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Meridian 1

# Upgraded Systems Installation

Upgrade to Options 51C, 61C, 81C

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# Revision history

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Standard 6.00. This document is up-issued to include content for Meridian 1 Release 25.40. This document is up-issued to include Call Processor Pentium (CP PII) and Fibre Network Fabric (FNF) for Option 81C.

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## About this document

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This document applies to Meridian 1 Internet Enabled systems.

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.

## Who should use this document

This document is intended for individuals responsible for upgrading Meridian 1 Internet Enabled systems.



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# General information

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## 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)
- *Administration* (553-3001-311)
- *Features and Services* (553-3001-306)

## Upgrade strategy

Software Release 25 supports Automatic Inline Conversion from software 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 software and utility programs that are specific to a single release and issue of software. A new kit must be obtained when upgrading to a new release or issue of software.

Table 1 on page 11 lists the contents of the Software Install Kit.

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

Item	Quantity	Description
Software CD-ROM	1	Each CD contains all nine generics for a given release and issue of 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 on the Options 51C and 61C. One security device is mounted onto each System Utility Transition card on the Option 81C.

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 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 on page 11.

**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.

## Tools

Table 3 on page 13 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 (Options 51C and 61C) or CP PII card (Option 81C) in the system. The terminals must be RS-232 and capable of 9600 baud.

The CP card serial interface ports (CPSI ports) or CP PII card COM ports are active only when the Core/Net associated with the CP/CP PII card is active. Therefore, the CPSI/COM 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/COM port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI/COM 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/COM 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 943 for instructions on connecting terminals and modems to the Option 51C, 61C, and 81C.

## Options 51C and 61C Module backplane connections

Module backplanes on the Options 51C and 61C 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**

#### **Damage to Equipment**

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 Options 51C and 61C 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**

##### **Damage to Equipment**

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****Damage to Equipment**

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.

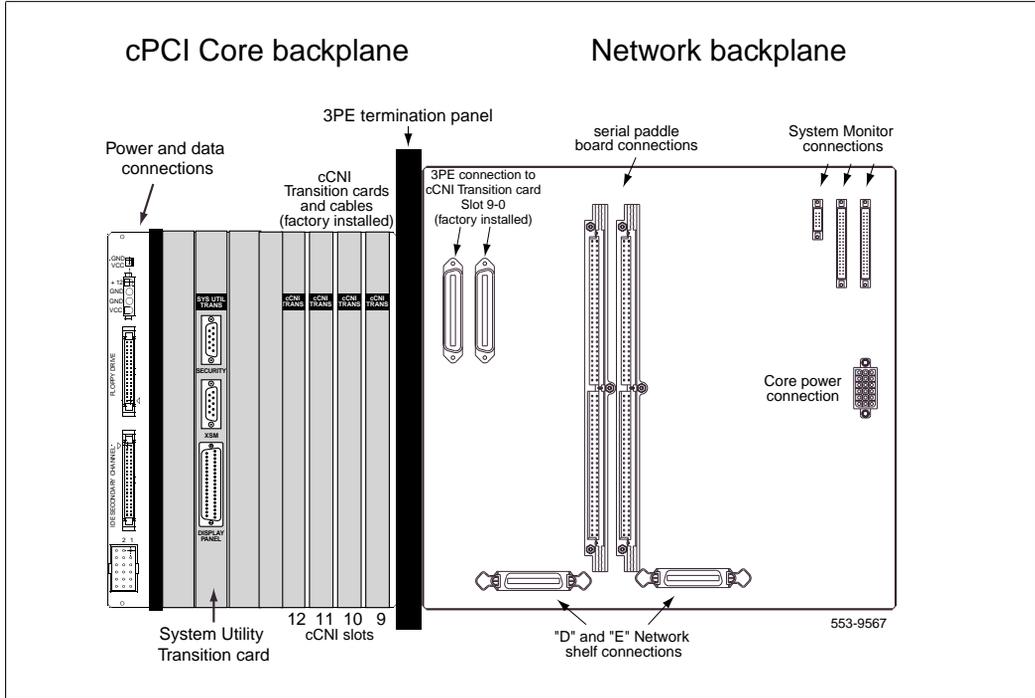
- 4 Stop applying pressure as soon as the cable connector comes loose from the backplane.
- 5 Slowly remove the extraction tool and the cable connector.

## Option 81C Backplane architecture

The CP PII Core/Net card cage contains two distinct backplanes:

- The **Core** side of the CP PII card cage uses a cPCI<sup>®</sup> backplane. This backplane is a high speed industry standard that allows expansion and replacement with “off the shelf” components.
- The **Network** side of the CP PII Core/Net card cage is a standard Meridian 1 backplane.

Figure 1  
CP PII Core/Net backplane (back view)



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# Prepare for upgrade to Option 81C and Option 81C CP PII

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The procedures in this section must be performed prior to upgrading Options 51, 51C, 61, 61C, 71, 81, 81C, systems to Option 81C CP PII with Fiber Network Fabric.

	<p><b>CAUTION</b>  <b>Service Interruption</b>                  Failure to perform the tasks in this section will result in increased downtime and possible system failure.</p>
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## Prepare for upgrade of Option 61C to Option 81C with FNF

Complete the following procedures before upgrading an Option 61C to an Option 81C with FNF:

- 1 "Check power supply version (DC power only)" on page 24
- 2 "Check minimum FNF system requirements" on page 24
- 3 "Check 3PE settings" on page 33
- 4 "Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)" on page 37
- 5 "Connect a terminal" on page 38
- 6 "Print site data" on page 40

## Prepare for upgrade of Option 71, 81, and 81C systems

Complete the following procedures before upgrading an Option 71, or Option 81, or Option 81c to an Option 81C with FNF:

- 1 "Identify two unique IP addresses" on page 37
- 2 "Connect a terminal" on page 38
- 3 "Check the Core ID switches" on page 38
- 4 "Check 3PE settings" on page 33
- 5 "Print site data" on page 40
- 6 "Perform a template audit" on page 43
- 7 "Back up the database (data dump and ABKO)" on page 44
- 8 "Convert the 4 MB database media to 2 MB database media" on page 45
- 9 "Options 71 and 81 - Guidelines for moving Clock Controllers" on page 49
- 10 "Route the 3PE to cCNI (NT8D76) cables" on page 70

## **Prepare for upgrade for Option 81/81C FNF to Option 81C CP PII**

Complete the following procedures before upgrading an Option 81 of Option 81C to an Option 81C CP PII:

- 1 "Identify two unique IP addresses" on page 37
- 2 "Connect a terminal" on page 38
- 3 "Check the Core ID switches" on page 38
- 4 "Print site data" on page 40
- 5 "Perform a template audit" on page 43
- 6 "Back up the database (data dump and ABKO)" on page 44
- 7 "Route the NT8D76 3PE to cCNI cables" on page 70

## **Prepare for upgrade for Option 81C CP PII to FNF**

Complete the following procedures before upgrading an Option 81C CP PII to FNF:

- 1 "Check power supply version (DC power only)" on page 24
- 2 "Check minimum FNF system requirements" on page 24
- 3 "Check 3PE settings" on page 33
- 4 "Print site data" on page 40
- 5 "Pre-route cables" on page 51
- 6 "Perform a template audit" on page 61
- 7 "Backup the database" on page 62

## **Prepare for upgrade for Option 51/51C to CP PII and FNF**

Complete the following procedures before upgrading an Option or Option 5151C to an Option 81C CP PII with FNF:

- 1 "Identify two unique IP addresses" on page 37
- 2 "Check the Core ID switches" on page 38
- 3 "Check minimum FNF system requirements" on page 24
- 4 "Print site data" on page 40
- 5 "Perform a template audit" on page 43

- 6 "Back up the database (data dump and ABKO)" on page 44
- 7 "Convert the 4 MB database media to 2 MB database media" on page 45
- 8 "Prepare to move Clock Controllers on Option 51/51C" on page 47
- 9 "In Core 0, pre-route cables" on page 49
- 10 "Pre-route the 3PE to cCNI cables" on page 71
- 11 "Pre-route the shelf 0 FIJI Fiber Ring cables" on page 66

## **Prepare for upgrade for Option 61/61C to CP PII and FNF**

Complete the following procedures before upgrading an Option 61 or Option 61C to an Option 81C CP PII with FNF:

- 1 "Identify two unique IP addresses" on page 37
- 2 "Check the Core ID switches" on page 38
- 3 "Check minimum FNF system requirements" on page 24
- 4 "Print site data" on page 40
- 5 "Perform a template audit" on page 43
- 6 "Back up the database (data dump and ABKO)" on page 44
- 7 "Convert the 4 MB database media to 2 MB database media" on page 45
- 8 "Prepare to move Clock Controllers on Option 61/61C" on page 48
- 9 "In Core 0, pre-route cables" on page 49
- 10 "Pre-route the 3PE to cCNI cables" on page 71
- 11 "Pre-route the shelf 0 FIJI Fiber Ring cables" on page 66

## Check power supply version (DC power only)

DC Power Supplies NT6D40 and NT6D41 must be AD vintage.

*Note:* AC power supplies do not need to be upgraded.

Table 4 on page 24 lists the DC power supplies that must be replaced with AD vintage cards.

**Table 4**  
**DC Power supply vintages**

Power Supply	Type	Upgrade to new vintage
NT6D40AA, all vintages	PE Power Supply, DC power	vintage AD release 1
NT6D40AB, vintages 1 to 12	PE Power Supply, DC power	vintage AD release 1
NT6D41AA, all vintages	CE Power Supply, DC power	vintage AD release 1
NT6D41AB, vintages 1 to 8	CE Power Supply, DC power	vintage AD release 1

## Check minimum FNF system requirements

Meridian 1 systems can be configured with only one type of network fabric: either 100% IGS/IGM or 100% Fiber Network Fabric. A combination of IGS/IGM and Fiber Network equipment within a Meridian 1 system is not supported. If a system is upgraded to Fiber Network Fabric, FIJI cards and related equipment must be installed in all Network groups

### Required software

Software Release 25 or higher is required for Fiber Network Fabric. Software Package 365 must be activated. Software package 368 is required for CP PII.

All systems must have a CD-ROM drive since Release 25 software is only shipped on CD-ROM media. In Motorola based systems, the CD ROM is part of the IODU/C unit (NT5D61AB). In the call processor based on Pentium, the CD ROM is part of the MMDU unit.

## Required hardware

The number of circuit cards required by each system depends on system capacity and module placement.

**Table 5**  
**Fiber Network cards and minimum vintage requirements**

Quantity	Part number	Description
1 per Network module	NTRB33	Fiber Junctor Interface (FIJI) card
1 per Network module, as needed	NTRE39	Optical Cable Management Card (OCMC)
6 per Motorola based system (3 per Core), as needed	NTRB34	Core Network Interface 3 (CNI-3) cards
1 per Network, Core or Core/Net module (DC powered systems only)	NT6D40 NT6D41	DC Power Supplies NT6D40 and NT6D41 must be AD vintage.
2 per system	NTRB53AA	Clock Controller cards (all countries)
2 per system	QPC471*	Clock Controller cards (USA) must be vintage H or later.
2 per system	QPC775*	Clock Controller cards (all countries except USA) must be vintage E or later.
As required	NT5D12	Dual Density PRI (DDP) cards must be either: <ul style="list-style-type: none"> <li>• vintage AD or earlier</li> <li>• vintage AG or later</li> </ul> <p><b>Note:</b> Vintages AE and AF are not compatible with FNF.</p>
* Either Clock Controller can be installed, but NTRB53, QPC471 and QPC775 Clock cards cannot be combined in one system.		

## Required cables

**Table 6**  
**Required cables. (Part 1 of 2)**

Cable type	Description	Quantity	Part number	Length
<b>Fiber Ring cable</b>	Fiber optic cable to connect the FIJI cards together in the Dual Ring Fiber Network.	1 per FIJI card	NTRC48AA	6 ft.
			NTRC48BA	10 ft.
			NTRC48CA	12 ft.
			NTRC48DA	14 ft.
			NTRC48EA	19 ft.
			NTRC48FA	26 ft.
			NTRC48GA	32 ft.
			NTRC48HA	50 ft.
<b>CNI to 3PE cable (CNI and CNI-3 backplane)</b>	Used to connect CNI and CNI-3 backplane connectors to 3PE cards	2 per CNI or CNI-3 card (2 cables per Network group)	NTND14	
<b>CNI-3 to 3PE cable (CNI-3 faceplate)</b>	Used to connect the "C" faceplate port on CNI-3 cards to 3PE cards.	2 per CNI-3 card	NT9D89CA	8 ft.
			NT9D89DA	10 ft.
			NT9D89EA	12 ft.
			NT9D89FA	25 ft.
			NT9D89GA	50 ft.
<b>Clock to FIJI</b>	Connects from the Clock to Clock card to the FIJI cards in Network group 0.	2 per system	NTRC46AB	4 ft.-4.5 ft.*
			NTRC46BB	5.5 ft. - 8 ft.*
			NTRC46CB	22 ft.-22 ft.*
<b>Clock to Clock</b>	Connects from Clock 0 to Clock 1. Also contains the connectors for the Clock to FIJI cables.	1 per system	NTRC49AA	6 ft.
			NTRC49BA	20 ft.

**Table 6**  
**Required cables. (Part 2 of 2)**

Cable type	Description	Quantity	Part number	Length
<b>FIJI to FIJI Sync</b>	Connects between the FIJI cards in shelf 0 and shelf 1 of each Network group (except group 0).	1 per network group (except group 0)	NTRC47AA	5 ft.
* indicates the lengths of the two "Y" terminations.				

**Table 7**  
**Equipment required for Option 61C upgrade to Option 81C with Fiber Network Fabric (Part 1 of 3)**

Order number	Description	Quantity per system
NTRB33AA	Fiber Junctor Interface Card (FIJI)	4
NT4N50AA	Power Distribution Unit DC <sup>2</sup>	2
NT6D40BA	Peripheral Equipment Power Supply, DC <sup>2</sup>	2
NT6D41AD	Common Equipment Power Supply, DC <sup>2</sup>	2
NT7D00AA	Top Cap, AC <sup>1</sup>	1
NT7D00BA	Top Cap, DC <sup>2</sup>	1
NT7D06AA	Filler Panel	2
NT7D09CA	Pedestal, DC <sup>2</sup>	1
NT8D01BC	Controller - Four Card	1
NT8D04BA	SuperLoop Network Card	1
NT8D06AB	Peripheral Equipment Power Supply AC <sup>1</sup>	1
NT8D17FA	Conference/TDS Card	2

**Table 7**  
**Equipment required for Option 61C upgrade to Option 81C with Fiber Network Fabric**  
**(Part 2 of 3)**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NT8D22AC	System Monitor	1
NT8D27BB	Pedestal AC <sup>1</sup>	1
NT8D29AB	Common Equipment Power Supply AC <sup>1</sup>	2
NT8D35BA	Network Module AC <sup>1</sup>	2
NT8D35EA	Network Module DC <sup>2</sup>	2
NT8D37BA	Intelligent Peripheral Module AC <sup>1</sup>	1
NT8D37EC	Intelligent Peripheral Equipment Module DC <sup>2</sup>	1
NT8D46AL	System Monitor Serial Link Cable (7 ft.)	1
NT8D52AB	Pedestal Blower Unit AC <sup>1</sup>	1
NT8D52DD	Pedestal Blower Unit DC <sup>2</sup>	1
NT8D53CA	Power Distribution Unit AC <sup>1</sup>	2
NT8D91AE	Network to Controller Cable (8 ft.)	1
NT8D99AB	Network to Network Cable (2 ft.)	5
NTND14BA	CNI to 3PE Cable (6 ft.)	2
NTND14BB	CNI to 3PE Cable (8 ft.)	2
P0712003	Instruction Package	1
P0738686	Meridian 1 Pallet Ramp Set	1
QPC43R	Peripheral Signaling	2
QPC441F	Three-port Extender	2
NTRC49AA	Clock-Clock Synchronization Cable	1
NTRC46BB	Clock to FIJI Cable (5.5 ft. - 8 ft./1.7m - 2.4m)	2

**Table 7**  
**Equipment required for Option 61C upgrade to Option 81C with Fiber Network Fabric**  
**(Part 3 of 3)**

Order number	Description	Quantity per system
NTRC47AA	FIJI to FIJI Synch Cable	1
NTRC48AA	FIJI Fiber Ring Cable - 6 ft./2 m.	2
NTRC48CA	Fiber Ring Cables (12 ft./3.7 m)	2
NT4R39AA	Optical Cable Management Card (OCMC)	2
<sup>1</sup> Required for AC Systems only.		
<sup>2</sup> Required for DC Systems only.		

## Compatible hardware

Fiber Network Fabric is supported by Option 81 and 81C systems that include the hardware below:

### Systems and related hardware

- All Enhanced Call Processor cards based on Motorola 68040, 68060, and 68060.
- Call Processor (CP PII) systems based on Intel Pentium II.
- All Network and Peripheral Equipment except equipment listed in “Incompatible FNF related hardware” on page 32. Fiber Network does not support equipment related to the Intergroup cards or Intergroup module.
- All Desktop and Applications Equipment.
- DC Power Supplies NT6D40 and NT6D41 must be AD vintage.
- QPC43 Peripheral Signaling cards must be minimum vintage R or later.
- NTRB53 Clock Controller cards must be vintage AA or later.
- QPC471 Clock Controller cards must be vintage H or later.
- QPC775 Clock Controller cards must be vintage E or later.

**Note:** NTRB53, QPC471 and QPC775 Clock cards cannot be combined in one system.

- QPC441 3-Port Extender (3PE) cards must be vintage F or later.
- NT8D29 ac Power Supply for CP PII must be vintage BA or later.
- NT6D41 dc Power Supply for CP PII must be vintage CA or later.

**Minimum memory requirements**

Meridian 1 systems with Fiber Network must meet the minimum Release 25 memory requirements listed in Table 8 on page 30.

- Fiber Network systems must contain either the CP2 (68040), CP3 (68060), CP 4 (68060E) or CP PII Core processor cards.
- Systems that do not contain these cards (such as the XT) must upgrade to either the CP4 or CP PII cards.

DRAM memory can be upgraded by the customer. See “Memory upgrade guidelines” on page 31 for information on DRAM upgrades.

Flash memory cannot be upgraded by the customer.

**Table 8**  
**Minimum memory requirements**

System configuration	Flash memory requirements	DRAM memory requirements	Total Memory requirements
Two to five Network groups	32 MB	64 MB	96 MB
Six to eight Network groups	32 MB	80 MB	112 MB
New 68060E systems or systems upgraded to 68060E call processor	64 MB	96 MB	160 MB
CP PII Core processors			128 MB <sup>2</sup>
<p><b>Note 1:</b> In addition to the memory requirements stated above, the call processor must have sufficient real time capacity. Consult your Nortel Networks representative after the upgrade process is complete to determine whether a call processor has sufficient real time capability.</p> <p><b>Note 2:</b> CP PII systems are only shipped in a 128 MB configuration. This memory cannot be upgraded in the field.</p>			

### Memory upgrade guidelines

Follow the instructions in Table 9 on page 31 to upgrade the memory in systems with two to five Network groups.

Follow the instructions in Table 10 on page 32 to upgrade the memory in systems with six to eight Network groups

These guidelines are for Option 81 or 81C systems with software Release 25 and Fiber Network. These guidelines are also for XT and single Core systems that are upgraded to dual Core systems:

**Table 9**  
**Memory upgrades for two to five Network groups.**

Motorola call processor	Current flash memory	Current DRAM memory	Upgrade process
68040, 68060, 68060E	32 MB	32 MB	Upgrade the DRAM memory to 64 MB. Add one 32 MB DRAM SIMM per processor card.
68040, 68060, 68060E	32 MB	48 MB	Upgrade the DRAM memory to 80 MB. Add one 32 MB DRAM SIMM per processor card.
68040, 68060, 68060E	64 MB	48 MB	Upgrade the DRAM memory to 80 MB. Add one 32 MB DRAM SIMM per processor card.
68060E	64 MB	64 MB	No upgrade required.
<p><b>Note 1:</b> The NTZC75AA DRAM memory upgrade kit contains one 32 MB SIMM for the upgrades described above.</p> <p><b>Note 2:</b> The NTZC77AA kit contains the anti-static mat and ESD wrist-strap required to perform a memory upgrade.</p>			

**Table 10**  
**Memory upgrade guidelines for six to eight Network groups**

Motorola call processor	Current flash memory	Current DRAM memory	Upgrade process
68060, 68060E	32 MB	32 MB	Upgrade the DRAM memory to 96 MB. Add two 32 MB DRAM SIMMs per processor card.
68060, 68060E	32 MB	48 MB	Upgrade the DRAM memory to 112 MB. Add one 32 MB DRAM SIMM per processor card.
68060, 68060E	64 MB	48 MB	Upgrade the DRAM memory to 80 MB. Add one 32 MB DRAM SIMM per processor card.
68060E	64 MB	64 MB NT5D03FA	Upgrade the DRAM memory to 80 MB. Remove one 16 MB DRAM SIMM and add one 32 MB DRAM SIMM. Repeat this process for both processor cards.
68060E	64 MB	64 MB NT5D03FB	Upgrade the DRAM memory to 96 MB. Add one 32 MB DRAM SIMM per processor card.
<p><b>Note 1:</b> The NTZC75AA DRAM memory upgrade kit contains one 32 MB SIMM for the upgrades described above.</p> <p><b>Note 2:</b> The NTZC77AA kit contains the anti-static mat and ESD wrist-strap required to perform a memory upgrade.</p>			

**Incompatible FNF related hardware**

- InterGroup Switch (IGS) card (QPC412)
- Dual InterGroup Switch (DIGS) card (NT5D30)
- Intergroup module (NT8D36)
- Junctor Board (QPC417)
- All marketing packages that contain the above items.

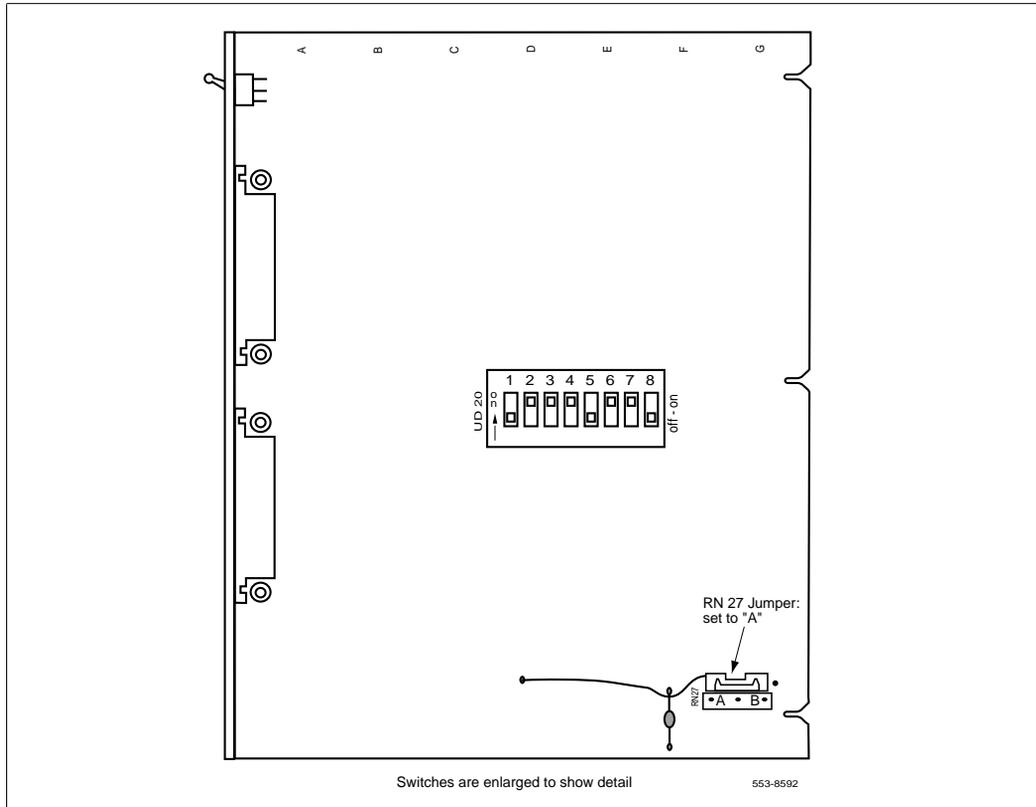
## Check 3PE settings

3PE card switches must be set to reflect the Network group number and Core module to which they belong. The 3PE switches and jumpers can be set before or during the upgrade. 3PE cards must be removed from the system to be configured. Since the removal of these cards will disrupt the system, reconfigure the 3PE cards when the impact to the site is minimal.

Follow the instructions below to verify that the 3PE cards are correctly configured:

- 1 All 3PE cards must be vintage F or later.  
**Note:** Figure 2 on page 34 shows a side view of the 3PE card and the location of the switch settings.
- 2 Jumper RN27 must also be set to "A".
- 3 If new groups are added or if a 3PE card is moved, the switches must be reset.  
**Note:** The settings for 3PE cards in shelves NT5D21, NT6D39, NT6D60, and NT9D11 are different from those in all other shelves.
  - a. Table 11 on page 35 shows the 3PE settings for cards installed in NT5D21, NT6D39, NT6D60, and NT9D11 Modules.
  - b. Table 12 on page 36 and Table 13 on page 36 show the 3PE settings for 3PE cards installed in all modules, *except* NT5D21, NT6D39, NT6D60, and NT9D11.

