- h If any CNI cards are disabled, enable them using LD 135; perform a data dump using LD 43; and then press the MAN INT button.
- i Check the status of the CNI cards using LD 135 (“STAT CNI”) and ensure all configured CNIs are software enabled.
- j Check for dial tone.

- 8 Cable the NTND11 IOP and NTND13 CP cables as shown in Figure 70.

**Figure 70**  
**NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables**



## Upgrading the software in Core/Net 0

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0 and synchronizes the IODU/C hard disks.

- 1    Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2    Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3    Initiate the installation by selecting the following prompt from the menu:  
          <cr> <u>>            to Install menu
- 4    Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
          <a>                    continue with keycode validation
- 5    Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6    When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:  
          <o>                    to copy system software from the other Core
- 7    When the software is installed successfully, press <CR> to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
- 8    From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:  
          <f>                    to install IOP-ROM only  
          <cr> <a>                to install the IOP-ROM from hard disk  
          <y>                    Yes, start installation  
          <cr> <a>                to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:
- <d> to go to the Database menu
  - <d> to copy the database from Core 1 to Core 0
  - <y> to confirm the installation status summary
  - <a> to confirm database copy
- 10 From the Main Menu, select the following options to quit and reload the system:
- <q> to quit
  - <y> to confirm quit
- 11 Reboot the Core/Net 0 CPU:
- <a> to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 13 In Core/Net 0, press and release the MAN RST button.
- 14 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 15 In 60 seconds, the LCD will display and confirm the process:
- RUNNING ROM OS**  
**ENTERING CP VOTE**
- An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.
- 16 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

## Completing the upgrade

- 1 Perform a redundancy sanity test:

<b>LD 135</b>	to load the program
<b>STAT CNI</b>	to get the status of all configured CNIs
<b>STAT CPU</b>	to get the status of both Cores
<b>TEST CPU</b>	to test the inactive CP card and CP-to-CP cable
<b>TEST IPB</b>	to test the backplane protocol on the inactive side
<b>TEST CNI c s</b>	to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds. Testing the CP can take up to 20 minutes.

- 2 Test the inactive Core, then switch Cores and test the other side:

<b>SCPU</b>	to switch to Core/Net 0
<b>TEST CPU</b>	to test the inactive CP card and CP-to-CP cable
<b>TEST IPB</b>	to test the backplane protocol on the inactive side

- 3 Get the status of the CP cards and memory and of the CNIs:

<b>STAT CPU</b>	to get the status of both Cores
<b>STAT CNI</b>	to get the status of all configured CNIs
<b>****</b>	to exit LD 135

- 4 Synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C respectively, verify that IODU/C is disabled:

<b>LD 137</b>	to load the program
<b>STAT</b>	to get the status of IOP/CMDUs or IODU/C and redundancy
<b>SWAP</b>	to switch IOP/CMDUs or IODU/C (if necessary)
<b>SYNC</b>	to synchronize the hard disks
<b>TEST CMDU</b>	Performs hard and floppy disk test.

*Note:* Synchronization may take up to 30 minutes.

- 5 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:
- |             |   |
|-------------|---|
| <b>STAT</b> | to get the status of IOP/CMDUs or IODU/C s and redundancy |
| <b>SWAP</b> | to switch IOP/CMDUs or IODU/Cs (if necessary)             |
| <b>****</b> | to exit LD 137  |
- 6 In the Configuration Record (LD 17), verify that LD 37, LD 135, and LD 137 are included in the midnight routines. Add them if they are not.
- 7 Insert the B1 disk into the active IODU/C for backup. Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

<b>LD 43</b>	to load the program
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When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

<b>EDD</b>	to begin the data dump
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When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, the upgrade is complete.

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Clear displays, major alarms, and minor alarms:
- |                 |                             |
|-----------------|-----------------------------|
| <b>CDSP</b>     | to clear the display        |
| <b>CMAJ</b>     | to clear all major alarms   |
| <b>CMIN ALL</b> | to clear all minor alarms   |
| <b>SCPU</b>     | to switch to the other Core |
| <b>CDSP</b>     | to clear the display        |
| <b>****</b>     | to exit LD 135              |

- 9    Software enable clock controller cards and any PRI/DTI cards in the Core/Net modules:

<b>LD 60</b>	to load the program
<b>ENL CC x</b>	to load the program
<b>TRCK aaa</b>	if necessary, to set tracking
<b>ENLL loop</b>	to enable the specified network loop and associated PRI/DTI card
<b>****</b>	to exit the program

- 10   Software enable the associated SDI port:

<b>LD 37</b>	to load the program
<b>ENL terminal x</b>	to enable the device associated with the port
<b>STAT XSM</b>	to check the status of the system monitor
<b>****</b>	to exit the program

- 11   For both Core/Net modules, install the appropriate trim panels from the upgrade package.

- 12   Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The upgrade is complete.

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# Option 61 upgrade to Option 61C

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## Content list

The following are the topics in this section:

- [Reference list 451](#)
- [Equipment required 453](#)
- [Upgrade preparation 454](#)
- [Installing the card cage 456](#)
- [Transferring the database from 4 MB to IODU/C 467](#)
- [Installing Release 25 software in Core/Net 1 471](#)
- [Installing intermodule cables 474](#)
- [Copying the software and database to Core/Net 0 477](#)
- [Returning the system to redundant mode 479](#)
- [Completing the upgrade 481](#)

## Reference list

The following are the references in this section:

- “Tools” on page 21
- *Software Conversion Procedures* (553-2001-320)
- “Terminal and modem connections” on page 933
- *Digital Clock Controllers: Installation and Administration* (553-3001-111)
- *System Installation Procedures* (553-3001-210)

This section describes upgrading a Meridian 1 Option 61 to an Option 61C. Upgrading requires powering down the Option 61, removing and replacing the NT6D39 CPU/Network card cages with the NT5D21 Core/Network card cages, and installing the Release 25 software.

**CAUTION**

**Read through the entire procedure before you begin this upgrade.**

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

**CAUTION**

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Because an Option 61 has both CPU/Network modules in the same column, power to the entire column must be shut off to accomplish the upgrade. This will cause loss of service to the whole telephone system. The upgrade must be planned for a time when the impact to the telephone users will be minimal.

## Equipment required

The hardware required for this upgrade is provided in the core card cage upgrade package. All existing equipment that will be retained must be compatible with X11 Release 25. You must order replacements for equipment that does not comply.

Additional equipment may also be needed to meet site requirements. Verify that all equipment needed for the upgrade has been identified.

Table 61 lists the equipment required to upgrade a Meridian 1 Option 61 system to a Meridian 1 Option 61C system.

**Table 61**  
**Hardware required to upgrade an Option 61 system to Option 61C**

Quantity	Part Number	Description
2	NT5D61AA	Input-Output Disk Unit w/ CDROM (IOU/C)
2	NT5D2103	Core/Network Card cages
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
2	NT6D65AA	Core to Network Interface card (CNI)
2	NTND11	CP-to-CP Cable
1	NTND13	SCSI Cable
2	NT7D89	RS-232 Cable
2	NT7D90	IOP-to-I/O Panel Ethernet Cable
2	NT8D80AZ	3PE to 3PE Cable
1	NT8D75AD	Clock to Clock Cable
2	NT8D99AB	D and E port cable
2	NT1R90AB	Trim Panel Kit
<p><b>Note 1:</b> Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required.</p>		

In addition, verify that the following cards installed in your current Option 61 system are the correct vintages (vintages earlier than these will not work in an Option 61C):

- QPC441 3PE card vintage F
- QPC471 Clock Controller card vintage H
- QPC775 Clock Controller card vintage E

## Upgrade preparation

The following summarizes the steps you must perform before beginning the upgrade:

- 1 Check equipment required for the upgrade.
- 2 Prepare cables for the installation.
- 3 Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.
- 4 Check the tool list in “Tools” on page 21. Make sure all the tools are on hand.
- 5 Check the cards that you will be reusing to ensure that they can be used in the 61C switch.
- 6 Separate the cables in the upgrade package. Label both ends of all cables.
- 7 If they are not already labeled, label both ends of the existing cables to the clock controller cards in both CPU 1 and CPU 0.
- 8 If QPC471 Clock Controller cards in the Option 61 are not minimum vintage H, you must replace them before the upgrade. (This requirement does not apply to QPC775 Clock Controller cards.)
- 9 Convert the customer database to Release 25 compatibility.

- 10** Follow “Procedure 1: Pre-conversion procedure,” *Software Conversion Procedures* (553-2001-320), and print configuration records:

Check the configuration record printouts to identify all configured I/O ports. When you transfer call processing to Core/Network modules, one I/O address should be available for a CPSI port. Refer to “Terminal and modem connections” on page 933 for specific information regarding the terminal and modem settings.

- a** If only one address is available, the CPSI port for a terminal connection is automatically assigned to it.
- b** If more than one address is available, the CPSI port for a terminal connection is automatically assigned to the first available address (the lowest number). If more than one address is available, the I/O port for a modem connection is also assigned automatically.
- c** If there is no address available, the device assigned to I/O address 15 is automatically replaced by the CPSI port for a terminal connection.

### Performing a data dump

Before converting your customer database, you must perform a data dump to your current tapes or disks.

- 1** Log into the system.
- 2** Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3** When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter **\*\*\*\*** to exit the program

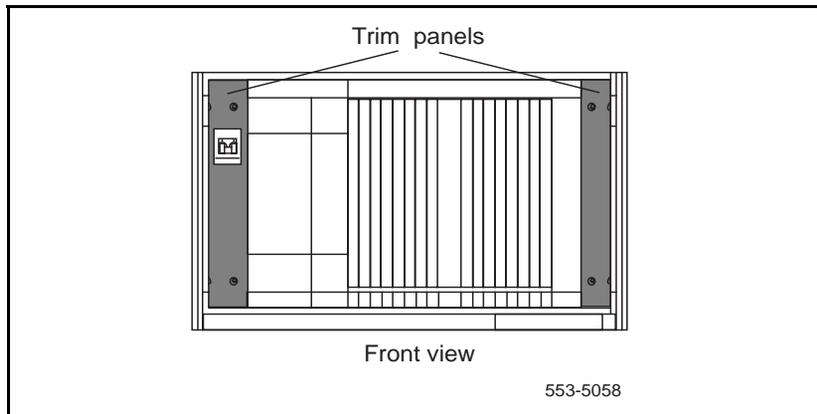
#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Installing the card cage

- 1 Perform the appropriate step below to turn off power to the column:
  - a For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
  - b For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the modules (see Figure 71). Keep the screws for reuse.

**Figure 71**  
**Location of the trim panels**



- 3 Tag and disconnect all cables connected to the front of each card in each CPU/Network module. Note the exact positions of the cables connected to cards on the network side of the card cage. They must connect to the same card when the switch is reassembled. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 4 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.

- 5 On each card cage, remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

**WARNING**

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.

- 6 Tag and disconnect cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 7 Tag and disconnect the system monitor ribbon cables to J1 and J2.
- 8 On each card cage, remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**WARNING**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

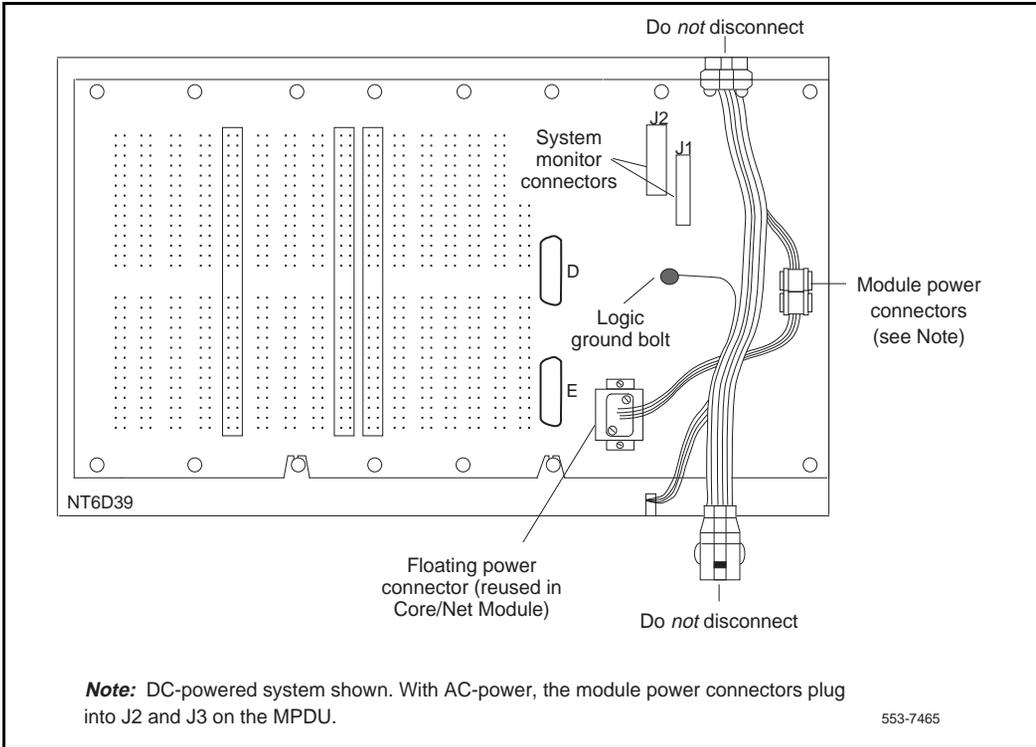
- 9 Pull each card cage forward until it is halfway out of the module.
- 10 Working from the rear of the module, tag and disconnect the two cables that connect the D and E connectors on the bottom (CPU/Network 0) module to the D and E connectors on the top (CPU/Network 1) module (see Figure 72).

**WARNING**

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 11 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.

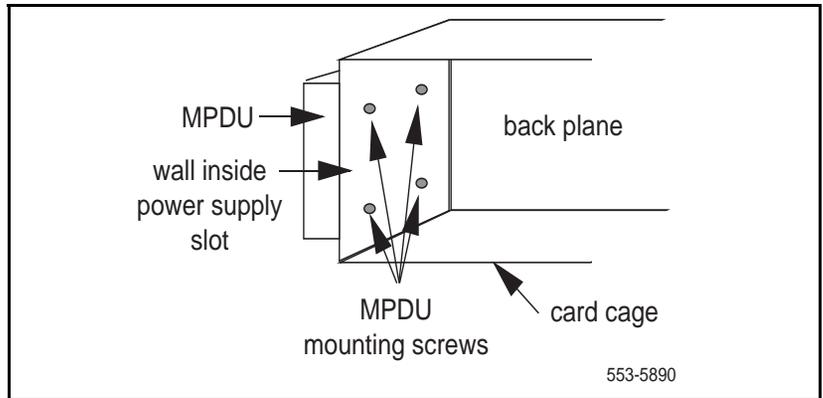
**Figure 72**  
**Power connectors on the rear of the CPU/Network module backplanes**



- 12 Tag and remove all SDI Paddle boards. They will be reused in the new Core/Net module.
- 13 Tag and disconnect the module power connectors. These are small orange connectors plugged into the module Power Distribution Unit (MPDU) with AC power or connected to each other with DC power.
- 14 Remove the CPU card cages from the modules.

**Note:** For AC-powered systems: If the new NT5D21 Core/Network modules did not come with a module Power Distribution Unit (MPDU), you must remove the MPDU from each CPU/Network card cage and reinstall it on the new Core/Network card cage after the CPU/Network card cage is out of the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 73).

**Figure 73**  
**Location of the screws for the Module Power Distribution Unit (MPDU)**



- 15** Remove the existing floating power connector (the black connector) from the rear of each CPU card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Network card cages.

*Note:* Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 16** Check the backplane jumpers in the Core/Network card cages to identify Core/Net 0 and Core/Net 1 (see Table 62 and Figure 74). The jumpers are located on the bottom, front side of the backplane near slot 14.

### **CAUTION**

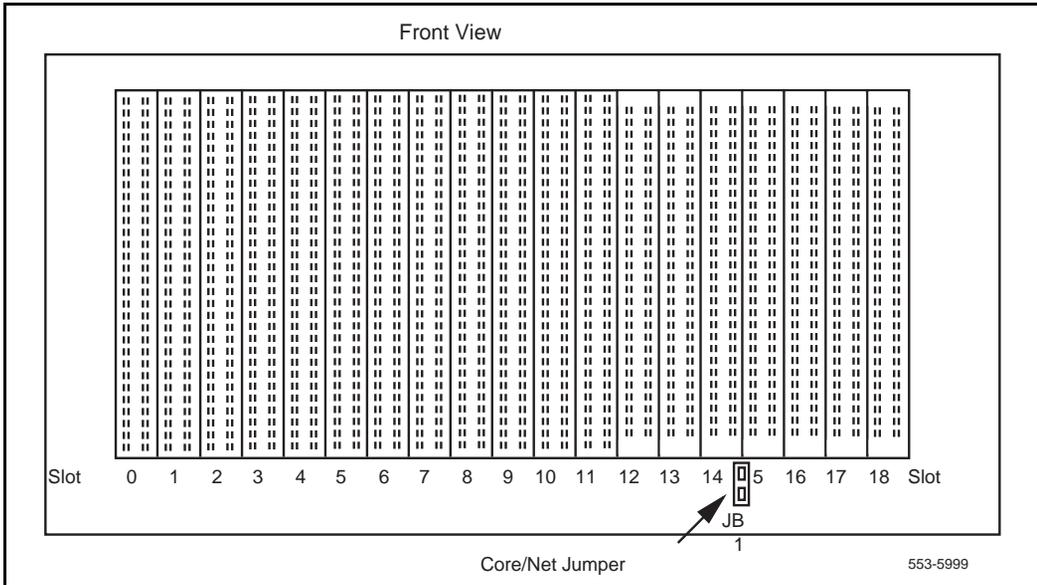
If the Core/Net module jumpers are set incorrectly, the system will not load and operate correctly.

- 17** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. The tape will be removed later.

**Table 62**  
**Backplane jumper settings for NT5D21 Core/Network module**

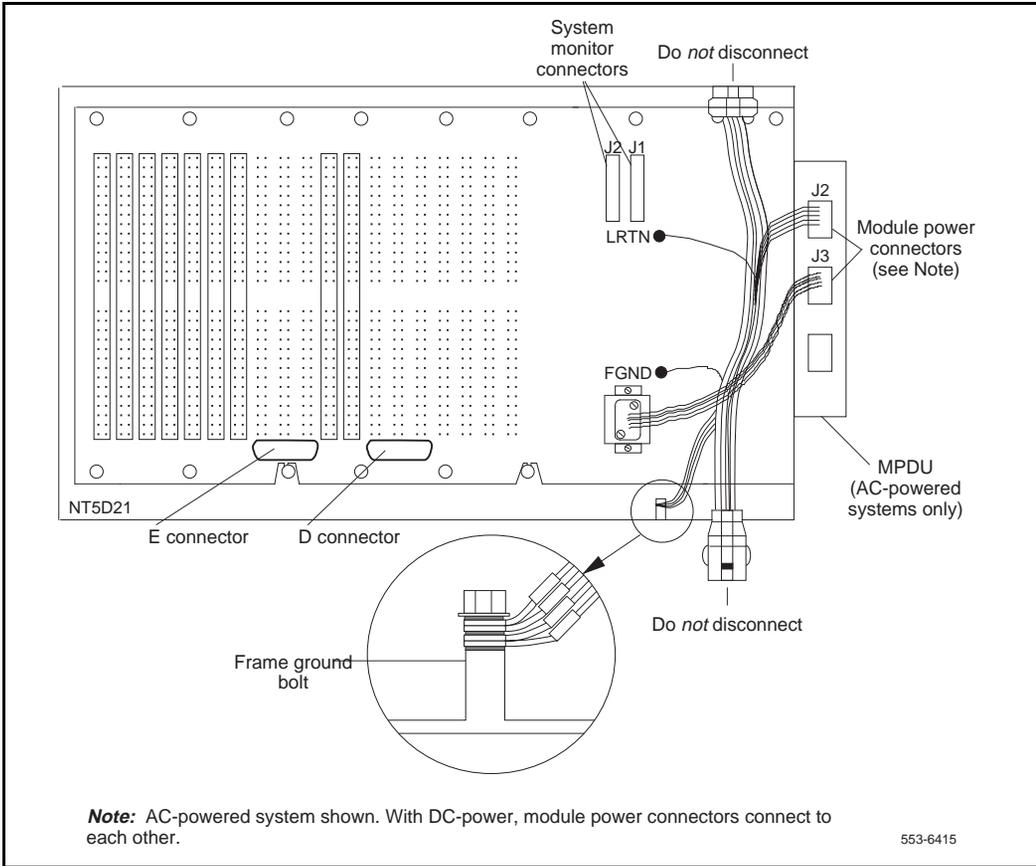
Module	Jumper configuration
Core/Net 0	Jumper plug installed
Core/Net 1	Jumper plug not installed

**Figure 74**  
**Location of the jumper on the NT5D21 backplane**



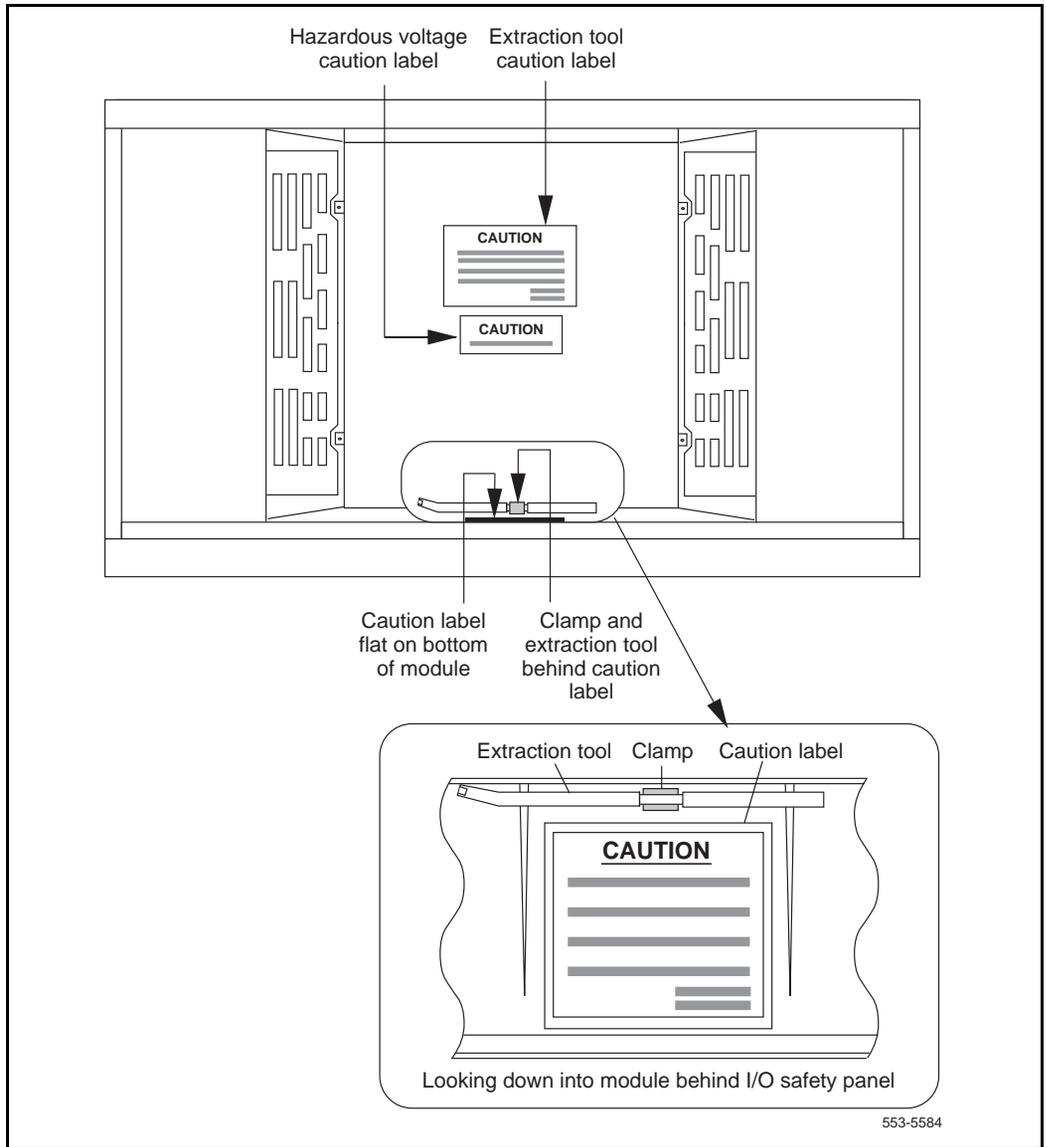
- 18** Slide the Core/Net 0 card cage about halfway into the lower module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 75):
- a** Attach the new frame ground (green) wire to the frame ground post in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the post. Put the frame ground connector over the post. Reinstall the top lock washer and the nut, then tighten the nut down.
- Note:** For all of the connectors to fit on the post, you need to remove one of the lock washers. You must leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third, or the third and fourth, connectors.
- b** Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the connector over the post, reinstall the lock washer and nut, then tighten the nut down. (A 3/8" socket wrench is needed for this operation.)
  - c** Connect the module power connectors to the MPDU for AC power or to each other for DC power.
  - d** Attach the system monitor ribbon cables. J1 goes down to the pedestal, J2 goes up the column.
- 19** Repeat the previous step for the Core/Net 1 card cage.
- 20** Slide the card cage all the way into the Core/Network module.
- 21** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 22** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 23** On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 76).
- 24** In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 25** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 26** Snap the P0741489 Extraction Tool into the clamp.

**Figure 75**  
**Power connectors on the rear of the NT5D21 Core/Network module**



- 27 Attach the Core/Network module designation labels, provided in the upgrade package, at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.

**Figure 76**  
**Positioning the extraction tool and caution labels**



- 28 Install the module power supply (reused from the CPU card cage) in the slot labeled “CE pwr sup” in the Core/Network card cage.
- 29 Turn on power to the module. With AC power, set the main circuit breaker to ON (up position) in the rear of the pedestal. With DC power, set the breaker to ON (up position) in the pedestal, then set the switch to ON (up position) on the power supply in the module.
- 30 Check the LED on the hybrid terminators located between slots 11 and 12. All LEDs must be off for Core/Net 0, and ON-OFF-OFF-OFF, from the top down, for Core/Net 1. The LED pattern matches the jumper settings on the backplanes. If either pattern is incorrect, check the jumper on that backplane (refer to Table 62).
- 31 Shut down power to the module again. With AC power, set the power supply breaker for the module to OFF (down position). With DC power, set the switch on the power supply for the module to OFF (down position).
- 32 Locate the round 1/2” diameter IODU/C security devices for each IODU/C card.  
  
*Note:* The security device is used with a keycode to activate system software, features, and ISM limits.
- 33 Install a security device onto each IODU/C card:  
  
With the Nortel Networks side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 34 Place one IODU/C card in slot 17 (the card occupies two slots) in Core/Net 1 and the other card in slot 17 of Core/Net 0, but **leave the cards unseated**.
- 35 Set the NORM/MAINT switch on the CP cards to MAINT. Place the CP cards in slot 15 (the card occupies two slots) of Core/Net 1 and Core/Net 0, but **leave the card unseated**.
- 36 Place the NT6D65 CNI card in slot 12. Set the front panel ENB/DIS switch to DIS.

- 37 Check the vintage of the QPC441 3PE card—it must be minimum vintage F. Set the front panel ENB/DIS switch to DIS. Set the option switches and jumper on the card (see Table 63). Place the card in slot 11.

**Table 63**  
**QPC441F 3PE card—option settings**

D20 switch: Core/Net 1								Core/Net 0							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	off	off	on	on	off	on	on	on	on
RN27 jumper at E35:															
NT5D21 Core/Network module								set to A							
All other modules								set to B							

- 38 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to DIS.
- 39 Set the option switches on the QPC471H Clock Controller card and set the front panel ENB/DIS switch to DIS. Refer to *Digital Clock Controllers: Installation and Administration* (553-3001-111) for switch settings.
- 40 Install the clock controller card in slot 9, Group 0, Network shelf 1, but **leave the cards unseated.**
- 41 Remove the network cards from the CPU/Network module and reinstall them in the new Core/Network card cage. Install the cards in slot numbers indicated in Table 64. Notice that although the slot numbers have changed, the relative positions of the cards in the modules have not.
- 42 Reinstall all SDI Paddle boards and reconnect the cables.

- 43** Follow the steps below to install the NT7D89 RS-232 cable that connects the CPSI ports on the CP card to the left I/O panel. The Y-cable connects one backplane connector to two connectors on the I/O panel (see Figure 79).

*Note:* The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.

- a** On the inside of the I/O panel, connect port A (for modem connection) to J21.
  - b** On the inside of the I/O panel, connect port B (for terminal connection) to J25.
- 44** Connect the single connector end of the cable to backplane connector position 15D.
- 45** Connect a terminal to the CPSI port on J25 Core/Net 1

**Table 64**  
**Slot number translation for network cards**

NT6D39 CPU/Net Slot Number	NT5D21 Core/Net Slot Number
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the Option 61 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### IODU/C cabling

- 1 Verify that the Core/Net module is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

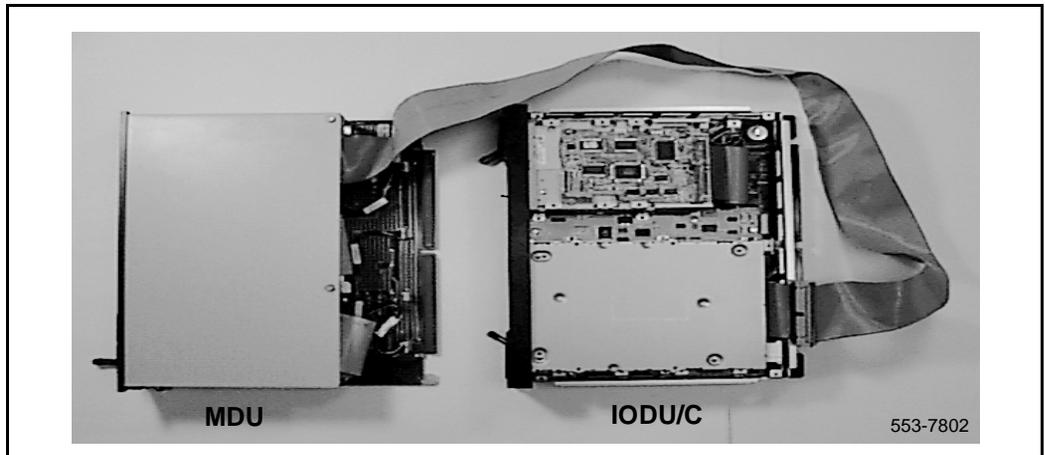
## MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:  
**LD 37** to load the program  
**DIS MSI 0** to disable the card
  - b Remove the floppy diskettes from the disk drives.
  - c Label and disconnect cables from the faceplate of the MDU or SMDU.
  - d Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 77, on page 469). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.

**Figure 77**  
**Cabling the MDU to the IODU/C card**



- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 10 When the NT logo appears, CP Install Program diskette press <CR> to continue.
- 11 Enter the date and time, when prompted.
- 12 When the Main Menu appears, select the following command from the menu:

<u> to Install menu

**13** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

- <a>**    to continue with keycode validation
- <y>**    to confirm that the keycode matches the CD-ROM release and return to the Install Menu

**14** Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 1.

**15** When the Install Menu appears, select the following options in sequence:

- <d>**    to install customer database only
- <f>**    to transfer the customer database from the MDU
- <a>**    to continue the database transfer
- <a>**    to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr>**    to continue  
The Installation Status Summary menu appears to confirm database transfer
- <y>**    to start installation
- <a>**    Yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr>**    Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

Remove any diskettes from the floppy drive.

- <q>**    When the Install Menu appears, select <q> to quit.
- <y>**    to confirm quit
- <a>**    to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal.

**16** Shut down power to Core/Net 1 module.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21** Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22** Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## Installing Release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
  - the CP Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
- 1** Install the CD-ROM into the CD drive:
    - a** press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b** place the CD-ROM disk into the holder with the disk label showing
    - c** use the four tabs to secure the CD-ROM in the disk holder
    - d** press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

- 2    Enter the date and time when prompted.
- 3    When the Main Menu appears, select the following options in sequence:
  - <u>     to Install menu
- 4    Remove the CP Install Program diskette and insert the Keycode diskette.  
      Select the following when prompted:
  - <a>     to continue with keycode validation
  - <y>     to confirm that the keycode matches the CD-ROM release
- 5    When the Install Menu appears, select the following options in sequence:
  - <a>     to install software, CP-BOOTROM, and IOP-ROM
  - <a>     to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

  - <y>     to start installation
  - <a>     to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

  - <a>     to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

  - <CR>    to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

  - <a>     to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

  - <y>     to start installation
  - <a>     to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

  - <CR>    to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>** to quit

**<y>** to confirm quit

Remove the diskette from the floppy drive.

**<a>** to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

- 6** When the sysload is complete, log into the system.
- 7** Confirm that the X11 Release 25 software is installed and functional on Core/Net 1:
  - LD 135** to load the program
  - STAT CPU** to display the CPU status
- 8** Remove the CD-ROM disk from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
  - LD 43** to load the program
- 9** When "EDD000" appears on the terminal, enter:
  - EDD** to begin the data dump
- 10** When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter:
  - \*\*\*\*** to exit the program

### **CAUTION**

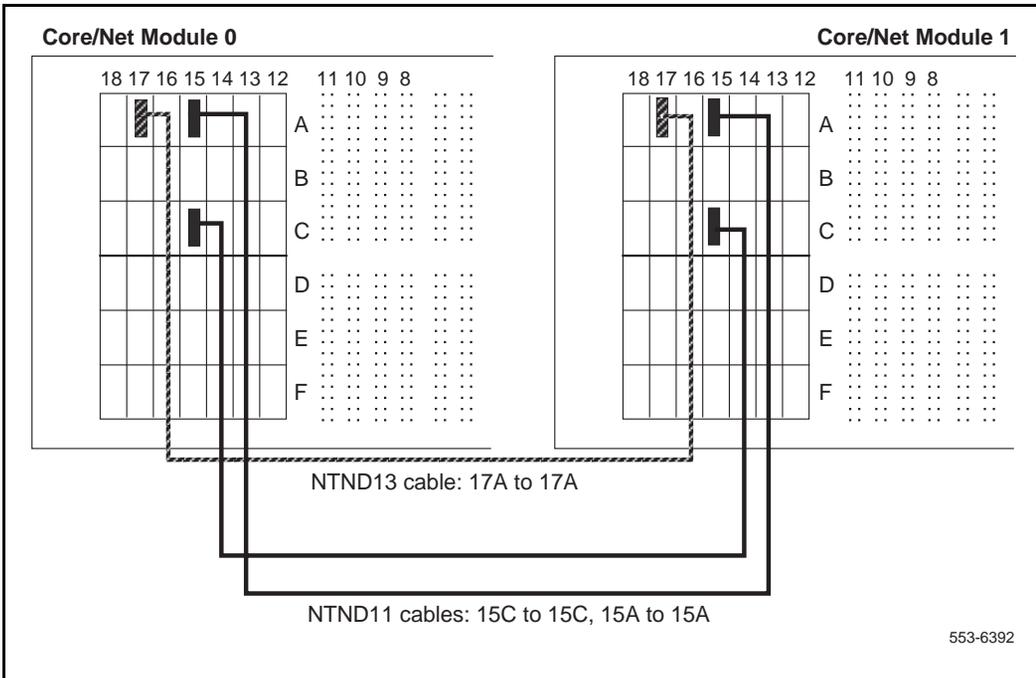
If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11** Power down the column containing Core/Net 1 and 0.

## Installing intermodule cables

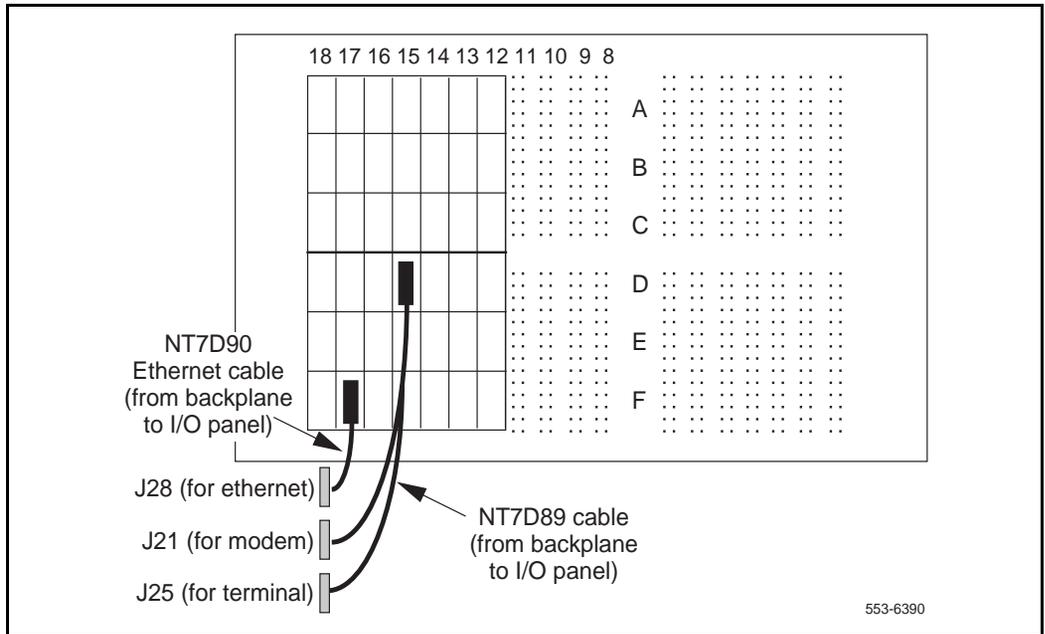
- 1 Install the NTND13 SCSI cable from backplane connector 17A in Core/Net 0 to connector 17A in Core/Net 1 (see Figure 78).
- 2 Install the first NTND11 CP-to-CP cable from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 (see Figure 78).
- 3 Install the second NTND11 CP-to-CP cable from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 78).
- 4 At the rear of each Core module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 79)

**Figure 78**  
**NT5D21 Core/Net module (rear)—NTND13 and NTND11 cables**



- 5 Install the first NT8D99AB D and E cable from the backplane connector labeled D in Core/Net 0 to the backplane connector labeled D in Core/Net 1.
- 6 Install the second NT8D99AB D and E cable from the backplane connector labeled E in Core/Net 0 to the the backplane connector labeled E in Core/Net 1.

**Figure 79**  
**NT5D21 Core/Network module (rear)—RS-232 cable connections for CPSI ports**



- 7 Follow the appropriate steps below to connect the clock controller cables:

- 8 For a QPC471 card, connect the NT8D75 cable from J3 (on the faceplate of the clock controller card) in Core/Net 0 to J3 of the clock controller card in Core/Net 1.
  - a For QPC775 Clock Controller cards, connect the NT8D75 cables from J2 (on the faceplate of the clock controller card) in Core/Net 0 to J2 of the clock controller card in Core/Net 1.
  - b Leave the ENB/DIS switch set to DIS on QPC471 or QPC775 cards.
- 9 Connect the 3PE module in Core/Net 0 to the 3PE module in Core/Net 1 using the two existing cables. Connector J4 on the faceplate of the 3PE module in Core/Net 0 is connected to connector J4 on the faceplate of the 3PE module in Core/Net 1. Connector J3 on the faceplate of the 3PE module in Core/Net 0 is connected to connector J3 on the faceplate of the 3PE module in Core/Net 1.
- 10 Connect any remaining network and serial cables to the network cards installed in slots 0 through 7. The cables should go to exactly the same connector that they were connected to on the old CPU module.

*Note:* You may have cables left over after completing this step. You should leave these cables installed until the new Option 61C switch has been tested and is working correctly. They will be removed later in this procedure.
- 11 Connect a terminal to the J25 (DCE) port on the I/O panel in Core/Net 0. You must use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

*Note:* Refer to “Terminal and modem connections” on page 933 before connecting the terminal.
- 12 Perform the appropriate step to turn on power to the column:
  - a For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal.
  - b For DC-powered systems, set the circuit breaker to ON (up position) in the pedestal.
- 13 Verify that the CNIs in Core/Net 0 are disabled.
- 14 Verify that all CNIs in Core/Net 1 are enabled.

- 15 Verify that the both CP cards are in MAINT.
- 16 Verify that the remaining cards in Core/Net 1 and 0 are enabled, but leave the CNIs in Core/Net 0 disabled.

## Copying the software and database to Core/Net 0

You will now copy system software from Core/Net 1 to Core/Net 0, install CP-software on CP 0, install ROMS on CP 0, and transfer the database from Core/Net 1 to Core/Net 0.

- 1 **Verify that the MAINT/NORM switch on the CP card in Core/Net 0 is set to MAINT.**
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Program Install diskette corresponds to the CP card type installed in the system.
- 3 **Press the MAN RST button on the CP card in Core/Net 0** to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 When the NT logo appears, press <CR> to continue.
- 5 When the Main Menu appears, select the following options in sequence:  
    <u>    to Install menu
- 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:  
    <a>    to continue with keycode validation  
    <y>    to confirm that the keycode matches the CD-ROM release
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:  
    <o>          to copy system software from the other core  
    <a>          to copy /p partition from Core1 to Core 0  
    <a>          to continue with upgrade

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

- <CR>**            press <CR> when you are ready to continue
- <y>**                to start installation
- <a>**                to continue with ROM upgrade
- <y>**                to start installation
- <a>**                to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

- <CR>**            to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

- <f>**                to install IOP-ROM only

When the Installation Status Summary screen appears:

- <y>**                to start installation
- <y>**                to continue installing IOP-ROM
- <a>**                to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

- <CR>**            to return to the Install Menu

When the Install Menu appears, install the database:

- <d>**                to install database only
- <d>**                to copy database from the redundant disk

When the Installation Status Summary screen appears:

- <y>**                to start installation
- <a>**                to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

- <CR>**            to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

- <q>**                to quit
- <y>**                to confirm quit
- <a>**                to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 8    Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

**\*\*\*\*** to exit the program

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## **Returning the system to redundant mode**

- 1 Connect a terminal to CPSI J25 in Core/Net 1 or SDI port.
- 2 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 3 In Core/Net 0, press and release the MAN RST button.

When SYS700 messages in Core/Net 0 appear on the LCD display, set the MAINT/NORM switch to NORM in Core/Net 0.

- 4 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HWI534” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an “HWI533” message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, set the NORM/MAINT switch to NORM on the CP card.

**6** Perform a redundancy sanity test:

- LD 135**            to load the program
- STAT CNI**        to get the status of all configured CNIs
- STAT CPU**        to get the status of both Cores
- TEST CNI c s**    to test the CNI on the inactive side

*Note:* Testing the CNI cards may take up to 90 seconds for each test.

**7** Test the inactive Core, then switch Cores and test the other side:

- TEST CPU**        to test the inactive CP card and CP-to-CP cable
- TEST IPB**        to test the inactive Interprocessor Bus
- SCPU**            to switch to Core 0
- TEST CNI c s**    to test the CNIs (c = core, s = slot)
- TEST CPU**        to test the inactive CP card and CP-to-CP cable
- TEST IPB**        to test the inactive Interprocessor Bus

*Note:* Testing the CP can take up to 20 minutes.

**8** Get the status of the CP cards and memory and of the CNIs:

- STAT CPU**        to get the status of both Cores
- STAT CNI**        to get the status of all configured CNIs
- \*\*\*\***              to exit LD 135

**9** Synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled:

- LD 137**            to load the program
- STAT**            to get the status of IODU/Cs, and redundancy (verify that IODU/C 1 is active)
- SYNC**            to synchronize the hard disks
- TEST CMDU**     Performs hard and floppy disk test.

*Note:* Synchronization may take up to 30 minutes.

After synchronization is complete, exit the program:

- \*\*\*\***              to exit LD 137

**10** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

**11** Insert a backup database disk from the set of installation diskettes into the active IODU/C for backup. Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

**12** Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

**\*\*\*\*** to exit the program

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

The upgrade is complete; the Option 61C is running X11 Release 25. Continue with “Completing the upgrade” to confirm system function.

## **Completing the upgrade**

To complete the card cage upgrade, perform the following steps:

**1** Test the IOP to IOP SCSI connection and test the IODU/Cs:

**LD 137** to load the program

**TEST SCSI** to check the IOP to IOP connection and access to the IODU/Cs

**TEST CMDU** to test the hard and floppy disk drives (a floppy disk must be installed)

**\*\*\*\*** to exit the program

**2** Test core functions:

**LD 135** to load the program

**TEST CPU** to test the inactive CP card and CP-to-CP cable

**TEST IPB**            to test the backplane protocol on the inactive side  
**TEST CNI c s**      to test each configured CNI on the inactive side

*Note:* Testing the CP can take up to 20 minutes.

If all the tests pass, switch Cores and test the side that is now inactive:

**SCPU**                to switch to the other Core  
**TEST CPU**          to test the inactive CP card and CP-to-CP cable  
**TEST IPB**            to test the backplane protocol on the inactive side  
**TEST CNI c s**      to test each configured CNI on the inactive side

**3** Clear displays, major alarms, and minor alarms:

**CDSP**                to clear the display  
**CMAJ**                to clear all major alarms  
**CMIN ALL**          to clear all minor alarms  
**SCPU**                to switch to the other Core  
**CDSP**                to clear the display  
**\*\*\*\***                  to exit LD 135

**4** Load overlay 60 and software enable clock controller cards and any PRI/DTI cards in the Core/Network modules:

**LD 60**                to load the program  
**ENL CC x**            to enable clock controller card 0 or 1  
**TRCK aaa**          if necessary, to set tracking  
**ENLL loop**          to enable the specified network loop and associated PRI/DTI card  
**\*\*\*\***                  to exit the program

**5** For both Core/Network modules, install the appropriate trim panels from the upgrade package.

**6** Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

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# Option 61 upgrade to Option 81C

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## Content list

The following are the topics in this section:

- [Reference list 483](#)
- [Equipment required 487](#)
- [Upgrade preparation 492](#)
- [Installing new modules 494](#)
- [Installing intermodule cables 495](#)
- [Transferring the database from 4 MB to IODU/C 497](#)
- [Installing Release 25 software in Core/Net 1 502](#)
- [Configuring the system 505](#)
- [Installing Core/Net 0 507](#)
- [Installing the IPE card cage 520](#)
- [Copying the software and database to Core/Net 0 526](#)
- [Completing the upgrade 528](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *Software Conversion Procedures* (553-2001-320)
- “Terminal and modem connections” on page 933
- *System Installation Procedures* (553-3001-210)

- *Power Engineering* (553-3001-152)
- *X11 Administration* (553-3001-311)
- *Capacity Engineering* (553-3001-149)
- “Troubleshooting” on page 959

This section describes upgrading a Meridian 1 Option 61 to an Option 81C. Upgrading requires powering down the Option 61, removing and replacing the NT6D39 CPU/Network card cages with the NT5D21 Core/Network card cages, installing additional modules, and installing the release 25 software.

**CAUTION**

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. You must read through the procedure you will use before you begin the upgrade.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

**CAUTION**

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Because an Option 61 has both CPU/Network modules in the same column, power to the entire column must be shut off to accomplish the upgrade. This will cause loss of service to the whole telephone system. The upgrade must be planned for a time when the impact to the telephone users will be minimum.

Figure 80 shows the upgrade from Option 61 to Option 81C. Figure 81 shows an Option 81C as typically configured.

**Figure 80**  
Upgrade from Option 61 to Option 81C

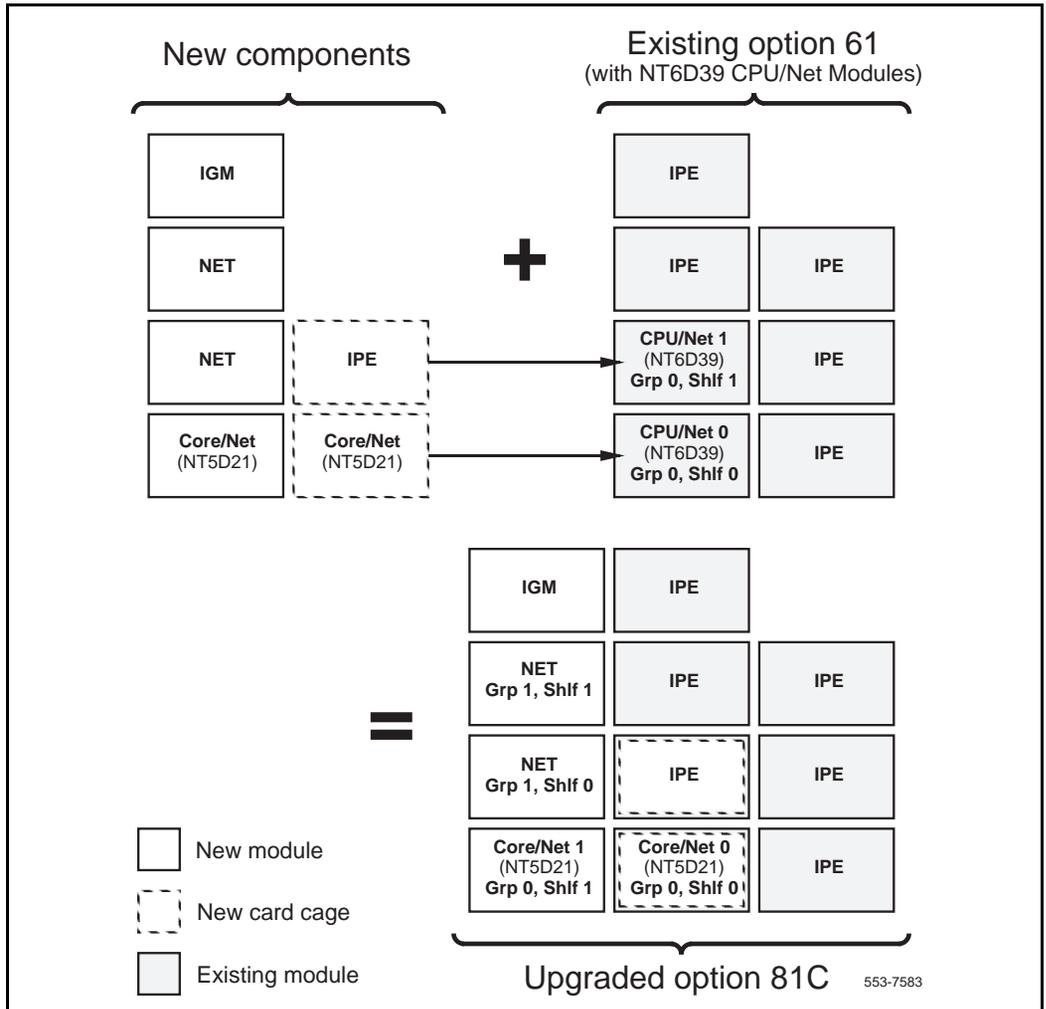
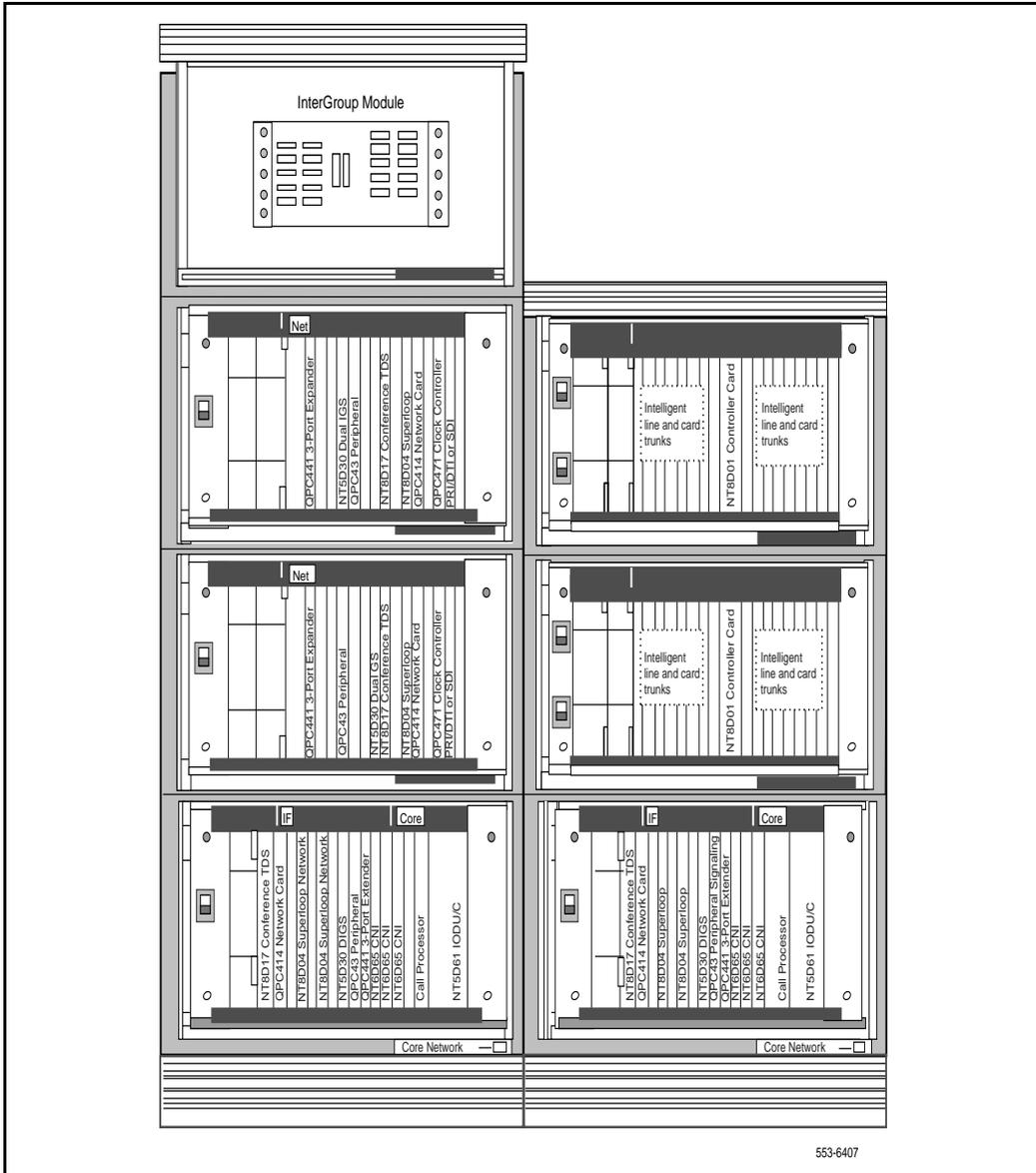


Figure 81  
Meridian 1 Option 81C



553-6407

## Equipment required

Tables 65 and 66 list the items required to upgrade an AC- or DC-powered Option 61 system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment to network cards in the new network modules. The number of cables required depends on the number of network cards installed. The cables are:

- NT8D86AC cables that connect the network card and the peripheral buffer card to the I/O panel
- NT9J96 cables that connect the I/O panel in the Core/Net module to the cabinet I/O panel

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 65**  
**Hardware requirements for an AC-powered Option 81C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R90BA	Field Upgrade Kit
1	NT1R89AA	IPE Card Cage Expansion Kit
1	NT5D2103	Core/Network Card Cage
2	NT5D61AA	IODU/C Card
1	NT5D21AA	Core/Network Module AC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
1	NT7D00AA	Top Cap AC
2	NT7D06AA	Filler Panel

**Table 65**  
**Hardware requirements for an AC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
2	NT8D35BA	Network Module AC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
4	NT8D49AA	Column Spacer Kit
2	NT8D52AB	Pedestal Blower Unit AC
2	NT8D53BB	Power Distribution Unit AC
1	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
1	NT8D74BF	Clock Controller to Junctor Cable (10 ft.)
4	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)
2	NT8D76BE	Intergroup Switch to Intergroup Module Cable (6 Ft).
2	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)

**Table 65**  
**Hardware requirements for an AC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D82AD	SDI to I/O Cable (6 ft.)
1	NT8D90AF	SDI Multi-Port Extension Cable (10 ft.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable 2Ft.
2	NT8D99AD	CPU to Network Cable 6Ft.
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
2	NTND14BC	CNI to 3PE Cable (10 ft.)
2	NTND14BD	CNI to 3PE Cable (12 ft.)
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
4	QPC441F	Three-Port Extender
2	QPC471H or	Clock Controller
2	QPC775E	
1	QPC841C	Four-port SDI
<p><b>Note:</b> QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> The QPC775 Clock Controller card is used in Canadian and International applications. QPC775 and QPC471 cards cannot be combined in one system. QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. Order replacement cards if existing cards do not meet this vintage requirement.</p>		

**Table 66**  
**Hardware requirements for a DC-powered Option 81C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R90BA	Field Upgrade Kit
1	NT1R89BA	IPE Card Cage Expansion Kit
2	NT5D61AA	IODU/C Card
1	NT5D2103	Core/Network Card Cage
1	NT5D21DA	Core/Network Module DC
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage

**Table 66**  
**Hardware requirements for a DC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
4	NT8D49AA	Column Spacer Kit
2	NT8D52DD	Pedestal Blower Unit DC
1	A0643619	Meridian 1 Reference Library Release 21
1	NT1R90BA	Field Upgrade Kit
1	NT1R89BA	IPE Card Cage Expansion Kit
1	NT5D2103	Core/Network Card Cage
1	NT5D21DA	Core/Network Module DC
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	NT8D01BC	Controller - Four Card

**Table 66**  
**Hardware requirements for a DC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
<p><b>Note:</b> QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> The QPC775 Clock Controller card is used in Canadian and International applications. QPC775 and QPC471 cards cannot be combined in one system. QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. Order replacement cards if existing cards do not meet this vintage requirement.</p>		

## Upgrade preparation

- 1 Separate the cables in the upgrade package. Label both ends of each cable.
- 2 If they are not already labeled, label both ends of the existing cables to the clock controller cards in both CPU 1 and CPU 0.
- 3 If QPC471 Clock Controller cards in the Option 61 are not minimum vintage H, you must replace them before the upgrade. (This requirement does not apply to QPC775 Clock Controller cards.)

**Note:** QPC775 and QPC471 cards cannot be combined in one system.

- 4 Customer databases Release 19 and 20 will be converted to Release 21 on the Option 61 and then Release 21 can be converted to Release 25 on the Option 81C. Customer databases prior to Release 21 must first be converted to Release 21 on the Option 61. To convert the database on the Option 61 to Release 19, refer to *Software Conversion Procedures* (553-2001-320).

- 5 Follow Procedure 1: Pre-conversion procedure, *Software Conversion Procedures* (553-2001-320) and print configuration records:

Check the configuration record printouts to identify all configured I/O ports. When you switch service to Core/Network modules, one I/O address must be available for a CPSI port. Refer to “Terminal and modem connections” on page 933 for specific information regarding the terminal and modem settings.

**Note:** When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

### **Performing a data dump**

To provide a safety backup of the customer database, perform a data dump to your current disks:

- 1 On the Option 61, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Installing new modules

The new modules are pre-configured at the factory according to your requirements. The equipment consists of one column containing a pedestal, two network modules, one intergroup module (IGM), one Core/Network module, cards, and a top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage.

- 1    Install the new modules. Follow the procedures in *System Installation Procedures* (553-3001-210) when installing them:
  - a    Install the new modules to the left of the existing column.
  - b    Place the IGM on the top of the new column.
- 2    Install the module power supply in each module:
  - a    Make sure the system is disconnected from any power source.
  - b    Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
  - c    Insert the power supply and engage the lock latches.
- 3    Install AC or DC power equipment. Refer to *Power Engineering* (553-3001-152) for ground wiring.
- 4    Make changes at the MDF as required to accommodate equipment in the new columns and system monitor connections.
- 5    Install PFTUs (if required).
- 6    Configure the system monitor. Use the tables in *System Installation Procedures* (553-3001-210).

## Installing intermodule cables

- 1 Set the switches on Clock Controller 1 (see Table 67).

**Table 67**

**Switch settings for clock controller card 1**

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- 2 Install Clock Controller 1 in slot 13 of Group 1, Shelf 1 network module.  
**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.
- 3 Route an NT8D74 cable from connector J3 on Clock Controller 1 to connector J12 on the junctor module.
- 4 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 1 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 1, IGS 0).

- 5    Route NT8D76 cables from the IGS cards in Core/Net 1 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 1, IGS 0).

- 6    Set the switches on Clock Controller 0 (see Table 68).

*Note:* When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 68**  
**Switch settings for clock controller card 0**

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position 1234	SW2 position 1234	SW4 position 1234
0–4.3 m (0–14 ft)	on off off off	off off off off	on on off off
4.6–6.1 m (15–20 ft)	on off off off	off off off off	on on off on
6.4–10.1 m (21–33 ft)	on off off off	off off off off	on on on off
10.4–15.2 m (34–50 ft)	on off off off	off off off off	on on on on
<b>Note:</b> Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.			

- 7 Install Clock Controller 0 in slot 13 of Group 1, Shelf 0 network module.  
*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.
- 8 Route an NT8D74 cable from connector J3 on Clock Controller 0 to connector J11 on the junctor module.
- 9 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 0 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0).

## Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the Option 61 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

### CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

### IODU/C cabling

- 1 **Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).

- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

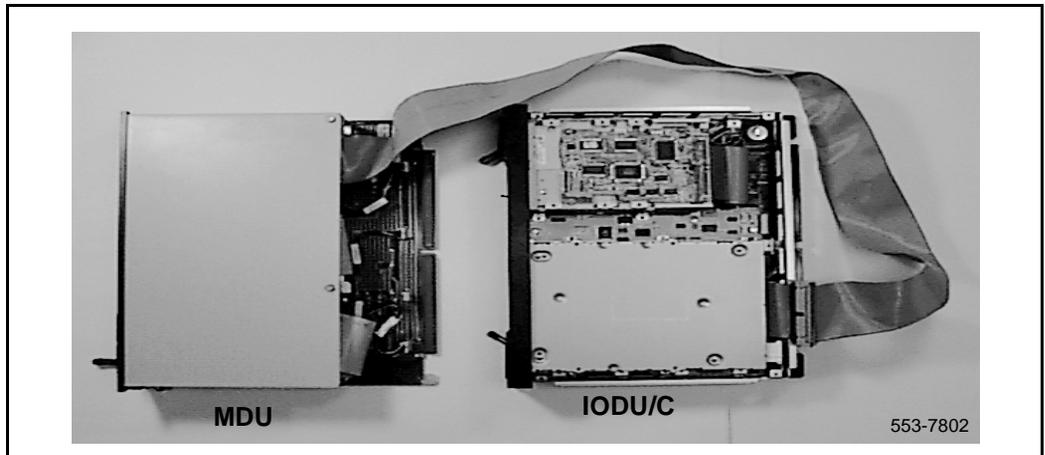
### **MDU cabling**

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:  
**LD 37** to load the program  
**DIS MSI 0** to disable the card
  - b Remove the floppy diskettes from the disk drives.
  - c Label and disconnect cables from the faceplate of the MDU or SMDU.
  - d Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

*Note:* When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 82, on page 499). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.

**Figure 82**  
**Cabling the MDU to the IODU/C card**



- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.

- 13** Initiate the database installation by selecting the following command from the menu:
- <u>**    to Install menu
- 14** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
- <a>**    to continue with keycode validation
  - <y>**    to confirm that the keycode matches the CD-ROM release
- 15** When the Install Menu appears, select the following options in sequence:
- <d>**    to install customer database only
  - <f>**    to transfer the customer database from the MDU
  - <a>**    to continue the database transfer
  - <a>**    to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
  - <cr>**    to continue  
the Installation Status Summary menu appears to confirm database transfer
  - <y>**    to start installation
  - <a>**    yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.
  - <cr>**    Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
  - <cr>**    Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
  - <q>**    When the Install Menu appears, select <q> to quit.  
Remove any

- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

## 16 Shut down power to Core/Net 1 module.

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## Installing Release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

- 1 Install the CD-ROM into the CD drive:
  - a press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b place the CD-ROM disk into the holder with the disk label showing
  - c use the four tabs to secure the CD-ROM in the disk holder
  - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 2 When the NT logo appears, press <CR> to continue.
- 3 Log into the system.
- 4 Enter the date and time when prompted.
- 5 When the Main Menu appears, select the following options in sequence:
  - <u>     to Install menu
- 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a>     to continue with keycode validation
  - <y>     to confirm that the keycode matches the CD-ROM release
- 7 When the Install Menu appears, select the following options in sequence:
  - <a>     to install software, CP-BOOTROM, and IOP-ROM
  - <a>     to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 8 When the sysload is complete, log into the system.

- 9 Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

**LD 135** to load the program

**STAT CPU** to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

- 10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43** to load the program

- 11 When “EDD000” appears on the terminal, enter:

**EDD** to begin the data dump

- 12 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13 Set date and time:

**LD 2** to load the overlay

**STAD** DD MM YY HR MN SC

## Configuring the system

- 1 Configure networks as CNI groups, based on the number of CNI cards in the system. In a typical configuration, there are three CNI cards for five network groups (see Table 69). Refer to *X11 Administration* (553-3001-311) for a complete description of the Configuration Record (LD 17):

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
...		
CEQU	YES	
...		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
...		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
...		

**Note:** If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See *X11 Administration* (553-3001-311) for procedures describing adding and removing groups.

**Table 69**  
Typical CNI configurations for an Option 81C

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 2 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

*Note:* The History File requires a dedicated I/O port.

<b>Prompt</b>	<b>Response</b>	<b>Comments</b>
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG	x = terminal number (0–15)
...	terminal x	
GRP	g	g = network group (0–4)
...		

- 3 Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.

- 4 Print the Configuration Record to verify the above changes:

**LD 22**            to load the program  
**REQ PRT**        to set the print option  
**TYPE CFN**      to print the configuration  
**\*\*\*\***            to exit the program

- 5 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43**            to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD**            to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

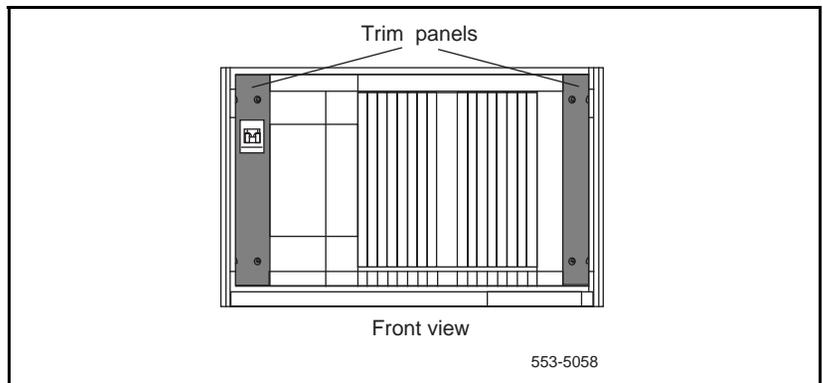
**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**Installing Core/Net 0**

- 1 Perform the appropriate step below to turn off power to the Option 61 column:
  - a For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
  - b For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the CPU/Net 0 module (see Figure 83). Keep the screws for reuse.

**Figure 83**  
**Location of the trim panels**



- 3 Tag and disconnect all cables connected to the front of each card in CPU/Net 0. Note the exact positions of the cables connected to cards on the network side of the card cage. They must connect to the same card when the module is reassembled. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 4 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

**WARNING**

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.

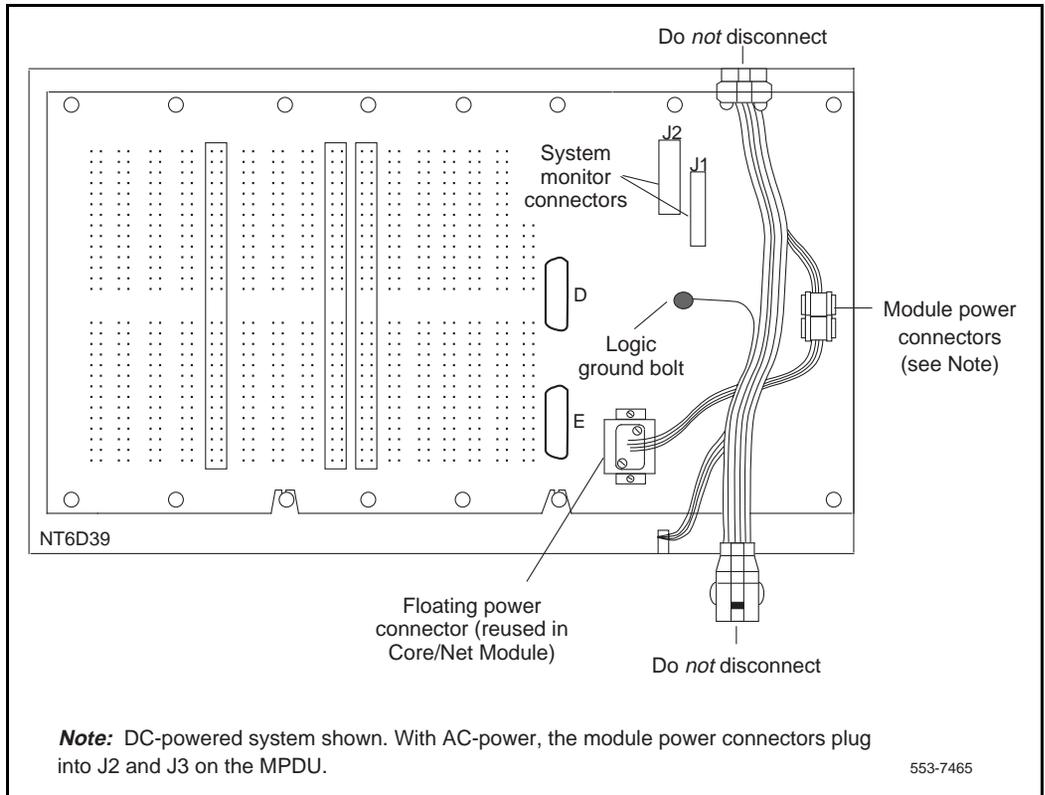
- 5 Tag and disconnect cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 6 Tag and disconnect the system monitor ribbon cables from J1 and J2.
- 7 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**WARNING**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 8 Pull the card cage forward until it is half-way out of the module.
- 9 Working from the rear of the module, tag and disconnect the two cables that connect to the "D" and "E" connectors (see Figure 84) .
- 10 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.

**Figure 84**  
**Power connectors on the rear of the NT6D39 CPU/Network module backplanes**

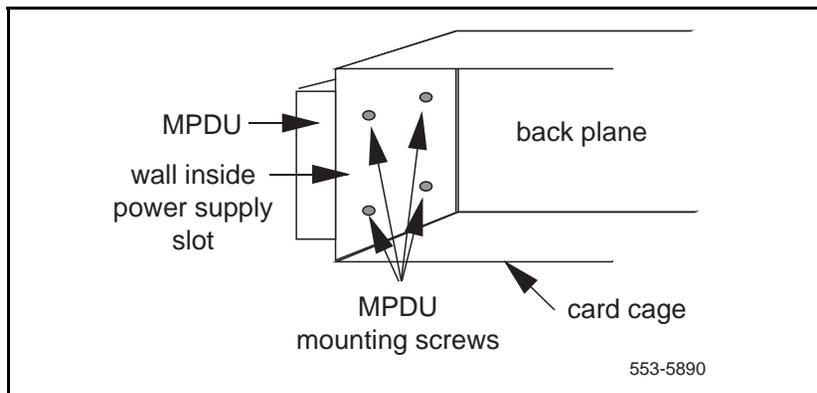


- 11 Tag and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.

- 12 Remove the CPU/Net card cage from the module.

**Note:** In AC-powered systems, if the new Core/Network card cages do not come with a module Power Distribution Unit (MPDU), remove the MPDU from the CPU/Network card cage and install it on the new Core/Network card cage after the CPU/Network card cage is out of the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 85).

**Figure 85**  
**Location of the screws for the Module Power Distribution Unit (MPDU)**



- 13 Remove the existing floating power connector (the black connector) from the rear of the CPU/Net card cage. Using the same mounting screws and nuts, attach the connector to the Core/Network card cage.

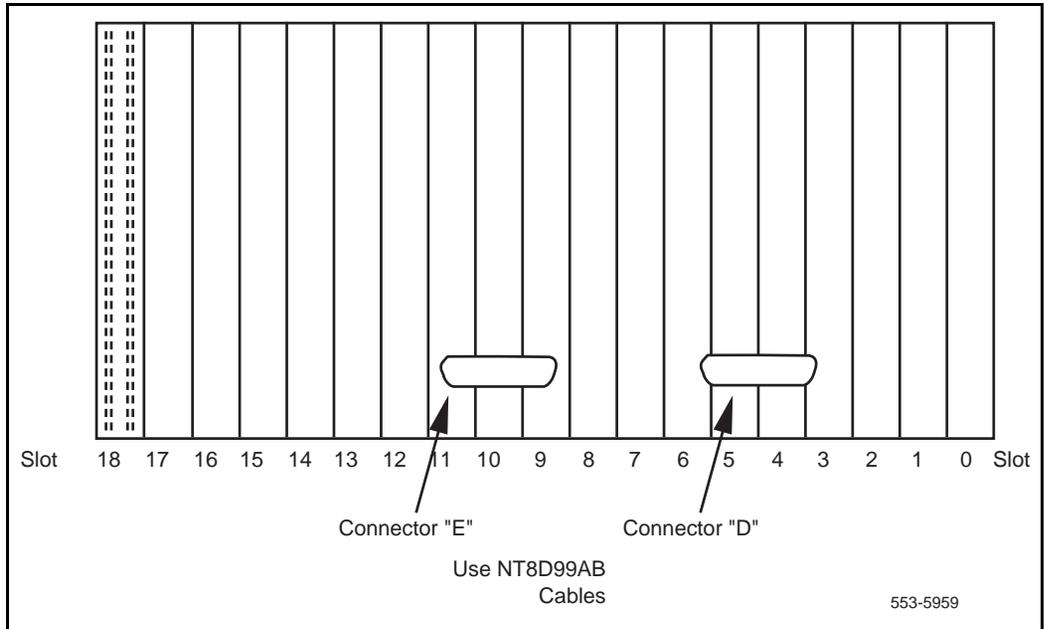
**Note:** Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 14 Verify that the backplane jumper in the Core/Network card cage is installed. The jumper is located on the bottom, front side of the backplane near slot 14 (see Figure 86).

**CAUTION**

If the Core/Net module jumper is set incorrectly, the system will not load or operate correctly.

**Figure 86**  
Location of the jumper on the NT5D21 Core/Net backplane



- 15** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 16** Slide the Core/Net 0 card cage about half-way into the module. Hold the card cage firmly while attaching the power connectors at the rear of the module (see Figure 87):

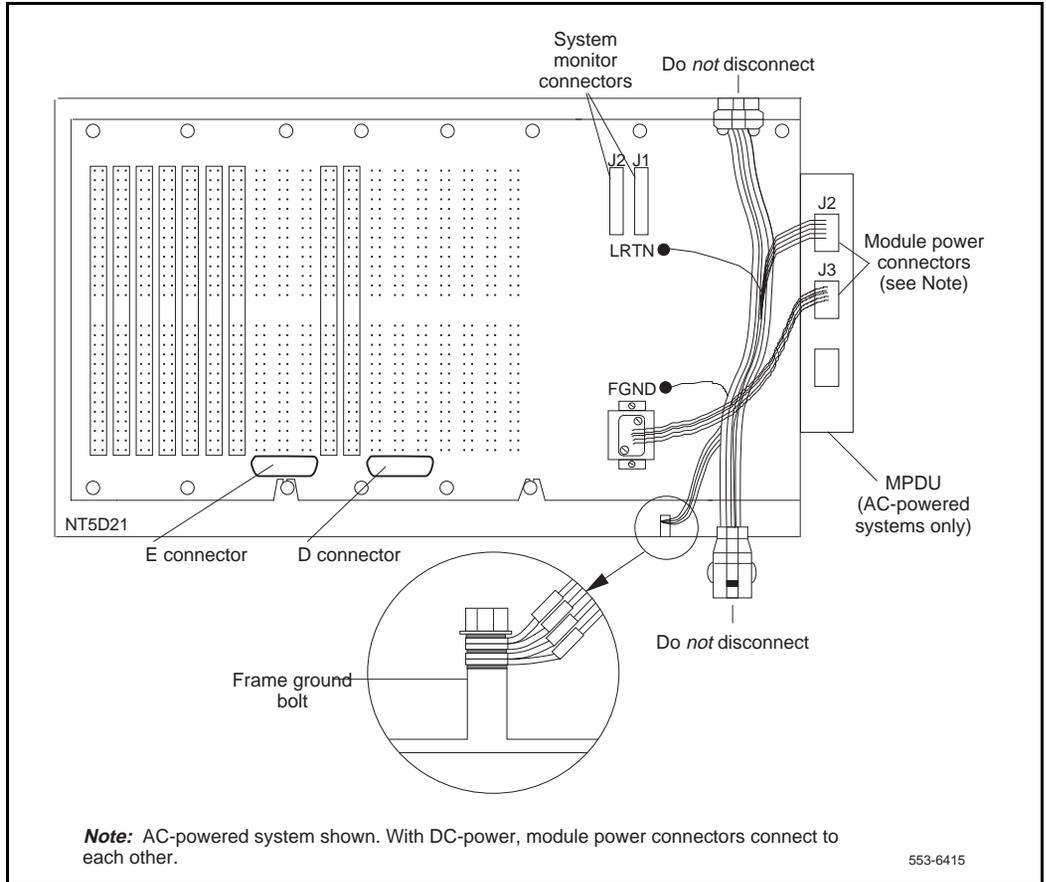
- a Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

**Note:** For all of the wire terminals to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

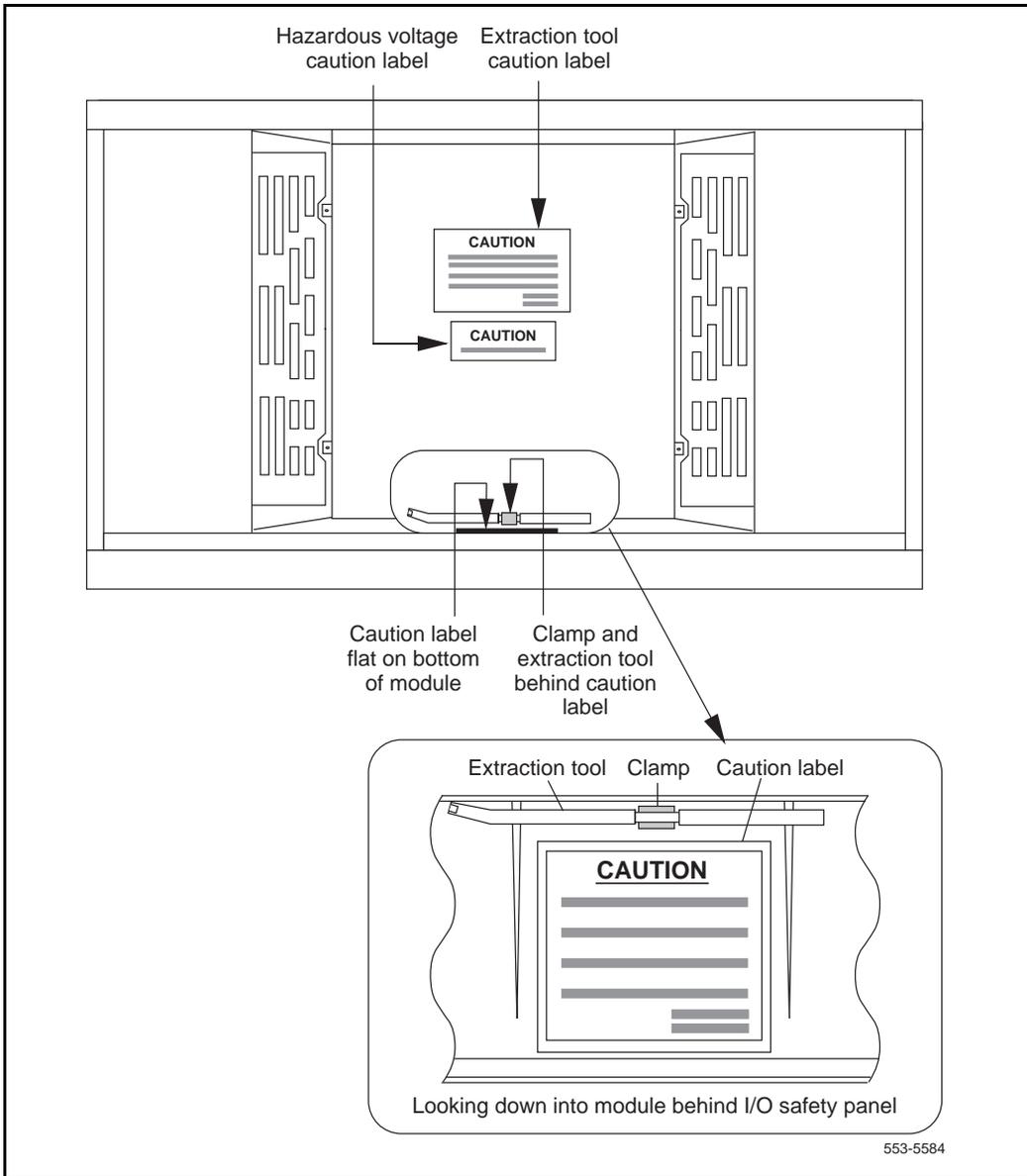
- b Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- c Connect the module power connectors: in AC-powered systems, connect them to the MPDU; in DC-powered systems, connect them to each other.
- d Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.