Figure 2  
3PE card: side view



**Table 11**  
**QPC441 3PE Card installed in the NT5D21, NT6D39, NT6D60, and NT9D11 Modules**

<b>Jumper Settings: Set Jumper RN27 at E35 to "A".</b>									
<b>Switch Settings</b>									
<b>Module</b>		<b>D20 switch position</b>							
NT6D60 (Option 81)		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Core 0		off	on	on	off	off	on	off	on
Core 1		off	on	on	off	off	on	off	off
NT5D21 (Option 81C)		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Core/Net 0 (Shelf 0)	Group 0	off	on	on	off	on	on	on	on
	Group 1	off	on	on	off	on	on	off	on
	Group 2	off	on	on	off	on	off	on	on
	Group 3	off	on	on	off	on	off	off	on
	Group 4	off	on	on	off	off	on	on	on
	Group 5	off	on	on	off	off	on	off	on
	Group 6	off	on	on	off	off	off	on	on
	Group 7	off	on	on	off	off	off	off	on
Core/Net 1 (Shelf 1)	Group 0	off	on	on	off	on	on	on	off
	Group 1	off	on	on	off	on	on	off	off
	Group 2	off	on	on	off	on	off	on	off
	Group 3	off	on	on	off	on	off	off	off
	Group 4	off	on	on	off	off	on	on	off
	Group 5	off	on	on	off	off	on	off	off
	Group 6	off	on	on	off	off	off	on	off
	Group 7	off	on	on	off	off	off	off	off

**Table 12**  
**QPC441 3PE Card installed in shelf 0 of modules or shelves *other than* NT5D21, NT6D39, NT6D60, and NT9D11**

Group	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
5	off	on	on	on	off	on	off	on
6	off	on	on	on	off	off	on	on
7	off	on	on	on	off	off	off	on

**Table 13**  
**QPC441 3PE Card installed in shelf 1 of modules or shelves *other than* NT5D21, NT6D39, NT6D60, and NT9D11**

Group	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
5	off	on	on	on	off	on	off	off
6	off	on	on	on	off	off	on	off
7	off	on	on	on	off	off	off	off

## Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)

During an Option 61C upgrade to Option 81C with Fiber Network Fabric, the two Clock Controller cards must be relocated from the NT5D21 Core/Net modules to the NT8D35 Network modules.

During an Option 81 upgrade, the two Clock Controller cards must be relocated from the NT6D60 Core modules to the NT8D35 Network modules.

Before the upgrade, determine where the Clock Controllers will be moved based on the following rules:

- 1 The two Clock Controllers must be installed in Slot 13 of any Network module. If another card is already located in slot 13, relocate the card prior to the upgrade.
- 2 One Clock must be installed in a Network shelf 0. The second Clock Controller must be installed in a Network shelf 1.
- 3 If current Clock Controller Reference cables are the wrong length after the Clock is moved, new NT8D79xx or NTCG03xx PRI/DTI to Clock Controller cables must be ordered separately.  
**Note:** QPC720 PRI cards require NT8D79xx cables. NT5D12 Dual PRI/DTI cards require NTCG03xx cables.
- 4 If possible, install each Clock Controller in a different Network group.
- 5 If possible, install the Clock Controllers in separate columns for power and cooling redundancy.  
**Note:** Either two NTRB53 (vintage AA or later), or two QPC471 (vintage H or later) or two QPC775 (vintage E or later) Clock Controllers can be installed in a system. These three types of Clock cards cannot be combined in one system.

### Identify two unique IP addresses

Each CP PII system must be configured with two unique IP addresses for LAN identification and communication. One IP number is defined for the *active* Core. The second IP address is defined for the *inactive* Core.

In this configuration, the *active* Core (either Core 0 or Core 1) that handles call processing is always identified by the same IP address.

- 1 Contact your systems administrator to identify two unique IP numbers before the upgrade.
- 2 For instructions to configure these IP numbers, see “Configure the IP addresses” on page 220.

## Connect a terminal

A maintenance terminal is required to access the Core or Core/Net modules during the upgrade procedure.

- 1 Connect a terminal to the J25 port on the I/O panel in the *inactive* Core or Core/Net module.
- 2 The settings for the terminal are:
  - 9600 Baud, 7 data, space parity, 1 stop bit, full duplex, XOFF
- 3 If only one terminal is used for both Core or Core/Net modules, the terminal will have to be connected from side to side to access each module. A “A/B” switch box can also be installed to switch the terminal from side to side.

## Check the Core ID switches

Each CP PII Core/Net card cage or module is identified as “Core 0” or “Core 1”. This setting is made by a set of option switches on the side of the System Utility Transition card. The Core ID switches are set in the factory. Confirm that these settings match the identification labels for the module into which they will be installed.



### **CAUTION**

#### **System Failure**

The CP PII Core/Net card cages **MUST** be installed in the correct Core 0 or Core 1 module.

- 1 Remove the screws on the top and bottom of the System Utility Transition card. This card is located in the back of the CP PII card cage or module (Figure 3 on page 39).
- 2 Pull the System Utility Transition card far enough out of its slot so you can see the ID switch settings. (Figure 4 on page 40).

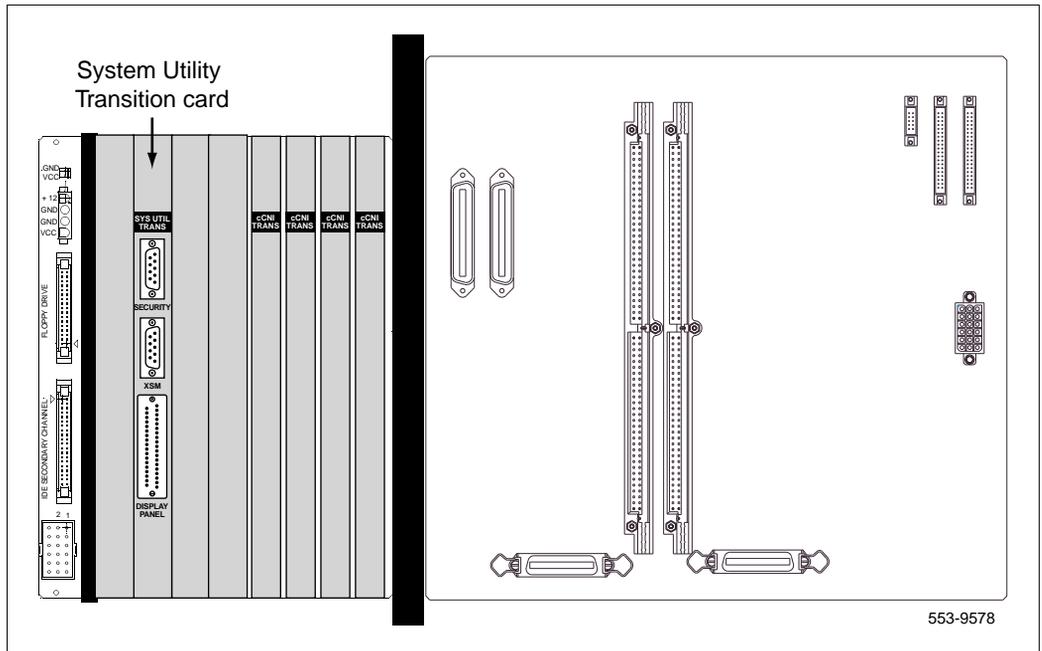
- 3 Configure the switch settings according to Table 14 on page 39.

**Table 14**  
**Core module ID switch settings (System Utility Transition card)**

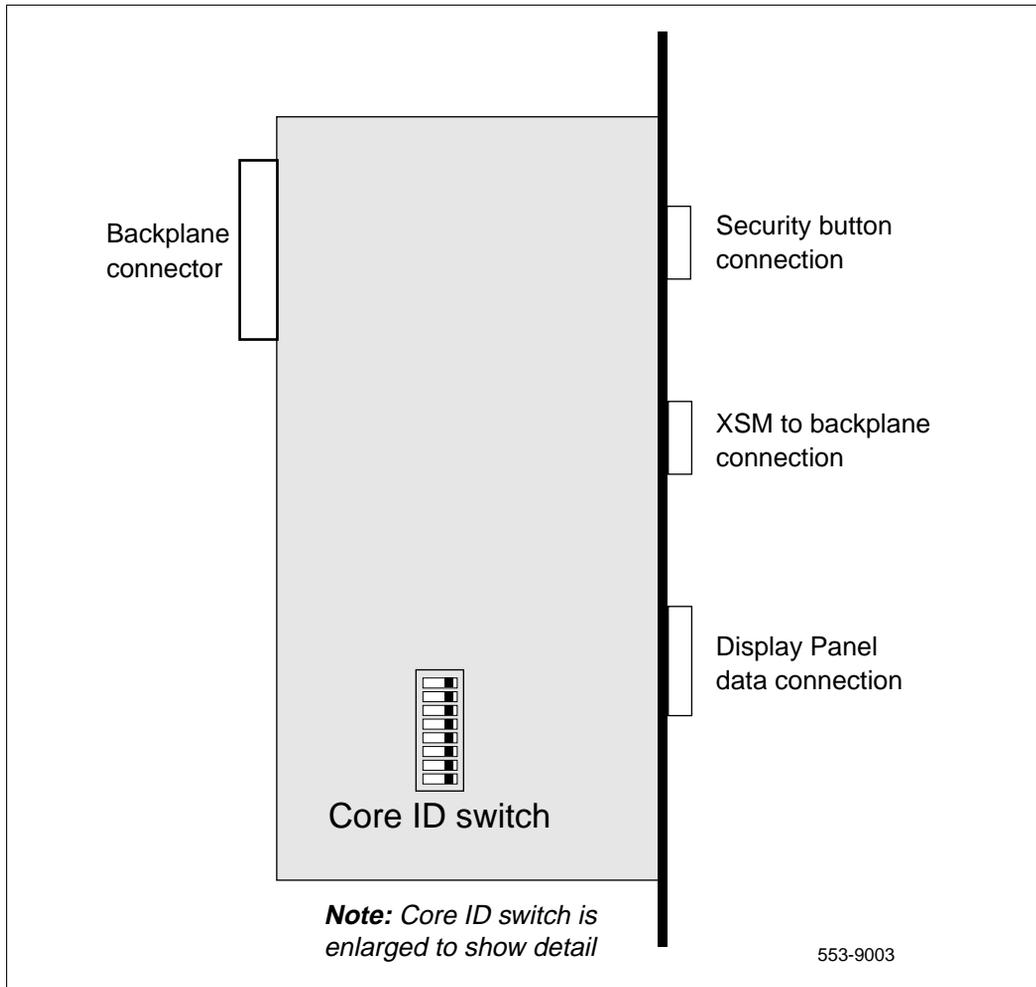
Core 0	All switches are set to ON
Core 1	Switch 1 is set to OFF Switches 2 through 8 are set to ON

- 4 Reinstall the System Utility Transition card:
  - a. Gently slide the card into the slot until it makes contact with the backplane. Never force a card into the slot.
  - b. Push in the top and bottom latches on the card to lock it in place.

**Figure 3**  
**Location of the System Utility Transition card (rear view of the CP PII backplane)**



**Figure 4**  
**System Utility Transition card (side view)**



## Print site data

Print site data to preserve a record of the system configuration (Table 15 on page 41). Verify all information is correct. Make corrections if necessary.

*Note:* Items marked with an asterisk (\*) are required. Other items are recommended for a total system status.

**Table 15**  
**Print site data (Part 1 of 2)**

Site data	Print command	
Terminal blocks for all TNs	LD 20  REQ TYPE CUST	PRT TNB <cr>
Directory Numbers	LD 20 (LD 22 prior to Release 16)	
	REQ TYPE CUST	PRT DNB <cr>
Attendant Console data block for all customers	LD 20  REQ TYPE CUST	LD 20  PRT ATT, 2250 <cr>
*Customer data block for all customers	LD 21  REQ TYPE CUST	LD 21  PRT CDB <cr>
Route data block for all customers	LD 21  REQ TYPE CUST ROUT ACOD	PRT RDB Customer number <cr> <cr>
*Configuration Record	LD 22  REQ TYPE	PRT CFN

**Table 15**  
**Print site data (Part 2 of 2)**

Site data	Print command	
*Software packages	LD 22  REQ TYPE	PRT PKG
*Software issue, ROM and tape ID	LD 22  REQ REQ REQ	ISS ROM TID
* Peripheral software versions	LD 22  REQ TYPE	PRT PSWV
ACD data block for all customers	LD 23  REQ TYPE CUST ACDN	PRT ACD Customer Number ACD DN (or <CR>)
Superloop card IDs and software version (peripheral controller, superloop network and controller cards)	LD 32  .	IDC loop
Multi-purpose ISDN Signaling Processor (MISP) card	LD 27  REQ TYPE LOOP APPL PH	PRT MISP loop number (0-158) <cr> <cr>
DTI/PRI data block for all customers	LD 73  REQ TYPE	PRT DDB
<p><b>Note:</b> Items marked with asterisks (*) are required printout for conversion. Other items are recommended for a total system status.</p>		

## Perform a template audit

A template audit (LD 01) reviews the templates in your system. Corrupted and duplicate templates are cleaned up.

An example of the information generated during the audit is listed below.

*Note:* The template audit may take an extended period of time on large systems. Run the audit during a low traffic period.



### CAUTION

#### Loss of Data

Do not abort this overlay until the audit is complete. If the overlay is interrupted, data will be corrupted.

**LD 01** The audit begins as soon as LD 01 is entered.

#### TEMPLATE AUDIT

##### STARTING PBX TEMPLATE SCAN

TEMPLATE 0001 USER COUNT LOW	CHECKSUM OK
TEMPLATE 0002 USER COUNT HIGH	CHECKSUM OK
TEMPLATE 0003 NO USERS FOUND	

##### STARTING SL1 TEMPLATE SCAN

TEMPLATE 0001 USER COUNT OK	CHECKSUM OK
-----------------------------	-------------

- 
- 

TEMPLATE 0120 USER COUNT OK	CHECKSUM OK
-----------------------------	-------------

TEMPLATE AUDIT COMPLETE

## Determine whether Group 0 will be in the Core/Net module

When upgrading to CP PII, it is important to know whether Network group 0 will be in the Core/Net module or not. Many existing installations will have Group 0 already established in a standard Network shelf, and will desire to place a higher Network group in the Core/Net.

If Network group 0 will be in the Core/Net, the factory configuration of the new Core/Net modules is correct, and no further action is required.

If Network Group 0 will not be in the Core/Net module, some re-configuration of the processor module is required, to allow for concurrent or future use of the Network portion of the Core/Net for a higher Network group.

## Back up the database (data dump and ABKO)

To back up the data on the system, complete the two part procedure described below:

Perform a data dump to save all system memory to the hard disk.

Perform a ABKO (attended backup) to save the database to a spare set of floppy disks.

### Perform 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.



#### CAUTION

##### Loss of Data

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before the system is upgraded to CP PII.

The messages "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" will appear once the data dump is complete.

\*\*\*\* To exit the program.

### Perform an ABKO (save the database to floppies)

- 1 Insert floppy diskettes into BOTH floppy disk drives in each Core IODU/C.  
**Note:** If the file is too large to fit on a single floppy disk, the ABKO command will compress the data. If the compressed data is still too large to fit on a single disk, both floppy disks in the two IODU/C drives will be used. Be sure to insert floppy disks into BOTH IODU/C drives before the ABKO backup is begun.
- 2 Load the Customer Configuration Backup and Restore (LD 143). At the prompt, enter  
**LD 143** to load the program
- 3 Run the ABKO backup (LD 143):  
**ABKO** To run the backup.
- 4 If the backup is successful, a message will state that the database backup is complete. A report will also indicate which floppy drives were used by the procedure.
- 5 If there are validation errors, repeat the procedure.



#### **CAUTION**

##### **Loss of Data**

If the backup is not successful, do not continue; contact your technical support organization. Any backup problems must be corrected before the system is upgraded to CP PII.

- 6 Once the backup is complete, type:  
**\*\*\*\*** To exit the program.

### Convert the 4 MB database media to 2 MB database media

Before the system is upgraded to CP PII, the database must be converted to 2 MB media. Systems with an IODU/C drive already have 2 MB media and can skip this procedure.

If the database is on a 4 MB database media (the system has an IOP/CMDU), the 4 MB customer database must be transferred to 2 MB media:

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the IOP or CMDU in Core 1.
- 3 Press the reset button (MAN RST) on the CP card in Core 1 to reboot the system. Start the Database Transfer Utility Tool.



**CAUTION**  
**System Failure**

Select only options:

- <t> *Tools Menu* from the Install menu
- and <s> *To archive existing database* from the Tools menu.

DO NOT select any other options. Other options can result in operating system corruption.

- 4 From the installation menu select:  

<t>	<b>To go to the Tools menu.</b>
<s>	<b>To archive existing database.</b>
<cr> <a>	<b>To continue with archive (insert blank 2MB diskette from the software kit into the floppy drive in Core 1).</b>
<cr> <a>	<b>Diskette is now in floppy drive in Core 1.</b>
- 5 The message displays "Database backup complete!" and the Tool menu appears again after the backup completes correctly.
- 6 Remove the 2 MB diskette with the customer database from the floppy drive of the IOP or CMDU.  
  
Keep the diskette for use after you convert Core 1 to NT4N41 Core/Net 1.  
  
Do not reboot the system at this point.

## Prepare to move Clock Controllers on Option 51/51C



### CAUTION

#### Service Interruption

Do not move the Clock Controllers now. The guidelines are presented here for system planning. You will move the Clock Controllers later during the actual upgrade.

The existing Clock Controller in Option 51/51C systems must be moved from the Core module to the Network modules.

Review the following rules to determine the new location of the Clock Controllers before you move Clock Controller 1.

- If possible, install each Clock Controller in a different Network group.
- If possible, install the Clock Controllers in separate columns for power and cooling redundancy.
- Install Clock Controller 0 in Network shelf 1-0, slot 13. Install Clock Controller 1 in Network shelf 1-1, slot 13.

*Note:* Either two NTRB53 (vintage A or later) or two QPC471 (vintage H or later) or two QPC775 (vintage E or later) Clock Controllers can be installed in a system. These three types of Clock Controllers cannot be combined in one system.

- If current Clock Controller cables are the wrong length after the Clock Controller is moved, **new NT8D79 or NTCG03 PRI/DTI to Clock Controller** cables must be ordered separately.

*Note:* QPC720 PRI cards require NT8D79 cables. NT5D12 Dual PRI/DTI cards require NTCG03 cables.

## Prepare to move Clock Controllers on Option 61/61C



### CAUTION

#### Service Interruption

Do not move the Clock Controllers now. The guidelines are presented here for system planning. You will move the Clock Controllers later during the actual upgrade.

The existing Clock Controllers in Option 61/61C systems must be moved from the Core modules to the Network modules.

Review the following rules to determine the new location of the Clock Controllers before you move Clock Controller 1.

- If possible, locate each Clock Controller in a different Network group.
- If possible, locate the Clock Controllers in separate columns for power and cooling redundancy.
- Locate Clock Controller 0 in Network shelf 1-0, slot 13.
- Locate Clock Controller 1 in Network shelf 1-1, slot 13.
- Either two NTRB53 (vintage A or later) or two QPC471 (vintage H or later) or two QPC775 (vintage E or later) Clock Controllers can be installed in a system. These three types of Clock Controllers cannot be combined in one system.
- If current Clock Controller cables are the wrong length after the Clock Controller is moved, **new NT8D79 or NTCG03 PRI/DTI to Clock Controller** cables must be ordered separately.
- QPC720 PRI cards require NT8D79 cables. NT5D12 Dual PRI/DTI cards require NTCG03 cables.

## In Core 0, pre-route cables

To minimize system downtime during the upgrade, whenever possible, route all cables before you begin the upgrade.



### CAUTION

#### Service Interruption

Be careful not to dislodge existing cables when routing new cables.

- 1 Label all cables at both ends.
- 2 Remove all module trim panels where cables will be routed.
- 3 Do not excessively bend or cinch the Fiber Ring cables. These cables are easily damaged. Use the Optical Cable Management Card (OCMD) to manage and protect the Fiber Ring cables.

## Options 71 and 81 - Guidelines for moving Clock Controllers



### CAUTION

#### Service Interruption

Do not move the Clock Controllers now. The guidelines are presented here for system planning. You will move the Clock Controllers later during the actual upgrade.

This information applies to Option 71 and 81 systems only.

For Option 81C upgrades, proceed to “Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)” on page 37.

The Clock Controllers in Option 71 and 81 systems must be moved from the Core modules to the Network modules. The new CP PII Core/Net modules do not provide slots for the Clock Controller cards.

Review the following rules to determine the new location of the Clock Controllers before you move Clock Controller 1:

- The two Clock Controllers must be installed in Slot 13 of any two Network modules. If another card is already located in slot 13, relocate the card prior to the upgrade.

**Note:** Either two NTRB53 (vintage A or later) or two QPC471 (vintage H or later) or two QPC775 (vintage E or later) Clock Controllers can be installed in a system. These three types of Clock Controllers cannot be combined in one system.

- One Clock Controller must be installed in a Network shelf 0. The second Clock Controller must be installed in a Network shelf 1.
- If possible, install each Clock Controller in a different Network group.
- If possible, install the Clock Controllers in separate columns for power and cooling redundancy.
- If current Clock Controller cables are the wrong length after the Clock is moved, new NT8D79 or NTCG03 PRI/DTI to Clock Controller cables must be ordered separately.

**Note:** QPC720 PRI cards require NT8D79 cables. NT5D12 Dual PRI/DTI cards require NTCG03 cables.

## Pre-route cables

To minimize system downtime during the upgrade, route all cables before the upgrade is begun.

Use the information below to plan the exact path and placement of each cable.



### **CAUTION**

#### **Service Interruption**

Be careful not to dislodge existing cables when routing new cables.

- 1 Label all cables at both ends.
- 2 Remove all module trim panels where cables will be routed.
- 3 Do not excessively bend or kink the Fiber Ring cables. These cables are easily damaged. Use the Optical Cable Management Card (OCMC) to manage and protect the Fiber Ring cables.
- 4 Proceed to “Route the FIJI Fiber Ring cables” on page 52.

## Route the FIJI Fiber Ring cables

The Dual Ring Fiber Network is comprised of two separate Rings of NTRC48 fiber optic cable: one Ring between the FIJI cards in all Network shelf 0's and a second Ring between the FIJI cards in all Network shelf 1's.

Carefully route the NTRC48 cables before installation. Always label both ends of each cable to simplify installation, reduce confusion and assist in troubleshooting.

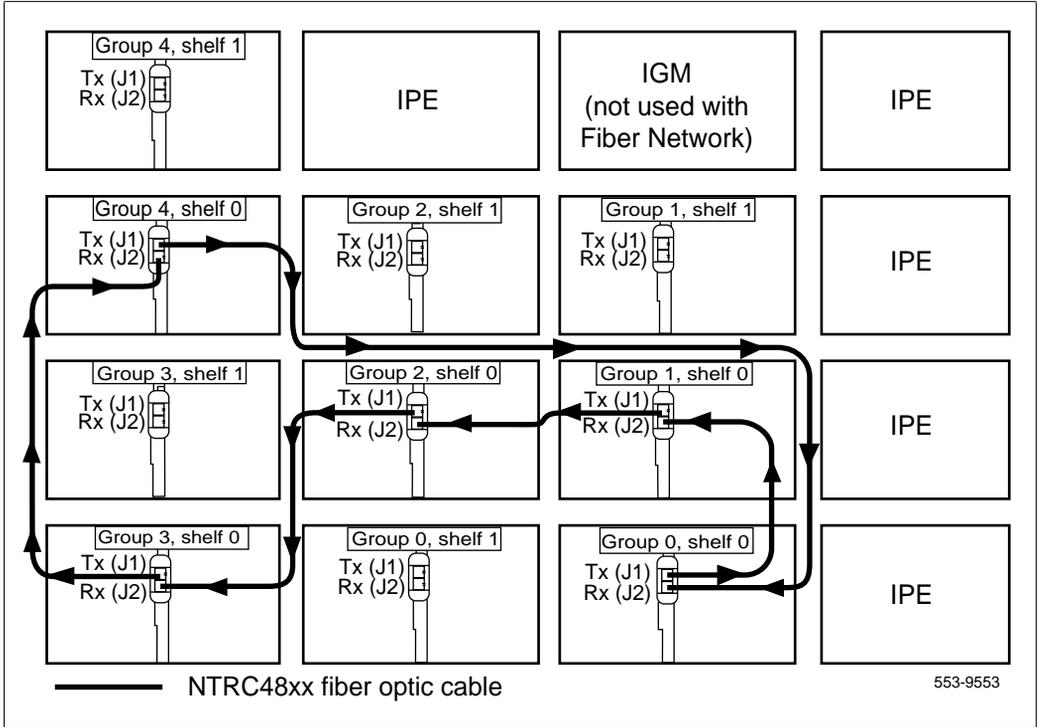
### Route the shelf 0 fiber optic cables (ascending)

Route the NTRC48 cables between the FIJI cards in each Network shelf 0 in *ascending* order (Figure 5 on page 53 and Table 16 on page 54):

**Note:** Each end of the NTRC48xx cable is labeled "Tx" or Rx" in the factory.

- 1 Start with group 0, shelf 0.
- 2 Route a NTRC48xx FIJI Fiber Ring cable of the appropriate length from the FIJI card in Group 0, shelf 0 to the FIJI card in Group 1, shelf 0.
- 3 Route a NTRC48xx FIJI Fiber Ring cable of the appropriate length from the FIJI card in Group 1, shelf 0 to the FIJI card in Group 2, shelf 0.
- 4 Continue to route NTRC48xx FIJI Fiber Ring cables of the appropriate length between the shelf 0 of each Network group. Route these cables in ascending order of Network groups.
- 5 To complete the Ring, route a final cable from the highest number group back to Group 0, shelf 0.

**Figure 5**  
**Shelf 0 ascending fiber optic Ring (example)**



**Table 16**  
**FIJI Ring 0 connections**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2

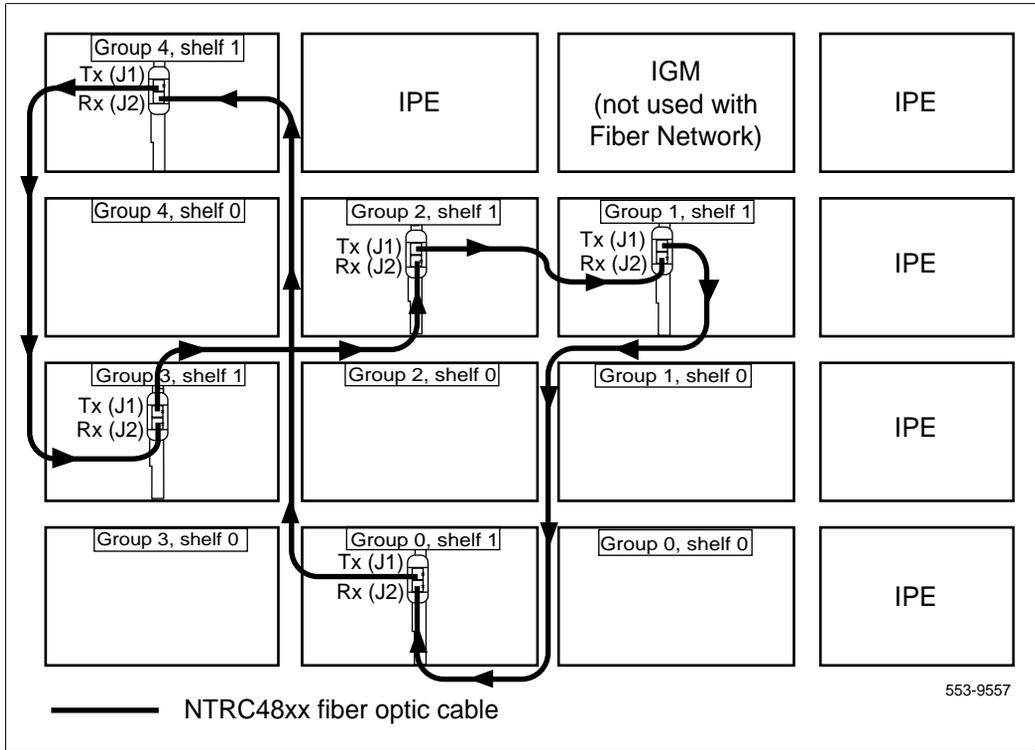
### Route the shelf 1 fiber optic cables (descending)

Route the NTRC48 cables between the FIJI cards in each Network shelf 1 in *descending* order (Figure 6 on page 56 and Figure 17 on page 56).

**Note:** Each end of the NTRC48xx cable is labeled “Tx” or Rx” in the factory.

- 1 Start with the Tx (J1) port in group 0, shelf 1.
- 2 Route a NTRC48xx FIJI Fiber Ring cable of the appropriate length from the FIJI card in Group 0, shelf 1 to the FIJI card in the highest Network group, shelf 1.
- 3 Route a NTRC48xx cable from the FIJI card in the highest Network group, shelf 1 to the FIJI card in the second highest Network group, shelf 1.
- 4 Continue to route NTRC48xx FIJI Fiber Ring cables of the appropriate length between shelf 1 of each Network group. Route these cables in descending order of Network Groups.
- 5 To complete the Ring, route a final cable from Group 1, shelf 1 to Group 0, shelf 1.

**Figure 6**  
**Shelf 1 descending fiber optic Ring (example)**



**Table 17**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1
6/1	P2	Rx - J2

**Table 17**  
**FIJI Ring 1 connections**

<b>Groups 0 - X are cabled in descending order</b>		
<b>Group/shelf</b>	<b>NTRC48 fiber cable connector</b>	<b>FIJI card connector</b>
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2

## Route FIJI to FIJI cables

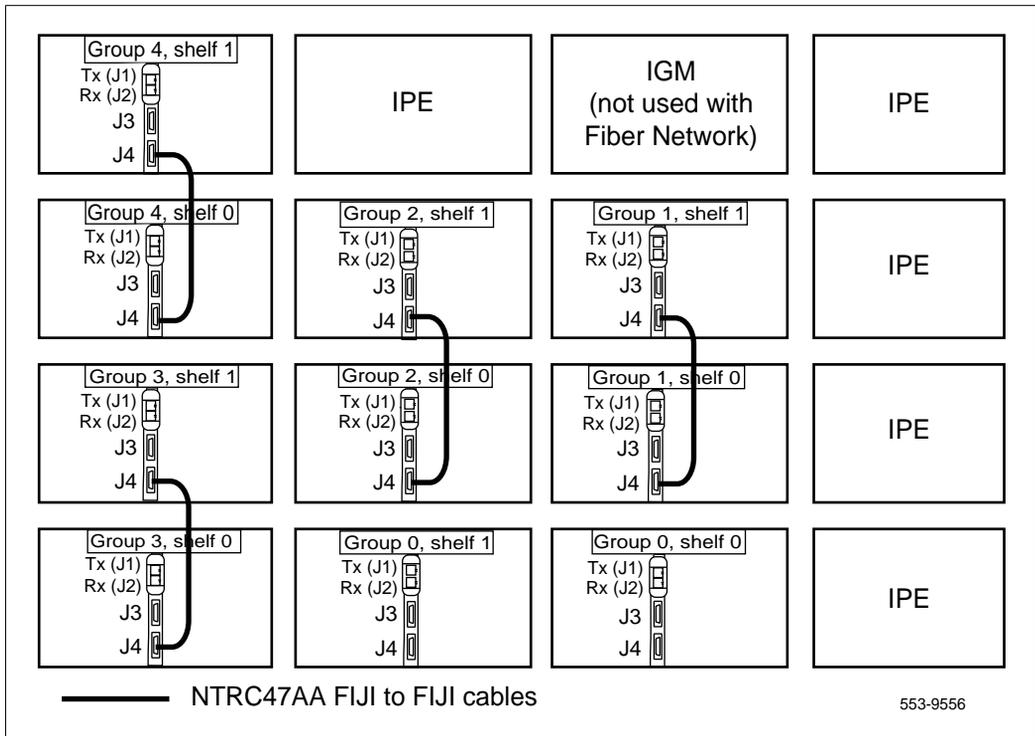
The FIJI cards in shelf 0 and shelf 1 in each Network group (*except group 0*) must be directly connected with a NTRC47AA FIJI to FIJI Synch cable.

**Note:** Route the cables only at this time. Do not connect the cables until the appropriate time during the installation.

- 1 Route a NTRC47AA cable between the FIJI cards in shelf 0 and shelf 1 of Network groups 1 through 7. These cables are connected to the J4 ports of the FIJI cards during the installation process.

Do not route a cable in group 0. The FIJI to FIJI connection in group 0 is part of the Clock Controller connection described on page 59.

**Figure 7**  
Route the FIJI to FIJI cables (Option 81C example)



## Route the Clock Controller cables

Clock to Clock (NTRC49) and Clock to FIJI (NTRC46) cables must be in place before the upgrade (Figure 8 on page 60). Do not connect the cables to the FIJI cards or Clock Controller cards. Route the cables only. The cables are not connected until the actual upgrade is performed.

### Route the Clock to Clock cable

- 1 Route a NTRC49 Clock to Clock cable between Clock 0 and Clock 1. Route the P1 end to Clock 0 and the P2 end to Clock 1. Do not connect the cable to the Clock Controllers.

**Note 1:** If the Clock Controllers need to be moved, route the cables to the new Clock locations. See “Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)” on page 37 for more information.

### Connect the Clock to FIJI cables (Clock end)

- 2 From Clock 0: Connect the “J1 Clock “ end of a Clock to FIJI cable (NTRC46Ax) to the J1 end of the Clock to Clock cable.
- 3 From Clock 1: Connect the “J1 Clock “ end of a second Clock to FIJI cable (NTRC46Ax) to the J2 end of the Clock to Clock cable.

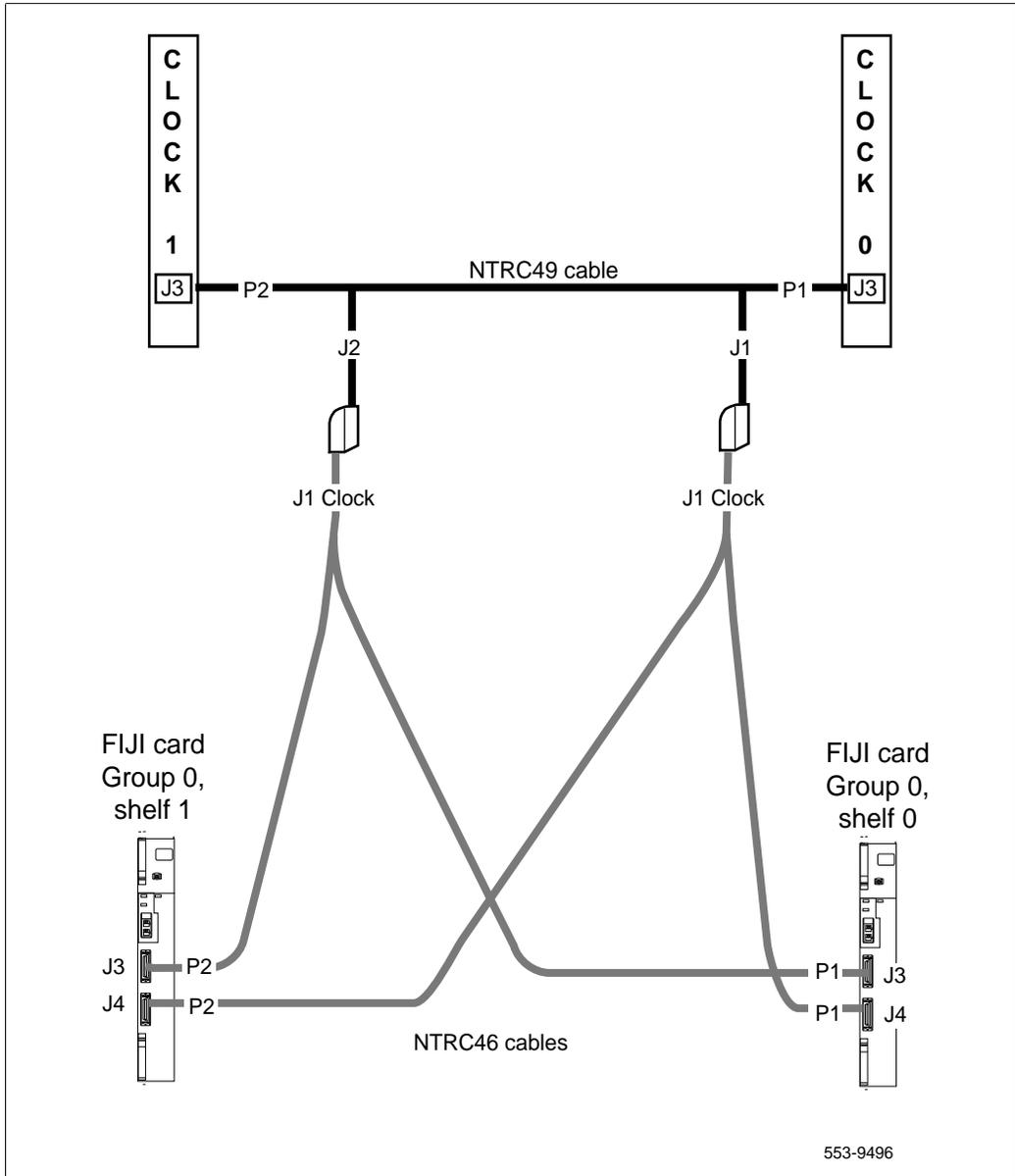
### Route the Clock 0 to FIJI cables (FIJI end)

- 4 From Clock 0: Route the P1 end of the Clock to FIJI cable (NTRC46Ax) to Group 0, shelf 0.  
Do not connect the cable to the FIJI card.
- 5 From Clock 0: Route the P2 end of the Clock to FIJI cable (NTRC46Ax) to Group 0, shelf 1.  
Do not connect the cable to the FIJI card.

### Route the Clock 1 to FIJI cables (FIJI end)

- 6 From Clock 1: Route the P1 end of the Clock to FIJI cable (NTRC46Ax) to Group 0, shelf 0.  
Do not connect the cable to the FIJI card.
- 7 From Clock 1: Route the P2 end of the Clock to FIJI cable (NTRC46Ax) to Group 0, shelf 1.  
Do not connect the cable to the FIJI card.

Figure 8  
Clock Controller cable configuration



## Route CNI to 3PE cables if necessary

The original NTND14 3PE to CNI cables are used with NCE.

When CNI-3 cards are installed in place of two port CNI cards, the original NTND14 cables can be left in place; only the NT9D89 CNI-3 to 3PE faceplate cables must be added.

- 1 Route two NT9D89 CNI-3 to 3PE cables from the faceplate of the 3PE card to the faceplate of the CNI3 card.

## Perform a template audit

A template audit (LD 01) reviews the templates in your system. Corrupted and duplicate templates are cleaned up.

An example of the information generated during the audit is listed below.

*Note:* The template audit may take an extended period of time on large systems. Run the audit during a low traffic period.



### **CAUTION**

#### **Loss of Data**

Do not abort this overlay until the audit is complete. If the overlay is interrupted, data will be corrupted.

**LD 01** The audit begins as soon as LD 01 is entered.

#### **TEMPLATE AUDIT**

##### **STARTING PBX TEMPLATE SCAN**

**TEMPLATE 0001 USER COUNT LOW CHECKSUM OK**

**TEMPLATE 0002 USER COUNT HIGH CHECKSUM OK**

**TEMPLATE 0003 NO USERS FOUND**

##### **STARTING SL1 TEMPLATE SCAN**

**TEMPLATE 0001 USER COUNT OK CHECKSUM OK**

•

•

TEMPLATE 0120 USER COUNT OK  
TEMPLATE AUDIT COMPLETE

CHECKSUM OK

## Backup the database

### Perform 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



#### CAUTION

##### Loss of Data

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before the system is upgraded to Fiber Network.

The messages "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" will appear once the data dump is complete.

\*\*\*\*

to exit the program

### Perform an ABKO (save the database to floppies)

- Insert floppy diskettes into BOTH floppy disk drives in each Core or Core/Net IODU/C.
- If the file is too large to fit on a single floppy disk, the ABKO command will compress the data. If the compressed data is still too large to fit on a single disk, both floppy disks in the two IODU/C drives will be used. Be sure to insert floppy disks into BOTH IODU/C drives before the ABKO backup is begun.
- Load the Customer Configuration Backup and Restore (LD 143). At the prompt, enter  
**LD 143** to load the program

- Run the ABKO backup (LD 143):  
**ABKO** to run the backup
- If the backup is successful, a message will state that the database backup is complete. A report will also indicate which floppy drives were used by the procedure.
- If there are validation errors, repeat the procedure.



**CAUTION**

**Loss of Data**

If the backup is not successful, do not continue; contact your technical support organization. Any backup problems must be corrected before the system is upgraded to Fiber Network.

Once the backup is complete, type:

\*\*\*\*

to exit the program

## Fiber Network Fabric application notes

This section provides information about FIJI card loadware and explains how to perform automatic and manual loadware download procedures.

### Automatic FIJI loadware download

If there is a version change on any of the FIJIs, the automatic download will be triggered by INIT. It will start about two minutes after INIT. The automatic download will occur on up to four FIJI cards (on the same ring) in parallel. The automated download is almost four times faster than the manual method.

### Manual FIJI loadware download

If for any reason the automatic download does not complete successfully, you can perform a manual download of the FIJI firmware. If the automatic download is not successful, a FIJI006 (Ring Recovery Failure) message will be displayed. This message indicates that the download has stopped and that the ring being downloaded was unable to complete. If this occurs, issue the STAT FIJI x y FULL command in LD 39 to verify that the firmware version matches on all FIJI cards. If the firmware version does not match, proceed with the manual download process as described below.

There are two ways to manually download FIJI card loadware:

- download to an individual card
- download to an entire ring

**Note:** A FIJI card cannot be upgraded while the ring that the FIJI card is in carries traffic. You must move all traffic to the other ring before any download can be done to an individual card or a whole ring.

Following either download method will cause the FIJI cards to be upgraded one at a time. It takes approximately 15 minutes to upgrade one FIJI card. Downloading to an entire ring causes each FIJI card in the ring to be upgraded in sequence one at a time. For a four-group ring, it would take approximately one hour. An eight-group ring would take approximately two hours.

The total amount of time to manually download all 16 FIJI cards on an eight-group system (both rings) would be approximately four hours.

- 1 Download one FIJI card in Overlay 39

**ARCV OFF**

**SWRG s** s the other ring

**STAT SCG s**

If clock active on side s go to next step, otherwise, SCLK.

**DIS FIJI x y** x-group#, y-ring#

**ENL FIJI x y [FDL]** FDL is needed only if there's no version change

**ARCV ON**

- 2 Download an entire ring in Overlay 39

**ARCV OFF**

**SWRG x** "x" the other ring

**STAT SCG x**

If clock active on side "x" go to next step, otherwise, SCLK

**DIS RING y**

**ENL RING y** will not download if there's no version change

**Note:** ENL RING step could take approximately two hours to complete.

To download other ring repeat steps 2-6 when S is current ring.

**ARCV ON**

- 3 Download to both rings in Overlay 39

**ARCV OFF**

**SWRG 1**

Ring status will now be  
NONE/FULL

**STAT SCG 1**

If clock active on side 1 go to next step, otherwise, SCLK. The active clock must be on side 1, while side 0 is being upgraded.

**DIS RING 0**

**ENL RING 0**

will not download if there is no  
version change

**Note:** ENL RING step could take approximately two hours to complete.

**SWRG 0**

Ring status will now be  
FULL/NONE

**SCLK**

**DIS RING 1**

**ENL RING 1**

will not download if there's no  
version change

**Note:** ENL RING step could take approximately two hours to complete.

**ARCV ON**

within one minute Ring status will  
go to HALF/HALF

### **Pre-route the shelf 0 FIJI Fiber Ring cables**

The Dual Ring Fiber Network is comprised of two separate Rings of NTRC48 fiber optic cable: one Ring between the FIJI cards in all Network self 0's and a second Ring between the FIJI cards in all Network shelf 1's.

Carefully route the NTRC48 cables for Core 0 before installation. Always label both ends of each cable to simplify installation, reduce confusion and assist in troubleshooting.

***Route the shelf 0 fiber optic cables (ascending)***

Route the NTRC48 cables between the FIJI cards in each Network shelf 0 in ascending order (Table 16 on page 54).

**Note:** Each end of the NTRC48 cable is labeled “Tx” or “Rx” in the factory.

- 1 Start with Group 0, shelf 0.
- 2 Route a NTRC48 FIJI Fiber Ring cable of the appropriate length from the FIJI card in Group 0, shelf 0 to the FIJI card in Group 1, shelf 0.
- 3 To complete the Ring, route a final cable from Group 1, shelf 0 to Group 0, shelf 0.

**Table 18**  
**FIJI Ring 0 connections**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2
<b>Note:</b> Groups 2 through 7 are shown for reference only.		

## Information Messages for FIJI Automated Download

The following new messages related to the automated download of firmware to the FIJI card for Fiber Network Fabric have been introduced with Release 25.

FIJI061 RING r: STARTING AUTOMATIC DOWNLOAD

FIJI062 FIJI g s: ENABLING FIJI CARD

FIJI063 FIJI g s: DOWNLOAD DONE. TESTING CARD

FIJI064 FIJI g s: SELFTTEST DONE

where:

r = ring number (0 or 1)

g = group (0 - 7)

s = side (0 or 1)

**Note:** These messages are for information only, and are not alarms.

## Route the 3PE to cCNI (NT8D76) cables

The cCNI to 3PE cables in CP PII are different from existing CNI to 3PE cables. New NT8D76 cables must be installed for both existing Network groups and new Network equipment.

Cables are routed to a module alongside the Core modules to allow for the removal of old equipment. Once the old card cage is replaced by the new CP PII card cages, the cables can be installed into the new Core/Net modules

To route the 3PE to cCNI cables.

- 1 Label each cable at both ends with:
  - a. the Network group number
  - b. Shelf 0 or Shelf 1 of the Network group
  - c. J3 or J4 (of the 3PE card)
- 2 Remove the module trim panels where the cables will be routed.
- 3 Route the cables:

**Note:** Route the cables along the right side of the Core modules to avoid interference from the power cards.

  - a. In Core 1, route the cables from the Shelf 1 3PE cards to a module adjacent to Core 1, as shown in Figure 9 on page 73.
  - b. In Core 0, route the cables, from the Shelf 0 3PE cards to a module adjacent to Core 0, as shown in Figure 9 on page 73.

## Route the NT8D76 3PE to cCNI cables

The cCNI to 3PE cables in CP PII are different from existing CNI to 3PE cables. New NT8D76 cables must be installed for both existing Network groups and new Network equipment.

Cables are routed to a module alongside the Core/Net modules to allow for the removal of old equipment. Once the old card cage is replaced by the NT4N46 card cages, the cables can be installed into the NT4N41 Core/Network modules.

To route the 3PE to cCNI cables.

- 1 Label each cable at both ends with:
  - a. the Network group number
  - b. Shelf 0 or Shelf 1 of the Network group
  - c. J3 or J4 (of the 3PE card)
- 2 Remove the module trim panels where the cables will be routed.
- 3 Route the cables:

**Note:** Route the cables along the right side of the Core/Net modules to avoid interference from the power cards.

  - a. In Core 1, route the cables from the Shelf 1 3PE cards to a module adjacent to Core 1, as shown in Figure 9 on page 73.
  - b. In Core 0, route the cables, from the Shelf 0 3PE cards to a module adjacent to Core 0, as shown in Figure 9 on page 73.

## Pre-route the 3PE to cCNI cables

The cCNI to 3PE (NT8D76) cables in CP PII are different from existing CNI to 3PE cables. New NT8D76 cables must be installed for both existing Network groups and new Network equipment.

Cables are routed to a module alongside the Core 0 module to allow for the removal of old equipment. Once the old card cage is replaced by the new CP PII card cage, the cables can be installed into the new Core/Net modules

To route the 3PE to cCNI cables.

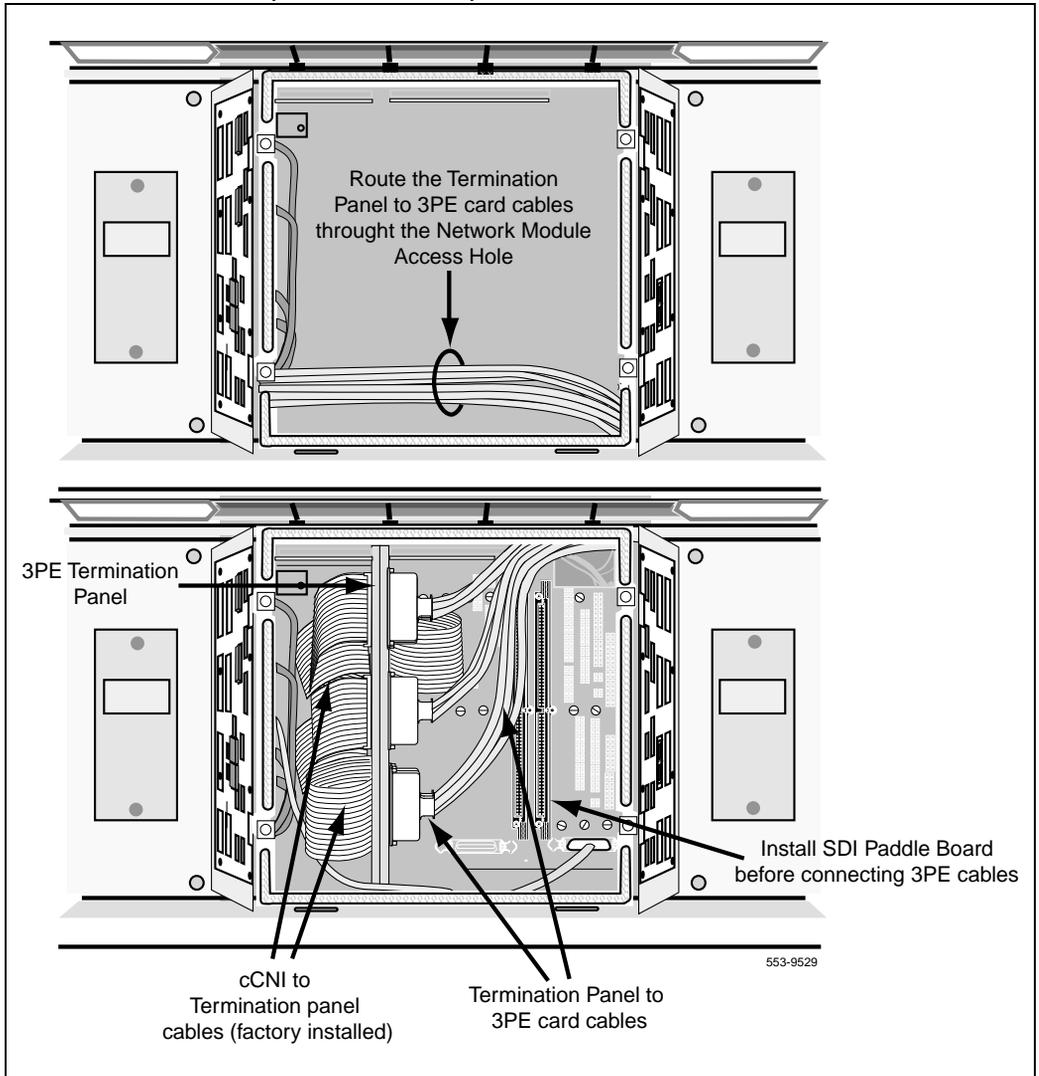
- 1 Label each cable at both ends with:
  - a. the Network group number
  - b. Shelf 0 or Shelf 1 of the Network group
  - c. J3 or J4 (of the 3PE card)

- 2 In Core 0, route the cables from the Shelf 0 3PE card to a module adjacent to Core 0. See Figure 9 on page 73.