- 17 Slide the card cage all the way into the module.
- 18 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 19 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 20 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 88).
- 21 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 22 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.

**Figure 87**  
**Power connectors on the rear of the NT5D21 Core/Network module**



**Figure 88**  
**Positioning the extraction tool and caution labels**



- 23 Snap the extraction tool into the clamp.
- 24 Attach the Core/Network module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.
- 25 Remove the QPC43 PS card from the CPU/Net card cage. Install it in slot 10 of Core/Net 0.
- 26 Check the vintage of the QPC441 3PE card—it must be minimum vintage F. Set the front panel ENB/DIS switch to DIS. Set the switches and jumper on the card (see Table 70). Place the card in slot 11.

**Table 70**  
QPC441F 3PE card—switch settings

D20 switch: Core/Net 1								Core/Net 0							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	off	off	on	on	off	on	on	on	on
<b>Note:</b> RN27 jumper at E35: all modules, set to A															

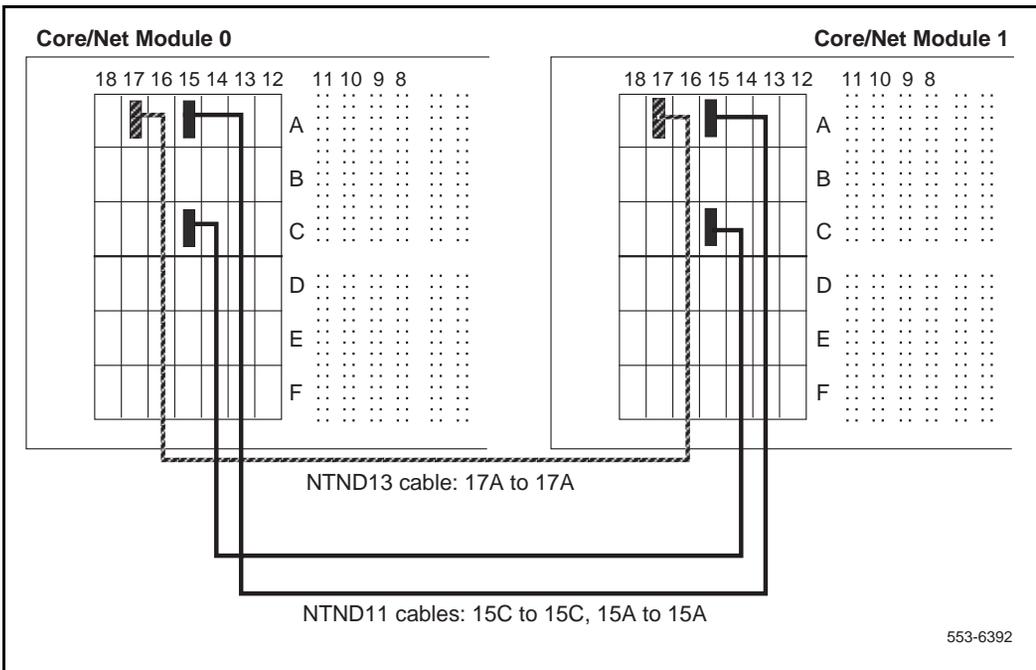
- 27 Remove the network cards from the CPU/Network module and install them in Core/Net 0. Install the cards in slot numbers indicated in Table 71. Note that although the slot numbers have changed, the relative positions of the cards in the modules have not.

**Table 71**  
Slot number translation for network cards

Slot Number in NT6D39 CPU/Net	Slot Number in NT5D21 Core/Net
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

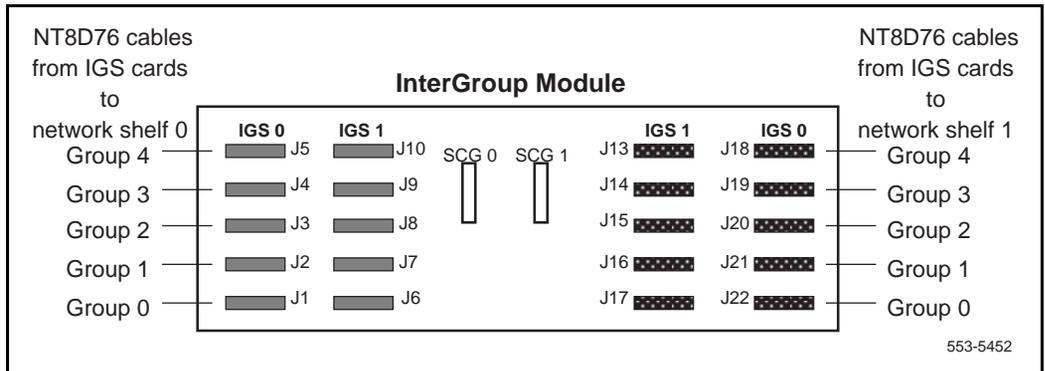
- 28 Install the NTND13 SCSI cable from backplane connector 17A in Core 0 to connector 17A in Core/Net 1 (see Figure 89).
- 29 Install the first NTND11 CP-to-CP cable from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 (see Figure 89).
- 30 Install the second NTND11 CP-to-CP cable from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 89).
- 31 At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel.

**Figure 89**  
**NT5D21 Core/Net module (rear)—NT7D90, NTND13, and NTND11 cables**



- 32 On the faceplates of the QPC441 3PE cards in the Core/Net modules:
  - a connect an NT8D80BZ cable from J4 in Core/Net 0 to J4 in Core/Net 1
  - b connect another NT8D80BZ cable from J3 in Core/Net 0 to J3 in Core/Net 1
- 33 Install an NT8D99AB cable from backplane connector “D” in Core/Net 0 to backplane connector “D” in Core/Net 1.
- 34 Install another NT8D99AB cable from backplane connector “E” in Core/Net 0 to backplane connector “E” in Core/Net 1.
- 35 Route NT8D76 cables from the IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 0, IGS 0). See Figure 90.

**Figure 90**  
**QPC412 IGS card cable assignments to the InterGroup module**



- 36 Route the two NTND14 cables from CNI cards in Core/Net 0 to 3PE cards (refer to Table 72 and Figure 91).

**Table 72**  
**CNI to 3PE NTND14 cable connections for Core/Net 1**

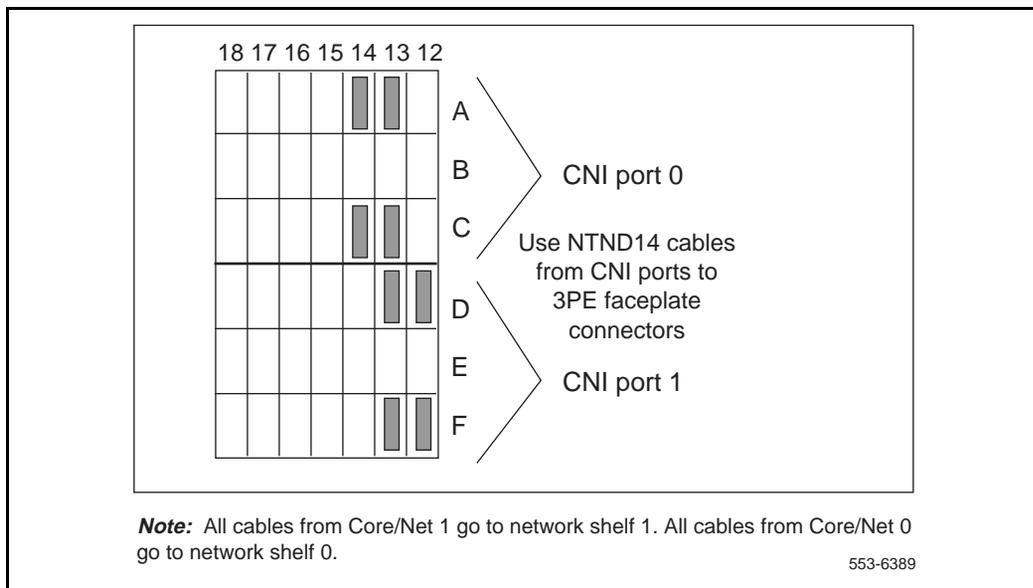
Cable for Group		Backplane connector on Core/Net 1		3PE card connector in Net Shelf 1
0	connects from	12A	to	(see Note 1)
0		12C		(see Note 1)
1		12D		J3
1		12F		J4
2		13A		J3
2		13C		J4
3		13D		J3
3		13F		J4
4		14A		J3
4		14C		J4

**Note:** Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

**Note 1:** Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.

- 37 Perform the appropriate step to turn on power to both columns:
- a For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal.
  - b For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 38 Set the ENB/DIS switch on the NT5D61AA IODU/C card in Core/Net 0 to ENB. As the card performs card level power-up tests, watch the faceplate display for error codes. See *X11 Administration* (553-3001-311) for an explanation of the codes. If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 959.

**Figure 91**  
**NT5D21 Core/Net module (rear)—backplane connections for CNI slots**



- 39** Press the MAN RST button on the CP card in Core/Net 0. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages: If the CP card fails the self-test, refer to “Troubleshooting” on page 959.

Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 959.

- 40** Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
- 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

- 41 Set the ENB/DIS switch on the NT5D61 IODU/C card in Core/Net 1 to ENB. As the card performs card level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 Administration* (553-3001-311) for an explanation of the codes.

If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 959.

- 42 Press the MAN RST button on the CP card in Core/Net 1. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages. If the CP card fails the self-test, refer to “Troubleshooting” on page 959.

Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 959.

## Installing the IPE card cage

- 1 Remove the trim panels on both sides of CPU/Net 1 (see Figure 83 on page 507). Keep the screws for reuse.
- 2 Tag and disconnect all cables connected to the front of each card in CPU/Net 1. Note the exact positions of the cables connected to cards on the network side of the card cage. They must connect to the same card when the new Core/Net module is installed. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 3 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.
- 4 Tag and disconnect cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 5 Tag and disconnect the system monitor ribbon cables from J1 and J2.

- 6 Remove the two mounting screws that secure the rear of the card cage to the CPU/Net 1 module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**WARNING**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 7 Pull the card cage forward until it is half-way out of the module.
- 8 Working from the rear of the module, tag and disconnect the two cables that connect to the "D" and "E" connectors (see Figure 84, on page 509).
- 9 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 10 Tag and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.
- 11 Remove the CPU/Net card cage from the module.
- 12 Install the new floating power connectors at the two locations on the NT8D37 IPE card cage. Using the same mounting screws and nuts, attach the connectors to the brackets. J5 mounts to the card cage chassis and J6 mounts to the backplane.

*Note:* Check the orientation of the connectors. Looking at each from the rear of the card cage, the upper left corner pin should be empty (no wire) and the green wire should be at the top right corner.

- 13 Slide the IPE card cage about half-way into the module. Hold the card cage firmly while attaching the power connectors at the rear of the module:
  - a Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

**Note:** For all of the wire terminals to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

- b** Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
  - c** Connect the module power connectors: In AC-powered systems, connect P2 of the main power harness to J2 of the MPDU, connect P3 and P4 of the card cage power harness to J3 and J4 of the MPDU. In DC-powered systems, connect P3 of the card cage power harness to P2 of the main power harness.
  - d** Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- 14** Slide the card cage all the way into the module.
- 15** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 16** Secure the card cage to the module with the three screws in the front and the two screws in the rear.

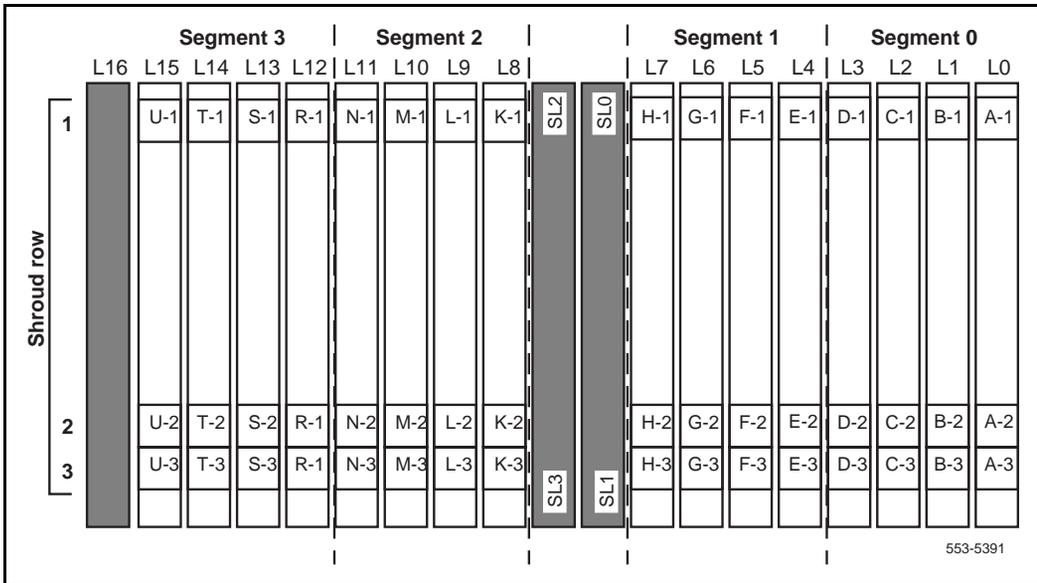
- 17** In the IPE module, install the NT8D81AA cables between the I/O panel and the backplane, as indicated in Table 73 and Figures 92 and 93.

**Table 73**  
**NT8D37 cable connections for 16-cable configuration**

Backplane slots-shroud rows	I/O panel/cable designation
L0-1, 2, 3	A
L1-1, 2, 3	B
L2-1, 2, 3	C
L3-1, 2, 3	D
L4-1, 2, 3	E
L5-1, 2, 3	F
L6-1, 2, 3	G
L7-1, 2, 3	H
L8-1, 2, 3	K
L9-1, 2, 3	L
L10-1, 2, 3	M
L11-1, 2, 3	N
L12-1, 2, 3	R
L13-1, 2, 3	S
L14-1, 2, 3	T
L15-1, 2, 3	U

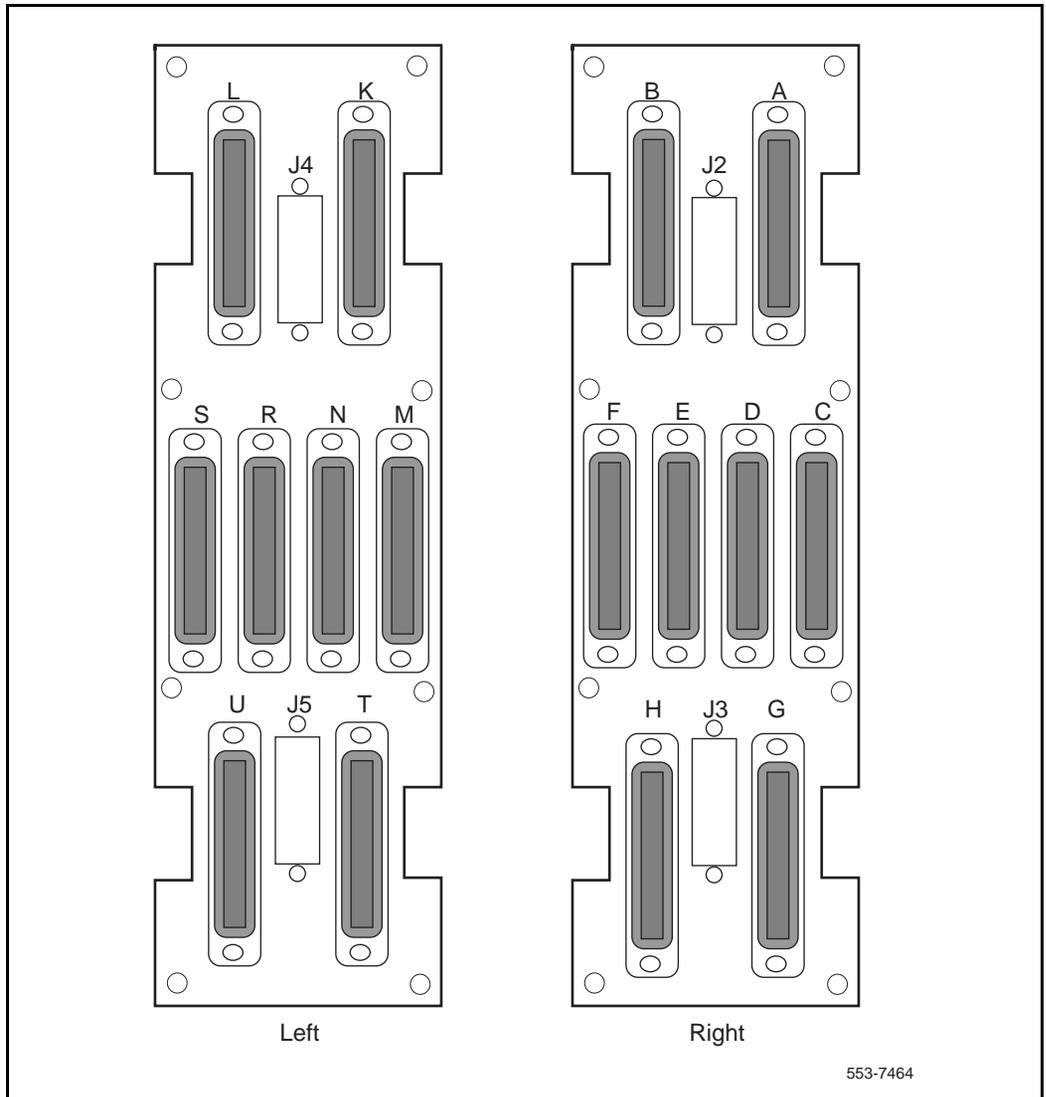
- 18** On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 88, on page 514).
- 19** In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 20** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 21** Snap the extraction tool into the clamp.
- 22** Attach the IPE module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.
- 23** On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 88, on page 514).

**Figure 92**  
**NT8D37 backplane cable designations for 12-cable configuration**



- 24 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 25 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 26 Snap the extraction tool into the clamp.
- 27 Attach the IPE module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.

**Figure 93**  
**NT8D37 IPE Module I/O panels for 12-cable configuration**



## Copying the software and database to Core/Net 0

- 1    Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
  
- 2    Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.
  
- 3    Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
  
- 4    Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
  
- 5    Initiate the installation by selecting the following prompt from the menu:
  - <cr> <u>        to Install menu
  
- 6    Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a>            continue with keycode validation
  - <y>            to confirm that keycode matches CD-ROM release
  
- 7    Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.

- 8** When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

<0> to copy system software from the other Core

<a> to continue

<a> to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR> press <CR> when you are ready to continue

<y> to start installation

<a> to continue with ROM upgrade

<y> to start installing CP-BOOT ROM

<a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation

<y> to continue installing IOP-ROM

<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

- <q>            to quit
- <y>            to confirm quit
- <a>            to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 9    In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 10   In Core/Net 0, press and release the MAN RST button.
- 11   When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 12   In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

## Completing the upgrade

- 1    In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 2    Perform a redundancy sanity test:

- LD 135**            to load the program
- STAT CNI**        to get the status of all configured CNIs
- STAT CPU**        to get the status of both Cores
- TEST CPU**        to test the inactive CP card and CP-to-CP cable
- TEST CNI c s**    to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 3 Switch Cores and test the other CPU:  
**SCPU** to switch to Core/Net 0  
**TEST CPU** to test the inactive CP card and CP-to-CP cable
  
- 4 Get the status of the CP cards, memories, and CNIs:  
**STAT CPU** to get the status of both Cores  
**STAT CNI** to get the status of all configured CNIs  
**\*\*\*\*** to exit LD 135
  
- 5 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:  
**LD 137** to load the program  
**STAT** to get the status of IODU/Cs and redundancy  
**SYNC** synchronize the hard disk drives  
**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**\*\*\*\*** to exit the program

- 7    Test the IOP to IOP SCSI connection and test the IODU/Cs:
  - LD 137**            to load the program
  - TEST SCSI**        to check the IOP to IOP connection and access to the IODU/Cs
  - TEST CMDU**        to test the hard and floppy disk drives (a floppy diskette must be installed)
  - \*\*\*\***                to exit the program
  
- 8    Clear displays, major alarms, and minor alarms:
  - LD 35**             to load the program
  - CDSP**             to clear the display
  - CMAJ**             to clear all major alarms
  - CMIN ALL**        to clear all minor alarms
  - SCPU**             to switch to the other Core
  - CDSP**             to clear the display
  - \*\*\*\***                to exit the program
  
- 9    Check the status of the clocks, swap clocks, and verify status:
  - LD 60**             to load the program
  - SSCK 0**            to get the status of clock 0
  - SSCK 1**            to get the status of clock 1
  - SWCK**             to swap active clocks
  - SSCK 0**            to verify that clock 0 is active
  - SSCK 1**            to verify that clock 1 is inactive
  - \*\*\*\***                to exit the program
  
- 10   Reinstall the system monitor in column 1. Reconnect the cables.
  
- 11   Reinstall the system monitor in column 0: first reconnect the cable to J6, then the cable to J3, then install the system monitor.
  
- 12   Software enable the associated SDI port:
  - LD 37**             to load the program
  - ENL terminal x**    to enable the device associated with the port
  - STAT XSM**        to check the status of the system monitor
  - \*\*\*\***                to exit the program

- 13** On both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 14** Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The upgrade is complete.



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# Option 61C (NT9D11 card cage) upgrade to Option 81C

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## Content list

The following are the topics in this section:

- [Reference list 533](#)
- [Equipment required 535](#)
- [Upgrade preparation 540](#)
- [Installing new modules 541](#)
- [Performing a data dump 546](#)
- [Splitting the Cores 546](#)
- [Installing intermodule cables 547](#)
- [Transferring the customer database to 2MB diskettes 550](#)
- [Converting the database to Release 25 552](#)
- [Configuring the new system 555](#)
- [Installing the card cage in Core/Net 0 560](#)
- [Copying software in Core/Net 0 579](#)
- [Completing the upgrade 581](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *System Engineering* (553-3001-151)

- *System Installation Procedures* (553-3001-210)
- *Hardware Replacement* (553-3001-520)
- *Capacity Engineering* (553-3001-149)
- *Software Conversion Procedures* (553-2001-320)
- *Power Engineering* (553-3001-152)
- *X11 Administration* (553-3001-311)
- “Troubleshooting” on page 959
- “Terminal and modem connections” on page 933

This section describes upgrading a Meridian 1 Option 61C (with NT9D11 card cages) to an Option 81C. Upgrading requires powering down the Option 61C, removing and replacing the NT9D11 CPU/Network card cages with the NT5D21 Core/Network card cages, installing additional modules, and installing X11 Release 25 software.

**CAUTION**

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. You must read through the procedure you will use before you begin the upgrade.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

**CAUTION**

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Because an Option 61C has both CPU/Network modules in the same column, power to the entire column must be shut off to accomplish the upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to telephone users will be minimal.

## **Equipment required**

The following upgrade procedures assume that your existing system is a standard Option 61C configuration and that you are upgrading to an Option 81C as illustrated in Figure 95, on page 545. If you are deviating from this configuration, your system may require additional equipment.

Tables 74 and 75 list the items required to upgrade an AC- or DC-powered 61C system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment to network cards in the new network modules. The number of cables required depends on the number of network cards installed.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 74**  
**Hardware requirements for an AC-powered Option 81C (Part 1 of 2)**

Qty	Part number	Description
2	NT1R90BA	Field Upgrade Kit
1	NT1R89AA	IPE Card Cage Expansion Kit
2	NT5D61AA	IODU/C Card (replaces IOP/CMDU)
1	NT5D21AA	Core/Network Module AC
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
2	NT8D35BA	Network Module AC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 in).
1	NT8D52AB	Pedestal Blower Unit AC

**Table 74**  
**Hardware requirements for an AC-powered Option 81C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D53BB	Power Distribution Unit AC
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable 10Ft.
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable (2 ft.)
2	NT8D99AD	CPU to Network Cable (6 Ft)
4	NTND14BB	CNI to 3PE Cable (8 ft.)
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender
<p><b>Note:</b> QPC471 Clock controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. QPC471 and QPC775 cards cannot be combined in one system. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> Two CP cards are required.</p>		

**Table 75**  
**Hardware requirements for a DC-powered Option 81C (Part 1 of 2)**

Qty	Part number	Description
1	NT1R90BA	Field Upgrade Kit
1	NT1R89BA	IPE Card Cage Expansion Kit
2	NT5D61AA	IODU/C (replaces IOP/CMDU)
1	NT5D21DA	Core/Network Module DC
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable 30in.
1	NT8D52DD	Pedestal Blower Unit DC

**Table 75**  
**Hardware requirements for a DC-powered Option 81C (Part 2 of 2)**

Qty	Part number	Description
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable 10Ft.
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable (2 ft.)
2	NT8D99AD	CPU to Network Cable 6Ft.
4	NTND14BB	CNI to 3PE Cable (8 ft.)
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender
<p><b>Note:</b> QPC471 Clock controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> Two CP cards are required. Refer to.</p>		

## Upgrade preparation

Some preparation is required before the conversion of the 61C hardware and software begins:

- inventory all equipment required for the upgrade
- provide appropriate power and ground for the increased electrical load of the new equipment

### Power and ground

Clean power and a good ground are prerequisites to any system upgrade. Refer to *System Engineering* (553-3001-151) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Relocating the clock controller cards

**Note:** The QPC471 Clock Controller cards must be vintage H or later. If QPC775 Clock Controller Cards are used, they must be vintage E, or later. Order replacement cards if existing cards do not meet this vintage requirement.

This Option 81C upgrade requires you to relocate the clock controller cards from the Option 61C NT9D11 Core/Net Modules to the new NT8D35 Network Modules in the Option 81C. Clock controller cards cannot be placed in the NT5D21 Core/Net modules.

When relocating the clock controller cards, clock reference cabling and InterGroup Module (IGM) cabling may be affected. Order replacement cables if new cables are required.

### Replacing 3PE cards

The QPC441 3PE cards must be vintage "F" or later. Replacement cards must be ordered if existing cards do not meet this vintage requirement. Refer to *Hardware Replacement* (553-3001-520) for card replacement procedures.

### Increasing CP card memory

To determine whether your system will operate on Release 25 software using the NT6D66 CP card, refer to the Nortel Networks technical publication (NTP) *Capacity Engineering* (553-3001-149). For memory upgrade procedures, refer to *Software Conversion Procedures* (553-2001-320).

#### **CAUTION**

Increasing the on-board CP card memory from 24 MB to 48 MB will disrupt some telephone service. Plan this for a time when the impact on customers will be minimal.

### Installing new modules

The new modules are pre-configured at the factory according to your requirements. The equipment consists of one column containing a pedestal, one core/net module, two network modules, one intergroup module (IGM), cards, and a top cap. Cards such as IOP/CMDUs and power supplies are shipped in separate packages to prevent damage to the cards. Figure 94, on page 544 shows an upgrade from Option 61C to Option 81C. Figure 95, on page 545 shows the Option 81C as typically configured after the upgrade.

- 1** Install the new column of modules next to the existing Option 61C. Follow the procedures in *System Installation Procedures* (553-3001-210) when installing them:
  - a** Prepare equipment for installation.
  - b** Place the fourth module on the column.
- 2** Install the module power supply in each module of the new column:
  - a** Make sure the system is disconnected from any power source.
  - b** Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
  - c** Insert the power supply and engage the lock latches.
- 3** Install AC or DC power equipment. Refer to *Power Engineering* (553-3001-152) for ground wiring.

- 4 Make changes at the MDF as required to accommodate equipment in the new columns and system monitor connections.
- 5 Install PFTUs (if required).
- 6 Configure the system monitor. Use the tables in *System Installation Procedures* (553-3001-210).
- 7 Make sure power to the new column is OFF.
- 8 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 1 modules (see Table 76). Make sure Jumper RN27 is set to "A".

**Table 76**  
**QPC441 3PE card switch settings for Network shelf 1 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off

**Note:** Jumper RN27 at location E35: set to A

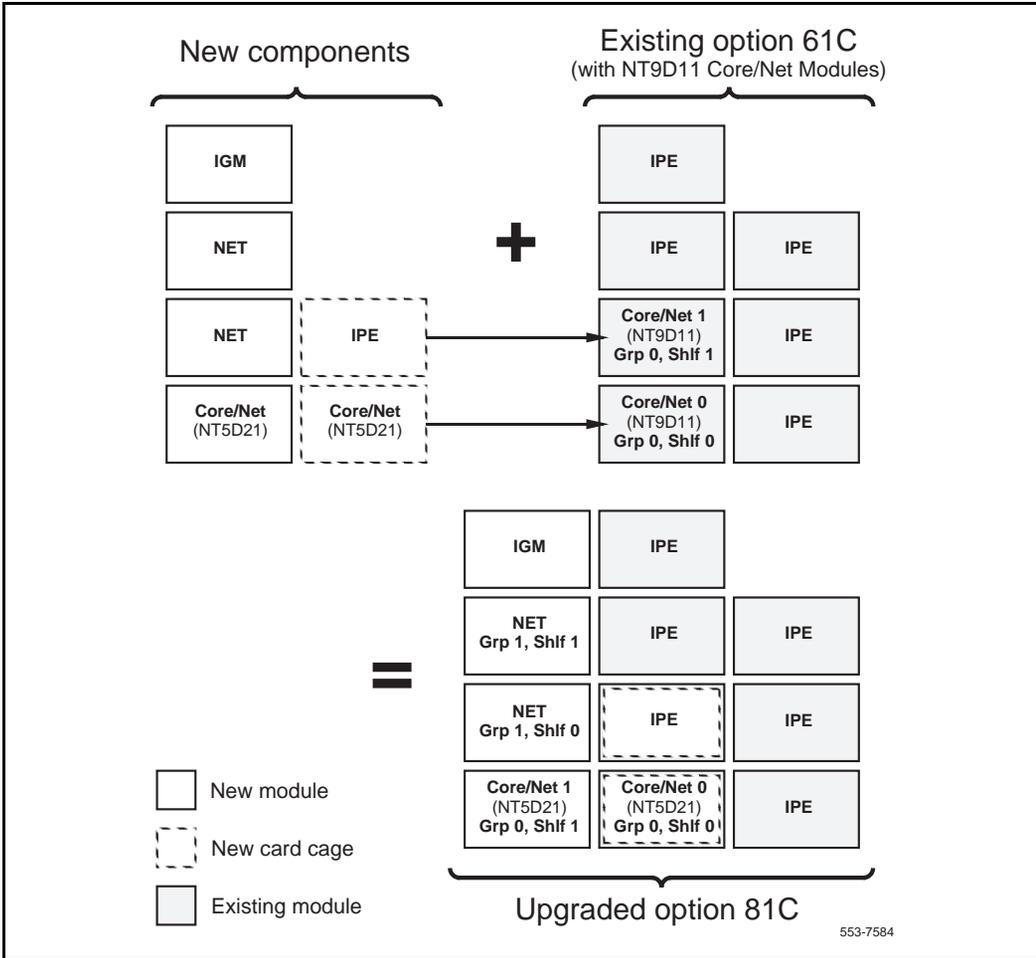
- 9 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 0 modules (see Table 77). Make sure Jumper RN27 is set to “A”.

**Table 77**  
**QPC441 3PE card switch settings for Network shelf 0 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on

**Note:** Jumper RN27 at location E35: set to A

**Figure 94**  
**Upgrade from Option 61C (NT9D11) to Option 81C**





## Performing a data dump

To provide a safety backup of the customer database, perform a data dump to your current disks:

- 1    On the 61C system, log into the system.
- 2    Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43**            to load the program
- 3    When “EDD000” appears on the terminal, enter  
**EDD**            to begin the data dump
- 4    When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
**\*\*\*\***            to exit the program

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Splitting the Cores

Before beginning the upgrade, disable Core/Net 1. To do this, perform these steps:

- 1    Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol

- 2 In the Option 61C, verify that Core/Net 0 is active. Switch cores if it is not:  
**LD 135** to load the program  
**STAT CPU** to get the status of the CPUs (cores)  
**SCPU** to switch CPUs (if required)  
**\*\*\*\*** to exit the program
- 3 In Core/Net 0, set the NORM/MAINT switch on the CP card to MAINT.
- 4 In Core/Net 1, set the ENB/DIS switch on all CNI cards to DIS.
- 5 In the Core/Net 1, set the NORM/MAINT switch on the CP card to MAINT.
- 6 Press the MAN RST button on the CP card in Core/Net 1.

## **Installing intermodule cables**

- 1 Software disable clock controller 1:  
**LD 60** to load the program  
**DIS CC 1** to disable clock controller 1  
**\*\*\*\*** to exit the program
- 2 Set the front panel ENB/DIS switch on the clock controller 1 card in the existing Option 61C to DIS and then remove the card from its slot.

- 3 Set the switches on Clock Controller 1 (see Table 78).

**Table 78**  
**Switch settings for clock controller card 1**

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

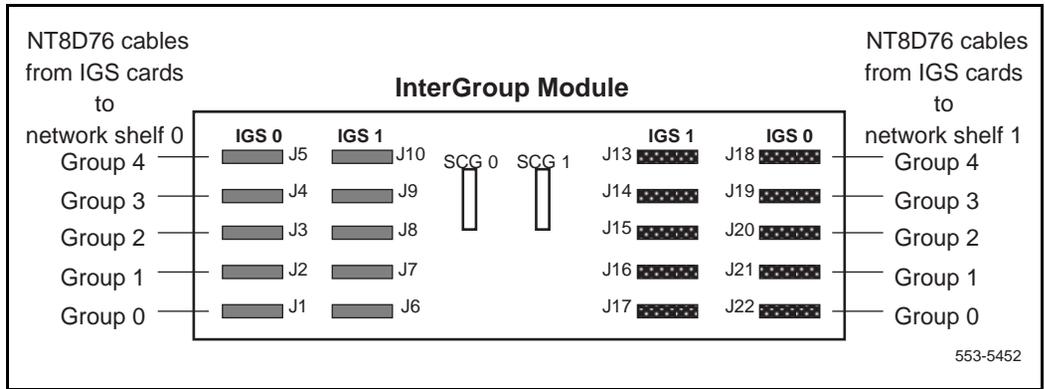
*Note:* When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- 4 Install clock controller 1 in slot 13 of Group 1, Shelf 1 network module.

*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

- 5 Route an NT8D74 cable from connector J3 on clock controller 1 to connector J12 on the junctor module.
- 6 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 1 Network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 1, IGS 0). See Figure 96.

**Figure 96**  
**QPC412 IGS card cable assignments to the InterGroup module**



- 7** If not already installed, route two NTND14 cables from CNI port backplane connector in the new Core/Net 1 (NT5D21) module to the faceplate of the 3PE card in the Group 1, Shelf 1 Network module. (Refer to Table 79 and Figure 97, on page 551.)
- 8** Route NT8D76 cables from the IGS cards in the new Core/Net 1 module (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 1, IGS 0). See Figure 96.
- 9** If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 0 Network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0).
- 10** Remove the CP card from the existing Option 61C NT9D11 Core/Net 1 Module and install it in slots 15/16 of the new NT5D21 Core/Net 1 Module. Leave the NORM/MAINT switch set to the MAINT position.
- 11** Set the ENB/DIS switch on the CNI card in the NT9D11 Core/Net 1 Module to DIS and then remove it from the module. Install it in slot 12 of the new NT5D21 Core/Net (1) Module.
- 12** Install the NT5D61AA IODU/C or NT5D20 IOP/CMDU Card from the upgrade package into slot 17 of the new Core/Net 1 module (or move it from the existing Core/Net 1 module if it is already equipped with an IOP/CMDU card).

**Table 79**  
**CNI port to 3PE NTND14 cable connections for Core/Net 1**

Cable for Group		CNI port backplane connector on Core/Net 0		3PE card connector in Net Shelf 0
0	connects from	12A	to	(see Note 1)
0		12C		(see Note 1)
1		12D		J3
1		12F		J4
2		13A		J3
2		13C		J4
3		13D		J3
3		13F		J4
4		14A		J3
4		14C		J4

**Note:** Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

**Note 1:** Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.

**Note:** Separate IOP and CMDU cards are not used in NT5D21 Core/Net Modules in an Option 81C.

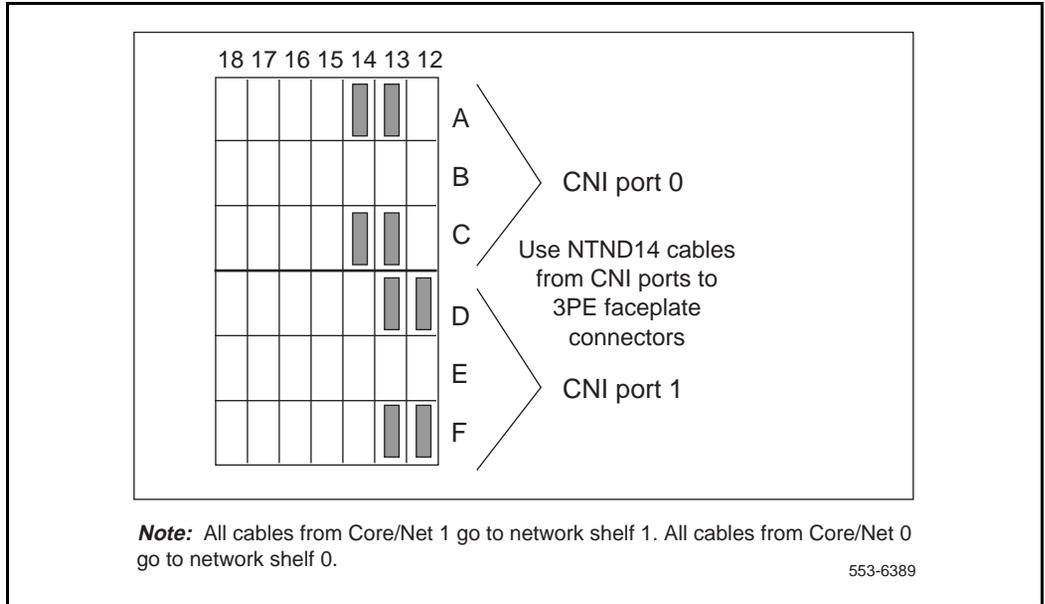
- 13 Turn on power to the new column. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.

### Transferring the customer database to 2MB diskettes

Use this procedure to transfer the customer database to 2MB diskettes using the Database Transfer Utility.

**Note:** You can also transfer the customer database from a CMDU to a IODU/C using the CP Install Program method. This procedure is described in "Database transfer" on page 743 of this document.

**Figure 97**  
**NT5D21 Core/Net module (rear) - backplane connections for CNI slots**



To be compatible with the IODU/C, you must transfer the customer database from 4MB diskettes used in IOP/CMDUs to 2MB diskettes used in IODU/Cs.

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

**CAUTION**

**When using the Database Transfer Utility, only select options <↑> Tools Menu and <s> To archive existing database. Selecting any other options can result in operating system corruption.**

- 4 From the installation menu select:
  - <t>            to go to the Tools menu
  - <s>            to archive existing database
  - <cr> <a>      to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
  - <cr> <a>      diskette is now in floppy drive in side 1

The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

## Converting the database to Release 25

Use the following procedures to install software and convert the database to Release 25.

- 1 Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2 Make sure that the Security Device is installed in the IODU/C.
- 3 Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4 Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).

- 5 Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 Enter time and date, when prompted.
- 7 Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>` to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>` continue with keycode validation
- 9 Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
  - a press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b place the CD-ROM disk into the holder with the disk label showing
  - c use the four tabs to secure the CD-ROM in the disk holder
  - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 10 When the install screen appears, select the following options in sequence when you are prompted to do so.  
`<b>` to install software, database, CP-ROM, and IOP-ROM  
`<a>` to verify that the CD-ROM is now in drive  
`<y>` Yes, start the installation  
`<a>` continue with upgrade

- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:

- <a> to install customer database
- <a> to continue with the database install
- <a> to transfer the database from floppy to hard disk
- <y> Yes, to start installation
- <a> Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12 When the ROM installation screen appears, select the prompts in the following sequence:

- <cr> <a> to install CP-ROM from hard disk
- <cr> <a> to continue with ROM upgrade
- <a> to install the IOP-ROM from hard disk
- <y> Yes, start installation
- <a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13 From the main menu select prompts in the following sequence to quit and sysload the system:

- <q> to quit
- <y> Yes, to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- a Verify that the following message appears on the system terminal:

**DATA CONVERSION**  
**X11 RELEASE xx.xx TO Release 25.xx**

- 14 Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

**LD 135**           to load the program  
**STAT CPU**       to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

## Configuring the new system

- 1 Perform this step only if you upgraded the memory on the NT6D66DA/DB CP cards to 48 MB as part of this system upgrade. If you did not perform the memory upgrade procedure, skip to step 2.

- a Configure the system with the new memory configuration:

**LD 17**           to load the overlay

- b For each prompt, type the following response:

**REQ**            CHG  
**TYPE**          CEQU

- c Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DA CP card:

**MCFN**            4 4 4 4 16 16

or,

- d Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DB CP card:

**MCFN**            8 8 16 16

*Note:* Be sure to insert one space between the values when typing.

- 2 Configure networks as CNI groups, based on the number of CNI cards in the system.

CNI ports are configured in LD 17 and can be assigned to support any network group from 0 to 4. See Table 80 for a typical Option 81C five group configuration. Refer to *X11 Administration (553-3001-311)* for a complete description of the Configuration Record (LD 17):

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
CEQU	YES	
•		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		
MCFN	4 4 4 4 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DA cards)

or,

MCFN	8 8 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DB cards)
REQ	****	to exit the program

**Note:** If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See *X11 Administration* (553-3001-311) for procedures describing adding and removing groups.

**Table 80**  
**Typical CNI configurations for an Option 81C**

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 3 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

**Note:** The History File requires a dedicated I/O port.

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG	x = terminal number (0–15)
...	terminal x	
GRP	g	g = network group (0–4)
•		

4 Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.

5 Print the Configuration Record to verify the above changes:

**LD 22**           to load the program  
**REQ PRT**       to set the print option  
**TYPE CFN**      to print the configuration  
**\*\*\*\***           to exit the program

6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43**           to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD**           to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**WARNING**

From this point on until the completion of the Core/Net 0 card cage upgrade, only partial telephone service will be available.

7 On the active processor (Core/Net 0), software disable all common equipment cards (i.e. network, 3PE, peripheral signaling) that are in the Group 0, Shelf 1 side of the existing NT9D11 Core/Net (1) Module (loops 16 through 31).

- 8 Label and disconnect cables from the network cards in the existing NT9D11 Core/Net (1) Module.
- 9 Remove all common equipment cards from the NET portion of the existing NT9D11 Core/Net (1) Module and install them in the new NT5D21 Core/Net (1) Module. Install the cards in the same numbered slots from which they were removed.
- 10 Reroute the cables that were disconnected in step 8 to the new NT9D21 Core/Net (1) Module and reconnect them to the common equipment cards in the NET portion of the module.
- 11 Set the switches on clock controller 0 (see Table 81).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 81**  
**Switch settings for clock controller card 0**

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position 1234	SW2 position 1234	SW4 position 1234
0–4.3 m (0–14 ft)	on off off off	off off off off	on on off off
4.6–6.1 m (15–20 ft)	on off off off	off off off off	on on off on
6.4–10.1 m (21–33 ft)	on off off off	off off off off	on on on off
10.4–15.2 m (34–50 ft)	on off off off	off off off off	on on on on
<b>Note:</b> Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.			

- 12 Install clock controller 0 in slot 13 of Group 1, Shelf 0 network module.

**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

- 13 Route an NT8D74 cable from connector J3 on clock controller 0 to connector J11 on the junctor module.
- 14 Perform the next four steps in succession. Call processing will be switched from Core 0 to Core 1:
  - a set the ENB/DIS switch on the IOP card in Core/Net 0 to DIS.
  - b set the ENB/DIS switch on all CNI cards in Core/Net 1 to ENB.
  - c set the ENB/DIS switch on all CNI cards in Core/Net 0 to DIS.
  - d press the MAN INT button on the CP card in Core/Net 1. When the initialization is complete, check for dial tone.

If you experience problems, refer to “Troubleshooting” on page 959.

## Installing the card cage in Core/Net 0

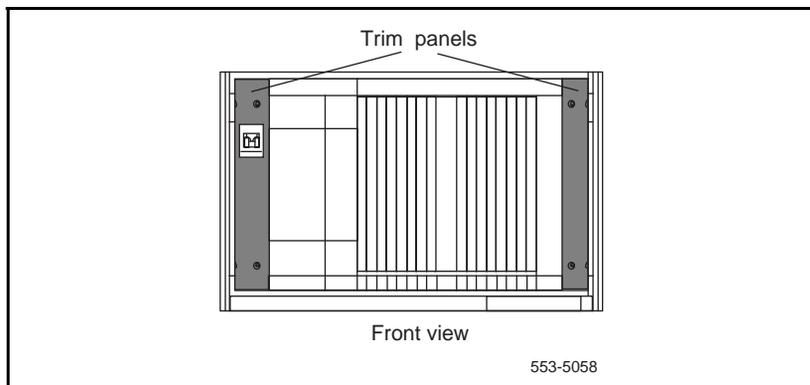
- 1 On the system monitor, disconnect the cable from J3, then the cable from J6. Remove the screws and pull the system monitor out of its slot. Do not disconnect the cable connected to J4, and do not turn off the blower unit in the front of the pedestal.

### CAUTION

If the system monitor is not removed, the system may shut down later in the upgrade.

- 2 Perform the appropriate step below to turn off power to the column:
  - a For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
  - b For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 3 Remove the trim panels on both sides of Core/Net 0 (see Figure 98). Keep the screws for reuse.

**Figure 98**  
**Location of the trim panels**



- 4 Label and disconnect all cables connected to the front of each card in Core/Net 0. Note the exact positions of the cables connected to cards on the network side of the module. They must connect to the same card when the module is reassembled. Tape over the contacts to avoid grounding. Tape or tie all cables out of the way so that the working area in front of the module is clear.
- 5 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 6 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.  
*Note:* It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.
- 7 Remove the I/O safety panel that covers the rear of the backplane. Label and disconnect from the backplane all cables that terminate at the I/O panels.
- 8 Label and disconnect from the backplane the three intermodule cables. One NTND13 cable connects to location 16A, and two NTND11 cables connect to locations 14A and 14C.
- 9 Label and disconnect the system monitor ribbon cables connecting to J1 and J2.

- 10 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**CAUTION**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 11 Working from the rear of the module, tag and disconnect the two cables that connect the "D" and "E" connectors on the backplane of each Core/Net module (see Figure 99). Retain these cables; they will be reused.
- 12 Pull the card cage forward until it is half-way out of the module.
- 13 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 14 Label and disconnect the module power connectors. These are small orange connectors plugged into the rear of the MPDU (in AC-powered systems), or connected to each other (in DC-powered systems.)

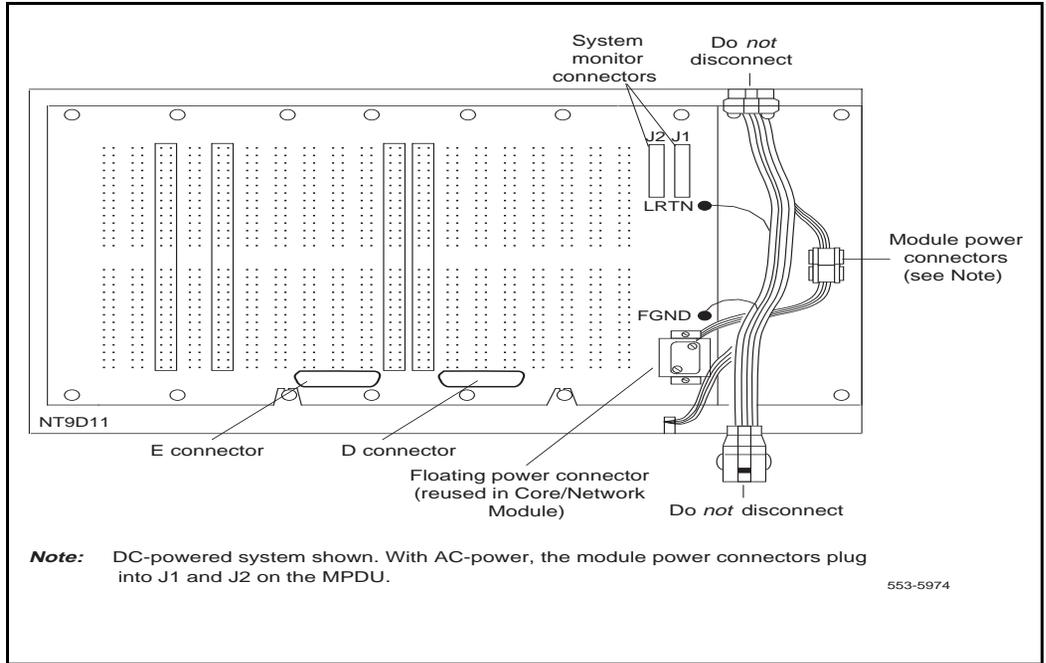
**CAUTION**

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module (see Figure 99).

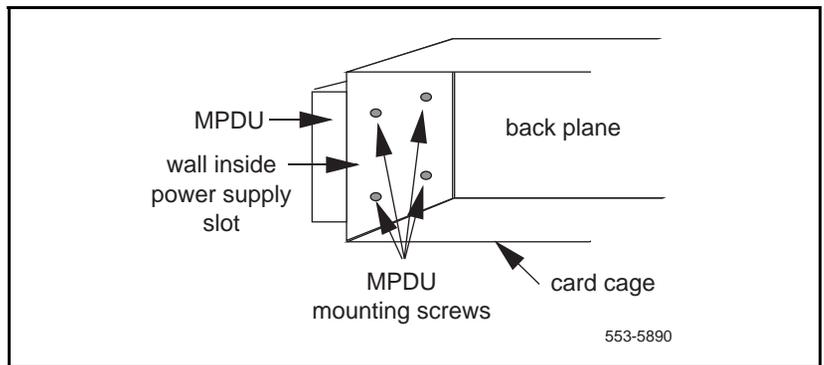
- 15 Remove the card cage from the module.

*Note:* In AC-powered systems, if the new NT5D21 Core/Net card cage did not come with a module Power Distribution Unit (MPDU), remove the MPDU from the Core/Net card cage and install it on the new Core/Net card cage after the existing card cage has been removed from the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 100).

**Figure 99**  
**Power connectors on the rear of the NT9D11 Core/Net module backplane**



**Figure 100**  
**Location of the screws for the Module Power Distribution Unit (MPDU)**



- 16 Remove the existing floating power connector (the black connector) from the rear of the old card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Net card cages.

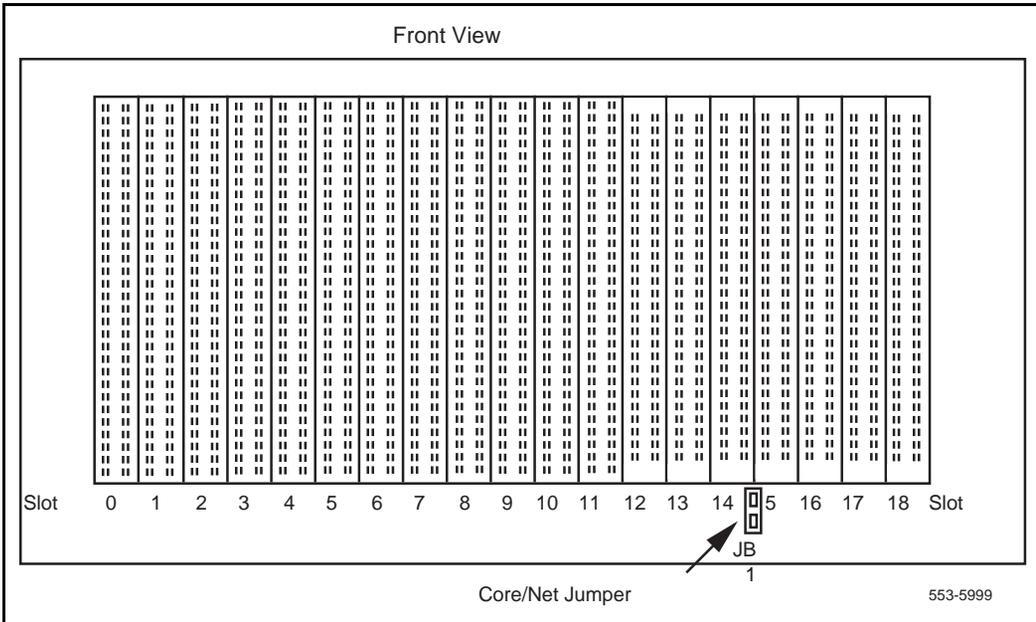
*Note:* Check the orientation of the connector when installing it. Looking from the rear of the card cage, the upper left corner pin of the connector should be empty (no wire), and the lower right corner pin should have a wire installed. The green wire should be at the top.

- 17 Verify that the jumper on the backplane of Core/Net 0 card cage is installed. The jumper is located on the front side of the backplane at the bottom of slot 14 (see Figure 101).

**CAUTION**

If the Core/Net module jumpers are set incorrectly, the system will not load or will not operate correctly.

**Figure 101**  
Location of the jumper on the NT5D21 backplane

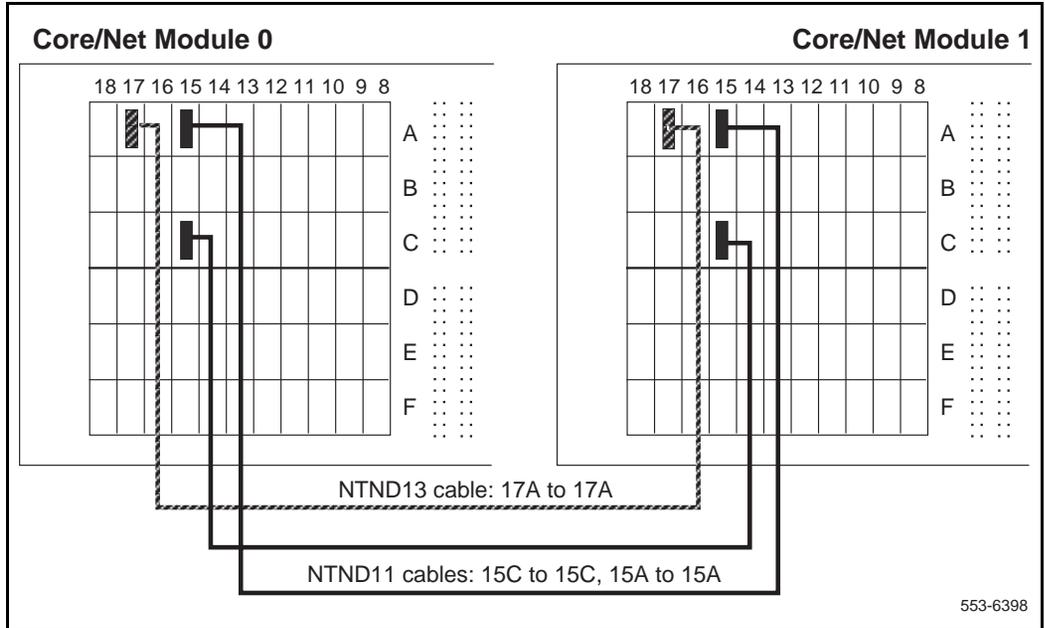


- 18** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 19** Slide the new card cage about half-way into the module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 99, on page 563):
  - a** Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

*Note:* For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and one at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth wire terminals.
  - b** Attach the logic ground (orange) wire to the logic ground bolt on the backplane. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
  - c** Connect the module power connectors to the MPDU (in AC powered systems) or to each other (in DC powered systems).
  - d** Attach the system monitor ribbon cables. Connect the ribbon cable (NT8D46) that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- 20** Slide the card cage all the way into the module.
- 21** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 22** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 23** Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.

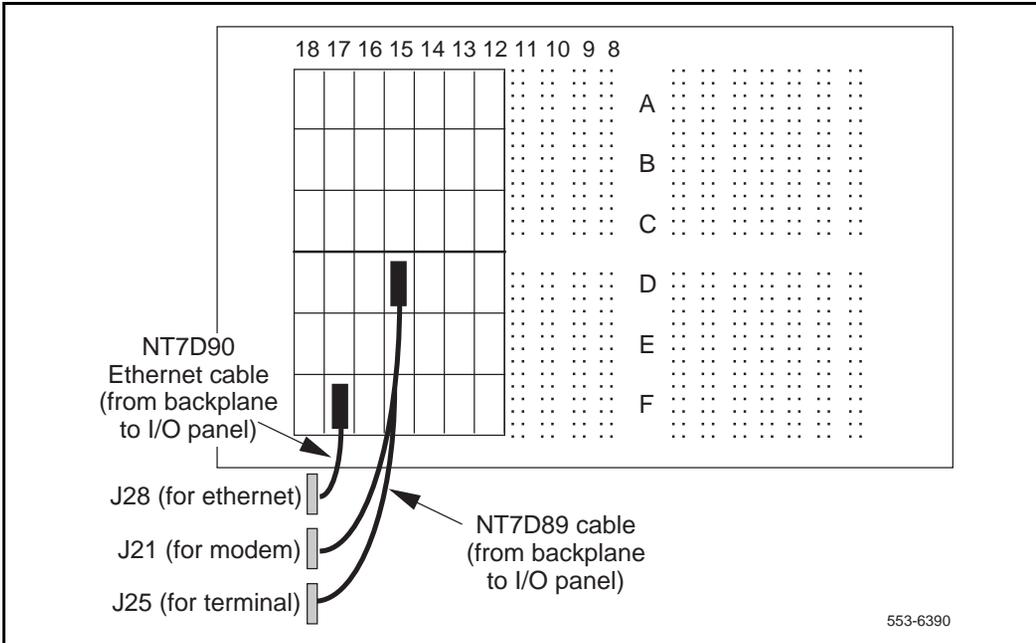
- 24** Install the module power supply (reused from the old card cage) in the slot labeled “CE PWR SUP”.
- 25** Turn on power to the module. With AC power, set the main circuit breaker to ON (up position) in the rear of the pedestal. With DC power, set the breaker to ON (up position) in the pedestal, then set the switch to ON (up position) on the power supply in the module.
- 26** Check the LED on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs should be OFF-OFF-OFF-OFF for Core/Net 0. The LED pattern matches the setting of the jumper on the backplane; if the pattern is incorrect, check the jumper (see Figure 101 on page 564).
- 27** Shut down power to the module again. For AC-powered systems, set the power supply breaker for the module to OFF (down position) and set the breakers in all of the shelves to OFF (down position). For DC-powered systems, set the circuit breaker to OFF (down position).
- 28** Install the NTND13 SCSI cable from backplane connector 17A in Core/Net 0 to connector 17A in Core/Net 1 (see Figure 102).
- 29** Install NTND11 CP-to-CP cables from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 and from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 102).

**Figure 102**  
**NT5D21 Core/Net module (rear)—IOP to IOP and CP to CP cables**



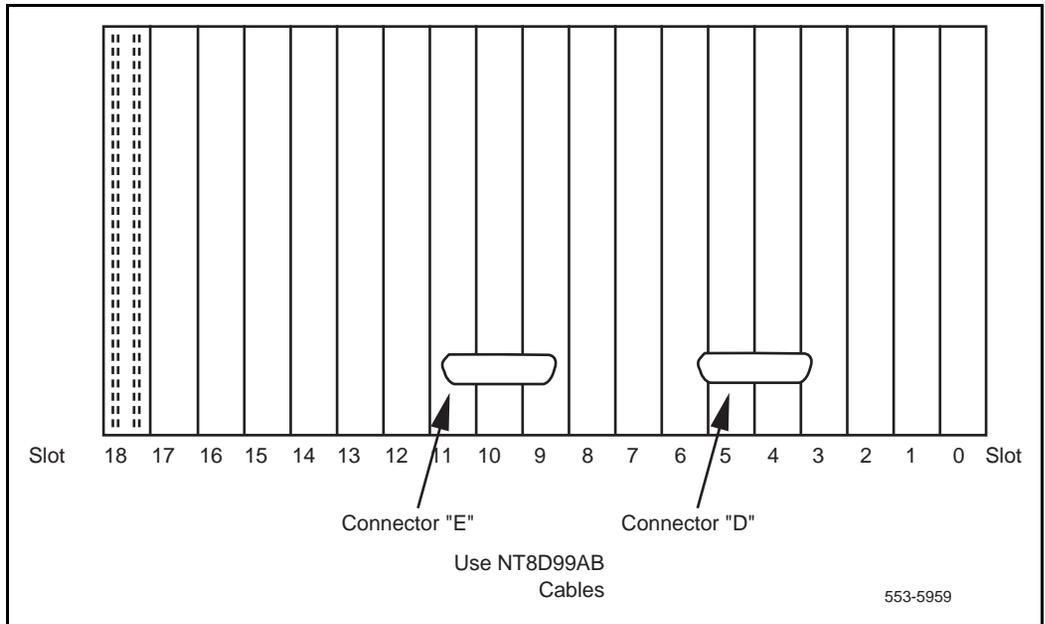
- 30** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 103).
- 31** At the rear of each Core/Net module, install the NT7D89 RS-232 cable that connects the CPSI ports to the left I/O panel. The Y-cable connects one backplane connector to two connectors on the I/O panel (see Figure 103).
  - a** Connect the single-connector end of the cable to backplane connector position 15D. The other end connects to locations J21 and J25 on the left I/O panel.

**Figure 103**  
**NT5D21 Core/Net module (rear)—RS-232 cable connections for CPSI ports**



- 32 Install the first NT8D99AB cable from the backplane connector labeled “D” in Core/Net 0 to the backplane connector labeled “D” in Core/Net 1 (see Figure 104).
- 33 Install the second NT8D99AB cable from the backplane connector labeled “E” in Core/Net 0 to the backplane connector labeled “E” in Core/Net 1 (see Figure 104).

**Figure 104**  
**NT5D21 Core/Network Module location of D and E connectors (rear view)**



- 34** Route the two NTND14 cables from CNI port backplane connectors in the new NT5D21 Core/Net (1) Module to the faceplate of the 3PE card in the Group 1, Shelf 0 Network module. (refer to Table 82 and Figure 97, on page 551).

*Note:* Cables are not required for the network group in the Core/Net module. Communication between port 0 on the CNI card in slot 12 and the 3PE card in slot 11 accomplished through the backplane.

- 35** Using the two existing cables, connect J4 on the faceplate of the 3PE card in Core/Net 0, Group 0 to connector J4 on the faceplate of the 3PE card in Core/Net 1, Group 0. Connect J3 on the faceplate of the 3PE card in Core/Net 0, Group 0 to J3 on the faceplate of the 3PE card in Core/Net 1, Group 0.

**Table 82**  
**CNI port to 3PE NTND14 cable connections for Core/Net 0**

Cable for Group		CNI port backplane connector on Core/Net 0		3PE card connector in Net Shelf 0
0	connects from	12A	to	(see Note 1)
0		12C		(see Note 1)
1		12D		J3
1		12F		J4
2		13A		J3
2		13C		J4
3		13D		J3
3		13F		J4
4		14A		J3
4		14C		J4

**Note:** Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

**Note 1:** Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.

- 36 For systems using IODU/C, locate the round 1/2" diameter IODU/C security device. With the Nortel Networks side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 37 Place the IOP/CMDU or IODU/C card in slot 17 (the card occupies two slots). Set the front panel ENB/DIS switch to DIS.
- 38 Verify that the NORM/MAINT switch on the CP card is set to MAINT. Place the CP card in slot 15 of the NT5D21 Core/Net 0 module (the card occupies two slots).
- 39 Remove the CNI card from the NT9D11 Core/Net 0 card cage and set the front panel ENB/DIS switch to DIS. Place the card in slot 12 of the NT5D21 Core/Net 0 module.

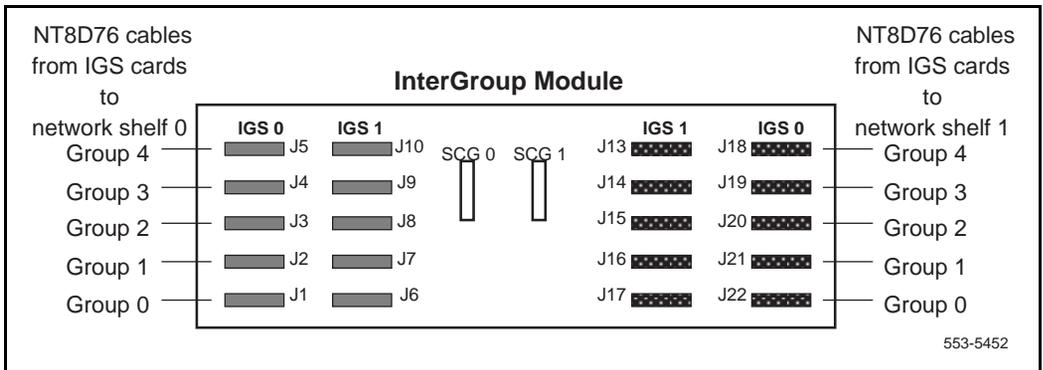
- 40 Remove the QPC441F 3PE card from the NT9D11 Core/Net 0 card cage and set the front panel ENB/DIS switch to DIS. Verify the switch and jumper settings on the card (see Table 83). Place the card in slot 11 of the NT5D21 Core/Net 0 module.

**Table 83**  
**QPC441F 3PE card switch settings for Group 0, Core/Net 0**

D20 switch							
1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	on
<b>Note:</b> RN27 jumper at E35: set to "A" for all modules							

- 41 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to DIS.
- 42 Install two QPC412 IGS cards in slots 8 and 9 of Core/Net 0. Set the front panel ENB/DIS switch to DIS.
- 43 Route NT8D76 cables from the IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module (see Figure 105). Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 0, IGS 0).

**Figure 105**  
**QPC412 IGS card cable assignments to the InterGroup module**



- 44 Remove the network cards from the NT9D11 Core/Net 0 card cage and install them in the new NT5D21 Core/Net 0 module. Install the cards in the same numbered slots from which they were removed.
- 45 Use any remaining network and serial cables to connect the network cards installed in slots 0 through 7 on Core/Net 0. Connect the cables to the same connector to which they were connected in the old card cage.  
*Note:* You may have cables left over after completing this step. Leave these cables installed until the new Option 81C has been tested and is working correctly. You can remove them later.
- 46 Remove the trim panels on both sides of the existing NT9D11 Core/Net (1) Module (see Figure 98, on page 561).
- 47 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.  
*Note:* It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.
- 48 Remove the I/O safety panel that covers the rear of the backplane. Label and disconnect from the backplane all cables that terminate at the I/O panels.
- 49 Label and disconnect the system monitor ribbon cables connecting to J1 and J2.
- 50 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

**CAUTION**

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 51 Pull the card cage forward until it is half-way out of the module.
- 52 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.

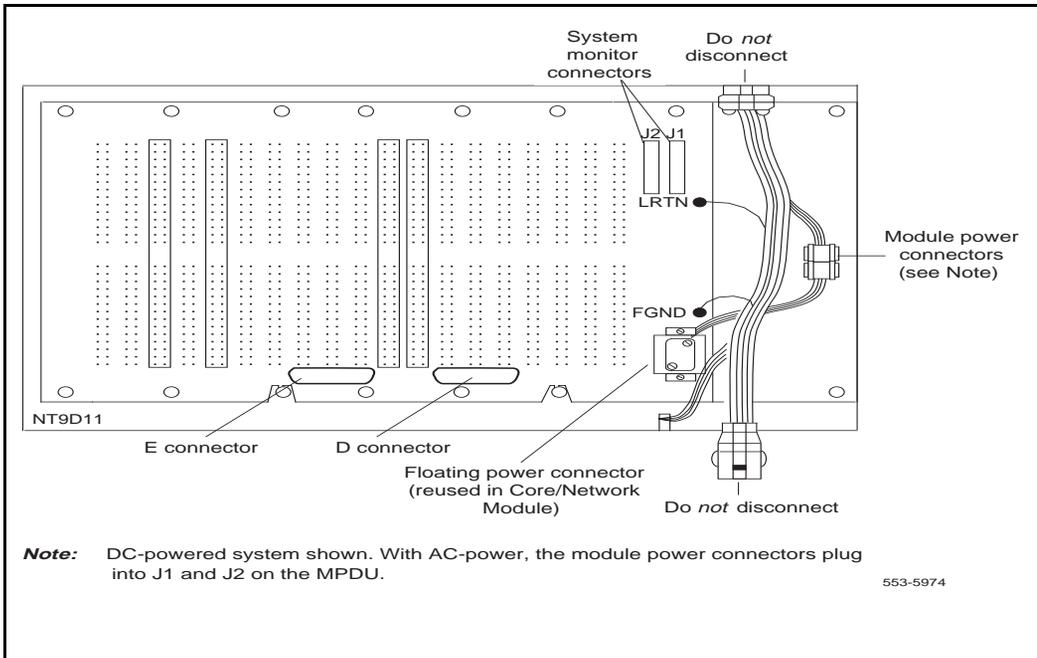
- 53 Label and disconnect the module power connectors. There are small orange connectors plugged into the rear of the MPDU (in AC-powered systems), or connected to each other (in DC-powered systems).
- 54 Remove the card cage from the module.

**CAUTION**

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module (see Figure 106).

- 55 Install the new floating power connectors at the two locations on the NT8D37 IPE card cage. Using the same mounting screws and nuts, attach the connectors to the brackets.  
  
*Note:* Check the orientation of the connectors. Looking at each from the rear of the card cage, the upper left corner pin should be empty (no wire) and the green wire should be at the top right corner.
- 56 Slide the IPE card cage about half-way into the module. Hold the card cage firmly while attaching the power connectors at the rear of the module:
  - a Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.  
  
*Note:* For all of the wire terminals to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

**Figure 106**  
**Power connections on the rear of the NT9D11 Core/Net module backplane**



- b** Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- c** Connect the module power connectors: in AC-powered systems, connect them to the MPDU; in DC-powered systems, connect them to each other.
- d** Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.

**57** Slide the card cage all the way into the module.

**58** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.

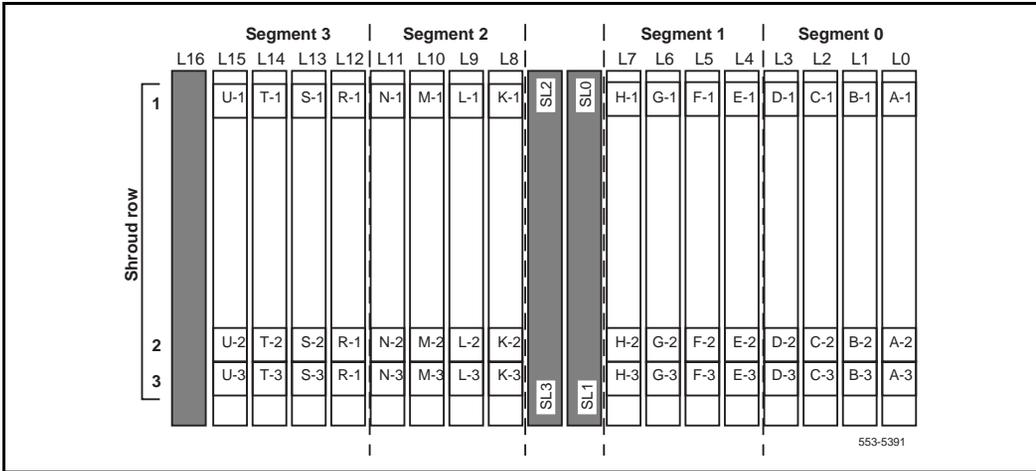
- 59** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 60** In the IPE module, install the NT8D81AA cables between the I/O panel and the backplane, as indicated in Table 84 and Figures 107 and 108.

**Table 84**  
**NT8D37 cable connections for 16-cable configuration**

Backplane slots-shroud rows	I/O panel/cable designation
L0-1, 2, 3	A
L1-1, 2, 3	B
L2-1, 2, 3	C
L3-1, 2, 3	D
L4-1, 2, 3	E
L5-1, 2, 3	F
L6-1, 2, 3	G
L7-1, 2, 3	H
L8-1, 2, 3	K
L9-1, 2, 3	L
L10-1, 2, 3	M
L11-1, 2, 3	N
L12-1, 2, 3	R
L13-1, 2, 3	S
L14-1, 2, 3	T
L15-1, 2, 3	U

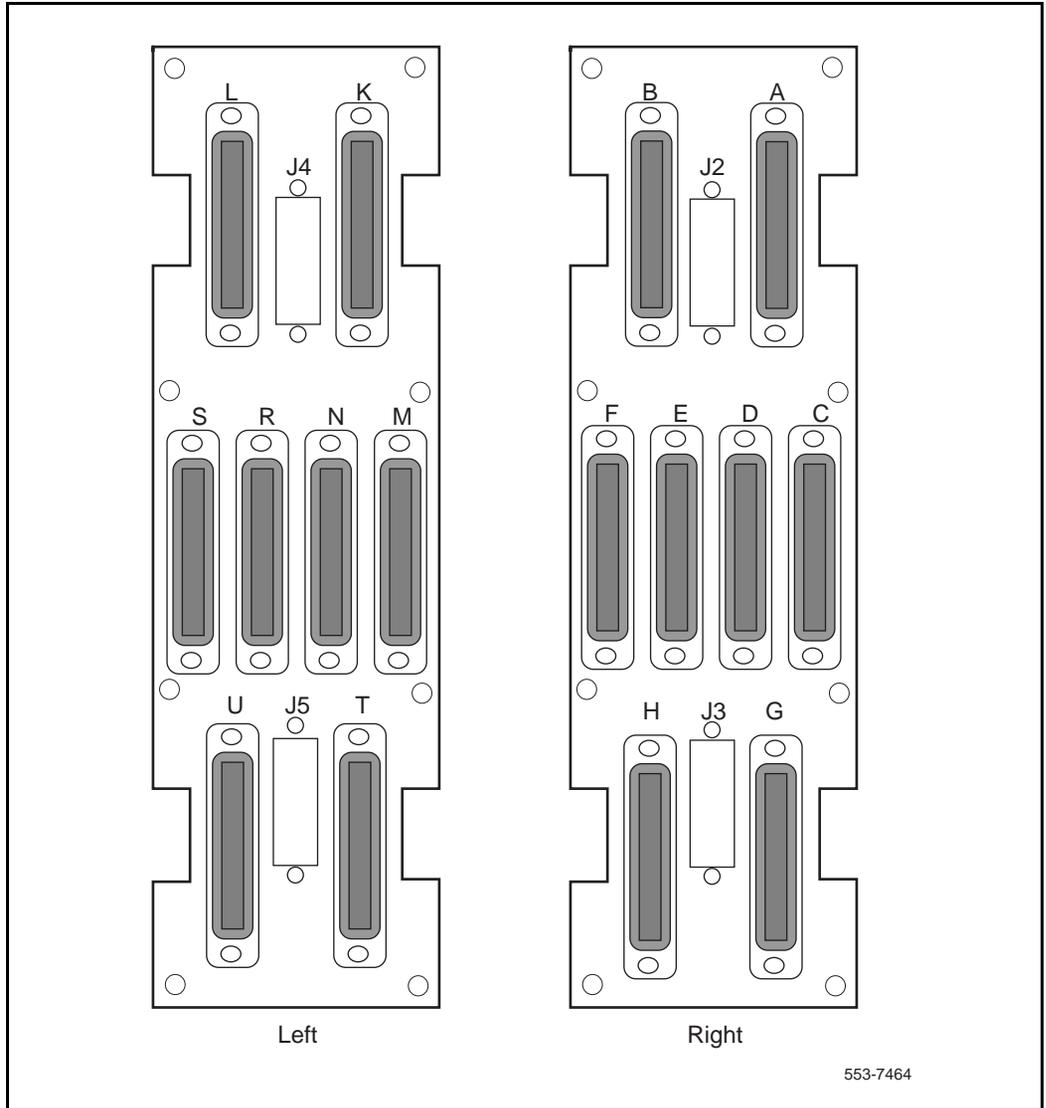
- 61** On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 109, on page 578)
- 62** In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 63** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 64** Snap the extraction tool into the clamp.
- 65** Attach the IPE module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.

**Figure 107**  
**NT8D37 backplane cable designations for 12-cable configuration**

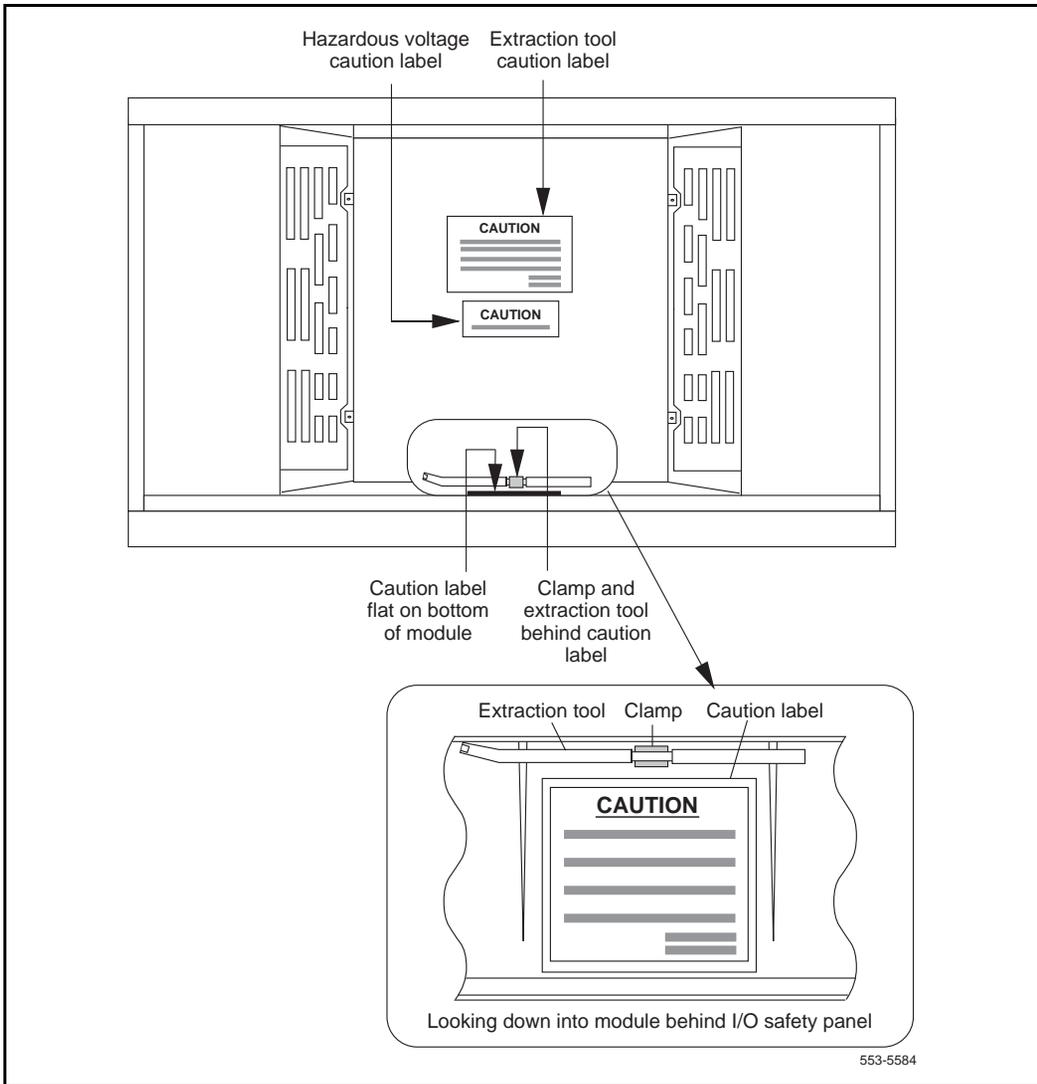


- 66 Connect a terminal to the DCE port (J25) on the I/O panel in Core/Net 0. Use the following settings on the terminal:  
 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol  
*Note:* Refer to “Terminal and modem connections” on page 933 before connecting the terminal.
- 67 Perform the appropriate step to turn on power to the column containing Core/Net 0:
  - a For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal.
  - b For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 68 On the active processor (Core/Net 1) enable all common equipment cards that are in the Group 0, Shelf 0 side of the Core/Net 0 module (loops 0 through 15).

**Figure 108**  
**NT8D37 IPE Module I/O panels for 12-cable configuration**



**Figure 109**  
**Positioning the extraction tool and caution labels**



- 69** Press the MAN RST button on the CP card in Core/Net 0. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages: If the CP card fails the self-test, refer to “Troubleshooting” on page 959.

Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 959.

- 70** Seat the system monitor in the pedestal and secure the thumbscrews.

## Copying software in Core/Net 0

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1** Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2** Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3** Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>>` to Install menu
- 4** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>` continue with keycode validation
- 5** Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6** When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:  
`<0>` to copy system software from the other Core

- 7 When the software is installed successfully, press <CR> to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:
  - <f> to install IOP-ROM only
  - <cr> <a> to install the IOP-ROM from hard disk
  - <y> Yes, start installation
  - <cr> <a> to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0:
  - <d> to go to the Database menu
  - <d> to copy the database from Core 1 to Core 0
  - <y> to confirm the installation status summary
  - <a> to confirm database copy
- 10 From the Main Menu, select the following options to quit and reload the system:
  - <q> to quit
  - <y> to confirm quit
- 11 Reboot the Core/Net 0 CPU:
  - <a> to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 13 In Core/Net 0, press and release the MAN RST button.
- 14 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**

- 15** In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 16** In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

## Completing the upgrade

These steps describe how to perform tests on the CPUs and how to synchronize the hard disk drives:

- 1** Perform a redundancy sanity test:

**LD 135** to load the program  
**STAT CNI** to get the status of all configured CNIs  
**STAT CPU** to get the status of both Cores  
**TEST CPU** to test the inactive CP card and CP-to-CP cable  
**TEST CNI c s** to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 2** Synchronize the hard disk drives. To be sure the content of CMDU 1 is copied to CMDU 0, verify that CMDU 0 is software disabled:

**LD 137** to load the program  
**STAT** get the status of CMDUs, IOPs, and redundancy  
**SYNC** synchronize the hard disk drives  
**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes. Wait until the hard disk synchronization is complete before continuing.

- 3    Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:  
**STAT**            to get the status of IODU/Cs  
**SWAP**            to switch IODU/Cs (if necessary)  
**\*\*\*\***            to exit LD 137
  
- 4    Switch Cores and test the other CPU:  
**SCPU**            to switch to Core/Net 0  
**TEST CPU**        to test the inactive CP card and CP-to-CP cable
  
- 5    Get the status of the CP cards and memories and of the CNIs:  
**STAT CPU**        to get the status of both Cores  
**STAT CNI**        to get the status of all configured CNIs  
**\*\*\*\***            to exit LD 135
  
- 6    Insert the database diskette into IODU/C 0.
  
- 7    Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43**            to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD**            to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**\*\*\*\***            to exit the program

- 8** Test the IOP to IOP SCSI connection and test the IODU/C or IOP/CMDUs:
- LD 137** to load the program
  - TEST SCSI** to check the IOP to IOP connection and access to the IODU/C s
  - TEST CMDU** to test the hard and floppy disk drives (a floppy diskette must be installed)
  - \*\*\*\*** to exit the program
- 9** Clear displays, major alarms, and minor alarms:
- LD 135** to load the program
  - CDSP** to clear the display
  - CMAJ** to clear all major alarms
  - CMIN ALL** to clear all minor alarms
  - SCPU** to switch to the other Core
  - CDSP** to clear the display
  - \*\*\*\*** to exit the program
- 10** Set the front panel ENB/DIS switch on clock controller cards 0 and 1 to ENB.
- 11** Software enable the clock controller cards and any PRI/DTI cards in the Core/Net modules:
- LD 60** to load the program
  - ENL CC 0** to enable clock controller 0
  - ENL CC 1** to enable clock controller 1
  - TRCK aaa** if necessary, to set tracking
  - \*\*\*\*** to exit the program
- 12** Reinstall the system monitor: first reconnect the cable to J6, then the cable to J3, then seat the system monitor and secure the thumbscrews.
- 13** Software enable the associated SDI port:
- LD 37** to load the program
  - ENL TTY** to enable the device associated with the port
  - STAT XSM** to check the status of the system monitor
  - \*\*\*\*** to exit the program

- 14 Remove any cables that may have been temporarily left in the system during the upgrade.
- 15 For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 16 Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The upgrade is complete.

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# Option 61C (NT5D21 card cage) upgrade to Option 81C

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## Content list

The following are the topics in this section:

- [Reference list 585](#)
- [Equipment required 590](#)
- [Upgrade preparation 595](#)
- [Installing the new modules 596](#)
- [Performing a data dump 598](#)
- [Splitting the CPUs on the Option 61C 599](#)
- [Transferring the customer database to 2MB diskettes 600](#)
- [Converting the database to Release 25 601](#)
- [Configuring the system 604](#)
- [Moving the clock controller cards 607](#)
- [Copying software in Core/Net 0 615](#)
- [Completing the upgrade 617](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *System Installation Procedures* (553-3001-210)
- *Hardware Replacement* (553-3001-520)

- *Capacity Engineering* (553-3001-149)
- *Software Conversion Procedures* (553-2001-320)
- *Power Engineering* (553-3001-152)
- *System Engineering* (553-3001-151)
- *X11 Administration* (553-3001-311)

This section describes how to upgrade an Option 61C, that has NT5D21 card cages installed in the Core/Net modules, to an Option 81C.

To upgrade an Option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing additional modules
- upgrading CP card memory, if required
- installing new network cables
- transferring clock controller cards from the Option 61C to the new modules
- verifying that the phones are working

Upgrading the software consists of installing X11 Release 25 software

**CAUTION**

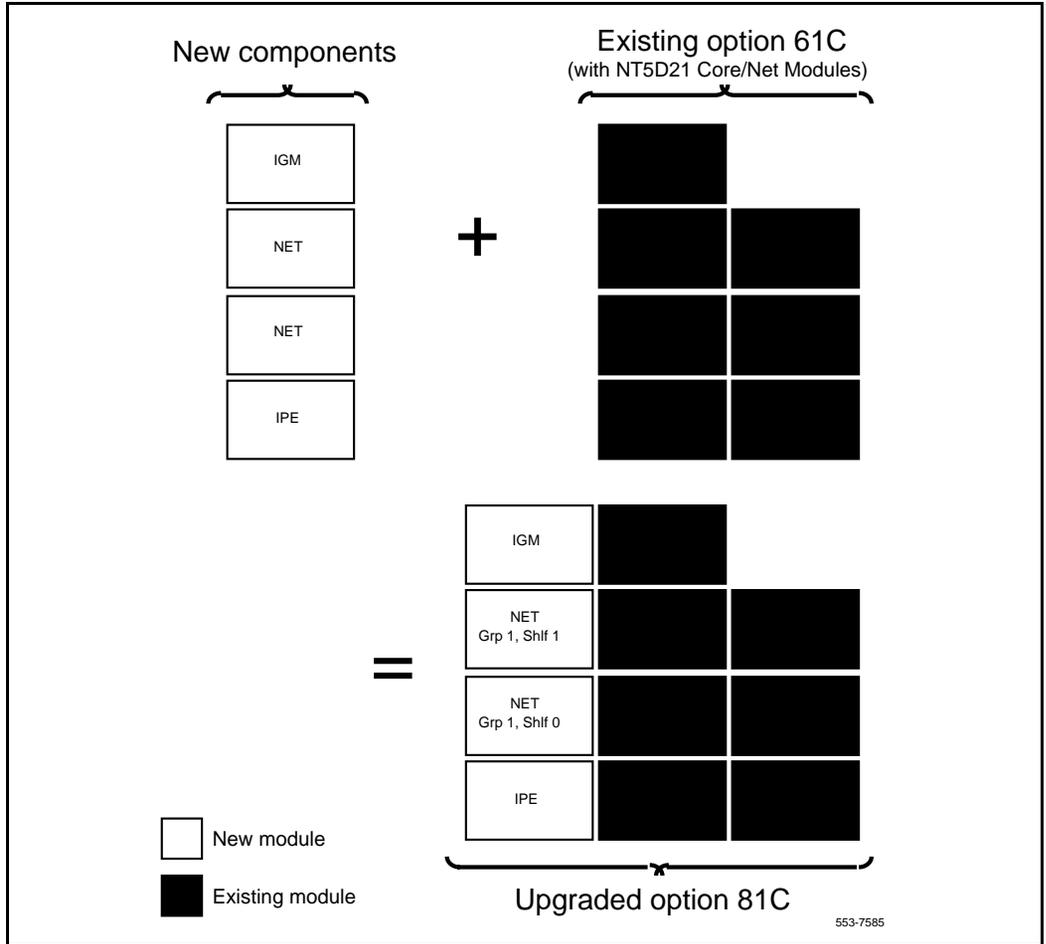
Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

Figures 110 and 111 show the upgrades from Option 61C to Option 81C. The side-by-side Core/Net configuration (Figure 110) is covered in this procedure. The over-and-under Core/Net configuration (Figure 111) is an optional configuration, not covered in this procedure.

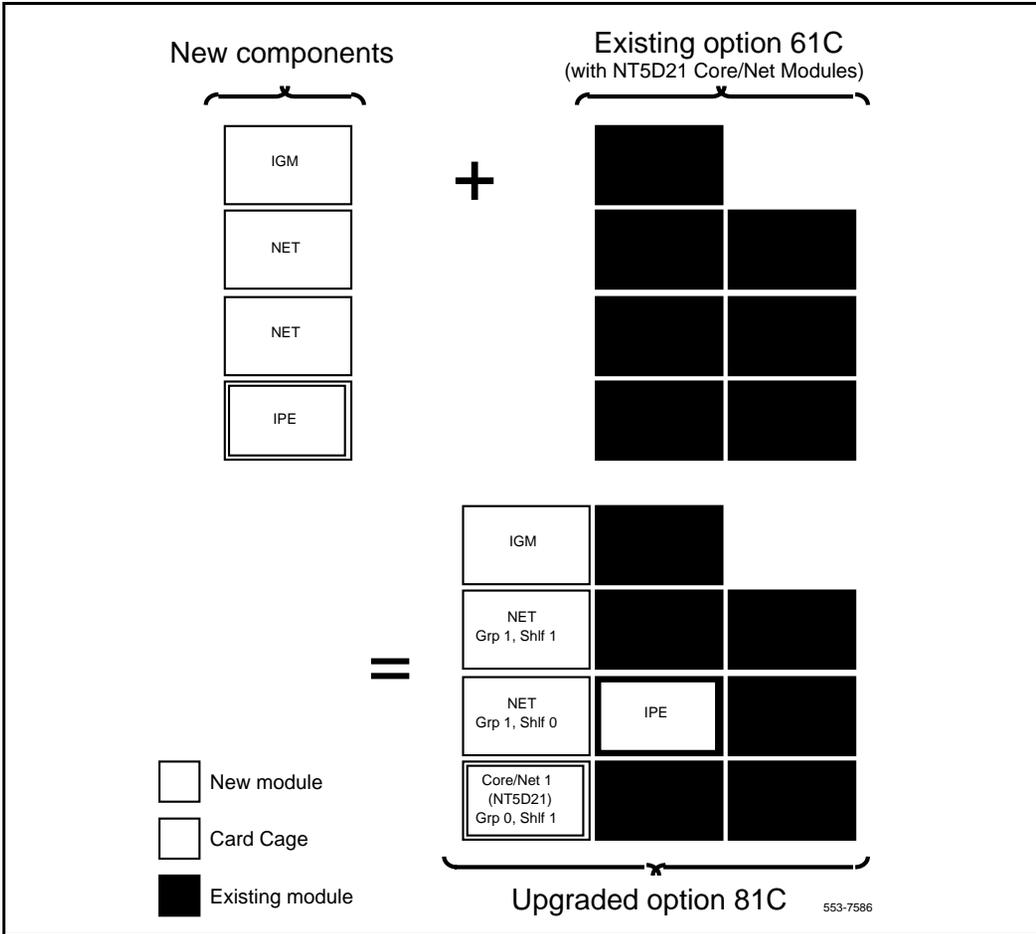
Figure 112 shows an Option 81C as typically configured.

Upgrading your system may require that you install an IPE card cage or a Core/Net card cage into a UEM. These two installations are covered in the procedures that come in the upgrade package.

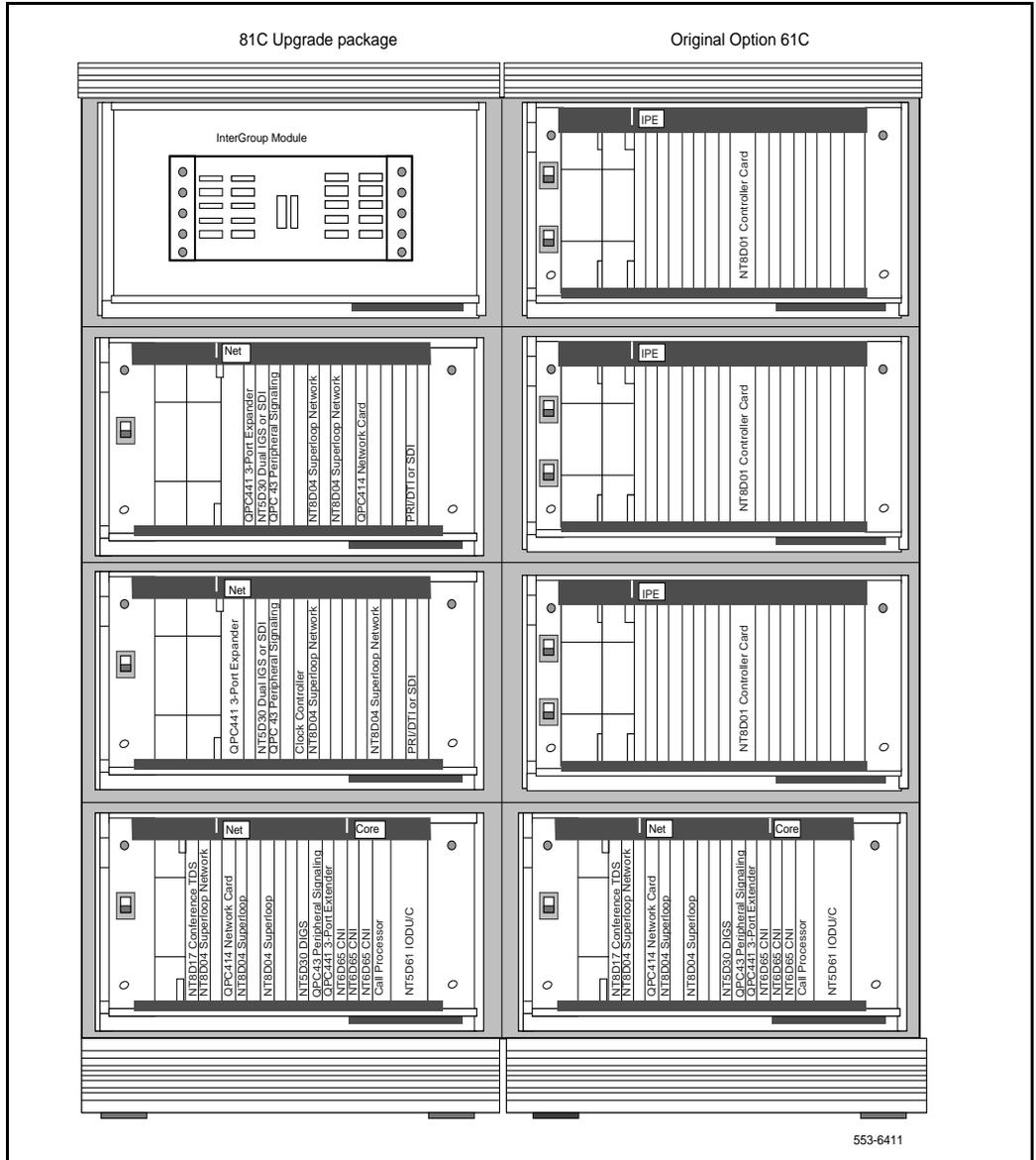
**Figure 110**  
**Upgrade from Option 61C to Option 81C**



**Figure 111**  
**Alternate upgrade from Option 61C to Option 81C**



**Figure 112**  
**Meridian 1 Option 61C upgraded to Option 81C**



## Equipment required

Tables 85 and 86 list the items required to upgrade an AC- or DC-powered 61C system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment in the cabinet to network cards in the new network modules. The number of cables required depends on the number of network cards installed. These are:

- NT8D86AC cables that connect the network card and the peripheral buffer card to the I/O panel
- NT9J96 cables that connect the I/O panel in the Core/Net module to the cabinet I/O panel

An NT8D01 controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

**Table 85**  
**Hardware requirements for an AC-powered Option 81C (Part 1 of 2)**

<b>Qty</b>	<b>Part number</b>	<b>Description</b>
2	NT5D61AA	IODU/C Card (replaces IOP/CMDU)
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
2	NT8D35BA	Network Module AC
1	NT8D36AA	Inter Group Module
1	NT8D37BA	Intelligent Peripheral Equipment Module AC
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D52AB	Pedestal Blower Unit AC
1	NT8D53BB	Power Distribution Unit AC
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)

**Table 85**  
**Hardware requirements for an AC-powered Option 81C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable (2 ft.)
4	NTND14BB	CNI to 3PE Cable (8 ft.)
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender

**Note:** QPC471 Clock controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. QPC471 and QPC775 cards cannot be combined in one system. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** Two CP cards are required.

**Table 86**  
**Hardware requirements for a DC-powered Option 81C (Part 1 of 2)**

<b>Qty</b>	<b>Part number</b>	<b>Description</b>
2	NT5D61AA	IOU/C Card (replaces IOP/CMDU)
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
1	NT8D36AA	Inter Group Module
1	NT8D37EC	Intelligent Peripheral Equipment Module DC
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D52DD	Pedestal Blower Unit DC
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)
1	NT8D91AE	Network to Controller Cable (8 ft.)

**Table 86**  
**Hardware requirements for a DC-powered Option 81C (Part 2 of 2)**

Qty	Part number	Description
5	NT8D99AB	CPU to Network Cable (2 ft.)
4	NTND14BB	CNI to 3PE Cable (8 ft.)
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender

**Note:** QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. QPC 471 and QPC775 cards cannot be combined in one system. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** Two CP cards are required.

## Upgrade preparation

Some preparation is required before you begin converting the Option 61C hardware and software:

- inventory all equipment required for the upgrade
- provide appropriate power and ground for the increased electrical load of the new modules

### Power and ground

Clean power and a good ground are prerequisites to any system upgrade. Refer to *System Engineering* (553-3001-151) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *System Installation Procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

### Relocating the clock controller cards

**Note:** The QPC471 Clock Controller cards must be vintage H or later. If QPC775 Clock Controller Cards are used, they must be vintage E, or later. Order replacement cards if existing cards do not meet this vintage requirement. QPC471 and QPC775 cards cannot be combined in one system.

This Option 81C upgrade requires you to relocate the clock controller cards from the Option 61C NT5D21 Core/Net Modules to the new NT8D35 Network Modules in the Option 81C. Clock controller cards cannot be placed in the Option 81C NT5D21 Core/Net modules.

When relocating the clock controller cards, clock reference cabling and InterGroup Module (IGM) cabling may be affected. Order replacement cables if new cables are required.

### Replacing 3PE cards

The QPC441 3PE cards must be vintage "F" or later. Replacement cards must be ordered if existing cards do not meet this vintage requirement. Refer to *Hardware Replacement* (553-3001-520) for card replacement procedures.

### Increasing CP card memory

To determine whether your system will operate on Release 25 software using the NT6D66 CP card, refer to the Nortel Networks technical publication (NTP), *Capacity Engineering* (553-3001-149). For memory upgrade procedures, refer to *Software Conversion Procedures* (553-2001-320).

#### CAUTION

Increasing the on-board CP card memory from 24 MB to 48 MB will disrupt some telephone service. Plan this for a time when the impact on customers will be minimal.

### Installing the new modules

The new modules are pre-configured at the factory according to your requirements. The equipment consists of one column containing a pedestal, two network modules, one intergroup module (IGM), one universal equipment module (UEM), cards, and top cap. Cards such as IOP/CMDUs and power supplies are shipped in separate packages to prevent damage to the cards.

- 1 Install the new modules. Follow the procedures in *System Installation Procedures* (553-3001-210) when installing the system:
  - a Prepare equipment for installation.
  - b Place a fourth module on a column.
- 2 Install the module power supply in each module:
  - a Make sure the system is disconnected from any power source.
  - b Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
  - c Insert the power supply and engage the lock latches.
- 3 Install AC or DC power equipment. Refer to *Power Engineering* (553-3001-152) for ground wiring.
- 4 Make changes at the MDF as required to accommodate equipment in the new columns.
- 5 Install PFTUs (if required).

- 6 Configure the system monitor. Use the tables in *System Installation Procedures* (553-3001-210).
- 7 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 1 modules (see Table 87). Make sure Jumper RN27 is set to “A”.

**Table 87**  
**QPC441 3PE card switch settings for Network shelf 1 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off

**Note:** Jumper RN27 at location E35: set to A

- 8 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 0 modules (see Table 88). Make sure Jumper RN27 is set to “A”.

**Table 88**  
**QPC441 3PE card switch settings for Network shelf 0 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on

**Note:** Jumper RN27 at location E35: set to A

### Performing a data dump

To provide a safety backup of the customer database, perform a data dump to your current disks:

- 1 On the 61C system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**Splitting the CPUs on the Option 61C**

Before beginning the upgrade, disable CPU 1. To do this, perform these steps:

- 1** Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2** In the Option 61C, verify that CPU 0 is the active CPU, and switch CPUs if it is not:
  - LD 135** to load the program
  - STAT CPU** to get the status of the CPUs
  - SCPU** to switch CPUs (if required)
  - \*\*\*\*** to exit the program
- 3** Set the NORM/MAINT switch on the CP card in CPU 0 to MAINT.
- 4** Set the ENB/DIS switch on all CNI cards in Core/Net 1 to DIS.
- 5** Set the NORM/MAINT switch on the CP card in CPU 1 to MAINT.
- 6** Press the MAN INT button on the CP card in CPU 1.

## Transferring the customer database to 2MB diskettes

Use this procedure to transfer the customer database to 2MB diskettes using the Database Transfer Utility.

To be compatible with the IODU/C, you must transfer the customer database from 4MB diskettes used in IOP/CMDUs to 2MB diskettes used in IODU/Cs.

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

### CAUTION

**When using the Database Transfer Utility, only select options <t> Tools Menu and <s> To archive existing database. Selecting any other options can result in operating system corruption.**

- 4 From the installation menu select:
  - <t> to go to the Tools menu
  - <s> to archive existing database
  - <cr> <a> to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
  - <cr> <a> diskette is now in floppy drive in side 1

The message "Database backup complete!" is displayed and the Tool menu reappears after the backup is successfully completed.
- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core 1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

## Converting the database to Release 25

Use the following procedures to install the software and convert the database to Release 25.

- 1** Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2** Make sure that the Security Device is installed in the IODU/C.
- 3** Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4** Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).
- 5** Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6** Enter time and date, when prompted.
- 7** Initiate the installation by selecting the following prompt from the menu:
  - `<cr> <u>` to Install menu
- 8** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - `<a>` continue with keycode validation

- 9 Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
  - a press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b place the CD-ROM disk into the holder with the disk label showing
  - c use the four tabs to secure the CD-ROM in the disk holder
  - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  
- 10 When the install screen appears, select the following options in sequence when you are prompted to do so.
  - <b> to install software, database, CP-ROM, and IOP-ROM
  - <a> to verify that the CD-ROM is now in drive
  - <y> Yes, start the installation
  - <a> continue with upgrade
  
- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:
  - <a> to install customer database
  - <a> to continue with the database install
  - <a> to transfer the database from floppy to hard disk
  - <y> Yes, to start installation
  - <a> Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12** When the ROM installation screen appears, select the prompts in the following sequence:

<cr> <a>	to install CP-ROM from hard disk
<cr> <a>	to continue with ROM upgrade
<a>	to install the IOP-ROM from hard disk
<y>	Yes, start installation
<a>	to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13** From the main menu select prompts in the following sequence to quit and sysload the system:

<q>	to quit
<y>	Yes, to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- a** Verify that the following message appears on the system terminal:

**DATA CONVERSION**  
**X11 RELEASE XX.xx TO Release 25.xx**

- 14** Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

<b>LD 135</b>	to load the program
<b>STAT CPU</b>	to display the CPU status

**Note:** This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

## Configuring the system

- 1 Perform this step *only* if you upgraded the memory on the NT6D66DA/DB CP cards to 48 MB as part of this system upgrade. If you did not perform the memory upgrade procedure, skip to step 2.
  - a Configure the system with the new memory configuration:  
**LD 17** to load the overlay
  - b For each prompt, type the following response:  
**REQ** CHG  
**TYPE** CEQU
  - c Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DA CP card:  
**MCFN** 4 4 4 16 16

or,

  - d Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DB CP card:  
**MCFN** 8 8 16 16

**Note:** Be sure to insert one space between the values when typing.

- 2 Configure networks as CNI groups, based on the number of CNI cards in the system.

CNI ports are configured in LD 17 and can be assigned to support any network group from 0 to 4. See Table 89 for a typical Option 81C five group configuration. Refer to *X11 Administration* (553-3001-311) for a complete description of the Configuration Record (LD 17):

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
...		

CEQU	YES	
...		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p xg	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
...		
_CNI	s p g	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
...		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p xg	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
...		
_CNI	s p g	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
MCFN	4 4 4 4 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DA CP cards)
		or,
MCFN	8 8 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DB CP cards)
REQ	****	to exit the program

*Note:* If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See *X11 Administration* (553-3001-311) for procedures describing adding and removing groups.

**Table 89**  
**Typical CNI configurations for Option 61C upgrade to Option 81C**

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 3 Press the RETURN key until the “REQ” prompt appears and then enter:  
**REQ**                   \*\*\*\*
  
- 4 Print the Configuration Record to verify the above changes:  
**LD 22**               to load the program  
**REQ PRT**           to set the print option  
**TYPE CFN**         to print the configuration  
  
After verifying the changes, enter  
**\*\*\*\***               to exit the program
  
- 5 Insert an unused B1 database diskette from the software upgrade package into the IODU/C drive.

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## **Moving the clock controller cards**

These steps describe how to move the clock controller cards from the Core/Net modules to the network modules and how to transfer call processing.

- 1 If clock controller 1 is active, switch to clock controller 0:  
**LD 60** to load the program  
**SSCK 1** to get the status of clock controller 1  
**SWCK** to switch to clock controller 0, if necessary
- 2 Make sure clock controller 0 is active, and if it is, disable clock controller 1:  
**SSCK 0** to get the status of clock controller 0  
**DIS CC 1** to disable clock controller 1
- 3 Set the ENB/DIS switch on Clock Controller 1 to DIS. Label and disconnect all cables to the card, and remove the card from the module.
- 4 Set the switches on Clock Controller 1 (see Table 90).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 90**  
**Switch settings for Option 81C clock controller card 1**

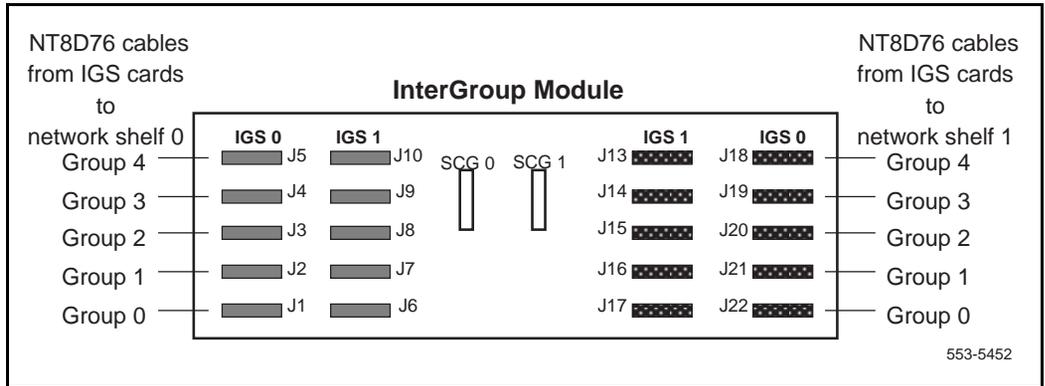
Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 5 Install Clock Controller 1 in slot 13 of Group 1, Shelf 1 Network module.  
**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.
- 6 Route an NT8D74 cable from connector J3 on Clock Controller 1 to connector J12 on the Junctor module.
- 7 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in Shelves 0 and 1 of the Group 1 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0).
- 8 If slot 8 is not empty, relocate the card in slot 8 to a vacant network slot.
- 9 Install, but do not seat, two QPC412 IGS cards in slots 8 and 9 of Core/Net 1 (IGS 0 in slot 8 and IGS 1 in slot 9).

- 10** Route NT8D76 cables from the IGS cards in Core/Net 1 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0). See Figure 113.

**Figure 113**  
**QPC412 IGS card cable assignments to the InterGroup module**



- 11** Route an NT8D74 cable from connector J4 in Clock Controller 1 in Core/Net 1 to connector J12 on the Junctor module.

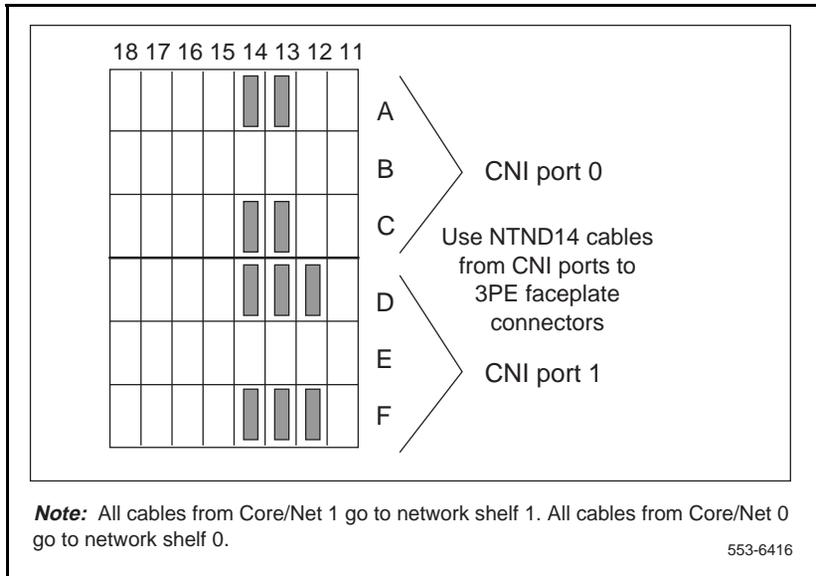
12 Route the two NTND14 cables from CNI cards to 3PE cards (refer to Table 91 and Figure 114).

**Table 91**  
**CNI to 3PE NTND14 cable connections for Core/Net 1**

Cable for Group	Backplane connector on Core/Net 1	3PE card connector in Net Shelf 1
1	12D	J3
1	12F	J4
2	13A	J3
2	13C	J4
3	13D	J3
3	13F	J4
4	14A	J3
4	14C	J4

**Note:** Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

**Figure 114**  
**NT5D21 Core/Net 1 (rear)—backplane connections for CNI slots**



- 13** Seat the QPC412 IGS cards in Core/Net 1 and engage the lock latches.
- 14** Verify that the NORM/MAINT switch on the CP card in Core 1 is set to MAINT.
- 15** Perform the next 4 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from Core/Net 0 to Core/Net 1:
  - a** Set the ENB/DIS switch to DIS on the IODU/C or IOP/CMDU card in Core/Net 0
  - b** Set the ENB/DIS switch on all CNI cards in Core/Net 0 to DIS.
  - c** Set the ENB/DIS switch on all CNI cards in Core/Net 1 to ENB.
  - d** Press the MAN INT button on the CP card in Core/Net 1.

After the initialization message (“INI”) appears on the display, check for dial tone.

- 16** Check the status of all configured CNI cards:

<b>LD 135</b>	to load the program
<b>STAT CNI</b>	to get the status of all configured CNIs
<b>****</b>	to exit the program

- 17** Check the status of the clock controllers:

<b>LD 60</b>	to load the program
<b>SSCK 1</b>	to check the status of clock controller 1
<b>ENL CC 1</b>	to enable clock controller 1 (if necessary)
<b>SSCK 0</b>	to check the status of clock controller 0; should be in Standby mode
<b>SWCK</b>	to switch to clock controller 1 (if necessary)
<b>SSCK 0</b>	to check the status of clock controller 0; should be in Standby mode
<b>DIS CC 0</b>	to disable clock controller 0

- 18** Set the ENB/DIS switch on Clock Controller 0 to DIS. Label and disconnect all cables to the card, and remove the card.
- 19** Set the switches on Clock Controller 0 (see Table 92).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 92**  
**Switch settings for Option 81C clock controller card 0**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

**20** Install Clock Controller 0 in slot 13 of Group 1, Shelf 0 Network module.

**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**21** Route NT8D74 cable(s) to Clock Controller 0 and reconnect.

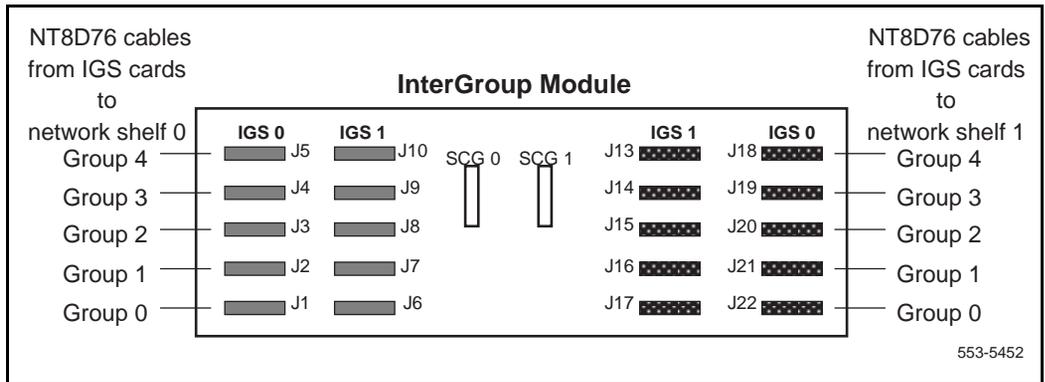
**22** If not already installed, route the NT8D76 cables from the QPC412 IGS cards in Shelves 0 and 1 of the Group 0 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (see Figure 115, on page 613).

**23** If slot 8 is not empty, relocate the card in slot 8 to a vacant network slot.

**24** Install, but do not seat, two QPC412 IGS cards in slots 8 and 9 of Core/Net 0 (IGS 0 in slot 8 and IGS 1 in slot 9).

- 25 Route NT8D76 cables for IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors in the junctor module (i.e. Group 0, Network Shelf 0, IGS 0). See Figure 115.
- 26 Route an NT8D74 cable from connector J4 in Clock Controller 0 in Core/Net 0 to connector J11 on the junctor module.
- 27 Seat the QPC412 IGS cards in Core/Net 1 and engage the lock latches.

**Figure 115**  
**QPC412 IGS card cable assignments to the InterGroup module**



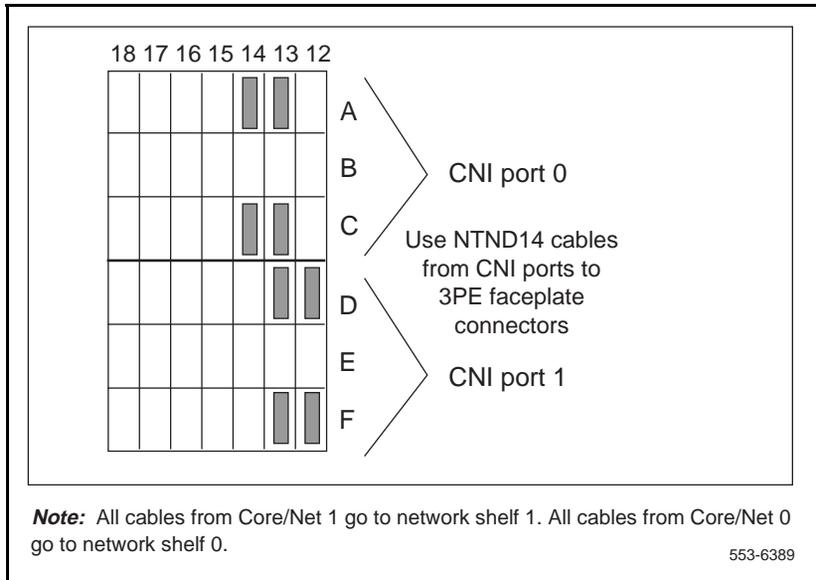
28 Route the two NTND14 cables from CNI cards to 3PE cards (refer to Table 93 and Figure 116)

**Table 93**  
**CNI to 3PE NTND14 cable connections for Core/Net 0**

Cable for Group		Backplane connector on Core/Net 0		3PE card connector in Net Shelf 0
1	connects from	12D	to	J3
1		12F		J4
2		13A		J3
2		13C		J4
3		13D		J3
3		13F		J4
4		14A		J3
4		14C		J4

**Note:** Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

**Figure 116**  
**NT5D21 Core/Net 0 (rear)—backplane connections for CNI slots**



## Copying software in Core/Net 0

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>>` to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>` continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:  
`<o>` to copy system software from the other Core
- 7 When the software is installed successfully, press `<CR>` to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:  
`<f>` to install IOP-ROM only  
`<cr> <a>` to install the IOP-ROM from hard disk  
`<y>` Yes, start installation  
`<cr> <a>` to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:
- <d> to go to the Database menu
  - <d> to copy the database from Core 1 to Core 0
  - <y> to confirm the installation status summary
  - <a> to confirm database copy

- 10 From the Main Menu, select the following options to quit and reload the system:
- <q> to quit
  - <y> to confirm quit

- 11 Reboot the Core/Net 0 CPU:
- <a> to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 13 In Core/Net 0, press and release the MAN RST button.
- 14 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 15 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 16 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

## Completing the upgrade

These steps describe how to perform tests on the CPUs and how to synchronize the hard disk drives:

- 1 Perform a redundancy sanity test:

**LD 135** to load the program  
**STAT CNI** to get the status of all configured CNIs  
**STAT CPU** to get the status of both Cores  
**TEST CPU** to test the inactive CP card and CP-to-CP cable  
**TEST CNI c s** to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 2 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is software disabled:

**LD 137** to load the program  
**STAT** get the status of IODU/Cs, IOPs, and redundancy  
**SYNC** synchronize the hard disk drives  
**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes. Wait until the hard disk synchronization is complete before continuing.

- 3 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

**STAT** to get the status of IOPs, IODU/C and redundancy  
**SWAP** to switch IODU/Cs (if necessary)  
**\*\*\*\*** to exit LD 137

- 4 Switch Cores and test the other CPU:

**SCPU** to switch to Core/Net 0  
**TEST CPU** to test the inactive CP card and CP-to-CP cable

- 5    Get the status of the CP cards and memories and of the CNIs:
- STAT CPU**    to get the status of both Cores
  - STAT CNI**    to get the status of all configured CNIs
  - SCPU**        to swap to Core/Net 1 active
  - \*\*\*\***         to exit LD 135
- 6    Check the status of the clocks, swap clocks and verify status:
- LD 60**        to load the program
  - SSCK 0**      if get the status of clock 0
  - SSCK 1**      to get the status of clock 1
  - SWCK**        to swap active clocks
  - SSCK 0**      to verify that clock 0 is active
  - SSCK 1**      to verify that clock 1 is inactive
  - \*\*\*\***         to exit the program
- 7    Insert the B database diskette into IODU/C 0.
- 8    Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- LD 43**        to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

- EDD**         to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- \*\*\*\***         to exit the program

- 9** Test the IOP to IOP SCSI connection and test the IODU/Cs:
- LD 137** to load the program
  - TEST SCSI** to check the IOP to IOP connection and access to the IODU/Cs
  - TEST CMDU** to test the hard and floppy disk drives (a floppy diskette must be installed)
  - \*\*\*\*** to exit the program
- 10** Clear displays, major alarms, and minor alarms:
- CDSP** to clear the display
  - CMAJ** to clear all major alarms
  - CMIN ALL** to clear all minor alarms
  - SCPU** to switch to the other Core
  - CDSP** to clear the display
  - \*\*\*\*** to exit LD 135
- 11** Reinstall the system monitor in column 1. Reconnect the cables.
- 12** On the master system monitor (column 0), reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.
- 13** Software enable the associated SDI port:
- LD 37** to load the program
  - ENL terminal x** to enable the device associated with the port
  - STAT XSM** to check the status of the system monitor
  - \*\*\*\*** to exit the program
- 14** For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 15** Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The upgrade is complete.



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# Option 71 card cage upgrade to Option 81C

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## Content list

The following are the topics in this section:

- [Reference list 621](#)
- [Equipment required 625](#)
- [Upgrade preparation 626](#)
- [Upgrading the CPU 1cardcage 634](#)
- [Transferring the database to IODU/C 653](#)
- [Installing Release 25 software in Core/Net 1 658](#)
- [Configuring the system 661](#)
- [Upgrading CPU 0 667](#)
- [Copying software and database to Core/Net 0 681](#)
- [Completing the upgrade 683](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- “Tools” on page 21
- *Hardware Replacement* (553-3001-520)
- *Capacity Engineering* (553-3001-149)
- *X11 Administration* (553-3001-311)

- “Troubleshooting” on page 959
- *System Installation Procedures (553-3001-210)*

**CAUTION**

Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

This procedure applies to Option 71 systems housed in modules. For Option 71 systems housed in QCA55 and QCA108 cabinets, use the upgrade procedure “XT and Option 71 Core/Net module upgrade to Option 81C” on page 143.

Upgrading the Option 71 to Option 81C (see Figure 117) consists of:

- Removing the card cage in each NT8D34 CPU module.
- Installing card cages to create NT5D21 Core/Net modules.

The hardware required for this upgrade is provided in the Core/Net card Cage Upgrade Package. All existing equipment that will be retained must be compatible with X11 Release 25. Order replacements for all equipment that does not comply.

Verify the vintages of the QPC441 3PE, QPC471 and QPC775 Clock Controller cards. If any existing card in the system is not the minimum vintage or later, replace it with a new card.

**Table 94**  
**Option 81C card vintages**

Card	Minimum vintage
QPC441	F
QPC471	H
QPC775	E

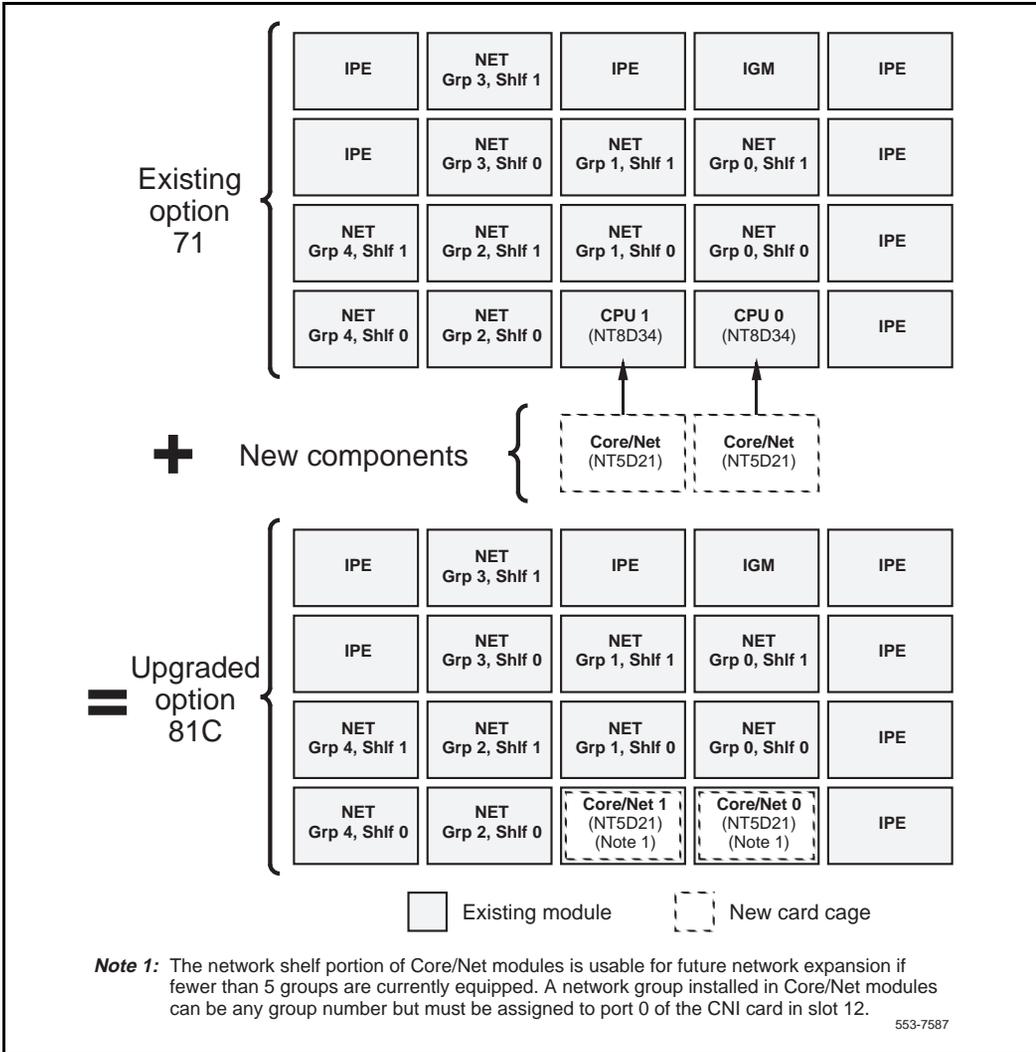
**Note:** QPC471 and QPC775 Clock Controller cards cannot be combined in one system. All 3PE cards in the system must be of the same vintage.

During the upgrade procedures, the following service interruptions may occur:

- For AC-powered systems, power to the entire column being upgraded must be turned off for safety reasons. This causes loss of service to any network, I/O, or service cards located in that column.
- Transient calls, CDR information, PRI service, and traffic report information may be lost.
- If the peripheral software download feature is activated during system initialization, calls carried by superloop cards will be dropped.

Figure 117 shows the upgrade from Option 71 to Option 81C.

Figure 117  
Upgrade from Option 71 to Option 81C



## Equipment required

Table 95 lists the items required to upgrade an AC- or DC-powered Option 71 to an Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start. Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.

Letters at the end of a part number may represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Check the tool list in “Tools” on page 21. Make sure all the equipment is on hand.

**Table 95**  
**Hardware requirements for an AC- or DC-powered Option 81C**  
**(Part 1 of 2)**

Qty	Part number	Description
2	NT1R90BA	Field Upgrade Kit
1	NT1R91AA	UDS FastTalk Modem Kit
2	NT5D61AA	IODU/C Card

**Table 95**  
**Hardware requirements for an AC- or DC-powered Option 81C**  
**(Part 2 of 2)**

Qty	Part number	Description
2	NT5D2103	Core/Network Card Cage AC/DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D89CA	CP to I/O Panel RS232 Cable
2	NT7D90CA	IOP to I/O Panel Ethernet Cable
2	NT8D80BZ	CPU Interface Cable (5 ft.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
2	NTND14BA	CNI to 3PE Cable (6 ft.)
2	NTND14BC	CNI to 3PE Cable (10 ft.)

**Note:** QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** QPC441 3-PE cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.

**Note:** This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.

## Upgrade preparation

### CAUTION

Read through the entire procedure before you begin this upgrade. Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Cable routing access in the system becomes extremely limited when new network group cables are added during the card cage upgrade. Before you begin the upgrade, consider the following options and plan well ahead for network cabling:

- This procedure provides a back-out contingency as a safety factor; by disconnecting the network cables to CPU 1, you can leave them in place until the upgrade is complete. To do this, however, you may have to temporarily route the new network cables externally or along the front cable trays. This temporary routing requires that you disconnect and reroute the cables at the end of the upgrade.
- Alternative methods can be used, but since this provides no back-out contingency, the advantages and disadvantages should be carefully evaluated beforehand.

### **Labeling cables**

Before beginning the upgrade, it is important to label all cables in the upgrade kit so you can have the correct cable available when you need it.

To label the cables:

- 1 Remove the NTND14 cables from the upgrade package and sort them into separate piles according to part number and vintage (e.g. NTND14BA cables in one pile, NTND14BC cables in another, etc.).
- 2 Remove each label from the sheet of adhesive cable labels provided in the upgrade kit and attach a pair of identical labels to the appropriate cable (one label at each end of the cable). Refer to Tables 96 and 97 for correct label assignments when labeling NTND14 cables.

**Note:** You may have unneeded labels left over when you finish labeling the cables.

**Table 96**  
**NTND14 Core/Net 1-to-CNI cable label assignments**

Cable number	Label both ends
NTND14BC	CPU1-CNI-12D to 3PE-GRP0/1-J3
NTND14BC	CPU1-CNI-12F to 3PE-GRP0/1-J4
NTND14BD	CPU1-CNI-13A to 3PE-GRP1/1-J3
NTND14BD	CPU1-CNI-13C to 3PE-GRP1/1-J4
NTND14BA	CPU1-CNI-13F to 3PE-GRP2/1-J4
NTND14BA	CPU1-CNI-13D to 3PE-GRP2/1-J3
NTND14BB	CPU1-CNI-14A to 3PE-GRP3/1-J3
NTND14BB	CPU1-CNI-14C to 3PE-GRP3/1-J4
NTND14BB	CPU1-CNI-14D to 3PE-GRP4/1-J3
NTND14BB	CPU1-CNI-14F to 3PE-GRP4/1-J4

**Note:** The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

**Table 97**  
**NTND14 Core/Net 0-to-CNI cable label assignments (Part 1 of 2)**

Cable number	Label both ends
NTND14BA	CPU0-CNI-12D to 3PE-GRP0/0-J3
NTND14BA	CPU0-CNI-12F to 3PE-GRP0/0-J4
NTND14BA	CPU0-CNI-13A to 3PE-GRP1/0-J3
NTND14BA	CPU0-CNI-13C to 3PE-GRP1/0-J4
NTND14BB	CPU0-CNI-13D to 3PE-GRP2/0-J3
NTND14BB	CPU0-CNI-13F to 3PE-GRP2/0-J4
NTND14BC	CPU0-CNI-14A to 3PE-GRP3/0-J3

**Table 97**  
**NTND14 Core/Net 0-to-CNI cable label assignments (Part 2 of 2)**

NTND14BC	CPU0-CNI-14C to 3PE-GRP3/0-J4
NTND14BD	CPU0-CNI-14D to 3PE-GRP4/0-J3
NTND14BD	CPU0-CNI-14F to 3PE-GRP4/0-J4

**Note:** The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

### Performing a data dump

Before you proceed, backup the customer database by performing a data dump:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

#### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Replacing clock controller cards

If QPC471 Clock controller cards in the Option 71 are not minimum vintage H, or if QPC775 Clock controller cards are not minimum vintage E, replace them with minimum vintage cards (as directed in step 1 through step 3) before beginning the upgrade. If both clock controller cards are already minimum vintage, proceed page 633.

*Note:* QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

- 1** If the clock controller card in CPU 1 is not of the minimum vintage or later, install a new one:

*Note:* Use the clock controller cards provided in the upgrade package.

- a** Determine which CPU is active:

**LD 35**            to load the program  
**STAT CPU**      to get the status of the CPUs

- b** If CPU 1 is active, switch to CPU 0:

**TCPU**            to test the CPUs  
**SCPU**            to switch to CPU 0 (if necessary)  
**\*\*\*\***            to exit the program

- c** If clock controller 1 is active, switch to clock controller 0:

**LD 60**            to load the program  
**SSCK 1**          to get the status of clock controller 1  
**SWCK**            to switch to clock controller 0 (if necessary)

- d** Make sure clock controller 0 is active, and if it is, disable clock controller 1:

**SSCK 0**          to get the status of clock controller 0  
**DIS CC 1**        to disable clock controller 1  
**SSCK 1**          to verify clock controller 1 is disabled

- e Set the ENB/DIS switch on clock controller 1 to DIS. Label and disconnect the cable from connector J12 in the NT8D36 InterGroup module at the junctor board. Then disconnect the cable from the faceplate connector on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last. Note which slot you remove the card from; you will install the new card in this same slot.
- f Set the ENB/DIS switch on the replacement clock controller card to DIS, and set the switches on the replacement card (see Table 98).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card back into the slot from which you previously removed the clock controller card. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 98**  
Clock controller card switch settings for Option 71

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	off	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	off	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	off	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	off	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of both clock controller cables (no single cable can exceed 25 ft). All switches must be set the same on both clock controller cards.

**g**    Install the replacement card and reconnect the cables. Set the ENB/DIS switch to ENB.

**h**    Software enable the card:

**ENL CC 1**        to enable clock controller 1

**\*\*\*\***              to exit LD 60

*Note:* Do not issue the tracking (TRCK) or status (SSCK) commands at this time. If you do issue these commands, the system may respond with an inaccurate error condition.

**2**    If the clock controller card in CPU 0 is not of the minimum vintage or later, install a new one:

**a**    Determine which CPU is active:

**LD 35**            to load the program

**STAT CPU**        to get the status of the CPUs

**b**    If CPU 0 is active, switch to CPU 1:

**TCPU**            to test the CPUs

**SCPU**            to switch to CPU 1 (if necessary)

**\*\*\*\***              to exit the program

**c**    If clock controller 0 is active, switch to clock controller 1:

**LD 60**            to load the program

**SSCK 0**          to get the status of clock controller 0

**SWCK**            to switch to clock controller 1 (if necessary)

**d**    Make sure clock controller 1 is active, and if it is, disable clock controller 0:

**SSCK 1**          to get the status of clock controller 1

**DIS CC 0**        to disable clock controller 0

**SSCK 0**          to verify clock controller 0 is disabled

- e Set the ENB/DIS switch on clock controller 0 to DIS.

Perform the following four steps in exact order.

- f Label and disconnect the cable from the J11 connector in the NT8D36 InterGroup module at the junctor board.
- g Disconnect the cable from the faceplate connector on the clock controller card.
- h If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last. Note which slot you remove the card from; you will install the new card in this same slot.
- i Set the ENB/DIS switch on the replacement clock controller card to DIS and set the switches on the replacement card (see Table 98 on page 631).

**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card back into the slot from which you previously removed the clock controller card. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- j Install the replacement card and reconnect the cables. Set the ENB/DIS switch to ENB.
- k Software enable the card:  
**ENL CC 0**      to enable clock controller 0

- 3 Issue the tracking command to enable clock controller tracking to the primary reference loop:

**TRCK PCK**      to enable tracking  
**\*\*\*\***            to exit the program

### Replacing 3PE cards

Check the vintage of the QPC441 3PE cards in all shelves in all network groups; they must be minimum vintage "F" or later. If the 3PE cards are not vintage "F" or later, refer to *Hardware Replacement* (553-3001-520) for card replacement procedures.

## Upgrading the CPU 1 cardcage

- 1 Print the configuration record:

<b>LD 22</b>	to load the program
<b>PRT</b>	to activate the print command
<b>CFN</b>	to print the configuration record

- 2 Check the configuration record to identify all configured I/O ports.

*Note:* When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

- 3 Inspect the Option 71 system to determine the group location of each I/O port. Mark the group number on the configuration record printout next to the device number address of each I/O port.

- 4 If the NTND16 MDU or NTND15 FDU is located in CPU 1, move the unit to CPU 0 or to a network module.

*Note:* Perform this step *only* if the MDU is installed in CPU 1.

- a Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.
- b Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
- c Remove the floppy diskettes from the disk drives.
- d Label and disconnect cables from the faceplate of the MDU or FDU.
- e Unhook the lock latches on the MDU or FDU and gently pull the unit forward two or three inches.

**Note:** When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- f** Move the MDU or FDU to the new slot. Seat it and engage the lock latches.
  - g** Reroute and reconnect cables to the faceplate of the MDU or FDU.
  - h** Reinstall the floppy disks.
  - i** Set the ENB/DIS switch on the MSI or EMSI card in the active CPU to ENB.
- 5** If the Option 71 is AC-powered, and you cannot afford extended downtime, disable the PRI/DTI cards and move them to any Network module (if available) in a column that does not have a CPU module in it. Label and disconnect all cables, move the cards, and then reroute and reconnect all cables.
- a** Disable the cards using LD 32.
  - b** Remove the cards and install them in the Network module.
  - c** Enable the cards using LD 32.
- 6** Get the status of the CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled:
- LD 35** to load the program
  - STAT CPU** to get the status of both CPUs
  - STAT CMA** to get CMA or OCMA status
  - STAT EXT** to get the extender status
  - STAT MEM** to get the memory status
- 7** Test and switch CPUs:
- TCPU** to test the CPUs
  - SCPU** to switch the CPUs

- 8** Get the status of the other CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled:
- STAT CPU**    to get the status of both CPUs. Verify that one CPU is enabled and the other CPU is idle
  - STAT CMA**    to get CMA or OCMA status
  - STAT EXT**    to get the extender status
  - STAT MEM**    to get the memory status
- 9** If CPU 1 is active, switch CPUs:
- STAT CPU**    to get the status of the CPUs
  - SCPU**        to switch to CPU 0 (if necessary)
- 10** Place CPU 0 into maintenance by setting the NORM/MAINT faceplate switch on the QPC580 card in CPU 0 to MAINT.
- 11** List the enabled memories, then disable the memories and the CMA or OCMA card in CPU 1:
- LENL**        to list enabled memories
  - DIS 10**      to disable CPU 1 memory 10
  - DIS 11**      to disable CPU 1 memory 11 (if equipped)
  - DIS CMA 1**    to disable CMA or OCMA 1
  - \*\*\*\***        to exit the program
- 12** Set the ENB/DIS switch on each QPC215 SBE card in CPU 1 to DIS.
- 13** Software disable clock controller 1:
- LD 60**        to load the program
  - SSCK 0**      to get the status of clock 0
  - SSCK 1**      to get the status of clock 1
  - SWCK**        if necessary, to switch to clock controller 0
  - DIS CC 1**    to disable clock controller 1
  - \*\*\*\***        to exit the program
- 14** Set the ENB/DIS switch on the clock controller card in CPU 1 to DIS.

- 15** Perform the following steps in exact order:
    - a** Label and disconnect the cable from connector J12 in the NT8D36 InterGroup module at the junctor board.
    - b** Then disconnect the cable from faceplate connector J3 on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last.
  - 16** Set the ENB/DIS switch on the FDI, MSI, or EMSI card in CPU 1 to DIS.
  - 17** Set the NORM/MAINT switch on the QPC580 Omega I/F card in CPU 1 to MAINT to split the CPUs.
  - 18** Verify the status of both CPUs:  
**LD 35** to load the program  
**STAT CPU** to get CPU status. Verify that CPU 0 is enabled, and CPU 1 is disabled.  
\*\*\*\* to exit the program
  - 19** Software disable the associated SDI port:  
**LD 37** to load the program  
**DIS TTY x** to disable the device associated with the port  
**STAT XSM** to check the status of the system monitor (an “IOD300” message appears indicating no response from the system monitor)  
\*\*\*\* to exit the program
- CAUTION**

Exercise caution when performing the next two steps to avoid inadvertently tripping circuit breakers on the rear of the power distribution units.
- 20** On the master system monitor (the one associated with CPU 0), disconnect the cable from J3, then the cable from J6.

- 21 Remove the screws and pull the system monitor out of its slot. Do not disconnect the cable connected to J4, and do not turn off the blower unit in the front of the pedestal.
- 22 On the slave system monitor (the one associated with CPU 1), disconnect the cables from connectors J5 and J6.
- 23 Remove the screws and pull the system monitor out of its slot. Do not turn off the blower unit in the front of the pedestal.

**CAUTION**

If the system monitors are not removed, the system may shut down later in the upgrade.

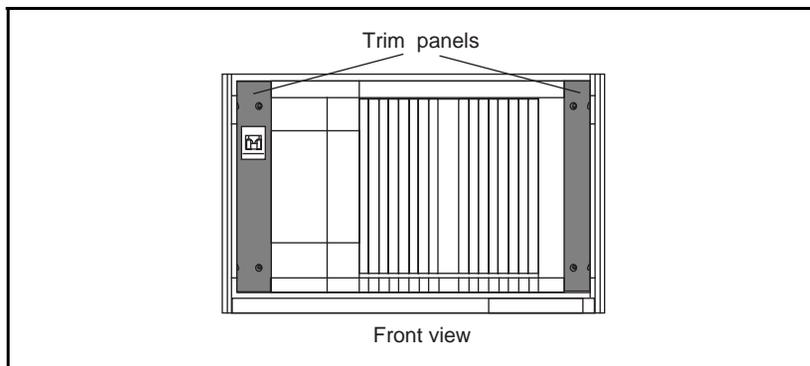
- 24 Follow the appropriate step below to turn off power to CPU 1:

**WARNING**

**Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.**

- a For AC-powered systems, set the main circuit breaker in the column that contains CPU 1 (located at the rear of the pedestal) to OFF (down position).
  - b For DC-powered systems, set the circuit breaker (located at the rear of the pedestal) only for the module that contains CPU 1 to OFF (down position). Power to all other modules in the column can safely remain on.
- 25 Remove the trim panels on both sides of the module (see Figure 118). Keep the screws for reuse.
  - 26 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.

**Figure 118**  
**Location of the trim panels**



- 27 On all cards in CPU 1 with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 28 Remove all cards and the power supply from the module. Keep the clock controller card and the power supply on hand. The power supply will be reused in the new Core/Net card cage. The clock controller card will be installed in slot 13 of the NT8D35 Network module.  
*Note:* Only QPC471H (or later vintage) or QPC775E (or later vintage) Clock controller cards can be reused with Option 81C.
- 29 Remove the I/O safety panel that covers the rear of the backplane.  
*Note:* Perform the next step only if the module is not already equipped with universal I/O panels (P0745713). Otherwise, skip the step.
- 30 Label and disconnect cables from both sides of the I/O panels at the back of the module. Remove both I/O panels. Keep the screws for reuse.

### **CAUTION**

Use extreme caution when removing module screws; do not drop them into the pedestal. Damage, equipment failure, or injury could result.

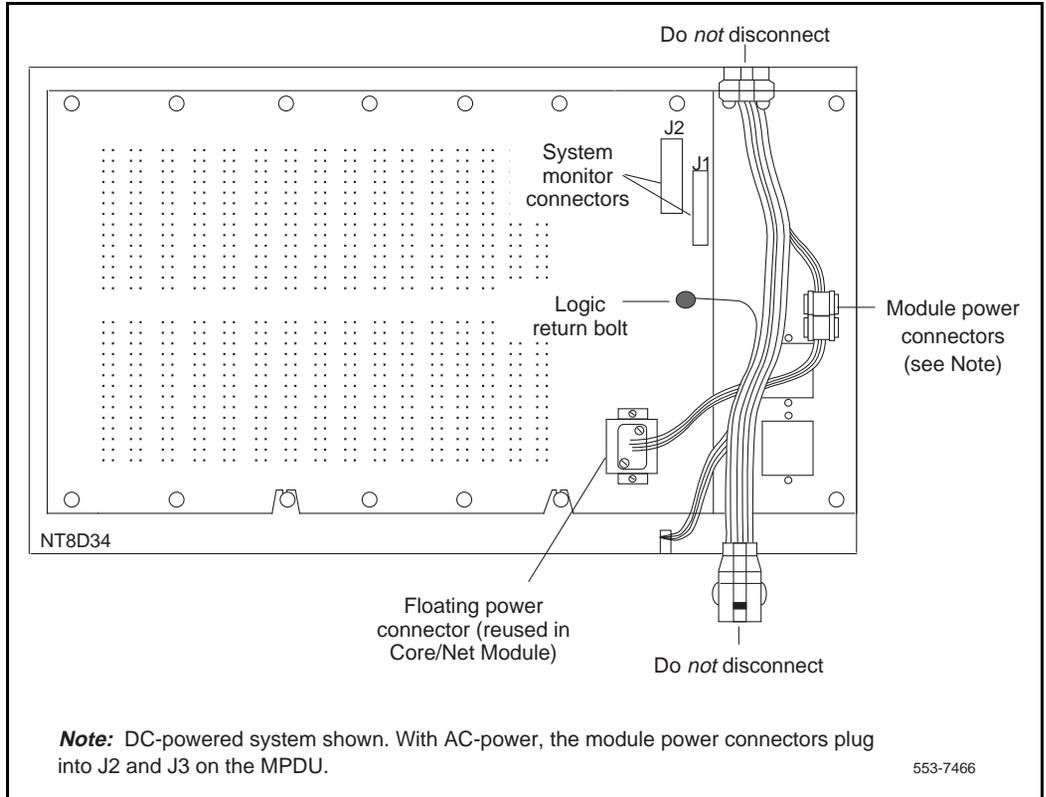
- 31 Remove the two mounting screws at the bottom rear of the card cage that secure the card cage to the module casting. Keep the screws for reuse. (A 1/4" nut driver is needed for this operation.)
- 32 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.
- 33 Remove the logic return (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal (see Figure 119).

**WARNING**

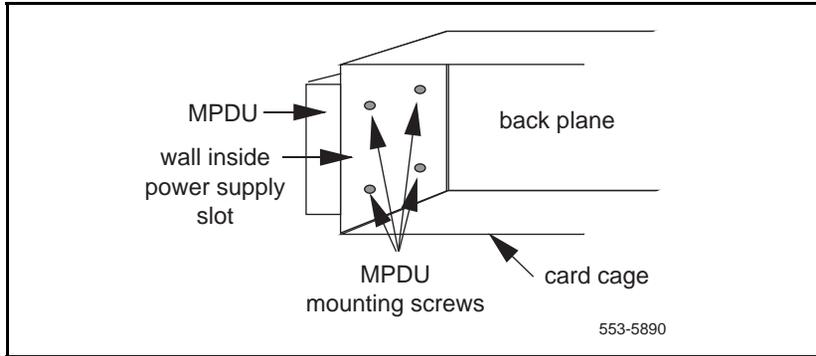
Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 34 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.
- 35 Label and disconnect the system monitor ribbon cables to J1 and J2.
- 36 Remove the CPU card cage from the module.
- 37 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the Core/Net card cage. The screws that secure the MPDU are accessible from the power supply slot (see Figure 120).
- 38 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the CPU card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.  
  
*Note:* Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

**Figure 119**  
**Power connectors on the rear of the NT8D34 CPU module backplane**



**Figure 120**  
**Location of the screws for the MPDU**



- 39 Remove the backplane jumper (if installed) from the backplane jumper pins at JB1 on the Core/Net 1 card cage. The jumper is located on the backplane along the bottom of the front side between slots 14 and 15 (see Table 99). To store the jumper for future use, place the jumper onto only one of the pins; do not install it on both pins.

**CAUTION**

If the Core/Net module jumpers are not set correctly, the system will not operate correctly.

**Table 99**  
**Backplane jumper settings for NT5D21 Core/Network module**

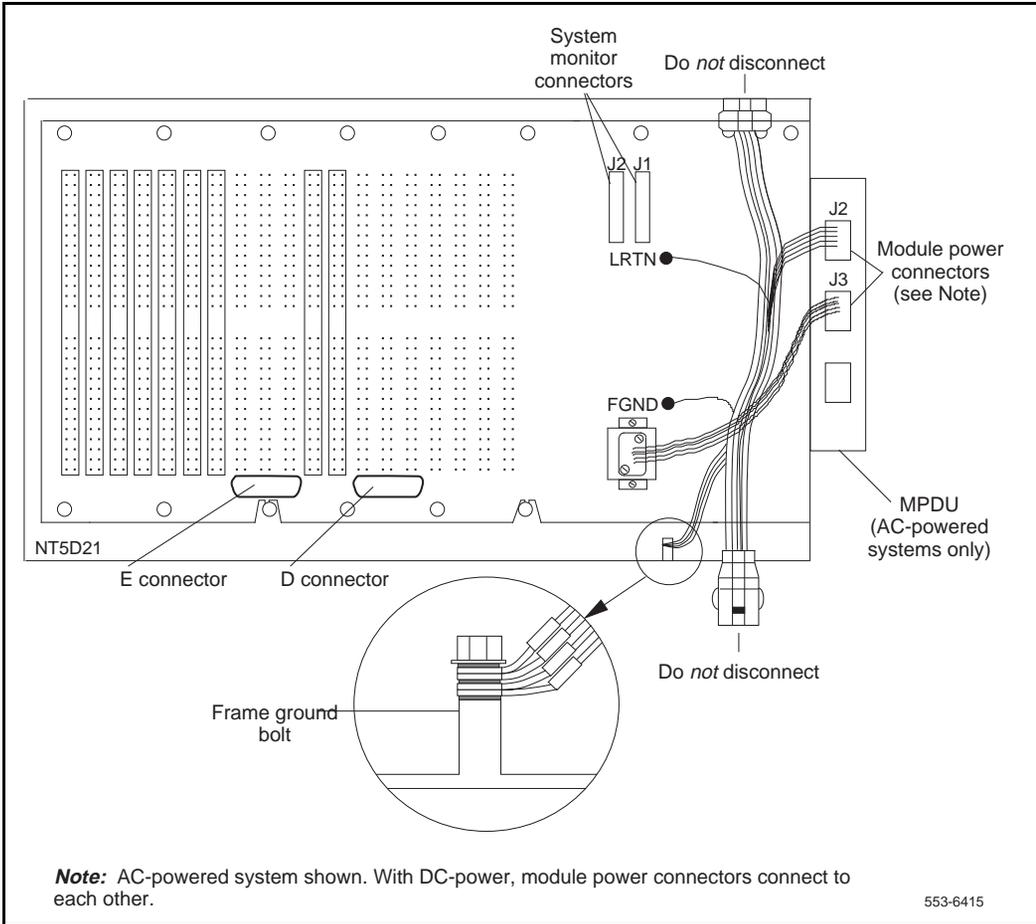
Module	Jumper configuration
Core/Net 0	Jumper plug installed
Core/Net 1	Jumper plug not installed

- 40 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

- 41 In AC-powered systems only, plug the module power cable (the short harness attached to the module power connector) into connector J3 on the MPDU (attached to the side of the card cage).
- 42 Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while making the following connections at the rear of the module (see Figure 121):
  - a Connect the remaining module power connectors to J2 and J3 on the MPDU, in AC-powered systems, or to each other, in DC-powered systems.
  - b Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
  - c Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

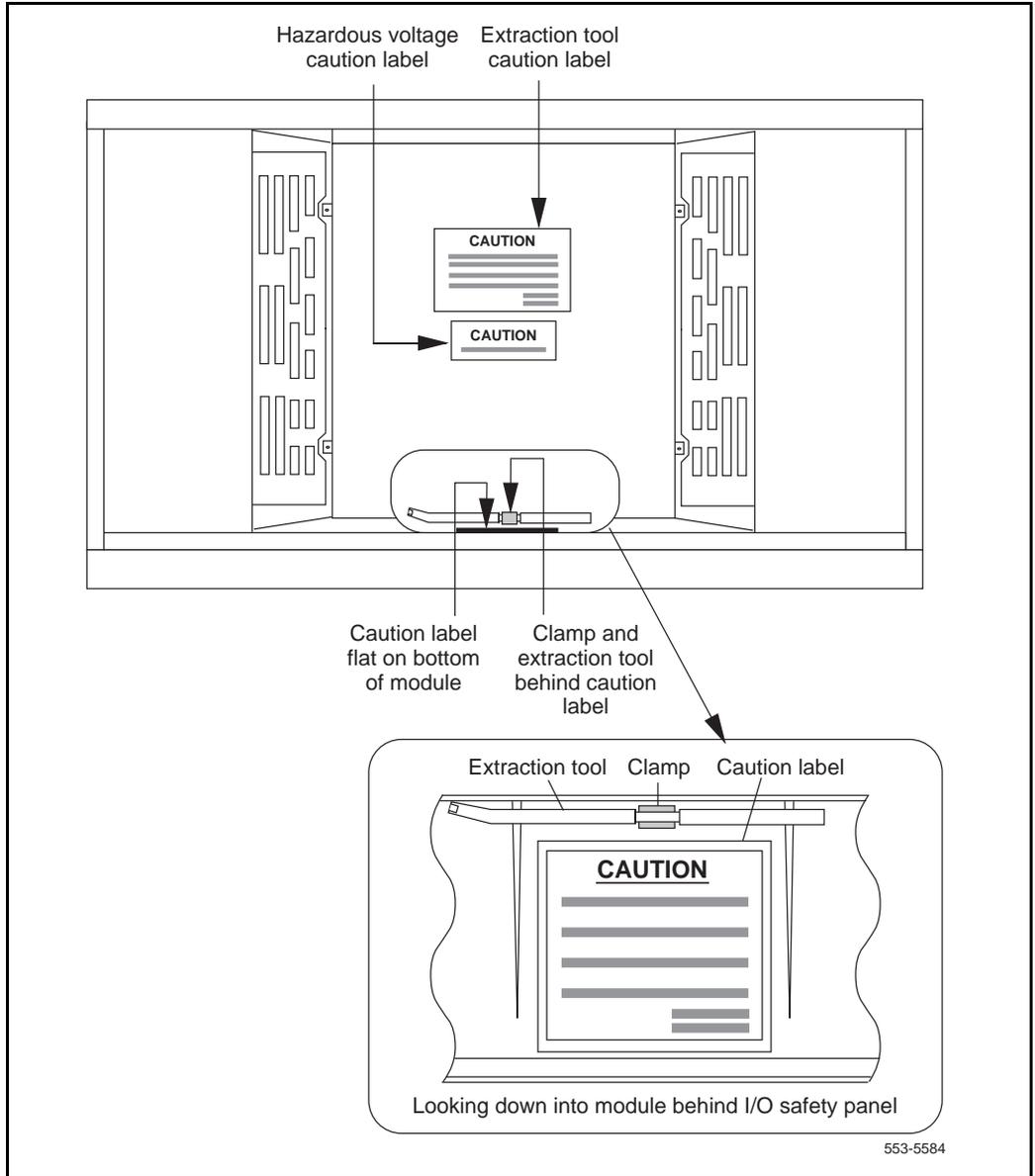
*Note:* For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.
  - d Attach the orange logic return wire. Remove one nut and the lock washer from the LRTN bolt at the rear of the card cage. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- 43 Slide the card cage all the way into the module.
- 44 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 45 Secure the card cage to the module with the three short screws in the front and the two long screws in the rear.
- 46 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 122).
- 47 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.

**Figure 121**  
**Power connections on the rear of the NT5D21 Core/Net module backplane**



- 48 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 49 Snap the extraction tool into the clamp.
- 50 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.

**Figure 122**  
**Positioning the extraction tool and caution labels**



- 51 Install the module power supply (reused from the CPU card cage) in the slot labeled “CE Pwr Sup” in the Core/Net card cage.
- 52 Turn on power to the module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal, then set the MPDU circuit breaker located at the left end of the module to ON (up position). For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 53 For AC-powered systems, enable all network cards located in the network modules located in the column containing CPU 1. You can do this in either of two ways:
  - a Press the MAN INT button on the QPC580 interface card in CPU 0. Initializing the system in this manner will result in temporary interruption of call processing.
  - b Enable each card located in the network modules located in the column containing CPU 1 using software overlays. Enabling the cards in this manner avoids interruption of call processing.
- 54 Check the LEDs on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be ON-OFF-OFF-OFF (from top to bottom) for Core/Net 1. The LED pattern matches the setting of the jumper JB1 on the backplane; if the pattern is incorrect, verify that the jumper is not installed over both pins.
- 55 Shut down power to Core/Net 1 module again. For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position). For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 56 Locate the round 1/2” diameter IODU/C security device.
- 57 With the Nortel Networks side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 58 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**

- 59 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 60 Set the ENB/DIS switch on an NT6D65 CNI card to DIS. Place the card in slot 12, **but leave the card unseated.**
- 61 Place other CNI cards in slots 13 and 14 (starting with slot 13) as required for the network group configuration, **but leave the cards unseated.**
- 62 Set the switches on clock controller 1 according to Table 100.

*Note:* When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 100**  
Switch settings for Option 81C clock controller card 1

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on

*Note:* Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 63 Set the ENB/DIS switch on clock controller 1 to DIS and place the clock controller card in slot 13, Shelf 1, network Group 1 module, but leave the card unseated.

*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**CAUTION**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 64 Configure the switch and jumper settings on the QPC441F or later 3PE card in **Core/Net 1** (see Table 101). Make sure Jumper RN27 is set to "A".

**Table 101**  
**QPC441F 3PE card switch settings for Core/Net 1**

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	off
Group 1					on	on	off	off
Group 2					on	off	on	off
Group 3					on	off	off	off
Group 4					off	on	on	off
<b>Note:</b> RN27 jumper at E35: set to "A" for all modules								

- 65 Faceplate disable the 3PE card and install the card into slot 11, **but leave the card unseated.**
- 66 On the QPC441 3PE cards in the Shelf 1, Network modules of all groups, tag and disconnect both cables.

*Note:* Disconnect the cables, but do not remove them yet (as a back-out contingency).

- 67** Check the vintage of the 3PE cards in the Shelf 1 Network modules. They must be minimum vintage F. See Table 102 for the QPC441F 3PE card switch and jumper settings.

**Table 102**  
**QPC441 3PE card switch settings for Network shelf 1 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off

**Note:** Jumper RN27 at location E35: set to A

- 68** Install NTND14 cables to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Shelf 1 Network modules (see Table 103 and Figure 123). The cables connect to backplane connectors (secondary shroud connectors) in the Core/Net module and to faceplate connectors on the 3PE cards in the network shelves.

**Note:** If the cables do not fit in the module cable troughs, temporarily route them externally or along the front cable trays.

- 69** Obtain a P0745713 I/O panel from the upgrade package. You will install this panel later on the left I/O panel opening.

**Note:** The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed above the slot match the designations on the outside of the panel.

- 70** On the inside of the I/O panel, connect the NT7D89 cable port A (DCE) connector to the panel at location J21.
- 71** On the inside of the I/O panel, connect the port B (DTE) connector at J25.

**Table 103**  
**CNI to 3PE NTND14 cable connections for Core/Net 1 when upgrading an Option 71 to 81C**

Cable for Group		Backplane connector on Core/Net 1		3PE card connector in each Shelf 1 Network module	Use cable length vintage
0	connects from	12D	to	J3	BC
0		12F		J4	BC
1		13A		J3	BD
1		13C		J4	BD
2		13D		J3	BA
2		13F		J4	BA
3		14A		J3	BB
3		14C		J4	BB
4		14D		J3	BB
4		14F		J4	BB

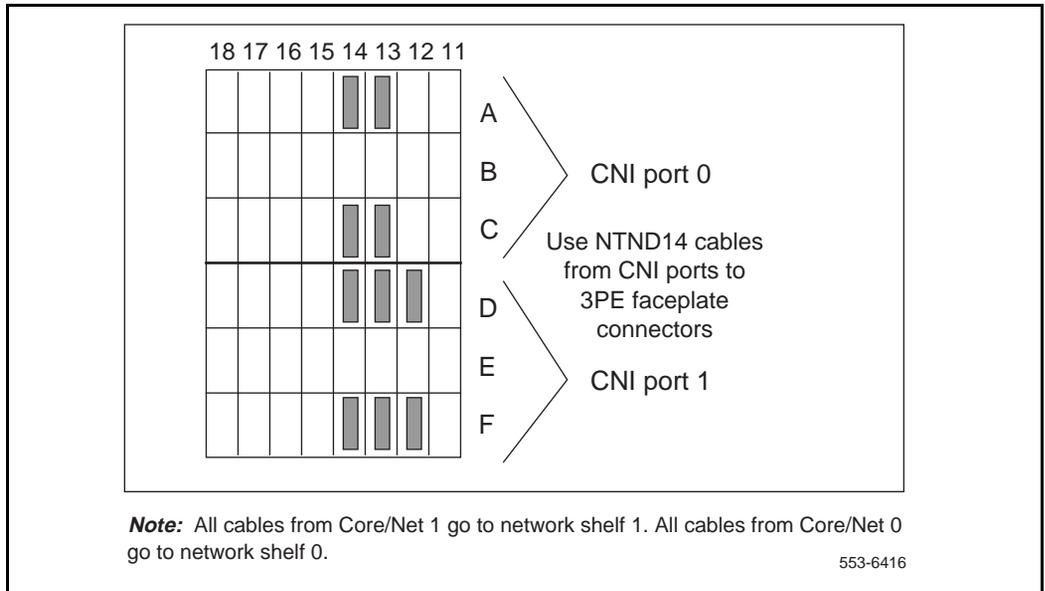
**Note:** Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through "F" from top to bottom.