**Note 2:** Route the cables **outside** the UEM module to be connected later.

**Note 3:** Route the cables along the right side of the Core module to avoid interference from the power cards.

**Figure 9**  
**3PE Termination Panel (rear module view)**





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# ST and STE upgrade to Option 61C

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## Contents

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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)
- *Administration* (553-3001-311)
- *Circuit Card: Installation and Testing* (553-3001-211)

## Upgrade outline



### **CAUTION**

#### **Service Interruption**

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 software 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



### **CAUTION**

#### **Service Interruption**

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

Table 19 on page 77 and Table 20 on page 79 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 19**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 3)**

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

**Table 19**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
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.)
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)

**Table 19**  
**Hardware requirements for an AC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
2	QPC441F	Three-Port Extender card (3PE)
2	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 3)
<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 NTRB53 Clock Controller cards (vintage A or later) or 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 20**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 3)**

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

**Table 20**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
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
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)

**Table 20**  
**Hardware requirements for a DC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
2	QPC441F	Three-Port Extender card (3PE)
2	NTRB53 or	Clock Controller cards (see note 3)
2	QPC471H or 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 NTRB53 (vintage A or later) or 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

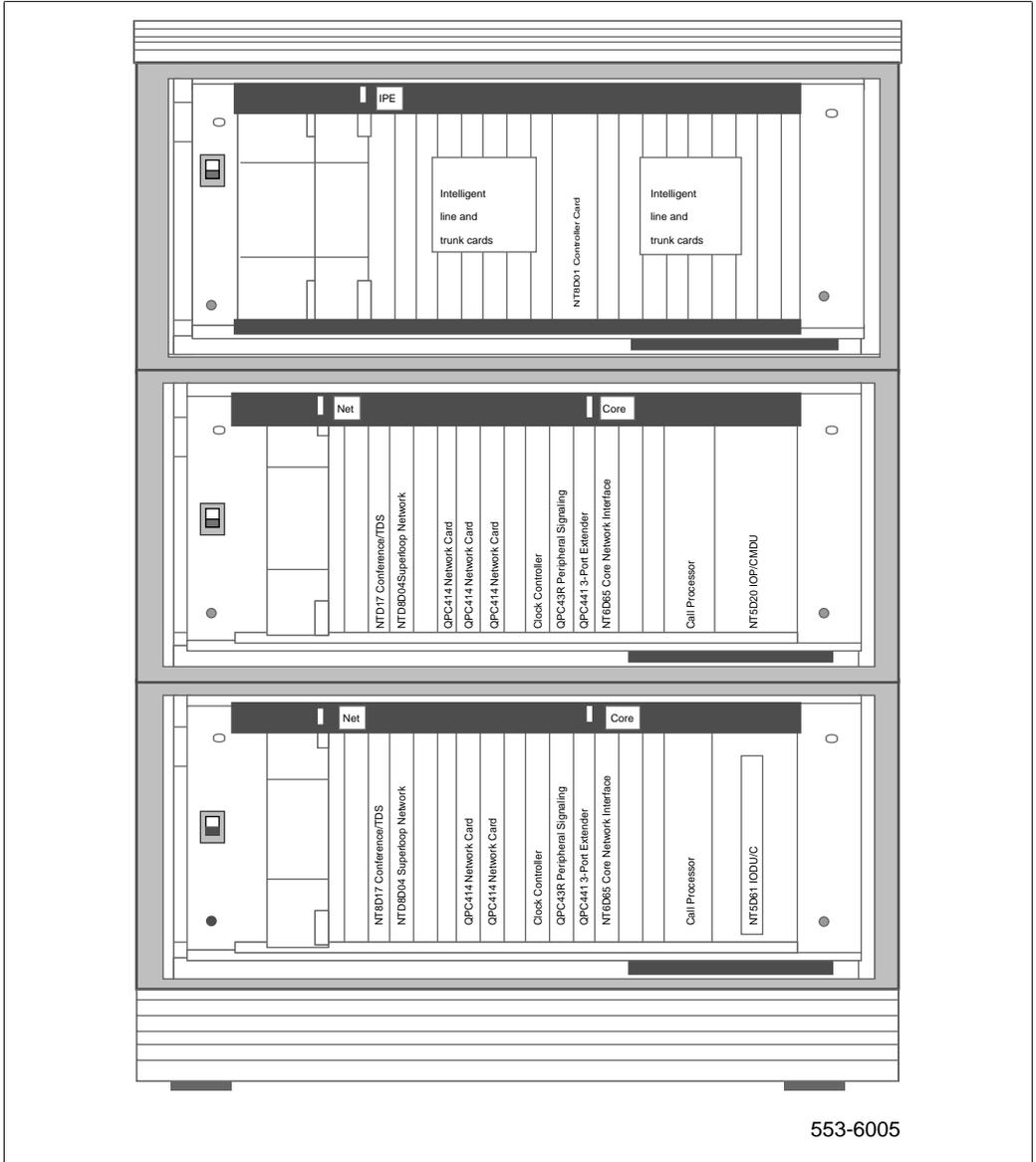
Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/C and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 10 on page 83 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 90).

**Figure 10**  
**Meridian 1 Option 61C**



### 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



#### **CAUTION**

##### **Loss of Data**

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

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

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

### Converting the customer database to Release 21

If the ST/STE is running 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 89.

**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****Service Interruption**

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



**CAUTION**

**Loss of Data**

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

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

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

- 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

**CAUTION****Loss of Data**

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

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

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

- 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



**CAUTION**

**Loss of Data**

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

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

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

24 Verify the system by using the test procedures described in *System Installation Procedures (553-3001-210)* and *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 89 to continue with the upgrade.

## Converting the SL-1 hardware

**CAUTION****Service Interruption**

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 801.
  - 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).

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**

#### **Damage to Equipment**

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.

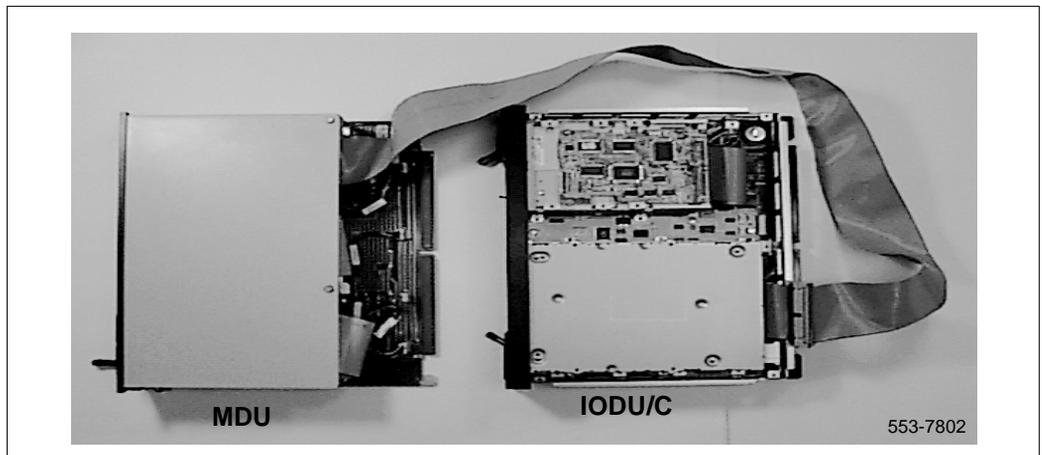
### MDU cabling

- 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 11 on page 93). 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 11**  
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 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 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



**CAUTION**

**Loss of Data**

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

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

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

- 12 Set date and time:  

<b>LD 2</b>	to load the overlay
<b>STAD</b>	DD MM YY HR MN SC
- 13 Set the ENB/DIS switch on all CNI cards in Core 1 to ENB.
- 14 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 99.

## 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
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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

**CAUTION****Loss of Data**

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

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

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

## 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 *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 *Administration* (553-3001-311). Clear any faults discovered during testing.
- 11** Perform the post conversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Option 61C software 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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## Contents

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

## Upgrade outline



### **CAUTION**

#### **Service Interruption**

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 software 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

Table 21 on page 109 and Table 22 on page 111 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 21**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 3)**

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

**Table 21**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
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.)
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

**Table 21**  
**Hardware requirements for an AC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
2	QPC441F	Three-Port Extender card (3PE)
2	NTRB53 or	Clock Controller cards (see note 3)
2	QPC471H or 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 NTRB53 (vintage A or later or 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 22**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 3)**

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

**Table 22**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
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.)
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

**Table 22**  
**Hardware requirements for a DC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
2	QPC441F	Three-Port Extender card (3PE)
2	NTRB53 or QPC471H or QPC775	Clock Controller cards (see note 3)
<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 NTRB53 (vintage A or later) or 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

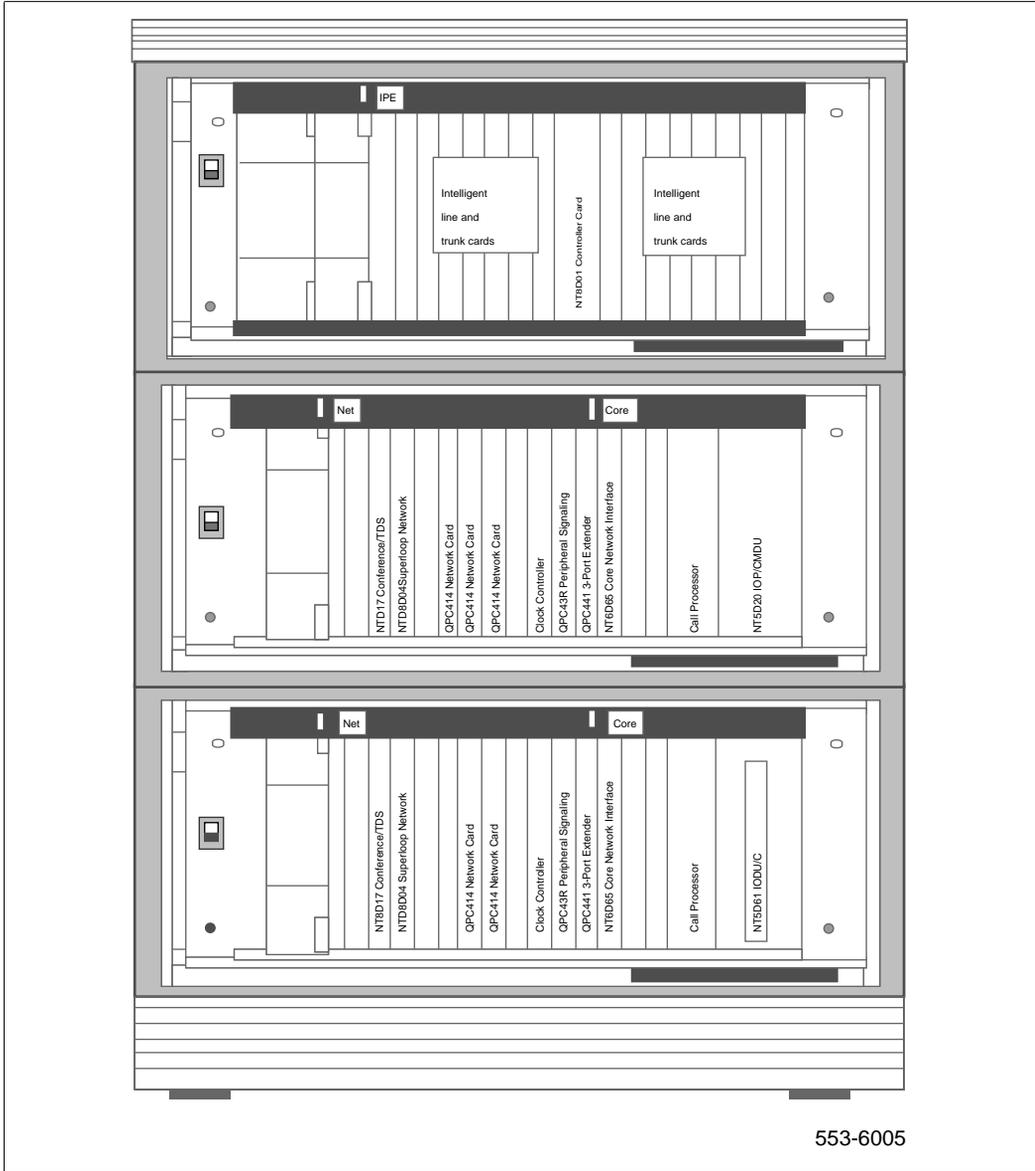
The Option 61C equipment is pre-configured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as MDUs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 12 on page 115 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 147).

Figure 12  
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



#### **CAUTION**

##### **Loss of Data**

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

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

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

## Converting the RT hardware



### CAUTION

#### Service Interruption

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 801.

- 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).

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**

#### **Damage to Equipment**

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.



**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 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 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



**CAUTION**

**Loss of Data**

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

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

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

10 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:  

<b>&lt;cr&gt;</b>	<b>&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
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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 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** 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.

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:

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

	<p><b>CAUTION</b> <b>Loss of Data</b> If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.</p>
---	--

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

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

## 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 *Administration* (553-3001-311). Clear any faults discovered during testing.
- 3 Perform the post-conversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

The Meridian 1 software 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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## Contents

The following are the topics in this section:

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



**CAUTION**

**Service Interruption**

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

Table 23 on page 137 and Table 24 on page 139 list the items required to upgrade an AC- or DC-powered system to an software 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 23**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 3)**

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)

**Table 23**  
**Hardware requirements for an AC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
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.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)

**Table 23**  
**Hardware requirements for an AC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
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	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 3)

**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 NTRB53 (vintage A or later) or two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

**Table 24**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 3)**

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

**Table 24**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 3)**

Qty	Part number	Description
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.)
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)

**Table 24**  
**Hardware requirements for a DC-powered Option 61C (Part 3 of 3)**

Qty	Part number	Description
2	QPC441F	Three-Port Extender card (3PE)
2	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 3)
<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 NTRB53 (vintage A or later) or 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 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 software 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

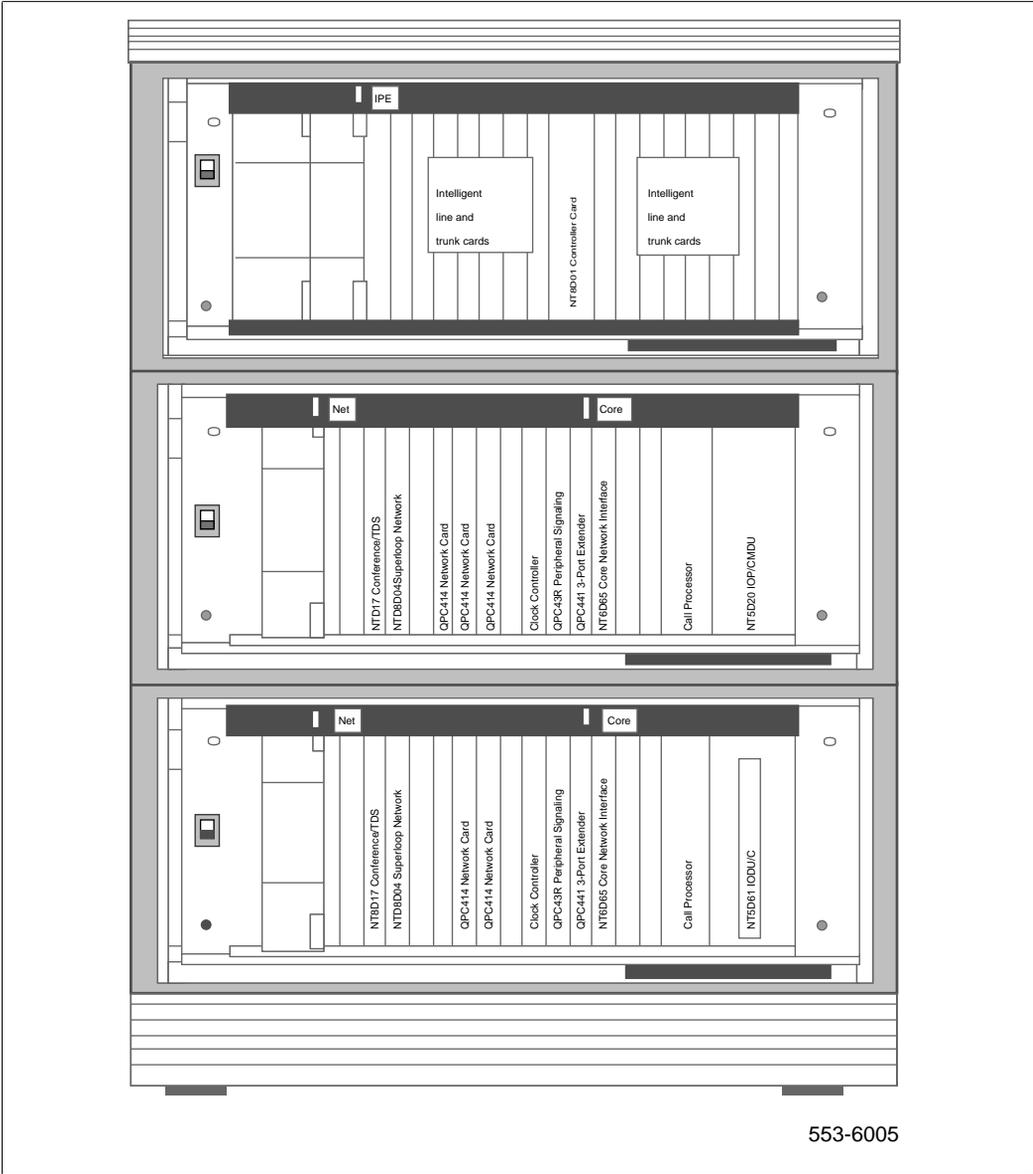
The Option 61C equipment is pre-configured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 14 on page 143 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 144).

Figure 14  
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.

- 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



### CAUTION

#### Loss of Data

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

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

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

## 4 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

---

## Converting the SL-1 hardware

**CAUTION****Service Interruption**

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 801.

- 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).

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

#### Damage to Equipment

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.

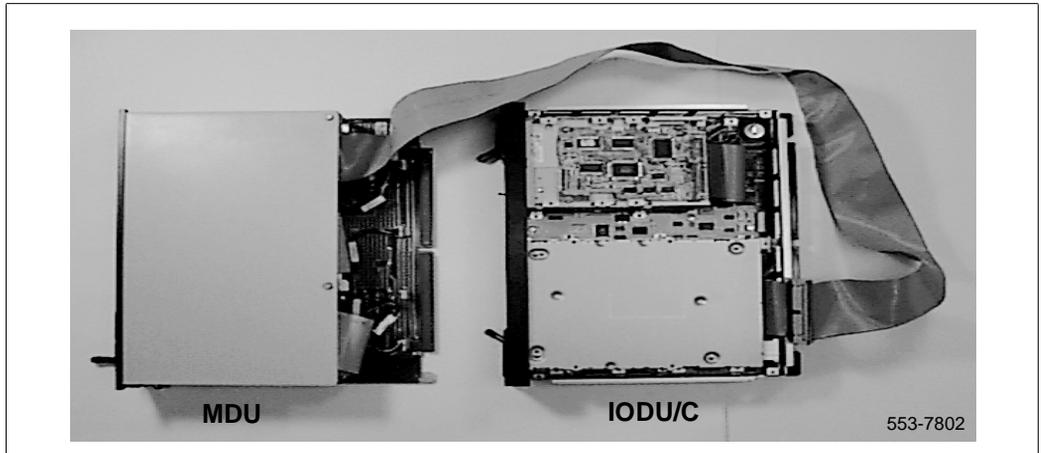
## MDU cabling

- 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 15 on page 151). 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 15**  
**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 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.

**6** When the sysload is complete, log into the system.

**7** In Core/Net 1, faceplate enable the CNI card.

**8** Confirm that the 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



### **CAUTION**

#### **Loss of Data**

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

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

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

**11** Set date and time:

<b>LD 2</b>	to load the overlay
<b>STAD</b>	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

**CAUTION****Loss of Data**

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

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

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

**15** 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 *Administration* (553-3001-311). Clear any faults discovered during testing.
- 4 Perform the post-conversion procedure as outlined in *Software Conversion Procedures* (553-2001-320).

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



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# Option 71, 81, 81C upgrade to an Option 81C CP PII

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## Upgrade outline

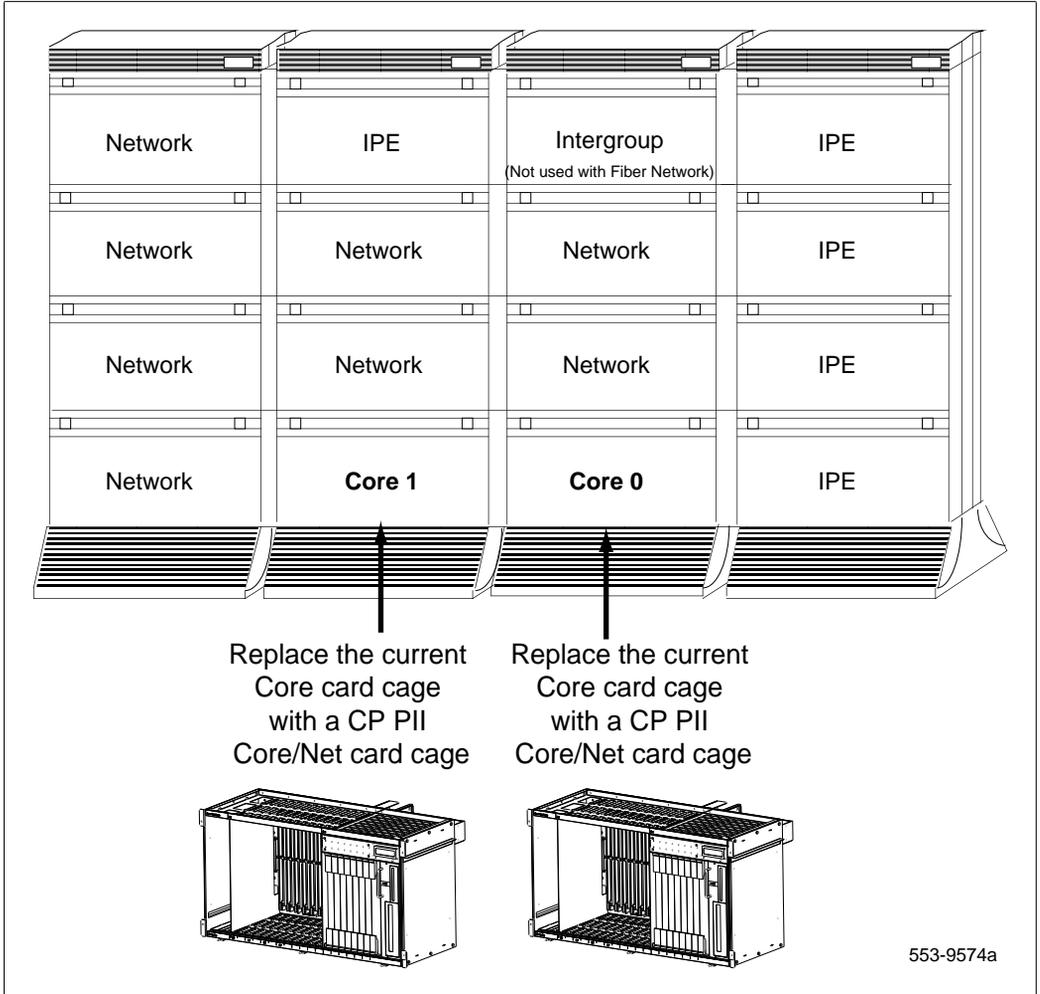
This chapter describes how to upgrade Option 71 (module) systems, Option 81 systems and Option 81C systems to Option 81C with CP PII.

For an Option 71 and 81 upgrade to CP PII, the existing common equipment card cages are replaced with the CP PII NT4N46AA Core/Net card cages. Of the existing common equipment cards, only the Clock Controller cards are reused. The Clock Controller cards are relocated to network modules. Figure 16 on page 169 shows an Option 81 upgrade to CP PII.

For an Option 81C upgrade to CP PII, the existing Core/Net card cages are replaced with CP PII Core/Net card cages. All equipped cards in the Network shelf are relocated to the same card slots in the new card cage.

Carefully follow the instructions in this chapter in sequence.

**Figure 16**  
**Option 71 and 81 upgrade to CP PII**



## Review upgrade requirements

This section describes the **minimum** equipment required for CP PII. Additional equipment may also be installed during the upgrade. Verify that *all* equipment has been received.

### Check equipment received

Before the upgrade, check that the equipment on the order form is also on the packing slip. Check that all equipment has been received. If any items are missing, contact your supplier for replacements before you begin the upgrade.



#### **CAUTION**

##### **Service Interruption**

Do not proceed with the upgrade if any of the required equipment is missing. All equipment must be received to complete the upgrade.

### Check required software

The following software packages are required to upgrade a system to Option 81C with CP PII:

- software Release 25
- Call Processor PII software package 368
- Option 81C Software Package 299
- Software Install Kit

### Check vintage requirements for existing hardware

Check the list below to make sure that existing hardware meets the minimum vintage requirements for CP PII.

If any of the equipment listed does not meet the requirements, replace the equipment before you begin the upgrade.



#### **CAUTION**

##### **Service Interruption**

Equipment that does not meet the minimum vintage requirements will cause system malfunctions and loss of call processing.

- The QPC441 **3-Port Extender (3PE)** cards must be minimum vintage F.
- The NTRB53 **Clock Controller** cards must be minimum vintage A.
- The QPC471 **Clock Controller** cards must be minimum vintage H.
- The QPC775 **Clock Controller** cards (all countries except USA) must be minimum vintage E.
- If the Clock Controllers are moved in Option 71 or 81 systems, the new Clock Controller cables must be the correct length. Order new NT8D79 or NTCG03 PRI/DTI to Clock Controller cables if necessary.  
*Note:* QPC720 PRI cards require NT8D79 cables. NT5D12 Dual PRI/DTI cards require NTCG03 cables.
- The QPC43 Peripheral Signaling cards must be minimum vintage R.

## Check required hardware

Table 25 on page 172 describes the *minimum* equipment required to upgrade a system to CP PII. Table 26 on page 173 and Table 27 on page 174 list the DC and AC power equipment requirements. Additional equipment for increased Network capacity is ordered separately.