**Note:** Cables are not required for a group being added in a Core/Net module.

**Note:** The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

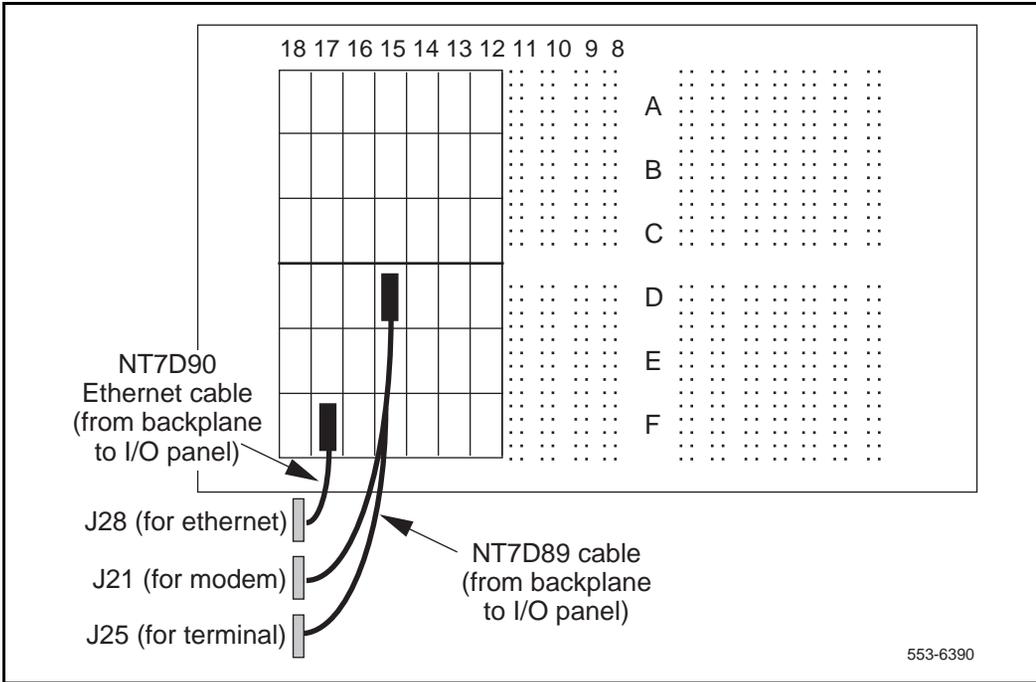
- 72** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable to location J28 on the I/O panel.
- 73** Connect the other end of the NT7D90 Ethernet cable to backplane at location 17F.
- 74** Connect the single connector end of the NT7D89 RS-232 cable to backplane connector position 15D (see Figure 124, on page 652)
- 75** Loosely attach the I/O panel to the left I/O panel opening of the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 76** Set the ENB/DIS switch on the clock controller card in the Group 1, Shelf 1 module to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables, yet.

**Figure 123**  
**NT5D21 Core/Net module (rear)—backplane connections for CNI slots**  
**when upgrading an Option 71 to 81C**



- 77** Connect the clock controller cables by performing the following steps in exact order:
- a** For a **QPC471** Clock controller card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card (see Figure 125, on page 653). Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.
  - b** For a **QPC775** Clock controller card, connect the NT8D74 cable from the J12 connector on the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
  - c** Leave the ENB/DIS switch set to DIS on the clock controller card.

**Figure 124**  
**NT5D21 Core/Net module (rear)—RS-232 cable and Ethernet cable connections**



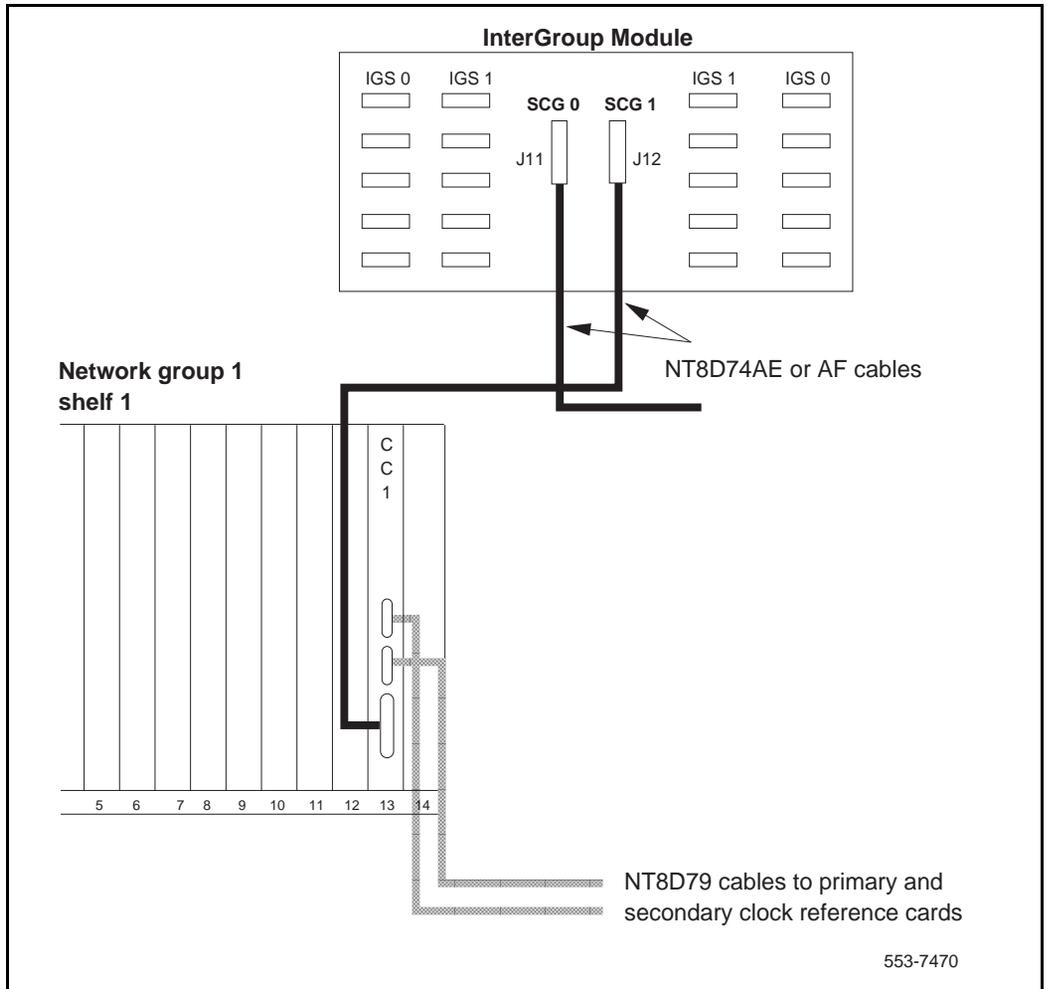
- 78** If you removed the I/O panels previously, install a new universal right I/O panel (P0745713) so the side with the two indents fits into the module casting. Secure the I/O panel with the screws from the former panel.

**Note:** The word RIGHT on the I/O panel faces the outside of the module. The J10 slot matches the designation on the outside of the panel.

- 79** Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

**Figure 125**  
**Clock controller card connections for network group x, shelf 1**



553-7470

### Transferring the database to IODU/C

In this procedure you will transfer the Option 71 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

*Note:* The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

**CAUTION**

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

**IODU/C cabling**

- 1**    **Verify that Core/Net 1 is powered down.**
- 2**    Remove the IODU/C card from Core/Net 1.
- 3**    Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4**    Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5**    Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6**    Install the IODU/C card into slot 17 of Core/Net 1.

**MDU cabling**

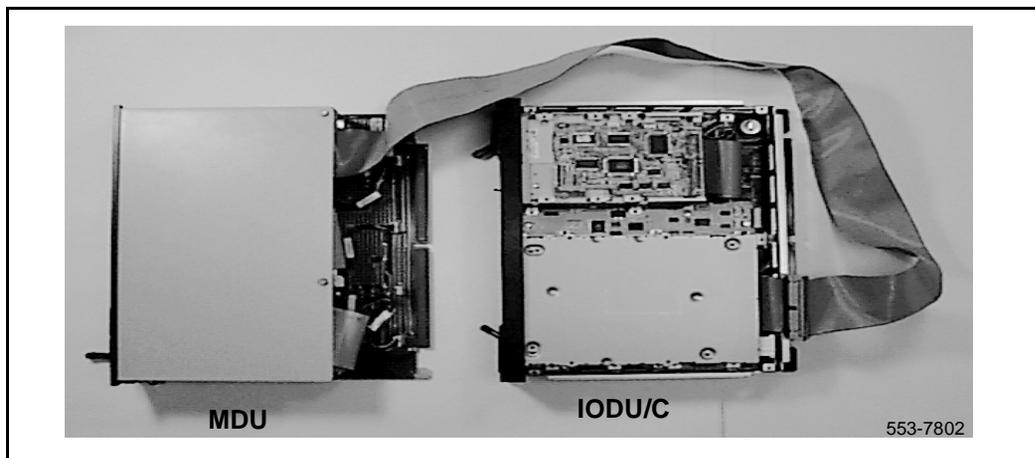
- 1**    If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a**    Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:  
**LD 37**            to load the program  
**DIS MSI 0**        to disable the card

- b Remove the floppy diskettes from the disk drives.
- c Label and disconnect cables from the faceplate of the MDU or SMDU.
- d Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

**Note:** When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 126, on page 655). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 126**  
Cabling the MDU to the IODU/C card



- 4    Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5    Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6    Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7    Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8    Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9    Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10   Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11   When the NT logo appears, press <CR> to continue.
- 12   Log into the system and enter the time and date, when prompted.
- 13   Initiate the database installation by selecting the following command from the menu:  
      <u>    to Install menu
- 14   Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
      <a>    to continue with keycode validation  
      <y>    to confirm that the keycode matches the CD-ROM release
- 15   When the Install Menu appears, select the following options in sequence:  
      <d>    to install customer database only  
      <f>    to transfer the customer database from the MDU  
      <a>    to continue the database transfer

- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue  
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr> Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit.  
Remove any
- <y> to confirm quit
- <a> to reboot the system  
  
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

## **16 Shut down power to Core/Net 1 module.**

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.

- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install Release 25 software in Core/Net 1.

## Installing Release 25 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
  - the CP Install Program diskette must be in the IODU/C floppy drive
  - the module must be powered on
  - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
    - a press the button on the CD-ROM drive to open the CD-ROM disk holder
    - b place the CD-ROM disk into the holder with the disk label showing
    - c use the four tabs to secure the CD-ROM in the disk holder
    - d press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  - 2 When the NT logo appears, press <CR> to continue.
  - 3 Log into the system.

- 4 Enter the date and time when prompted.
- 5 When the Main Menu appears, select the following options in sequence:
  - <u> to Install menu
- 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
- 7 When the Install Menu appears, select the following options in sequence:
  - <a> to install software, CP-BOOTROM, and IOP-ROM
  - <a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

  - <y> to start installation
  - <a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

  - <a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

  - <CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

  - <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

  - <y> to start installation
  - <a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

**<CR>**    to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

**<q>**    to quit

**<y>**    to confirm quit

Remove the diskette from the floppy drive.

**<a>**    to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 8    When the sysload is complete, log into the system.
- 9    Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

**LD 135**        to load the program

**STAT CPU**    to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

- 10    Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

**LD 43**        to load the program

- 11    When “EDD000” appears on the terminal, enter:

**EDD**        to begin the data dump

- 12** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13** Set date and time:

**LD 2** to load the overlay  
**STAD** DD MM YY HR MN SC

## Configuring the system

In the Option 81C, CNI cards reside in slots 12, 13, and 14 of the Core/Net module. Following database conversion, the Option 81C assigns a default configuration to the CNI network groups. The Option 81C default CNI configuration is listed in Table 104.

**Table 104**  
**Option 81C CNI network group default configuration**

CNI card slot	Port	Network group
12	0	0
12	1	1
13	0	2
13	1	3
14	0	4

**If the Option 81C CNI default configuration does not match your network group configuration, you must remove and add network groups to match your desired configuration.**

Use the worksheet in Table 105 to assist you in configuring the CNI network groups.

**Table 105**  
**Option 81C CNI network group configuration worksheet**

<b>CNI card slot</b>	<b>Port</b>	<b>Network group</b> <i>(enter your Option 81C configuration in this column)</i>
12	0	
12	1	
13	0	
13	1	
14	0	
14	1	
<b>Note:</b> CNI card slot 12, port 0 is the network group with the Core/Net module.		

- 1 To reconfigure the Option 81C network groups, first disable all CNI cards in Core/Net 0 and Core/Net 1 using LD 135:

**LD 135**            to load the program  
**STAT CNI**        to get the status of all CNI cards  
**DIS CNI c s p**    c = core (0 or 1)  
                           s = card slot (12-14)  
                           p = port (0 or 1)  
**STAT CNI**        to confirm that CNI cards are disabled  
**\*\*\*\***              to exit the program

- 2 When the CNI cards are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

<b>Prompt</b>	<b>Response</b>	<b>Comments</b>
<b>LD 17</b>		to load the program
<b>REQ</b>	<b>CHG</b>	
<b>TYPE</b>	<b>CFN</b>	
<b>CEQU</b>	<b>YES</b>	
<b>EXT0</b>	<b>3PE</b>	Core/Net 0 extended to 3PE
<b>_CNI</b>	<b>s p xg</b> <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
<b>_CNI</b>	<b>s p g</b> <i>to "add" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
<b>EXT1</b>	<b>3PE</b>	Core/Net 1 extended to 3PE
<b>_CNI</b>	<b>s p xg</b> <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
<b>_CNI</b>	<b>s p g</b> <i>to "add the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
<b>REQ</b>	<b>****</b>	to exit the program

- 3 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG aaa x	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
GRP	g	g = network group (0-4)
...		

- 4 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Capacity Engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
PARAM	YES	
...		
500 B	1000	use 1000 as a minimum value
...		
NCR	2000	use 2000 as a minimum value
...		
	****	to exit the program

- 5 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print option
TYPE CFN	to print the configuration
****	to exit the program

- 6 Insert an unused B1 database diskette from the target software upgrade package into the IODU/C drive.
- 7 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Exit the program. Enter  
**\*\*\*\*** to exit the program
- 9 Verify that all CNI cards in Core/Net 1 are seated and disabled.
- 10 Check the status of all configured CNI cards:  
**LD 135** to load the program  
**STAT CNI** to get the status of all configured CNIs  
  
*Note:* The status will indicate that the CNI cards are not responding. Verify that an entry exists for each CNI card in the system. There may be extra entries for CNI cards that were previously removed from the database; ignore these entries for now.  
  
**\*\*\*\*** to exit the program
- 11 Set the ENB/DIS switch to ENB on the clock controller card in network Group 1, Shelf 1.

- 12 Set the ENB/DIS switch to ENB on all CNI cards in Core/Net 1.

**CAUTION**

Call processing will be interrupted. Perform the next steps carefully. This is the point at which your service will be interrupted. Calls in process will be interrupted.

- 13 Perform the next 3 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from CPU 0 to Core/Net 1.
- a In CPU 0, set the ENB/DIS switch to DIS on all SBE cards.
  - b Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
  - c Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process. Make sure the faceplate LEDs on CNI, 3PE, and IGS cards go out.
- 14 Check for dial tone. If there is no dial tone (the system is inoperable) and you cannot afford downtime, switch the loops back to CPU 0 (which still has the CPU card cage):
- a Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS. Set the ENB/DIS switch on each SBE card on CPU 0 to ENB.
  - b Initialize CPU 0 by pressing the MAN INT button.
  - c Troubleshoot the Option 81C off-line.
  - d If you can afford downtime, troubleshoot the Option 81C on-line:
  - e Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
  - f Verify that all cables are properly and securely connected in the front and rear of the module.
  - g Check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.

- h** If any CNI cards are disabled, enable them in LD 135, perform a data dump with LD 43, and initialize the system by pressing the MAN INT button. Otherwise, proceed directly to step 16.
- i** Again, check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- j** Check for dial tone.

**15** Verify the status of clock controller 1:

**LD 60**           to load the program  
**SSCK 1**         verify that clock 1 is active (The status may show that clock controller 1 is “standby”. The status of clock controller 1 will change when clock controller 0 is removed later in the procedure.)  
**\*\*\*\***           to exit the program

- a** Check for dial tone.

**16** Following a successful dial tone test, perform the following basic sanity tests:

- a** Make sure intra-group and inter-group calls can be placed.
- b** Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

The upgrade of CPU 1 is complete. The system is operating in split-mode with call processing on Core/Net 1.

## Upgrading CPU 0

Before you upgrade CPU 0 to the Option 81C Core/Net card cage, perform the following steps.

Check the remaining equipment from the upgrade package. Make sure you have enough equipment for the upgrade and for troubleshooting, if needed.

**1** Perform these steps to disable the clock controller card:

- LD 60**            to load the program
- SSCK1**           to get the status of clock 1. Verify it is active.  
(The status may show that clock controller 1 is “standby”. The status of clock controller 1 will change when clock controller 0 is removed later in the procedure.)
- SSCK0**           to get the status of clock 0
- SWCK**           if necessary, to switch to clock 1

**2** Perform the following steps in exact order:

- a** Set the ENB/DIS switch on the clock controller card in CPU 0 to DIS.
- b** At the NT8D36 InterGroup module, disconnect the J11 cable that is routed from the clock controller card in CPU 0.
- c** Disconnect the cable at the faceplate of the clock controller card in CPU 0.
- d** If primary and secondary clock reference cables are equipped, label and disconnect them at this time.

**3** Perform the appropriate step to turn off power to CPU 0:

- a** For AC-powered systems, set the main circuit breaker for column 0 to OFF (down position) in the rear of the pedestal.

**WARNING**

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- b** For DC-powered systems, set the circuit breaker for CPU 0 module only (located at the rear of the pedestal) to OFF (down position). All other modules in the column can safely remain on.

- 4 Remove the trim panels on both sides of the module (refer to Figure 118 on page 639). Keep the screws for reuse.
- 5 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 6 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 7 Remove the cards, including the power supply, from the front of the module. Keep the clock controller card and the power supply on hand. The power supply will be reused in the Core/Net card cage. The clock controller card will be installed in slot 13 of the NT8D35 Network module.  
  
*Note:* QPC471 (H or later vintage) or QPC775 (E or later vintage) clock controller cards must be used with Option 81C.
- 8 Label and disconnect cables from the I/O panels. Remove both I/O panels. Keep the screws for reuse. Remove the I/O safety panel that covers the rear of the backplane.
- 9 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)
- 10 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.
- 11 Remove the logic ground (orange) wire from the backplane ground bolt (refer to Figure 119 on page 641). Be careful; do not drop the nut or lock washer into the pedestal.

**WARNING**

Do *not* disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 12 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) with AC power or connected to each other with DC power.

- 13 Label and disconnect the system monitor ribbon cables from J1 and J2.
- 14 Remove the CPU card cage from the module.

For AC-powered systems, after the card cage is out of the module remove the MPDU and reinstall it on the Core/Net card cage. The screw-heads for the MPDU are in the wall of the power supply slot (refer to Figure 120 on page 642).
- 15 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the CPU card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.
- 16 Install the backplane jumper on the Core/Net card cage. The jumper is located along the bottom of the front side of the backplane between slots 14 and 15 (refer to Table 106).

**CAUTION**

If the Core/Net module jumpers are set incorrectly, the system will not load or will not operate correctly.

**Table 106**  
**Backplane jumper settings for NT5D21 Core/Network module**

Module	Jumper configuration
Core/Net 0	Jumper plug installed
Core/Net 1	Jumper plug not installed

- 17 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

- 18 Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while you attach the power connectors at the rear of the module (refer to Figure 121 on page 644).
- 19 Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- 20 Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.  
  
*Note:* For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth wire terminals.
- 21 Attach the logic ground (orange) wire. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- 22 Connect the module power connectors to the MPDU for AC power, or to each other for DC power.
- 23 Slide the card cage the remainder of the way into the module.
- 24 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 25 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 26 Position the I/O panel so that the two cutouts match with the castings on the module. Secure the I/O panel with the screws from the previous panel.
- 27 Set the finger end over the lower edge of the J10 opening. The finger rests against the outside of the I/O panel.
- 28 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label.

- 29 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 30 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 31 Snap the extraction tool into the clamp.
- 32 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 33 Install the module power supply (reused from the CPU card cage) in the slot labeled “CE Pwr Sup” in the Core/Net card cage. Faceplate enable the power supply.
- 34 Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 35 Check the LED on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be OFF-OFF-OFF-OFF for Core/Net 0. The LED pattern matches the setting of the jumper on the backplane; if the pattern is incorrect, check the jumper.
- 36 Shut down power to the Core/Net 0 module again. For AC-powered systems, set the main breaker for the column to OFF (down position). For DC-powered systems, set the switch on the pedestal breaker for the module to OFF (down position).
- 37 Locate the round 1/2” diameter IODU/C security device.
- 38 With the Nortel Networks side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 39 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**
- 40 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**

- 41 Place an NT6D65 CNI card in slot 12, **but leave the card unseated.**
- 42 Place other CNI cards in slots 13 and 14 as required for the network group configuration, **but leave the cards unseated.**
- 43 Faceplate disable the 3PE card and install the card in slot 11, **but leave the card unseated.**
- 44 Configure the switch and jumper settings on the QPC441F 3PE card in **Core/Net 0** (see Table 107). Make sure Jumper RN27 is set to “A”.

**Table 107**  
**QPC441F 3PE card switch settings for Core/Net 0**

D20 switch position	1	2	3	4	5	6	7	8
		off	on	on	off			
Group 0					on	on	on	on
Group 1					on	on	off	on
Group 2					on	off	on	on
Group 3					on	off	off	on
Group 4					off	on	on	on
<b>Note:</b> RN27 jumper at E35: set to “A” for all modules								

- 45 Check the vintage of the QPC441 3PE cards in **network shelf 0 of groups 0 and 1**; they must be minimum vintage F. See Table 108 for switch and jumper settings.

**WARNING**

I/O devices will be disrupted when removing circuit cards.

- 46 Set switches on clock controller 0 as shown in Table 109.

**Table 108**  
**Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 0 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on

**Note:** Jumper RN27 at location E35: set to A

**Table 109**  
**Clock controller card 0 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 47** Place the clock controller card in slot 13, Group 0, Network Shelf 0 module but leave the card unseated.

*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**CAUTION**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 48** On the QPC441 3PE cards in Network module 0 of all groups, disconnect and remove the cables that were connected to the QPC215 SBE cards in CPU 0.
- 49** Install NTND14 cable pairs to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Network modules as shown in Table 110 (see Figure 123 on page 651). The cables connect to backplane connectors in the Core/Net module and to faceplate connectors on the 3PE cards.

*Note:* This step does not apply to the QPC441 3PE card in the Core/Net module.

**Table 110**  
**CNI to 3PE NTND14 cable connections for Core/Net 0 when upgrading an Option 71 to 81C**

Cable for Group		Backplane connector on Core/Net 0		3PE card connector in each Shelf 0 Network module	Use cable length vintage
0	connects from	12D	to	J3	BA
0		12F		J4	BA
1		13A		J3	BA
1		13C		J4	BA
2		13D		J3	BB
2		13F		J4	BB
3		14A		J3	BC
3		14C		J4	BC
4		14D		J3	BD
4		14F		J4	BD

**Note:** Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through F from top to bottom.

**Note:** Cables are not required for a group being added in a Core/Net module.

**Note:** The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

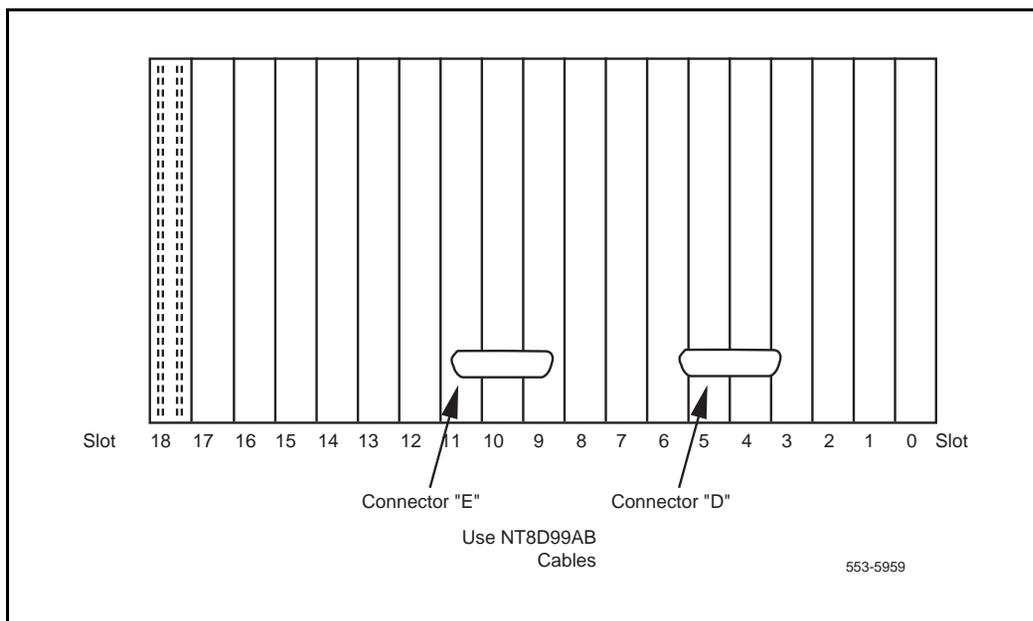
- 50** At the rear of the module, connect the single connector end of the J21/J25 NT7D89 RS-232 cable to backplane connector position 15D (see Figure 124 on page 652).
- 51** Connect port A (DCE) to J21 of the left I/O panel.
- 52** Connect port B (DTE) to J25 of the left I/O panel.
- 53** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 124 on page 652).

- 54** On the faceplates of the 3PE cards in the Core/Net modules:
- connect an NT8D80BZ cable from J4 in Core/Net 0 to J4 in Core/Net 1
  - connect another NT8D80BZ cable from J3 in Core/Net 0 to J3 in Core/Net 1

**Note:** Leave the 3PE card unseated.

- 55** In the rear of the Core/Net modules, install an NT8D99BD cable from the backplane connector labeled “D” in Core/Net 0 to the backplane connector labeled “D” in Core/Net 1 (see Figure 127).
- 56** Install the second NT8D99BD cable from the backplane connector labeled “E” in Core/Net 0 to the backplane connector labeled “E” in Core/Net 1 (see Figure 127).

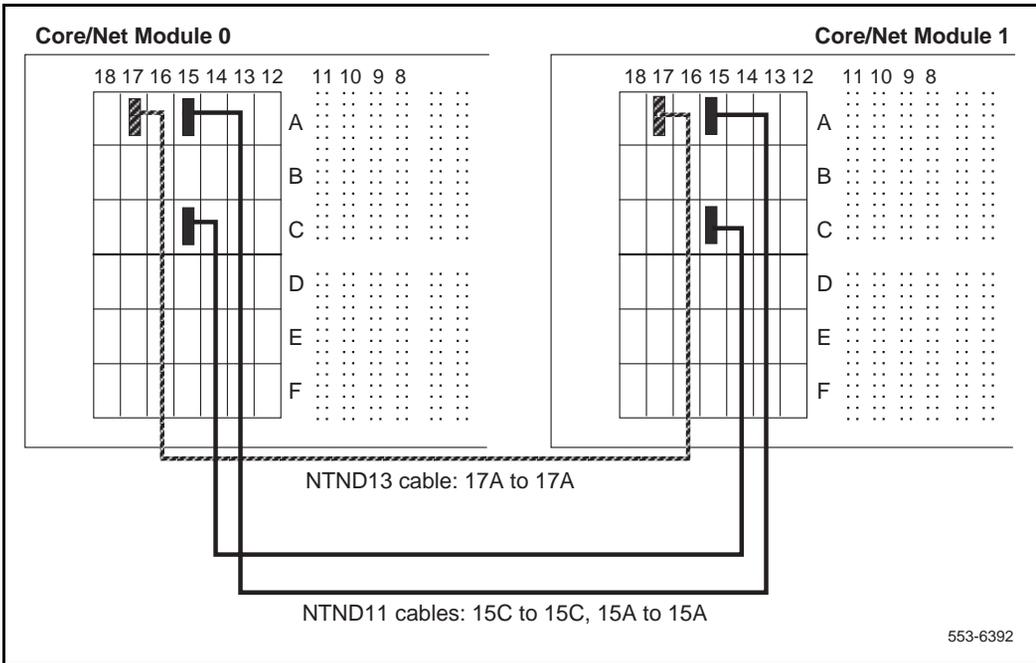
**Figure 127**  
**NT5D21 Core/Network module; location of D and E connectors (rear view)**



- 57** Temporarily remove the left I/O panels.

- 58 Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 17A in Core/Net 0 to 17A in Core/Net 1 (see Figure 128).
- 59 Connect one NTND11 cable from backplane connector position 15A in Core/Net 0 to 15A in Core/Net 1 (see Figure 128).
- 60 Connect another NTND11 cable from backplane connector position 15C in Core/Net 0 to 15C in Core/Net 1 (see Figure 128).

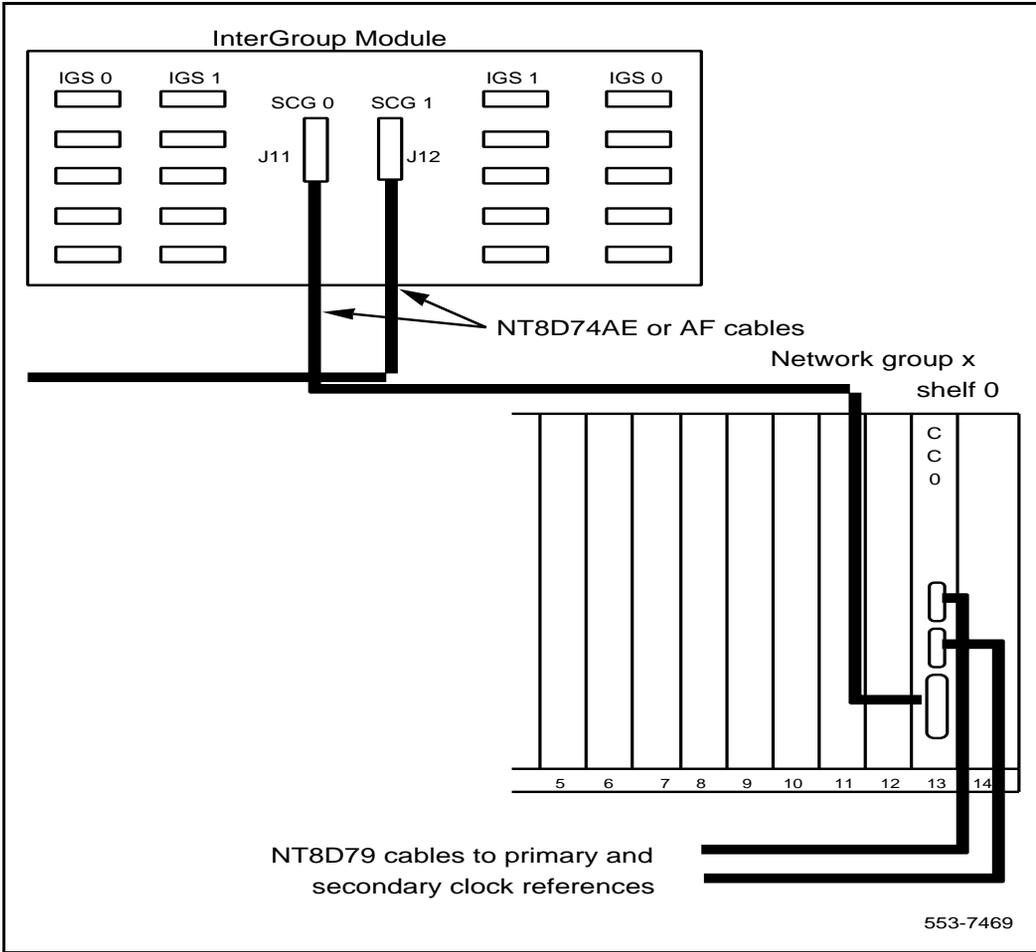
**Figure 128**  
**NT5D21 Core/Net module (rear)—NTND13, and NTND11 cables**



- 61 Loosely attach the I/O panel to the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 62 Set the ENB/DIS switch on the clock controller card to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables.

- 63** Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 64** Perform the following steps in exact order to connect the clock controller cables (refer to Figure 129):
  - a** For a QPC471 card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card. Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.
  - b** For QPC775 Clock controller cards, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
  - c** Set the ENB/DIS switch to ENB on the Clock controller 0.

Figure 129  
Controller card connections for network group x, shelf 0



- 65** Seat the IODU/C card, and then, set the ENB/DIS switch to ENB.

As the card performs card level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 Administration* (553-3001-311) for an explanation of the codes.

If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 959.

- 66** Connect a terminal to the J25 port on the I/O panel in Core/Net 0. Use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

- 67** On the CP card, **set the NORM/MAINT switch to MAINT** and then seat the card into the backplane and secure the lock latches. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages:

- a** If the CP card fails the self-test, go to “Troubleshooting” on page 959.
- b** Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 959.
- c** Watch the LCD for the message “Loading Disk OS.” As the system attempts to access the hard disk, watch the LCD for error messages. If error messages indicate file corruption (such as “Error in file disk OS” type messages), refer to “Troubleshooting” on page 959.
- d** Watch the LCD for system reload (SYS) and initialization (INI) messages. Following this, Core/Net 0 is operational. If the sysload or initialization fails, refer to “Troubleshooting” on page 959.

## **Copying software and database to Core/Net 0**

- 1** Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 2** Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)

- 3    When the NT logo appears, press <CR> to continue.
- 4    When the Main Menu appears, select the following options in sequence:
  - <u>        to Install menu
- 5    Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
  - <a>        to continue with keycode validation
  - <y>        to confirm that the keycode matches the CD-ROM release
- 6    When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:
  - <o>                to copy system software from the other core
  - <a>                to copy /p partition from Core1 to Core 0
  - <a>                to continue with upgrade

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

  - <CR>              press <CR> when you are ready to continue
  - <y>                to start installation
  - <a>                to continue with ROM upgrade
  - <y>                to start installation
  - <a>                to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

  - <CR>              to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

  - <f>                to install IOP-ROM only

When the Installation Status Summary screen appears:

  - <y>                to start installation
  - <y>                to continue installing IOP-ROM
  - <a>                to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

<d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 7 Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

## Completing the upgrade

- 1 Seat all CNI cards with ENB/DIS switches set to DIS.
- 2 Faceplate disable the 3PE card in Core/Net 0 and seat the card.
- 3 Set the ENB/DIS switch on all CNI cards and the 3PE card in Core/Net 0 to ENB.
- 4 Check the status of all configured CNI cards:

**LD 135** to load the program

**STAT CNI** to get the status of all configured CNIs

*Note:* If you get error messages stating that CNIs are disabled, verify that an entry exists for each CNI card in the system.

\*\*\*\* to exit the program

- 5 Connect a terminal to the CPSI port J25 on Core/Net 1 or an SDI port.

- 6 Verify that the CP card in Core/Net 1 is set to MAINT.
- 7 Verify that the CP card in Core/Net 0 is set to MAINT and **unseat the card.**
- 8 In Core/Net 0, verify that the NORM/MAINT switch on the CP card is set to MAINT and then seat the card and secure the lock latches; the card will perform a self-test. When SYS700 messages appear on the LCD display, **set the NORM/MAINT switch to NORM.**

A “HWI534” message from the CPSI (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 15 minutes, an HWI533 message from the CPSI or SDI port will display indicating the Core/Net 1 memory is shadowed to the Core/Net 0 memory.

- 9 **In Core/Net 1, set the NORM/MAINT switch to NORM** on the CP card.
- 10 Perform a redundancy sanity test:
  - LD 135** to load the program
  - STAT CNI** to get the status of all configured CNIs
  - STAT CPU** to get the status of both Cores
  - TEST CPU** to test the inactive CP card and CP-to-CP cable
  - TEST IPB** to test the backplane protocol on the inactive side
  - TEST CNI c s** to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 11 Switch Cores and test the other side:
  - SCPU** to switch to Core/Net 0
  - TEST CPU** to test the inactive CP card and CP-to-CP cable
- 12 Get the status of the CP cards and memories and of the CNIs:
  - STAT CPU** to get the status of both Cores
  - STAT CNI** to get the status of all configured CNIs
  - \*\*\*\*** to exit LD 135

- 13** Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

**LD 137** to load the program  
**STAT** get the status of IODU/Cs, and redundancy  
**SYNC** to synchronize the hard disks  
**TEST CMDU** Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 14** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs, if necessary:

**STAT** to get the status of IODU/Cs, and redundancy  
**SWAP** to switch IODU/Cs (if necessary)  
**\*\*\*\*** to exit the program

- 15** Check the status of the clocks, swap clocks, and verify status:

**LD 60** to load the program  
**SSCK 0** to get the status of clock 0  
**SSCK 1** to get the status of clock 1  
**SWCK** to swap active clocks  
**SSCK 0** to verify that clock 0 is enabled  
**SSCK 1** to verify that clock 1 is standby  
**\*\*\*\*** to exit the program

- 16** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

*Note:* Make sure that the J1 to J2 ribbon cable on the new Core/Net modules are connected. Loose cabling may inadvertently cause the system monitor to power down.

- 17** Reinsert the system monitor and reconnect the associated cabling.

- 18** Insert a B1 backup database diskette into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C:

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43**            to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD**            to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

The system is operating in dual CPU mode with redundant disk drives.

- 19** Test the IOP to IOP SCSI connection and test the IODU/Cs:

**LD 137**            to load the program

**TEST SCSI**        to check the IOP to IOP connection and access to the IODU/Cs

**TEST CMDU**        to test the hard and floppy disk drives (a floppy diskette must be installed)

**\*\*\*\***            to exit the program

- 20** Clear displays, major alarms, and minor alarms:

**LD 135**            to load the program

**CDSP**            to clear the display

**CMAJ**            to clear all major alarms

**CMIN ALL**        to clear all minor alarms

**SCPU**            to switch to the other Core

**CDSP**            to clear the display

**\*\*\*\***            to exit the program

- 21** Software enable clock controller cards and any PRI/DTI cards in the Core/Net modules:
- LD 60** to load the program
  - ENL CC x** to enable clock controller 1 or 0
  - TRCK aaa** if necessary, to set tracking
  - ENLL loop** to enable the specified network loop and associated PRI/DTI card
  - \*\*\*\*** to exit the program
- 22** Reinstall the system monitor in column 1. Reconnect the cables.
- 23** On the master system monitor (column 0), reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.
- 24** Software enable the associated SDI port:
- LD 37** to load the program
  - ENL terminal x** to enable the device associated with the port
  - STAT XSM** to check the status of the system monitor
  - \*\*\*\*** to exit the program
- 25** Remove any remaining NT8D80 cables that connected the 3PE cards to SBE cards. If cables were routed externally or along the front cable trays, reroute them to their permanent positions.
- 26** For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 27** Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The Option 71 to Option 81C upgrade is complete.



# Option 81 card cage upgrade to Option 81C

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## Content list

The following are the topics in this section:

- [Reference list 689](#)
- [Equipment required 692](#)
- [Upgrade preparation 694](#)
- [Splitting the Cores 699](#)
- [Upgrading Core 1 700](#)
- [Converting the customer database to Release 25 719](#)
- [Configuring the system 723](#)
- [Upgrading Core 0 731](#)
- [Copying software in Core/Net 0 with IODU/C 744](#)
- [Completing the upgrade 745](#)

## Reference list

The following are the references in this section:

- *Product Compatibility* (553-3001-156)
- *Hardware Replacement* (553-3001-520)
- “Tools” on page 21
- “Troubleshooting” on page 959
- *Software Conversion Procedures* (553-2001-320)

- *X11 Administration* (553-3001-311)
- *System Installation Procedures* (553-3001-210)

**CAUTION**

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. You must read through the procedure you will use before you begin the upgrade.

This procedure describes how to upgrade an Option 81 system to an Option 81C.

Upgrading an Option 81 to an Option 81C (see Figure 130) consists of:

- removing the card cage in each NT6D60 Core module
- upgrading the CP card or CP memory (if required)
- installing card cages to create NT5D21 Core/Net modules

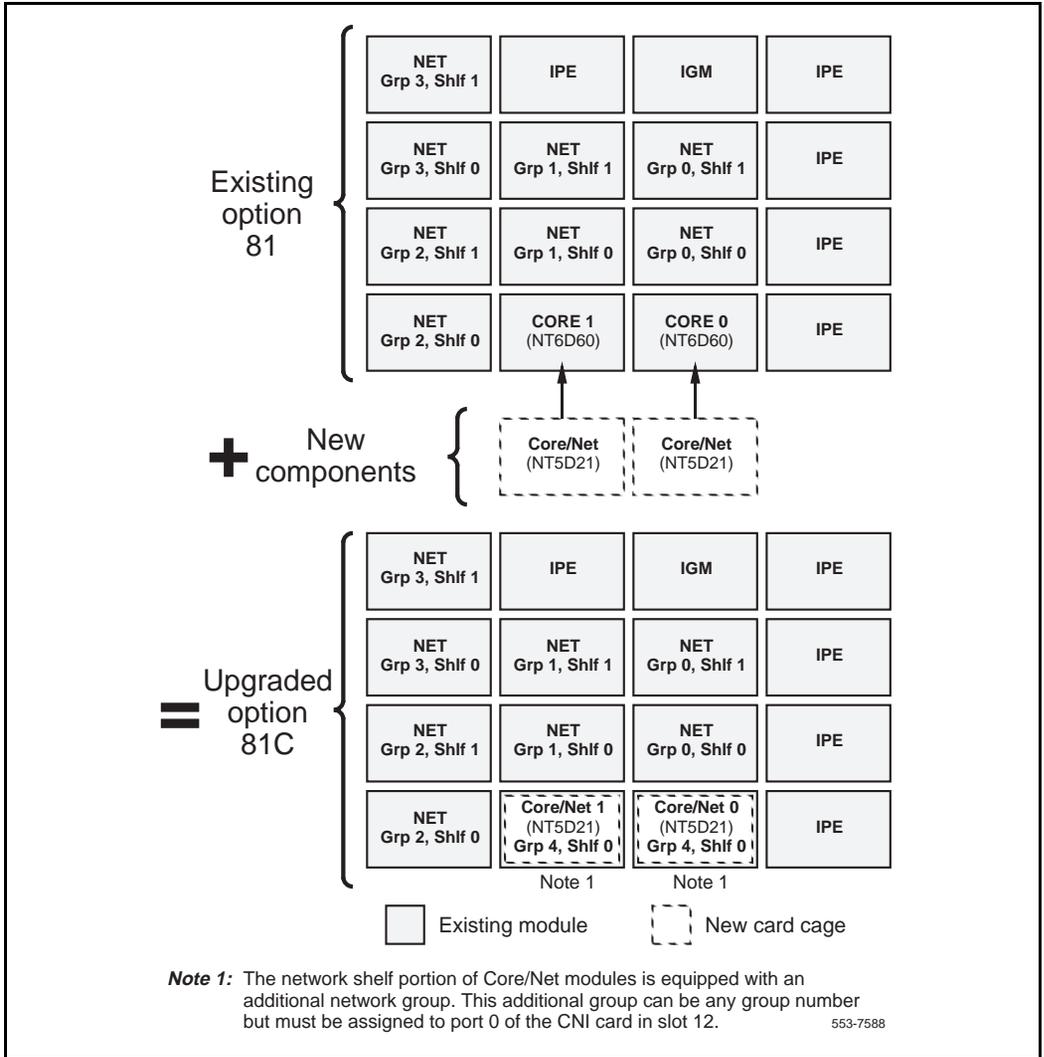
The hardware required for this upgrade is provided in the Core/Net card Cage Upgrade Package. All existing equipment that will be retained must be compatible with X11 Release 25. Order replacements for all equipment that does not comply.

During the upgrade procedures, the following service interruptions may occur:

- For AC-powered systems, power to the entire column being upgraded must be turned off for safety reasons. This causes loss of service to any network, I/O, or service cards located in that column.
- Transient calls, CDR information, PRI service, and traffic report information may be lost.
- If the peripheral software download feature is activated during system initialization, calls carried by superloop cards will be dropped.

Figure 130 shows the upgrade from Option 81 to Option 81C.

**Figure 130**  
**Upgrade from Option 81 to Option 81C**



## Equipment required

The following upgrade procedures assume that your existing system is a standard Option 81 configuration and that you are upgrading to an Option 81C. If you are deviating from the standard configuration, your system may require additional equipment.

Table 111 lists the items required to upgrade an AC- or DC-powered Option 81 to an Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start. Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.

Letters at the end of a part number may represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product Compatibility* (553-3001-156) for equipment compatibility information.

Verify that any existing QPC441 3-Port Extender cards in the system are vintage F. If any existing 3PE card in the system is not vintage F, replace it with a new card. All 3PE cards in the system must be of the same vintage. Refer to *Hardware Replacement* (553-3001-520) for 3-PE card replacement procedures.

Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Hardware Replacement* (553-3001-520) for Clock Controller card replacement procedures.

**Note:** QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

See the tool list in “Tools” on page 21. Verify all the equipment is on hand.

**Table 111**  
**Hardware requirements for an AC- or DC-powered Option 81C**

Qty	Part number	Description
2	NT1R90BA	Field Upgrade Kit
2	NT5D61AA	IODU/C Card
2	NT5D2103	Core/Network Card Cage AC/DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT8D17FA	Conference/TDS Card
4	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)
2	NT8D99AD	CPU to Network Cable (6 ft.)
2	NTND14BA	CNI to 3PE Cable (6 ft.)
2	NTND14BC	CNI to 3PE Cable (10 ft.)
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	P0738866	Label Kit for Inter-Cabinet Cables
4	QPC412C	Intergroup Switch
2	QPC441F	Three Port Extender
2	QPC43R	Peripheral Signaling
<p><b>Note:</b> QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.</p> <p><b>Note:</b> QPC441 3-Port extended cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement.</p>		

## Upgrade preparation

### CAUTION

Read through the entire procedure before you begin this upgrade. Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Cable routing access in the system becomes extremely limited when new network group cables are added during the card cage upgrade. Before you begin the upgrade, consider the following options and plan well ahead for network cabling:

- This procedure provides a back-out contingency as a safety factor; by disconnecting the network cables to Core 1, you can leave them in place until the upgrade is complete. To do this, however, you may have to temporarily route the new network cables externally or along the front cable trays. This temporary routing requires that you disconnect and reroute the cables at the end of the upgrade.
- Alternative methods can be used, but since this provides no back-out contingency, the advantages and disadvantages should be carefully evaluated beforehand.

### Labeling cables

Before beginning the upgrade, it is important to label all cables in the upgrade kit so you can have the correct cable available when you need it.

To label the cables:

- 1 Remove the NTND14 cables from the upgrade package and sort them into separate piles according to part number and vintage (e.g. NTND14BA cables in one pile, NTND14BC cables in another, etc.).

- 2 Remove each label from the sheet of adhesive cable labels provided in the upgrade kit and attach a pair of identical labels to the appropriate cable (one label at each end of the cable). Refer to Tables 112 and 113 for correct label assignments when labeling NTND14 cables.

**Note:** You may have unneeded labels left over when you finish labeling the cables.

**Table 112**  
**NTND14 Core/Net 1-to-CNI cable label assignments**

Cable number	Label both ends
NTND14BC	CPU1-CNI-12D to 3PE-GRP0/1-J3
NTND14BC	CPU1-CNI-12F to 3PE-GRP0/1-J4
NTND14BD	CPU1-CNI-13A to 3PE-GRP1/1-J3
NTND14BD	CPU1-CNI-13C to 3PE-GRP1/1-J4
NTND14BA	CPU1-CNI-13F to 3PE-GRP2/1-J3
NTND14BA	CPU1-CNI-13D to 3PE-GRP2/1-J4
NTND14BB	CPU1-CNI-14A to 3PE-GRP3/1-J3
NTND14BB	CPU1-CNI-14C to 3PE-GRP3/1-J4
NTND14BB	CPU1-CNI-14D to 3PE-GRP4/1-J3
NTND14BB	CPU1-CNI-14F to 3PE-GRP4/1-J4

**Note:** The upgrade package provides cables for two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

**Table 113**  
**NTND14 Core/Net 0-to-CNI cable label assignments**

Cable number	Label both ends
NTND14BA	CPU0-CNI-12D to 3PE-GRP0/0-J3
NTND14BA	CPU0-CNI-12F to 3PE-GRP0/0-J4
NTND14BA	CPU0-CNI-13A to 3PE-GRP1/0-J3
NTND14BA	CPU0-CNI-13C to 3PE-GRP1/0-J4
NTND14BB	CPU0-CNI-13D to 3PE-GRP2/0-J3
NTND14BB	CPU0-CNI-13F to 3PE-GRP2/0-J4
NTND14BC	CPU0-CNI-14A to 3PE-GRP3/0-J3
NTND14BC	CPU0-CNI-14C to 3PE-GRP3/0-J4
NTND14BD	CPU0-CNI-14D to 3PE-GRP4/0-J3
NTND14BD	CPU0-CNI-14F to 3PE-GRP4/0-J4

**Note:** The upgrade package provides cables for two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

**Relocating the clock controller cards**

**Note:** The Option 81C requires QPC471 clock controller cards that are vintage H or later, or QPC4775 clock controller cards that are vintage E or later. Order replacement cards if existing cards do not meet this vintage requirement.

The Option 81C upgrade requires you to relocate the QPC471H Clock controller cards from the Option 81 NT6D60 Core module to NT8D35 Network modules in the Option 81C. The QPC471H Clock controller card cannot be placed in the Option 81C NT5D21 Core/Net module.

The clock controller cards may be relocated in any network shelf or network module, provided that one clock is located in shelf 0 and one clock is located in shelf 1.

Replacing the clock controller cards consists of:

- disconnecting all cables to the clock controller cards
- removing clock controller cards 0 and 1 from the Option 81 NT6D60 Core module
- verifying the clock controller switch and jumper settings
- installing one clock controller card in slot 13, Network shelf 0
- installing the second clock controller card in slot 13, Network shelf 1
- reconnecting the clock controller card cables

Relocating the clock controller cards to Network modules may affect clock reference cabling and Intergroup Module (IGM) cabling. If existing cabling cannot support the relocated clocks, new clock controller cables (NT8D74 Clock controller to IGM and NT8D79 PRI/DTI to Clock controller) must be ordered separately.

### **Upgrading 24 MB CP cards to 48 MB**

For memory requirements and upgrade procedures, refer to *Software Conversion Procedures* (553-2001-320).

#### **CAUTION**

Increasing the on-board NT6D66CP card memory from 24 MB to 48 MB will disrupt some telephone service. Plan this for a time when the impact on customers will be minimal.

### **Performing a data dump**

Before you proceed, backup the customer database by performing a data dump:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump

- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter  
\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**Transferring Release 21 database to 2MB diskettes**

To upgrade the system to X11 Release 25, you must first transfer the database to 2MB diskettes to be compatible with the IODU/C floppy drive.

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

**CAUTION**

**When using the Database Transfer Utility, only select options <t> Tools Menu and <s> To archive existing database. Selecting any other options can result in operating system corruption.**

- 4 From the installation menu select:  
<t> to go to the Tools menu  
<s> to archive existing database  
<cr> <a> to continue with archive (insert 2MB diskette into the floppy drive in Core 1)  
<cr> <a> diskette is now in floppy drive in side 1

The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core 1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

## Splitting the Cores

Before beginning the upgrade, split the Cores and transfer call processing to Core 0.

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core.
- 2 Get the status of the CP (Core Processor) and the memory. Verify that all common equipment is enabled:  
**LD 135** to load the program  
**STAT CPU** to get the status of both Cores  
**STAT MEM** to get the memory status
- 3 Test and switch CPUs:  
**TEST CPU** to test the inactive Core  
**SCPU** to switch the Cores
- 4 Get the status of the other CP and the memory. Verify that all common equipment is enabled:  
**STAT CPU** to get the status of both Cores. Verify that one CP is enabled and the other CP is idle  
**STAT MEM** to get the memory status
- 5 If Core 1 is active, switch Cores:  
**STAT CPU** to get the status of the Cores  
**SCPU** to switch to Core 0 (if necessary)  
**\*\*\*\*** to exit the program
- 6 In Core 0, set the NORM/MAINT faceplate switch on the CP card to MAINT.
- 7 In Core 1, set the ENB/DIS switch on all NT6D65 CNI cards to DIS.

- 8 In Core 1, set the NORM/MAINT faceplate switch on the CP card to MAINT.
- 9 Press the MAN RST button on the CP card in Core 1.

The system is now operating in split mode.

## Upgrading Core 1

- 1 Verify that Core 0 is the active Core, and switch Cores if it is not:
  - LD 135** to load the program
  - STAT CPU** to get the status of both Cores. Verify that Core 0 is enabled, and Core 1 is disabled.
  - SCPU** to switch Cores (if necessary)
  - \*\*\*\*** to exit the program

### CAUTION

Exercise caution when performing the next two steps to avoid inadvertently tripping circuit breakers on the rear of the power distribution units.

- 2 Software disable clock controller 1:
  - LD 60** to load the program
  - SSCK 0** to get the status of clock 0
  - SSCK 1** to get the status of clock 1
  - SWCK** if necessary, to switch to clock controller 0
  - DIS CC 1** to disable clock controller 1
  - \*\*\*\*** to exit the program
- 3 Set the ENB/DIS switch on the clock controller card in Core 1 to DIS.
- 4 Label and disconnect the cable from connector J12 in the NT8D36 InterGroup module at the junctor board. Then disconnect the cable from the faceplate connector on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last.

- 5 Disable the system monitor:  
**LD 37** to load the program  
**DIS TTY x** to disable the system monitor and TTY port  
**\*\*\*\*** to exit the program
- 6 On the master system monitor (the one associated with Core 0), disconnect the cable from J3, then the cable from J6.
- 7 Remove the screws and pull the system monitor out of its slot. Do not disconnect the cable connected to J4, and do not turn off the blower unit in the front of the pedestal.
- 8 On the slave system monitor (the one associated with Core 1), disconnect the cables from connectors J5 and J6.
- 9 Remove the screws and pull the system monitor out of its slot. Do not turn off the blower unit in the front of the pedestal.

**CAUTION**

If the system monitors are not removed, the system may shut down later in the upgrade.

- 10 Follow the appropriate step below to turn off power to Core 1:

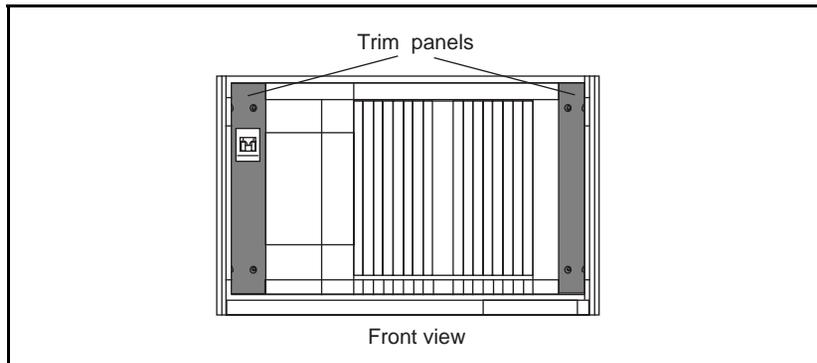
**WARNING**

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- For AC-powered systems, set the main circuit breaker in the column that contains Core 1 (located at the rear of the pedestal) to OFF (down position).
- For DC-powered systems, set the circuit breaker (located at the rear of the pedestal) only for the module that contains Core 1 to OFF (down position). Power to all other modules in the column can safely remain on.

- 11 Remove the trim panels on both sides of the module (see Figure 131). Keep the screws for reuse.

**Figure 131**  
**Location of the trim panels**



- 12 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 13 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 14 Remove the power supply and all cards from Core 1.
- 15 Remove the I/O safety panel that covers the rear of the backplane.
- 16 Label and disconnect all cables from the backplane of Core 1.

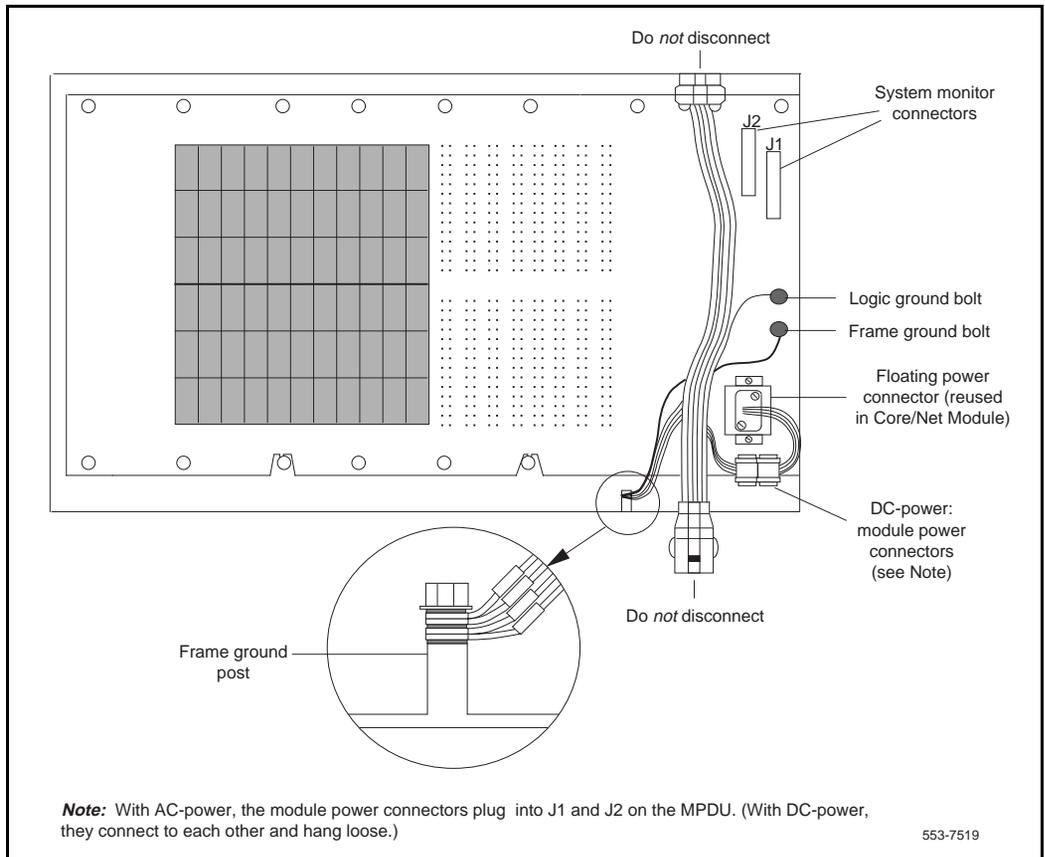
**CAUTION**

Use extreme caution when removing module screws; do not drop them into the pedestal. Damage, equipment failure, or injury could result.

- 17 Remove the two mounting screws at the bottom rear of the card cage that secure the card cage to the module casting. Keep the screws for reuse. (A 1/4" nut driver is needed for this operation.)

- 18 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.
- 19 Remove the logic return (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal (see Figure 132).

**Figure 132**  
**Power connectors on the rear of the NT6D60 Core module backplane**



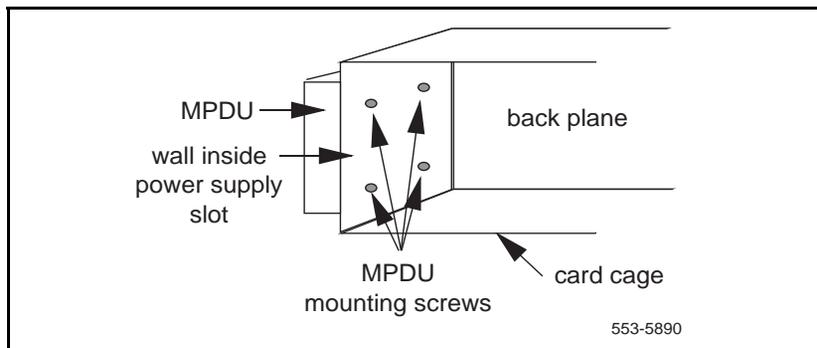
- 20 Remove the frame ground (green) wire from the frame ground bolt on the module.

**WARNING**

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 21 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.
- 22 Label and disconnect the system monitor ribbon cables to J1 and J2.
- 23 Remove the Core card cage from the module.
- 24 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the Core/Net card cage. The screws that secure the MPDU are accessible from the power supply slot (see Figure 133).

**Figure 133**  
**Location of the screws for the MPDU**



- 25 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the Core card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

**Note:** Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

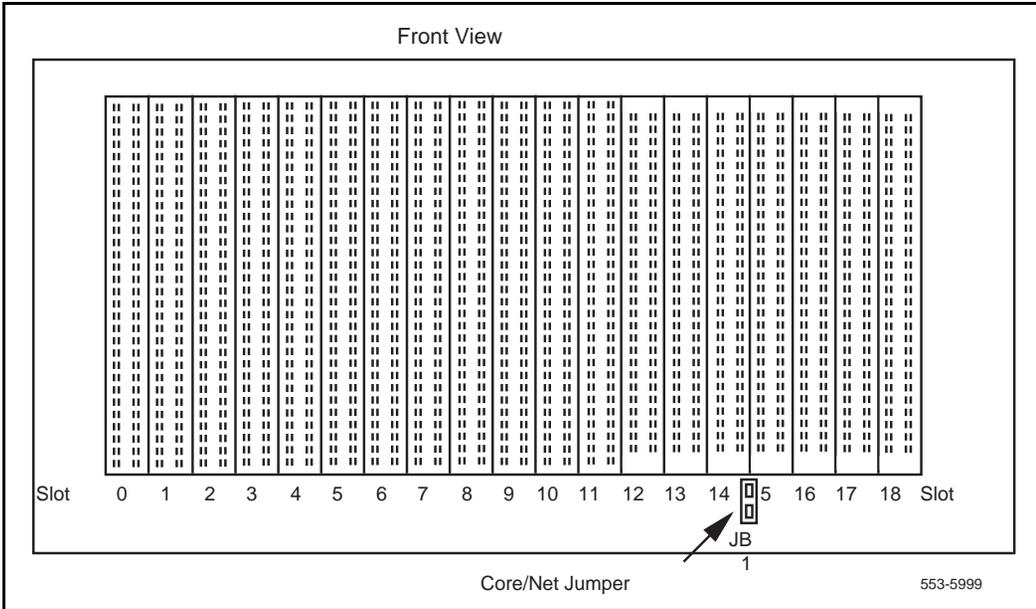
- 26** Remove the backplane jumper (if installed) from the backplane jumper pins at JB1 on the Core/Net 1 card cage. The jumper is located on the backplane along the bottom of the front side between slots 14 and 15 (see Figure 134). To store the jumper for future use, place the jumper onto only one of the pins; do not install it on both pins.
  - a** Core/Net 0: Jumper plug installed
  - b** Core/Net 1: Jumper plug not installed

**CAUTION**

If the Core/Net module jumpers are not set correctly, the system will not operate correctly.

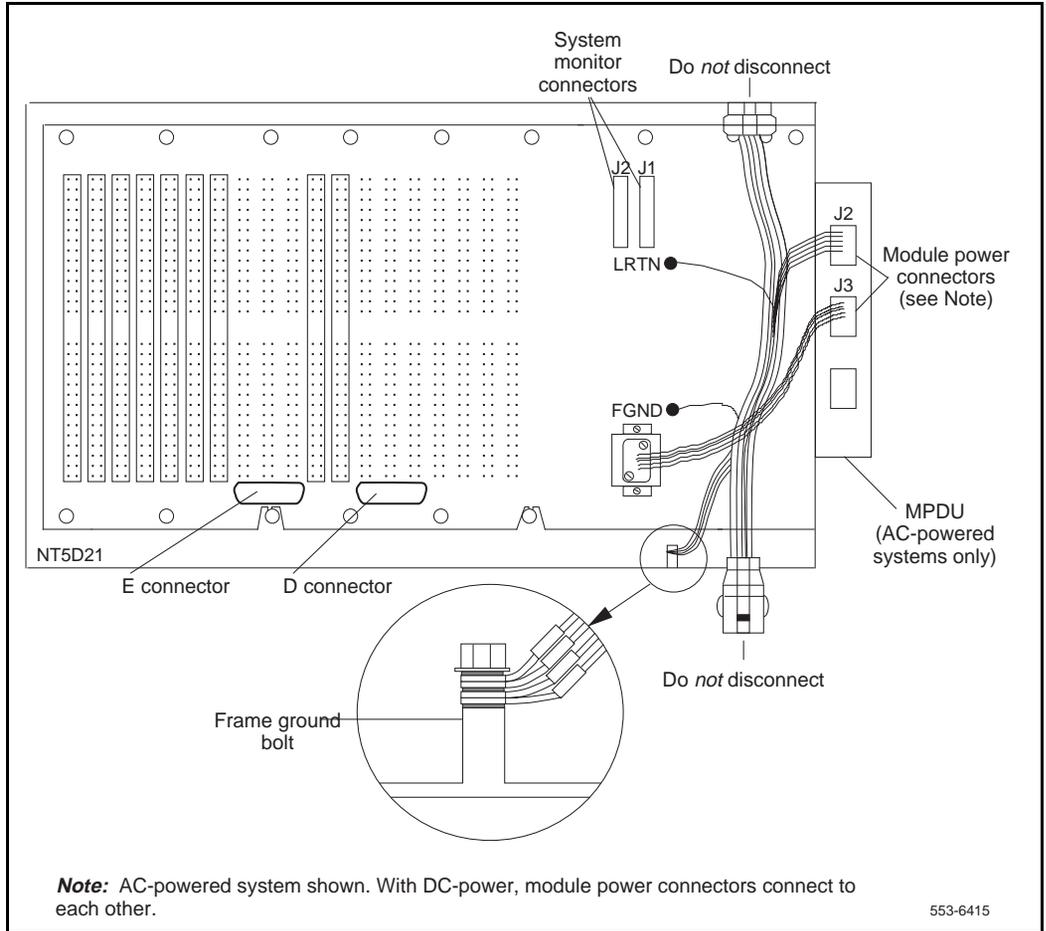
- 27** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 28** In AC-powered systems only, plug the module power cable (the short harness attached to the module power connector) into connector J3 on the MPDU (attached to the side of the card cage).

**Figure 134**  
**Location of the backplane jumper**



- 29** Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while making the following connections at the rear of the module (see Figure 135):
  - a** Connect the remaining module power connectors to J2 on the MPDU, in AC-powered systems, or to each other, in DC-powered systems.
  - b** Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
  - c** Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

**Figure 135**  
**Power connections on the rear of the NT5D21 Core/Net module backplane**

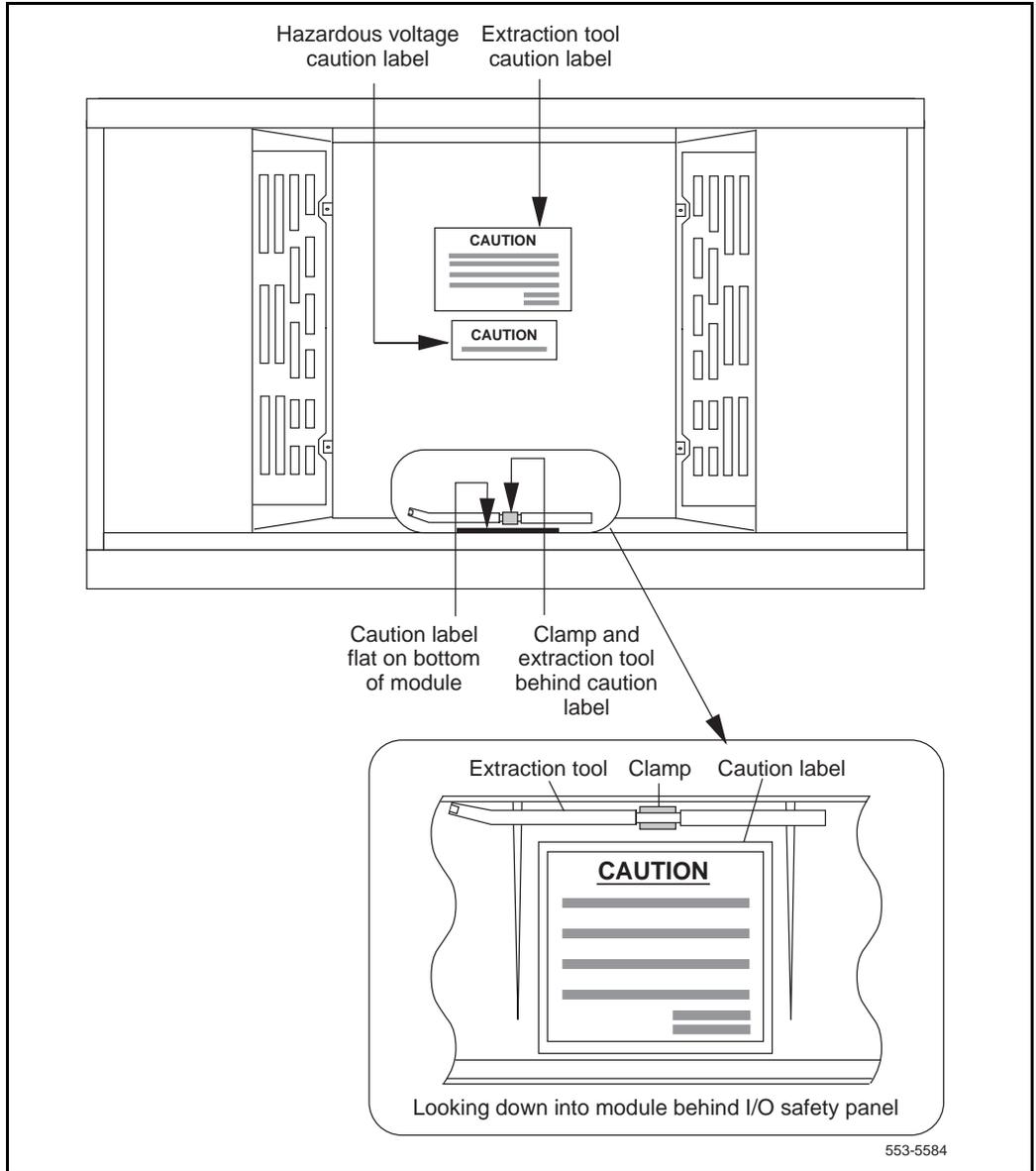


**Note:** For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

**d** Attach the orange logic return wire. Remove one nut and the lock washer from the LRTN bolt at the rear of the card cage. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)

- 30** Slide the card cage all the way into the module.
- 31** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 32** Secure the card cage to the module with the three short screws in the front and the two long screws in the rear.
- 33** On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 136).
- 34** In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 35** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 36** Snap the extraction tool into the clamp.
- 37** Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 38** Install the module power supply (reused from the Core card cage) in the slot labeled "CE Pwr Sup" in the Core/Net 1 module.
- 39** Turn on power to the module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal, then set the MPDU circuit breaker located at the left end of the module to ON (up position). For DC-powered systems, set the breaker to ON (up position) in the pedestal.

**Figure 136**  
**Positioning the extraction tool and caution labels**



- 40 Enable all network cards located in the network modules located in the column containing Core/Net 1. You can do this in either of two ways:
  - a Press the MAN INT button on the CP card in Core 0. Initializing the system in this manner will result in temporary interruption of call processing.
  - b Enable each card located in the network modules located in the column containing Core/Net 1 using software overlays. Enabling the cards in this manner avoids interruption of call processing.
- 41 Check the LEDs on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be ON-OFF-OFF-OFF (from top to bottom) for Core/Net 1. The LED pattern matches the setting of the jumper JB1 on the backplane; if the pattern is incorrect, verify that the jumper is not installed over both pins.
- 42 Shut down power to Core/Net 1 module again. For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position). For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 43 Locate the round 1/2" diameter IODU/C security device.
- 44 With the Nortel Networks side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 45 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**
- 46 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 47 Set the ENB/DIS switch on the NT6D65 CNI card to DIS. Place the card in slot 12, but leave the card unseated.
- 48 Remove the CNI cards from the old card cage. Place the CNI cards in slots 13 and 14 (starting with slot 13) of Core/Net 1 as required for the network group configuration, but leave the cards unseated.

- 49** Remove the QPC441F 3PE card from the old card cage and set the front panel ENB/DIS switch to DIS. Verify the switch and jumper settings on the 3PE card for Core/Net 1 (see Table 114). Make sure Jumper RN27 is set to “A”.

**Table 114**  
**QPC441F 3PE card switch settings for Core/Net 1**

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	off
Group 1					on	on	off	off
Group 2					on	off	on	off
Group 3					on	off	off	off
Group 4					off	on	on	off
<b>Note:</b> RN27 jumper at E35: set to “A” for all modules								

- 50** Place the 3PE card in slot 11 of Core/Net, 1 but leave the card unseated.

- 51 Verify the switch and jumper settings on the existing QPC441F 3PE cards in Network shelf 1 modules. Make sure Jumper RN27 is set to “A”.

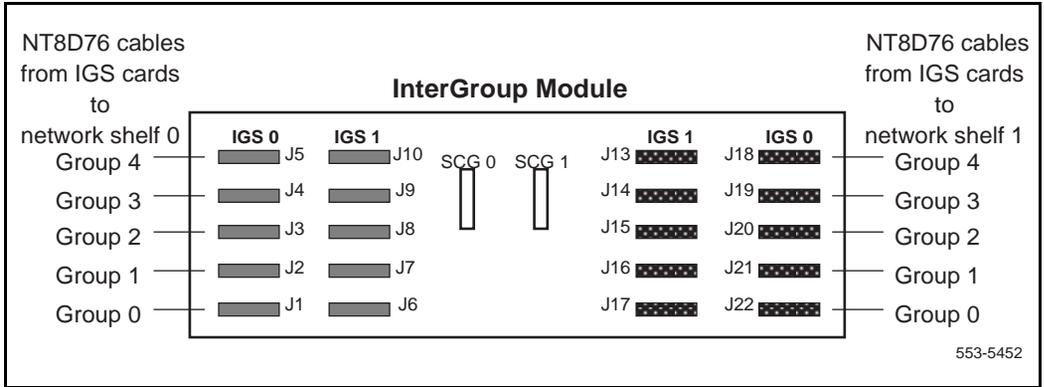
**Table 115**  
**QPC441 3PE card switch settings for Network shelf 1 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off

**Note:** Jumper RN27 at location E35: set to A

- 52 Place the QPC43PS card in slot 10 of Core/Net 1. Set the front panel ENB/DIS to DIS.
- 53 In Core/Net 1, install IGS 0 in slot 8 and IGS 1 in slot 9. Set the front panel ENB/DIS switch to DIS.
- 54 Attach and route NT8D76 cables from the IGS cards in Core/Net 1 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module (see Figure 137, on page 713). Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 1, IGS 0).

**Figure 137**  
**QPC412 IGS card cable assignments to the InterGroup module**



**55** Set the switches on Clock controller 1 according to Table 116.

*Note:* When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

**Table 116**  
**Switch settings for Option 81C clock controller card 1**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

- 56** Set the ENB/DIS switch on Clock controller 1 to DIS. Install Clock controller 1 in Network shelf 1, slot 13, but leave the card unseated.

*Note:* Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**CAUTION**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 57** Install NTND14 cable pairs to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Network Shelf 1 modules (see Table 117 and Figure 138). The cables connect to backplane connectors (secondary shroud connectors) in the Core/Net module and to faceplate connectors on the 3PE cards in the network shelves.

*Note:* Cables are not required for the network group in the Core/Net module. Communication between port 0 on the CNI card in slot 12 and the 3PE card in slot 11 is accomplished through the backplane.

- 58** On the inside of the I/O panel, connect the port A (DTE) connector to the panel at location J21 (see Figure 139, on page 717).
- 59** On the inside of the I/O panel, connect the port B (DCE) connector at J25 (see Figure 139, on page 717).
- 60** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable to location J28 on the I/O panel (see Figure 139, on page 717).
- 61** Connect the other end of the NT7D90 Ethernet cable to backplane at location 17F (see Figure 139, on page 717).
- 62** Connect the single connector end of the NT7D89 RS-232 cable to backplane connector position 15D (see Figure 139, on page 717).
- 63** Loosely attach the I/O panel to the left I/O panel opening of the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 64** Verify that the ENB/DIS switch on Clock controller 1 is set to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables, yet.

**Table 117**  
**CNI to 3PE NTND14 cable connections for Core/Net 1 when upgrading an Option 81 to 81C**

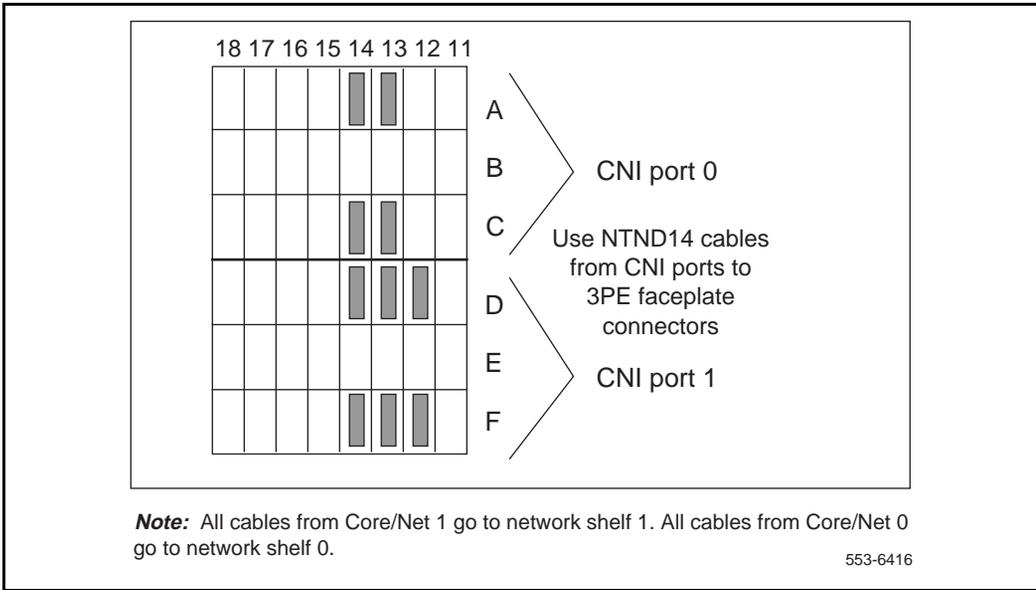
Cable for Group		Backplane connector on Core/Net 1		3PE card connector in each Shelf 1 Network module	Use cable length vintage
0	connects from	12D	to	J3	BC
0		12F		J4	BC
1		13A		J3	BD
1		13C		J4	BD
2		13D		J3	BA
2		13F		J4	BA
3		14A		J3	BB
3		14C		J4	BB
4		12A		(see Note 1)	(see Note 1)
4		12C		(see Note 1)	(see Note 1)

**Note:** Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through 'F' from top to bottom.

**Note 1:** Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.

- 65** Follow the appropriate step below to turn on power to the module:
- a** For AC-powered systems, set the breaker on the MPDU to ON (up position).
  - b** For DC-powered systems, set the switch on the pedestal in the module to ON (up position).
- 66** Route an NT8D74 cable from connector J3 on Clock controller 1 to connector J12 on the Junctor module.

**Figure 138**  
**NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 81 to 81C**



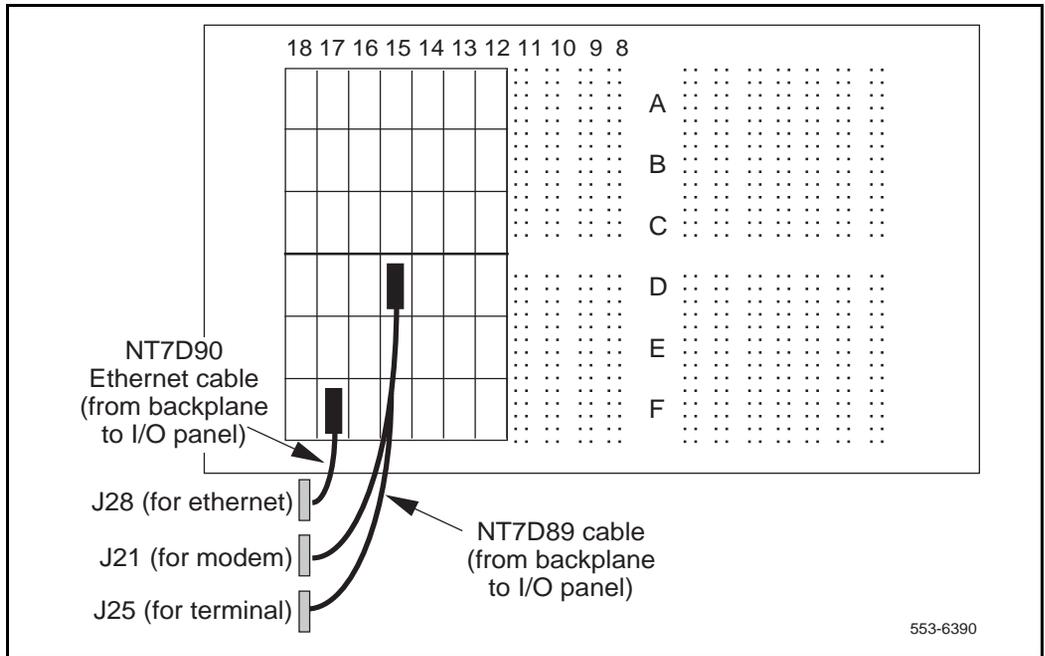
**67** Connect the clock controller cables:

For a QPC471 Clock controller card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card (see Figure 140). Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.

For a QPC775 Clock controller card, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.

Leave the ENB/DIS switch set to DIS on the clock controller card.

**Figure 139**  
**NT5D21 Core/Net module (rear)—RS-232 cable and Ethernet cable connections**



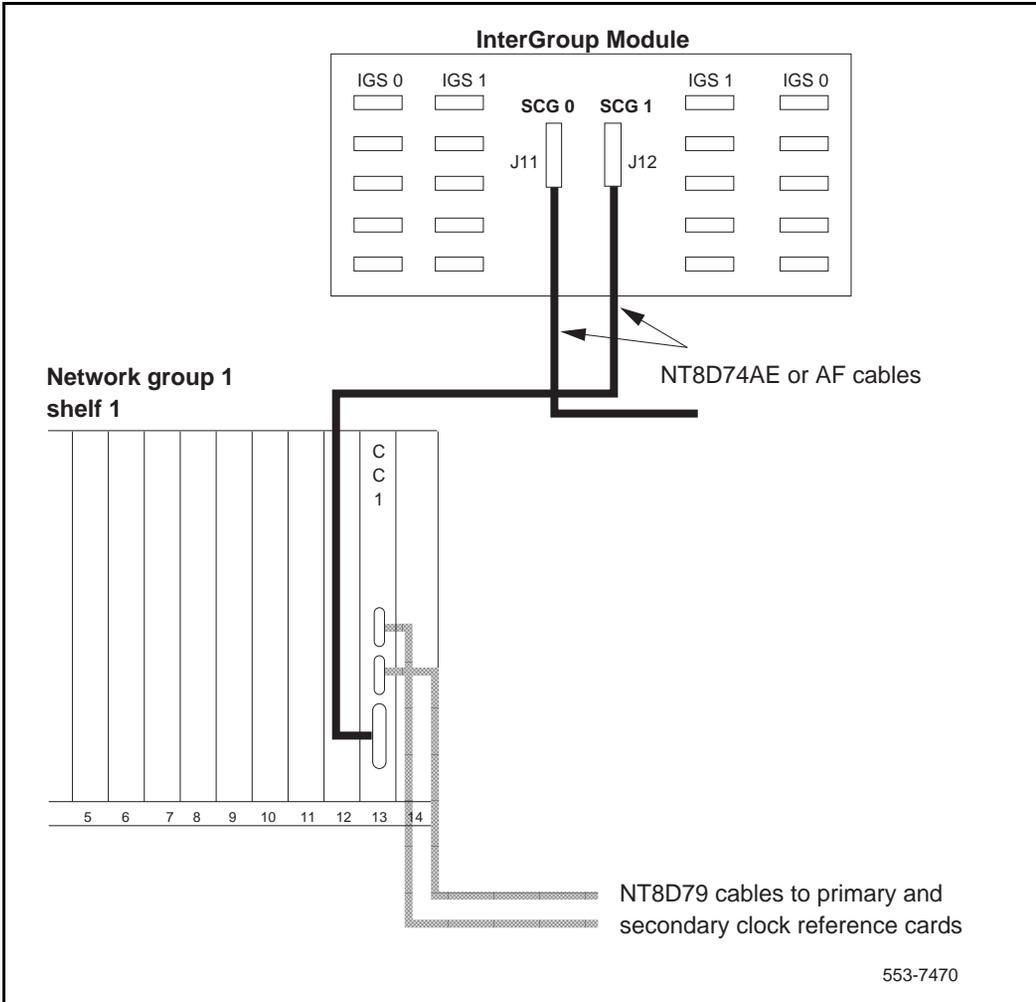
- 68** If you removed the I/O panels previously, install the universal right I/O panel (P0745713) so the side with the two indents fits into the module casting. Secure the I/O panel with the screws from the former panel.

**Note:** The word **RIGHT** on the I/O panel faces the outside of the module. The J10 slot matches the designation on the outside of the panel.

- 69** Seat the NT5D61 IODU/C card and set the ENB/DIS switch to ENB.

As the card performs card level power-up tests, watch the faceplate HEX display and the single LED on the faceplate of the IODU/C. See *X11 Administration* (553-3001-311) for an explanation of the codes. When the initialization completes successfully, the LED on the IODU/C faceplate will flash three times.

Figure 140  
Clock controller card connections for network group x, shelf 1



- 70** Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal:
- 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol
- 71** Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
- 72** Seat the CP card. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages:
- If the CP card fails the self-test, refer to “Troubleshooting” on page 959.
- Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 959.
- Watch the LCD on the IODU/C for the message “Running Disk OS.” As the system attempts to access the hard disk, watch the LCD for error messages. If the system points to file corruption (such as “Error in file diskos” type messages), go to “Troubleshooting” on page 959.
- Watch the terminal for system reload (SYS) and initialization (INI) messages. If the sysload or initialization fails, go to “Troubleshooting” on page 959.
- Note:** It will take at least 70 seconds between the “DONE” and “INI” messages.

Core/Net 1 is operational.

## Converting the customer database to Release 25

Before beginning the database conversion procedure, obtain all of the system software disks required.

**Note:** Obtain extra-high-density floppy disks containing system software from your Nortel Networks representative.

### **CAUTION**

Performing this database conversion procedure will result in disruption of call processing. Plan to perform the conversion when impact on your customers will be minimal.

- 1    Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2    Make sure that the Security Device is installed in the IODU/C.
- 3    Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4    Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).
- 5    Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6    Enter time and date, when prompted.
- 7    Initiate the installation by selecting the following prompt from the menu:
  - <cr> <u>            to Install menu
- 8    Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a>                continue with keycode validation

- 9** Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
  - a** press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b** place the CD-ROM disk into the holder with the disk label showing
  - c** use the four tabs to secure the CD-ROM in the disk holder
  - d** press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
  
- 10** When the install screen appears, select the following options in sequence when you are prompted to do so.
  - <b>** to install software, database, CP-ROM, and IOP-ROM
  - <a>** to verify that the CD-ROM is now in drive
  - <y>** Yes, start the installation
  - <a>** continue with upgrade
  
- 11** When the database installation screen appears, insert the 2MB database diskette and select the following:
  - <a>** to install customer database
  - <a>** to continue with the database install
  - <a>** to transfer the database from floppy to hard disk
  - <y>** Yes, to start installation
  - <a>** Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12** When the ROM installation screen appears, select the prompts in the following sequence:
  - <cr> <a>** to install CP-ROM from hard disk
  - <cr> <a>** to continue with ROM upgrade
  - <a>** to install the IOP-ROM from hard disk
  - <y>** Yes, start installation
  - <a>** to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13** From the main menu select prompts in the following sequence to quit and sysload the system:

<q>	to quit
<y>	Yes, to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- a** Verify that the following message appears on the system terminal:

**DATA CONVERSION**  
**X11 RELEASE XX.xx TO Release 25.xx**

- 14** Confirm that the X11 Release 25 software is installed and is functional on Core/Net 1:

<b>LD 135</b>	to load the program
<b>STAT CPU</b>	to display the CPU status

*Note:* This concludes the X11 Release 25 software installation into the IODU/C in Core/Net 1.

- 15** Log into the system, and continue with “Configuring the system”.

## Configuring the system

- 1 Perform this step only if you upgraded the memory on the NT6D66DA/DB CP cards to 48 MB as part of this system upgrade. If you did not perform the memory upgrade procedure, skip to step 4.

- a Configure the system with the new memory configuration:

- LD 17** to load the overlay

- b For each prompt, type the following response:

- REQ** CHG

- TYPE** CEQU

- c Press the RETURN key until the “MCFN” prompt appears for a NT6D66DA card and enter:

- MCFN** 4 4 4 4 16 16

Or,

- d Press the RETURN key until the “MCFN” prompt appears for a NT6D66DB card and enter:

- MCFN** 8 8 16 16

*Note:* Be sure to insert one space between the values when typing.

- 2 In the Option 81, CNI cards resided in slots 8, 9, and 10 (see Table 118). In the Option 81C, CNI cards reside in slots 12, 13, and 14 of the Core/Net module. Following database conversion, the default network group databases differ between Option 81 and 81C because of the difference in CNI card locations. The Option 81C default CNI configuration is listed in Table 119.

**Table 118**  
**Typical Option 81 CNI network group configuration**

CNI card slot	Port	Network group
8	0	5
8	1	0
9	0	1
9	1	2
10	0	3
10	1	4

**Note:** CNI card slot 8, port 0 is not used in the Option 81.

**Table 119**  
**Option 81C CNI network group default configuration**

CNI card slot	Port	Network group
12	0	0
12	1	1
13	0	2
13	1	3
14	0	4

**If the Option 81C CNI default configuration does not match your network group configuration, you must remove and add network groups to match your desired configuration.**

Use the worksheet in Table 120 to assist you in configuring the CNI network groups.

**Table 120**  
**Option 81C CNI network group configuration worksheet**

<b>CNI card slot</b>	<b>Port</b>	<b>Network group</b> <i>(enter your Option 81C configuration in this column)</i>
12	0	
12	1	
13	0	
13	1	
14	0	
14	1	

**Note:** CNI card slot 12, port 0 is the network group with the Core/Net module.

- 3** To reconfigure the Option 81C network groups, first disable all CNI cards in Core/Net 1 using LD 135:

**LD 135** to load the program  
**STAT CNI** to get the status of all CNI cards  
**DIS CNI x s p** x = extender number (0 or 1)  
s = card slot (12-14)  
p = port (0 or 1)  
**STAT CNI** to confirm that CNI cards are disabled  
**\*\*\*\*** to exit the program

- 4    When the CNI cards in Core/Net 1 are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

<b>Prompt</b>	<b>Response</b>	<b>Comments</b>
<b>LD 17</b>		to load the program
<b>REQ</b>	<b>CHG</b>	
<b>TYPE</b>	<b>CFN</b>	
<b>CEQU</b>	<b>YES</b>	
<b>EXT0</b>	<b>3PE</b>	Core/Net 0 extended to 3PE
<b>_CNI</b>	<b>s p xg</b> <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
<b>_CNI</b>	<b>s p g</b> <i>to "add" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
<b>EXT1</b>	<b>3PE</b>	Core/Net 1 extended to 3PE
<b>_CNI</b>	<b>s p xg</b> <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
<b>_CNI</b>	<b>s p g</b> <i>to "add the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
<b>MCFN</b>	<b>4 4 4 4 16 16</b> or, <b>8 8 16 16</b>	to set the "DA" memory card configuration to set the "DB" memory card configuration
	<i>(this prompt appears only in systems equipped with NT6D66 DA/DB CP cards)</i>	
<b>REQ</b>	<b>****</b>	to exit the program

- 5 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG aaa x	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
GRP	g	g = network group (0-4)
...		

- 6 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
PARM	YES	
...		
500 B	1000	use 1000 as a minimum value
...		
NCR	2000	use 2000 as a minimum value
...		
.	****	to exit the program

- 7 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print option
TYPE CFN	to print the configuration
****	to exit the program

- 8    Insert an unused B1 database diskette from the target software upgrade package into the IODU/C drive.
- 9    Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43**                    to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

**EDD**                    to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 10    Exit the program. Enter  
**\*\*\*\***                    to exit the program
- 11    Seat all CNI cards, but leave the ENB/DIS switches set to DIS.
- 12    Check the status of all configured CNI cards:  
**LD 135**                    to load the program  
**STAT CNI**                to get the status of all configured CNIs  
  
*Note:* The status will indicate that the CNI cards are disabled. Verify that an entry exists for each CNI card in the system. There may be extra entries for CNI cards that were previously removed from the database; ignore these entries for now.  
  
**\*\*\*\***                    to exit the program
- 13    Set the ENB/DIS switch to ENB on the clock controller card in network Group 1, Shelf 1.
- 14    Seat and enable the QPC441 3PE card in Core/Net 1.

- 15** Enable the faceplate switch on the QPC412 IGS card in Core/Net 1.
- 16** Set the ENB/DIS switch to ENB on all CNI cards in Core/Net 1.

**CAUTION**

Call processing will be interrupted. Perform the next steps carefully. This is the point at which your service will be interrupted. Calls in process will be interrupted.

- 17** Perform the next 4 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from Core 0 to Core/Net 1.
  - a** In Core 0, set the ENB/DIS switch to DIS on the IODU/C card.
  - b** In Core 0, set the ENB/DIS switch on all CNI cards to DIS.
  - c** Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
  - d** Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process. Make sure the faceplate LEDs on CNI, 3PE, and IGS cards go out.
- 18** Check for dial tone. If there is no dial tone (the system is inoperable) and you cannot afford downtime, switch the loops back to Core 0 (which still has the Core card cage):
  - a** Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS
  - b** Set the ENB/DIS switch on each CBI card on Core 0 to ENB.
  - c** Initialize Core 0 by pressing the MAN INT button.
  - d** Troubleshoot the Option 81C off-line.

If you can afford downtime, troubleshoot the Option 81C on-line:

- e Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
- f Verify that all cables are properly and securely connected in the front and rear of the module.
- g Check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- h If any CNI cards are disabled, enable them in LD 135, perform a data dump with LD 43, and initialize the system by pressing the MAN INT button. Otherwise, proceed directly to step 19.
- i Again, check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- j Check for dial tone.

**19** Enable clock controller 1:

```
LD 60          to load the program
SSCK 1        verify that the response is DISABLE
ENL CC 1      to enable clock 1
SSCK 1        verify that clock 1 is active
****         to exit the program
```

- a Check for dial tone.

**20** Following a successful dial tone test, perform the following basic sanity tests:

- a Make sure intra-group and inter-group calls can be placed.
- b Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

The upgrade of Core 1 is complete. The system is operating in split-mode with call processing on Core/Net 1.

## Upgrading Core 0

Before you upgrade Core 0 to the Option 81C Core/Net card cage, perform the following steps.

Check the remaining equipment from the upgrade package. Make sure you have enough equipment for the upgrade and for troubleshooting, if needed.

- 1 Perform these steps to disable the clock controller card:

<b>LD 60</b>	to load the program
<b>SSCK 1</b>	to get the status of clock 1. Verify it is active.
<b>SSCK 0</b>	to get the status of clock 0
<b>SWCK</b>	if necessary, to switch to clock 1
<b>DIS CC 0</b>	to disable clock 0
<b>****</b>	to exit the program
- 2 Set the ENB/DIS switch on the clock controller card in Core 0 to DIS.
- 3 Label and disconnect the cable from connector J11 in the NT8D36 InterGroup module at the junctor board. Then disconnect the cable from faceplate connector J3 on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last.
- 4 Perform the appropriate step to turn off power to Core 0:
  - a For AC-powered systems, set the main circuit breaker for column 0 to OFF (down position) in the rear of the pedestal.

### **WARNING**

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- b For DC-powered systems, set the circuit breaker for Core 0 only (located at the rear of the pedestal) to OFF (down position). All other modules in the column can safely remain on.

- 5 Remove the trim panels on both sides of the module (refer to Figure 131, on page 702). Keep the screws for reuse.
- 6 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 7 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 8 Remove the power supply and all cards from Core 0.
- 9 Label and disconnect cables from the I/O panels. Remove both I/O panels. Keep the screws for reuse. Remove the I/O safety panel that covers the rear of the backplane.
- 10 Label and disconnect all cables from the backplane of Core 0.
- 11 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)
- 12 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.
- 13 Remove the logic ground (orange) wire from the backplane ground bolt (refer to Figure 132 on page 703). Be careful; do not drop the nut or lock washer into the pedestal. (A 1/4" socket wrench is needed for this operation.)
- 14 Remove the frame ground (green) wire from the frame ground bolt on the module.

**WARNING**

Do *not* disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 15 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) with AC power or connected to each other with DC power.
- 16 Label and disconnect the system monitor ribbon cables from J1 and J2.

- 17** Remove the Core card cage from the module.

For AC-powered systems, after the card cage is out of the module remove the MPDU and reinstall it on the Core/Net card cage. The screw-heads for the MPDU are in the wall of the power supply slot (refer to Figure 133 on page 704).

- 18** Remove the floating power connector (the black connector) and its mounting bracket from the rear of the Core card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 19** Install the backplane jumper on the Core/Net module. The jumper is located along the bottom of the front side of the backplane between slots 14 and 15 (refer to Figure 134 on page 706).

**CAUTION**

If the Core/Net module jumpers are set incorrectly, the system will not load or will not operate correctly.

- 20** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 21** Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while you attach the power connectors at the rear of the module (refer to Figure 135 on page 707).
- 22** Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.

- 23** Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

*Note:* For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth wire terminals.
- 24** Attach the logic ground (orange) wire. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- 25** Connect the module power connectors to the MPDU for AC power, or to each other for DC power.
- 26** Slide the card cage the remainder of the way into the module.
- 27** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 28** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 29** Position the I/O panel so that the two cutouts match with the castings on the module. Secure the I/O panel with the screws from the previous panel.
- 30** Set the finger end over the lower edge of the J10 opening. The finger rests against the outside of the I/O panel.
- 31** On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label.
- 32** In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 33** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 34** Snap the extraction tool into the clamp.

- 35 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 36 Install the module power supply (reused from the Core card cage) in the slot labeled “CE Pwr Sup” in the Core/Net card cage.
- 37 Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 38 Check the LED on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be OFF-OFF-OFF-OFF for Core/Net 0. The LED pattern matches the setting of the jumper on the backplane; if the pattern is incorrect, check the jumper.
- 39 Shut down power to the Core/Net 0 module again. For AC-powered systems, set the main breaker for the column to OFF (down position). For DC-powered systems, set the switch on the pedestal breaker for the module to OFF (down position).
- 40 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**
- 41 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 42 Set the ENB/DIS switch on an NT6D65 CNI card to DIS. Place the card in slot 12, but leave the card unseated.
- 43 Remove the other CNI cards from the old card cage and set the front panel ENB/DIS switches to DIS. Place the CNI cards in slots 13 and 14 as required for the network group configuration, but leave the cards unseated.

- 44 Configure the switch and jumper settings on the QPC441F 3PE card for Core/Net 0 (see Table 121). Make sure Jumper RN27 is set to “A”.

**Table 121**  
**QPC441F 3PE card switch settings for Core/Net 0**

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	on
Group 1					on	on	off	on
Group 2					on	off	on	on
Group 3					on	off	off	on
Group 4					off	on	on	on
<b>Note:</b> RN27 jumper at E35: set to “A” for all modules								

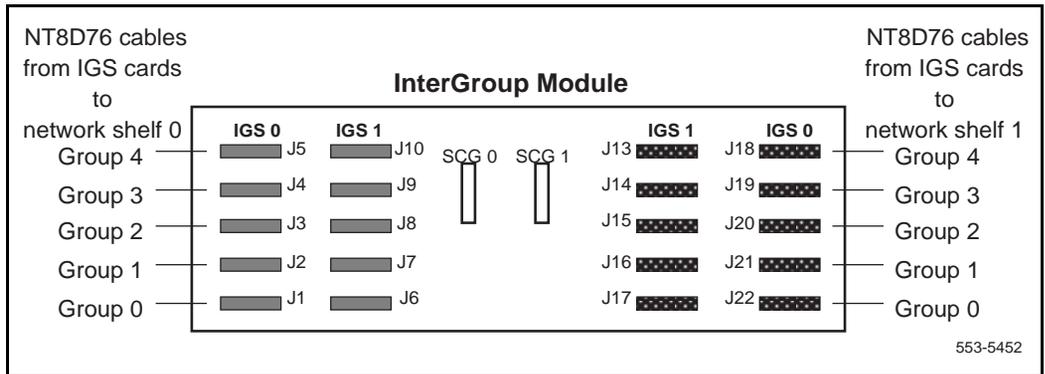
- 45 Place the 3PE card in slot 11 of Core/Net 0, but leave the card unseated.
- 46 Verify the switch and jumper settings on the existing QPC441F 3PE cards in the Network shelf 0 modules (see Table 122). Make sure Jumper RN27 is set to “A”.
- 47 Place the QPC43PS card in slot 10 of Core/Net 0. Set the front panel ENB/DIS switch to DIS.
- 48 In Core/Net 0, install the two QPC412 IGS cards (IGS 0 in slot 8 and IGS 1 in slot 9). Set the front panel ENB/DIS switch to DIS.
- 49 Route NT8D76 cables from the IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module (see Figure 141). Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 0, IGS 0).
- 50 Set switches on Clock controller 0 as shown in Table 123 on page 738.

**Table 122**  
**QPC441 3PE card switch settings for Network shelf 0 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on

**Note:** Jumper RN27 at location E35: set to A

**Figure 141**  
**QPC412 IGS card cable assignments to the InterGroup module**



**Note:** When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21, 51, 61, 71”) next to the switches.

- 51** Place the Clock controller card in Network shelf 0, slot 13, but leave the card unseated.

**Table 123**  
**Clock controller card 0 switch settings**

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on

**Note:** Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.

**Note:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

- 52 Route an NT8D74 cable from connector J3 on Clock Controller 0 to connector J11 on the Junctor module.

**CAUTION**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 53 Install NTND14 cable pairs to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Network modules as indicated in Table 124 (see Figure 142 on page 740). The cables connect to backplane connectors in the Core/Net module and to faceplate connectors on the 3PE cards.

**Note:** Cables are not required for the network group in the Core/Net module. Communication between port 0 on the CNI card in slot 12 and the 3PE card in slot 11 is accomplished through the backplane.

Table 124

CNI to 3PE NTND14 cable connections for Core/Net 0 when upgrading an Option 81 to 81C

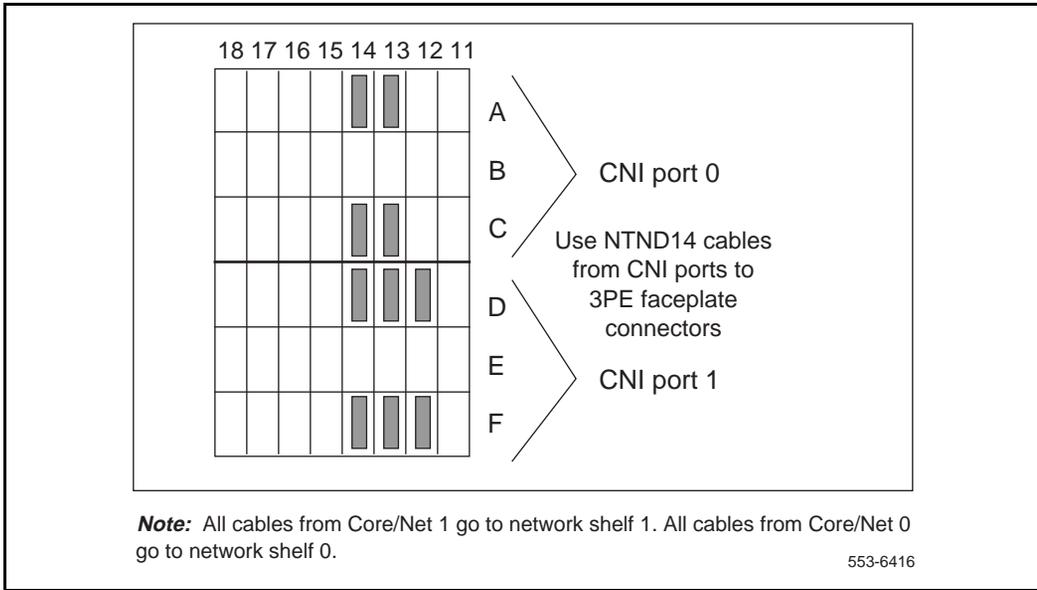
Cable for Group		Backplane connector on Core/Net 0		3PE card connector in each Shelf 0 Network module	Use cable length vintage
0	connects from	12D	to	J3	BA
0		12F		J4	BA
1		13A		J3	BA
1		13C		J4	BA
2		13D		J3	BB
2		13F		J4	BB
3		14A		J3	BC
3		14C		J4	BC
4		12A		(see Note 1)	(see Note 1)
4		12C		(see Note 1)	(see Note 1)

**Note:** Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through 'F' from top to bottom.

**Note 1:** Cables are not required for a group being added in a Core/Net module.

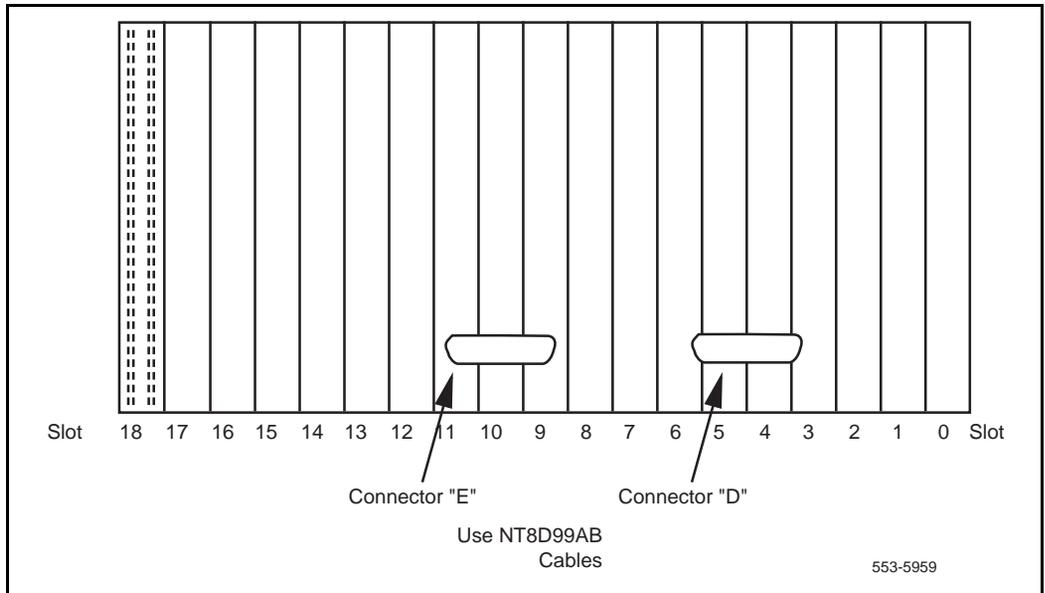
- 54** At the rear of each Core/Net module, connect the single connector end of the NT7D89 RS-232 cable to backplane connector position 15D (see Figure 139 on page 717).
- 55** Connect port A (DTE) to J21 of the left I/O panel (see Figure 142).
- 56** Connect port B (DCE) to J25 of the left I/O panel (see Figure 142).
- 57** Connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 142).
- 58** On the faceplates of the 3PE cards in the Core/Net modules:
- a** connect an NT8D80BZ cable from J4 in Core/Net 0 to J4 in Core/Net 1
  - b** connect another NT8D80BZ cable from J3 in Core/Net 0 to J3 in Core/Net 1

**Figure 142**  
**NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 81 to 81C**



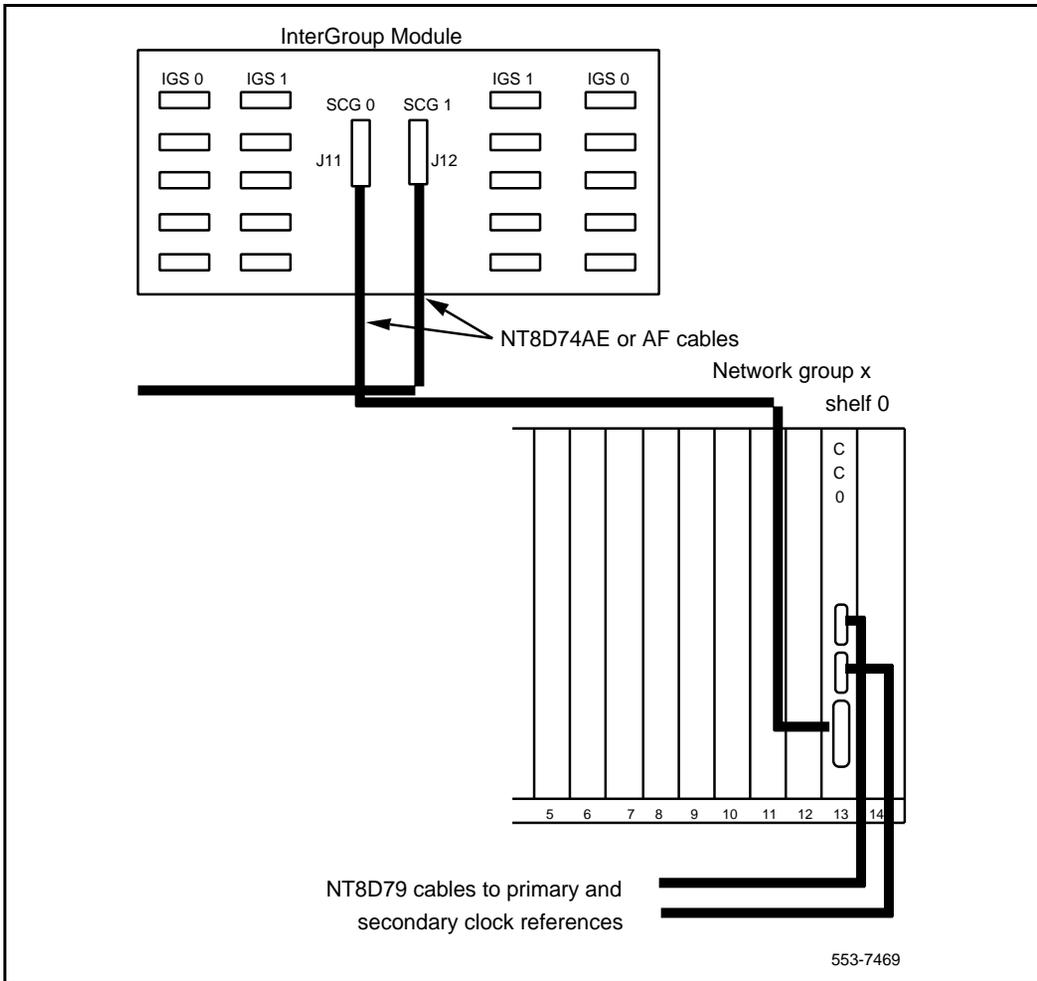
- 59 In the rear of the Core/Net modules, install an NT8D99BD cable from the backplane connector labeled “D” in Core/Net 0 to the backplane connector labeled “D” in Core/Net 1 (see Figure 143).
- 60 Install the second NT8D99BD cable from the backplane connector labeled “E” in Core/Net 0 to the backplane connector labeled “E” in Core/Net 1 (see Figure 143).
- 61 Loosely attach the I/O panel to the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 62 Verify that the ENB/DIS switch on Clock controller 0 is set to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables.

**Figure 143**  
**NT5D21 Core/Network module; location of D and E connectors (rear view)**



- 63** Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 64** Perform the appropriate steps to connect the clock controller cables (refer to Figure 144):

Figure 144  
Clock Controller card connections for network group x, shelf 0



- a** For a QPC471 card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card. Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.
- b** For QPC775 Clock controller cards, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
- c** Leave the ENB/DIS switch set to DIS on QPC471 and QPC775 cards.

- 65** Seat the NT5D61 IODU/C card, and then, set the ENB/DIS switch to ENB.

As the card performs card level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 Administration* (553-3001-311) for an explanation of the codes.

If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 959.

- 66** Connect a terminal to the J25 port on the I/O panel in Core/Net 0. Use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

- 67** On the CP card, set the NORM/MAINT switch to MAINT and then seat the card into the backplane and secure the lock latches. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages:

- a** If the CP card fails the self-test, go to “Troubleshooting” on page 959.
- b** Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 959.

- c Watch the LCD for the message “Loading Disk OS.” As the system attempts to access the hard disk, watch the LCD for error messages. If error messages indicate file corruption (such as “Error in file disk OS” type messages), refer to “Troubleshooting” on page 959.
- d Watch the LCD for system reload (SYS) and initialization (INI) messages. Following this, Core/Net 0 is operational. If the sysload or initialization fails, refer to “Troubleshooting” on page 959.

## Copying software in Core/Net 0 with IODU/C

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>>`        to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>`                continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:  
`<0>`                to copy system software from the other Core
- 7 When the software is installed successfully, press `<CR>` to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.

- 8** From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

<f>	to install IOP-ROM only
<cr> <a>	to install the IOP-ROM from hard disk
<y>	Yes, start installation
<cr> <a>	to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9** From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:

<d>	to go to the Database menu
<d>	to copy the database from Core 1 to Core 0
<y>	to confirm the installation status summary
<a>	to confirm database copy

- 10** From the Main Menu, select the following options to quit and reload the system:

<q>	to quit
<y>	to confirm quit

- 11** Reboot the Core/Net 0 CPU:

<a>	to reboot the system
-----	----------------------

Wait for “DONE” and then “INI” messages to be displayed before continuing.

## **Completing the upgrade**

- 1** Seat and enable the QPC441 3PE card in Core/Net 1.
- 2** Enable the faceplate switch on the QPC412 IGS card in Core/Net 1.
- 3** Seat all CNI cards, but leave their ENB/DIS switches set to DIS.

- 4 Check the status of all configured CNI cards:

**LD 135**            to load the program

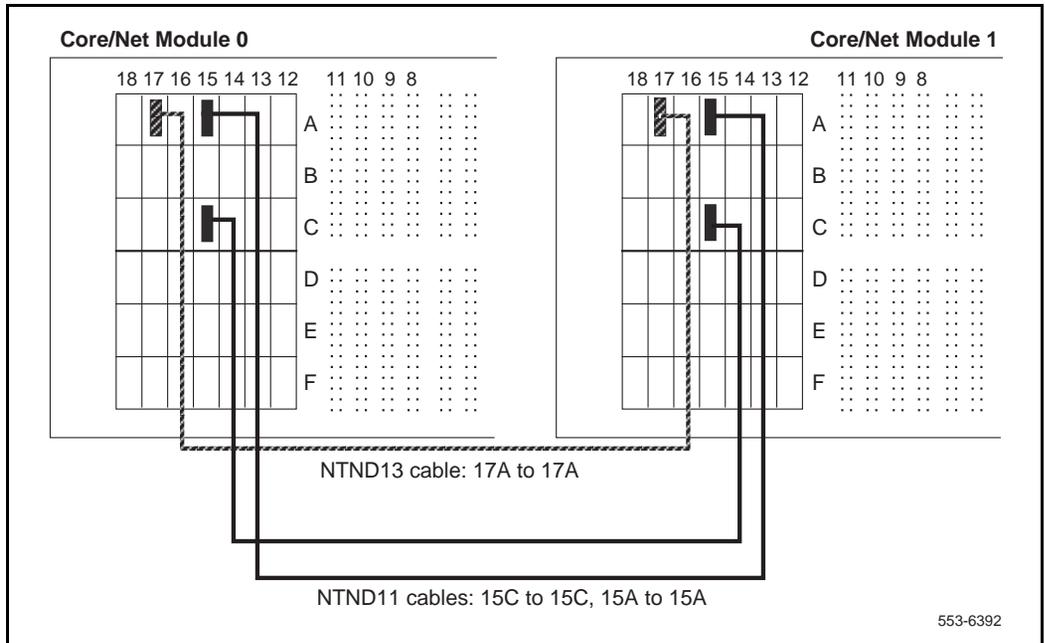
**STAT CNI**        to get the status of all configured CNIs

*Note:* If you get error messages stating that CNIs are disabled, verify that an entry exists for each CNI card in the system.

**\*\*\*\***                to exit the program

- 5 Verify the NORM/MAINT switch on both CP cards is still set to MAINT.
- 6 In Core/Net 0 (the inactive side), set the ENB/DIS switch on the IODU/C or IOP/CMDU card to DIS, and then unseat the card.
- 7 In Core/Net 0, unseat the CP card.
- 8 Temporarily remove the left I/O panels.
- 9 Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 17A in Core/Net 0 to 17A in Core/Net 1 (see Figure 145).
- 10 Connect one NTND11 cable from backplane connector position 15A in Core/Net 0 to 15A in Core/Net 1 (see Figure 145).
- 11 Connect another NTND11 cable from backplane connector position 15C in Core/Net 0 to 15C in Core/Net 1 (see Figure 145).
- 12 Reinstall the I/O panels in both Core/Net modules. Install and tighten all screws.
- 13 Reseat the IODU/C or IOP/CMDU card in Core/Net 0, and then set the ENB/DIS switch to ENB.
- 14 Set the ENB/DIS switch on the Clock controller card 0 in Network shelf 0, slot 13 to ENB.
- 15 Set the ENB/DIS switch on all CNI cards in Core/Net 0 to ENB.

**Figure 145**  
**NT5D21 Core/Net module (rear)—NTND13, and NTND11 cables**



- 16** In Core/Net 0, verify that the NORM/MAINT switch on the CP card is set to MAINT and then seat the card and secure the lock latches; the card will perform a self-test. When SYS700 messages appear on the LCD display, **set the NORM/MAINT switch to NORM.**

A "HWI534" message from the CPSI (Core 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an "HWI533" message indicates that the contents of Core 1 memory is copied to Core 0 memory. Wait until the memory synchronization is complete before continuing.

**17 Set the NORM/MAINT switch to NORM** on the CP card in Core/Net 1 and perform a redundancy sanity test:

- LD 135**            to load the program
- STAT CNI**        to get the status of all configured CNIs
- STAT CPU**        to get the status of both Cores
- TEST CPU**        to test the inactive CP card and CP-to-CP cable
- TEST IPB**        to test the backplane protocol on the inactive side
- TEST CNI c s**    to test each configured CNI on the inactive side

*Note:* Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

**18 Switch Cores and test the other side:**

- SCPU**            to switch to Core/Net 0
- TEST CPU**        to test the inactive CP card and CP-to-CP cable

**19 Get the status of the CP cards and memories and of the CNIs:**

- STAT CPU**        to get the status of both Cores
- STAT CNI**        to get the status of all configured CNIs
- \*\*\*\***              to exit LD 135

**CAUTION**

**Call processing will be interrupted when you perform the following step.**

**20 Synchronize the hard disks.** To be sure the content of IODU/C 1 is copied to IODU/C 0 respectively, verify that IOCU/C 0 is disabled:

- LD 137**            to load the program
- STAT**            get the status of IODU/Cs, and redundancy. Verify that the IODU/C 0 is disabled.
- SYNC**            to synchronize the hard disks
- TEST CMDU**    Performs hard and floppy disk test.

*Note:* Synchronization may take up to 50 minutes.

- 21** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs or CMDUs, if necessary:
- STAT** to get the status of IODU/Cs, and redundancy
  - SWAP** to switch IODU/Cs (if necessary)
  - \*\*\*\*** to exit the program
- 22** In Core/Net 0, press the MAN INT button to execute clock hunt software and locate clock controller 0.
- 23** Check the status of the clocks, swap clocks, and verify status:
- LD 60** to load the program
  - SSCK 0** to get the status of clock 0
  - SSCK 1** to get the status of clock 1
  - SWCK** to swap active clocks
  - SSCK 0** to verify that clock 0 is enabled
  - SSCK 1** to verify that clock 1 is disabled
  - \*\*\*\*** to exit the program
- 24** Insert a B1 backup database diskette into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C:
- Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- LD 43** to load the program
- When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter
- EDD** to begin the data dump
- When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

The system is operating in dual CPU mode with redundant disk drives.

- 25** Test the IOP to IOP SCSI connection and test the IODU/Cs:
- LD 137**            to load the program
  - TEST SCSI**        to check the IOP to IOP connection and access to the IODU/Cs
  - TEST CMDU**        to test the hard and floppy disk drives (a floppy diskette must be installed)
  - \*\*\*\***                to exit the program
- 26** Clear displays, major alarms, and minor alarms:
- LD 135**            to load the program
  - CDSP**             to clear the display
  - CMAJ**             to clear all major alarms
  - CMIN ALL**        to clear all minor alarms
  - SCPU**             to switch to the other Core
  - CDSP**             to clear the display
  - \*\*\*\***                to exit the program
- 27** Software enable clock controller cards and any PRI/DTI cards in the Core/Net modules:
- LD 60**             to load the program
  - ENL CC x**         to enable clock controller 1 or 0
  - TRCK aaa**        if necessary, to set tracking
  - ENLL loop**        to enable the specified network loop and associated PRI/DTI card
  - \*\*\*\***                to exit the program
- 28** Reinstall the system monitor in column 1. Reconnect the cables.
- 29** On the master system monitor (column 0), reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.

- 30** Software enable the associated SDI port:
- |                       |   |
|-----------------------|---|
| <b>LD 37</b>          | to load the program                           |
| <b>ENL terminal x</b> | to enable the device associated with the port |
| <b>STAT XSM</b>       | to check the status of the system monitor     |
| <b>****</b>           | to exit the program                           |
- 31** For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 32** Perform all applicable acceptance test procedures in *System Installation Procedures* (553-3001-210).

The Option 81 to Option 81C upgrade is complete.



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# Database transfer for Option 21E, 51, 61, 71, STE, NT, and XT systems

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## Content list

The following are the topics in this section:

- [Using the Database Transfer Utility 753](#)
- [Using the direct cabling method 755](#)

For systems equipped with MDU or SMDU cards, the database can be transferred using **two different methods**:

- transfer the database using the Database Transfer Utility (this requires an “interim” IOP/CMDU card during the database transfer)
- cable the SMDU or MDU to the IODU/C card and downloading the database

## Using the Database Transfer Utility

To perform this procedure, an interim NT5D20 IOP/CMDU and QMM42 security cartridge are required.

Before beginning this procedure:

- The system must be running X11 Release 21 or 18H (Phase 8)
- For dual-CPU systems, the system must be in split mode with **Core 0 processing calls**.
- The target system must be installed and powered up.

- 1 Perform a data dump in LD 43 on the existing system.
- 2 In Core/Net 1 (Core/Net 0 for single CPU systems) of the target system, install the NT5D20 IOP/CMDU card into slot 17.
- 3 In Core/Net 1, install the Database Transfer Utility diskette, which corresponds to the existing (source) CP card, into the floppy drive on the IOP/CMDU card.
- 4 Press the MAN RST button on the CP card in Core/Net 1.
- 5 When the Nortel Networks Logo Screen appears on the terminal, the Database Transfer Utility has loaded. Press <CR> to continue.

**CAUTION**

**When using the Database Transfer Utility, do not select options other than those specified by this procedure. Selecting any other options can result in operating system corruption.**

- 6 When the Main Menu appears, select <d> *To install Database only.*
- 7 Select <c> *to transfer the previous system database (DBMT).* Follow all on-screen instructions. When DBMT is complete, press <CR> to return to the Main Menu.
- 8 Select <t> to go to the Tools Menu
  - <s> to archive existing database
  - <a> to continue with archive (insert 2.0 MB diskette into the floppy drive in Core 1)
  - <a> diskette is now in floppy drive in side 1

The message "Database backup complete!" is displayed and the Tool menu reappears after the backup is successfully completed.

- 9 Remove the 2.0 MB diskette containing the customer database from the IOP/CMDU floppy drive.
- 10 When the database is converted to 2.0 MB, place it in a safe place for use after the IOP/CMDU card is replaced with an IODU/C card, and continue with the system upgrade.

The database transfer procedure is complete. You are now ready to install Release 25 software.

## Using the direct cabling method

Typically, database transfer is performed in conjunction with a system upgrade. Refer to the appropriate upgrade section in this document for complete system upgrade procedures.

Before beginning this procedure:

- The system being upgraded must be running X11 Release 21 or 18H (Phase 8)
- The target system must be configured with a Core/Net module, Call Processor (CP) card, and Common Equipment Power Supply.
- For redundant systems, the system must be in split mode with **CPU 0 processing calls.**

### **CAUTION**

For redundant systems, the direct cabling procedure must begin on CPU 0. For single CPU systems, a jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

**Note:** To transfer the database using the direct cabling method, you will place the MDU (or SMDU and EMSI cards) into an empty network slot in the Core/Net 1 module. For redundant systems, the MDU (or SMDU and EMSI cards) is used in Core/Net 1 only. The database is copied from Core/Net 1 to Core/Net 0 using the Software Installation Tool.

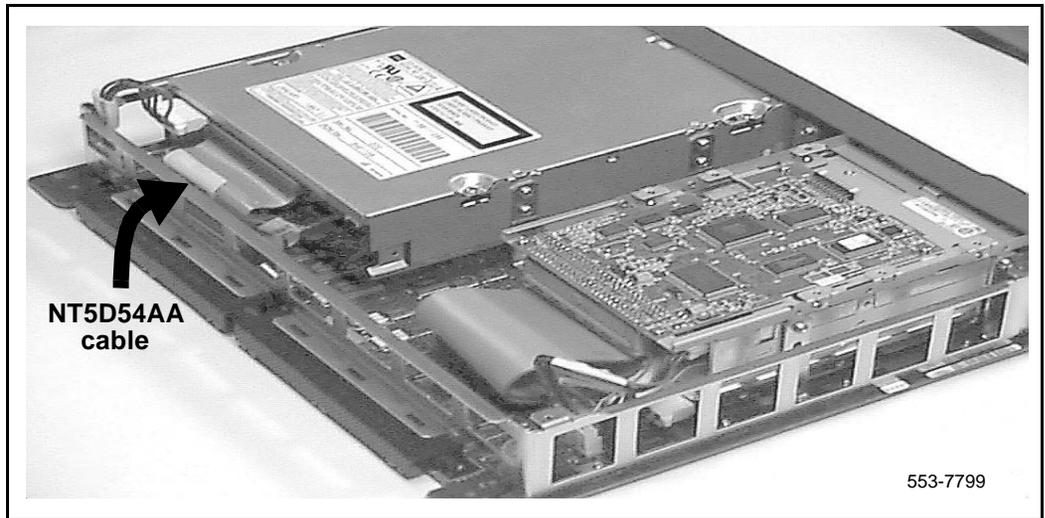
**CAUTION**

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

**IODU/C cabling**

- 1 Shut down power to the Core/Net 1 module. For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position). For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 146). **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

**Figure 146**  
**Location of NT5D54 cable on IODU/C card**



### **MDU cabling**

- 1** If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
  - a** Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:  
**LD 37**           to load the program  
**DIS MSI 0**       to disable the card
  - b** Remove the floppy diskettes from the disk drives.
  - c** Label and disconnect cables from the faceplate of the MDU or SMDU.
  - d** Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

**Note:** When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

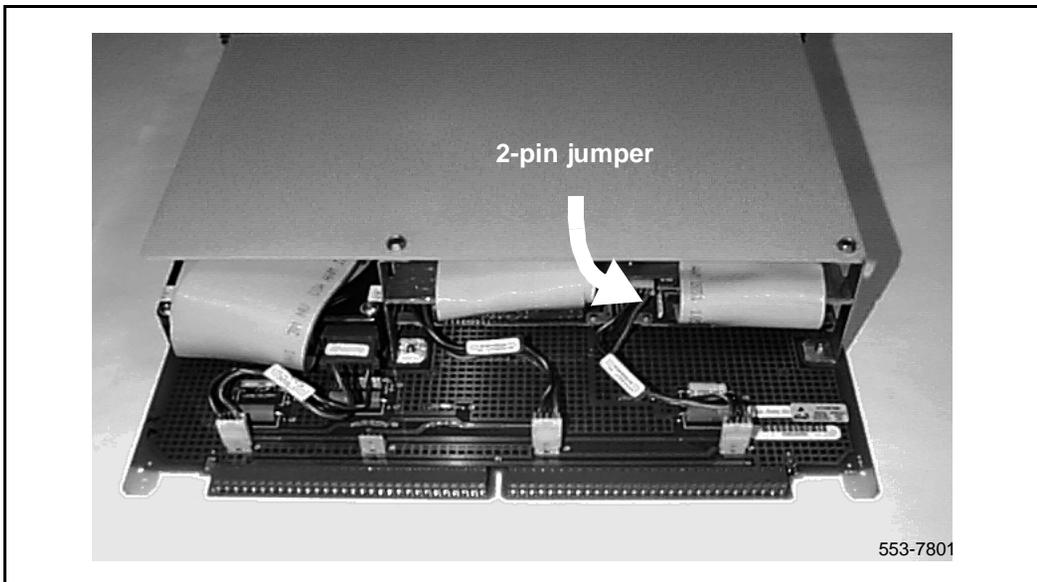
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

**CAUTION**

Perform step 3 for Option 51C systems only. The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

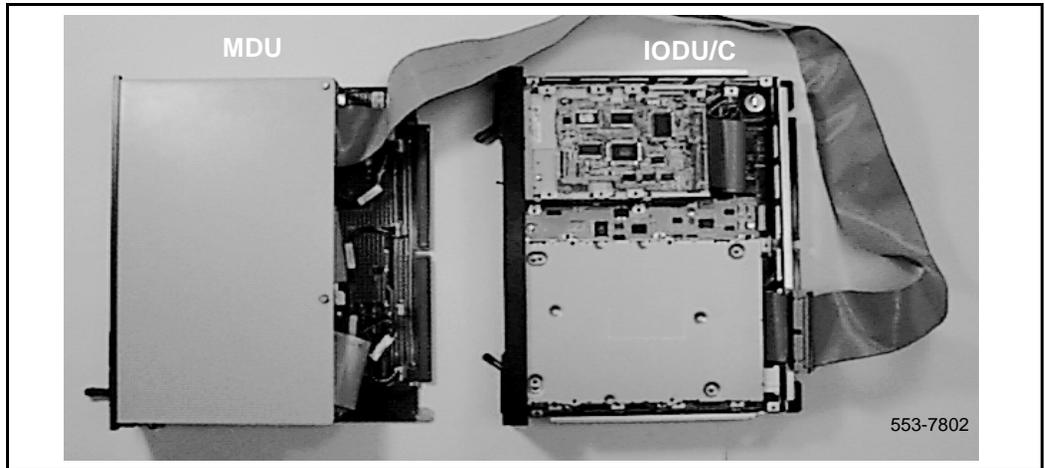
- 3 **For Option 51C systems only:** Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (see Figure 147). The jumper block has 6 pins and three jumpers.

**Figure 147**  
Option 51C 2-pin jumper location on MDU card



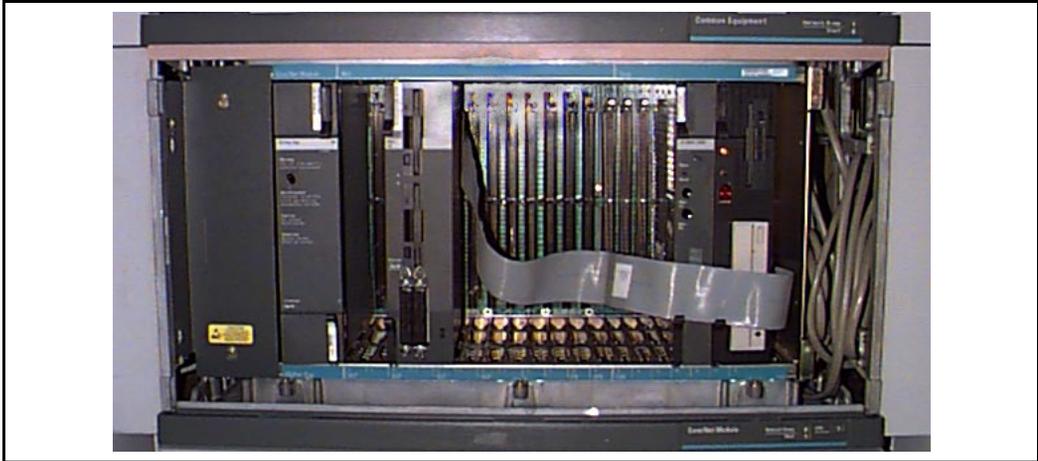
- 4 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 148). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

**Figure 148**  
**Cabling the MDU to the IODU/C card**



- 5 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module (see Figure 149). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 6 Insert the B1 (4.0 MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 9 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive (68060 or 68060E).

**Figure 149**  
**IODU/C and MDU cabled in Core/Net 1**



- 10** Connect a terminal to the J25 CPSI port on Core/Net 0.
- 11** Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display *SYSLOAD* messages during file loading. Wait for the Nortel Networks logo to appear after *SYSLOAD* has been completed.
- 12** When the Nortel Networks logo appears, press <CR> to continue.
- 13** Log into the system and enter the time and date, when prompted.
- 14** Initiate the database installation by selecting the following command from the menu:
  - <u> to Install menu
- 15** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release

**16** When the Install Menu appears, select the following options in sequence:

- <d>** to install customer database only
- <f>** to transfer the customer database from the MDU
- <a>** to continue the database transfer
- <a>** to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr>** to continue  
the Installation Status Summary menu appears to confirm database transfer
- <y>** to start installation
- <a>** Yes, transfer the database  
  
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr>** Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr>** Press return to return to the Install Menu.  
Remove any diskettes from the floppy drive.
- <q>** When the Install Menu appears, select <q> to quit.  
Remove any
- <y>** to confirm quit
- <a>** to reboot the system  
  
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

**17 Shut down power to Core/Net 1 module.**

**Note:** When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 18** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 19** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.

- 20 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive (68030, 68040, 68060 or 68060E).
- 21 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the CP card faceplate switch is set to MAINT.
- 24 Apply power to the module.

The database transfer procedure is complete. You are now ready to install software.

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# Database transfer for Option 51C, 61C, 81, and 81C systems

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## Content list

The following are the topics in this section:

- [Reference list 763](#)
- [Using the Database Transfer Utility 763](#)
- [Using the Copy database command 764](#)
- [Databases on X11 Release 16 G \(Phase 7\) 766](#)

## Reference list

The following are the references in this section:

- *Hardware Upgrade Procedures (553-3001-258)*

For systems equipped with IOP/CMDU or separate IOP and CMDU cards, the database is transferred using:

- the Database Transfer Utility diskette
- the Software Installation Tool *Copy database* command (this method is supported for dual CPU systems only)

## Using the Database Transfer Utility

Before beginning this procedure:

- The system must be running Release 21 or later

- For redundant systems, the system must be in split mode with Core 0 processing calls.
  - The target system must be installed and powered up.
- 1 Perform a data dump in LD 43.
  - 2 Insert the Database Transfer Utility diskette which corresponds to your Call Processor type (68060, 68040, 68030) into the floppy drive.
  - 3 Press the MAN RST button on the CP card in Core 1 (Core 0 for single CPU systems) to reboot the system and start the Transfer Utility Tool.

**CAUTION**

**When using the Database Transfer Utility, only select options <d> To install Database only, <t> Tools Menu, and <s> To archive existing database. Selecting any other options can result in operating system corruption.**

- 4 When the Transfer Utility Main Menu appears, select the following options in sequence:
  - <t> to go to the Tools menu
  - <s> to archive existing database
  - <a> to continue with archive (insert 2.0 MB diskette into the floppy drive in Core 1)
  - <a> diskette is now in floppy drive in side 1

The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2.0 MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core 1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

The database transfer procedure is complete. Continue with the system upgrade.

## Using the *Copy database* command

This procedure is supported on **dual Commercial Processor systems only**.

Before beginning this procedure:

- The existing system must be running Release 21 or later.
  - The system must be in split mode with Core 0 processing calls.
  - The IODU/C and Call Processor cards must be installed in the target system.
  - The NTND13 IOP SCSI cable must be connected to the IOP/CMDU card in Core 0 and the IODU/C card in Core 1.
  - Core 1 is powered up.
- 1** Place the Install Program diskette that corresponds with your CP type into the IODU/C in Core 1.
  - 2** Install the CD-ROM into the CD drive.
  - 3** Press and release the MAN RST button in Core 1. This will reboot the system.

A sysload will begin (cold start). Wait for the NT Logo to appear on the terminal before proceeding. Press <CR> to continue.

The Install Main Menu is displayed after the system-check passes. The next menu prompts you to continue with the Install or go to the Tools Menu.

- 4** Select option <u> to go to the Install menu.
- 5** Insert the Keycode diskette into the disk drive and select option <a>.
- 6** When the Install Main Menu appears, select the following options in sequence to copy the customer database from the IOP/CMDU in Core 0 to the IODU/C in Core 1.
  - <d> to install database only
  - <d> to copy the database
  - <y> to confirm installation status summary
  - <a> to confirm database copy

7 Select the following options to quit and reload the system:

- |     |                      |
|-----|----------------------|
| <q> | to quit              |
| <y> | to confirm quit      |
| <a> | to reboot the system |

Wait for “DONE” and then “INI” messages to be displayed before continuing.

The database transfer procedure is complete. You are now ready to install software.

## Databases on X11 Release 16 G (Phase 7)

Use the following procedure if your system is equipped with NT8D69 MDU cards running X11 Release 16G (Phase 7) software.

Before beginning this procedure:

- Perform a data dump in LD 43 on the existing system.
- Upgrade the existing system to Meridian Option 51C, 61C, or 81C using the procedures in *Hardware Upgrade Procedures (553-3001-258)*.
- Install X11 Release 25 software.

- 1 Insert the Database Transfer Utility diskette into the IODU/C floppy drive.
- 2 Press the MAN RST button on the CP card to reboot the system and start the Software Installation Tool. When the sysload is complete, the NT logo appears.
- 3 When the NT logo appears, press <CR> to continue.
- 4 Log in the system and enter the time and date, when prompted.
- 5 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu

- 6 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
  - <a> to continue with keycode validation
  - <y> to confirm that the keycode matches the CD-ROM release
  
- 7 When the Install Menu appears, select the following options in sequence:
  - <d> to install customer database only
  - <c> to transfer the previous system database (DBMT)  
When DBMT is complete, press <CR> to transfer the database from 2.0 MB floppy to hard disk.  
Insert the source database 2.0 MB disk (B1) into the floppy drive.  
The Installation Status Summary table appears.
    - <a> to start installation
    - <a> to transfer the database  
The system transfers the database to hard disk and the Installation Status Summary table re-appears.
    - <cr> to return to the Install Menu
    - <q> to quit
    - <y> to confirm quitRemove the 2.0 MB database diskette from the floppy drive.
    - <a> to reboot the system  
The system will reboot and that database is converted from Release 16G (Phase 7) to Release 25.

The database transfer procedure is complete.



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# Upgrade to a Call Processor card

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## Content list

The following are the topics in this section:

- [Reference list 770](#)
- [Upgrading Options 61C, 81, or 81C to a CP card 771](#)
- [Performing a data dump 771](#)
- [Splitting the cores 772](#)
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- [Performing a data dump 799](#)
- [Installing the new CP card and Release 25 software 800](#)
- [Completing the upgrade 803](#)

## Reference list

The following are the references in this section:

- *Capacity Engineering* (553-3001-149)

### CAUTION

Personnel performing this upgrade do so at their own risk. Personnel should have spare CP cards on hand or risk installation delay and/or system down time. Nortel Networks assumes no responsibility for any damage incurred, system down time, or loss due to damage or down time.

This section contains procedures for performing Call Processor card upgrades on Options 51C, 61C, 81, or 81C systems running X11 Release 23 or later software.

- NT6D66 CP cards support upgrades to NT9D19, NT5D10 or NT5D03 CP cards
- NT9D19 CP cards support upgrades to NT5D10 or NT5D03 CP cards

**Note:** The procedures in the section can be used for all NT9D19, NT5D10 or NT5D03 CP card memory configurations.

X11 Release 25 supports Automatic Inline Conversion from X11 Release 19, 20, 21, 22, 23, and 24. If your system is running on a release earlier than Release 19, the database must be converted to X11 Release 19 compatibility before continuing with this upgrade. The customer database can be sent to Nortel Networks for conversion or converted on-site.

This procedure differs for systems equipped with NT5D20 IOP/CMDU or NT5D61 IODU/C cards.

There should be an SDI TTY connection at J30, which should remain connected at all times to monitor system status.

## Upgrading Options 61C, 81, or 81C to a CP card

Use the following instructions if you are upgrading a system to Release 25 and are installing NT9D19, NT5D10 or NT5D03 CP cards.

Installing a new CP card in an Option 61C, 81, or 81C consists of:

- splitting the CPUs
- installing a new CP card in Core 1
- upgrading the system software and CP ROMs on Core 1
- swapping CPUs
- installing a new CP card in Core 0
- upgrading the system software and CP ROMs on Core 0
- synchronizing the hard disks

### Performing a data dump

Before starting the upgrade, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 4 When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Splitting the cores

- 1 Verify that the disk drives are synchronized:

**LD 137** to load the program  
**STAT** to get the status of the disk drives

If the disks are synchronized, proceed with step 2. If they are not synchronized, execute the SYNC command:

**SYNC** to synchronize the drives  
**\*\*\*\*** to exit the program

- 2 Verify that clock controller 0 is active. If it is not, switch to clock controller 0:

**LD 60** to load the program  
**SSCK 0** to get the status of clock controller 0  
**SWCK** to switch to clock controller 0 (if necessary)  
**\*\*\*\*** to exit the program

- 3 Verify that Core 0 is the active Core:

**LD 135** to load the program  
**STAT CPU** to check CPU status  
**TEST CPU** to test the CPU

If Core 0 is active, proceed with step 5. If Core 0 is not the active CPU, swap Cores and verify again:

**SCPU** to swap CPUs  
**STAT CPU** to check CPU status

- 4 Verify that CMDU 0 is active. You may need to switch CMDUs.  
**LD 137**  
**STAT** Get the status of CMDU and IOP.  
**SWAP** Switch CMDUs (if necessary).
- 5 Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.
- 6 Set the ENB/DIS switch on all CNI cards in Core 1 to DIS.
- 7 Perform the following three steps in uninterrupted sequence:
  - a press and hold the MAN RST button on the CP card in Core 1
  - b set the MAINT/NORM switch on the CP card in Core 1 to MAINT
  - c release the MAN RST button

## Upgrading Core 1

At this time you will install the new CP card and X11 Release 25 system software on Core 1 if it is not already installed on the hard drive.

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2 Disengage the lock latches and remove the CP card from Core 1.
- 3 Set the ENB/DIS switch on the NT6D63 IOP or NT5D20 IOP/CMDU card to DIS and remove the card. Replace the current QMM42 cartridge with the target QMM42 cartridge. Reinstall and enable the card.
- 4 Insert disk A1 from the software upgrade package into CMDU 1 or IOP/CMDU 1.
- 5 Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.

- 6 Insert the new CP card in the same slot in Core 1 and secure the lock latches.

The system will automatically load the software install program.

- 7 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yyyy

hh mm ss

or

dd-mm-yyyy

hh-mm-ss

- 8 When the Main Menu appears, select the following options in sequence when you are prompted to do so:

<a> to install software, CP-BOOT ROM and IOP-ROM

<y> to start installation

<a> to continue with the upgrade

- 9 Insert disk 2 from the software upgrade package into CMDU 1 or IOP/CMDU 1. Follow all screen directions requiring disk insertion. A number of disks will be requested.

- 10 Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

<a> to continue with ROM upgrade

<a> to continue with ROM upgrade (CP-BOOT ROM)

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM)

- 11 Remove any diskettes from CMDU 1 or IOP/CMDU 1.

- 12** Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will perform a sysload and system initialization during which several messages will appear on the system terminal.

**Note:** SYS4695 is not an error message. This message is cleared when you perform a data dump.

If you are converting from a software release prior to X11 Release 25, the following message appears on the system terminal:

**DATA CONVERSION**

**X11 RELEASE 21.xx TO RELEASE 25.xx**

- 13** Verify that the “DONE” message appears on the system terminal.

**Note:** The SYSTEM INI message may take 70 seconds or more to appear.

- 14** Set the ENB/DIS switches on all CNI cards in Core 1 to ENB.

**CAUTION**

Disabling CNI cards in Core 0 will momentarily interrupt call processing. Calls established or in process will be dropped. Call processing will resume after the “SYSTEM INI” messages appear on the system terminal (approximately 1 minute).

- 15 Perform the following three steps in uninterrupted sequence:
  - a set the DIS/ENB faceplate switch on the IOP/CMDU card in Core 0 to DIS
  - b set the ENB/DIS switch on all CNI cards in Core 0 to DIS
  - c press and release the MAN INT button on the CP card in Core 1

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

If the system fails to load, or system messages indicate data corruption, back out of the procedure by performing the steps in “Backing out of the CP card upgrade” on page 780.

- 16 Following a successful dial tone test, perform the following basic sanity tests:
  - a Make sure calls can be placed.
  - b Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

## Upgrading Core 0

Once the CP card in Core 1 is upgraded, upgrade the CP card in Core 0 and install Release 25 software:

- 1 Connect a terminal to the CPSI port in Core 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2 Verify that the MAINT/NORM switch on the CP card in Core 0 is set to MAINT.

- 3** In Core 0, remove the IOP/CMDU card. Replace the current QMM42 cartridge with the target QMM42 cartridge.
- 4** Reseat the IOP/CMDU card and set the faceplate switch to ENB.
- 5** Verify that the ENB/DIS switches on all CNI cards in Core 0 are set to DIS.
- 6** Disengage the lock latches and remove the CP card from Core 0.
- 7** Insert disk A1 from the software upgrade package into CMDU 0 or IOP/CMDU 0.
- 8** Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
- 9** Insert the new CP card in the same slot in Core 0 and secure the lock latches.

The system will perform a sysload and display the install menu.

- 10** When the Main Menu appears, select the following options in sequence when you are prompted to do so:
  - <a> to install software, CP-BOOT ROM and IOP-ROM
  - <y> to start installation
  - <a> to continue with upgrade
- 11** Insert disk 2 from the software upgrade package into CMDU 0 or IOP/CMDU 0. Follow all screen directions requiring disk insertion. A number of disks will be requested.
- 12** Following the software installation, select the following options:
  - <a> to continue with ROM upgrade
  - <a> to continue with ROM upgrade (CP-BOOT ROM)
  - <y> to start installation
  - <a> to continue with ROM upgrade (IOP-ROM)
- 13** Remove any diskettes from CMDU 0 or IOP/CMDU 0.

- 14 Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

- 15 In Core 0, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.
- 16 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel in the back of the core.
- 17 In Core 0, perform the following steps in uninterrupted sequence:
- a press and release the MAN RST button
  - b when SYS700 messages appear on CP 0 LCD display, **set the MAINT/NORM switch to NORM.**

Within 60 seconds, the LCD will display the following messages, confirming the process.

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HWI534” message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message on Core 1 CPSI or SDI TTY indicates the memory synchronization is taking place. Wait until the memory synchronization is complete before continuing.

- 18 Set the MAINT/NORM switch on the CP card in Core 1 to NORM.
- 19 Synchronize the disk drives:
- |               |  |
|---------------|--|
| <b>LD 137</b> | to load the overlay                                  |
| <b>STAT</b>   | to get the status of both CMDUs, IOPs and redundancy |

**SYNC**           to synchronize the disk drives  
**\*\*\*\***           to exit the program

## Completing the upgrade

To complete the upgrade, synchronize the disk drives and verify CPU and CNI status.

**1**   Verify CPU redundancy and CNI function:

**LD 135**       to load the overlay  
**STAT CPU**   to check the status of the CPU  
**STAT CNI**   to verify function of the CNIs  
**TEST CPU**   to test the CPU  
**SCPU**       switch CPUs  
**STAT CPU**   to check the status of the CPU  
**STAT CNI**   to verify function of the CNIs  
**TEST CPU**   to test the CPU  
**SCPU**       switch to CPUs  
**\*\*\*\***       to exit the program

**2**   Insert the Release 25 software B1 diskette into both CMDUs or IOP/CMDUs.

**3**   Load the Equipment Data Dump Program (LD 43). At the prompt, enter

**LD 43**       to load the program

**4**   When “EDD000” appears on the terminal, enter

**EDD**       to begin the data dump

**5**   When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter

**\*\*\*\***       to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Capacity Engineering* (553-3001-149).

The CP card upgrade is complete.

### Backing out of the CP card upgrade

- 1 Place the original **Source** installation disk 1 in CMDU or IOP/CMDU in Core 1.
- 2 In Core 1, set the ENB/DIS switch on the NT6D63 IOP or NT5D20 IOP/CMDU to DIS. Remove the card and replace the data cartridge with the **Source** cartridge.
- 3 In Core 1, reseal the IOP or IOP/CMDU and set the faceplate switch to ENB.
- 4 Disengage the lock latches and remove the new NT9D19, NT5D10 or NT5D03 CP card from Core 1.
- 5 Verify that the MAINT/NORM switch on the original CP card is set to MAINT.
- 6 In Core 1, insert the original CP card and secure the lock latches.
- 7 In Core 1, press the MAN RST button.
- 8 When the install screen appears, select the following options in sequence, and insert the **source B** diskette containing the customer database when you are prompted to do so.
  - <b> to install software, database, CP-ROM, and IOP-ROM
  - <a> to start installation
  - <a> continue with upgrade

Follow all screen direction requiring disk insertion. A number of disks will be requested.

- 9** When the ROM installation screen appears, select the following:
- <a> to continue with the ROM upgrade
- 10** When the database installation screen appears, select the following:
- <c> to transfer the previous system database (DBMT)  
(choose this option if the database was converted on-site)
  - or
  - <a> to install customer database (choose this option if the database was sent to Nortel Networks for conversion)
  - <a> to continue with the database install
  - <y> to delete the hardware infrastructure database files from the hard disk
- 11** Following the database installation, upgrade the ROMs:
- <a> to continue with ROM upgrade (CP-BOOT)
  - <y> to start installation
  - <a> to continue with ROM upgrade (IOP-ROM)
- 12** Remove the disk from the IOP/CMDU.
- 13** From the main menu, select the following options to quit and reload the system:
- <q> to quit
  - <y> to confirm quit
- 14** Remove any diskettes from the floppy drive, and type
- <a> to reboot the system
- 15** In Core 1, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.

- 16** On CP 1, press and release the MAN RST button. When SYS700 messages appear on the CP 1 LCD display, set CP 1 MAINT/NORM switch to NORM. Within 60 seconds, the LCD will display the following messages, confirming the process.

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HWI534” message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an “HWI533” message on Core 0 CPSI or SDI TTY indicates the memory synchronization is complete. Wait until the memory synchronization is complete before continuing.

- 17** In Core 0, set the MAINT/NORM switch on the CP card to NORM.
- 18** Perform a redundancy sanity test.

**LD 135**

<b>TEST CPU</b>	Test the CP.
<b>SCPU</b>	Switch the CPs.
<b>CDSP</b>	Clear display.
<b>TEST CPU</b>	Test the CP.
<b>SCPU</b>	Switch the CPs.

*Note:* Testing the CPs can take up to 20 minutes for each test. When the test is complete, the memories are automatically synchronized.

- 19** Load LD 137 and synchronize hard disks. Synchronization may take up to 50 minutes. To be sure the contents of CMDU 0 are copied to CMDU 1, use the STAT command to verify that CMDU 1 is disabled.

**LD 137**

<b>STAT CMDU</b>	Get the status of both CMDUs.
<b>SYNC</b>	Synchronize disks.

You are now out of the CP card upgrade procedure, and have returned to the **Source** software.

---

## Upgrading an Option 51C to a CP card

### **CAUTION**

Installing the NT9D19 or NT5D10 CP card in the Option 51C will require system downtime. Schedule for this when planning the system upgrade.

Power to the entire column must be shut off to perform this upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to the telephone users will be minimal.

Installing an NT9D19, NT5D10 or NT5D03 CP card in an Option 51C system consists of:

- installing a new CP card in the Core module
- upgrading the system software and CP ROMs

### **Performing a data dump**

Before starting the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter **\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Installing the new NT5D03 CP card and Release 25 software

At this time you will install the new NT5D03 CP card and Release 25 system software if it is not already installed on the hard drive.

- 1 Connect a terminal to the CPSI port in the Core module to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2 Disengage the lock latches and remove the CP card from the Core module.
- 3 Set the ENB/DIS switch on the NT6D63 IOP or NT5D20 IOP/CMDU card to DIS and remove the card.
- 4 Replace the current QMM42 cartridge with the target QMM42 cartridge. Reinstall and enable the card.
- 5 Insert disk 1 from the software upgrade package into the CMDU or IOP/CMDU.
- 6 Verify that the MAINT/NORM switch on the new NT9D19 or NT5D10 CP card is set to NORM.
- 7 Verify that the ENB/DIS switch on the CNI card is set to ENB.
- 8 Insert the new CP card in the same slot in the Core module and secure the lock latches.

The system will automatically load the software install program.

- 9** Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yy  
hh mm ss  
or  
dd-mm-yyyy  
hh-mm-ss

- 10** When the Main Menu appears, select the following options in sequence when you are prompted to do so:

<a> to install software, CP-BOOT ROM and IOP-ROM  
<y> to start installation  
<a> to continue with the upgrade

- 11** Insert disk 2 from the software upgrade package into the CMDU or IOP/CMDU card. Follow the screen directions requiring disk insertion.

- 12** Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

<a> to continue with ROM upgrade  
<a> to continue with ROM upgrade (CP-BOOT ROM)  
<y> to start installation  
<a> to continue with ROM upgrade (IOP-ROM)

- 13** Remove any diskettes from the CMDU or IOP/CMDU.

- 14** Select the following options to quit and reload the system:

<q> to quit  
<yes> to confirm quit  
<a> to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

**Note:** SYS4695 is not an error message. This message is cleared when you perform a data dump.

*Note:* If you are converting from a software release prior to Release 25, the following message appears on the system terminal:

**DATA CONVERSION**

**X11 RELEASE xx.xx TO RELEASE 25.xx**

- 15 Verify that the “DONE” message appears on the system terminal.

*Note:* The SYSTEM INI message may take 70 seconds or more to appear.

## Completing the upgrade

To complete the CP card upgrade, verify CPU and CNI status.

- 1 Verify CPU and CNI functionality:

<b>LD 135</b>	to load the overlay
<b>STAT CPU</b>	to check the CPU status
<b>STAT CNI</b>	to verify CNI functionality
<b>****</b>	to exit the program

- 2 Insert the Release 25 software B1 diskette into the CMDU or IOP/CMDU.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program
- 4 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 5 When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Capacity Engineering* (553-3001-149).

The CP card upgrade is complete.

## Upgrading Options 61C, 81, or 81C with IODU/C to a CP card

**Note:** This procedure is used for systems equipped with IODU/C cards only. If your system contains IOP/CMDU or separate IOP and CMDU cards, refer back to page 771.

Use the following instructions if you are converting a system to Release 25 and are installing NT9D19, NT5D10 or NT5D03 CP cards.

Installing a new CP card in an Option 61C, 81, or 81C consists of:

- splitting the CPUs
- installing a new CP card in Core 1
- upgrading the system software and CP ROMs on Core 1
- swapping CPUs
- installing a new CP card in Core 0
- upgrading the system software and CP ROMs on Core 0
- synchronizing the hard disks

### Performing a data dump

Before starting the upgrade, make a backup copy of the customer database on 2MB diskettes using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When "EDD000" appears on the terminal, enter **EDD** to begin the data dump

- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter  
\*\*\*\* to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

### Splitting the cores

- 1 Verify that the disk drives are synchronized:  
**LD 137** to load the program  
**STAT** to get the status of the disk drives  
  
If the disks are synchronized, proceed with step 2. If they are not synchronized, execute the SYNC command:  
**SYNC** to synchronize the drives  
\*\*\*\* to exit the program
- 2 Verify that clock controller 0 is active. If it is not, switch to clock controller 0:  
**LD 60** to load the program  
**SSCK 0** to get the status of clock controller 0  
**SWCK** to switch to clock controller 0 (if necessary)  
\*\*\*\* to exit the program
- 3 Verify that Core 0 is the active Core:  
**LD 135** to load the program  
**STAT CPU** to check CPU status  
**TEST CPU** to test the CPU

If Core 0 is active, proceed with step 5. If Core 0 is not the active CPU, swap Cores and verify again:

**SCPU**            to swap CPUs  
**STAT CPU**      to check CPU status

- 4 Verify that CMDU 0 is active. You may need to switch CMDUs.

**LD 137**

**STAT**                      Get the status of IODU/C  
**SWAP**                     Switch IODU/Cs (if necessary).

- 5 Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.
- 6 Set the ENB/DIS switch on all CNI cards in Core 1 to DIS.
- 7 Perform the following three steps in uninterrupted sequence:
  - a press and hold the MAN RST button on the CP card in Core 1
  - b set the MAINT/NORM switch on the CP card in Core 1 to MAINT
  - c release the MAN RST button

## Upgrading Core 1

At this time you will install the new NT5D03 CP card and X11 release 25 system software on Core 1 if it is not already installed on the hard drive.

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2 Disengage the lock latches and remove the CP card from Core 1.
- 3 Insert the Install diskette which corresponds to the CP card to which you are upgrading into IODU/C 1.

- 4 Install the CD-ROM disk into the CD-ROM drive on the IODU/C in Core 1. To install the CD-ROM:
  - a press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b place the CD-ROM disk into the holder with the disk label showing
  - c press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 5 Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
- 6 Insert the new CP card in the same slot in Core 1 and secure the lock latches.

The system will automatically load the IODU/C Software Installation Tool.
- 7 When the NT Logo Screen appears on the terminal, the Software Installation Tool has loaded. Press <CR> to go to the Install Main Menu.
- 8 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yyyy  
hh mm ss  
or  
dd-mm-yyyy  
hh-mm-ss

**9** At the Main menu select <u> to go to the Install menu.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
-----
                               M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>--> <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.

Enter choice > u
```

553-7780

**10** Insert the Keycode diskette when prompted and select <a> to continue with the keycode validation.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
-----

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>--> <a> - Continue with the keycode validation
        (the keycode diskette is in the floppy drive).
         <q> - Quit.

Enter Choice > a
```

553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

- 11 When the Install menu appears, select the following options in sequence when you are prompted to do so:

<a> to install software, CP-BOOT ROM and IOP-ROM  
<y> to start installation  
<a> to continue with the upgrade

- 12 Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

<a> to continue with ROM upgrade  
<a> to continue with ROM upgrade (CP-BOOT ROM)  
<y> to start installation  
<a> to continue with ROM upgrade (IOP-ROM)

- 13 **Remove the diskette** from IODU/C 1.

- 14 Select the following options to quit and reload the system:

<q> to quit  
<yes> to confirm quit  
<a> to reboot the system

The system will perform a sysload and system initialization during which several messages will appear on the system terminal.

**Note:** SYS4695 is not an error message. This message is cleared when you perform a data dump.

If you are converting from a software release prior to X11 Release 25, the following message appears on the system terminal:

**DATA CONVERSION**

**X11 RELEASE 21.xx TO RELEASE 23.xx**

- 15 Verify that the “DONE” message appears on the system terminal.

**Note:** The SYSTEM INI message may take 70 seconds or more to appear.

- 16 Set the ENB/DIS switches on all CNI cards in Core 1 to ENB.

**CAUTION**

Disabling CNI cards in Core 0 will momentarily interrupt call processing. Calls established or in process will be dropped. Call processing will resume after the “SYSTEM INI” messages appear on the system terminal (approximately 1 minute).

- 17 Perform the following three steps in uninterrupted sequence:
  - a set the DIS/ENB faceplate switch on the IODU/C card in Core 0 to DIS
  - b set the ENB/DIS switch on all CNI cards in Core 0 to DIS
  - c press and release the MAN INT button on the CP card in Core 1

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

- 18 Following a successful dial tone test, perform the following basic sanity tests:
  - a Make sure calls can be placed.
  - b Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

## Upgrading Core 0

Once the CP card in Core 1 is upgraded, upgrade the CP card in Core 0 and install Release 25 software:

- 1 Connect a terminal to the CPSI port in Core 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity

- Full duplex
  - XON protocol
- 2 Verify that the MAINT/NORM switch on the CP card in Core 0 is set to MAINT.
  - 3 Verify that the ENB/DIS switches on all CNI cards in Core 0 are set to DIS.
  - 4 Disengage the lock latches and remove the CP card from Core 0.
  - 5 Insert the Install diskette that corresponds with the CP card you will be installing into IODU/C 0.
  - 6 Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
  - 7 Insert the new CP card in the same slot in Core 0 and secure the lock latches.