**Table 25**  
**Minimum requirements for Option 71, 81 and 81C systems**

Order number	Description	Quantity per system
NT4N64AA	CP PII Call Processor Card (256MB Memory)	2
NT4N65AB	cPCI Core Network Interface Card (2 ports)	2
NT4N66AB	cPCI Core Network Interface Transition Card	2
NT4N67AA	cPCI System Utility Card	2
NT4N68AA	cPCI System Utility Transition Card	2
NT4N88AA	CP PII to I/O Panel DTE Cable (48 in.)	2
NT4N88BA	CP PII to I/O Panel DCE Cable (48 in.)	2
NT4N90AA	CP PII to I/O Panel Ethernet Cable (48 in.)	2
NT4N43AA	cPCI Multi-Media Disk Unit	2

**Table 25**  
**Minimum requirements for Option 71, 81 and 81C systems**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NTRC17AA	CP PII Ethernet to Ethernet Cable (8.5 ft.)	2
P0745716	Rear I/O Panel	2
P0906308	cPCI Card Slot Filler Panel	16
NTRE40AA	Dual Ethernet Adapter (RJ45) for I/O Panel	2
NT4N89AA	System Utility to XSM Cable	2
NT4N46AA	cPCI Core/Network Card Cage AC/DC	2
NT8D76BE	IGS to IGM or cCNI to 3PE Cable (6 ft.)	2
NT8D76BF	IGS to IGM or cCNI to 3PE Cable (10 ft.)	2
NT8D99AD	CPU to Network Cable (6 ft.)	2
NT4N6809	Security Device Holder	2

### **Check required power equipment**

- Table 26 on page 173 lists the equipment required for DC powered systems.
- Table 27 on page 174 lists the equipment required for AC powered systems.

**Table 26**  
**DC power requirements for Option 71, 81 and 81C upgrades**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NT6D41CA	Core/Network Power Supply DC	2
NT4N97BA	cPCI Upgrade Kit DC (Misc. Card Cage Components)	2

**Table 27**  
**AC power requirements for Option 71, 81 and 81C upgrades**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NT8D29BA	Core/Network Power Supply AC	2
NT4N97AA	cPCI Upgrade Kit AC (Misc. Card Cage Components)	2

### **Check required tools**

With standard tools required to service a Meridian 1, use the following special tools for the upgrade:

- a 12" long, 3/8" hex head nut driver (to secure the screws in the back of the card cage)
- a flashlight

### **Check personnel requirements**

Nortel Networks recommends that a minimum of two people perform the card cage upgrade.

### **Option 71 only: database requirements**

For Option 71 only, you must send the database to Nortel Networks to be converted.

### **Prepare for upgrade**

Follow the procedures "Prepare for upgrade of Option 71, 81, and 81C systems" on page 21 and return to "Upgrade Options 71, 81 or 81C to CP PII" on page 175.

## Upgrade Options 71, 81 or 81C to CP PII

To upgrade an Option 71, 81 or 81C system to CP PII, the existing CPU, Core or Core/Net card cages are upgraded to CP PII Core/Net card cages.



### **CAUTION WITH ESDS DEVICES**

Always wear the static discharge bracelet (located inside the cabinet) before you handle circuit cards. Failure to wear the bracelet can result in damage to the circuit cards.

The card cage upgrade is performed first on Core 1, and then on Core 0.



### **CAUTION System Failure**

Although the procedures to upgrade Core 0 are similar to those for Core 1, significant differences do exist.

Follow all the procedures carefully and in sequence. Failure to follow the specific installation and configuration procedures will result in system failure and increased downtime.

### **System downtime**

Although system downtime is required, this procedure minimizes the loss of call processing. Follow the instructions in this chapter carefully to ensure a successful upgrade.



### **CAUTION Service Interruption**

The upgrade requires system downtime. Schedule for system downtime when planning the system upgrade.

Proceed to CP PII card cage upgrade procedures.

Perform all procedures in order.

Start with “Disable Core 1” on page 176 and continue through “Perform a data dump” on page 270.

## Disable Core 1

### Check that Core 0 is active

To upgrade Core 1, verify that Core 0 is the active side performing call processing:

- 1      Verify that Core 0 is active.  
**LD 135**          To load the program  
**STAT CPU**        Get the status of the CPUs
  
- 2      If Core 1 is active, make Core 0 active:  
**SCPU**            Switch to Core 0 (if necessary)  
**\*\*\*\***             Exit the program

### Check that Clock Controller 0 is active

- 1      Check the status of the Clock Controllers:  
**LD 60**            to load the program  
**SSCK 0**          Get the status of Clock Controller 0  
**SSCK 1**          Get the status of Clock Controller 1
  
- 2      If Clock Controller 1 is active, switch to Clock Controller 0.  
**SWCK**            If necessary, switch to Clock Controller 0  
**DIS CC 1**        Disable Clock Controller 1  
**\*\*\*\***             Exit the program
  
- 3      Faceplate disable Clock Controller 1.

## Check that Ring 0 is active

- 1 Check the status of Ring 0.  
**LD 39** to load the program  
**STAT RING 0** to get the status of Ring 0. Ring state should be HALF/HALF.
  
- 2 Disable Ring auto recovery.  
**LD 39** to load the program  
**ARCV ON/OFF** Set or reset auto-recovery operation for ring
  
- 3 Swap to Ring 0.  
**LD 39** to load the program  
**SWRG 0** Switch call processing to ring 0
  
- 4 Disable Ring 1.  
**LD 39** to load the program  
**DIS RING 1** Disables all FIJI cards on side 1

## Split the Cores

Split the Cores and transfer call processing to Core 0:

- 1 In Core 0, set the NORM/MAINT switch on the CP card to MAINT.
- 2 In Core 1, set the ENB/DIS switch on all NT6D65 CNI cards to DIS.
- 3 In Core 1, set the NORM/MAINT switch on the CP card to MAINT.

The system is now in split mode, with call processing on Core 0.

## Disable and remove equipment from Core 1

### Options 71 and 81 only: Move Clock Controller 1

This section is for Option 71 and 81 upgrades only.

For Option 81C upgrades, proceed to “Option 81C only: Software disable Network cards in Core/Net 1” on page 180.



#### **CAUTION**

##### **Service Interruption**

Move only Clock Controller 1 at this point in the upgrade.

Do not move Clock Controller 0 at this time.

- 1 Label and disconnect the Clock Controller 1 Junctor cable from the J12 connector in the InterGroup Module junctor board.
- 2 Disconnect the Junctor cable from the Clock Controller 1 faceplate card.
- 3 If primary and secondary clock reference cables are connected to the Clock Controller 1 faceplate, disconnect them last.
- 4 Remove Clock Controller 1 from the Core module.
- 5 Set the Clock Controller 1 switch settings according to Table 28 on page 179.
- 6 Move Clock Controller 1 to any Network Shelf 1, slot 13. Seat Clock Controller 1 but do not enable the card.

**Note:** The Clock Controllers (0 and 1) must be located in different Network groups in different columns. Refer to the guidelines on “Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)” on page 37 to determine Clock Controller placement.

- 7 Reconnect the Clock Controller 1 Junctor cables.
- 8 Disable any ISDN PRI card in the Core module.
- 9 Disable the CNI card in Core module (phantom group 5):

**LD 135** To load the program.

**DIS CNI 1 8 0** Disable the CNI card in Core module 1, slot 8, port 0.

**Table 28**  
**Clock Controller 1 switch settings**

<b>Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table. DO NOT use the Option 81 switch settings.</b>											
<b>SW1</b>				<b>SW2</b>				<b>SW4</b>			
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
on	off	off	off	off	off	off	off	**	on	*	*
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
* If there is only one Clock Controller card in the system, set to OFF. If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above. Set the switches on both cards to the same settings.											
** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.											

This is the end of the procedure to move Clock Controller 1. To continue with the Option 71 or 81 upgrades, proceed to “Remove the system monitors from Core 1 and Core 0” on page 184.

## Option 81C only: Software disable Network cards in Core/Net 1

This procedure is for Option 81C systems only.

For Option 71 and 81 systems, go to "Remove the system monitors from Core 1 and Core 0" on page 184.

Software disable all cards in the network slots of Core/Net 1.



### **CAUTION**

#### **Service Interruption**

At this point, the upgrade interrupts service.

Cards in the Network slots include the following:

- NT8D04 Superloop Network card
- QPC414 Network card
- QPC441 Three-Port Extender (3PE) card
- QPC43R Peripheral Signaling card
- QPC 412 InterGroup Switch (IGS) card/NT5D30AA Dual InterGroup Switch (DIGS) card
- QPC513 Enhanced Serial Data Interface (ESDI) card
- NT8D41 Extended Serial Data Interface (XSDI) card
- QPC536 Digital Trunk Interface (DTI) card
- NT8D72 Primary Rate Interface (PRI) card
- NT6D80 Multipurpose Serial Data Link (MSDL) card

### Software disable cards in network slots of Core/Net 1:

- 1 In Core/Net 1 only, software disable all network and I/O cards such as XNET, TTY, Conf/TDS and ISDN cards:
  - a. In Core/Net 1 only, disable XNET.
  - b. In Core/Net 1 only, disable ENET.
  - c. In Core/Net 1 only, software disable each port on the SDI cards:

#### LD 37

**DIS TTY x** x = the number of the interface device attached to a port.

\*\*\*\* Exit the program



#### CAUTION

##### Service Interruption

If the system terminal is assigned to an SDI port that you are disabling, assign it to another port before you disable the SDI

- d. In Core/Net 1 only, disable DTI cards.
- e. In Core/Net 1 only, disable PRI cards.
- f. In Core/Net 1 only, disable MSDL cards.

2 In Core/Net 1 only, disable the IGS/DIGS cards:

a. Software disable the IGS/DIGS card:

**LD 39**

**DISI IGS/DIGS x** "x" is the IGS/DIGS card number—0 to 19.

\*\*\*\* Exit the program.

You see ISR043 on the system terminal when the card is disabled.  
Busy channels are not disabled until the call is disconnected.

Repeat step a to disable remaining IGS/DIGS cards in Core/Net 1 only.

**Table 29**  
**IGS/DIGS card locations**

Network Group 0	Shelf 1	IGS/DIGS 1 & 3
Network Group 1	Shelf 1	IGS/DIGS 5 & 7
Network Group 2	Shelf 1	IGS/DIGS 9 & 11
Network Group 3	Shelf 1	IGS/DIGS 13 & 15
Network Group 4	Shelf 1	IGS/DIGS 17 & 19

b. In Core/Net 1 only, faceplate disable the IGS/DIGS cards.

- 3** In Core/Net 1 only, software disable the QPC43 Peripheral Signaling Card:

**LD 32****DSPS x**

Table 30 on page 183 lists Peripheral Signaling Card numbers specified by "x"

\*\*\*\*

Exit the program.

**Table 30**  
**Peripheral Signaling Card numbers**

Group/ shelf	Peripheral Signaling Card	Loops disabled/enabled		
0 / 0	0	0	–	15
0 / 1	1	16	–	31
1 / 0	2	32	–	47
1 / 1	3	48	–	63
2 / 0	4	64	–	79
2 / 1	5	80	–	95
3 / 0	6	96	–	111
3 / 1	7	112	–	127
4 / 0	8	128	–	143
4 / 1	9	144	–	159
5 / 0	10	160	–	175
5 / 1	11	176	–	191
6 / 0	12	192	–	207
6 / 1	13	208	–	223
7 / 0	14	224	–	239
7 / 1	15	240	–	255

- 4** In Core/Net 1 only, disable the 3PE card:

Set the ENB/DIS switch on the 3PE card to DIS.

This is the end of the Option 81C procedure to software disable cards in the network slots. Go to "Remove the system monitors from Core 1 and Core 0" on page 184.

## Remove the system monitors from Core 1 and Core 0

- 1 In Core 0, software disable the master system monitor (NT8D22):

**LD 37**

**DIS TTY #**      Disable the master system monitor TTY interface.

- 2 For both Core 1 and Core 0, remove J3 and J4 cables on both system monitors.
- 3 For both Core 1 and Core 0, remove the system monitors from the rear of the pedestals.

Do not turn off the blower units in the front of the pedestals.



**CAUTION**

**System Failure**

The system can shut down if the system monitors are not removed. Remove the monitors and keep the cooling fans ON.

## Turn Core 1 module power OFF

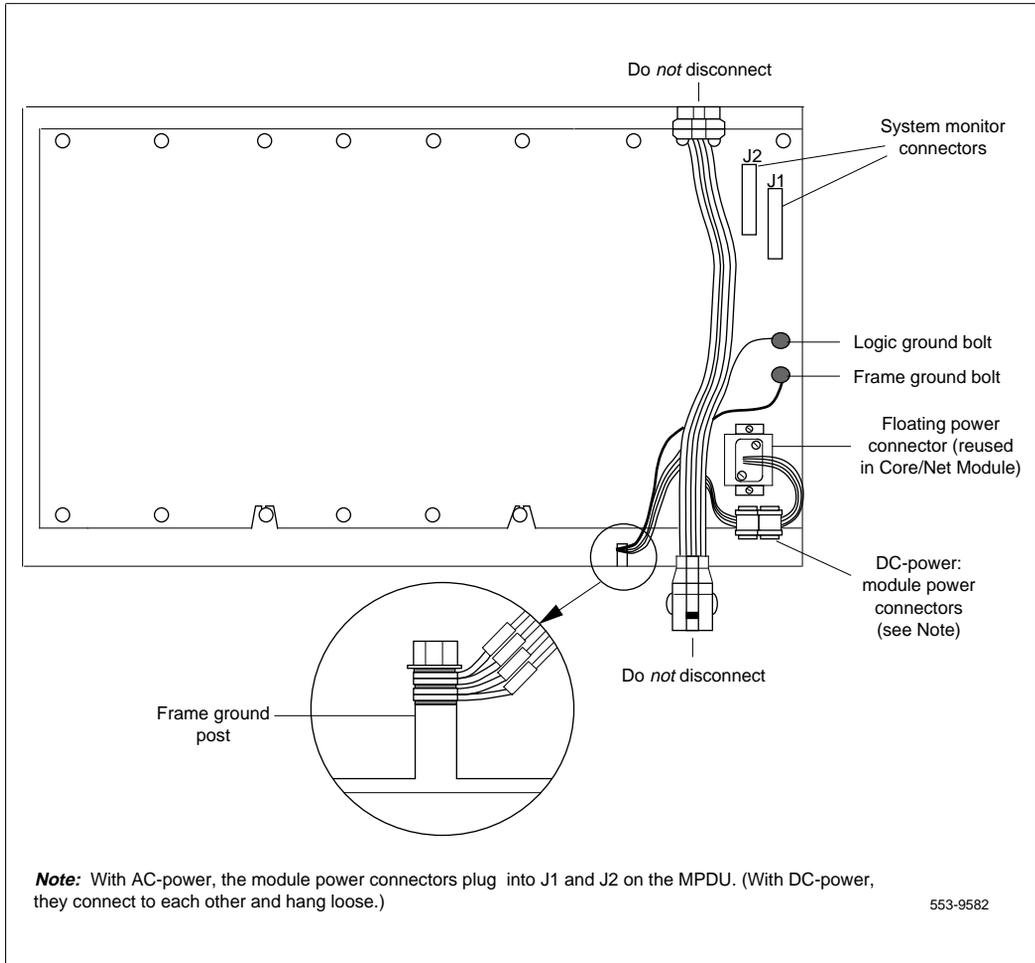
For AC-powered systems: set the MPDU circuit breaker located at the left end of the module to OFF (top position).

For DC-powered systems: set the breaker for the Core 1 module in the back of the column pedestal to OFF (down position).

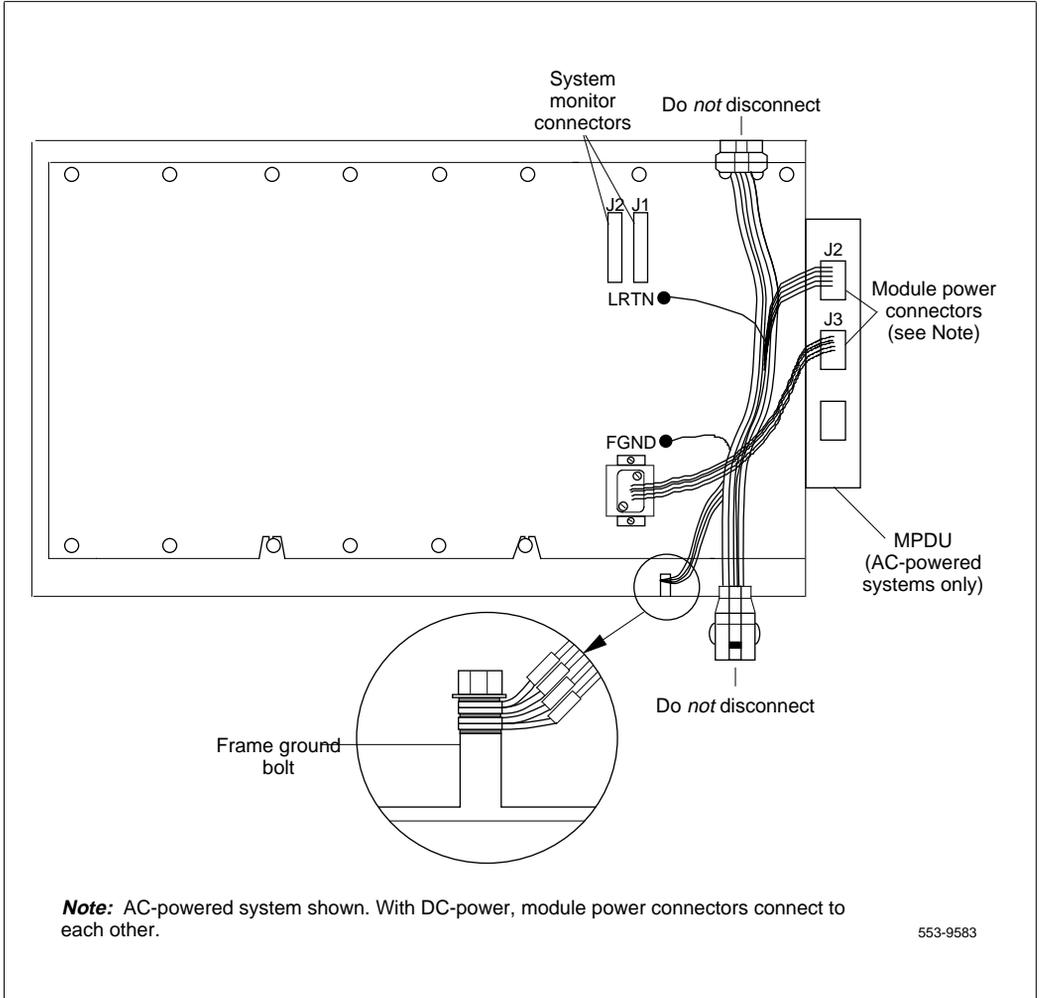
## Remove Core 1 cables and card cage

- 1 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.
- 2 If there is an I/O safety panel, remove it by turning the screws on each side. Set the cover aside.
- 3 Tag and disconnect all cables from the backplane to the interior of the I/O assembly.
- 4 Tag and disconnect all plugs, wires, and cables to the backplane.  
**Note 4:** Leave the network cards in the card cage. You will relocate them to the CP PII Core/Net later in the upgrade procedure.  
**Note 5:** Two people are needed to remove the Core 1 card cage because of the weight of the card cage with the cards left installed.
- 5 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 use with the CP PII card cage. (You need a 1/4" nut driver to remove the screws.)
- 6 Remove the front cover plates on both sides of the card cage.
- 7 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Save the screws for use with the CP PII card cage.
- 8 Pull the card cage forward until it is halfway out of the module.
- 9 Remove the logic return (LTRN) (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal. Save the nut for reuse later.  
  
See Figure 17 on page 186 for DC power connectors.  
See Figure 18 on page 187 for AC power connectors.
- 10 Remove preexisting CNI (NT4D14) cables.

**Figure 17**  
**DC power connectors on the Core module backplane**



**Figure 18**  
**AC power connectors on the Core module backplane**



- 11    Remove the frame ground (FGND) (green) wire from the frame ground bolt on the module. Save screws for reuse later.
- 12    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.
- 13    Label and disconnect the system monitor ribbon cables to J1 and J2.
- 14    Remove the Core card cage from the module.
- 15    Remove the power harness and reserve it for reinstallation as part of installing the new NT4N46 card cage.  
The power harness is located at the right rear lower corner and plugs into the rear of the power supply.
  - a.    For AC systems, relocate power harness NT8D80AM.
  - b.    For DC systems, relocate power harness NT7D11.



**CAUTION**

**Damage to Equipment**

Be sure to perform the following step. If you do not tape the EMI shield in position, you will not be able to install the card cage in the module correctly.

- 16    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.

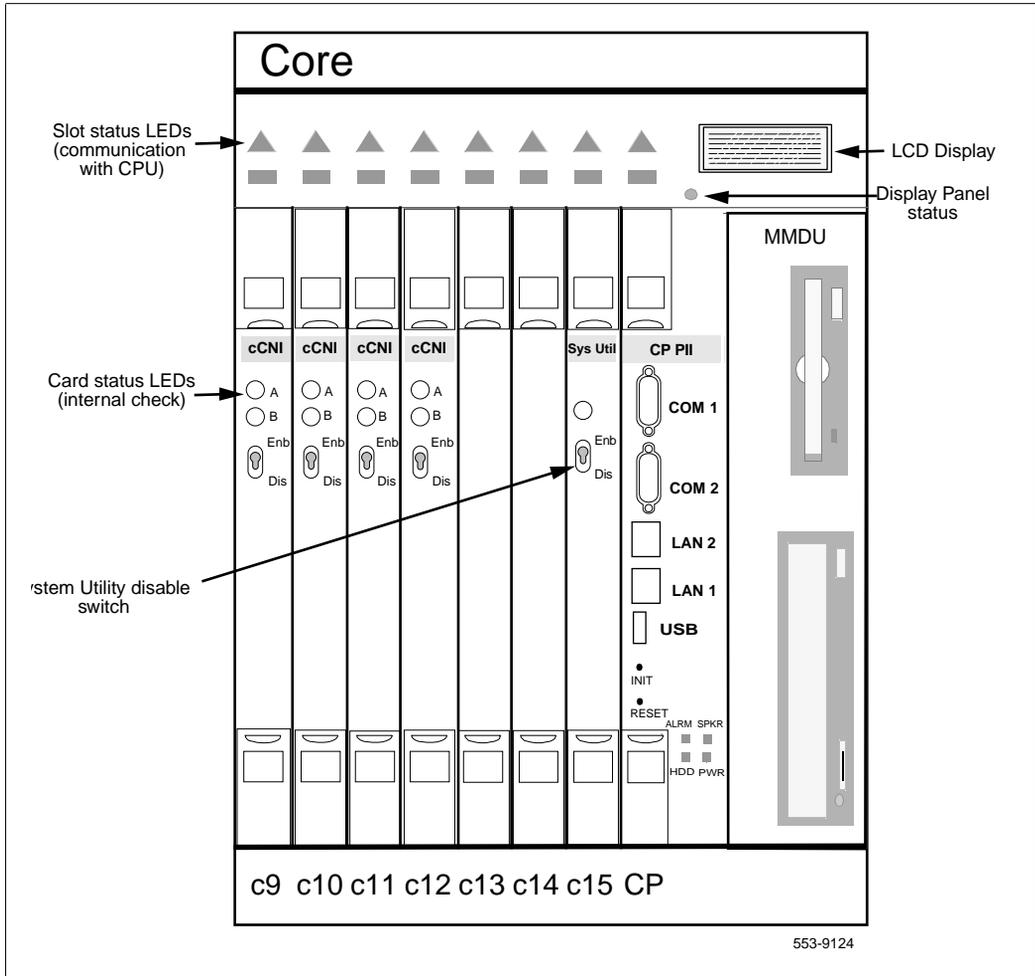
## Install equipment in Core/Net 1

### Check that the main Core cards (front side) are installed

The main Core cards including the MMDU (with the cables for power and data) are installed in the factory (see Figure 19 on page 190):

- **NT4N65AB cPCI Core Network Interface (cCNI) cards:** Each system contains between one and four NT4N65 cCNI cards per Core/Net Module. The cCNI cards are located in slots c9-c12. If not already installed, install a P0906308 cPCI Card Slot Filler Panel to cover any of slots c10 - c 12 which do not contain cCNIs.
- Slots c13 and c14 are left empty. If not already installed, install a P0906308 cPCI Card Slot Filler Panel in each slot.
- **NT4N67AA System Utility (Sys Util) card** is located in slot c15.
- **NT4N64AA Call Processor PII (CP II)** is located in the slot marked CP.
- **NT4N43AA cPCI Multi-Media Disk Unit (MMDU)** is located in the extreme right hand slot next to the CP PII card. The MMDU contains the Hard drive, floppy drive and CD-ROM drive.

**Figure 19**  
**Core card placement in the NT4N41 Core/Net Module (front)**



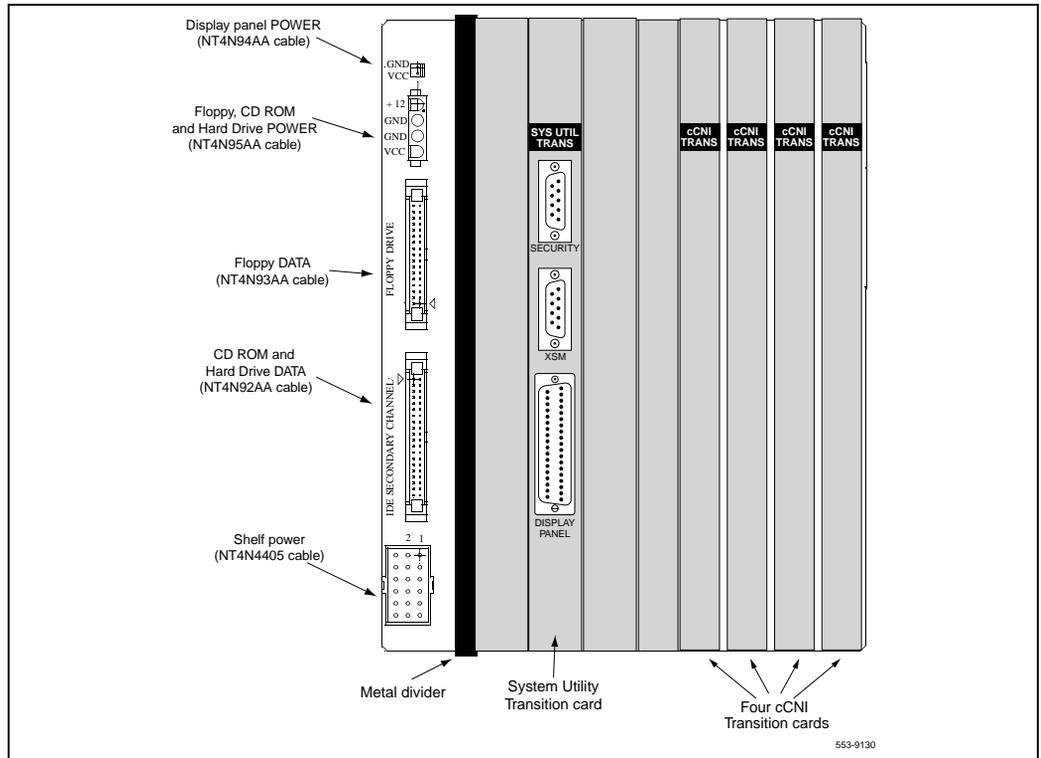
## Check that the Core Transition cards are installed

The Core Transition cards are located directly behind the corresponding main cards (on the rear of the Core backplane). Core Transition cards are installed in the factory:

- **NT4N66AB cCNI Transition Cards:** Each system contains four cCNI Transition cards.
- **NT4N68AA System Utility Transition card:** The System Utility Transition card is installed directly behind the System Utility card and contains connections for the Security Device, the System Monitor (XSM) and the Display Panel.

Figure 20 on page 191 displays the location of the Core Transition cards.

**Figure 20**  
**Location of Transition cards**



## Network Group 0 Connections

There are two different 3PE Termination Panels in a CP PII system:

- Early CP PII systems include panel P0908658, Figure 29 on page 211, recognized by having 14 connector cutouts, allowing cCNI-3PE cables for Groups 1 to 7 to terminate. When using this panel, it is expected that Network Group 0 will be in the Core/Net module.
- Later CP PII systems are supplied with Panel P0942500, Figure 30 on page 212, which has 16 connector cutouts. This allows cCNI-3PE cables for all eight groups to be terminated if desired, although systems supplied from the factory will have the two spaces for Group 0 connectors empty. This panel allows users to reconfigure their system placing any Network Group, including Group 0, in the Core/Net module.

### Placing a group other than Group 0 in the Core/Net module

CP PII systems are factory configured with cCNI card 9 Port 0 directly connected to the Network portion of the Core/Net backplane. This places Network Group 0 into the Core/Net module, the normal configuration for new systems.

In upgrading systems, sometimes Group 0 is situated in a Network module, and it is required to place a different Network Group into the Core/Net module. To accomplish this configuration, take the following steps, separately for both Core/Net modules:

- 1 Ensure that the 16 connector cutout 3PE Termination Panel is equipped. This can be retrofitted into systems initially equipped with the 14 connector cutout Panel.
- 2 Remove the connections from the Network backplane connectors that originate from card 9 port 0. This can involve removing the screws that hold in the panel, so that the connectors can be moved through the slot. Reattach the panel.
- 3 Connect all eight pairs of cables from the cCNI Transition Cards to this panel.

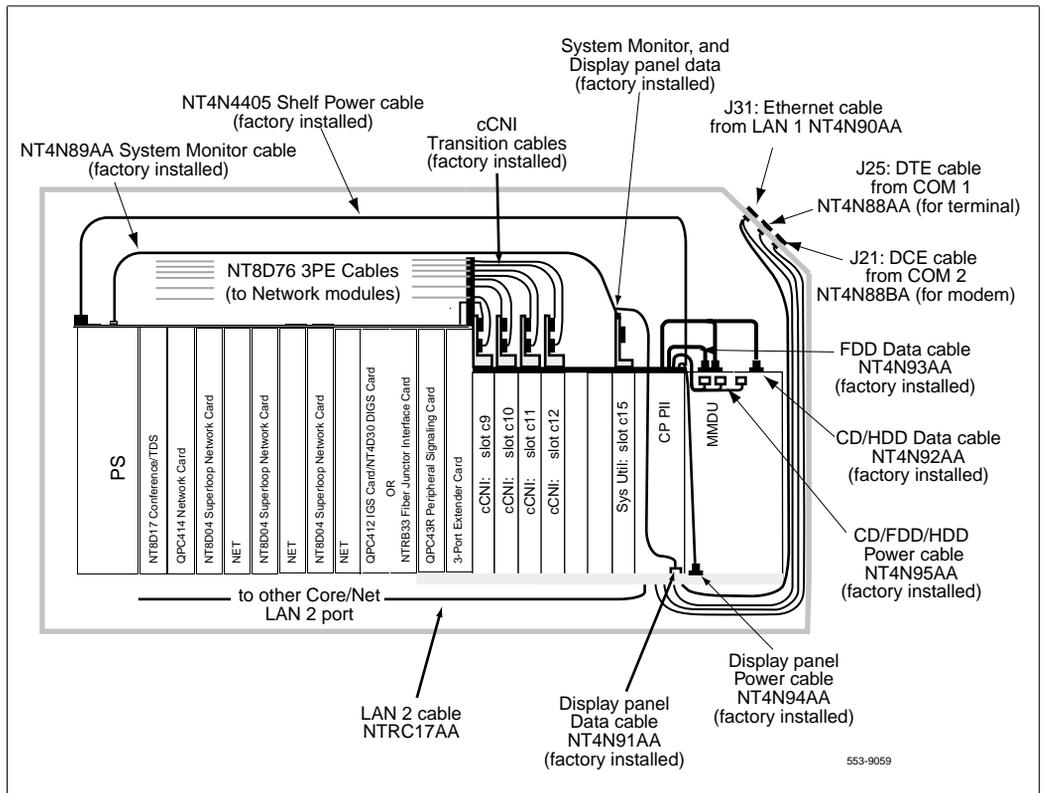
- 4 Using two cables NT4N72AA, connect the appropriate pair of connectors on the 3PE Termination Panel corresponding to the desired Group to the two connectors on the Network backplane.

**Note:** Step 4 only required if the Core/Net had a network group before the upgrade.

## Check for the shelf power cable

Check that the NT4N4405 Shelf Power Cable is installed in the NT4D46 card cage backplane. See Figure 21 on page 193 for cable location.

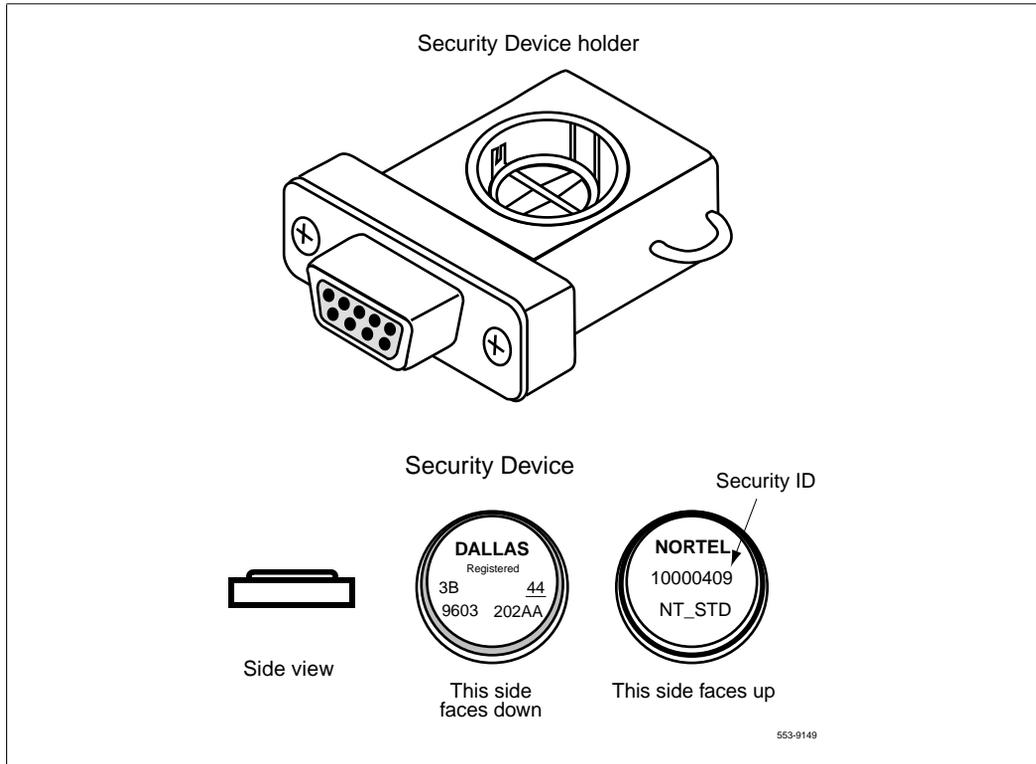
**Figure 21**  
**Core/Net cable connections (top view)**



## Install the Security Device

The Security Device fits into the Security Device holder (see Figure 22 on page 194). This assembly attaches to the System Utility Transition card located on the back of the core backplane.

**Figure 22**  
**Security Device and holder**



To install the Security Device:

- 1** If the original system had an IODU/C, remove the Security Device from the IODU/C for reuse.
  - a.** Unlock the latches and remove the IODU/C card.
  - b.** Remove the round 1/2" diameter IODU/C Security Device from the round black Security Device holder on the top right corner of the IODU/C card.

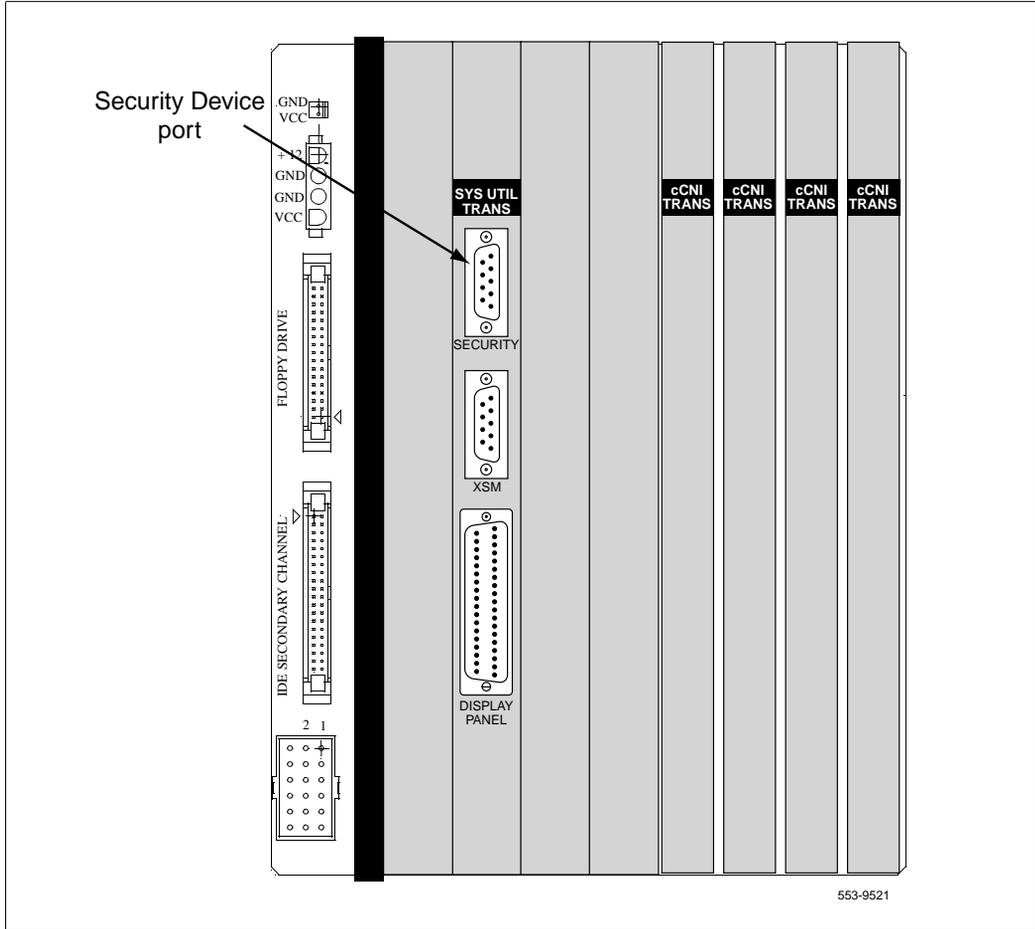
Or

If the original system did not have an IODU/C, use the Security Device provided with the CP PII Software kit.

Locate the Security Device holder in the plastic bag taped to the top of the card cage.

- 2** Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.
- 3** Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 23 on page 196).
- 4** Check that the Security Device is securely in place.

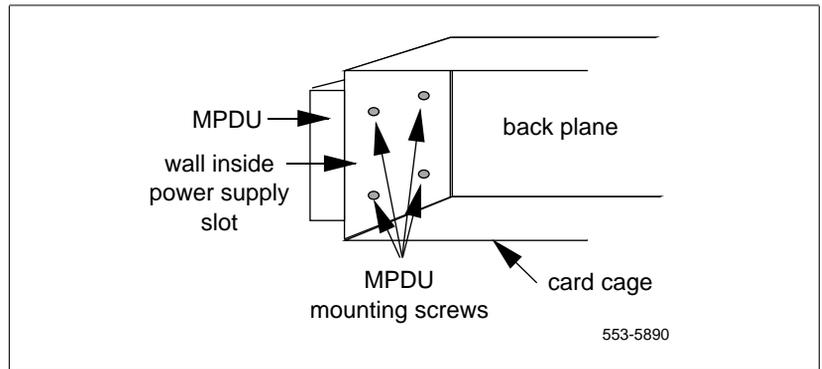
**Figure 23**  
**Security Device installation (System Utility Transition card)**



## Install the NT4N46 Core/Net 1 card cage

- 1 Check that the card cage is configured as Core 1. See “Check the Core ID switches” on page 38 for instructions.
- 2 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the CP PII card cage. Install the new MPDU, part of the cPCI Upgrade kit, to the side on the NT4N46 card cage. The screws that secure the MPDU are accessible from the power supply slot. See Figure 24 on page 197.

**Figure 24**  
**Location of the screws for the MPDU**



- 3 Check that the power harness at the right rear corner of the card cage has been transferred from the old card cage to the CP PII card cage.
  - a. In DC powered systems, connect the module power connectors to each other.
- 4 Slide the CP PII card cage halfway into the module.
- 5 Hold the card cage firmly and make the following connections at the rear of the module.

In AC powered systems, connect the remaining module power connectors to J2 on the MPDU.

In AC-power 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)



**CAUTION**

**Damage to Equipment**

Check for and remove any debris (such as screws) that may have fallen into the base of the UEM module.

- b. Attach the system monitor ribbon cables:
  - connect the ribbon cable that goes down to the pedestal to connector J1 on the backplane.
  - connect the ribbon cable that goes up the column to **J2** on the backplane.
- c. Attach the green ground wire to the frame ground bolt on the module. (a 11/32" socket wrench is used to attach the wire.) 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.

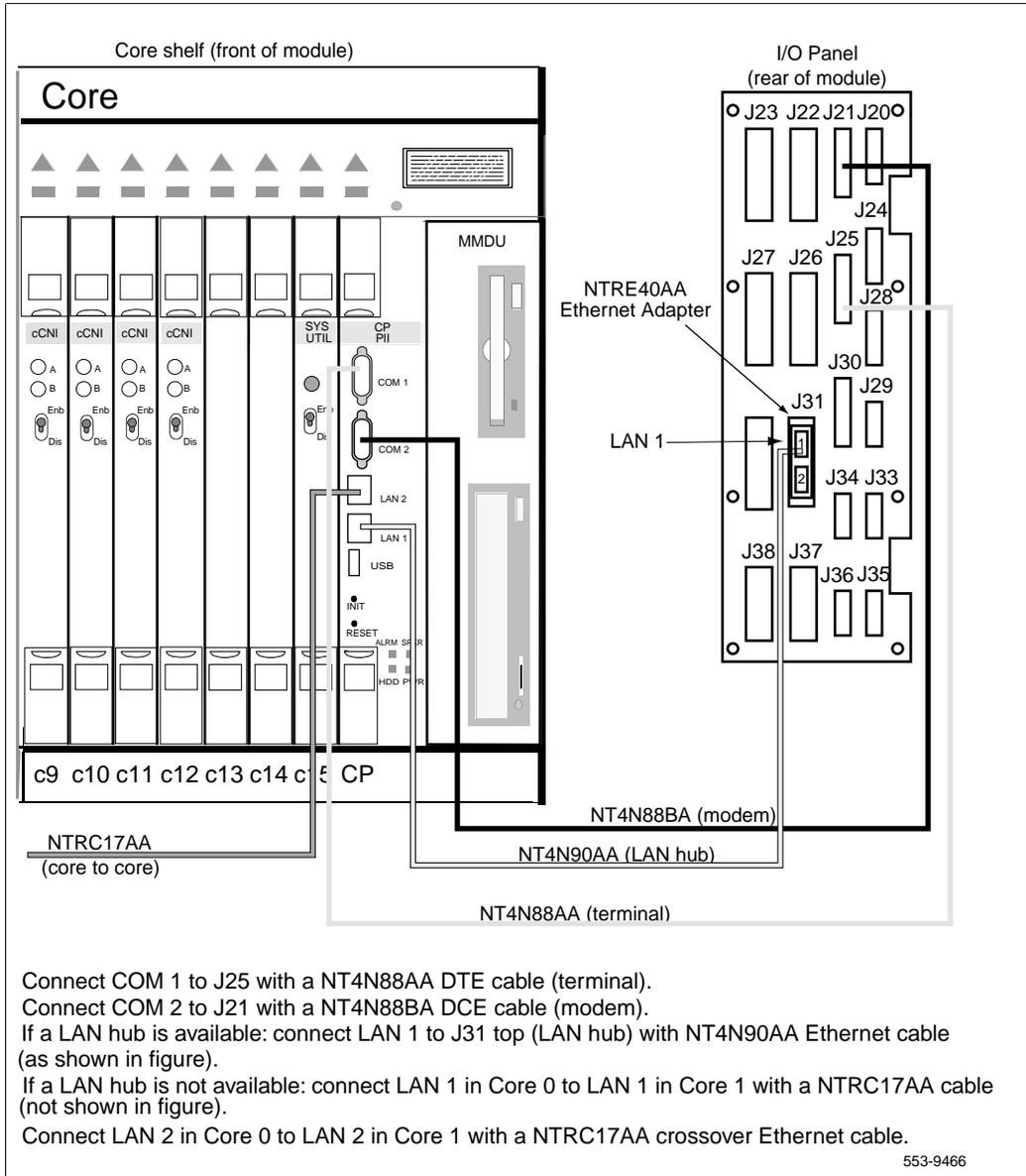
**Note:** For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

- d. Attach the orange logic return wire. Remove one nut and the lock washer from the LRTN blot 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. (You need a 1/4" or 2/8" socket wrench.)

- 6 Slide the card cage all the way into the module.
- 7 Check the position of the EMI shield. If the EMI shield has shifted, reposition it. Remove the tape holding the EMI shield.

- 8** Pre-route cables NT4N88AA, NT4N88BA and NT4N90AA before you secure the card cage. (See Figure 25 on page 200.)
  - a.** Route cable NT4N88AA from COM1 on the CP PII faceplate to J25 on the I/O panel. (NT4N88AA is used to connect a terminal.)
  - b.** Route cable NT4N88BA from COM2 on the CP PII faceplate to J21 on the I/O panel. (NT4N88BA is used to connect a modem.)
  - c.** Route cable NT4N90AA from LAN 1 on the CP PII faceplate to J31 (top) of the I/O panel.
- 9** Install either the NT6D41 DC power supply (see Figure 26 on page 173, for details) or the NT8D29 AC power supply (see Figure 27 on page 174, for details).

**Figure 25**  
**COM and LAN connections to the Core/Net I/O panel**

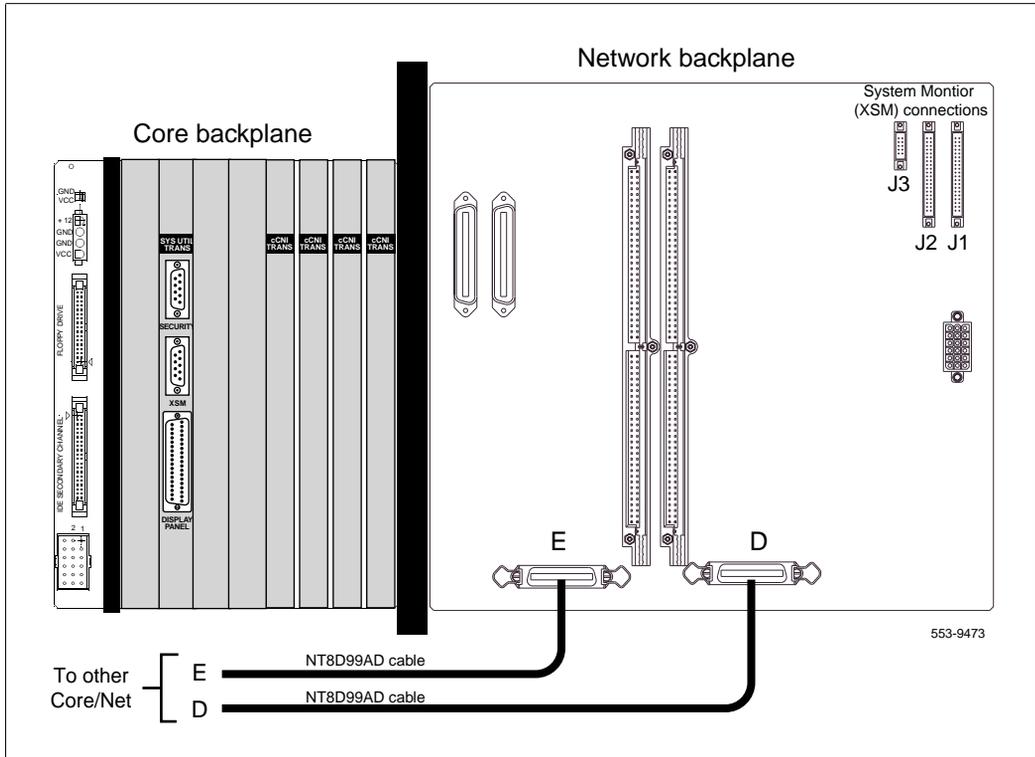


Connect COM 1 to J25 with a NT4N88AA DTE cable (terminal).  
 Connect COM 2 to J21 with a NT4N88BA DCE cable (modem).  
 If a LAN hub is available: connect LAN 1 to J31 top (LAN hub) with NT4N90AA Ethernet cable (as shown in figure).  
 If a LAN hub is not available: connect LAN 1 in Core 0 to LAN 1 in Core 1 with a NTRC17AA cable (not shown in figure).  
 Connect LAN 2 in Core 0 to LAN 2 in Core 1 with a NTRC17AA crossover Ethernet cable.

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- 10** Secure the card cage to the module with the three short screws in the front and the two long screws in the rear.  
**Note:** You need a minimum 12" long, 3/8" hex head nut driver for the two screws in the rear of the card cage.
- 11** Replace the trim panels on both sides of the card cage.
- 12** Install the screws at the back of the card cage.
- 13** Reconnect cables, plugs, and wires to the backplane:
  - a.** Connect all plugs, wires, and cables to the backplane.  
Figure 26 on page 202 shows the existing D and E cables which connect the network side.
  - b.** Position the I/O safety panel. Tighten the screws.

**Figure 26**  
**Connections on the Network backplane**



## **Cable COM 1 and COM 2 to the I/O panel**

COM 1 is used to connect a terminal (NT4N88AA cable).

COM 2 is used to connect a modem (NT4N88BA cable).

*Note:* If the system is Option 71 or Option 81, install the new I/O panel (PO745716).

Figure 27 on page 205 displays the COM and LAN cable connections.

- 1 Connect COM1 on the CP PII faceplate to J25 on the I/O panel with cable NT4N88AA.
- 2 Connect COM2 on the CP PII faceplate to J21 on the back of the I/O panel with cable NT4N88BA.

## **Connect a terminal and modem to the I/O panel**

- 1 Connect J25 to a terminal for use during the upgrade. Use a separate terminal for each Core if available. J25 can also be connected to an A/B box to share a terminal between both Cores.
- 2 Connect J21 to the device connected in the original system (such as a modem or A/B box).

## Connect LAN 1

The LAN 1 port is used to enable redundancy features between the two Core/Net modules. LAN 1 can also be connected to a local area network (LAN) for use with LAN based administration tools such as MAT.

### If the system will be connected to a LAN

- 1 Connect the “Dual Ethernet Adapter (RJ45) for I/O Panel” (NTRE40AA) to J31. Secure the adapter to J31 with the two screws included in the shipment.  
Insert the adapter from the inside of the I/O panel.
- 2 Connect LAN 1 (Ethernet) on the CP PII faceplate to J31 (top) of the I/O panel with cable NT4N90AA. This connection can only be made *after* the Dual Ethernet Adapter is installed (see step 3 above).
- 3 Connect J31 to a LAN hub.