The system will perform a sysload and load the IODU/C Software Installation Tool.

- 8 When the NT Logo Screen appears on the terminal, the Software Installation Tool has loaded. Press <CR> to go to the Install Main Menu.
- 9 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yyyy  
hh mm ss  
or  
dd-mm-yyyy  
hh-mm-ss

**10** At the Main menu select <u> to go to the Install menu.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
-----
                               M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>--> <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.

Enter choice > u
```

553-7780

**11** Insert the Keycode diskette when prompted and select <a> to continue with the keycode validation.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
-----

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>--> <a> - Continue with the keycode validation
        (the keycode diskette is in the floppy drive).
         <q> - Quit.

Enter Choice > a
```

553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

- 12** When the Install menu appears, select the following options in sequence when you are prompted to do so:

<o> to copy system software from Core 1 to Core 0.  
<y> to start installation  
<a> to continue with upgrade

- 13** At the Install menu, select the following options to install CP-BOOTROM:

<e> to install CP-BOOTROM  
<y> to start the upgrade  
<a> to upgrade CP-BOOTROM from the hard disk drive

- 14** At the Install menu, select the following options to install IOP-ROM:

<f> to install IOP-ROM  
<y> to start the upgrade  
<a> to upgrade IOP-ROM from the hard disk drive

- 15** **Remove the diskette** from IODU/C 0.

- 16** Select the following options to quit and reload the system:

<q> to quit  
<y> to confirm quit  
<a> to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

- 17** In Core 0, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.
- 18** Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel in the back of the core.
- 19** In Core 0, perform the following steps in uninterrupted sequence:
- press and release the MAN RST button

- when SYS700 messages appear on CP 0 LCD display, **set the MAINT/NORM switch to NORM.**

Within 60 seconds, the LCD will display the following messages, confirming the process.

**RUNNING ROM OS  
ENTERING CP VOTE**

An “HWI534” message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message on Core 1 CPSI or SDI TTY indicates the memory synchronization is taking place. Wait until the memory synchronization is complete before continuing.

**20** Set the MAINT/NORM switch on the CP card in Core 1 to NORM.

**21** Synchronize the disk drives:

<b>LD 137</b>	to load the overlay
<b>STAT</b>	to get the status of both CMDUs, IOPs and redundancy
<b>SYNC</b>	to synchronize the disk drives
<b>****</b>	to exit the program

## Completing the upgrade

To complete the upgrade, verify CPU and CNI status and perform a data dump.

**1** Verify CPU redundancy and CNI function:

<b>LD 135</b>	to load the overlay
<b>STAT CPU</b>	to check the status of the CPU
<b>STAT CNI</b>	to verify function of the CNIs
<b>TEST CPU</b>	to test the CPU
<b>SCPU</b>	switch CPUs
<b>STAT CPU</b>	to check the status of the CPU
<b>STAT CNI</b>	to verify function of the CNIs
<b>TEST CPU</b>	to test the CPU
<b>SCPU</b>	switch to CPUs
<b>****</b>	to exit the program

Backup the customer database on 2MB diskettes.

- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Capacity Engineering* (553-3001-149).

The CP card upgrade is complete.

## Upgrading an Option 51C with IODU/C to a CP card

This procedure is for systems equipped with IODU/C cards only. If your system is equipped with an IOP/CMDU or IOP and CMDU cards, refer to page 783

**CAUTION**

Installing the NT9D19 or NT5D10 CP card in the Option 51C will require system downtime. Schedule for this when planning the system upgrade.

Power to the entire column must be shut off to perform this upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to the telephone users will be minimal.

Installing an NT9D19, NT5D10 or NT5D03 CP card in an Option 51C system consists of:

- installing a new CP card in the Core module
- upgrading the system software and CP ROMs

## Performing a data dump

Before starting the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter  
**\*\*\*\*** to exit the program

### **CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

## Installing the new CP card and Release 25 software

At this time you will install the new CP card and Release 25 system software if it is not already installed on the hard drive.

- 1 Connect a terminal to the CPSI port in the Core module to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
  - 7 data bits
  - 1 stop bit
  - Space parity
  - Full duplex
  - XON protocol
- 2 Set the NORM/MAINT switch to MAINT, disengage the lock latches and remove the CP card from the Core module.
- 3 Insert the Install diskette that corresponds to the CP card you will be installing into the IODU/C.
- 4 Install the CD-ROM disk into the CD-ROM drive. To install the CD-ROM:
  - a press the button on the CD-ROM drive to open the CD-ROM disk holder
  - b place the CD-ROM disk into the holder with the disk label showing
  - c press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 5 Verify that the MAINT/NORM switch on the new NT9D19 or NT5D10 CP card is set to NORM.
- 6 Verify that the ENB/DIS switch on the CNI card is set to ENB.
- 7 Insert the new CP card in the same slot in the Core module and secure the lock latches.

The system will automatically load the software install program.
- 8 When the NT Logo Screen appears on the terminal, the Software Installation Tool has loaded. Press <CR> to go to the Install Main Menu.

- 9 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yyyy  
hh mm ss  
or  
dd-mm-yyyy  
hh-mm-ss

- 10 At the Main menu select <u> to go to the Install menu.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
=====
                M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>--> <u> - To Install menu.
        <t> - To Tools menu.
        <q> - Quit.

Enter choice > u
```

553-7780

- 11 Insert the Keycode diskette when prompted and select <a> to continue with the keycode validation.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
-----
-----

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>--> <a> - Continue with the keycode validation
          (the keycode diskette is in the floppy drive).
          <q> - Quit.

Enter Choice > a
```

553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

- 12 When the Install menu appears, select the following options in sequence when you are prompted to do so:

<a> to install software, CP-BOOT ROM and IOP-ROM  
<y> to start installation  
<a> to continue with the upgrade

- 13 Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

<a> to continue with ROM upgrade  
<a> to continue with ROM upgrade (CP-BOOT ROM)  
<y> to start installation  
<a> to continue with ROM upgrade (IOP-ROM)

- 14 Remove the diskette from the IODU/C.

- 15** Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

*Note:* SYS4695 is not an error message. This message is cleared when you perform a data dump.

*Note:* If you are converting from a software release prior to Release 25, the following message appears on the system terminal:

### **DATA CONVERSION**

#### **X11 RELEASE xx.xx TO RELEASE 23.xx**

- 16** Verify that the “DONE” message appears on the system terminal.

*Note:* The SYSTEM INI message may take 70 seconds or more to appear.

## **Completing the upgrade**

To complete the CP card upgrade, verify CPU and CNI status.

- 1** Verify CPU and CNI functionality:

<b>LD 135</b>	to load the overlay
<b>STAT CPU</b>	to check the CPU status
<b>STAT CNI</b>	to verify CNI functionality
<b>****</b>	to exit the program

Backup the customer database to 2MB diskettes:

- 2** Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- |              |                     |
|--------------|---------------------|
| <b>LD 43</b> | to load the program |
|--------------|---------------------|

- 3 When “EDD000” appears on the terminal, enter  
**EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter  
**\*\*\*\*** to exit the program

**CAUTION**

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Capacity Engineering* (553-3001-149).

The CP card upgrade is complete.

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# System monitor upgrade installation

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## Content list

The following are the topics in this section:

- [Reference list 806](#)
- [System monitoring in NT/XT systems and QCA60-type cabinets 806](#)
- [System monitoring in ST and RT systems 816](#)
- [Configuration 1—ST system with QCA136 and PE Module 819](#)
- [Configuration 2—ST system with QCA136 and CE/PE Module 823](#)
- [Configuration 3—ST/RT system with QCA137 and CE/PE Module 829](#)
- [Configuration 4—ST system with QCA136, QCA137, and PE Module 833](#)
- [Configuration 5—ST system with QCA136, QCA137, and CE/PE Module 839](#)
- [Configuration 6—RT system with QCA147 and PE Module 847](#)
- [Configuration 7—RT system with QCA147 and CE/PE Module 852](#)
- [Configuration 8—RT system with QCA147, QCA137, and PE Module 857](#)
- [Configuration 9—RT system with QCA147, QCA137, and CE/PE Module 862](#)
- [Configuration 10—RT system with two QCA137s and CE/PE Module 869](#)

- [Configuration 11—RT system with QCA147, two QCA137s, and PE Module 874](#)
- [Configuration 12—RT system with QCA147, two QCA137s, and CE/PE Module 880](#)

## Reference list

The following are the references in this section:

- *System Installation Procedures* (553-3001-210)
- *Circuit Card: Installation and Testing* (553-3001-211)
- *X11 Administration* (553-3001-311)

This chapter describes how to connect the system monitors in the modules to the power monitors in the existing system.

Table 125 provides the SW1 switch settings for the system monitor in upgraded systems.

## System monitoring in NT/XT systems and QCA60-type cabinets

Procedure 1 gives steps for connecting system monitors when existing common equipment (CE) and cabinets equipped with QPC84 or QPC173 Power Monitors are used in the upgrade.

Procedure 2 gives steps for connecting system monitors when the CE is located in a column and the existing cabinets are equipped with QPC84 Power Monitors.

Table 125

**SW1 system monitor switch settings for system upgrades (Part 1 of 2)**

SW1	Setting	Function
1	ON	Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor.
	OFF	Is not co-located with an existing system.
2	ON	This is the master system monitor and is located in a column containing a CPU and is connected to an existing system containing a QPC84, QPC173, or QPC704 Power Monitor.
	OFF	Set to OFF on all slave system monitors.
	OFF	Switch 1 is set to ON and modules contain only peripheral equipment (PE).
	OFF	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
3	ON	The entire system is DC powered.
	OFF	The modules are AC powered.
4	ON	The Power Fail Transfer Unit (PFTU) activates when overheating occurs.
	OFF	The PFTU will not be activated if overheating occurs.
5	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system).
	OFF	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system).
	OFF	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
6	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system).

**Table 125**  
**SW1 system monitor switch settings for system upgrades (Part 2 of 2)**

SW1	Setting	Function
	OFF	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system).
	OFF	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
7	ON	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system), and the modules contain only PE (the CE is in an existing cabinet).
	OFF	Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor, and the CPU is in a module.
	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system), and the modules contain only PE.
	OFF	The PE and CE are located in modules only. There are no existing cabinets associated with this system.
8	OFF	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system), and the modules contain only PE (the CE is in an existing cabinet).
	ON	Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor, and the CPU is in a module.
	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system), and the modules contain only PE.
	OFF	The PE and CE are located in modules only. There are no existing cabinets associated with this system.

**Procedure 1****Connecting system monitor—CE remains in a cabinet equipped with a QPC84 or QPC173 Power Monitor**

**Note:** During this procedure, use Figure 150 if the CE cabinet is equipped with a QPC84 Power Monitor (typically in an NT system). Use Figure 151 if the CE cabinet is equipped with a QPC173 Power Monitor (typically in an XT system).

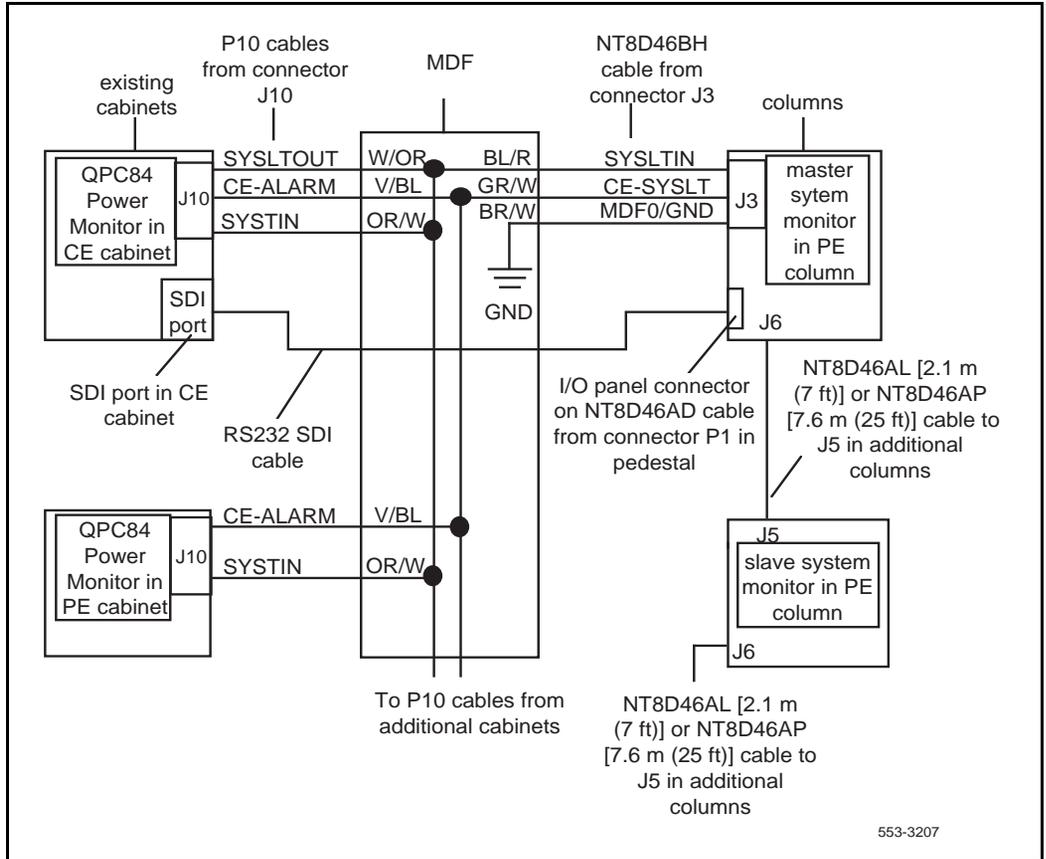
- 1 Make sure that the NT8D46BH alarm cable from connector J3 at the rear of the pedestal housing the master system monitor is terminated at the main distribution frame (MDF). The column containing CPU 0 contains the master system monitor. See *System Installation Procedures* (553-3001-210).
- 2 At the MDF, locate the P10 cable from each existing cabinet:
  - a Make sure that the SYSLTIN connections (OR/W wire) in all P10 cables are connected together and to the SYSLTOUT connection (W/OR wire) on the P10 cable from the CE cabinet.
  - b Make sure that the CE-ALARM connections (V/BL wire) in all P10 cables are connected together.
- 3 Locate a ground at the MDF. Connect it to the MDF 0/gnd connection (BR/W wire) on the NT8D46BH cable from the master column.
- 4 At the MDF, locate the SYSLTIN (BL/R wire) and CE-SYSLT (GR/W wire) connections in the NT8D46BH cable from the master column:
  - a Connect the SYSLTIN connection (BL/R wire) on the NT8D46BH alarm cable to the SYSLTOUT (W/OR wire) connection on the P10 cable from the CE cabinet.
  - b Connect the CE-SYSLT connection (GR/W wire) on the NT8D46BH alarm cable to the CE-ALARM connection (V/BL wire) on the P10 cable from the CE cabinet.
- 5 Refer to the installation manual for the existing system and install an SDI port. This port connects to the column containing the master system monitor and must be set for 1200 baud operation.

- 6 Check the switch settings on the system monitors in each column. Make sure that switch SW1 on all system monitors is set according to Table 125. See *Circuit Card: Installation and Testing* (553-3001-211) to set switches SW2 and SW3.

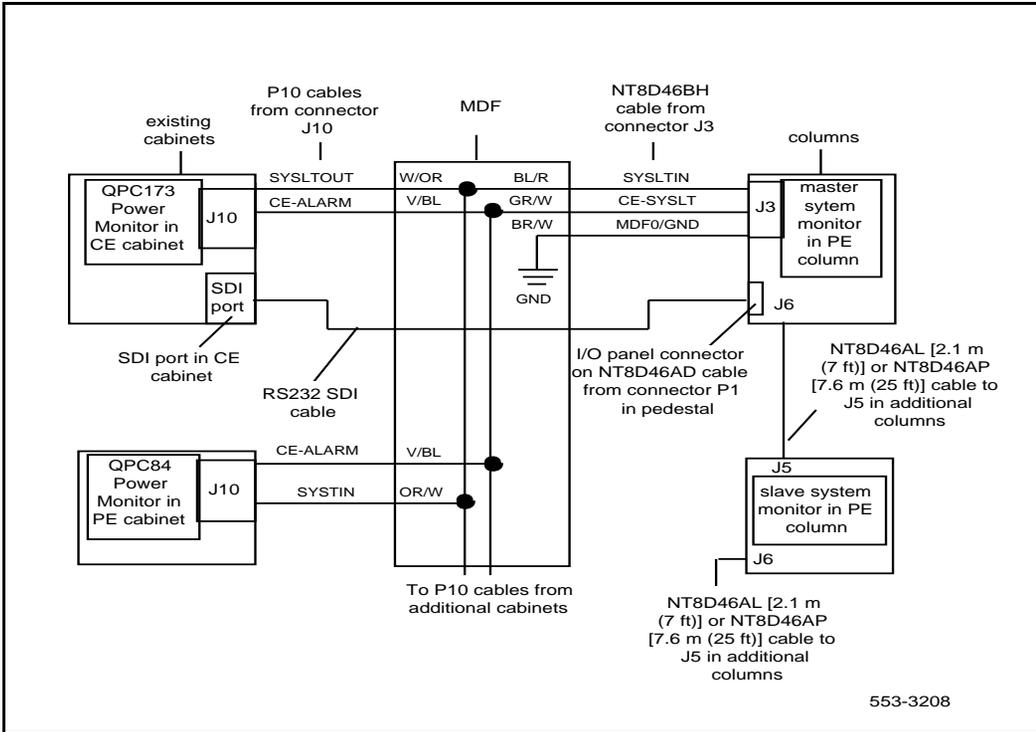
**Note:** Install and connect system monitors as described in *System Installation Procedures* (553-3001-210). The column containing CPU 0 contains the master system monitor. Other columns contain slave system monitors. A master system monitor is always required.

- 7 Install an NT8D46AD cable from connector P1 in the pedestal containing the master system monitor to J1 on the backplane. Mount the SDI connector on the cable in an available opening in the I/O panel. See Figure 152 and *System Installation Procedures* (553-3001-210).
- 8 Install an SDI cable from the SDI port on the existing CE cabinet to the SDI connector on the NT8D46AD cable in the I/O panel on the module.

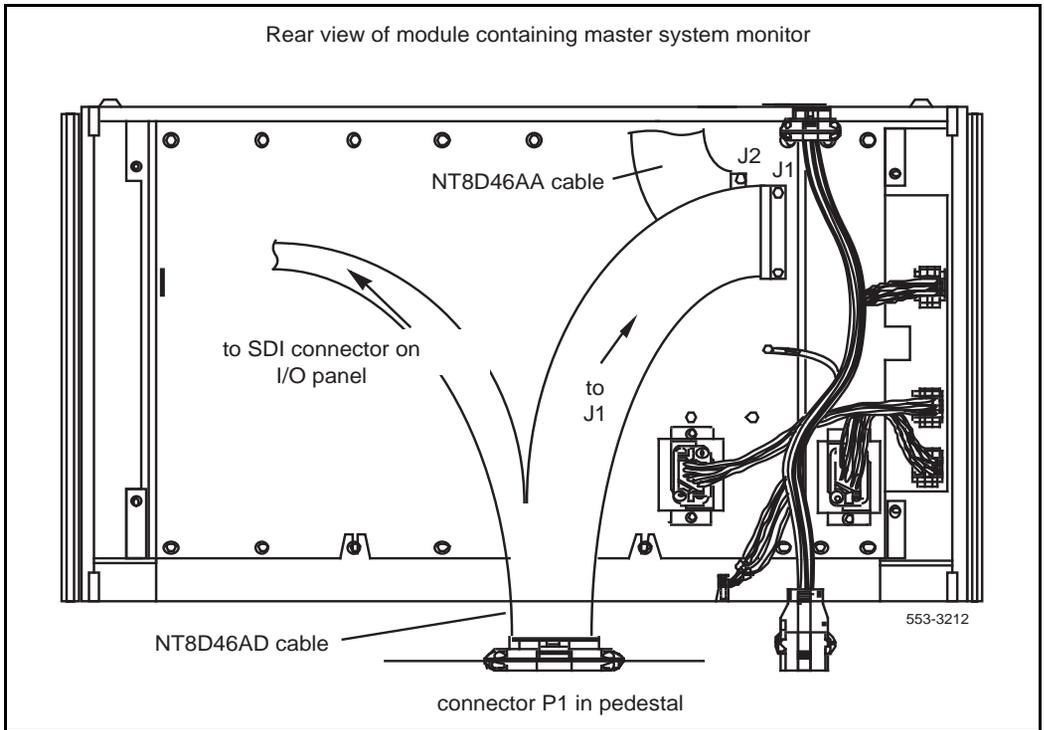
**Figure 150**  
**Common equipment in existing cabinet equipped with a QPC84 Power Monitor**



**Figure 151**  
**Common equipment in existing cabinet equipped with a QPC173 Power Monitor**



**Figure 152**  
**NT8D46AD cable connections**



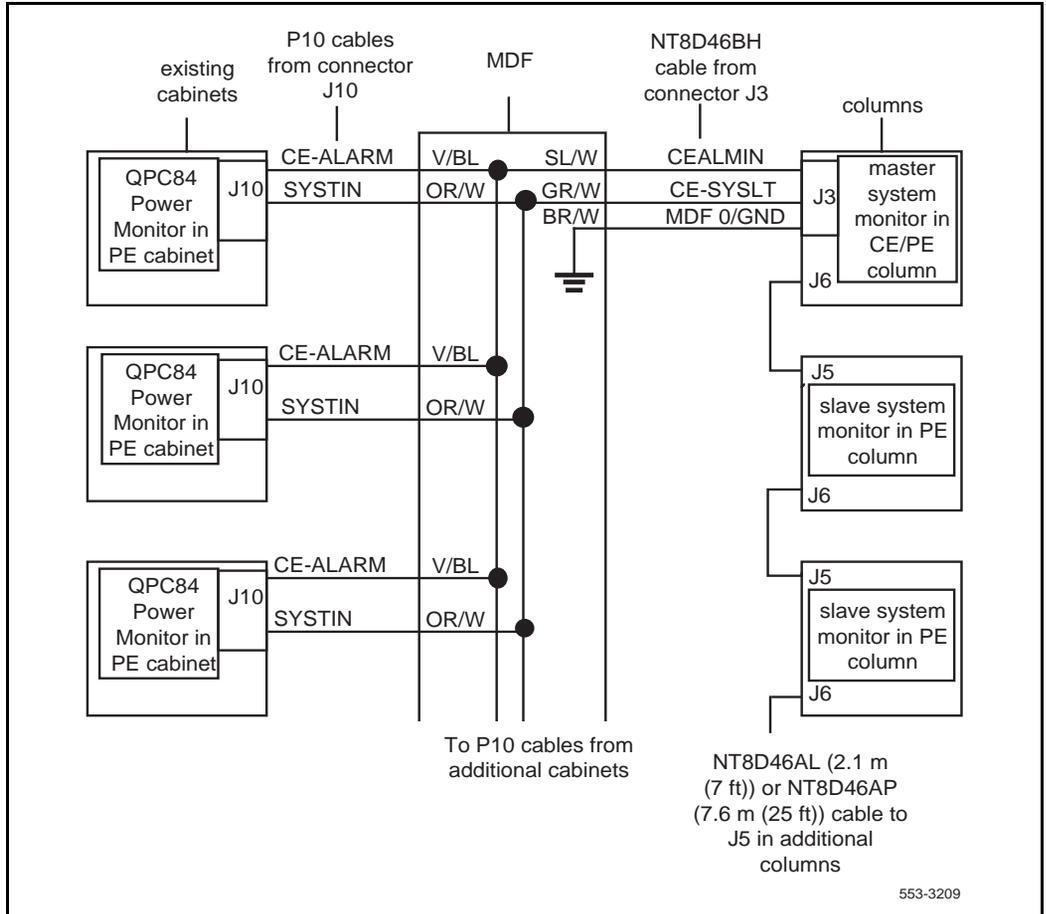
## Procedure 2

### Connecting system monitor—CE in a column and existing cabinets are equipped with QPC84 Power Monitors

- 1 Make sure that the NT8D46BH alarm cable from connector J3 at the rear of the pedestal housing the master system monitor is terminated at the MDF. The column containing CPU 0 contains the master system monitor. See *System Installation Procedures* (553-3001-210).
- 2 At the MDF, locate the P10 cable from each existing cabinet:
  - a Make sure that the SYSLTIN connections (OR/W wire) in all P10 cables are connected together. See Figure 153.
  - b Make sure that the CE-ALARM connections (V/BL wire) in all P10 cables are connected together. See Figure 153.
- 3 Locate a ground source at the MDF. Connect it to the MDF 0/gnd connection (BR/W wire) on the NT8D46BH cable from the master column. See Figure 153.
- 4 At the MDF, locate the CEALMIN (SL/W wire) and CE-SYSLT (GR/W wire) connections in the NT8D46BH cable from the master column:
  - a Connect the CEALMIN connection (SL/W wire) on the NT8D46BH alarm cable to the CE-ALARM (V/BL wire) connection on the P10 cable from the CE cabinet. See Figure 153.
  - b Connect the CE-SYSLT connection (GR/W wire) on the NT8D46BH alarm cable to the SYSLTIN connection (OR/W wire) on the P10 cable from the CE cabinet. See Figure 153.
- 5 Check the switch settings on the system monitor in each column. Make sure that switch SW1 on all system monitors is set according to Table 125. See *Circuit Card: Installation and Testing* (553-3001-211) to set switches SW2 and SW3.

**Note:** Install and connect system monitors as described in *System Installation Procedures* (553-3001-210). The column containing CPU 0 contains the master system monitor. Other columns contain slave system monitors. A master system monitor is always required.

**Figure 153**  
**Common equipment in module and existing cabinets equipped with QPC84 Power Monitors**



## System monitoring in ST and RT systems

The system monitoring hardware requirements for ST and RT systems depend on the various combinations of cabinet types and whether the CPU is located in the cabinet or in the Meridian 1 module. See Table 126.

**Table 126**  
**Hardware requirements (Part 1 of 3)**

Cabinet type	CPU location	Hardware required (one of each)
QCA136 and Meridian 1 Module(s)	QCA136	NT8D46AY System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD309 Alarm Adapter Cable (Note 2) P0678258 Filter Connector (Note 2)
	Meridian 1 Module	NT8D46AX System Monitor Cable NT8D46BA System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) NT6D81AA Power Regulator (Note 3) NT8D22AC System Monitor (Note 4)
QCA137 and Meridian 1 Module(s)	Meridian 1 Module	NT8D46AX System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
QCA136, QCA137, and Meridian 1 Module(s)	QCA136	NT8D46BC System Monitor Cable NT8D46BE System Monitor Cable NT8D46BM System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
	Meridian 1 Module	NT8D46BB System Monitor Cable NT8D46BC System Monitor Cable NT8D46BD System Monitor Cable NT8D46BE System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5) NT6D81AA Power Regulator (Note 3) NT8D22AC System Monitor (Note 4)

**Table 126**  
**Hardware requirements (Part 2 of 3)**

Cabinet type	CPU location	Hardware required (one of each)
QCA147 and Meridian 1 Module(s)	QCA147	NT8D46AY System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1)
	Meridian 1 Module	NT8D46AX System Monitor Cable NT8D46BG System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) NT8D22AC System Monitor (Note 4)
QCA147, QCA137, and Meridian 1 Module(s)	QCA147	NT8D46CH System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
	Meridian 1 Module	NT8D46BC System Monitor Cable NT8D46BD System Monitor Cable NT8D46BE System Monitor Cable NT8D46BJ System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5) NT8D22AC System Monitor (Note 4)
Two QCA137s and Meridian 1 Module(s)	Meridian 1 Module	NT8D46BC System Monitor Cable NT8D46BE System Monitor Cable NT8D46BK System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)

**Table 126**  
**Hardware requirements (Part 3 of 3)**

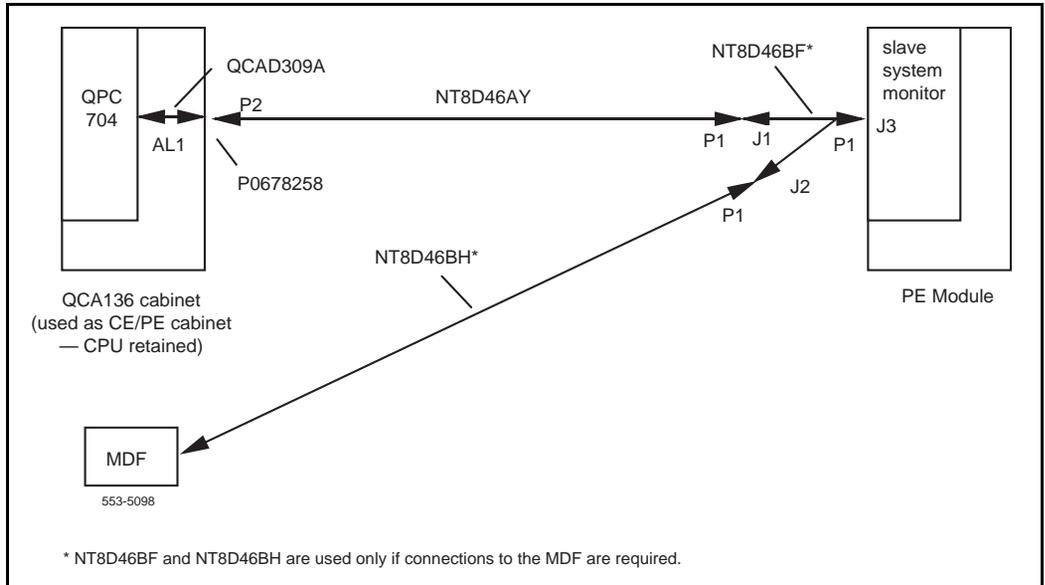
Cabinet type	CPU location	Hardware required (one of each)
QCA147, two QCA137s, and Meridian 1 Module(s)	QCA147	NT8D46BC System Monitor Cable NT8D46BE System Monitor Cable NT8D46BL System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
	Meridian 1 Module	NT8D46BJ System Monitor Cable NT8D46BC System Monitor Cable NT8D46BD System Monitor Cable NT8D46BE System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5) NT8D22AC System Monitor (Note 4)
<p><b>Note 1:</b> The NT8D46BF and NT8D46BH cables are only required when extending the alarm connections to the main distribution frame (MDF).</p> <p><b>Note 2:</b> ST systems consisting of a single QCA136 cabinet require the installation of a QCAD309 Alarm Adapter cable and one P0678258 Filter Connector.</p> <p><b>Note 3:</b> The NT6D81AA Power Regulator Card is required when a QCA136 cabinet is retained as part of the upgraded system. Each cabinet requires one card that resides in any network or SDI card slot.</p> <p><b>Note 4:</b> The NT8D22AC System Monitor is required when a QCA136, QCA137, or QCA147 cabinet is retained as part of the upgraded system.</p> <p><b>Note 5:</b> The QCAD310 Ground Cable must be installed in ST or RT systems using one or more QCA137 cabinets.</p>		

## Configuration 1—ST system with QCA136 and PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet and a PE Module (see Figure 154). The CPU is located in the cabinet.

**Figure 154**  
**Connecting system monitor—Configuration 1**



**Procedure 3**  
**Connecting system monitor—Configuration 1**

**Note:** This procedure requires powering down the QCA136 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AY cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.  
**Note:** This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.  
**Note:** When configuring the system monitor, use the switch settings for a *slave* unit.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap light emitting diode (LED) flashes three times then stays off.
- 4 Install connector P1 of the NT8D46AY cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Power down the QCA136 cabinet.
- 10 Remove the QCA136 rear panels.
- 11 Remove the QCA136 EMI back panel.
- 12 Install the QCAD309 cable and the filter connector (P0678258) according to the instructions as described in *System Installation Procedures* (553-3001-210)
- 13 Connect P2 of the NT8D46AY cable into the filter connector at the bottom rear of the QCA136 cabinet. Ensure the connection with a screwdriver.

- 14** Reinstall the QCA136 EMI back panel.
- 15** Reinstall the QCA136 rear panels.
- 16** Power up the QCA136 cabinet.

### **Fault clearing**

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1** The PFTU (if installed) is not activated.
- 2** All ringing generators are enabled.
- 3** All LEDs on the QUAA3 Power Unit stay on. If not, verify that step 12 of the installation procedure has been completed.
- 4** The LED on the top cap of the PE Module is off. If not, perform one of the following:
  - a** Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.

To verify the installation, perform the following optional procedure on the PE Module:

- 1** Locate the blower unit inside the pedestal of the PE Module.
- 2** Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on, and the PE 2-5 LED on the QUAA3 Power Unit is off.
- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off, and the PE 2-5 LED on the QUAA3 Power Unit is on.

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 2-5 LED on the QUAA3 Power Unit is off and the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card, and verify that the PE 2-5 LED is on.

- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
  - a** the CE/PE 1 LED is off
  - b** the PFTU (if installed) is activated
  - c** the LED on the top cap of the PE Module is on
  - d** the ringing generator is off
  
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
  - a** the CE/PE 1 LED is on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** the ringing generator is on
  
- 4** Perform a data dump using LD 43.
  
- 5** Perform a sysload on the QCA136 cabinet. Verify the following:
  - a** the CE/PE 1 LED is off
  - b** the PFTU (if installed) is activated
  - c** the LED on the top cap of the PE Module is on
  - d** the ringing generator is off
  
- 6** Wait 90 seconds after the sysload; then verify the following:
  - a** the CE/PE 1 LED is on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** the ringing generator is on

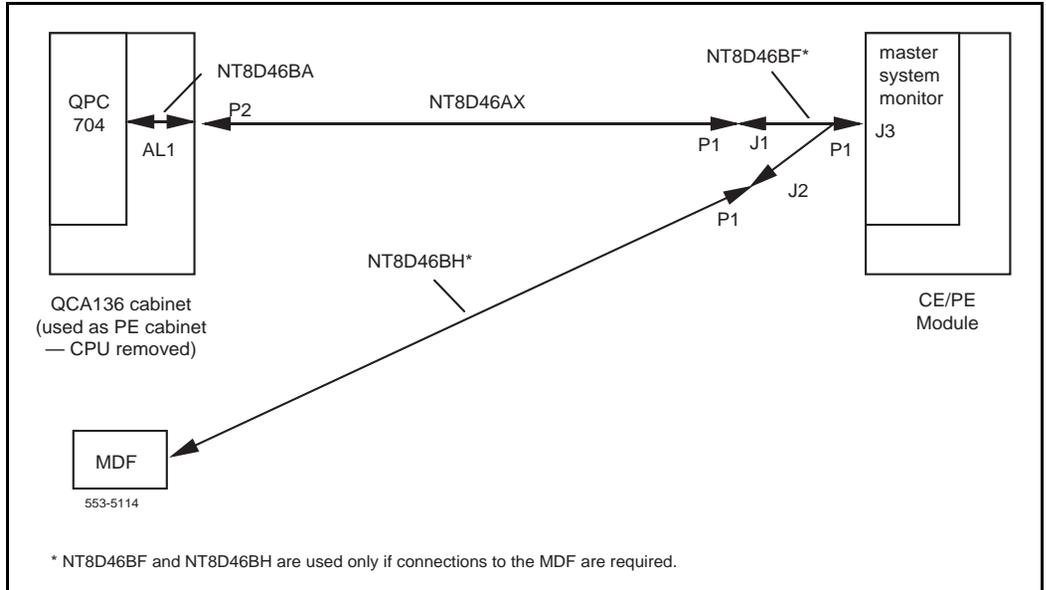
If any test fails, verify that the QCAD309A and NT8D46AY cables are installed properly, and the switch settings on the system monitor are correct for this configuration.

## Configuration 2—ST system with QCA136 and CE/PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet and a CE/PE Module (see Figure 155). The CPU is located in the module.

**Figure 155**  
**Connecting system monitor—Configuration 2**



**Procedure 4**  
**Connecting system monitor—Configuration 2**

**Note:** This procedure requires powering down the QCA136 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

**Note:** This step is not applicable to new installations.

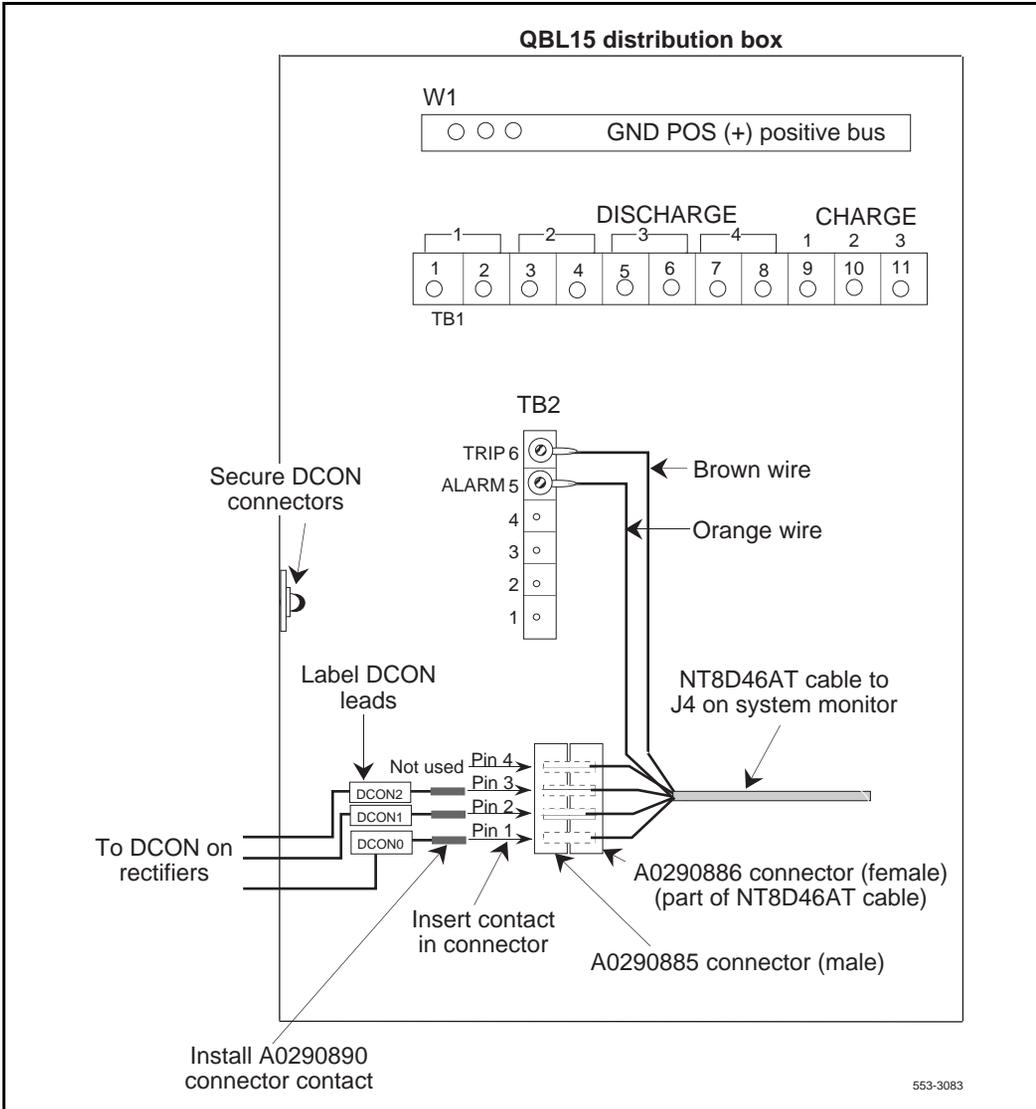
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

**PWR0054 XSMC 00 0 0**

- 4 Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA136 cabinet.
- 9 Remove all circuit cards from the CE shelf.
- 10 Install the NT6D81AA Power Regulator Board in any of slots 2 through 11 of the CE shelf.
- 11 Remove the QCA136 rear panels.
- 12 Remove the QCA136 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.

- 13** On DC-powered ST systems using a QBL15 Battery Distribution Box, perform these steps:
- a** On the ST system, remove the wire between terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier and terminal 3 on terminal board TB2 of the QUX19 breaker assembly.
  - b** Install the NT8D46AT cable from J4 of the system monitor to the terminal area in the QBL15.
  - c** Connect the brown wire of the NT8D46AT cable to terminal 6 (TRIP) on terminal board TB2 in the QBL15. Connect the orange wire to terminal 5 (ALARM). Refer to Figure 156.  
**Note:** The QCA136 cabinet does not require a TRIP wire to be connected to the QBL15.
  - d** Run an AWG 22 wire from terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier to the QBL15.
  - e** Install an A0290890 connector contact on the end of the AWG 22 wire inside the QBL15. Insert the contact into pin 1, 2, or 3 of the NT8D86 system monitor cable.
  - f** Attach the DCON label to the AWG 22 wire.
  - g** Attach the strain-relief clip to a clean surface inside the QBL15 near the terminal boards. Secure the NT8D46AT cable under the strain-relief clip.
- 14** Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA3 Power Unit.
- 15** Install connector P5 of the NT8D46BA cable into connector J5 on the rear of the QUAA3 Power Unit.
- 16** Install connector J5 of the NT8D46BA cable into connector P5 of the existing harness.
- 17** Install connector ALM1 into the filter connector (P0678258) located in one of the three horizontal cutouts located at the bottom rear of the QCA136 cabinet.
- 18** Loosen screws REMA and REMB on terminal block TB2 of the QUX19 Power Distribution Unit.

**Figure 156**  
**NT8D46AT cable field wiring connections**



- 19 Connect lug REMA (yellow wire) from the NT8D46BA cable to screw REMA on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMA.
- 20 Connect lug REMB (black wire) from the NT8D46BA cable to screw REMB on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMB.
- 21 Loosen one of the ground lugs located on the ground bar on the rear of the QUAA3 Power Unit with a 7/16 inch socket driver.
- 22 Connect the GND ring lug (2 black wires) to the loosened ground lug on the rear of the QUAA3 Power Unit and tighten with the socket driver.
- 23 Install connector P2 of the NT8D46AX cable into connector ALM1 (filter connector P0678258). Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 24 Reinstall the EMI back panel.
- 25 Reinstall the QCA136 rear panels.
- 26 Power up the QCA136 cabinet. Verify that all alarm LEDs on the QUAA3 Power Unit are on, except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:  
**PWR0055 00 0 0**

### Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Unit stay on. If not, verify that steps 13 through 22 of the installation procedure have been completed.

- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
  - a the LED on the top cap is on
  - b all LEDs on the QUAA3 Power Unit stay on
  - c the maintenance console displays the following message:

**PWR0006 FANU 00 0 0**

- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

**PWR0046 FANU 00 0 0**

- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a the CE/PE 1 LED on the QUAA3 Power Unit is off
  - b the PFTU (if installed) is activated
  - c the LED on the top cap of the CE/PE Module is on
  - d the LEDs on all ringing generators are off

- 6 Wait 90 seconds after the sysload, then verify the following:
  - a the CE/PE 1 LED is on
  - b the PFTU (if installed) is deactivated
  - c the LED on the top cap of the CE/PE Module is off
  - d the LEDs on all ringing generators are on
  - e the maintenance console displays the following messages:

```
PWR0056 PFTU XX X X  
PWR0055 XSMC 00 0 0  
PWR0000 PWSP XX X X  
(for each ringing generator)
```

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 2-5 LED on the QUAA3 Power Unit is off
  - b the LED on the top cap of the CE/PE Module is off
  - c the maintenance console displays the following message:

```
PWR0015 XSMC 00 0 0
```

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 2-5 LED is on and the maintenance console displays the following message:

```
PWR0055 XSMC 00 0 0
```

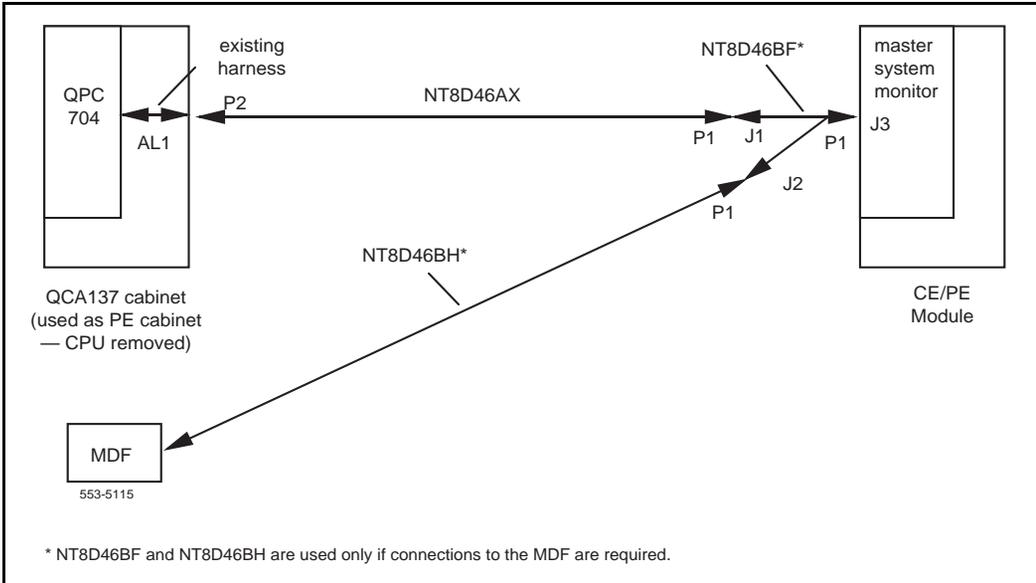
If any test fails, verify that the QCAD309A and NT8D46AY cables are installed properly, and the switch settings on the system monitor are correct for this configuration.

## **Configuration 3—ST/RT system with QCA137 and CE/PE Module**

### **Hardware installation procedure**

The following procedure describes how to connect the system monitor in an ST or RT system equipped with a QCA137 cabinet and a CE/PE Module (see Figure 157). The CPU is located in the module.

**Figure 157**  
**Connecting system monitor—Configuration 3**



**Procedure 5**  
**Connecting system monitor—Configuration 3**

**Note:** This procedure requires powering down the QCA137 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.  
**Note:** This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

**PWR0054 XSMC 00 0 0**

- 4 Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel on the module.
- 9 Verify that the RECT/BATT, PE 2-5, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA137 cabinet.
- 10 Remove the QCA137 rear panels.
- 11 Remove the QCA137 EMI back panel. Install a customer-provided #6 or #10 AWG wire between terminal lugs GND1 and GND2 on the ground bar at the back of the QUUA3 Power Unit.
- 12 Install connector P2 of the NT8D46AX cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA137 cabinet. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 13 Reinstall the EMI back panel.
- 14 Reinstall the QCA137 rear panels.
- 15 Power up the QCA137 cabinet. Verify that all alarm LEDs on the QUAA3 Power Unit are on except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

**PWR0055 00 0 0**

### Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Unit stay on. If not, verify cable connections.

- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
  - a the LED on the top cap is on
  - b all LEDs on the QUAA3 Power Unit stay on
  - c the maintenance console displays the following message:

**PWR0006 FANU 00 0 0**

- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

**PWR0046 FANU 00 0 0**

- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a the CE/PE 1 LED on the QUAA3 Power Unit is off
  - b the PFTU (if installed) is activated
  - c the LED on the top cap of the CE/PE Module is on
  - d the LEDs on all ringing generators are off

- 6 Wait 90 seconds after the sysload, then verify the following:
  - a the CE/PE 1 LED is on
  - b the PFTU (if installed) is deactivated
  - c the LED on the top cap of the CE/PE Module is off
  - d the LEDs on all ringing generators are on
  - e the maintenance console displays the following messages:

```
PWR0056 PFTU XX X X  
PWR0055 XSMC 00 0 0  
PWR0000 PWSP XX X X  
(for each ringing generator)
```

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 2-5 LED on the QUAA3 Power Unit is off
  - b the LED on the top cap of the CE/PE Module is off
  - c the maintenance console displays the following message:

```
PWR0015 XSMC 00 0 0
```

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 2-5 LED is on, and the maintenance console displays the following message:

```
PWR0055 XSMC 00 0 0
```

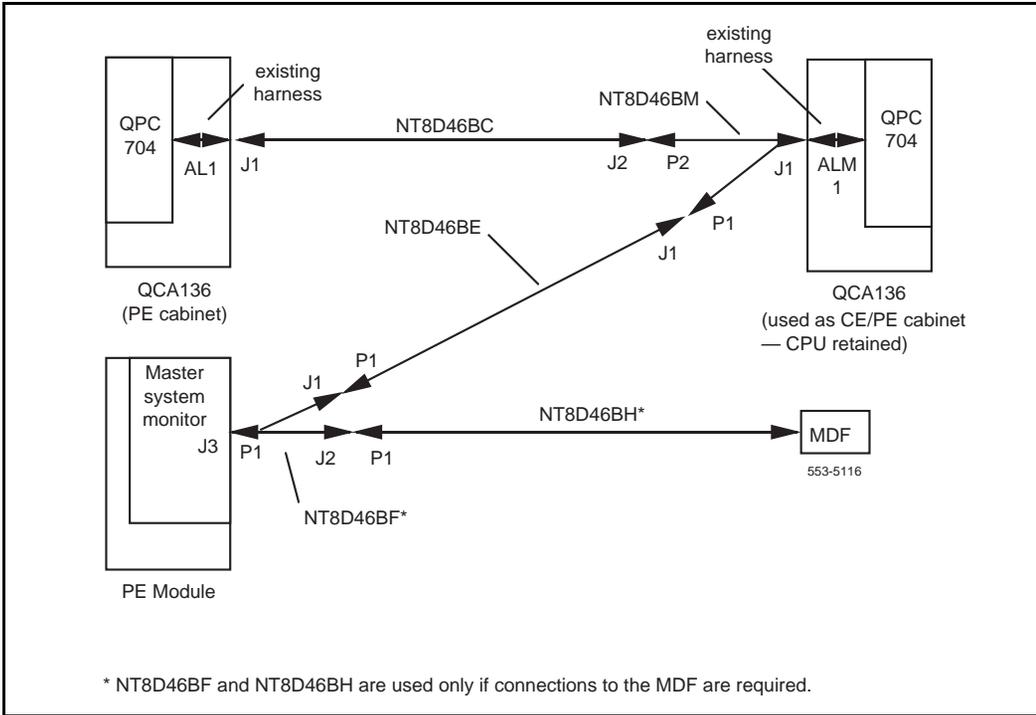
If any test fails, verify that the NT8D46AX cable is installed properly, and the switch settings on the system monitor are correct for this configuration.

## **Configuration 4—ST system with QCA136, QCA137, and PE Module**

### **Hardware installation procedure**

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet, a QCA137 cabinet, and a PE Module (see Figure 158). The CPU is located in the QCA136 cabinet.

**Figure 158**  
**Connecting system monitor—Configuration 4**



**Procedure 6**  
**Connecting system monitor—Configuration 4**

**Note:** This procedure requires powering down the QCA136 and QCA137 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.  
**Note:** This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.

- 3** Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4** Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5** Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6** Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7** Terminate the other end of the NT8D46BH cable.
- 8** Reinstall the pedestal back panel.
- 9** Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA136 cabinet.
- 10** Remove the QCA136 rear panels.
- 11** Remove the QCA136 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 12** Install connector J1 of the NT8D46BM cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA136 cabinet. Ensure the connection with a screwdriver.
- 13** Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BM cable. Ensure the connection with a screwdriver.
- 14** Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BM cable. Ensure the connection with a screwdriver.
- 15** Reinstall the QCA136 EMI back panel.
- 16** Reinstall the QCA136 rear panels.
- 17** Remove the QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the QCA136 and QCA137 cabinets.
- 18** Remove the QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 19** Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA137 cabinet. Ensure the connection with a screwdriver.

- 20 Reinstall the QCA137 EMI back panel.
- 21 Reinstall the QCA137 rear panels.
- 22 Power up the QCA136 and QCA137 cabinets. Ninety seconds after sysload, verify the following:
  - a all LEDs on the QUAA3 Power Unit are on
  - b the ringing generators are back on
  - c the LED on the top cap of the PE Module is off

### Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All ringing generators are enabled.
- 3 All LEDs on the QUAA3 Power Units in the QCA136 and QCA137 cabinets stay on. If not, verify that steps 12 through 19 of the installation procedure have been completed.
- 4 The LED on the top cap of the PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the PE Module:

- 1 Locate the blower unit inside the pedestal of the PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on, and the PE 2-5 LED on the QUAA3 Power Unit is off.
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off, and the PE 2-5 LED on the QUAA3 Power Unit is on.

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 2-5 LED on the QUAA3 Power Unit is off, and the LED on the top cap of the PE Module stays off.  
  
Hardware enable the QPC659 DLB card, and verify that the PE 2-5 LED is on.
- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
  - a** all CE/PE 1 LEDs are off
  - b** the PFTU (if installed) is activated
  - c** the LED on the top cap of the PE Module is on
  - d** all ringing generators are off
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
  - a** all CE/PE 1 LEDs are on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** all ringing generators are on
- 4** Perform a data dump using LD 43.
- 5** Perform a sysload on the QCA136 cabinet. Verify the following:
  - a** all CE/PE 1 LEDs are off
  - b** the PFTU (if installed) is activated
  - c** the LED on the top cap of the PE Module is on
  - d** the ringing generator is off

- 6** Wait 90 seconds after the sysload, then verify the following:
  - a** all CE/PE 1 LEDs are on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** all ringing generators are on

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 2-5 LEDs on the QCA136 and QCA137 cabinets and the LED on the top cap of the PE Module are off.  
  
Hardware enable the QPC659 DLB card and verify that all PE 2-5 LEDs are on.
- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
  - a** all CE/PE 1 LEDs are off
  - b** the PFTU (if installed) is activated
  - c** the LED on the top cap of the PE Module is on
  - d** all ringing generators are off
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
  - a** all CE/PE 1 LEDs are on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** all ringing generators are on

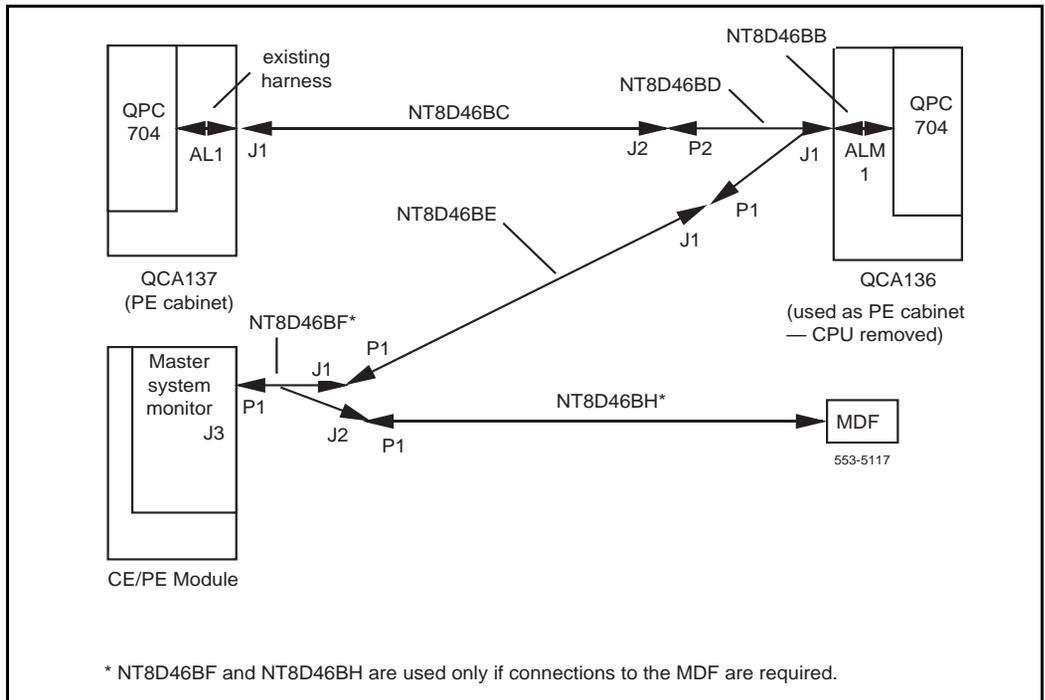
If any test fails, verify that the NT8D46BE and NT8D46BM cables are installed properly, and the switch settings on the system monitor are correct for this configuration. For the QCA137 cabinet, verify that the NT8D46BC and QCAD310 cables are installed properly.

## Configuration 5—ST system with QCA136, QCA137, and CE/PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet, a QCA137 cabinet, and a CE/PE Module (see Figure 159). The CPU is located in the module.

**Figure 159**  
Connecting system monitor—Configuration 5



### Procedure 7

#### Connecting system monitor—Configuration 5

**Note:** This procedure requires powering down the QCA136 and QCA137 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

**Note:** This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

**PWR0054 XSMC 00 0 0**

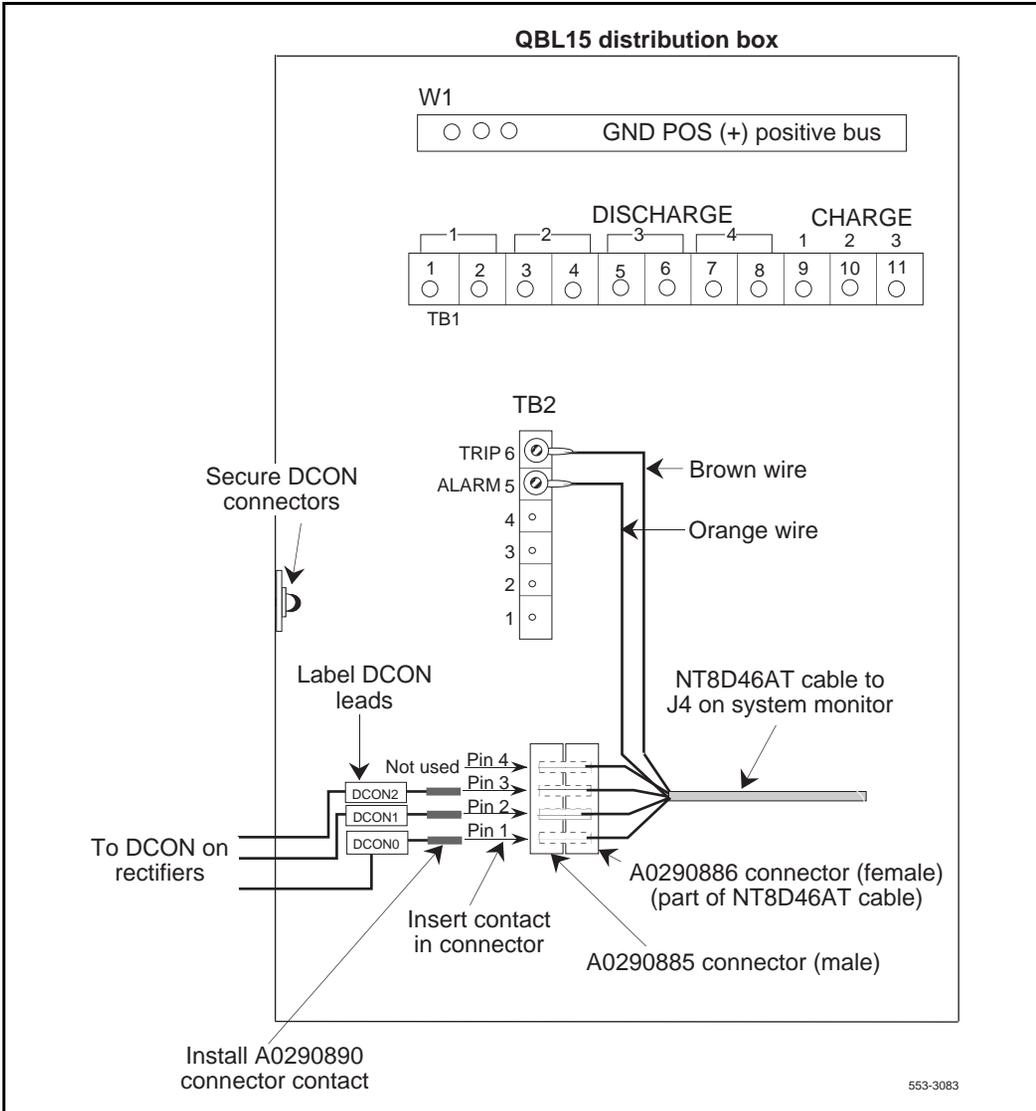
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA136 cabinet.
- 10 Remove all circuit cards from the CE shelf.
- 11 Install the NT6D81AA Power Regulator Board in any slots 2 through 11 of the CE shelf.
- 12 Remove the QCA136 rear panels.
- 13 Remove the QCA136 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.

- 14** On DC-powered ST systems using a QBL15 Battery Distribution Box, perform these steps:
- a** On the ST system, remove the wire between terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier and terminal 3 on terminal board TB2 of the QUX19 breaker assembly.
  - b** Install the NT8D46AT cable from J4 of the system monitor to the terminal area in the QBL15.
  - c** Connect the brown wire of the NT8D46AT cable to terminal 6 (TRIP) on terminal board TB2 in the QBL15. Connect the orange wire to terminal 5 (ALARM). Refer to Figure 160.

**Note:** The QCA136 cabinet does not require a TRIP wire to be connected to the QBL15.

- a** Run an AWG 22 wire from terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier to the QBL15.
  - b** Install an A0290890 connector contact on the end of the AWG 22 wire inside the QBL15. Insert the contact into pin 1, 2, or 3 of the NT8D86 system monitor cable.
  - c** Attach the DCON label to the AWG 22 wire.
  - d** Attach the strain-relief clip to a clean surface inside the QBL15 near the terminal boards. Secure the NT8D46AT cable under the strain-relief clip.
- 15** Unplug connector P6 of the existing harness from connector J6 of the QCAD309 Alarm Cable.
- 16** Unplug connector P6 of the QCAD309 Alarm Cable from connector J6 of the QUAA3 Power Unit.
- 17** Unplug connector P4 of the existing harness from connector J4 of the QCAD309 Alarm Cable.
- 18** Unplug connector P4 of the QCAD309 Alarm Cable from connector J4 of the QUAA3 Power Unit.

**Figure 160**  
**NT8D46AT cable field wiring connections**



- 19** Remove connector AL1 of the QCAD309 Alarm Cable from the P0678258 Filter Connector located in one of the three horizontal cutouts at the bottom rear of the QCA136 cabinet.
- 20** Remove the QCA309 Alarm Cable.
- 21** Remove the NE-25MQA1 Alarm Cable connecting the QCA136 and QCA137 cabinets.
- 22** Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA3 Power Unit.
- 23** Install connector P5 of the NT8D46BB cable into connector J5 on the rear of the QUAA3 Power Unit.
- 24** Install connector J5 of the NT8D46BB cable into connector P5 of the existing harness.
- 25** Install connector P4 of the existing harness into connector J4 on the rear of the QUAA3 Power Unit.
- 26** Unplug connector P6 of the existing harness from connector J6 on the QUAA3 Power Unit.
- 27** Install connector P6 of the NT8D46BB cable into connector J6 on the QUAA3 Power Unit.
- 28** Install connector J6 of the NT8D46BB cable into connector P6 of the existing harness.
- 29** Loosen screws XCE, REMA, and REMB on terminal block TB2 of the QUX19 Power Distribution Unit.
- 30** Connect lug XCE (white wire) from the NT8D46BB cable to screw XCE on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw XCE.
- 31** Connect lug REMA (yellow wire) from the NT8D46BB cable to screw REMA on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMA.
- 32** Connect lug REMB (black wire) from the NT8D46BB cable to screw REMB on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMB.
- 33** Loosen one of the ground lugs located on the ground bar on the rear of the QUAA3 Power Unit with a 7/16 inch socket driver.

- 34 Connect the GND ring lug (four black wires) to the loosened ground lug on the rear of the QUAA3 Power Unit and tighten with the socket driver.
- 35 Install connector ALM1 of the NT8D46BB cable into one of the three horizontal cutouts using the existing P0678258 Filter Connector.
- 36 Install connector J1 of the NT8D46BD cable into the P0678258 Filter Connector. Ensure the connection with a screwdriver.
- 37 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BD cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 38 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BD cable. Ensure the connection with a screwdriver.
- 39 Reinstall the QCA136 EMI back panel.
- 40 Reinstall the QCA136 rear panels.
- 41 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA137 cabinet.
- 42 Remove the QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the QCA136 and QCA137 cabinets.
- 43 Remove the QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 44 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA137 cabinet. Ensure the connection with a screwdriver.
- 45 Reinstall the QCA137 EMI back panel.
- 46 Reinstall the QCA137 rear panels.
- 47 Power up the QCA136 and QCA137 cabinets. Verify that all alarm LEDs on the QUAA3 Power Unit are on except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

**PWR0055 00 0 0**

## Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Units in the QCA136 and QCA137 cabinets stay on. If not, verify that steps 10, 11, and 14 through 33 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
  - a the LED on the top cap is on
  - b all LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets stay on
  - c the maintenance console displays the following message:

**PWR0006 FANU 00 0 0**

- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

**PWR0046 FANU 00 0 0**

- 4 Perform a data dump using LD 43.

- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a all CE/PE 1 LEDs are off
  - b the PFTU (if installed) is activated
  - c the LED on the top cap of the CE/PE Module is on
  - d the LEDs on all ringing generators are off
- 6 Wait 90 seconds after the sysload, then verify the following:
  - a all CE/PE 1 LEDs are on
  - b the PFTU (if installed) is deactivated
  - c the LED on the top cap of the CE/PE Module is off
  - d the LEDs on all ringing generators are on
  - e the maintenance console displays the following messages:

**PWR0056 PFTU XX X X**  
**PWR0055 XSMC 00 0 0**  
**PWR0000 PWSP XX X X**  
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 2-5 LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets stay on
  - b the LED on the top cap of the PE Module stays off
  - c the maintenance console displays message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card and verify that the PE 2-5 LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets are on. Verify that the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
  - b the PE 2-5 LED on the QUAA3 Power Unit of the QCA136 cabinet stays on
  - c the LED on the top cap of the CE/PE Module stays off
  - d the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card and verify that the PE 2-5 LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets are on. Verify that the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

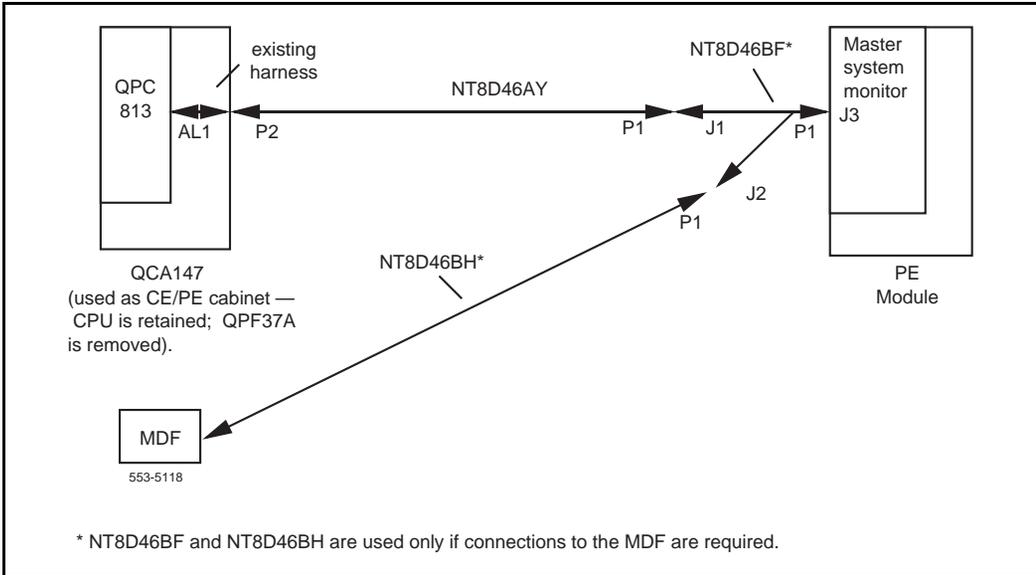
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. On the QCA137 cabinet, verify the installation of the QCAD310 cable.

## **Configuration 6—RT system with QCA147 and PE Module**

### **Hardware installation procedure**

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet and a PE Module (see Figure 161). The CPU is located in the QCA147 cabinet.

**Figure 161**  
**Connecting system monitor—Configuration 6**



**Procedure 8**  
**Connecting system monitor—Configuration 6**

**Note:** This procedure requires powering down the QCA147 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AY cable into connector J1 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.  
**Note:** This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46AY cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.

- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel.
- 12 Install connector P2 of the NT8D46AY cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA147 cabinet. Ensure the connection with a screwdriver.
- 13 Remove the QPF37A Alarm Adapter Plug.
- 14 Reinstall the QCA147 EMI back panel.
- 15 Reinstall the QCA147 rear panels.
- 16 Power up the QCA147 cabinet. Ninety seconds after sysload, verify the following:
  - a all LEDs on the QUAA3 Power Unit are on
  - b the ringing generators are back on
  - c the LED on the top cap of the PE Module is off

### **Fault clearing**

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All ringing generators are enabled.

- 3 All LEDs on the QUAA5 Power Unit stay on.
  - a The LED on the top cap of the PE Module is off. If not, perform one of the following:
  - b Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - c Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the PE Module:

- 1 Locate the blower unit inside the pedestal of the PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on, and the PE 1-2 LED on the QUAA5 Power Unit is off.
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the PE 1-2 LED is on.

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1 Hardware disable the QPC659 DLB card. Verify that the PE 1-2 LED on the QUAA5 Power Unit is off, and the LED on the top cap of the PE Module stays off.  
  
Hardware enable the QPC659 DLB card and verify that the PE 1-2 LED is on.
- 2 Set the LN XFR switch on the QUAA5 Power Unit to 1. Verify the following:
  - a the CPU/NWK/MSU LED is off
  - b the PFTU (if installed) is activated
  - c the LED on the top cap of the PE Module is on
  - d all ringing generators are off

- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
  - a** the CPU/NWK/MSU LED is on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** all ringing generators are on
- 4** Perform a data dump using LD 43.
- 5** Perform a sysload on the QCA147 cabinet. Verify the following:
  - a** the CPU/NWK/MSU LED is off
  - b** the PFTU (if installed) is activated
  - c** the LED on the top cap of the PE Module is on
  - d** all ringing generators are off
- 6** Wait 90 seconds after the sysload, then verify the following:
  - a** the CPU/NWK/MSU LED is on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the PE Module is off
  - d** all ringing generators are on

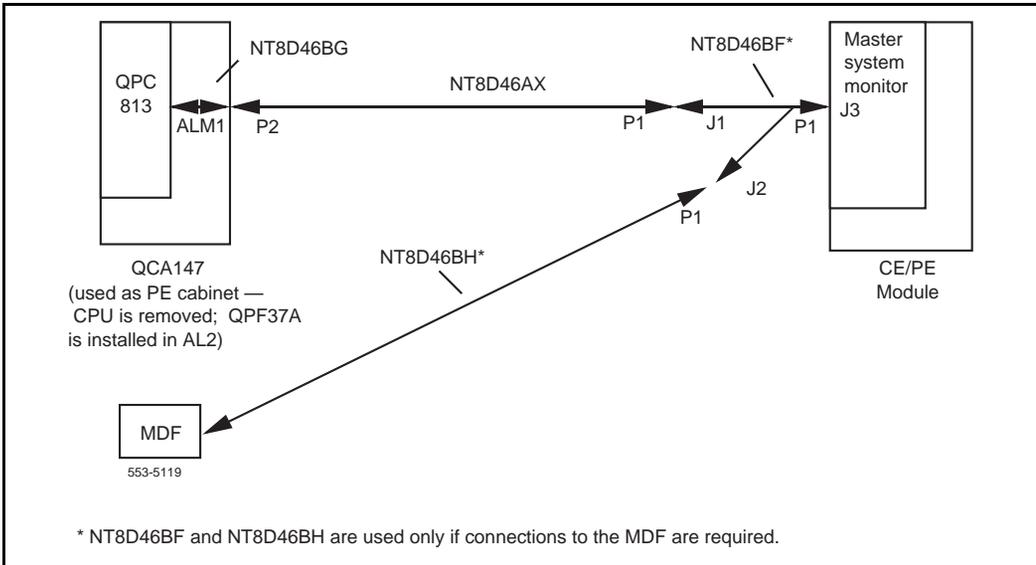
If any test fails, verify that the NT8D46AY cable and the QPF37A Alarm Adapter Plug are installed properly.

## Configuration 7—RT system with QCA147 and CE/PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet and a CE/PE Module (see Figure 162). The CPU is located in the module.

**Figure 162**  
**Connecting system monitor—Configuration 7**



### Procedure 9

#### Connecting system monitor—Configuration 7

**Note:** This procedure requires powering down the QCA147 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

**Note:** This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:  
**PWR0054 XSMC 00 0 0**
- 4 Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 9 Remove the QCA147 rear panels.
- 10 Remove the QCA147 EMI back panel.
- 11 Unplug connector P2 of the existing harness from connector J2 of the QUAA5 Power Unit.
- 12 Install connector J2 of the NT8D46BG cable into connector P2 of the existing harness.
- 13 Install connector P2 of the NT8D46BG cable into connector J2 of the QUAA5 Power Unit.
- 14 Unplug connector P3 of the existing harness from connector J3 of the QUAA5 Power Unit.
- 15 Install connector J3 of the NT8D46BG cable into connector P3 of the existing harness.
- 16 Install connector P3 of the NT8D46BG cable into connector J3 of the QUAA5 Power Unit.
- 17 Unplug connector P5 of the existing harness from connector J5 of the QUAA5 Power Unit.

- 18 Install connector J5 of the NT8D46BG cable into connector P5 of the existing harness.
- 19 Install connector P5 of the NT8D46BG cable into connector J5 of the QUAA5 Power Unit.
- 20 Unplug connector P6 of the existing harness from connector J6 on the rear of the QUAA5 Power Unit.
- 21 Install connector J6 of the NT8D46BG cable into connector P6 of the existing harness.
- 22 Install connector P6 of the NT8D46BG cable into connector J6 on the rear of the QUAA5 Power Unit.
- 23 Unplug connector P8 of the existing harness from connector J8 (horizontally oriented) near the top of the QUAA5 Power Unit.
- 24 Install connector J8 of the NT8D46BG cable into connector P8 of the existing harness.
- 25 Install connector P8 of the NT8D46BG cable into connector J8 on the rear of the QUAA5 Power Unit.
- 26 Install connector ALM1 into the AL1 cutout at the bottom rear of the QCA147 cabinet using the existing P0678258 Filter Connector.
- 27 Loosen one of the ground lugs located on the ground bar on the rear of the QUAA5 Power Unit with a 7/16 inch socket driver.
- 28 Connect the GND ring lug (two white wires) to the loosened ground lug on the rear of the QUAA5 Power Unit and tighten with the socket driver.
- 29 Ensure that the QPF37A Alarm Adapter Plug is inserted into connector AL2.
- 30 Install connector P2 of the NT8D46AX cable into connector ALM1 (P0678258 Filter Connector). Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 31 Reinstall the QCA147 EMI back panel.
- 32 Reinstall the QCA147 rear panels.

- 33** Power up the QCA147 cabinet. Verify that all alarm LEDs on the QUAA5 Power Unit are on, except the CPU/NWK/MSU LED which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

**PWR0055 00 0 0**

### **Fault clearing**

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1** The PFTU (if installed) is not activated.
- 2** All LEDs on the QUAA5 Power Unit stay on. If not, verify that steps 12 through 30 of the installation procedure have been completed.
- 3** The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a** Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b** Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1** Locate the blower unit inside the pedestal of the CE/PE Module.
- 2** Set the circuit breaker on the blower unit to off. Verify the following:
  - a** the LED on the top cap is on
  - b** all LEDs on the QUAA5 Power Unit stay on
  - c** the maintenance console displays the following message:

**PWR0006 FANU 00 0 0**

- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

**PWR0046 FANU 00 0 0**

- 4** Perform a data dump using LD 43.

- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a the CPU/NWK/MSU LED is off
  - b the PFTU (if installed) is activated
  - c the LED on the top cap of the CE/PE Module is on
  - d all ringing generators are off
  
- 6 Wait 90 seconds after the sysload, then verify the following:
  - a the CPU/NWK/MSU LED is on
  - b the PFTU (if installed) is deactivated
  - c the LED on the top cap of the CE/PE Module is off
  - d all ringing generators are on
  - e the maintenance console displays the following messages:

**PWR0056 PFTU XX X X**  
**PWR0055 XSMC 00 0 0**  
**PWR0000 PWSP XX X X**  
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1 Hardware disable the QPC659 DLB card. Verify that the PE 1-2 LEDs on the QUAA5 Power Unit and the LED on the top cap of the CE/PE Module are off. Verify that the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 1-2 LED is on and the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

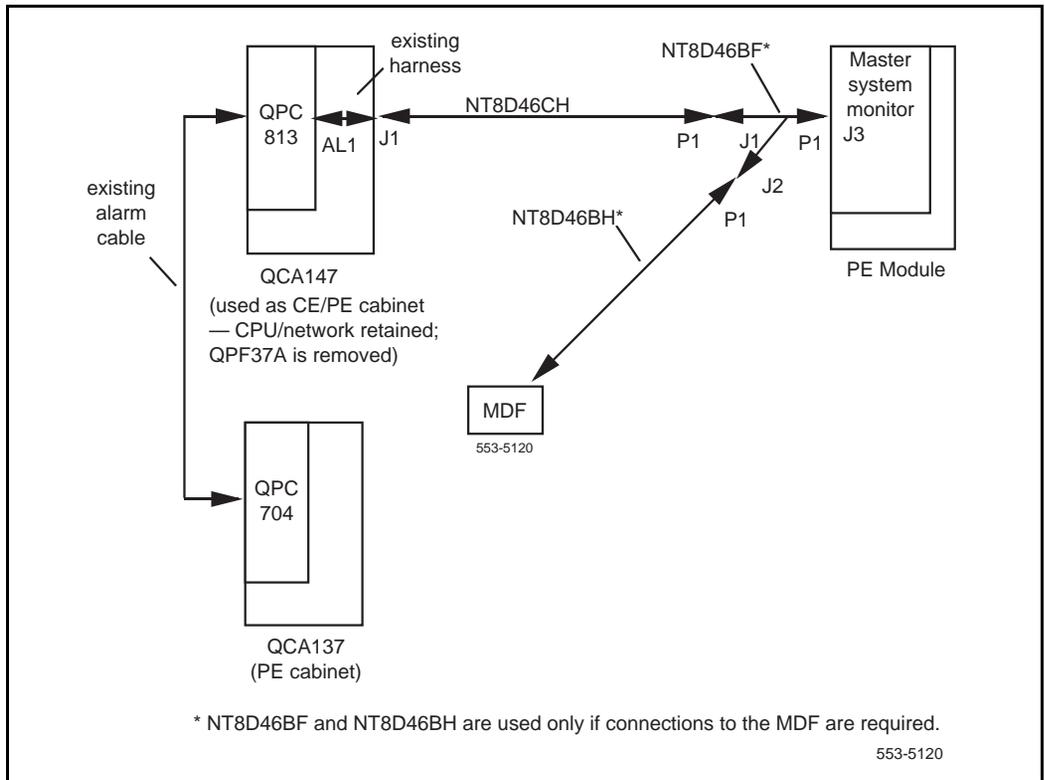
If any test fails, verify that the NT8D46BG and NT8D46AX cables are installed properly, the switch settings on the system monitor are correct for this configuration, and the QPF37A Alarm Adapter Plug is installed in AL2 of the existing harness.

## Configuration 8—RT system with QCA147, QCA137, and PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, a QCA137 cabinet, and a PE Module (see Figure 163). The CPU is located in the QCA147 cabinet.

**Figure 163**  
Connecting system monitor—Configuration 8



**Procedure 10**  
**Connecting system monitor—Configuration 8**

**Note:** This procedure requires powering down the QCA147 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46CH cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.  
**Note:** This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46CH cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Verify that the existing alarm cable (NE25MQ1A) between the QCA147 and QCA137 cabinets is installed.
- 12 Remove the QCA147 EMI back panel. Verify that the QCAD310 cable is installed between the ground bars of the QCA147 and QCA137 cabinets.
- 13 Remove the QPF37A Alarm Adapter Plug from the QCA147 cabinet.

- 14** Install connector J1 of the NT8D46CH cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA147 cabinet. Ensure the connection with a screwdriver.
- 15** Reinstall the QCA147 EMI back panel.
- 16** Reinstall the QCA147 rear panels.
- 17** Power up the QCA147 cabinet. Ninety seconds after sysload, verify the following:
  - a** all LEDs on the QUAA3 and QUAA5 Power Units are on
  - b** the ringing generators are back on
  - c** the LED on the top cap of the PE Module is off

### **Fault clearing**

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1** The PFTU (if installed) is not activated.
- 2** All ringing generators are enabled.
- 3** All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 11 and 13 of the installation procedure have been completed.
- 4** The LED on the top cap of the PE Module is off. If not, unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.

To verify the installation, perform the following optional procedure on the PE Module:

- 1** Locate the blower unit inside the pedestal of the PE Module.
- 2** Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on and the PE 1-2 LED on the QUAA5 Power Unit is off.
- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the PE 1-2 LED is on.

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 1-2 LED on the QUAA5 Power Unit is off and the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card, and verify that the PE 1-2 LED is on.
- 2** Set the LN XFR switch on the QUAA5 Power Unit to 1. Verify the following:

  - a** the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is off
  - b** the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
  - c** the PFTU (if installed) is activated
  - d** the LED on the top cap of the PE Module is on
  - e** all ringing generators are off
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:

  - a** the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is on
  - b** the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is on
  - c** the PFTU (if installed) is deactivated
  - d** the LED on the top cap of the PE Module is off
  - e** all ringing generators are on
- 4** Perform a data dump using LD 43.

- 5** Perform a sysload on the QCA147 cabinet. Verify the following:
  - a** the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is off
  - b** the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
  - c** the PFTU (if installed) is activated
  - d** the LED on the top cap of the PE Module is on
  - e** all ringing generators are off
  
- 6** Wait 90 seconds after the sysload, then verify the following:
  - a** the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is on
  - b** the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is on
  - c** the PFTU (if installed) is deactivated
  - d** the LED on the top cap of the PE Module is off
  - e** all ringing generators are on

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1** Hardware disable the QPC659 DLB card and verify the following:
  - a** the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
  - b** the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is off
  - c** the LED on the top cap of the PE Module stays off

Hardware enable the QPC659 DLB card and verify that the PE 1-2 and PE 2-5 LEDs are on.

- 2 Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
  - a the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is off
  - b the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
  - c the PFTU (if installed) is activated
  - d the LED on the top cap of the PE Module is on
  - e all ringing generators are off
  
- 3 Set the LN XFR switch to 0. After 90 seconds, verify the following:
  - a the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is on
  - b the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is on
  - c the PFTU (if installed) is deactivated
  - d the LED on the top cap of the PE Module is off
  - e all ringing generators are on

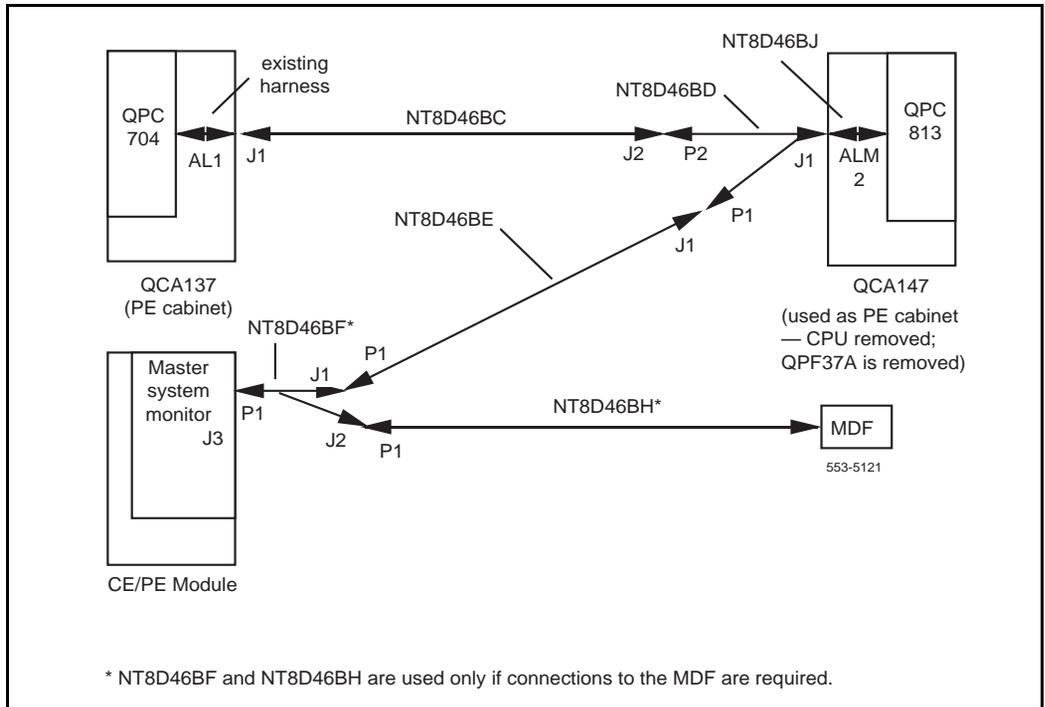
If any test fails, verify that the NT8D46CH cable is installed properly, and the switch settings on the system monitor are correct for this configuration. Verify the N5-25MQ1A cable installation on the QCA137 cabinet.

## **Configuration 9—RT system with QCA147, QCA137, and CE/PE Module**

### **Hardware installation procedure**

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, a QCA137 cabinet, and a CE/PE Module (see Figure 164). The CPU is located in the module.

**Figure 164**  
**Connecting system monitor—Configuration 9**



**Procedure 11**  
**Connecting system monitor—Configuration 9**

**Note:** This procedure requires powering down the QCA137 and QCA147 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.  
**Note:** This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.

- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:  
**PWR0054 XSMC 00 0 0**
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel.
- 12 Remove the QPF37A Alarm Adapter Plug. Verify that the QCAD310 cable is installed between the ground bars of the QCA137 and QCA147 cabinets.
- 13 Unplug connector P2 of the existing harness from connector J2 on the rear of the QUAA5 Power Unit.
- 14 Install connector P2 of the NT8D46BJ cable into connector J2 on the rear of the QUAA5 Power Unit.
- 15 Install connector J2 of the NT8D46BJ cable into connector P2 of the existing harness.
- 16 Unplug connector P3 of the existing harness from connector J3 on the rear of the QUAA5 Power Unit.
- 17 Install connector P3 of the NT8D46BJ cable into connector J3 on the rear of the QUAA5 Power Unit.
- 18 Install connector J3 of the NT8D46BJ cable into connector P3 of the existing harness.

- 19 Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA5 Power Unit.
- 20 Install connector P5 of the NT8D46BJ cable into connector J5 on the rear of the QUAA5 Power Unit.
- 21 Install connector J5 of the NT8D46BJ cable into connector P5 of the existing harness.
- 22 Unplug connector P6 of the existing harness from connector J6 on the QUAA5 Power Unit.
- 23 Install connector P6 of the NT8D46BJ cable into connector J6 on the QUAA5 Power Unit.
- 24 Install connector J6 of the NT8D46BJ cable into connector P6 of the existing harness.
- 25 Unplug connector P8 from the existing harness on the rear of the QUAA5 Power Unit.
- 26 Install connector P8 of the NT8D46BJ cable into connector J8 (horizontally oriented) near the top of the QUAA5 Power Unit.
- 27 Install connector J8 of the NT8D46BJ cable into connector P8 of the existing harness.
- 28 Loosen one of the ground lugs located on the ground bar on the rear of the QUAA5 Power Unit with a 7/16 inch socket driver.
- 29 Insert the GND ring lug (three wires) into the ground lug and tighten with the socket driver.
- 30 Install connector ALM1 into one of the horizontal cutouts using the existing P0678258 Filter Connector.
- 31 Install connector J1 of the NT8D46BD cable into connector ALM1 (P0678258 Filter Connector) of the NT8D46BJ cable. Ensure the connection with a screwdriver.
- 32 Install connector ALM2 of the NT8D46BJ cable into connector AL1 of the existing harness.
- 33 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BD cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 34 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BD cable. Ensure the connection with a screwdriver.

- 35 Reinstall the QCA147 EMI back panel.
- 36 Reinstall the QCA147 rear panels.
- 37 Remove the QCA137 rear panels.
- 38 Remove the QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 39 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) in the QCA137 cabinet. Ensure the connection with a screwdriver.
- 40 Reinstall the QCA137 EMI back panel.
- 41 Reinstall the QCA137 rear panels.
- 42 Power up the QCA147 cabinet. Verify that all alarm LEDs on the QUAA5 Power Unit are on, except the CPU/NWK/MSU LED, which is on after approximately 90 seconds.
- 43 Power up the QCA137 cabinet. Verify that all alarm LEDs on the QUAA3 Power Unit are on, except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

**PWR0055 00 0 0**

### **Fault clearing**

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 12 through 33 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
  - a the LED on the top cap is on
  - b all LEDs on the QUAA3 and QUAA5 Power Units stay on
  - c the maintenance console displays the following message:  
**PWR0006 FANU 00 0 0**
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:  
**PWR0046 FANU 00 0 0**
- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
  - b the CE/PE 1 LED on the QUAA3 Power Unit is off
  - c the PFTU (if installed) is activated
  - d the LED on the top cap of the CE/PE Module is on
  - e all ringing generators are off
- 6 Wait 90 seconds after the sysload, then verify the following:
  - a the CPU/NWK/MSU LED is on
  - b the CE/PE 1 LED is on
  - c the PFTU (if installed) is deactivated
  - d the LED on the top cap of the CE/PE Module is off
  - e all ringing generators are on
  - f the maintenance console displays the following messages:

**PWR0056 PFTU XX X X**  
**PWR0055 XSMC 00 0 0**  
**PWR0000 PWSP XX X X**  
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 1-2 LED on the QUAA5 Power Unit is off
  - b the PE 2-5 LED on the QUAA3 Power Unit stays on
  - c the LED on the top cap of the CE/PE Module stays off
  - d the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 1-2 LED is on and the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 2-5 LED on the QUAA3 Power Unit is off
  - b all LEDs on the QUAA5 Power Unit stay on,
  - c the LED on the top cap of the CE/PE Module stays off
  - d the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card. Verify that all LEDs on the QUAA5 and QUAA3 Power Units are on and the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

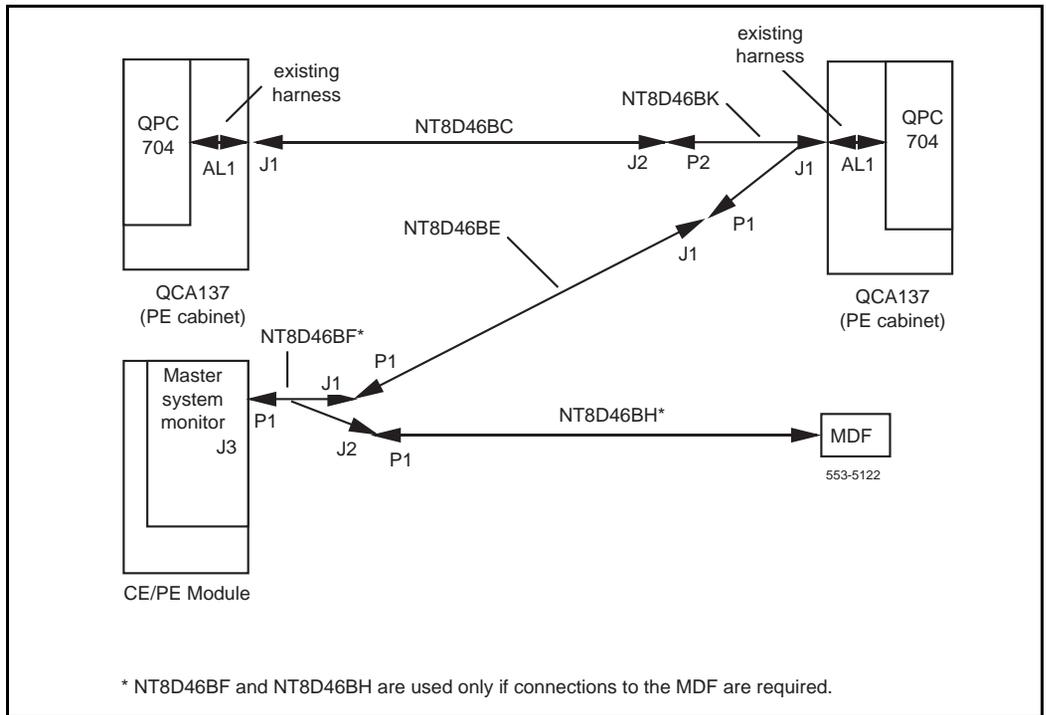
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the QCAD310 cable installation on the QCA137 cabinet.

## Configuration 10—RT system with two QCA137s and CE/PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with two QCA137 cabinets and a CE/PE Module (see Figure 165). The CPU is located in the module.

**Figure 165**  
Connecting system monitor—Configuration 10



## Procedure 12

### Connecting system monitor—Configuration 10

**Note:** This procedure requires powering down the QCA137 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

**Note:** This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

**PWR0054 XSMC 00 0 0**

- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 2-5, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down either QCA137 cabinet, which is hereafter referred to as the first QCA137 cabinet.
- 10 Remove the first QCA137 rear panels.
- 11 Remove the first QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit, and the QCAD310 cable is installed between the two QCA137 cabinets.

- 12 Install connector J1 of the NT8D46BK cable into connector AL1 (P0678258 Filter Connector) of the first QCA137 cabinet. Ensure the connection with a screwdriver.
- 13 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BK cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 14 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BK cable. Ensure the connection with a screwdriver.
- 15 Reinstall the first QCA137 EMI back panel.
- 16 Reinstall the first QCA137 rear panels.
- 17 Verify that the RECT/BATT, PE 2-5, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the second QCA137 cabinet.
- 18 Remove the second QCA137 rear panels.
- 19 Remove the second QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 20 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) of the second QCA137 cabinet. Ensure the connection with a screwdriver.
- 21 Reinstall the second QCA137 EMI back panel.
- 22 Reinstall the second QCA137 rear panels.
- 23 Power up both QCA137 cabinets. Verify that all alarm LEDs on the QUAA3 Power Units are on, except the CE/PE 1 LEDs, which are on after approximately 90 seconds. Verify that the maintenance console displays the following message:

**PWR0055 00 0 0**

## Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Unit stay on. If not, verify all cable connections.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on and all LEDs on the QUAA3 Power Unit stay on. Verify that the maintenance console displays the following message:  
**PWR0006 FANU 00 0 0**
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:  
**PWR0046 FANU 00 0 0**
- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a the CE/PE 1 LEDs on the QUAA3 Power Units are off
  - b the PFTU (if installed) is activated
  - c the LED on the top cap of the CE/PE Module is on
  - d all ringing generators are off

- 6** Wait 90 seconds after the sysload, then verify the following:
- a** the CE/PE 1 LEDs are on
  - b** the PFTU (if installed) is deactivated
  - c** the LED on the top cap of the CE/PE Module is off
  - d** all ringing generators are on
  - e** the maintenance console displays the following messages:

**PWR0056 PFTU XX X X**  
**PWR0055 XSMC 00 0 0**  
**PWR0000 PWSP XX X X**  
(for each ringing generator)

To verify the installation, perform the following optional procedure on each QCA137 cabinet:

- 1** Hardware disable the QPC659 DLB card and verify the following:
- a** the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet under test is off
  - b** the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet not under test is on
  - c** the LED on the top cap of the CE/PE Module is off
  - d** the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2** Hardware enable the QPC659 DLB card and verify that the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet under test is on and the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

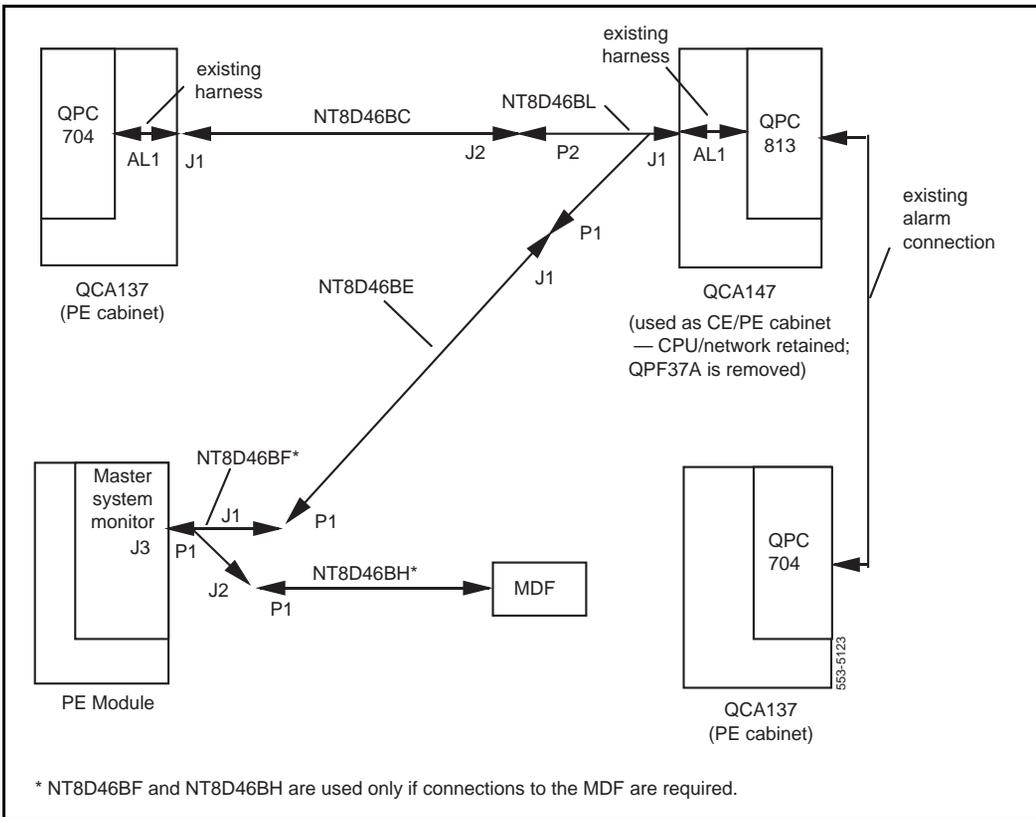
If any test fails, verify that all cables are installed properly, and the switch settings on the system monitor are correct for this configuration. Also verify the QCAD310 cable connections.

## Configuration 11—RT system with QCA147, two QCA137s, and PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, two QCA137 cabinets, and a PE Module (see Figure 166). The CPU is located in the QCA147 cabinet.

**Figure 166**  
Connecting system monitor—Configuration 11



**Procedure 13****Connecting system monitor—Configuration 11**

**Note:** This procedure requires powering down one QCA137 and the QCA147 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

**Note:** This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel.
- 12 Remove the QPF37A Alarm Adapter Plug in the QCA147 cabinet.
- 13 Verify that the alarm cable (NE25MQ1A) is installed between the QCA147 and the first QCA137 cabinets.

- 14 Install connector J1 of the NT8D46BL cable into connector AL1 (P0678258 Filter Connector) of the QCA147 cabinet. Ensure the connection with a screwdriver.
- 15 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BL cable. Ensure the connection with a screwdriver.
- 16 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BL cable. Ensure the connection with a screwdriver.
- 17 Reinstall the QCA147 EMI back panel.
- 18 Reinstall the QCA147 rear panels.
- 19 Verify that the RECT/BATT, PE 1-2, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the second QCA137 cabinet.
- 20 Remove the second QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the two QCA137 cabinets.
- 21 Remove the second QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 22 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) of the second QCA137 cabinet. Ensure the connection with a screwdriver.
- 23 Reinstall the second QCA137 EMI back panel.
- 24 Reinstall the second QCA137 rear panel.
- 25 Power up the QCA147 and QCA137 cabinets. Ninety seconds after sysload, verify the following:
  - a all LEDs on the QUAA3 and QUAA5 Power Units are on
  - b the ringing generators are back on
  - c the LED on the top cap of the PE Module is off

## Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All ringing generators are enabled.
- 3 All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 12 through 16 and 22 of the installation procedure have been completed.
- 4 The LED on the top cap of the PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the PE Module:

- 1 Locate the blower unit inside the pedestal of the PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
  - a the LED on the top cap is on
  - b the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is off
  - c all LEDs on the two QUAA3 Power Units of the QCA137 cabinets stay on
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the PE 1-2 LED on the QUAA5 Power Unit is on.

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1** Hardware disable the QPC659 DLB card and verify the following:
  - a** the PE 1-2 LED on the QUAA5 Power Unit is off
  - b** the CE/PE 1 LEDs on both QUAA3 Power Units are off
  - c** the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card and verify that the PE 1-2 LED and the CE/PE 1 LEDs are on.

- 2** Set the LN XFR switch on the QUAA5 Power Unit to 1. Verify the following:
  - a** the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
  - b** the CE/PE 1 LEDs on both QUAA3 Power Units are off
  - c** the PFTU (if installed) is activated
  - d** the LED on the top cap of the PE Module is on
  - e** all ringing generators are off

- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
  - a** the CPU/NWK/MSU LED is on
  - b** the CE/PE 1 LEDs are on
  - c** the PFTU (if installed) is deactivated
  - d** the LED on the top cap of the PE Module is off
  - e** all ringing generators are on

- 4** Perform a data dump using LD 43.

- 5** Perform a sysload on the QCA147 cabinet. Verify the following:
  - a** the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
  - b** the CE/PE 1 LEDs on both QUAA3 Power Units are off
  - c** the PFTU (if installed) is activated
  - d** the LED on the top cap of the PE Module is on
  - e** all ringing generators are off
  
- 6** Wait 90 seconds after the sysload, then verify the following:
  - a** the CPU/NWK/MSU LED is on
  - b** the CE/PE 1 LEDs are on
  - c** the PFTU (if installed) is deactivated
  - d** the LED on the top cap of the PE Module is off
  - e** all ringing generators are on

To verify the installation, perform the following optional procedure on each QCA137 cabinet:

- 1** Hardware disable the QPC659 DLB card and verify the following:
  - a** the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet under test is off
  - b** the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet not under test is on
  - c** the LED on the top cap of the PE Module is off
  
- 2** Hardware enable the QPC659 DLB card. Verify that the PE 2-5 LED on the QUAA3 Power Unit and the PE 1-2 LED on the QUAA5 Power Unit are on.

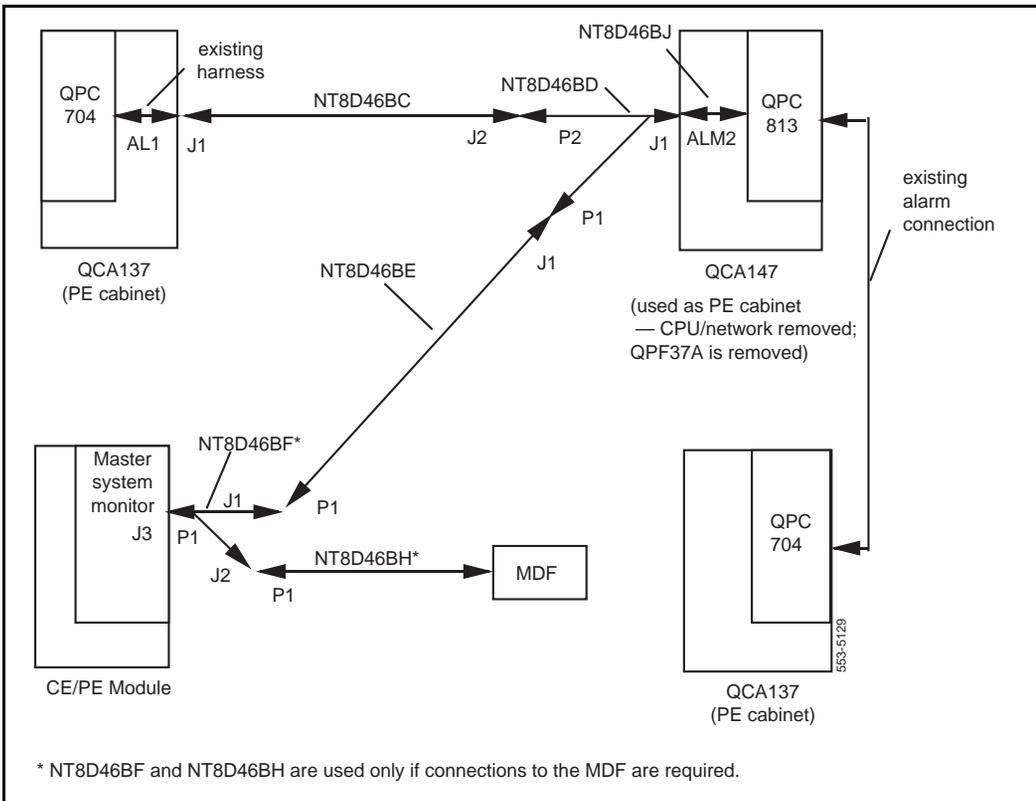
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the NE-25MQ1A and QCAD310 cable installation for the QCA137 cabinets.

## Configuration 12—RT system with QCA147, two QCA137s, and CE/PE Module

### Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, two QCA137 cabinets, and a CE/PE Module (see Figure 167). The CPU is located in the module.

**Figure 167**  
Connecting system monitor—Configuration 12



**Procedure 14****Connecting system monitor—Configuration 12**

**Note:** This procedure requires powering down one QCA137 and the QCA147 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

**Note:** This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 125.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

**PWR0054 XSMC 00 0 0**

- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CCPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel. Verify that the QCAD310 cable is installed between the ground bars of the QCA147 and QCA137 cabinets.
- 12 Remove the QPF37A Alarm Adapter Plug.

- 13 Verify that the alarm cable is installed between the QCA147 cabinet and the first QCA137 cabinet. The alarm cable is connected to AL2 in the QCA147 cabinet and AL1 in the QCA137 cabinet.
- 14 Unplug connector P2 of the existing harness from connector J2 on the rear of the QUAA5 Power Unit.
- 15 Install connector P2 of the NT8D46BJ cable into connector J2 on the rear of the QUAA5 Power Unit.
- 16 Install connector J2 of the NT8D46BJ cable into connector P2 of the existing harness.
- 17 Unplug connector P3 of the existing harness from connector J3 on the rear of the QUAA5 Power Unit.
- 18 Install connector P3 of the NT8D46BJ cable into connector J3 on the rear of the QUAA5 Power Unit.
- 19 Install connector J3 of the NT8D46BJ cable into connector P3 of the existing harness.
- 20 Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA5 Power Unit.
- 21 Install connector P5 of the NT8D46BJ cable into connector J5 on the rear of the QUAA5 Power Unit.
- 22 Install connector J5 of the NT8D46BJ cable into connector P5 of the existing harness.
- 23 Unplug connector P6 of the existing harness from connector J6 on the QUAA5 Power Unit.
- 24 Install connector P6 of the NT8D46BJ cable into connector J6 on the rear of the QUAA5 Power Unit.
- 25 Install connector J6 of the NT8D46BJ cable into connector P6 of the existing harness.
- 26 Unplug connector P8 of the existing harness from connector J8 (horizontally oriented) near the top of the QUAA5 Power Unit.
- 27 Install connector P8 of the NT8D46BJ cable into connector J8 on the rear of the QUAA5 Power Unit.
- 28 Install connector J8 of the NT8D46BJ cable into connector P8 of the existing harness.
- 29 Loosen one of the ground lugs located on the ground bar on the rear of the QUAA5 Power Unit with a 7/16 inch socket driver.

- 30 Insert the GND ring lug (three wires) into the ground lug and tighten with the socket driver.
- 31 Install connector ALM2 of the NT8D46BJ cable into connector AL1 of the existing harness.
- 32 Install connector ALM1 of the NT8D46BJ cable into the P0678258 Filter Connector.
- 33 Install connector J1 of the NT8D46BD cable into connector ALM1 (P0678258 Filter Connector) of the NT8D46BJ cable. Ensure the connection with a screwdriver.
- 34 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BD cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:  
**PWR0015 XSMC 00 0 0**
- 35 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BD cable. Ensure the connection with a screwdriver.
- 36 Reinstall the QCA147 EMI back panel.
- 37 Reinstall the QCA147 rear panels.
- 38 Remove the second QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the QCA147 and QCA137 cabinets.
- 39 Remove the second QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 40 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) in the second QCA137 cabinet. Ensure the connection with a screwdriver.
- 41 Reinstall the second QCA137 EMI back panel.
- 42 Reinstall the second QCA137 rear panels.
- 43 Power up the QCA147 cabinet. Verify that all alarm LEDs on the QUAA5 Power Unit are on, except the CPU/NWK/MSU LED, which is on after approximately 90 seconds.

- 44 Power up the QCA137 cabinets. Verify that all alarm LEDs on the QUAA3 Power Units are on, except the CE/PE 1 LEDs, which are on after approximately 90 seconds. Verify that the maintenance console displays the following message:

**PWR0055 00 0 0**

### **Fault clearing**

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 11 through 34 and 39 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
  - a Unseat the system monitor, verify the switch settings (Table 125), and reinstall it into the pedestal.
  - b Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *X11 Administration* (553-3001-311).

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off and verify the following:
  - a the LED on the top cap is on
  - b all LEDs on the QUAA3 and QUAA5 Power Units stay on
  - c the maintenance console displays the following message:

**PWR0006 FANU 00 0 0**

- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

**PWR0046 FANU 00 0 0**

- 4 Perform a data dump using LD 43.

- 5 Perform a sysload on the CE/PE Module. Verify the following:
  - a the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
  - b the CE/PE 1 LEDs on the QUAA3 Power Units are off
  - c the PFTU (if installed) is activated
  - d the LED on the top cap of the CE/PE Module is on
  - e all ringing generators are off
  
- 6 Wait 90 seconds after the sysload, then verify the following:
  - a the CPU/NWK/MSU LED is on
  - b the CE/PE 1 LEDs are on
  - c the PFTU (if installed) is deactivated
  - d the LED on the top cap of the CE/PE Module is off
  - e all ringing generators are on
  - f the maintenance console displays the following messages:

**PWR0056 PFTU XX X X**  
**PWR0055 XSMC 00 0 0**  
**PWR0000 PWSP XX X X**  
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 1-2 LED on the QUAA5 Power Unit is off
  - b the PE 2-5 LEDs on the QUAA3 Power Units stay on
  - c the LED on the top cap of the CE/PE Module stays off
  - d the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 1-2 LED is on and the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

To verify the installation, perform the following optional procedure on each QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
  - a the PE 2-5 LED on the QUAA3 Power Unit is off
  - b all LEDs on the QUAA5 Power Unit stay on
  - c the LED on the top cap of the CE/PE Module stays off
  - d the maintenance console displays the following message:

**PWR0015 XSMC 00 0 0**

- 2 Hardware enable the QPC659 DLB card. Verify that all LEDs on the QUAA5 and QUAA3 Power Units are on and the maintenance console displays the following message:

**PWR0055 XSMC 00 0 0**

If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the NE-25MQ1A and QCAD310 cable installation on the QCA137 cabinets.

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# Ground package installation

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## Content list

The following are the topics in this section:

- [Installing Ground Package P0677580 887](#)
- [Installing Ground Package P0677587 890](#)
- [Installing Ground Package P0677588 892](#)

This chapter describes how to install Ground Packages P0677580, P0677587, and P0677588.

## Installing Ground Package P0677580

The installation procedure is simple to follow and can be accomplished within one hour. For those systems already in service, call processing can continue without disruption during the installation procedure. It is recommended that this procedure be accomplished before the cutover of the upgraded system.

If additional assistance is required to complete the installation procedure, please contact your customer service representative.

To modify those systems that are affected, Nortel Networks has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

**Note:** For those systems that are already in service, it is necessary to have available approximately 25 feet of #6 AWG wire to jumper the system ground during the installation procedure. This wire is not provided in the installation package and must be purchased before modifying the ground.

The following are step-by-step instructions required to modify the ground on systems that do not have a ground mini-bus bar but have conduit for the ground wire.

To install Ground Package P0677580:

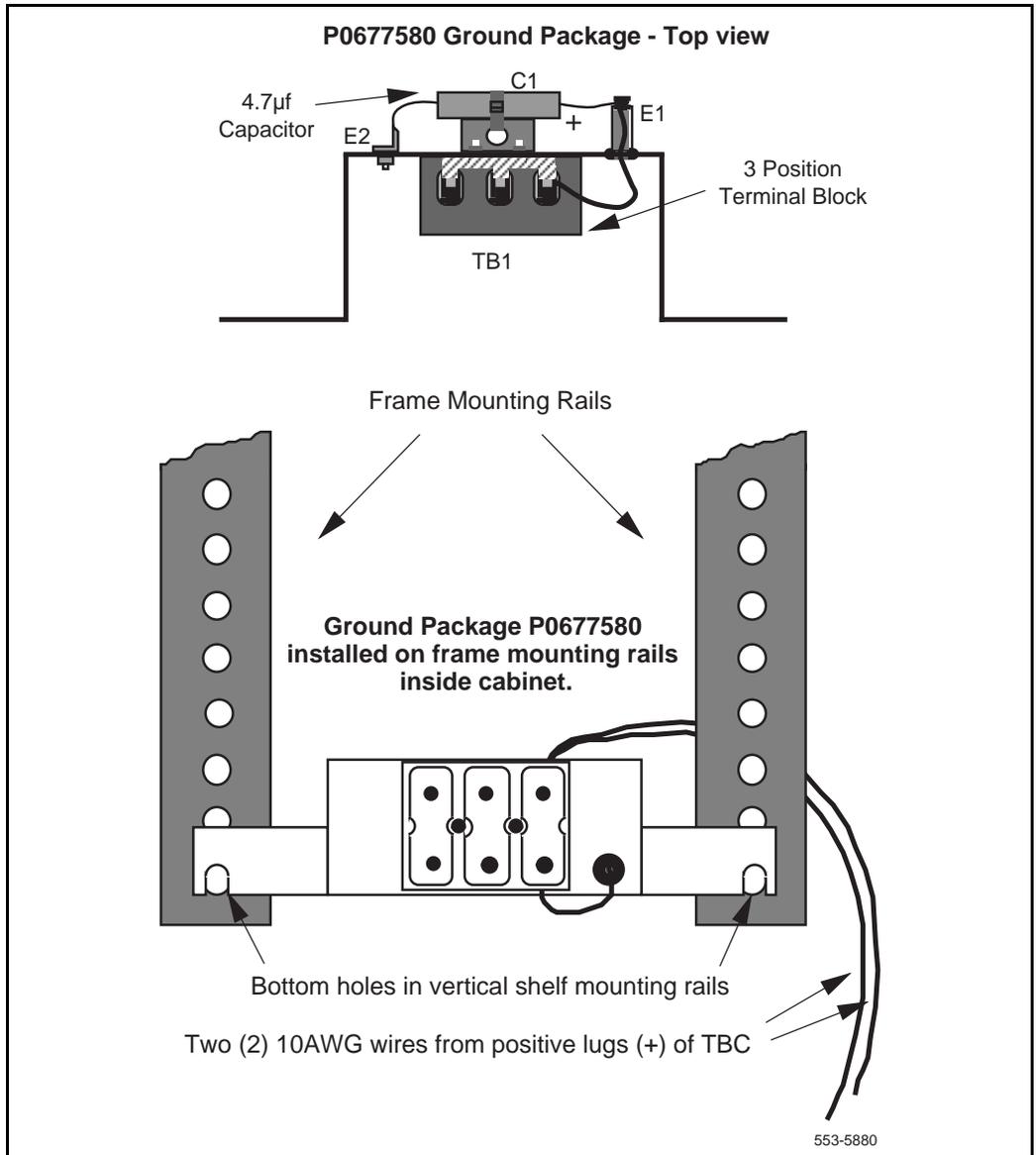
**Note:** Before modifying the ground, a temporary bypass ground wire must be added to avoid interrupting call processing.

- 1 Locate the supplied ground lugs and a 1/4-20 hex nut. Place the ground lug over one of the 1/4-20 threaded studs on the analog ground bar and secure it using the 1/4-20 hex nut.
- 2 Insert one end of the #6 AWG wire, which is not supplied, into the ground lug and tighten securely. Connect the other end of the wire to the ground window, the positive bus bar in the power distribution box, or the I.G. of the AC panel depending on the system.
- 3 Disconnect existing +48 volt return wires from the frame. These wires are terminated in ground lugs located at the bottom of the cabinet near the end of the 3/4-in. ground conduit.
- 4 Install the terminal block bracket using the bottom holes in the two center vertical shelf mounting rails. Assemble to rails using two of the supplied No.12-24 x.50 screws.

**Note:** The bracket should be oriented so that when installed between the rails, the capacitor assembly is facing toward the rear of the cabinet and the two rail mounting slots are facing down. See Figure 168.

- 5 Connect the wires previously disconnected in step 2 to the terminal block.
- 6 Connect the two #10 AWG wires from the TBC into the third position of the terminal bracket.
- 7 This completes the ground modification. Remove the bypass ground wire, ground lug, and 1/4-20 hex nut from the analog ground bar previously installed in step 1.

Figure 168  
Ground Package P0677580



## Installing Ground Package P0677587

The installation procedure is simple to follow and can be accomplished within one hour. For those systems already in service, call processing can continue without disruption during the installation procedure. It is recommended that this procedure be accomplished before the cutover of the upgraded system.

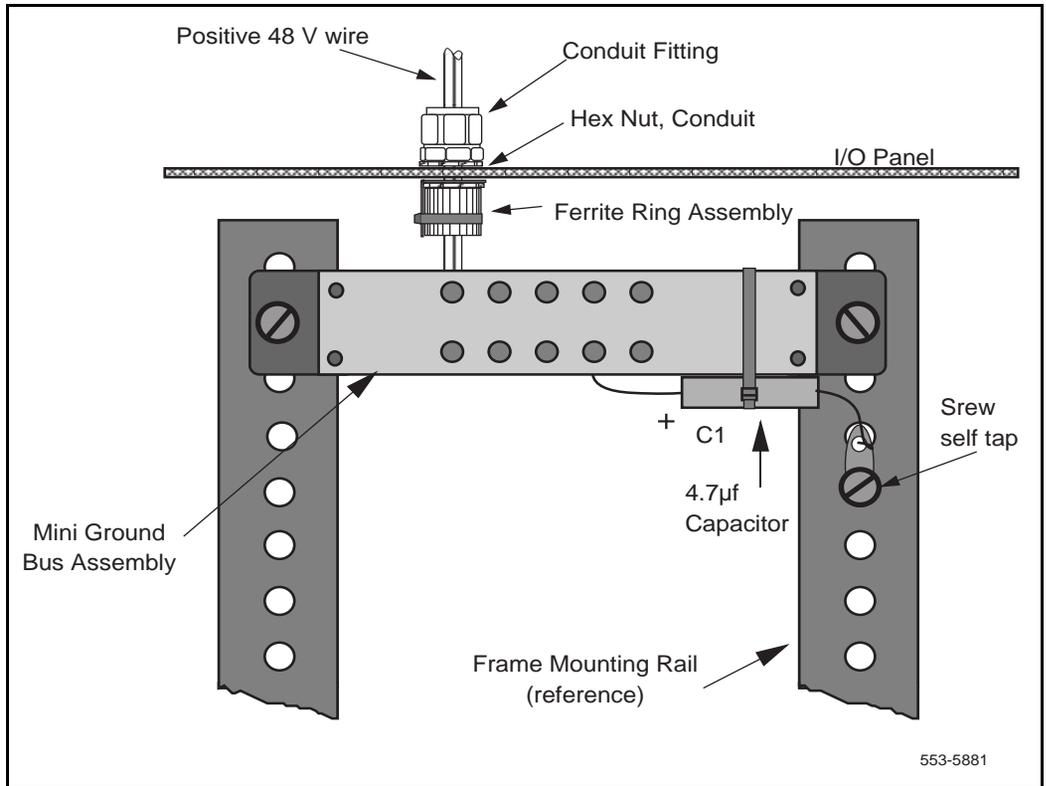
To install those systems that are affected, Nortel Networks has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

*Note:* For those systems that are already in service, it is necessary to have available approximately 25 feet of #6 AWG wire to jumper the system ground during the installation procedure. This wire is not provided in the installation package and must be purchased before modifying the ground.

To install Ground Package P0677587:

- 1 Disconnect the small jumper between the isolated mini ground bus bar and the frame. See Figure 169.
- 2 To jumper the system ground, connect one end of the # 6 AWG wire to the isolated mini ground bus bar and connect the other end of the wire to the ground window, positive bus bar of the QBL-15, or to I.G. of the AC panel depending on the system.

**Figure 169**  
**Installing Ground Package P0677587**



- 3 Disconnect the +48V return wire from the isolated mini ground bus bar. See Figure 169. Install the supplied ferrite ring assembly (P0677577) as shown in Figure 169. To install the ferrite ring assembly, do the following:
  - Remove the locknut and lockwasher from the ground conduit fitting. These are located on the shelf side of the I/O panel.
  - Remove the conduit fitting from the hole in the I/O panel and attach the supplied locknut. Hand tighten until the nut rests against the base of the fitting.
  - To insert the conduit fitting into the hole in the I/O panel, reassemble the lockwasher and locknut that were previously removed. (The lockwasher may be discarded because of an insufficient number of threads for the bottom locknut.) While these are still loose, slip the two prongs of the ferrite ring assembly on either side of the conduit fitting and between the lockwasher and the I/O panel. Tighten the locknut until the ferrite assembly is securely in place.
- 4 Reinstall the +48V return wire from the isolated ferrite ring and connect it to the isolated mini ground bus bar.
- 5 Connect the 4.7  $\mu$ F 200V capacitor (A0275046) as shown in Figure 169.
- 6 Disconnect the #6 AWG wire that was previously installed in step 2.

## Installing Ground Package P0677588

The installation procedure is simple to follow and can be accomplished within one hour. For those systems already in service, call processing can continue without disruption during the installation procedure. It is recommended that this procedure be accomplished before the cutover of the upgraded system.

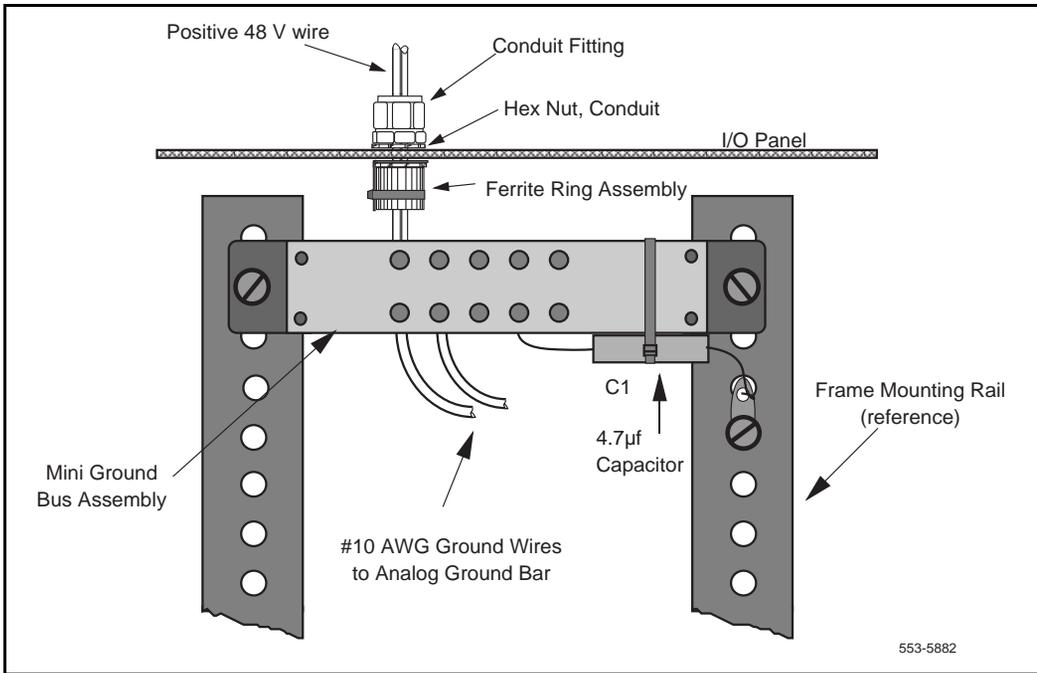
In order to install those systems that are affected, Nortel Networks has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

**Note:** For those systems that are already in service, it is necessary to have available approximately 25 feet of #6 AWG wire to jumper the system ground during the installation procedure. This wire is not provided in the installation package and must be purchased before modifying the ground.

To install Ground Package P0677588:

- 1 Locate the supplied ground lugs and a 1/4-20 hex nut. Place the ground lug over one of the 1/4-20 threaded studs on the analog ground bar and secure it using the 1/4-20 hex nut.
- 2 Insert one end of the #6 AWG wire, which is not supplied, into the ground lug and tighten securely. Connect the other end of the wire to the ground window, the positive bus bar in the power distribution box, or the I.G. of the AC panel depending on the system.
- 3 Disconnect the existing +48 volt return wire from the frame.
- 4 Locate the two wires between the analog bus bar and the frame ground near the top of the cabinet. Disconnect the two wires at the frame ground end and remove the ground lugs.
- 5 Install the supplied ferrite ring assembly as shown in Figure 170. To install the ferrite ring assembly do the following:
  - Remove the locknut and lockwasher from the ground conduit fitting. These are located on the shelf side of the I/O panel.
  - Remove the conduit fitting from the hole in the I/O panel and attach the supplied locknut. Hand tighten until the nut rests against the base of the fitting.
  - To insert the conduit fitting into the hole in the I/O panel, reassemble the lockwasher and locknut that were previously removed. (The lockwasher may be discarded because of an insufficient number of threads for the bottom locknut.) While these are still loose, slip the two prongs of the ferrite ring assembly on either side of the conduit fitting and between the lockwasher and the I/O panel. Tighten the locknut until the ferrite assembly is securely in place.
- 6 Install the supplied mini-bus bar assembly using the two supplied .214-24 X .75 screws as shown in Figure 170. Attach the ground lug from the capacitor to the mounting rail, as shown, using the third screw.

**Figure 170**  
**Installing Ground Package P0677588**



- 7 Shorten the two wires that were removed in step 3 (as required) and reconnect the ground ends to the lower side of the mini bus bar.
- 8 Install the +48 volt return wire through the ferrite ring and connect it to the upper side of the mini bus bar as shown in Figure 170.
- 9 This completes the ground modification. Remove the bypass ground wire, the ground lug, and the 1/4-20 hex nut from the analog ground bar that was previously installed.

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# Network hybrid installation

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## Content list

The following are the topics in this section:

- [Removing the BTUs 896](#)
- [Installing the Network Hybrids 898](#)
- [Using the Extraction Tool 901](#)

This procedure includes instructions on how to remove two QPC477 BTUs from a QSD39 Network shelf and install four network hybrids (NT4D19AA, NT4D20AA, NT4D22AA, and NT4D23AA). Typically this procedure is done in conjunction with other procedures, such as system upgrades.

### **CAUTION**

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

Network hybrids must be installed in all QSD39 network shelves in which clock controller cards are to be installed. Most systems contain one QSD39 network shelf (left side) and one QSD40 network shelf (right side) and will require the installation of network hybrids in the QSD39 network shelf 0, group 0 only. However, a few systems contain two QSD39 network shelves (right and left sides), and will require the installation of network hybrids in both network shelf 0, group 0 and network shelf 1, group 0.

Installing the network hybrids consists of

- powering down the QSD39 Network shelf

- removing the power supply and required network cards
- removing two QPC477 BTUs from the shelf
- installing four network hybrids into the shelf
- installing the power supply and network cards
- powering up the QSD39 Network shelf

During this procedure you may need the following tools:

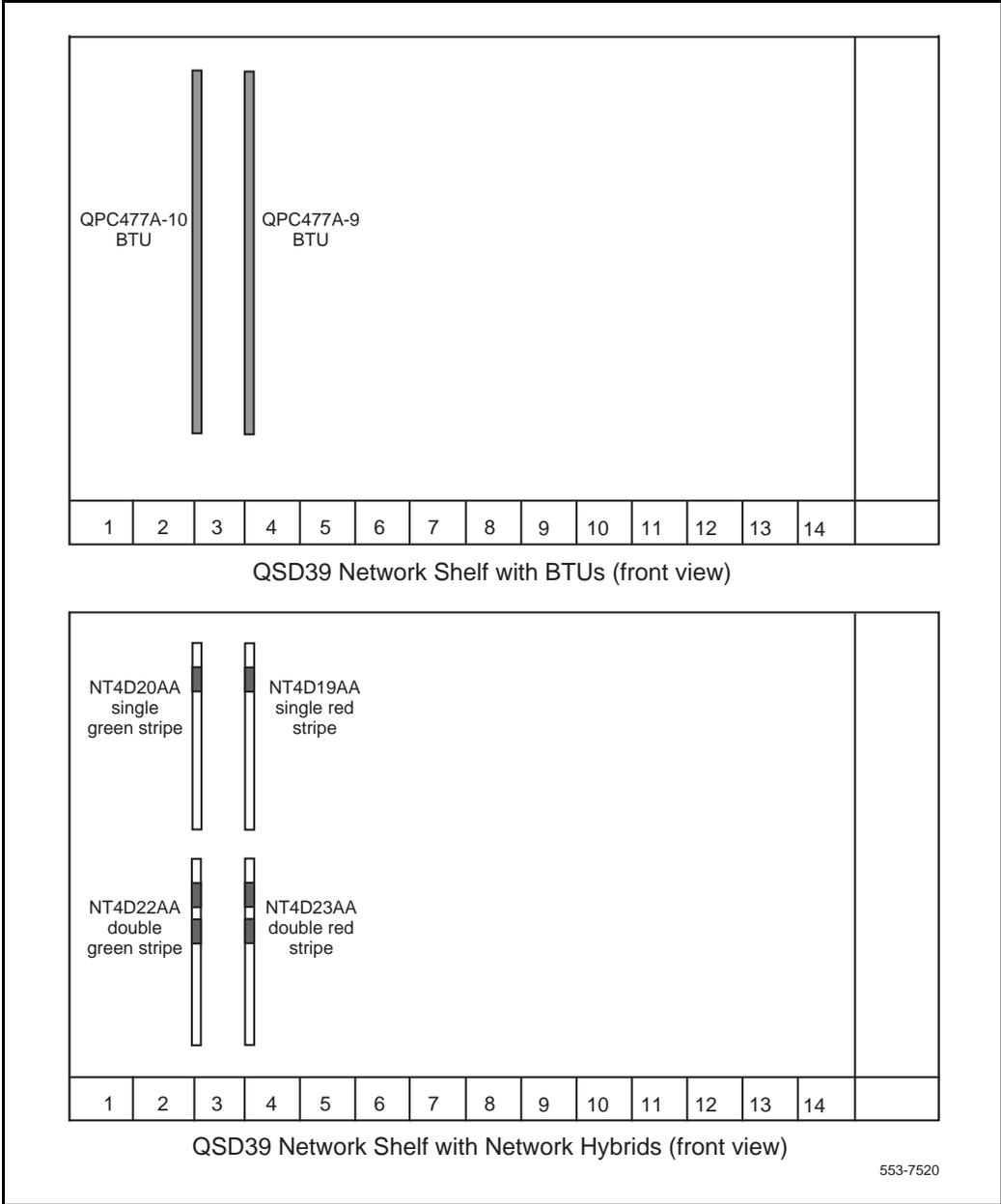
- extraction tool (provided in the installation kit)
- flashlight

## Removing the BTUs

To remove the QPC477 BTUs from the QSD39 Network shelf:

- 1 Log into the system.
- 2 In Group 0, software disable the cards in slots 2, 3, and 4.
- 3 In Group 0, software disable the extender cards.
- 4 Shut down power to the network shelf by switching the circuit breaker to OFF.
- 5 Set the ENB/DIS faceplate switch to DIS on the network cards in slots 2, 3 and 4. Tag and disconnect all cables.
- 6 Remove the power supply in slot 1, and the network cards in slots 2, 3, and 4.
- 7 Gently remove each BTU from the shelf (see Figure 171).

**Figure 171**  
**BTU and Network Hybrid Locations**



## Installing the Network Hybrids

Follow the procedure below to install the network hybrids on the QSD39 Network shelf. Use extreme caution to avoid bending or breaking backplane pins.

**Note:** During the network hybrid installation, refer to Figure 171 for hybrid locations.

- 1 Locate the NT4D20AA Network Hybrid.
- 2 Orient the network hybrid so that the single green stripe is on top and the hybrid connector faces the backplane.
- 3 Align the network hybrid with the top connector in the network shelf between slots 2 and 3. The lower edge of the hybrid should be closest to the metal screw in the middle of the backplane.

### CAUTION

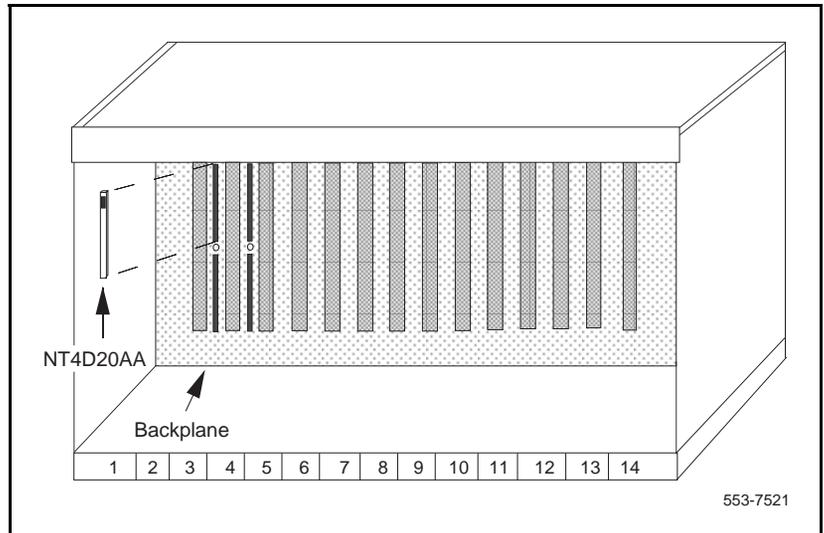
Do not force the network hybrids into the QSD39 Network backplane connectors. Any damage caused to the connector pins will require replacement of the QSD39 Network shelf.

- 4 Carefully insert the network hybrid into the backplane connector (see Figure 172).
- 5 Inspect the network hybrid and ensure that there are no empty pins below or above the hybrid. When the hybrid is inserted correctly, continue with step 6.

**Note:** If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page 901 for instructions on removing the hybrid. Do not use a tool other than the extraction tool included in the installation kit to remove the hybrid. Any damage caused to the backplane connector pins will require replacement of the QSD39 shelf.

- 6 Locate the NT4D19AA Network Hybrid.
- 7 Orient the network hybrid so that the single red stripe is on top and the hybrid connector faces the backplane.

**Figure 172**  
**Installing the Network Hybrids**



- 8 Align the network hybrid with the top connector between slots 3 and 4. The lower edge of the hybrid should be closest to the metal screw in the middle of the backplane.
- 9 Gently insert the network hybrid into the backplane connector.
- 10 Inspect the network hybrid and ensure that there are no empty pins below or above the hybrid. When the hybrid is inserted correctly, continue with step 11.

**Note:** If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page page 901 for instructions on removing the hybrid.

- 11 Locate the NT4D22AA Network Hybrid.
- 12 Orient the network hybrid so that the double green stripe is on top and the hybrid connector faces the backplane.
- 13 Align the network hybrid with the bottom connector between slots 2 and 3. The top edge of the hybrid should be closest to the metal screw in the middle of the backplane.

- 14 Carefully insert the network hybrid into the backplane connector.
- 15 Inspect the hybrid and ensure that there are no empty pins below or above the hybrid. When the hybrid is inserted correctly, continue with step 16.  
*Note:* If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page page 901 for instructions on removing the hybrid.
- 16 Locate the NT4D23AA Network Hybrid.
- 17 Orient the hybrid so that the double red stripe is on top and the hybrid connector faces the backplane.
- 18 Align the hybrid with the bottom connector between slots 3 and 4 (see Figure 2). The top edge of the hybrid should be closes to the metal screw in the middle of the backplane.
- 19 Carefully insert the network hybrid into the backplane connector.
- 20 Inspect the hybrid and ensure that there are no empty pins below or above the hybrid.  
*Note:* If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page page 901 for instructions on removing the hybrid.

When the four network hybrids are installed, use the following instructions to complete the installation.

- 1 Reinstall the power supply in slot 1 and the network cards in slots 2, 3, and 4.
- 2 Reconnect all card cables.
- 3 Set the ENB/DIS faceplate switch on all disabled cards to ENB.
- 4 Turn on power to the shelf by switching the circuit breaker for the network shelf to ON.
- 5 As necessary, software enable the cards in the Network shelf.

The network hybrid installation is complete.

## Using the Extraction Tool

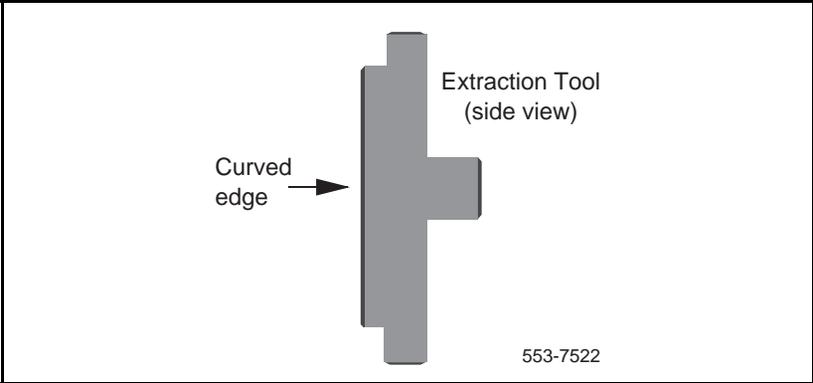
**CAUTION**

You must use the extraction tool provided in the installation kit to remove the network hybrids from the backplane to avoid bending or breaking backplane pins. Do not improvise with common hand tools.

The following procedure describes how to remove a network hybrid from the QSD39 backplane. If a network hybrid is inserted incorrectly, it must be removed using this tool.

- 1** Hold the extraction tool so that the long flat edge faces the network backplane and the curved edge faces inward toward the network hybrid (see Figure 173).
- 2** Align the extraction tool to the left of the hybrid and gently position the curved edge between the hybrid and backplane connector.
- 3** Gradually apply pressure to the extraction tool toward the backplane while gently pulling the network hybrid away from the backplane. A gentle side-to-side rocking motion may be used on the network hybrid if needed.
- 4** Stop applying pressure as soon as the network hybrid comes loose from the backplane.
- 5** Slowly remove the extraction tool and the network hybrid.
- 6** Reinstall the network hybrid.

**Figure 173**  
**Extraction Tool**



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# Core Module upgrades using NTND33BB/BC/BD cable kits

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## Content list

The following are the topics in this section:

- [Reference list 903](#)
- [Installing NTND33Bx cable kits 904](#)
- [Labelling cables 906](#)
- [Assembling and mounting connector housings 915](#)
- [Preparing the Core Module columns 920](#)
- [Connecting intercabinet cables 926](#)

## Reference list

The following are the references in this section:

- *System Installation Procedures* (553-3001-210)

The Core Module upgrade currently ships with NTND33Cx cable kits. If you have NTND33Bx cable kits, you are instructed in the Option 81C upgrade procedures to refer to certain procedures in this appendix. After completing the appropriate procedures, you are instructed to return to the Option 81C upgrade procedure and resume with the next step.

## Installing NTND33Bx cable kits

The NTND33Cx upgrade cable kits supersede the NTND33Bx cable kits. There are three cable kits in the NTND33Bx series:

- NTND33BB Cable Kit (Group 0) is the only kit needed for single group systems.
- NTND33BC Cable Kit (Groups 1–2) is used with the NTND33BB kit for two and three group systems.
- NTND33BD Cable Kit (Groups 3–4) is used with the NTND33BB and NTND33BC kits for four and five group systems.

The equipment in the cable kits provides the intercabinet cabling between the Core Modules and the existing common equipment cabinet. The intercabinet cabling provides clock controller to junctor connections, CNI to 3PE connections, and PRI to clock controller reference connections (when present).

A P0738866 Label Kit is provided in the upgrade package. The packet contains a pair of preprinted labels for each cable in the three kits.

**Note:** There are also labels that do not apply to this upgrade. You will not use all of the labels that are provided.

During preparation for the upgrade, there are detailed instructions for labeling the cables as you separate them by kit and by function. (For example, as you label them, keep cables in the NTND33BB kit separate from cables in the NTND33BC kit, and the cables for Core 0 separate from the intercabinet cables.) Using the P0738866 Label Kit, label and install cables for only the groups equipped.

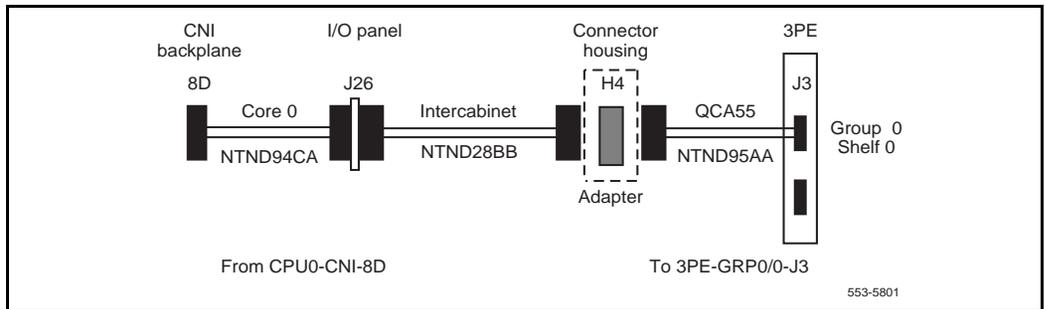
The cable labels indicate the from-to terminations for the cabling path, not the connections for the individual cable. For example, the three following cables will each be labeled CPU0-CNI-8D to 3PE-GRP0/0-J3 (see the example in Figure 174):

- 1 An NTND94CA cable (from CPU0-CNI-8D) in Core 0 connects to the following:
  - a a CNI port at backplane position 8D
  - b the inside of the I/O panel at connector J26

- 2 An NTND28BB cable connects to the following:
  - a the outside of the I/O panel at connector J26
  - b position H4 on the outside of the connector housing at the QCA55 cabinet.
  
- 3 An NTND95AA cable (to 3PE-GRP0/0-J3) connects to the following:
  - a position H4 on the inside of the connector housing
  - b faceplate connector J3 on the 3PE card for network group 0, shelf 0

**Note:** Return to the Option 81C upgrade procedures and resume with the next step.

**Figure 174**  
**Cabling path for cables labeled CPU0-CNI-8D to 3PE-GRP0/0-J3**



## Labelling cables

- 1 For Group 0, label cables from the NTND33BB kit (see Figure 175 for end-to-end cable paths):
  - a Separate the Core 0, Core 1, intercabinet, and QCA55 cabinet cables (see Table 127).
  - b Label each cable as listed in Table 127. The labels should be identical on both ends of each cable.

**Table 127**  
**NTND33BB Group 0 cable labels (Part 1 of 2)**

Core 0 cables	Label both ends
NT1R04AA	CPU0-CC-J3 to JCTR-J11
NT8D79AD	CPU0-CC-J2 to PRIM PRI-J1
NT8D79AD	CPU0-CC-J1 to SEC PRI-J1
NTND94CA	CPU0-CNI-8D to 3PE-GRP0/0-J3
NTND94CA	CPU0-CNI-8F to 3PE-GRP0/0-J4
Core 1 cables	Label both ends
NT1R04AA	CPU1-CC-J3 to JCTR-J12
NT8D79AD	CPU1-CC-J2 to PRIM PRI-J2
NT8D79AD	CPU1-CC-J1 to SEC PRI-J2
NTND94CA	CPU1-CNI-8D to 3PE-GRP0/1-J3
NTND94CA	CPU1-CNI-8F to 3PE-GRP0/1-J4

**Table 127**  
**NTND33BB Group 0 cable labels (Part 2 of 2)**

<b>Intercabinet cables</b>	<b>Label both ends</b>
NTND28BB	CPU0-CC-J3 to JCTR-J11
NTND28BB	CPU1-CC-J3 to JCTR-J12
NTND28BB	CPU0-CNI-8D to 3PE-GRP0/0-J3
NTND28BB	CPU0-CNI-8F to 3PE-GRP0/0-J4
NTND28BB	CPU1-CNI-8D to 3PE-GRP0/1-J3
NTND28BB	CPU1-CNI-8F to 3PE-GRP0/1-J4
NT1R05AA	CPU0-CC-J2 to PRIM PRI-J1
NT1R05AA	CPU0-CC-J1 to SEC PRI-J1
NT1R05AA	CPU1-CC-J2 to PRIM PRI-J2
NT1R05AA	CPU1-CC-J1 to SEC PRI-J2
<b>QCA55 cabinet cables</b>	<b>Label both ends</b>
NT1R04AA	CPU0-CC-J3 to JCTR-J11
NT1R04AA	CPU1-CC-J3 to JCTR-J12
NTND95AA	CPU0-CNI-8D to 3PE-GRP0/0-J3
NTND95AA	CPU0-CNI-8F to 3PE-GRP0/0-J4
NTND95AA	CPU1-CNI-8D to 3PE-GRP0/1-J3
NTND95AA	CPU1-CNI-8F to 3PE-GRP0/1-J4
NT8D79AE	CPU0-CC-J2 to PRIM PRI-J1
NT8D79AE	CPU0-CC-J1 to SEC PRI-J1
NT8D79AE	CPU1-CC-J2 to PRIM PRI-J2
NT8D79AE	CPU1-CC-J1 to SEC PRI-J2



- 2 For Group 1 and Group 2 (as equipped), label cables from the NTND33BC kit (see Figure 176 for end to end cable paths):
  - a Separate the Core 0, Core 1, intercabinet, and QCA55 cabinet cables (see Table 128).
  - b Label each cable as listed in Table 128. The labels should be identical on both ends of each cable.

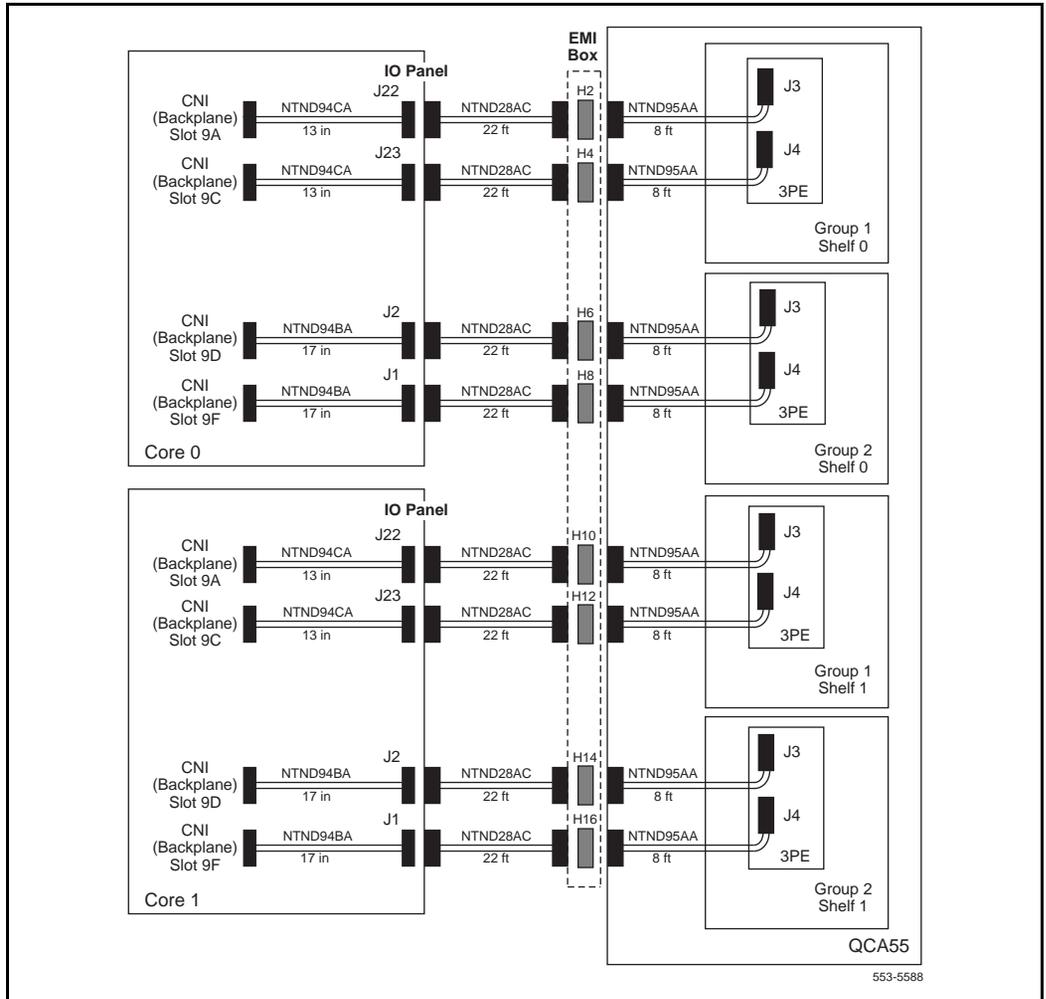
**Table 128**  
**NTND33BC Group 1 and Group 2 cable labels (Part 1 of 2)**

<b>Core 0 cables</b>	<b>Label both ends</b>
NTND94CA	CPU0-CNI-9A to 3PE-GRP1/0-J3
NTND94CA	CPU0-CNI-9C to 3PE-GRP1/0-J4
NTND94BA	CPU0-CNI-9D to 3PE-GRP2/0-J3
NTND94BA	CPU0-CNI-9F to 3PE-GRP2/0-J4
<b>Core 1 cables</b>	<b>Label both ends</b>
NTND94CA	CPU1-CNI-9A to 3PE-GRP1/1-J3
NTND94CA	CPU1-CNI-9C to 3PE-GRP1/1-J4
NTND94BA	CPU1-CNI-9D to 3PE-GRP2/1-J3
NTND94BA	CPU1-CNI-9F to 3PE-GRP2/1-J4
<b>Intercabinet cables</b>	<b>Label both ends</b>
NTND28BC	CPU0-CNI-9A to 3PE-GRP1/0-J3
NTND28BC	CPU0-CNI-9C to 3PE-GRP1/0-J4
NTND28BC	CPU0-CNI-9D to 3PE-GRP2/0-J3
NTND28BC	CPU0-CNI-9F to 3PE-GRP2/0-J4
NTND28BC	CPU1-CNI-9A to 3PE-GRP1/1-J3
NTND28BC	CPU1-CNI-9C to 3PE-GRP1/1-J4
NTND28BC	CPU1-CNI-9D to 3PE-GRP2/1-J3

**Table 128**  
**NTND33BC Group 1 and Group 2 cable labels (Part 2 of 2)**

<b>QCA55 cabinet cables</b>	<b>Label both ends</b>
NTND28BC	CPU1-CNI-9F to 3PE-GRP2/1-J4
NTND95AA	CPU0-CNI-9A to 3PE-GRP1/0-J3
NTND95AA	CPU0-CNI-9C to 3PE-GRP1/0-J4
NTND95AA	CPU0-CNI-9D to 3PE-GRP2/0-J3
NTND95AA	CPU0-CNI-9F to 3PE-GRP2/0-J4
NTND95AA	CPU1-CNI-9A to 3PE-GRP1/1-J3
NTND95AA	CPU1-CNI-9C to 3PE-GRP1/1-J4
NTND95AA	CPU1-CNI-9D to 3PE-GRP2/1-J3
NTND95AA	CPU1-CNI-9F to 3PE-GRP2/1-J4

**Figure 176**  
**NTND33BC Group 1 and Group 2 cable paths**



- 3 For Group 3 and Group 4 (as equipped), label cables from the NTND33BD kit (see Figure 177 for end-to-end cable paths):
  - a Separate the Core 0, Core 1, intercabinet, and QCA108 cabinet cables (see Table 129).
  - b Label each cable as listed in Table 129. The labels should be identical on both ends of each cable.

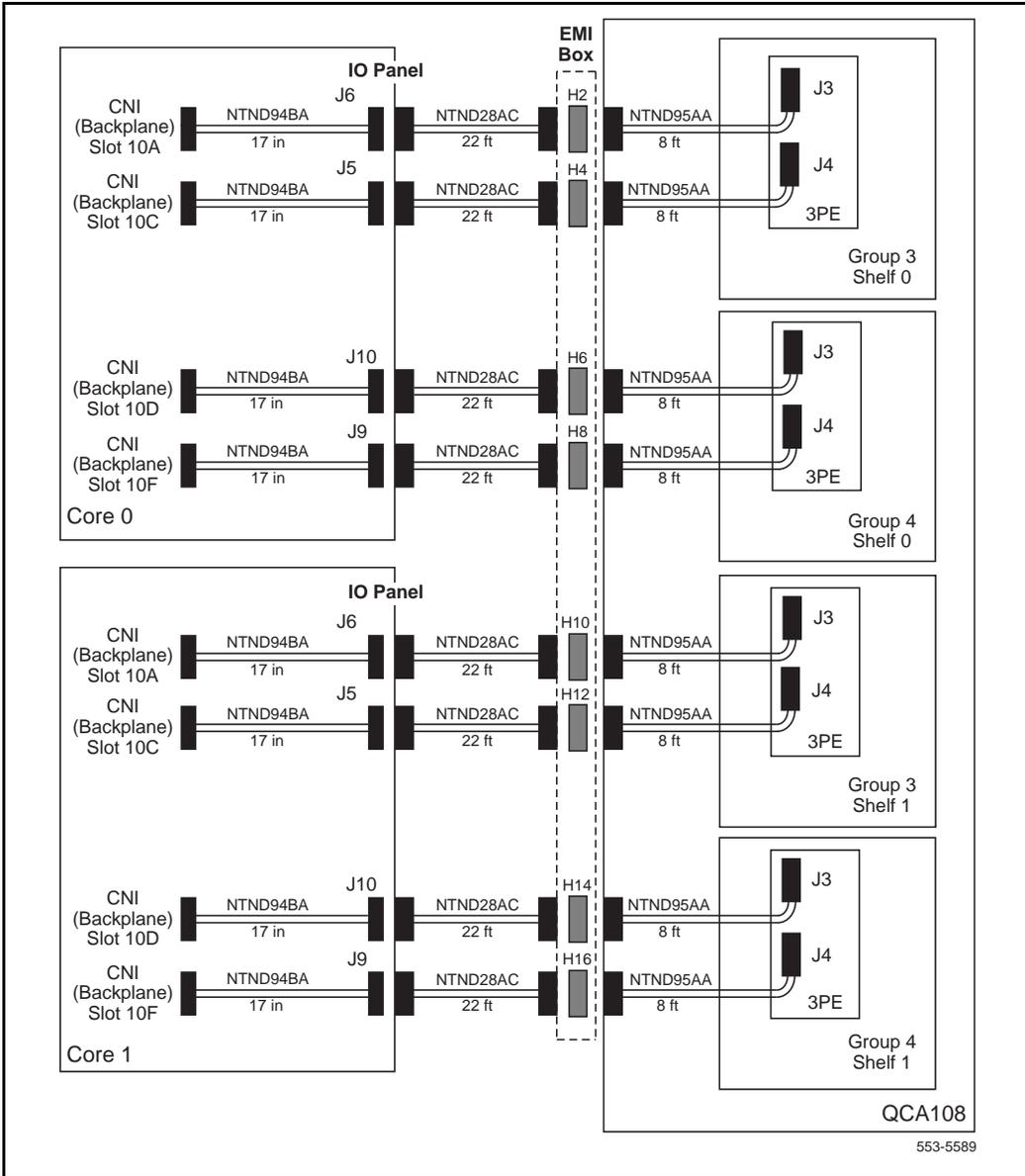
**Table 129**  
**NTND33BD Group 3 and Group 4 cable labels (Part 1 of 2)**

<b>Core 0 cables</b>	<b>Label both ends</b>
NTND94BA	CPU0-CNI-10A to 3PE-GRP3/0-J3
NTND94BA	CPU0-CNI-10C to 3PE-GRP3/0-J4
NTND94BA	CPU0-CNI-10D to 3PE-GRP4/0-J3
NTND94BA	CPU0-CNI-10F to 3PE-GRP4/0-J4
<b>Core 1 cables</b>	<b>Label both ends</b>
NTND94BA	CPU1-CNI-10A to 3PE-GRP3/1-J3
NTND94BA	CPU1-CNI-10C to 3PE-GRP3/1-J4
NTND94BA	CPU1-CNI-10D to 3PE-GRP4/1-J3
NTND94BA	CPU1-CNI-10F to 3PE-GRP4/1-J4
<b>Intercabinet cables</b>	<b>Label both ends</b>
NTND28BC	CPU0-CNI-10A to 3PE-GRP3/0-J3
NTND28BC	CPU0-CNI-10C to 3PE-GRP3/0-J4
NTND28BC	CPU0-CNI-10D to 3PE-GRP4/0-J3
NTND28BC	CPU0-CNI-10F to 3PE-GRP4/0-J4
NTND28BC	CPU1-CNI-10A to 3PE-GRP3/1-J3
NTND28BC	CPU1-CNI-10C to 3PE-GRP3/1-J4
NTND28BC	CPU1-CNI-10D to 3PE-GRP4/1-J3
NTND28BC	CPU1-CNI-10F to 3PE-GRP4/1-J4

**Table 129**  
**NTND33BD Group 3 and Group 4 cable labels (Part 2 of 2)**

<b>QCA108 cabinet cables</b>	<b>Label both ends</b>
NTND95AA	CPU0-CNI-10A to 3PE-GRP3/0-J3
NTND95AA	CPU0-CNI-10C to 3PE-GRP3/0-J4
NTND95AA	CPU0-CNI-10D to 3PE-GRP4/0-J3
NTND95AA	CPU0-CNI-10F to 3PE-GRP4/0-J4
NTND95AA	CPU1-CNI-10A to 3PE-GRP3/1-J3
NTND95AA	CPU1-CNI-10C to 3PE-GRP3/1-J4
NTND95AA	CPU1-CNI-10D to 3PE-GRP4/1-J3
NTND95AA	CPU1-CNI-10F to 3PE-GRP4/1-J4

**Figure 177**  
**NTND33BD Group 3 and Group 4 cable paths**



## Assembling and mounting connector housings

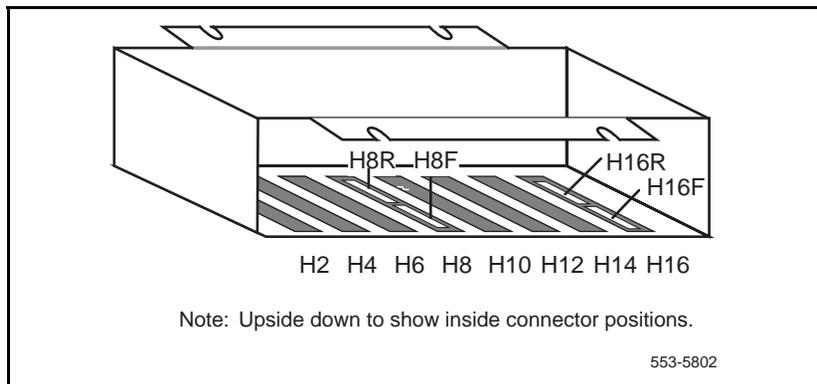
- 1** For Group 0, assemble and mount the connector housing from the NTND33BB kit. Connect the cables listed in Table 130 to the inside of the connector housing (see Figure 178):
  - a** Attach the NT1R04AA and NTND95AA cables to the filter adapters on the housing. Secure the cables with the bail locks.
  - b** Attach the NT8D79AE cables to the filter adapters on the housing. With A0314862 screw lock kits and captive screws, secure the cables to the filter adapters on the housing.
  - c** Locate an available and accessible cover plate on top of the QCA55 cabinet closest to the junctor board.
  - d** Remove the connector housing cover and four screws. Keep the screws for reuse.
  - e** Orient the connector housing so the strain relief bracket is toward the center of the cabinet. Route the cables through the access on the top of the QCA55 cabinet, and mount the connector housing using the four retained screws.