### If a LAN is not available

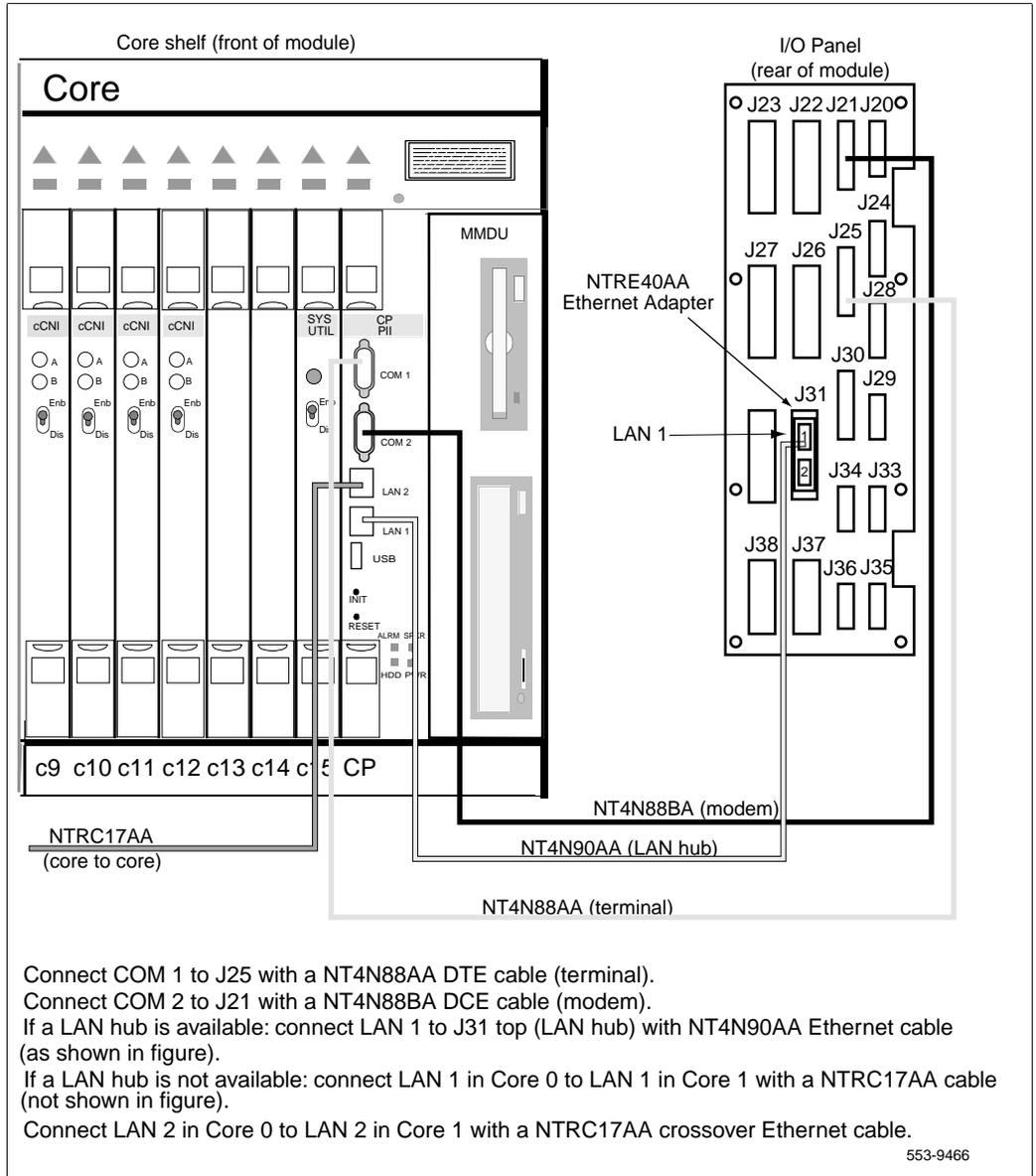
If a LAN hub is not available, do NOT connect LAN 1 to the I/O panel. The NTRE40AA Adapter and NT4N90AA cable are NOT installed.

If a LAN hub is not available, the LAN 1 port on the CP PII faceplate in Core/Net 0 is directly connected to LAN 1 in Core/Net 1 with a NTRC17AA crossover Ethernet cable. This connection is made later in the upgrade after the second card cage is installed.

## LAN 2 connections

The LAN 2 portion the CP PII faceplate in Core/Net 0 is directly connected to LAN 2 in Core/Net 1 with a NTRC17AA crossover Ethernet cable. This cable is installed later in the upgrade after the Core/Net 0 card cage is installed.

**Figure 27**  
**COM and LAN connections to the Core/Net I/O panel**



## Faceplate disable the cCNI cards

In Core/Net 1, disengage all cCNI cards from the backplane and disable the faceplate switch on all cCNI cards.

## Faceplate enable the System Utility Main card

Faceplate enable the System Utility Main card.

## Option 81C only: Move network cards to Core/Net 1

This procedure applies to Option 81C only. For Option 71 or 81 upgrades, go to “Attach the 3PE cables”.

- 1 Remove each network card from the NT5D21 Core/Net 1.
- 2 Reinstall each card in the same network slot in the NT4N41 Core/Net 1.
- 3 Connect the tagged cables to the relocated cards.

This is the end of the Option 81C-specific procedure. Proceed to “Attach the 3PE cables”.

## Attach the 3PE cables

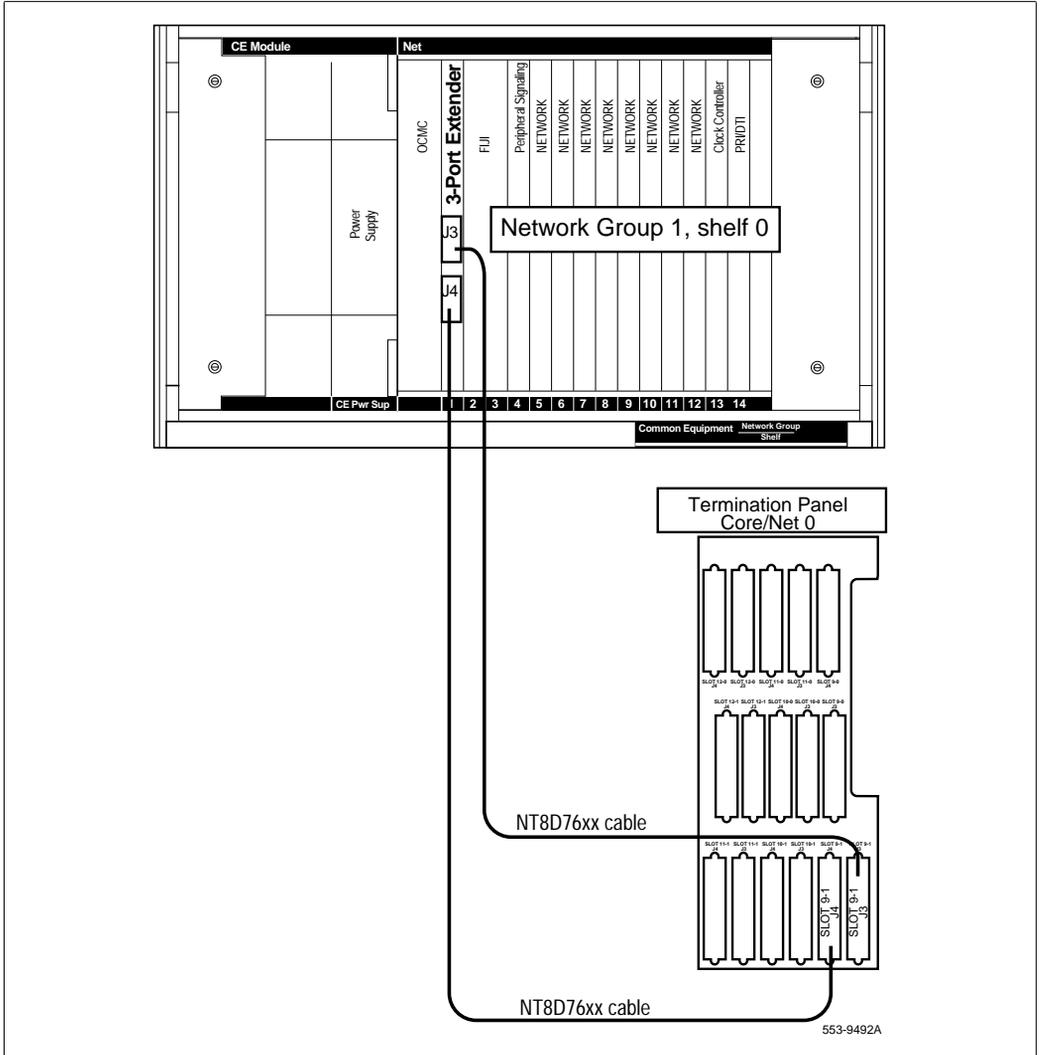
NT8D76 cables connect between the Core/Net Termination Panel and the 3PE cards:

- See Table 31 on page 210 for detailed information on the slot and Network group assignments.
- This procedure applies to systems with columns in a single row. This procedure does not apply to systems with columns in separate aisles.
- Network group assignments for the cCNI ports in the new CP PII card cage must be the same as the original system. Check to make sure that the cables are installed according to the port assignments in the existing database.
- The new NT8D76 3PE cables must be routed and in place before this procedure is begun. Refer to “Route the 3PE to cCNI (NT8D76) cables” on page 70.
- Remember to label all cables with the connection information. Labels are necessary to perform troubleshooting or future upgrades
- Table 31 on page 210 contains connection information for 3PE faceplates and the Core/Net Termination Panel.
- Figure 28 on page 209 shows the connection information for the Termination Panel.
- Figure 29 on page 211 shows the connection information for the Termination Panel.
- Figure 30 on page 212 shows the connection information for cCNI Transition Cables to the Termination Panel (eight group version)
- Figure 31 on page 213 shows the top view connection information for 3PE Termination Panel in the Core/Net module (group 0 in the Core/Net module)
- Figure 32 on page 214 shows the top view connection information for the 3PE Termination Panel in the Core/Net module (group 0 in a Network module Core/Net)
- If required, using two cables NT4N72AA, connect the appropriate pair of connectors on the 3PE Termination Panel corresponding to the desired Group to the two connectors on the Network backplane.

### **Connect the 3PE cables in the shelf 1 Network modules**

- 1        Disconnect the old cables from the J3 and J4 connectors on the 3PE cards in shelf 1 of each Network group.
- 2        Reinstall the two NT8D80BZ cables between the 3PE cards located in the existing Core 0 and the 3PE reinstalled in the new Core 1 module. Connect the first cable to J3 on each card and the second cable to J4 on each card.
- 3        Connect the new NT8D76 cables to J3 and J4 of the 3PE cards. See Figure 28 on page 209 and Table 31 on page 210 for connection information.
- 4        Connect the new NT8D76 cables to the Termination Panel in Core/Net 1 as shown in Figure 30 on page 212 and Table 31 on page 210.  
  
**Note:** Remove the old unused CNI to 3PE cables.
- 5        If the system has XSDI cards, reinstall the cards and attach the cables.

**Figure 28**  
**3PE Termination Panel connections**



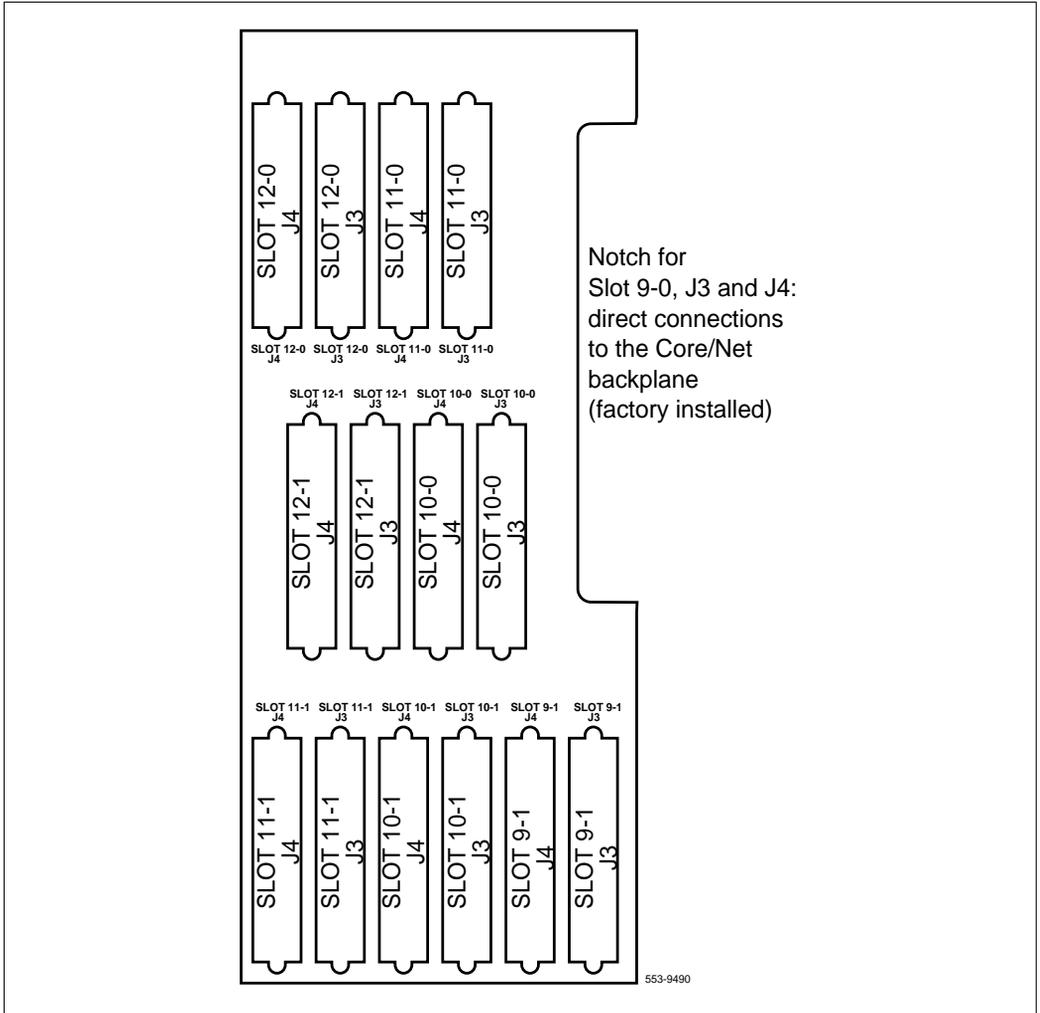
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**Table 31**  
**Termination Panel to 3PE card connectors**

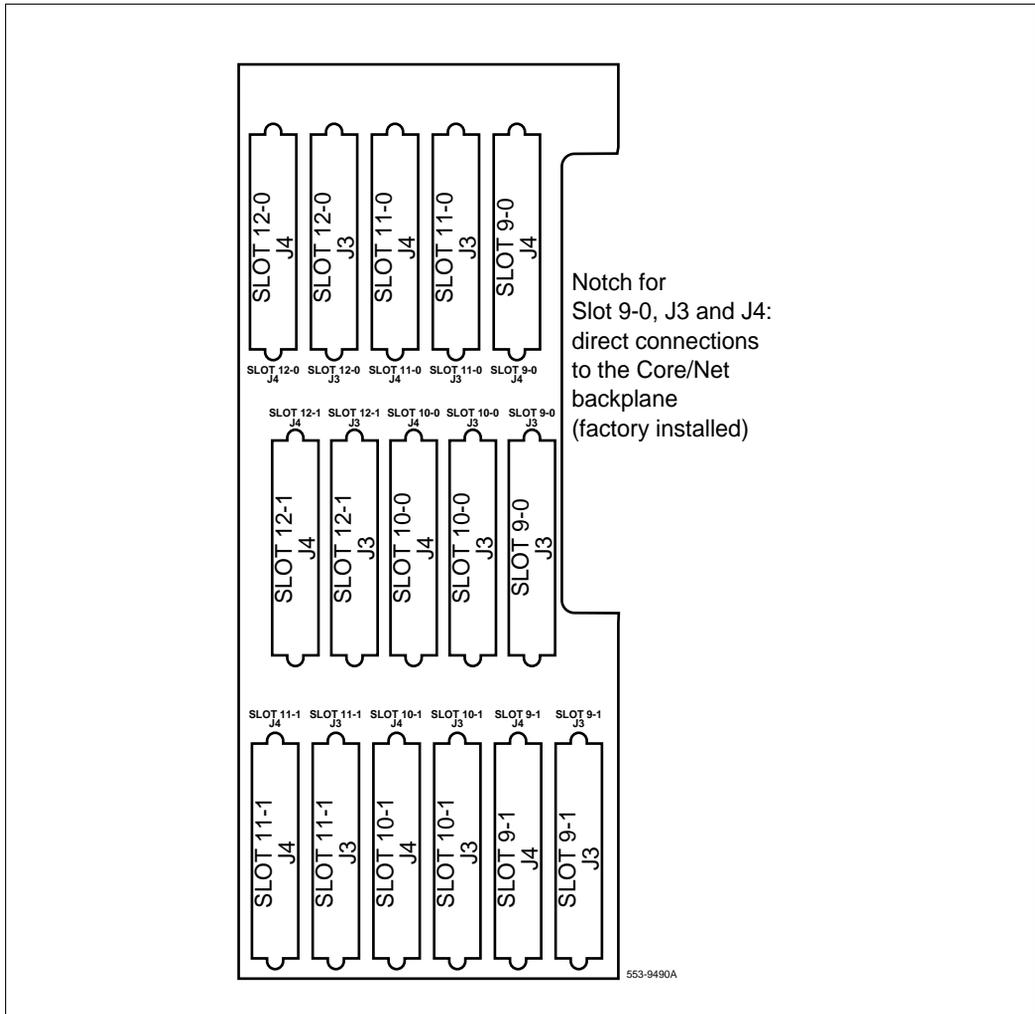
Group number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

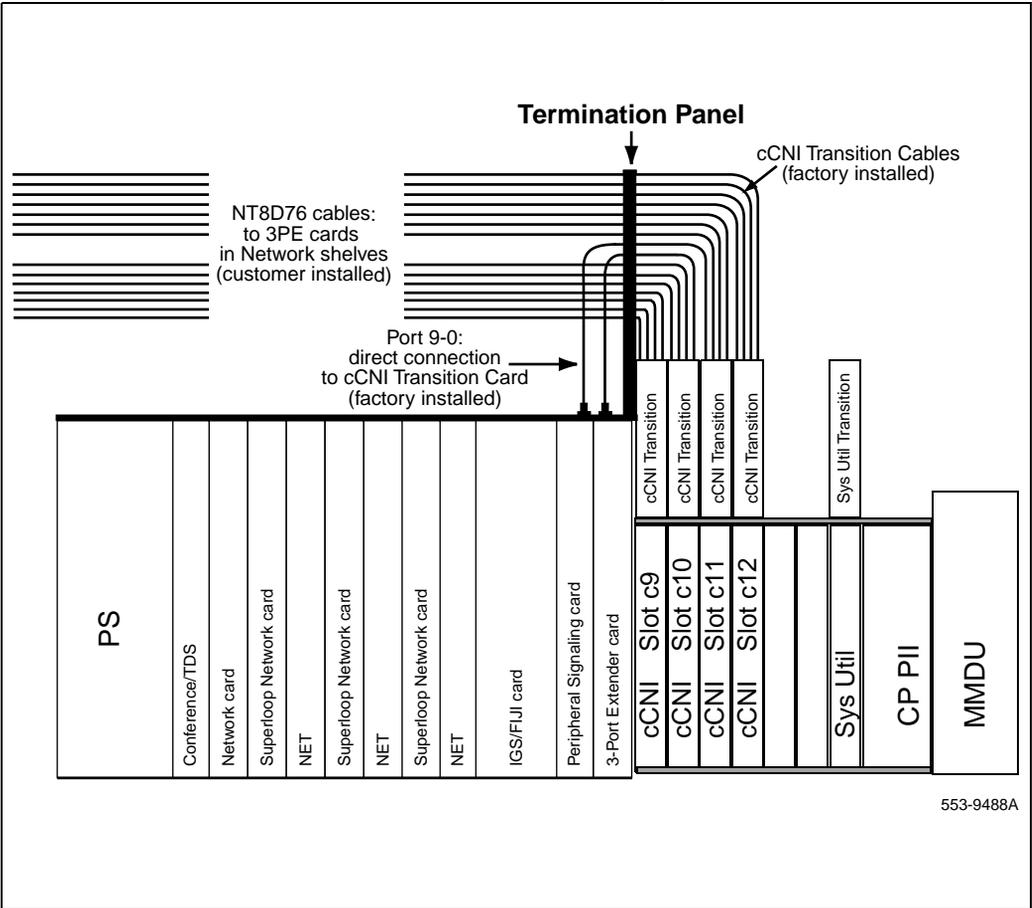
**Figure 29**  
**Connectors for cCNI Transition Cables to the Termination Panel (seven group version)**



**Figure 30**  
**Connectors for cCNI Transition Cables to the Termination Panel (eight group version)**



**Figure 31**  
**3PE Termination Panel in the Core/Net module (top view - group 0 in the Core/Net module)**





## Power up and complete the Core/Net 1 upgrade

### Power up the system

Turn on power to the module:

- For AC-powered systems, set the main circuit breaker to ON (top position) in the rear of the pedestal, then set the MPDU circuit breaker located at the left end of the module to ON (top position).
- For DC-powered systems, set the breaker to ON (up position) in the pedestal.

### Confirm that all cards in the Network are working

Bring up all the Network and Network I/O cards. Confirm that all the cards have working power.

### Install software and convert the database on Core/Net 1

- 1 Check that a terminal is connected to J25 on Core/Net 1.
- 2 In Core/Net 1, install the CD-ROM into the CD-ROM drive in the MMDU:
  - 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. Do not push the holder in by hand.

**Note:** If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

- 3 Place the CP PII Install floppy disk into the MMDU floppy drive.

**Note:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

- 4        Press the manual RESET button on the CP PII card faceplate.
- 5        Before the install runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:  
Testing partition 0  
          0 percent done...1 percent done.....99 percent done....100 percent done  
Testing partition 1  
          0 percent done...1 percent done.....99 percent done....100 percent done  
Testing partition 2  
          0 percent done...1 percent done.....99 percent done....100 percent completed!  
Disk physical checking is completed!  
There are 3 partitions in disk 0:  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
Disk partitions and sectors checking is completed!
- 6        At the terminal, press <cr> to start the software installation.
- 7        When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.  
  
      <a>    Continue with keycode validation  
      <y>    Confirm that the keycode matches the CD-ROM release
- 8        When the screen displays the Install Menu, select the following options in sequence when prompted to do so:  
  
      <b>    Install software, database, and CP-BOOT ROM  
      <a>    Verify that the CD-ROM is now in drive  
The Installation Status Summary screen appears that lists the options to be installed.  
      <a>    Continue with Upgrade

### **Pre-Release 3 language groups**

- 9 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 10**    Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>    Global 10 Languages
- <2>    Western Europe 10 Languages
- <3>    Eastern Europe 10 Languages
- <4>    North America 6 Languages
- <5>    Spare Group A
- <6>    North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

**11** Continue with upgrade when prompted. Select a database to install.

**<cr>** Enter carriage return to continue.

**<a>** Continue with CP BOOTROM installation

**<a>** Install the CP BOOTROM from hard disk

**<a>** Start installation

**<a>** Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, Database, and CP-BOOTROM were installed.

**<cr>** Continue

**<q>** Quit (remove any diskettes and the CD-ROM from the MMDU drives)

**<y>** Confirm quit

**<a>** Reboot the system

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for "DONE" and then "INI" messages to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION

RELEASE XX.XX TO RELEASE 25.

Confirm that the Release 25 software is installed and functional on Core/Net 0:

**LD 135** to load the program

**STAT CPU** to display the CPU status

## Configure the IP addresses

Two unique IP address are required for the CP PII system to communicate with the LAN. One IP number is defined for the *active* Core. The second IP address is defined for the *inactive* Core.

Contact your systems administrator to identify these IP numbers.

1        Configure the primary (*active*) and secondary (*inactive*) IP addresses:

<b>LD 117</b>	To load the program.
<b>new host <i>name 1</i> IP address</b>	To define the first IP address: “name 1” is an alias for the IP address such as “primary”. The IP address is the IP number.
<b>chg elnk active <i>name 1</i></b>	To assign the “name 1” address to the <i>active</i> Core.
<b>new host ‘name 2’ IP address’</b>	To define the second IP address: “name 2” is an alias for the IP address such as “secondary”. The IP address is the IP number.
<b>chg elnk inactive <i>name 2</i></b>	To assign the “name 2” address to the <i>inactive</i> Core.
<b>chg mask 255.255.240.0</b>	To set the sub-net per local site. This number allows external sub-nets to connect to the system.
<b>new route 0.0.0.0 <i>ip address</i></b>	Sub-net router address, if required.
<b>prt route</b>	To print the route data. This returns a value assigned to the route used in the next step.
<b>enl route #</b>	To enable the route table entry: the value is from the step above.

2        Enable the new Ethernet interface:

<b>LD 137</b>	To load the program.
<b>dis elnk</b>	To <i>disable</i> the old IP interface values.
<b>enl elnk</b>	To <i>enable</i> the new IP interface values.

## Check for Peripheral Software Download to Core/Net 1

Load LD 22 and print Target peripheral software version. The Source peripheral software version was printed during the procedure to "Print site data" on page 40.

If there is a difference between the Source and Target peripheral software version:

- A forced download occurs during initialization when coming out of parallel reload.
- System initialization takes longer.
- The system drops established calls on IPE.

### **LD 22**

**REQ**

PRT

**TYPE**

PSWV.

**ISSP**

Print System and Patch Information.

**SLT**

Print System Limits.

**TID**

Print the Tape ID.

**\*\*\*\***

Exit program.

## For systems with fewer than five groups, delete CNIs

Software has configured the system for five groups.

If your system has five groups, skip this procedure.

If your system has fewer than five groups, you must software remove the CNIs not used in your system configuration:

1        In Core/Net 1, disable all CNI cards using LD 135:

<b>LD 135</b>	To load the program.
<b>STAT CNI</b>	Get the status of all CNI cards.
<b>DIS CNI x s p</b>	Disable CNI cards where: x = extender number (0 or 1) s = card slot (9-12) p = port (0 or 1)
<b>STAT CNI</b>	Confirm that CNI cards are disabled.
<b>****</b>	Exit the program.

2        Use LD 17 to remove the extra CNI cards.

<b>LD 17</b>	To load the program.
<b>CHG</b>	
<b>CFN</b>	
<b>CEQU YES</b>	
<b>EXTO 3PE</b>	Core/Net 0 extended to 3PE.
<b>CNI s p xg</b>	Out the CNI card, where: s = card slot (9-12) p = port (0 or 1) xg = out network group (x0-x4)
<b>EXTI 3PE</b>	Core/Net 1 extended to 3PE
<b>CNI s p xg</b>	Out the CNI card, where: s = card slot (9-12) p = port (0 or 1) xg = out network group (x0 - x4)
<b>****</b>	Exit the program.

## Option 71 only, reconfigure I/O ports and call registers

This procedure applies to Option 71 only.

For Option 81 and Option 81C upgrades, proceed to “Reboot the system” on page 224.

- 1 Remap 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

**LD 17** Load the program.

**CHG**

**CFN**

**CHG aaa x g** aaa = terminal type (such as tty or aml).  
x = terminal number (0 -15).  
g = network group (0 - 4)

- 2 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 *Meridian 1 Capacity Engineering*.