**Table 130**  
**Group 0 cables to the inside of the connector housing**

Cable	Cable label	Position in housing
NT1R04AA	CPU0-CC-J3 to JCTR-J11	H2
NTND95AA	CPU0-CNI-8D to 3PE-GRP0/0-J3	H4
NTND95AA	CPU0-CNI-8F to 3PE-GRP0/0-J4	H6
NT1R04AA	CPU1-CC-J3 to JCTR-J12	H10
NTND95AA	CPU1-CNI-8D to 3PE-GRP0/1-J3	H12
NTND95AA	CPU1-CNI-8F to 3PE-GRP0/1-J4	H14
NT8D79AE	CPU0-CC-J1 to SEC PRI-J1	H8R
NT8D79AE	CPU0-CC-J2 to PRIM PRI-J1	H8F
NT8D79AE	CPU1-CC-J1 to SEC PRI-J2	H16R
NT8D79AE	CPU1-CC-J2 to PRIM PRI-J2	H16F

**Note:** The 8F and 16F locations are closest to the front of the connector housing, and the 8R and 16R locations are the locations in the center of the housing.

**Figure 178**  
**Group 0 connector housing positions—inside of housing**

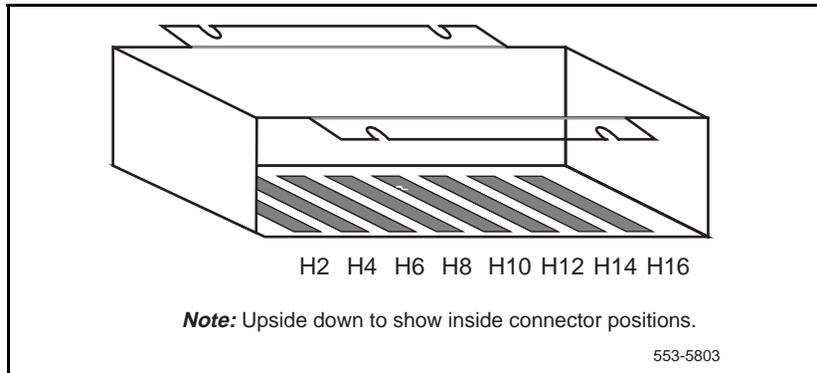


- 2 For Group 1 and Group 2 (as equipped), assemble and mount the connector housing from the NTND33BC kit. Connect the cables listed in Table 131 to the inside of the connector housing and secure the cables with the bail locks (see Figure 179):
  - a Locate an available and accessible cover plate on top of the QCA55 cabinet.
  - b Remove the connector housing cover and four screws. Keep the screws for reuse.
  - c Orient the connector housing so the strain relief bracket is toward the center of the cabinet. Route the cables through the access on the top of the QCA55 cabinet and mount the connector housing using the four retained screws.

**Table 131**  
**Group 1 and Group 2 cables to the inside of the connector housing**

Cable	Cable label	Position in housing
NTND95AA	CPU0-CNI-9A to 3PE-GRP1/0-J3	H2
NTND95AA	CPU0-CNI-9C to 3PE-GRP1/0-J4	H4
NTND95AA	CPU0-CNI-9D to 3PE-GRP2/0-J3	H6
NTND95AA	CPU0-CNI-9F to 3PE-GRP2/0-J4	H8
NTND95AA	CPU1-CNI-9A to 3PE-GRP1/1-J3	H10
NTND95AA	CPU1-CNI-9C to 3PE-GRP1/1-J4	H12
NTND95AA	CPU1-CNI-9D to 3PE-GRP2/1-J3	H14
NTND95AA	CPU1-CNI-9F to 3PE-GRP2/1-J4	H16

**Figure 179**  
**Group 1 and Group 2 (or Group 3 and Group 4) connector housing positions—inside of housing**



- 3 For Group 3 and Group 4 (as equipped), assemble and mount the connector housing from the NTND33BD kit. Connect the cables listed in Table 132 to the inside of the connector housing and secure the cables with the bail locks (refer to Figure 179):
  - a Locate an available and accessible cover plate on top of the QCA108 cabinet.
  - b Remove the connector housing cover and four screws. Keep the screws for reuse.
  - c Orient the connector housing so the strain relief bracket is toward the center of the cabinet. Route the cables through the access on the top of the QCA108 cabinet and mount the connector housing using the four retained screws.

**Table 132**  
**Group 3 and Group 4 cables to the inside of the connector housing**

<b>Cable</b>	<b>Cable label</b>	<b>Position in housing</b>
NTND95AA	CPU0-CNI-10A to 3PE-GRP3/0-J3	H2
NTND95AA	CPU0-CNI-10C to 3PE-GRP3/0-J4	H4
NTND95AA	CPU0-CNI-10D to 3PE-GRP4/0-J3	H6
NTND95AA	CPU0-CNI-10F to 3PE-GRP4/0-J4	H8
NTND95AA	CPU1-CNI-10A to 3PE-GRP3/1-J3	H10
NTND95AA	CPU1-CNI-10C to 3PE-GRP3/1-J4	H12
NTND95AA	CPU1-CNI-10D to 3PE-GRP4/1-J3	H14
NTND95AA	CPU1-CNI-10F to 3PE-GRP4/1-J4	H16

## Preparing the Core Module columns

- 1 Install the Core Module columns. Use the following procedures (as required for the system configuration) in *System Installation Procedures* (553-3001-210).

**Note 1:** Instructions for connecting the XN/XT cabinets to the system monitor are provided in this document.

**Note 2:** Leave an SDI port and system terminal configured on a network shelf in the XN/XT.

**Note 3:** Instructions for cabling the Core Modules are provided in this document. Network loops should already be cabled in the XN/XT cabinets.

**Note 4:** Power-up procedures will be done after the Core Module cables are installed.

- a Prepare equipment for installation.
- b Place a fourth module on a column (if required).
- c Position and level equipment.
- d Install overhead cable tray kits (if required).
- e Install the module power supply in each module.
- f Make sure the system is disconnected from any power source:
  - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
  - Insert the power supply and hook the locking devices.
- g Install a CMDU in each Core Module.
- h Install AC or DC power equipment.
- i Make changes at the MDF to accommodate equipment in the new columns and system monitor connections.
- j Install PFTUs (if required).
- k Configure the system monitor. Use the tables in *System Installation Procedures* (553-3001-210) with the following exceptions:

- For the master, set SW1 positions 1, 2, and 8 to ON.
- For slaves, set SW1 positions 1 and 8 to ON.

Connect system monitor cables with the following exception in Core 0:

- Attach a P0369107 Filter Adapter to the inside of slot J11 on the right I/O panel.
- Connect the narrow ribbon on the NT8D46AD cable from connector J2 to slot J11 on the right I/O panel.

**l** Connect a terminal for the CPIO ports.

**m** If IPE cards are added in the columns, cable the lines and trunks.

**2** On the faceplates of the 3PE cards in the Core Modules do the following:

**a** Connect an NT8D80AZ cable from J4 in Core 0 to J4 in Core 1.

**b** Connect another NT8D80AZ cable from J3 in Core 0 to J3 in Core 1.

**3** In the rear of the Core Modules, remove the I/O panels.

**Note:** If only Group 0 and Group 1 are equipped, you do not need to remove the right I/O panel.

**a** Remove the eight screws that secure the I/O panels. Keep the screws for reuse.

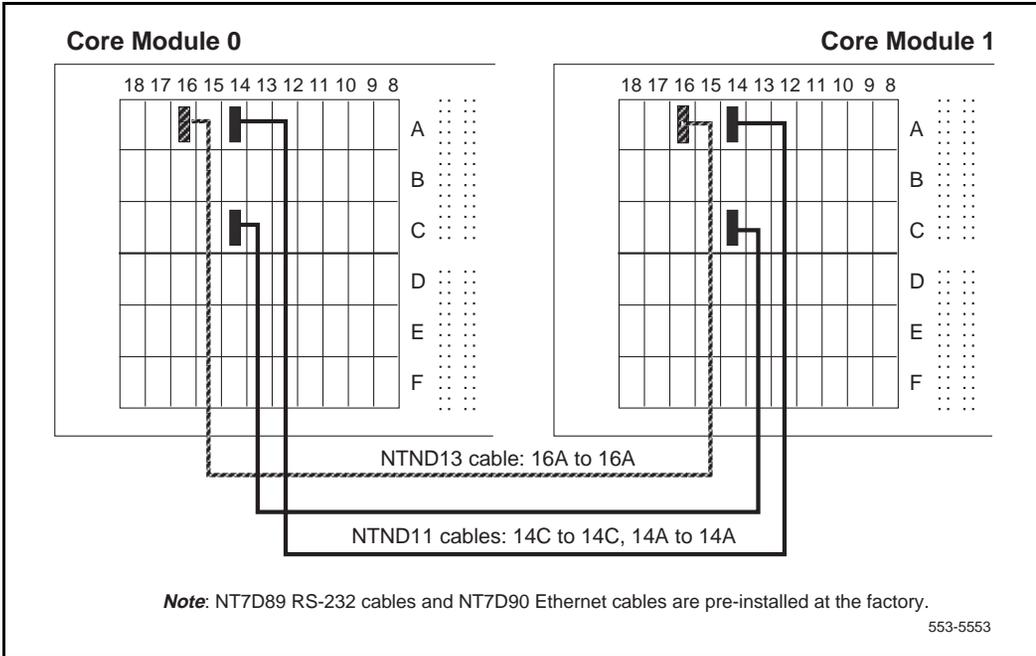
**Note:** You must use the P0741489 Extraction Tool to disconnect cables from the connectors on the rear of the backplane.

**b** Using the extraction tool, temporarily disconnect the NT7D90 Ethernet and NT7D89 RS-232 cables from backplane connector positions 16F and 14D, respectively.

**c** Remove the I/O panels but keep them on hand for immediate reuse.

**4** In the rear of the Core Modules, install the following cables between Core 0 and Core 1 (see Figure 180).

**Figure 180**  
**NT6D60 Core Module (rear)—connections for NTND13 and NTND11 cables**



**Note:** The following cables may already be connected in one of the modules. If so, leave them connected and attach the loose end.

- a Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 16A in Core 0 to backplane connector position 16A in Core 1.
- b Connect one NTND11 CP-to-CP Cable from backplane connector position 14C in Core 0 to backplane connector position 14C in Core 1.
- c Connect another NTND11 cable from backplane connector position 14A in Core 0 to backplane connector position 14A in Core 1.

- 5 For Group 0, attach adapters and cables from the NTND33BB kit to the inside of the left I/O panel for each Core Module.
  - a The inside of the I/O panel faces the backplane. The word **LEFT** faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.
  - b Mount an A0360683 50-pin adapter at slot J32, pin 1 to the top.
  - c Mount an A0369106 9-pin filter adapter at slot J29, pin 1 to the bottom, using the A0314862 screw lock kit.
  - d Mount an A0369106 9-pin filter adapter at slot J33, pin 1 to the bottom, using the A0314862 screw lock kit.
  - e Connect the NTND94CA CNI cables to the inside of the I/O panels as listed in Table 133.

**Table 133**  
**Group 0 connections on the left I/O panel: NTND94CA cables**

Core 0 cable label	Core 1 cable label	I/O slot	Backplane connector
CPU0-CNI-8F to 3PE-GRP0/0-J4	CPU1-CNI-8F to 3PE-GRP0/1-J4	J27	8F
CPU0-CNI-8D to 3PE-GRP0/0-J3	CPU1-CNI-8D to 3PE-GRP0/1-J3	J26	8D

- f Plug an NT1R04AA cable into the adapter on slot J32 and lock the cable in position:
  - In Core 0 the cable is labeled CPU0-CC-J3 to JCTR-J11.
  - In Core 1 the cable is labeled CPU1-CC-J3 to JCTR-J12.
- g Attach an A0314862 screw lock kit to the filter adapter in slot J29. Plug an NT8D79AD cable into the adapter and secure it with the screws on the cable:
  - In Core 0 the cable is labeled CPU0-CC-J1 to SEC PRI-J1.

- In Core 1 the cable is labeled CPU1-CC-J1 to SEC PRI-J2.
- h** Attach an A0314862 screw lock kit to the filter adapter in slot J33. Plug an NT8D79AD cable into the adapter and secure it with the screws on the cable:
  - In Core 0 the cable is labeled CPU0-CC-J2 to PRIM PRI-J1.
  - In Core 1 the cable is labeled CPU1-CC-J2 to PRIM PRI-J2.
- 6** For Group 1 (if equipped), connect the NTND94CA cables from the NTND33BC kit to the inside of the left I/O panel as listed in Table 134 for each Core Module.

**Table 134**  
**Group 1 connections on the left I/O panel: NTND94CA cables**

Core 0 cable label	Core 1 cable label	I/O slot	Backplane connector
CPU0-CNI-9C to 3PE-GRP1/0-J4	CPU1-CNI-9C to 3PE-GRP1/1-J4	J23	9C
CPU0-CNI-9A to 3PE-GRP1/0-J3	CPU1-CNI-9A to 3PE-GRP1/1-J3	J22	9A

- 7** Install the left I/O panels in each Core Module and route the cables:
  - a** Feed the cables from the I/O panel through the panel opening. Route the NT1R04AA and NT8D79AD cables to the left of the module. Route other cables to the right.
  - b** With the panel partly in place, reconnect the NT7D90 and NT7D89 cables to backplane connectors 16F and 14D, respectively.
 

*Note:* The Ethernet port is equipped for future use; it cannot currently be used. Attaching an external device to this port may cause service interruptions.
  - c** Install the I/O panel with the eight retained screws.
  - d** Route the following clock controller cables to the front of slot 6 (the cables will be connected to the clock controller cards later in the upgrade):
    - In both Core Modules: NT1R04AA cable

- In Core 0: NT8D79AD cable labeled CPU0-CC-J2 to PRIM PRI-J1 and NT8D79AD cable labeled CPU0-CC-J1 to SEC PRI-J1
  - In Core 1: NT8D79AD cable labeled CPU1-CC-J2 to PRIM PRI-J2 and NT8D79AD cable labeled CPU1-CC-J1 to SEC PRI-J2
- e** Connect the cables to the backplane connector positions indicated on the cable label (refer to Tables 133 and 134).
- 8** For Group 2, Group 3, and Group 4 (as equipped), attach adapters and cables from the NTND33BC and NTND33BD kits to the inside of the right I/O panel for each Core Module.

**Note:** The inside of the I/O panel faces the backplane. The word **RIGHT** faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.

- a** Permanently remove the cable restraint bracket on the inside of the I/O panel. Remove the pan-head screw and lift the bracket away from the lower edge of the J10 opening.
  - b** Attach a filter adapter at slot J11.
  - c** For all equipped groups, connect the NTND94CA cables to the I/O panel as listed in Table 135.
  - d** Feed the cables from the I/O panel through the panel opening and secure the panel with the eight mounting screws.
  - e** Connect the cables to the backplane connector positions indicated on the cable label and listed in Table 135.
- 9** To power up the Core Module columns, go to page 16-1 in *System Installation Procedures* (553-3001-210). See the notes below for exceptions to the standard power-up procedure.

**Note 1:** If the clock controller cards were moved to the CPU shelves in the XN/XT, they will be moved to the Core Modules later in the upgrade.

**Note 2:** Set all faceplate switches to ENB except on the CNI cards. Make sure the CNI cards are set to DIS.

**Note 3:** After power-up, set the Norm/Maint switch to Maint in Core 1, then in Core 0.

**Table 135**  
**Group 2, 3, and 4 connections on the right I/O panel: NTND94CA cables**

Core 0 cable labels	Core 1 cable labels	I/O slot	Backplane connector
CPU0-CNI-9F to 3PE-GRP2/0-J4	CPU1-CNI-9F to 3PE-GRP2/1-J4	J1 (group 2)	9F (group 2)
CPU0-CNI-9D to 3PE-GRP2/0-J3	CPU1-CNI-9D to 3PE-GRP2/1-J3	J2 (group 2)	9D (group 2)
CPU0-CNI-10C to 3PE-GRP3/0-J4	CPU1-CNI-10C to 3PE-GRP3/1-J4	J5 (group 3)	10C (group 3)
CPU0-CNI-10A to 3PE-GRP3/0-J3	CPU1-CNI-10A to 3PE-GRP3/1-J3	J6 (group 3)	10A (group 3)
CPU0-CNI-10F to 3PE-GRP4/0-J4	CPU1-CNI-10F to 3PE-GRP4/1-J4	J9 (group 4)	10F (group 4)
CPU0-CNI-10D to 3PE-GRP4/0-J3	CPU1-CNI-10D to 3PE-GRP4/1-J3	J10 (group 4)	10D (group 4)

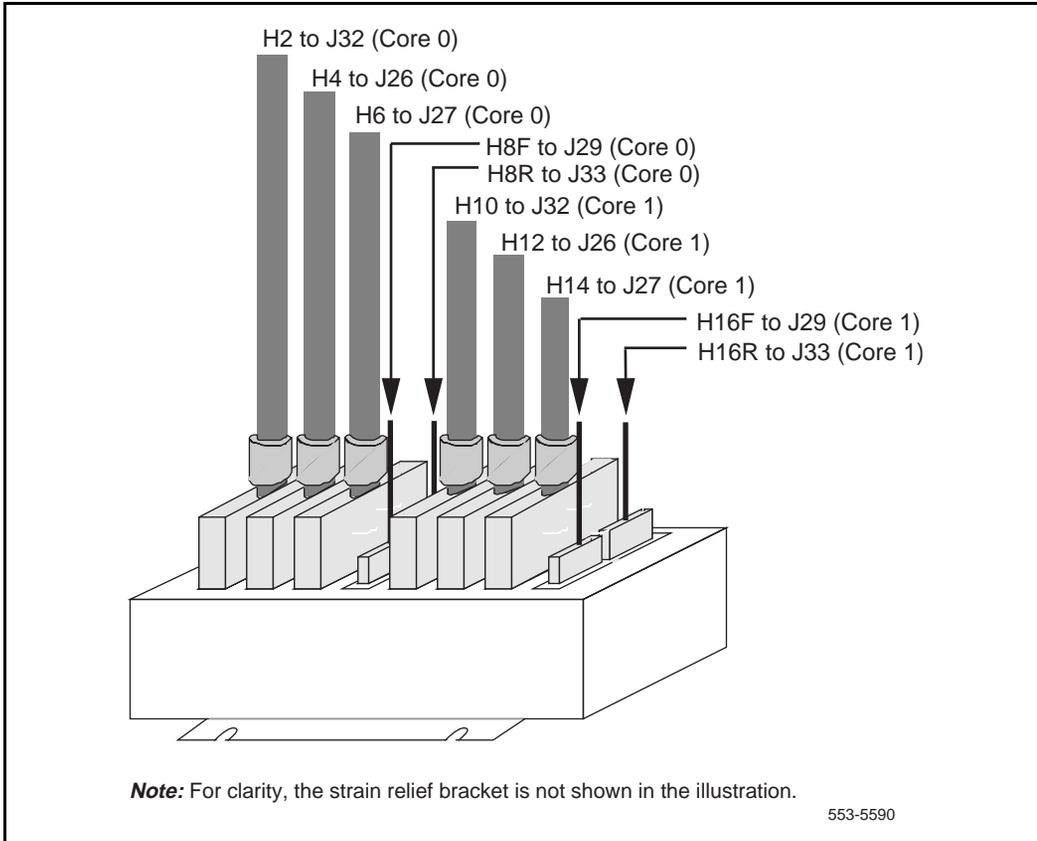
## Connecting intercabinet cables

- 1 For Group 0, connect the intercabinet cables from the NTND33BB kit:
  - a Mount and screw-lock the intercabinet cables listed in Table 136 to the Group 0 connector housing on the top of the QCA55 cabinet (see Figure 181). Using a screwdriver, you can access the rear screw locks through the access hole in the strain relief bracket.
    - With one cable tie, secure the two cables from position H8 to the strain relief bracket. With another cable tie, secure the two cables from position H16 to the bracket. With one more cable tie, secure the remaining cables to the bracket.
  - b Route the cables along the overhead cable racks to the Core Modules. Connect the cables to the outside of the left I/O panels as listed in Table 136, and secure the cables with the screw-locks.

**Table 136**  
**Group 0 intercabinet cables**

<b>Cable</b>	<b>Cable label</b>	<b>Position on housing</b>	<b>I/O panel connector</b>
NTND28BB	CPU0-CC-J3 to JCTR-J11	H2	Core 0—J32
NTND28BB	CPU0-CNI-8D to 3PE-GRP0/0-J3	H4	Core 0—J26
NTND28BB	CPU0-CNI-8F to 3PE-GRP0/0-J4	H6	Core 0—J27
NT1R05AA	CPU0-CC-J1 to SEC PRI-J1	H8	Core 0—J33
NT1R05AA	CPU0-CC-J2 to PRIM PRI-J1	H8	Core 0—J29
NTND28BB	CPU1-CC-J3 to JCTR-J12	H10	Core 1—J32
NTND28BB	CPU1-CNI-8D to 3PE-GRP0/1-J3	H12	Core 1—J26
NTND28BB	CPU1-CNI-8F to 3PE-GRP0/1-J4	H14	Core 1—J27
NT1R05AA	CPU1-CC-J1 to SEC PRI-J2	H16	Core 1—J33
NT1R05AA	CPU1-CC-J2 to PRIM PRI-J2	H16	Core 1—J29

**Figure 181**  
**Group 0 cables from the outside of the connector housing**

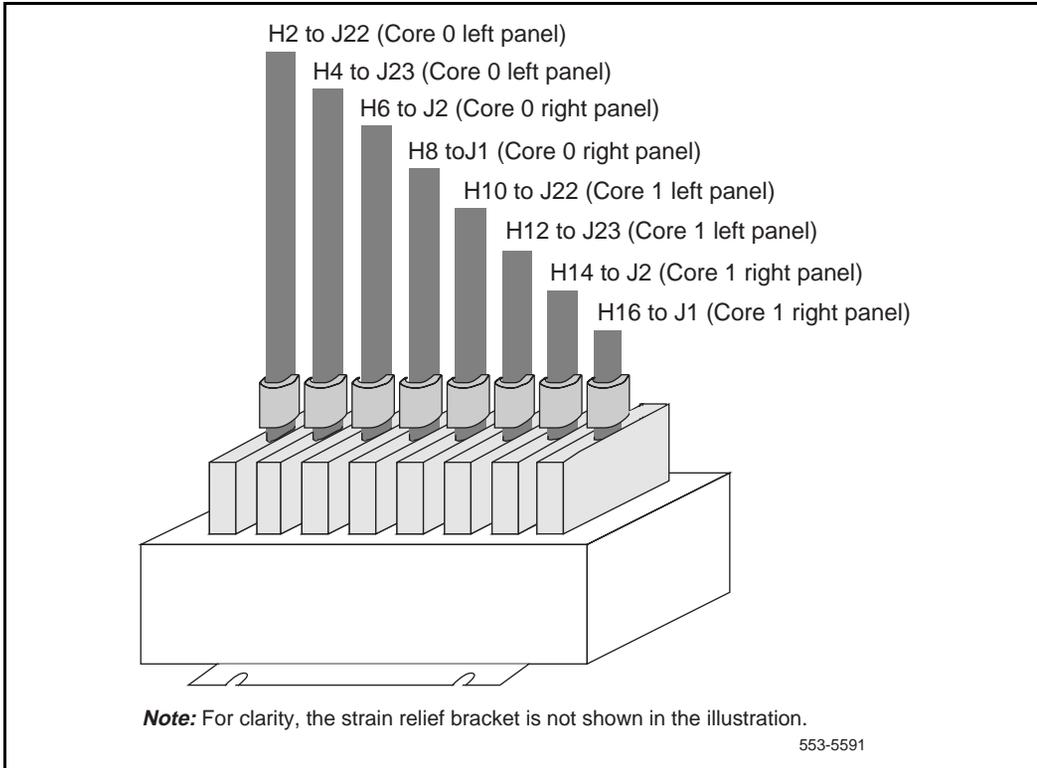


- 2 For Group 1 and Group 2 (as equipped), connect the intercabinet cables from the NTND33BC kit:
  - a Mount and screw-lock the intercabinet cables listed in Table 137 to the connector housing on the top of the QCA55 cabinet (see Figure 182).
  - b Route the cables along the overhead cable racks to the Core Modules. Connect the cables to the outside of the I/O panels, as listed in Table 137, and secure the cables with the screw-locks.

**Table 137**  
**Groups 1 and 2 intercabinet cables**

Cable	Cable label	Position on housing	I/O panel connector
NTND28BC	CPU0-CNI-9A to 3PE-GRP1/0-J3	H2	Core 0—J22 (left panel)
NTND28BC	CPU0-CNI-9C to 3PE-GRP1/0-J4	H4	Core 0—J23 (left panel)
NTND28BC	CPU0-CNI-9D to 3PE-GRP2/0-J3	H6	Core 0—J2 (right panel)
NTND28BC	CPU0-CNI-9F to 3PE-GRP2/0-J4	H8	Core 0—J1 (right panel)
NTND28BC	CPU1-CNI-9A to 3PE-GRP1/1-J3	H10	Core 1—J22 (left panel)
NTND28BC	CPU1-CNI-9C to 3PE-GRP1/1-J4	H12	Core 1—J23 (left panel)
NTND28BC	CPU1-CNI-9D to 3PE-GRP2/1-J3	H14	Core 1—J2 (right panel)
NTND28BC	CPU1-CNI-9F to 3PE-GRP2/1-J4	H16	Core 1—J1 (right panel)

**Figure 182**  
**Groups 1 and 2 cables from the outside of the connector housing**



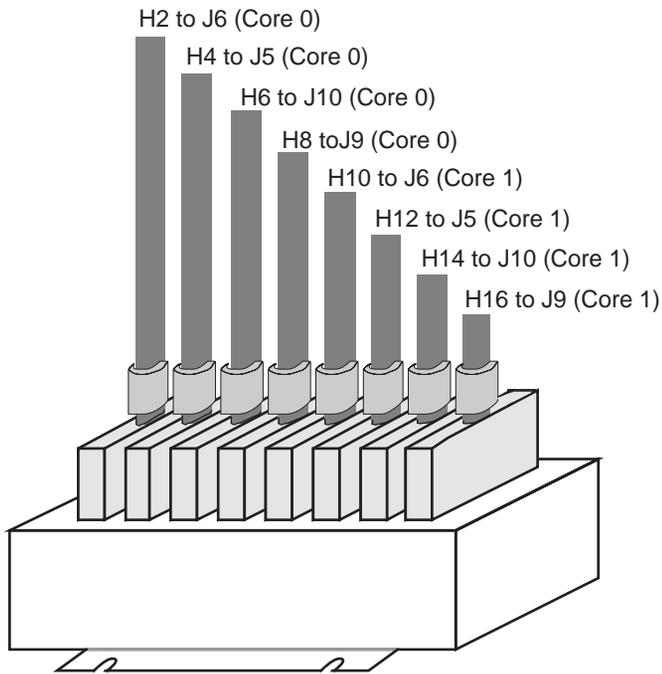
- 3 For Group 3 and Group 4 (as equipped), connect the intercabinet cables from the NTND33BD kit:
  - a Mount and screw-lock the intercabinet cables listed in Table 138 to the connector housing on the top of the QCA108 cabinet (see Figure 183).
  - b Route the cables along the overhead cable racks to the Core Modules. Connect the cables to the outside of the right I/O panels, as listed in Table 138, and secure the cables with the screw-locks.

**Table 138**  
**Group 3 and Group 4 intercabinet cables**

Cable	Cable label	Position on housing	I/O panel connector
NTND28BC	CPU0-CNI-10A to 3PE-GRP3/0-J3	H2	Core 0—J6
NTND28BC	CPU0-CNI-10C to 3PE-GRP3/0-J4	H4	Core 0—J5
NTND28BC	CPU0-CNI-10D to 3PE-GRP4/0-J3	H6	Core 0—J10
NTND28BC	CPU0-CNI-10F to 3PE-GRP4/0-J4	H8	Core 0—J9
NTND28BC	CPU1-CNI-10A to 3PE-GRP3/1-J3	H10	Core 1—J6
NTND28BC	CPU1-CNI-10C to 3PE-GRP3/1-J4	H12	Core 1—J5
NTND28BC	CPU1-CNI-10D to 3PE-GRP4/1-J3	H14	Core 1—J10
NTND28BC	CPU1-CNI-10F to 3PE-GRP4/1-J4	H16	Core 1—J9

**Note:** Return to the Option 81C upgrade procedures and resume with the next step.

**Figure 183**  
**Groups 3 and 4 cables from the outside of the connector housing**



**Note:** For clarity, the strain relief bracket is not shown in the illustration.  
All connections are to the right I/O panel.

553-5592

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# Terminal and modem connections

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## Content list

The following are the topics in this section:

- [Reference list 933](#)
- [Options 51C, 61C, 81, and 81C terminal and modem connections 941](#)
- [Configuring an A0638930 Motorola 28.8 Data/Fax Modem 949](#)
- [Configuring an A0381391 UDS FastTalk modem 951](#)
- [Connecting a modem to an SDI port 953](#)
- [Connecting a modem to a switch box and CPSI and SDI ports 954](#)

## Reference list

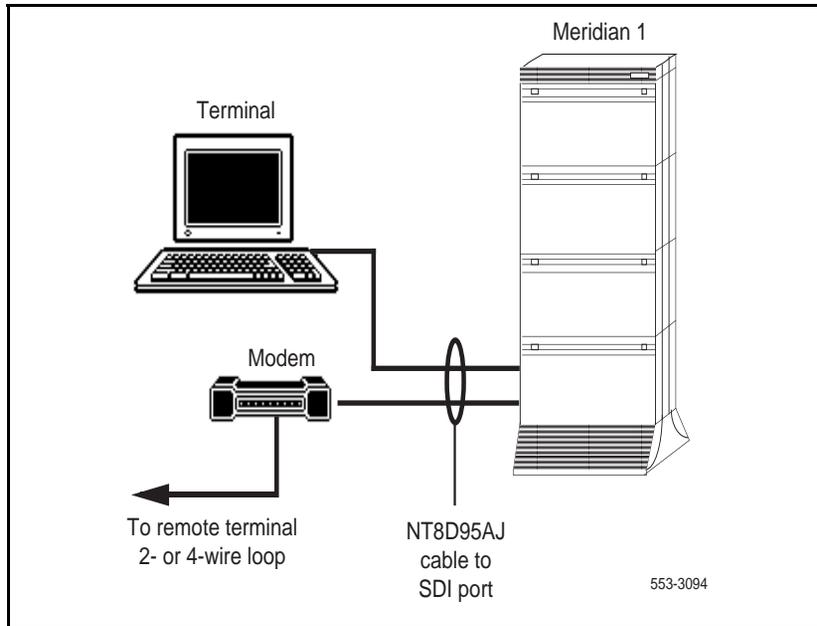
The following are the references in this section:

- *Circuit Card: Installation and Testing* (553-3001-211)

During the system upgrade, a terminal must be connected to a serial data interface (SDI) port to provide an I/O interface to the system. When the upgrade is complete, a terminal (for local access) or a modem (for remote access) must remain permanently connected to an SDI port to provide a constant I/O interface to the system (see Figure 184).

When upgrading a dual CPU system, you may want to temporarily install additional terminals for split mode monitoring, or programming, or both.

**Figure 184**  
**Terminal connection diagram**



**Note:** In Options 61 and 71, SDI cards can be temporarily installed in CPU slots during a software conversion. In Options 51C, 61C, 81, and 81C, I/O ports on the call processing (CP) cards can be used to monitor CPU operations. These configurations should not be used as the permanent I/O connection for the system because the port is only active when the associated CPU, or CPU, is active.

For a modem connection to the Meridian 1, Bell 103/212 compatible dumb modems are recommended for all systems, except Options 51C, 61C, 81, and 81C.

**CAUTION**

If a Hayes command-set compatible (smart) modem is used at the Meridian 1 end, you *must* select the dumb mode of operation, Command Recognition OFF and Command Echo OFF, before connecting the modem to the SDI port. Refer to the modem instructions to set the mode of operation.

If a printer is connected to an SDI port (locally or remotely), you must disable XON/XOFF flow control, so no characters or signals are sent to the port, to avoid a “ping-pong” effect.

**Note:** For information specific to Options 51C, 61C, 81, and 81C, see “Options 51C, 61C, 81, and 81C terminal and modem connections” on page 941.

- 1** Install and cable a system terminal or a modem:
  - a** Unpack the terminal/modem and place it in its assigned location.
  - b** Install the terminal/modem according to the manufacturer’s instructions.
  - c** Connect an NT8D95AJ cable to a matching connector on the terminal/modem.

**Note:** At a remote location, install and connect a compatible modem and terminal. Connect the NT8D95AJ cable to the modem.

- 2 Install and cable the SDI card:
  - a Set the Enb/Dis switch to Dis (down).
  - b See *Circuit Card: Installation and Testing* (553-3001-211) to set the option switches for each port.

See Figure 185 for switch locations on an NT8D41 SDI Paddle Board. (The paddle board cannot be used in Options 71, 81, and 81C.)

See Figure 186 for switch locations on an NTND02 MSPS Card. (The MSPS card is used in Option 21E only.)
  - c Insert the SDI card into its assigned slot.
  - d Cable the SDI card:

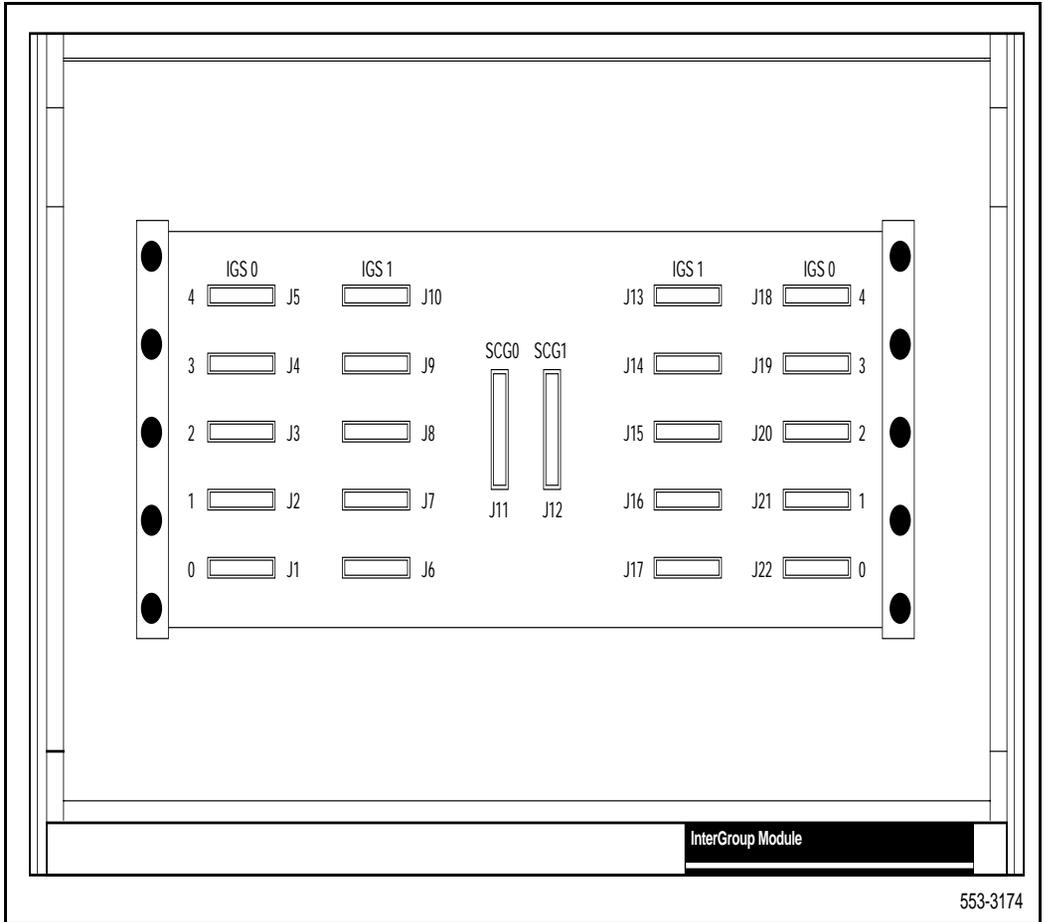
See Figure 187 to cable the NT8D41 SDI Paddle Board. (There is no faceplate on the paddle board; Figure 187 identifies the ports.)

See Figure 188 to cable an NTND02 MSPS Card.

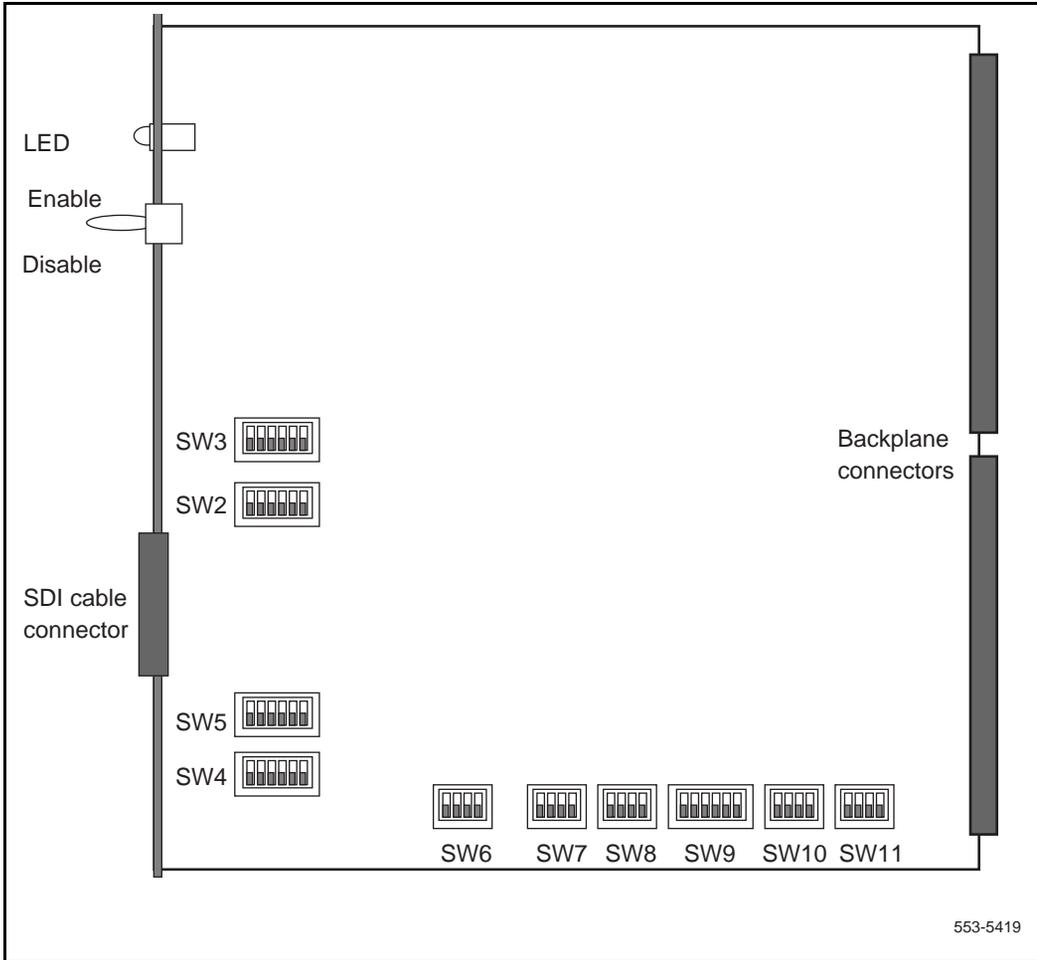
See Figure 189 to cable a QPC841 Four-Port SDI Card.
  - e Set the Enb/Dis switch to Enb (up).
- 3 Software enable the SDI card:
  - a Define each SDI port in the Configuration Record (LD 17).
  - b Enable each SDI port using the appropriate software program for the port application. Typical SDI applications and associated programs include:

Terminal and printer ports	LD 37
Call Detail Recording (CDR) ports	LD 42
Automatic Call Distribution (ACD) ports	LD 48
- 4 Connect an NT8D95AJ cable from the terminal, or modem, to the assigned SDI port.

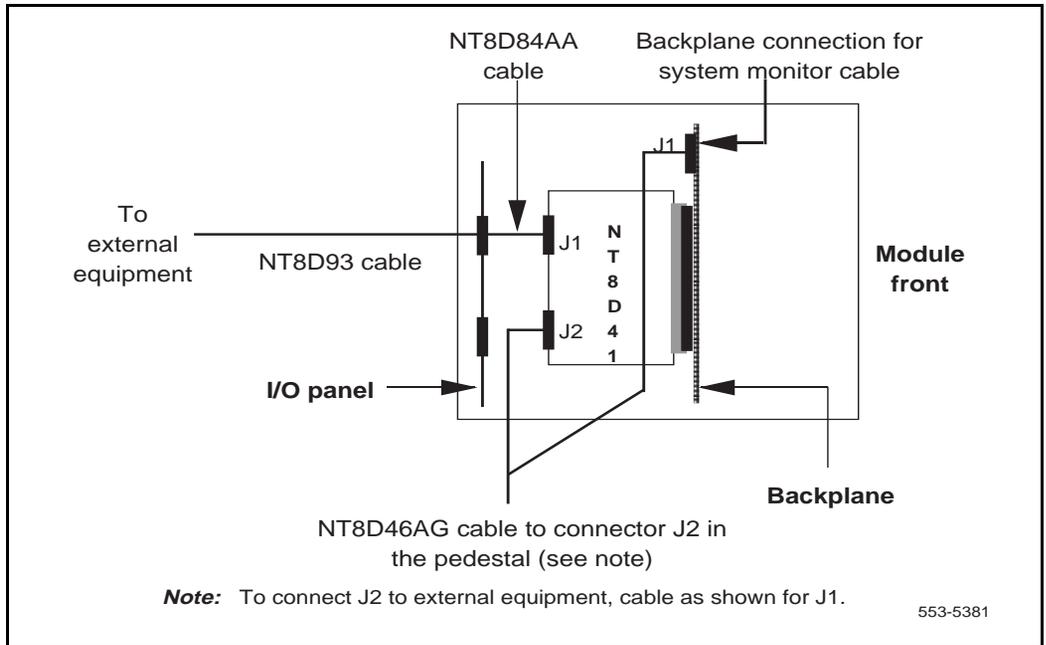
**Figure 185**  
**Ports and switches on the NT8D41 SDI Paddle Board**



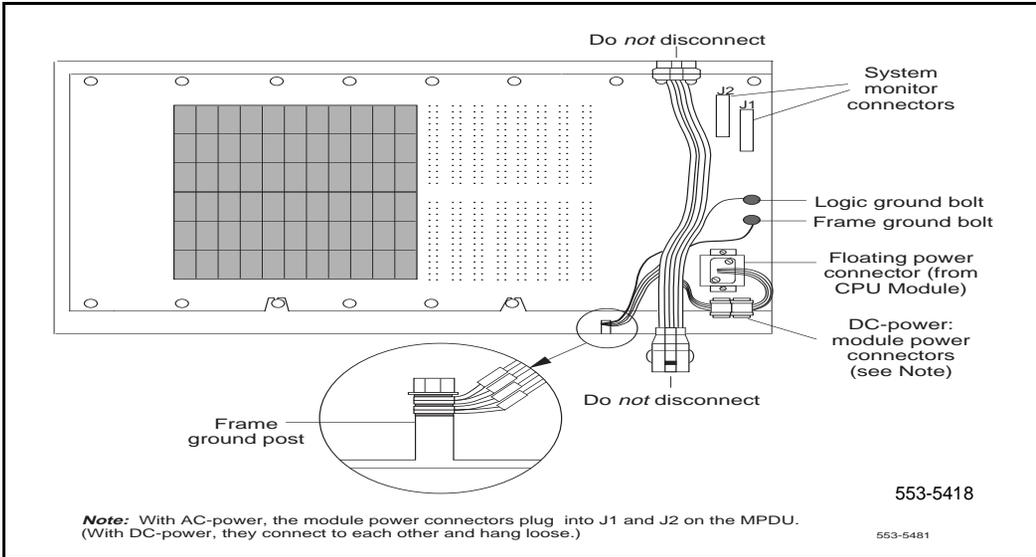
**Figure 186**  
**Switch locations on the NTND02 MSPS Card**



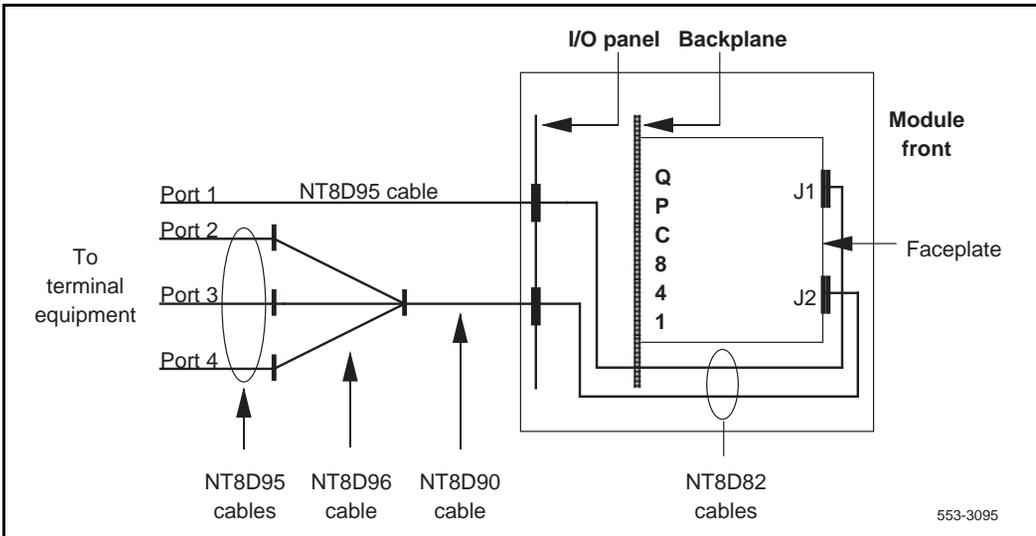
**Figure 187**  
**Cabling diagram for the NT8D41 SDI Paddle Board**



**Figure 188**  
**Cabling diagram for the NTND02 MSPS Card**



**Figure 189**  
**Cabling diagram for the QPC841 Four-Port SDI Card**



## Options 51C, 61C, 81, and 81C terminal and modem connections

During the system upgrade and for continuing system operation, a terminal must be connected to an SDI port in a network slot to provide an I/O interface to the active CPU in the system. In addition, a data terminal equipment (DTE) port and a data communication equipment (DCE) port on each NT6D66 or NT9D19 CP Card can be used for direct access to the Core or Core/Network Module that houses the card. The designations DTE and DCE refer to the function of the port, not the type of device that connects to the port. Therefore, a modem (which is DCE) connects to the DTE port at J21, and a terminal (which is DTE) connects to the DCE port at J25. Typically, the CPSI ports are preconfigured on I/O addresses four and five.

The CP card ports (CPSI ports) are active only when the CPU associated with the CP card is active. Therefore, the CPSI ports should not be used as the only I/O connection for the system.

When the upgrade is complete, you must leave a terminal or a modem connected to the system. One SDI port in a network slot must be permanently connected to a terminal or modem.

On the CPSI ports you can:

- disconnect the ports
- leave terminals connected for local monitoring
- connect modems for remote monitoring

The Black Box ABCDE-Switch, which provides up to four-to-one switching, is available from Nortel Networks as part number A0377992. The switch box can be used to connect the SDI and CPSI ports to a terminal or a modem. If used, one switch box must be used for terminals and one for modems.

### **Options 51C, 61C, 81, and 81C terminal guidelines**

During an upgrade, you can connect terminals to the CPSI ports for split mode monitoring, or programming, or both. (Due to the speed of the system messages displayed, personal computers are useful for file capture and review.) Terminals connected to the CPSI ports can be installed as follows:

- one terminal connects to a CPSI port in one CPU (the cable is switched from module to module as needed); one terminal is required in addition to the terminal for the SDI port connection (see Figure 190)
- one terminal connects to a switch box that connects to a CPSI port in each CPU: one terminal and a switch box are required in addition to the terminal for the SDI port connection (see Figure 191)
- one terminal connects to a switch box that connects to an SDI port and to a CPSI port in each CPU: one terminal and a switch box are required (see Figure 192)

The Option 51C has only one CPU module and requires only one CPSI terminal connection and one SDI port connection. A single terminal with a switch box can be used.

### **Connecting a terminal to a CPSI port**

Use the following procedure to connect a CPSI port directly (no switch box) to a terminal (see Figure 190):

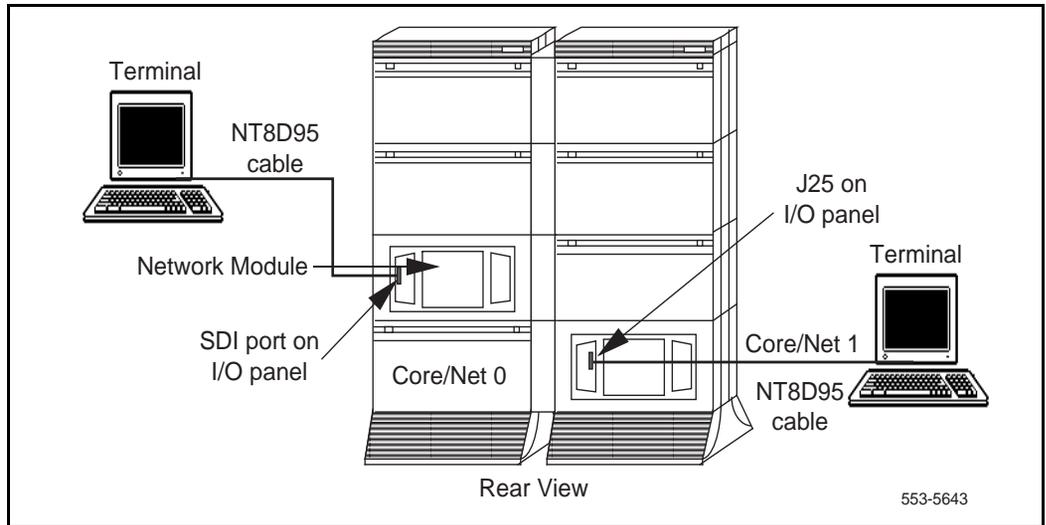
- Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- Connect an NT8D95 cable to a matching connector on the terminal.
- Connect the NT8D95 cable to J25 on the I/O panel in the rear of the Core or Core/Network Module.
- If you are using only one terminal for both CPSI ports, switch the cable as needed. The terminal connected to the SDI port will always communicate with whichever CPU is active.

### **Connecting a switch box and terminal to CPSI ports**

Use the following procedure to connect CPSI ports to a switch box and a terminal (see Figure 191):

- Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.

**Figure 190**  
**One terminal for the CPSI ports**

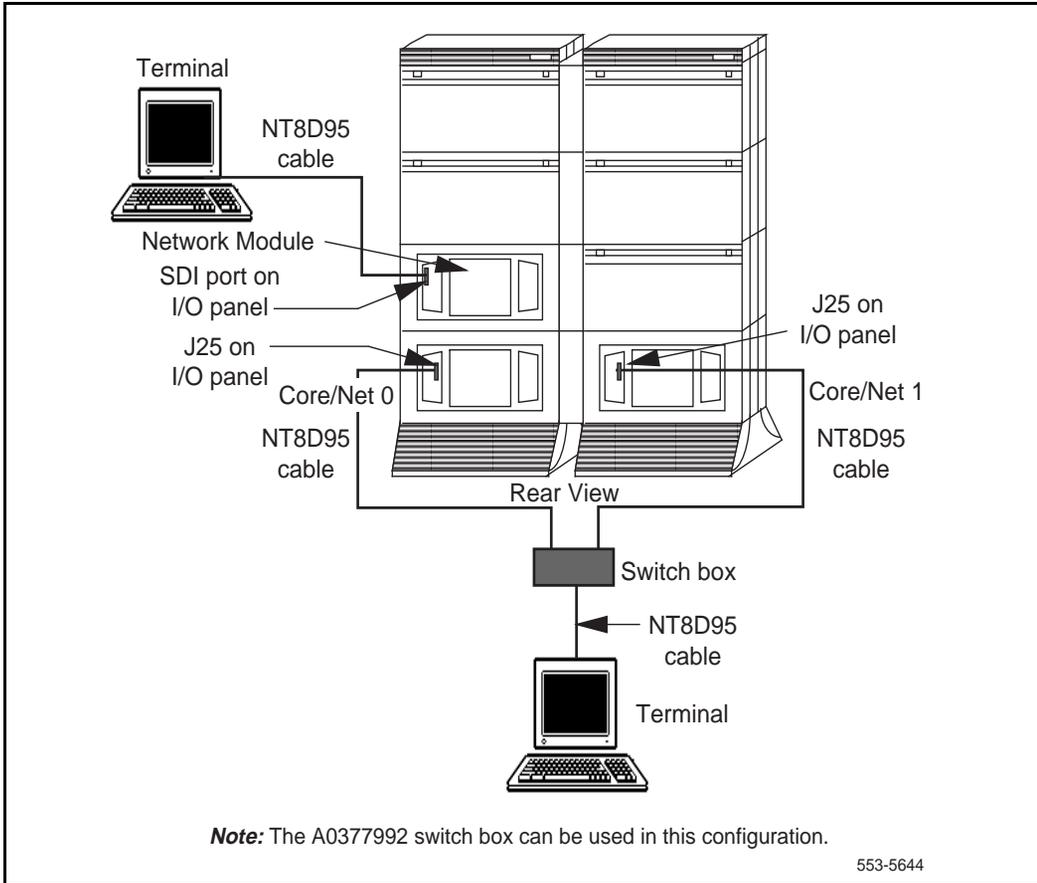


- Connect an NT8D95 cable to the terminal and to the switch box.
- Connect NT8D95 cables to a matching connector on the switch box.

If you are using an A0377992 ABCDE box, connect cables as follows:

- Connect CPU 0 to connector A.
- Connect CPU 1 to connector B.
- Connect the NT8D95 cables from the switch box to J25 on the I/O panel in the rear of the Core/Network Modules.
- To communicate directly with a CPSI port, switch the cable as needed. The terminal connected to the SDI port will always communicate with whichever CPU is active.

**Figure 191**  
**One terminal and a switch box to two CPSI ports**

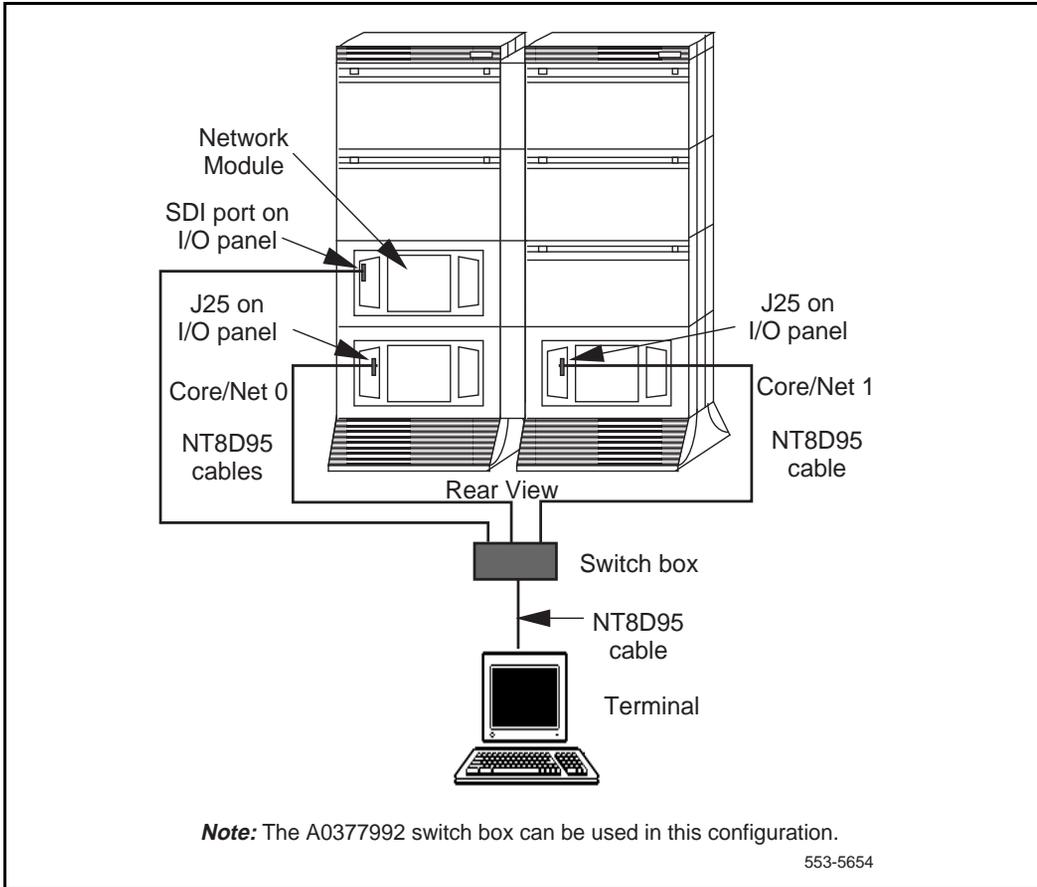


**Connecting a switch box and terminal to the SDI and CPSI ports**

Use the following procedure to connect CPSI ports to a switch box and a terminal (see Figures 191 and 192):

- Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- Connect an NT8D95 cable to the terminal and to the switch box.
- Connect NT8D95 cables to a matching connector on the switch box.  
If you are using an A0377992 ABCDE box, connect cables as follows:
  - Connect CPU 0 to connector A.
  - Connect CPU 1 to connector B.
  - Connect the SDI port to connector D (connector C is common).
- Connect NT8D95 cables from the switch box to J25 on the I/O panel in the rear of each Core or Core/Network Module.
- Connect an NT8D95 cable from the switch box to the I/O panel slot for the SDI card.
- To communicate with the system in general, set the switch box to the SDI port. To communicate directly with a CPSI port, switch the cable as needed.

**Figure 192**  
**One terminal and a switch box to the SDI and CPSI ports**



**Options 51C, 61C, 81, and 81C modem guidelines**

You can connect a modem to an SDI port to remotely monitor general system operation. Or you can connect a modem to the CPSI ports for debugging and patch downloading (through your Nortel Networks representative). Or you may want a remote connection to both the SDI and CPSI ports.

At the Meridian 1 end (the local end), modems must be set to dumb mode (command recognition OFF, command echo OFF). Modems at the local end can be connected as follows:

- one modem connects to the SDI port and the cable is switched to each CPSI port as needed (see Figure 193)
- one modem connects to a switch box that connects to the SDI and CPSI ports (see Figure 194)

**Note:** The second method listed here is preferred. Other configurations, such as a separate modem for each port, are possible.

At the remote end, at least one modem (which can be set to smart mode), one terminal, and one RS-232 cable are required in all modem configurations.

Modems at the local end must meet the following required specifications to be compatible with Options 51C, 61C, 81, and 81C. Modems that meet the following recommended specifications must also meet the required specifications.

- *Required:* true, not buffered, 9600 baud support (required for remote Nortel Networks technical support)
- *Required:* CCITT V.32 or V.32bis compliance
- *Recommended:* the ability to adjust to lower and higher speeds, depending on line quality, while maintaining 9600 baud at local DTE
- *Recommended:* V.42 error correction
- *Recommended:* V.42 bis data compression

A dispatch or call back modem, normally connected to the SDI port, can be used if it meets the requirements. If you want to use a modem of this type that does not meet the requirements, the modem can only be used in addition to a modem that does meet specifications.

Any modem that meets the required specifications should be compatible with Options 51C, 61C, 81, and 81C. The following models have been tested and verified as compatible:

- Hayes V-series ULTRA Smartmodem 9600
- UDS FastTalk V.32/42b
- US Robotics Courier HST Dual Standard V.32bis
- Motorola 28.8 Data/Fax

The UDS FastTalk modem is available through Nortel Networks as part number A0381391 and the Motorola 28.8 Data/Fax modem is available as part number A0638930. Each modem is equipped with a 6-ft power cord for a standard 110 V ac wall socket and a cable that connects to an RJ11C jack. (The A0377992 Black Box ABCDE-Switch can be used with the UDS FastTalk or Motorola 28.8 Data/Fax modem.)

## Configuring an A0638930 Motorola 28.8 Data/Fax Modem

Use the following procedure to configure a Motorola 28.8 Data/Fax Model 3400 modem for operation with Options 51C, 61C, 81, and 81C.

The modem can be configured:

- for local mode of operation
- for remote mode of operation

**Note:** After the modem is configured, power down of the modem will not result in loss of the configuration settings. However, by pushing the RESET button on the modem and holding it down until the “MR” light flashes 5 only, and by releasing the RESET button before the next 5 flashes start, will reset the modem to its factory default settings. It will then be necessary to reconfigure the modem to the settings required for operation with Meridian 1 systems.

### Installation procedure

- 1 Unpack the modem and read the installation instructions included with the modem.
- 2 Position the modem in its designated space, install its power cord, and plug it into the power receptacle.
- 3 Connect a 25-pin RS-232 cable to the modem and to a terminal.

### Local configuration procedure

- 1 Set the terminal with these parameters:
  - 9600 baud
  - 8 data bits
  - 1 stop bit
  - no parity
- 2 Install the communication utility program shipped with the modem or use an appropriate alternate communication utility program such as Procomm, Telix, SmartCom, Bitcom, or CrossTalk.

- 3 Enter the following command string in one line, followed by the carriage return <cr>:  
`AT&F\Q0 &S1 S0=1 S7=60 S2=128 Q1 E0 &W &W1 <cr>`

After you press the carriage return <cr>, the modem will appear to have stopped functioning. This is normal.

- 4 Power off the modem and connect it to a Call Processor CPSI port in the Meridian 1 system. To do this:
  - a Set the power switch to OFF.
  - b Connect the NT8D95 cable between the modem and the J25 on the I/O panel at the rear of the Core/Network module.
  - c Connect the modem to the telephone jack (RJ11) using the RJ11 telephone cord. If the cord is not supplied, use the NT8D46 cable.
  - d Turn the power switch on the modem to ON.

The modem is now configured for local communication with the Meridian 1 system.

### Remote configuration procedure

To configure a modem in the remote mode, connect the modem as described above in “Local configuration procedure” and proceed as follows:

- 1 To place the modem in the remote configuration mode:
  - a Press and hold the RESET button until the “MR” light flashes 10 times. There is a 3 second pause before each set of five flashes are received. The “AA” lite comes on at the beginning of the last five flashes and remains on.
  - b Do not release the RESET button until you receive all 10 flashes, the “MR”, and the “AA” lights are on. The modem is now placed in the remote mode.
- 2 Dial up the modem at 9600 bps.

*Note:* Dialing up the modem at a baud rate other than 9600 bps will result in configuration errors.

- 3 Enter five equal signs (= = = =) after you received the connection message.
- 4 Press carriage return <cr> after the PASSWORD prompt appears.
- 5 RC ESTABLISHED prompt will appear. Now you can enter the following commands, each followed by the carriage return <cr>:

AT\Q0	<cr>	Disable Computer Flow Control
AT&S1	<cr>	DSR on when ready to accept data
ATS0=1	<cr>	Answer on the first ring
ATS7=60	<cr>	How long to wait for carrier
ATS2=128	<cr>	Escape sequence character
AT*NT	<cr>	Turn AT command set OFF (very important)
ATQ1	<cr>	Response display OFF
AT&W	<cr>	Write to first profile
AT&W1	<cr>	Write to second profile
AT*RQ	<cr>	End remote configuration and save changes
- 6 The modem is now configured for remote communication with the Meridian 1 system.

## Configuring an A0381391 UDS FastTalk modem

Use the following procedure to configure a UDS FastTalk modem for operation with Options 51C, 61C, 81, and 81C.

**Note:** With the exception of the smart/dumb mode jumper setting, configuration changes to the modem are made through software. The modem must remain in smart mode (as shipped) until the software configuration is complete.

- ATE           turn off local character echo
- ATS0=2       enable autoanswer on second ring
- ATDT         set for tone dialing (default is pulse dialing)
- AT&W         store changes in profile 0
- AT&Y         use profile 0 at power up

- 1 Disconnect the power cord, RS-232 cable, and any other cables from the modem.
- 2 Remove the top cover on the modem:
  - a Stand the unit on its side.
  - b Using a medium-size flat screwdriver, lightly pry the four lock tabs off the locks (located on the bottom of the case) and pull the cover away from the modem as the locks release.
- 3 Set the modem to smart mode:
  - a Locate the option jumper. The jumper is located just to the left of the speaker (when viewed from the front of the modem).
  - b Place the jumper on the two pins farthest from the speaker.
- 4 Connect a 25-pin RS-232 cable to the modem and to a terminal.
- 5 Set the terminal with these parameters:
  - 9600 baud (no other speeds will work)
  - 8 data bits
  - 1 stop bit
  - no parity

**Note:** The modem will communicate at 9600 bps *only*; the terminal or computer must be set to 9600 bps also.

- 6 Enter the following commands to set compatible parameters. Follow each command with a carriage return (press the “Return” or “Enter” key):

AT&F	load active profile containing factory settings
AT\N0	select normal mode, error control disabled
AT\Q0	set serial port flow control
ATV3	form-of-response message = DTE
AT&D2	modem disconnects when DTR signal is lost
AT&S1	select DSR control
ATS0=1	answer after 1 ring
ATS2=128	escape character = ascii 128

ATS7=60      pause 1 second for carrier detection  
ATQ1

After you enter this last command (ATQ1), the modem no longer responds with “OK”. Enter the next command:

AT&W      store active profile

The modem should respond to every command (except the last two commands) with “OK”. If you do not get this response, turn the modem off and on and try again.

- 7 Disconnect the power cord and serial cable.
- 8 Set the modem to dumb mode:
  - a Locate the option jumper. The jumper is located just to the left of the speaker (when viewed from the front of the modem).
  - b Place the jumper on the two pins closest to the speaker.
- 9 Replace the cover on the modem:
  - a Align the tabs, locks, and rear guide grooves.
  - b Press the cover into place until the locks and the tabs snap together.
- 10 Reconnect the power cord and any other cables that will be used.

## **Connecting a modem to an SDI port**

Use the following procedure to connect an SDI port directly (no switch box) to a modem (see Figure 193):

- At the remote end, connect an RS-232 cable to the terminal and to the modem.
- At the remote end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- At the local end, configure the modem:
  - If you are using a Motorola 28.8 Data/Fax modem, follow the instructions in this document. (See “Configuring an A0638930 Motorola 28.8 Data/Fax Modem” on page 949.)

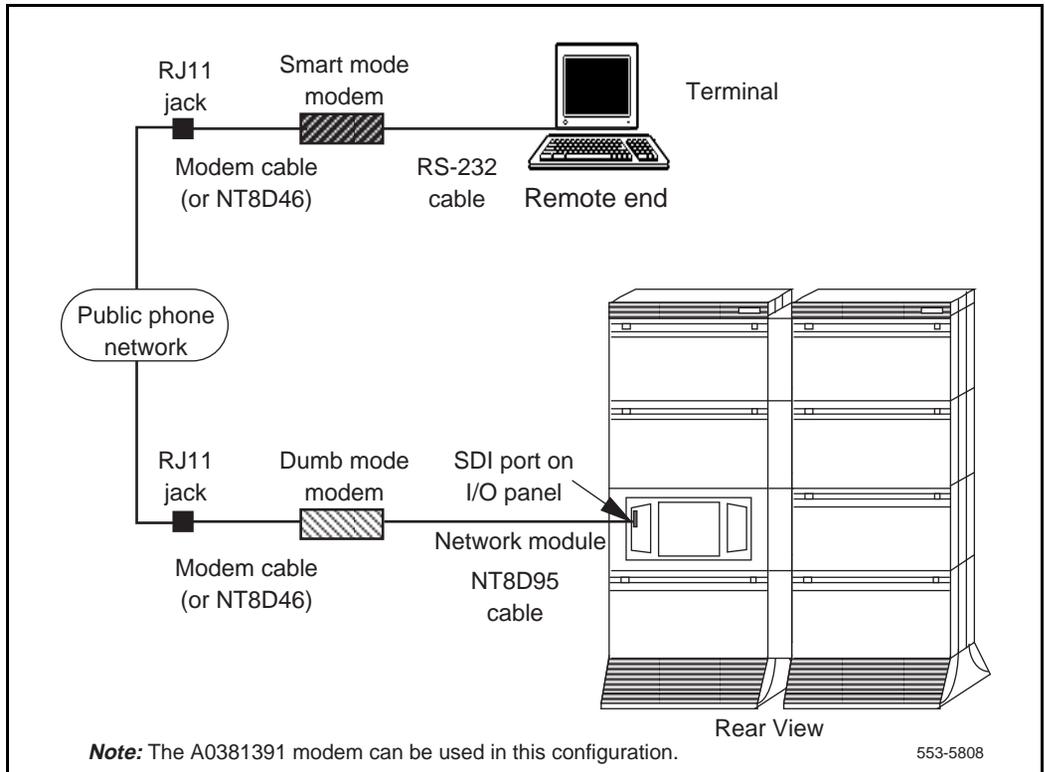
- If you are using an UDS FastTalk modem, follow the instructions in this document. (See “Configuring an A0381391 UDS FastTalk modem” on page 951.)
- If you are using a different type of modem, follow the manufacturer’s instructions to set the modem for 9600 baud, auto answer, dumb mode, command recognition OFF, command echo OFF.
- At the local end, connect an NT8D95 cable to the SDI port on the I/O panel in the rear of the module and to the modem.
- At the local end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- To communicate with a CPSI port, switch the cable from the modem to the port as needed:
  - For debugging or monitoring, connect the cable to the *active* CPU at J21 on the I/O panel in the rear of the Core/Network Module.
  - For patch downloading, connect the cable to the *inactive* CPU at J21 on the I/O panel in the rear of the Core or Core/Network Module.

## Connecting a modem to a switch box and CPSI and SDI ports

Use the following procedure to connect SDI and CPSI ports to a switch box and a modem (see Figures 194 and 195):

- At the remote end, connect an RS-232 cable to the terminal and to the modem.
- At the remote end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- At the local end, configure the modem:
  - If you are using a Motorola 28.8 Data/Fax modem, follow the instructions in this document. (See “Configuring an A0638930 Motorola 28.8 Data/Fax Modem” on page 949.)

**Figure 193**  
**Modem to SDI port**



- If you are using an UDS FastTalk modem, follow the instructions in this document. (See “Configuring an A0381391 UDS FastTalk modem” on page 951.)
- If you are using a different modem, follow the manufacturer’s instructions to set the modem for 9600 baud, autoanswer, dumb mode, command recognition OFF, command echo OFF.
- At the local end, connect NT8D95 cables to
  - J21 on the I/O panel in the rear of the Core or Core/Network Modules
  - the SDI port on the I/O panel in the rear of the Network module

- At the local end, connect NT8D84 cables to
  - the SDI Paddle Board at the Core/Network backplane to the I/O panel in the rear of the Core/Network Module.

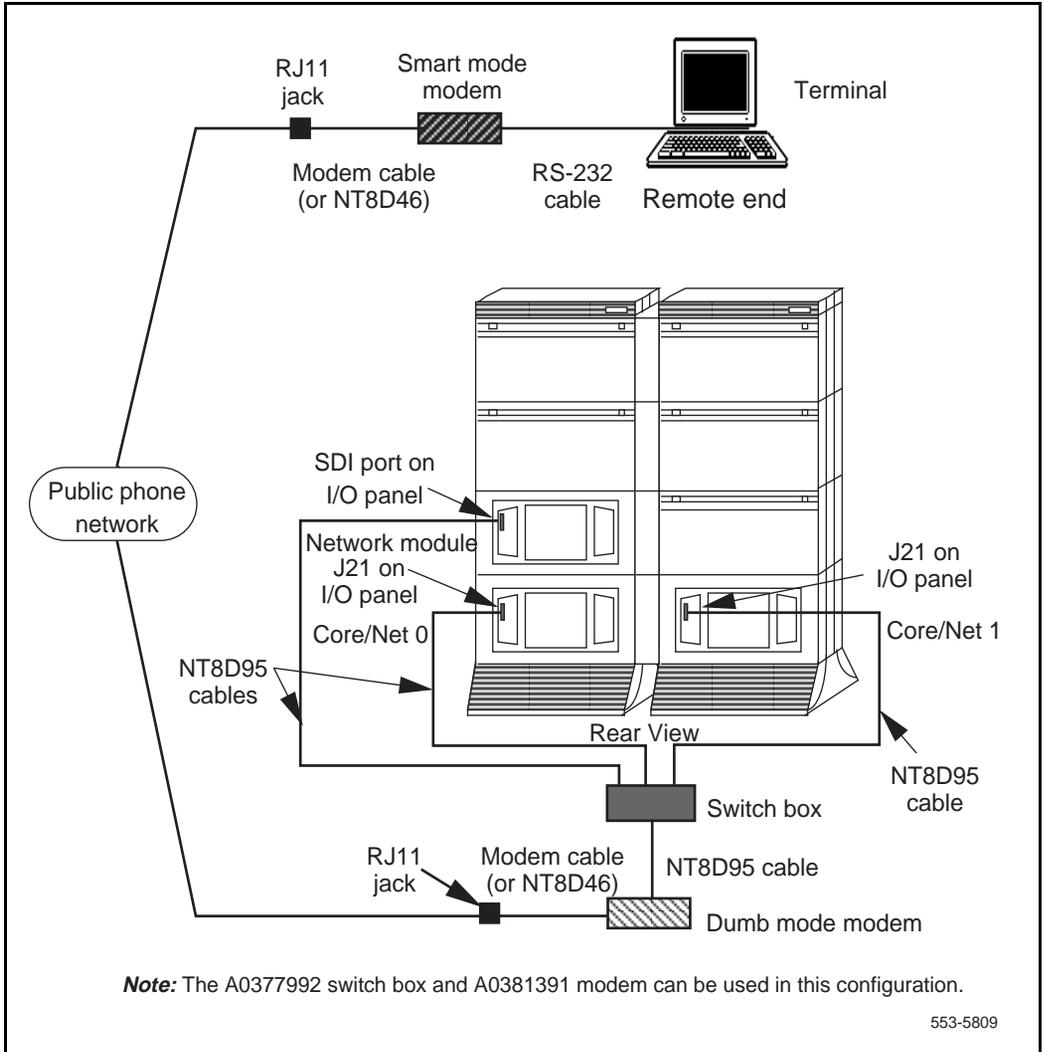
- At the local end, connect NT8D95 cables from the I/O panels to a matching connector on the switch box.

If you are using an A0377992 ABCDE box, connect cables as follows:

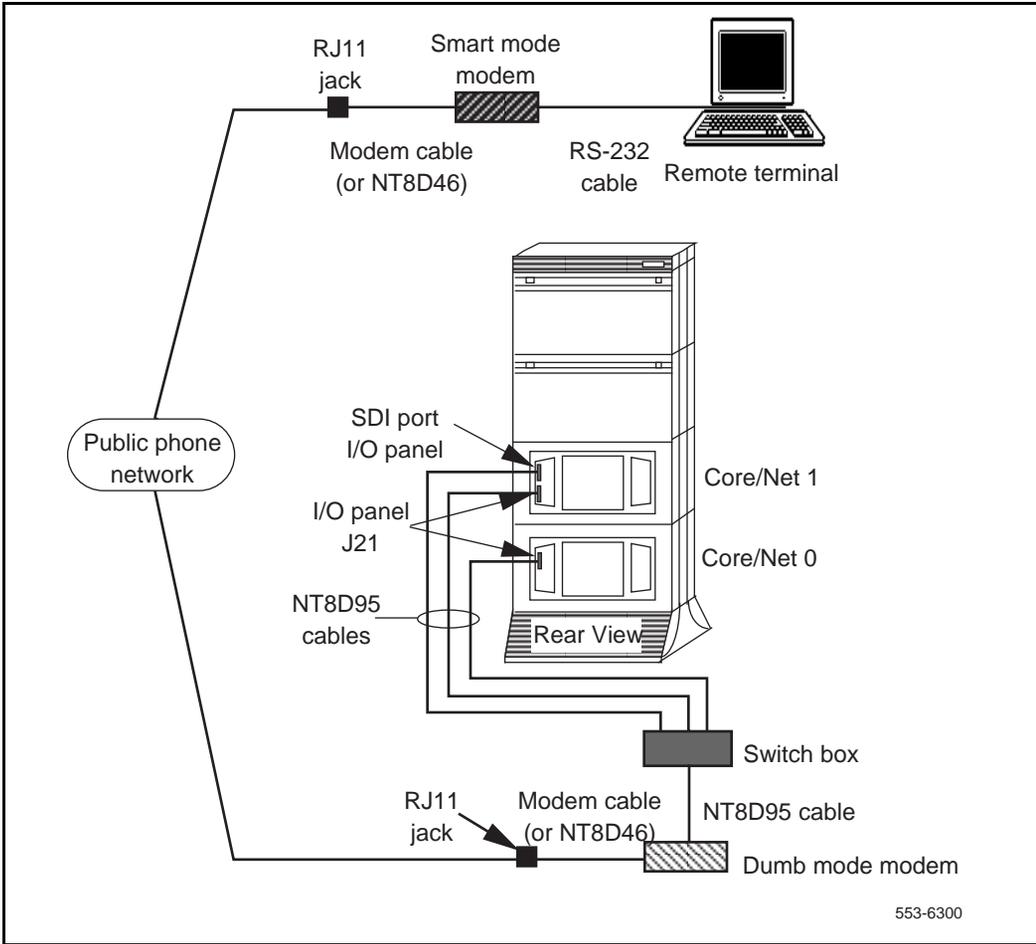
- Connect CPU 0 to connector A.
- Connect CPU 1 to connector B.
- Connect the SDI port to connector D (connector C is common).

- At the local end, connect an NT8D95 cable from the switch box to the modem.
- At the local end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- At the local end, set the switch box as needed to communicate with the CPSI ports:
  - During normal operation, set the switch to the SDI port.
  - For debugging, set the switch to the *active* CPU.
  - For patch downloading, set the switch to the *inactive* CPU.

**Figure 194**  
**Modem to a switch box and SDI and CPSI ports (dual-column systems)**



**Figure 195**  
**Modem to a switch box and SDI and CPSI ports (single-column systems)**



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# Troubleshooting

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## Reference list

The following are the references in this section:

- *General Maintenance Information* (553-3001-500)
- *Fault Clearing* (553-3001-510)
- *X11 Administration* (553-3001-311)

This appendix contains procedures that you can perform if you experience trouble after upgrading a system to an Option 51C, 61C, 81 or Option 81C. Look up all messages displayed on the terminal in the *X11 Administration* (553-3001-311). For further troubleshooting procedures for these and other systems, also refer to these documents:

## Troubleshooting procedures

Find the symptom listed below, and perform the appropriate corrective procedure.

- 1** If the NT5D20 IOP/CMDU or NT5D61 IODU/C card fails the self-test, do the following:
  - a** Replace the card with a spare IOP/CMDU or IODU/C card.
  - b** Look for bent pins on the backplane connectors.
  - c** Replace the card cage.
- 2** If the CP Card fails the self-test, do the following:
  - a** Replace the card with a spare CP card.
  - b** Look for bent pins on the backplane connectors.
  - c** Replace the card cage.

**Note:** Contact your Nortel Networks representative for card or card cage replacement information.

- 3 If “IOP Out of Service” appears on the CP card LCD, do the following:
  - a Check the cable connections on the rear of the backplane. Make sure backplane connector positions are correct (and no connectors are in row B or E).
  - b Look for bent pins on the backplane connectors.
  - c Replace the IOP/CMDU or IODU/C card with a spare card and make sure it completes its power-up tests successfully. Reset the CP card to force it to rehunt the IOP or IOP/CMDU card.
  - d If the CP card finds the IOP/CMDU or IODU/C card, the original IOP/CMDU or IODU/C card is defective.
  - e If the CP card still fails to find the IOP/CMDU or IODU/C card, replace the card cage.
- 4 If the system points to file corruption (such as “Error in file diskos” type messages) while the software was loading, do the following:
  - a Place the A1 disk (IOP/CMDU) or the Install Program disk (IODU/C) in the floppy drive and reload (sysload) the system. The system will boot from the floppy, which contains the operating system software, and invoke the installation program. When the program installs the software on the hard drive, file-level corruption problems should be eliminated.
  - b If the failure persists, because of a hard drive failure for example, replace the IOP/CMDU or IODU/C card with a spare card and try to load the software.

**Note:** If the database conversion or the data dump failed, contact your Nortel Networks support representative.

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## **Hardware Upgrade**

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#### **Upgrade to Options 51C, 61C, 81C**

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Publication number: 553-3001-258

Document release: Standard 5.00

Date: April 2000

Printed in Canada



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