If changes are required, reconfigure the values in LD 17:

**LD 17** Load the program.

**CHG**

**CFN**

**PARM YES**

**500B 1000** Use 1000 as a minimum value.

**NCR 20000** Use 20000 as a minimum value.

**\*\*\*\*** To exit the program.

- 3 Print the Configuration Record to confirm the changes made above:

**LD 22** Load the program.

**REQ PRT** Set the print Option.

**TYPE CFN** Print the configuration.

**\*\*\*\*** To exit the program.

- 4      Perform a data dump to save the customer database to the hard drive:
  - a.    Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43**                    To load the program.
  - b.    When “EDD000” appears on the terminal, enter  
**EDD**                      To begin the data dump.



**CAUTION**

**Loss of Data**

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

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

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

To continue the Option 71 upgrade, proceed to “Reboot the system” on page 224.

## Reboot the system

Press the RESET button on the CP PII card faceplate to reboot the system.

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for “DONE” and then “INI” messages to display before you continue.

## Transfer call processing to Core/Net 1

- 1 From the active Core 0, disable the existing Ethernet interface:

**LD 137** To load the program.

**dis eInk** Disable the old IP interface.

**Note:** Any applications using the Ethernet interface will be impacted.

- 2 Disconnect the ethernet connection from Core 0 and connect to J31 of Core Net 1.

**Note:** If the cable is too short, install a new cable.

- 3 In Core 0, disable all the SBE or CNI cards.

- 4 In Core/Net 1, enable all the cCNI cards.

- 5 For Option 71 or 81: in Network shelf 1, faceplate enable Clock Controller 1.

- 6 In Core/Net 1, press the INIT button.  
Wait for the INIT process to complete.

- 7 Check the status of the Clock Controller 1:

**LD 60** To load the program.

**SSCK 1** Get the status of Clock Controller 1.

- 8 **For Option 71 or 81:** if Clock Controller 1 is enabled standby, faceplate disable Clock Controller 0.

- 9 Check the status of the Clock Controller 1 again.

**LD 60** To load the program.

**SSCK 1** Get the status of Clock Controller 1.

Clock Controller 1 is enabled active.

Core/Net 1 and Clock Controller 1 are now active.

## Test the Core/Net 1 card cage upgrade

Test Call Processing. This includes, but is not limited to the following:

- 1     Check for dial tone.
- 2     Make internal, external, and network calls. Make sure intragroup and intergroup calls can be placed.
- 3     Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.
- 4     Check attendant console activity.
- 5     Check DID trunks.
- 6     Check any auxiliary processors.
- 7     Check I/O, XNET, MISP, TTYs (all cards disabled and removed).
- 8     Test Core/Net 1.

*Note:* Be aware that you are in single CPU mode at this point in the upgrade.

## Perform a data dump on Core/Net 1

Perform a data dump to save the customer database to the hard drive:

- 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.



### **CAUTION Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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



### **CAUTION System Failure**

Although the procedures to upgrade Core 0 are similar to those for Core 1, significant differences do exist.

Follow all the procedures for Core 0 carefully. Complete the instructions in sequence. Failure to follow the specific installation and configuration procedures will result in system failure and increased downtime.

## Disable and remove equipment from Core 0

### Options 71 and 81 only: move Clock Controller 0

For Option 81C upgrades, proceed to “Option 81C only: Software disable Network cards in Core/Net 0” on page 230.

The Clock Controllers in Option 81 systems must be moved to the Network modules according to the guidelines on “Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)” on page 37. Review these rules to determine the new location of the Clock Controllers.

- 1 Label and disconnect the Clock Controller Junctor cable from the J12 connector in the InterGroup Module junctor board.
- 2 Disconnect the Junctor cable from the Clock Controller 0 faceplate card.
- 3 If primary and secondary clock reference cables are connected to the Clock Controller faceplate, disconnect them last.
- 4 Remove Clock Controller 0 from the Core module.
- 5 Set the Clock Controller 0 switch settings according to Table 32 on page 229.
- 6 Move Clock Controller 0 to any Network shelf 0, slot 13. Seat Clock Controller 0 but do not enable the card.  
**Note:** The Clock Controllers (0 and 1) must be located in different Network groups in different columns. Refer to the guidelines on page 37 to determine Clock Controller placement.
- 7 Reconnect the Clock Controller 0 Junctor cables.
- 8 In Core 0, disable any ISDN PRI cards.
- 9 In Core 0, disable the CNI card (phantom group 5):  
**LD 135** To load the program.  
**DIS CNI 0 8 0** Disable the CNI card in Core module 0, slot 8, port 0.

**Table 32**  
**Clock Controller 0 switch settings**

Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table. DO NOT use the Option 81 switch settings.											
SW1				SW2				SW4			
1	2	3	4	1	2	3	4	1	2	3	4
on	off	**	on	*	*						
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
<p>* If there is only one Clock Controller card in the system, set to OFF.            If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above.            Set the switches on both cards to the same settings.</p> <p>** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.</p>											

This is the end of the procedure to move Clock Controller 0. To continue with Option 71 or 81 upgrades, proceed to “Turn Core 0 module power OFF” on page 233.

## Option 81C only: Software disable Network cards in Core/Net 0

This procedure is for Option 81C systems only.

For Option 71 and 81 systems, proceed to “Turn Core 0 module power OFF” on page 233.

Software disable all cards in the network slots of Core/Net 0.



### **CAUTION**

#### **Service Interruption**

At this point, the upgrade interrupts service.

Cards in the Network slots include the following:

- NT8D04 Superloop Network card
- QPC414 Network card
- QPC441 Three-Port Extender (3PE) card
- QPC43R Peripheral Signaling card
- QPC 412 InterGroup Switch (IGS) card/NT5D30AA Dual InterGroup Switch (DIGS) card
- QPC513 Enhanced Serial Data Interface (ESDI) card
- NT8D41 Extended Serial Data Interface (XSDI) card
- QPC536 Digital Trunk Interface (DTI) card
- NT8D72 Primary Rate Interface (PRI) card
- NT6D80 Multipurpose Serial Data Link (MSDL) card

**Software disable cards in network slots of Core/Net 0:**

- 1 In Core/Net 0 only, software disable all network and I/O cards such as XNET, TTY, Conf/TDS and ISDN cards:
  - a. In Core/Net 0 only, disable XNET.
  - b. In Core/Net 0 only, disable ENET.
  - c. In Core/Net 0 only, software disable each port on the SDI cards.



**CAUTION**

**Service Interruption**

If the system terminal is assigned to an SDI port that you are disabling, assign it to another port before you disable the SDI.

**LD 37**

**DIS TTY x**

x = the number of the interface device attached to a port.

\*\*\*\*

Exit the program.

- d. In Core/Net 0 only, disable DTI cards.
- e. In Core/Net 0 only, disable PRI cards.
- f. In Core/Net 0 only, disable MSDL cards.

**2** In **Core/Net 0** only, disable the IGS/DIGS cards:

a. Software disable the IGS/DIGS card:.

**LD 39**

**DISI IGS/DIGS x** "x" is the IGS/DIGS card number—0 to 19.

\*\*\*\*

Exit the program.

You see ISR043 on the system terminal when the card is disabled.  
Busy channels are not disabled until the call is disconnected.

Repeat step a to disable remaining IGS/DIGS cards in Core/Net 0 only.

**Table 33**  
**IGS/DIGS card locations**

Network Group 0	Shelf 1	IGS/DIGS 1 & 3
Network Group 1	Shelf 1	IGS/DIGS 5 & 7
Network Group 2	Shelf 1	IGS/DIGS 9 & 11
Network Group 3	Shelf 1	IGS/DIGS 13 & 15
Network Group 4	Shelf 1	IGS/DIGS 17 & 19

b. In Core/Net 0 only, faceplate disable the IGS/DIGS cards.

- 3** In Core/Net 1 only, software disable the QPC43 Peripheral Signaling Card:

**LD 32****DSPS x**

Table 30 on page 183 lists Peripheral Signaling Card numbers specified by "x."

\*\*\*\*

Exit the program.

**Table 34**  
**Peripheral Signaling Card numbers**

Group/ shelf	Peripheral Signaling Card	Loops disabled/enabled		
0 / 0	0	0	–	15
0 / 1	1	16	–	31
1 / 0	2	32	–	47
1 / 1	3	48	–	63
2 / 0	4	64	–	79
2 / 1	5	80	–	95
3 / 0	6	96	–	111
3 / 1	7	112	–	127
4 / 0	8	128	–	143
4 / 1	9	144	–	159
5 / 0	10	160	–	175
5 / 1	11	176	–	191
6 / 0	12	192	–	207
6 / 1	13	208	–	223
7 / 0	14	224	–	239
7 / 1	15	240	–	255

- 4** In Core/Net 1 only, disable the 3PE card:  
Set the ENB/DIS switch on the 3PE card to DIS.

This is the end of the Option 81C procedure to software disable cards in the network slots. Proceed to "Turn Core 0 module power OFF" on page 233.

## Turn Core 0 module power OFF

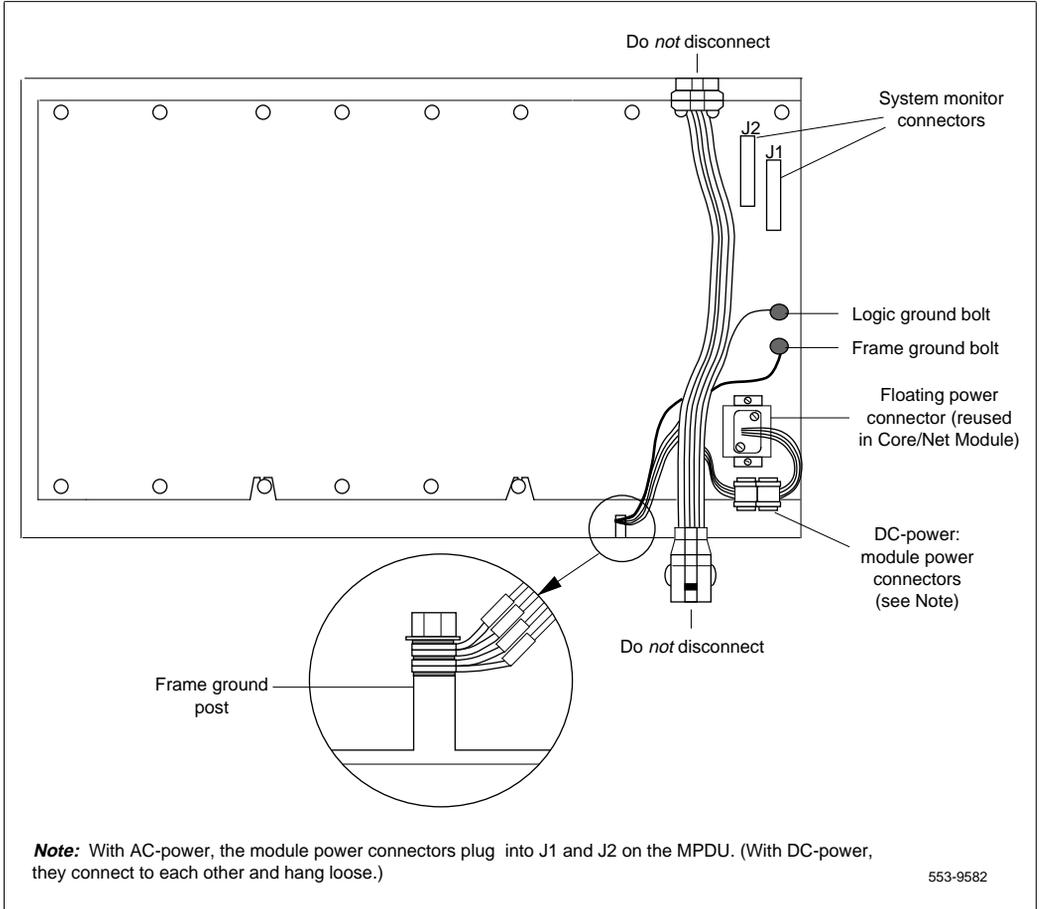
For AC-powered systems: set the MPDU circuit breaker at the let end of the module to OFF (top position)

For DC-powered systems: set the breaker in the back of the column pedestal to OFF (down position).

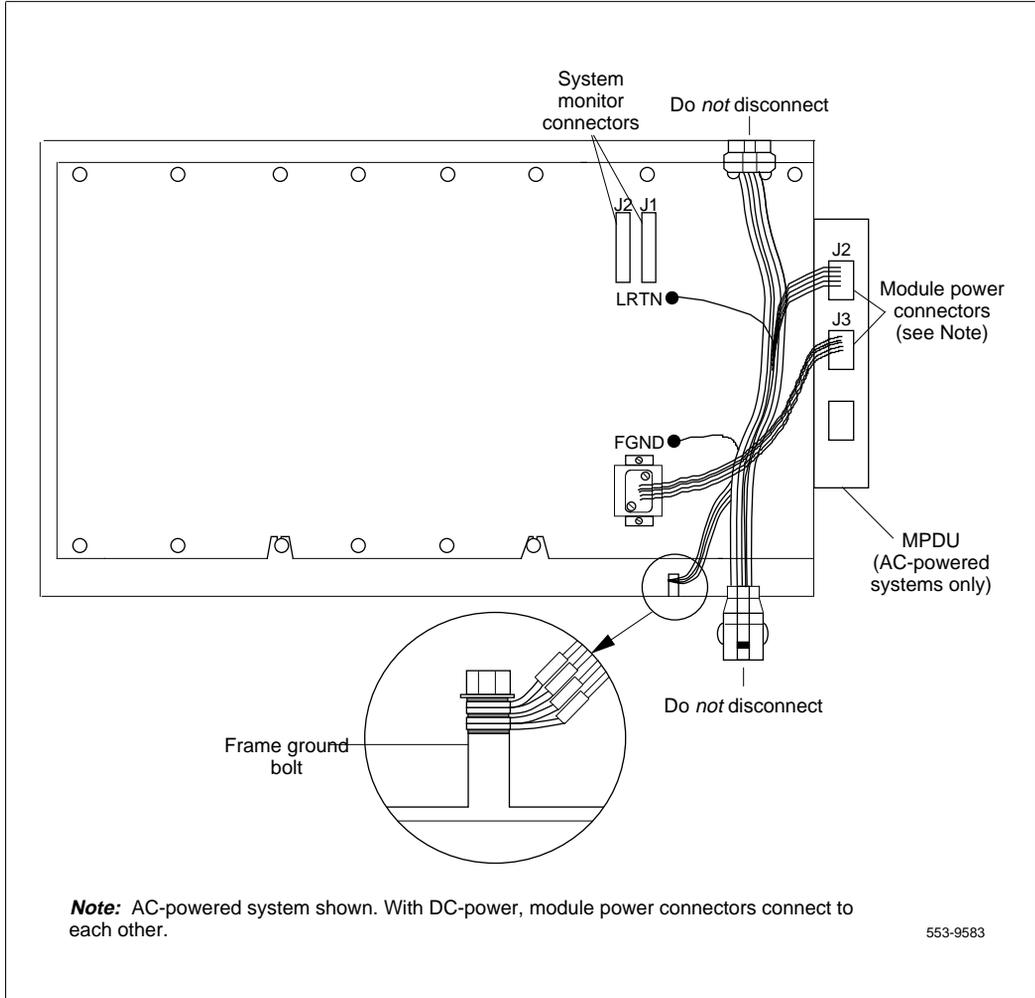
## Remove Core 0 cables and card cage

- 1      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.
- 2      Remove the I/O safety panel by turning the screws on each side. Set the cover aside.
- 3      Tag and disconnect all cables from the backplane to the interior of the I/O assembly.
- 4      Tag and disconnect all plugs, wires, and cables to the backplane.  
  
**Note 1:** Leave the network cards in the card cage. You will relocate them to the CP PII card cage later in the upgrade procedure.  
  
**Note 2:** Two people are needed to remove the Core card cage because of the weight of the card cage with the cards left installed.
- 5      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 use with the CP PII card cage. (You need a 1/4" nut driver to remove the screws.)
- 6      Remove the front trim panels on both sides of the card cage.
- 7      Remove the three mounting screws that secure the front of the card cage to the bottom of the module.  
Save the screws for use with the CP PII card cage.
- 8      Pull the card cage forward until it is halfway out of the module.
- 9      Disconnect cables, plugs, and wires from the rear of the module to the backplane:
- 10     Remove the logic return (LTRN) (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.  
  
See Figure 33 on page 235, below, for DC power connectors.  
  
See Figure 34 on page 236, for AC power connectors.

**Figure 33**  
**DC power connectors on the Core module backplane**



**Figure 34**  
**AC power connectors on the Core module backplane**



- 11 Remove the frame ground (FGND) (green) wire from the frame ground bolt on the module.
- 12 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.
- 13 Label and disconnect the system monitor ribbon cables to J1 and J2.
- 14 Remove the Core card cage from the module.S
- 15 Remove and reinstall the module to module power harness.  
The power harness is located at the right rear lower corner and plugs into the rear of the power supply.
  - For AC systems, relocate power harness NT8D80AM.

For DC systems, relocate power harness NT7D11.

**CAUTION****Damage to Equipment**

Be sure to perform the following step. If you do not tape the EMI shield in position, you will not be able to install the card cage in the module correctly.

- 16 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.

In AC-power 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).

**CAUTION****Damage to Equipment**

Check for and remove any debris (such as screws) that may have fallen into the base of the UEM module.

## Install equipment in Core/Net 0

### Equipment check

Check that the following equipment arrives installed in the CP PII card cage:

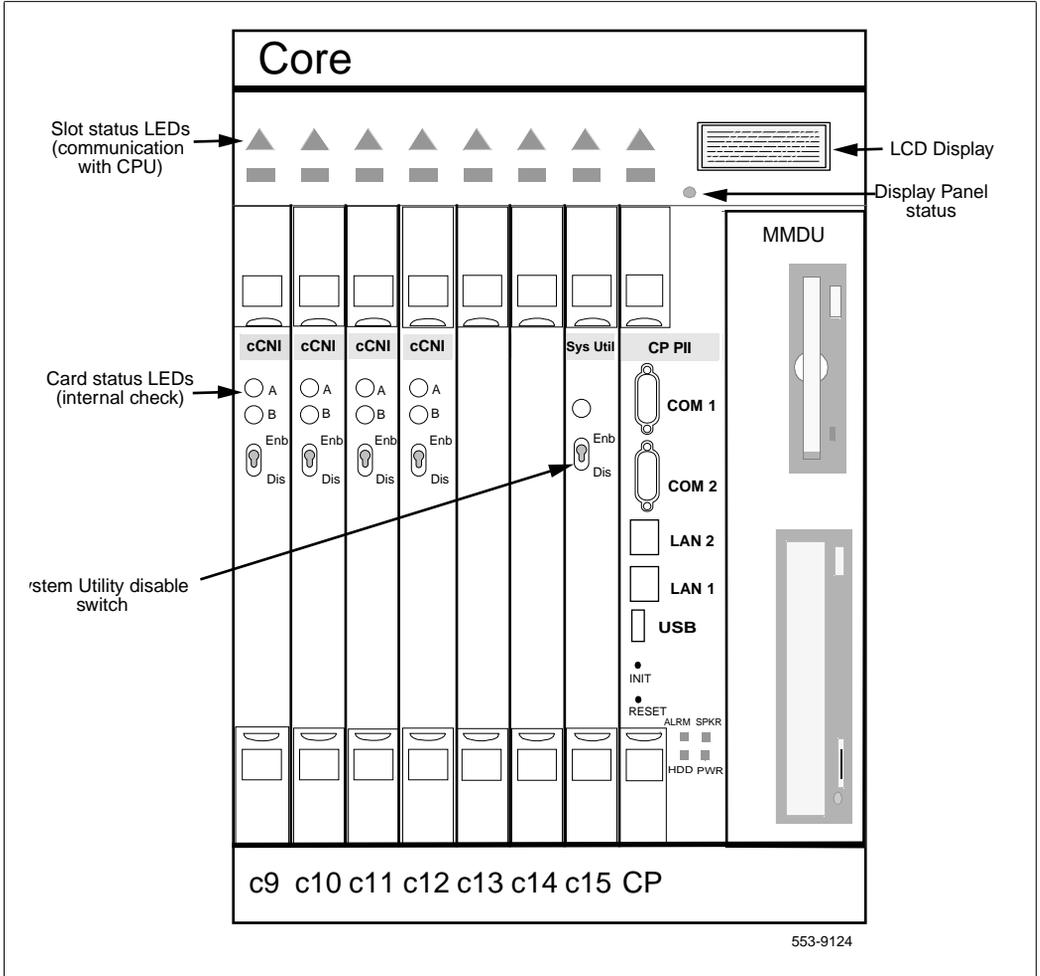
- 1        "Check that the main Core cards (front side) are installed" on page 238
- 2        "Check that the Core Transition cards are installed" on page 240
- 3        "Check for the shelf power cable" on page 242
- 4        "Option 81C only: Move Network cards to NT4N41 Core/Net 0" on page 254.

### Check that the main Core cards (front side) are installed

The main Core cards including the MMDU (with the cables for power and data) are installed in the factory (see Figure 35 on page 239):

- **NT4N65AA cPCI Core Network Interface (cCNI) cards:** Each system contains between one and four NT4N65 cCNI cards per Core/Net module. The cCNI cards are located in slots c9-c12. If not already installed, install a P0906308 cPCI Card Slot Filler Panel to cover any of slots c10 - c 12 which do not contain cCNIs.
- Slots c13 and c14 are left empty. If not already installed, install a P0906308 cPCI Card Slot Filler Panel in each slot.
- **NT4N67AA System Utility (Sys Util) card** is located in slot c15.
- **NT4N64** or **A0810496 Call Processor PII (CP II)** is located in the slot marked CP.
- **NT4N43AA cPCI Multi-Media Disk Unit (MMDU)** is located in the extreme right hand slot next to the CP PII card. The MMDU contains the Hard drive, floppy drive and CD-ROM drive.

**Figure 35**  
**Core card placement in the NT4N41 Core/Net (front)**



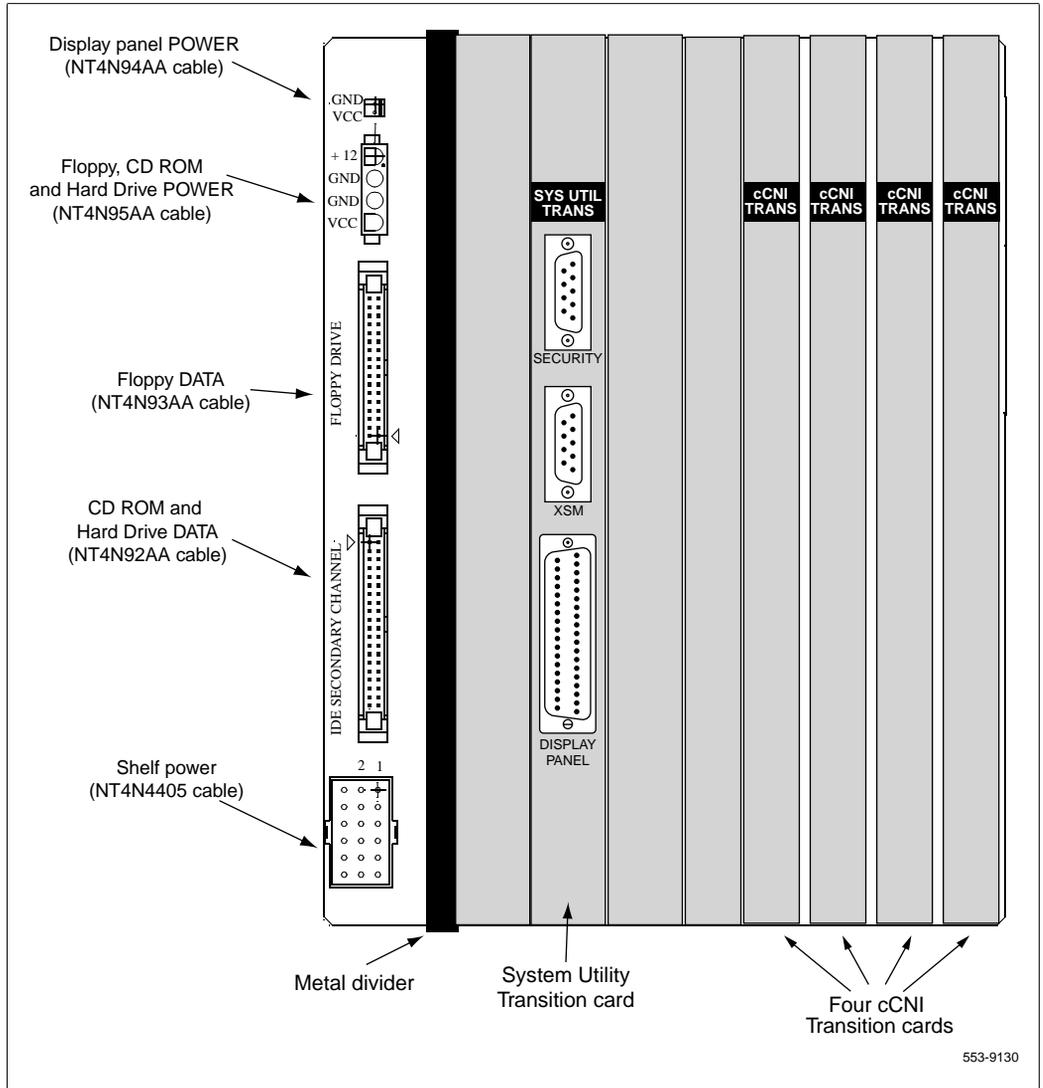
## Check that the Core Transition cards are installed

The Core Transition cards are located directly behind the corresponding main cards (on the rear of the Core backplane). Core Transition cards are installed in the factory:

- **NT4N66AA cCNI Transition cards:** Each system contains four of these cards.
- **NT4N68AA System Utility Transition card:** The System Utility Transition card is installed directly behind the System Utility card and contains connections for the Security Device, the System Monitor (XSM) and the Display Panel.

Figure 36 on page 241 displays the location of the Core Transition cards.

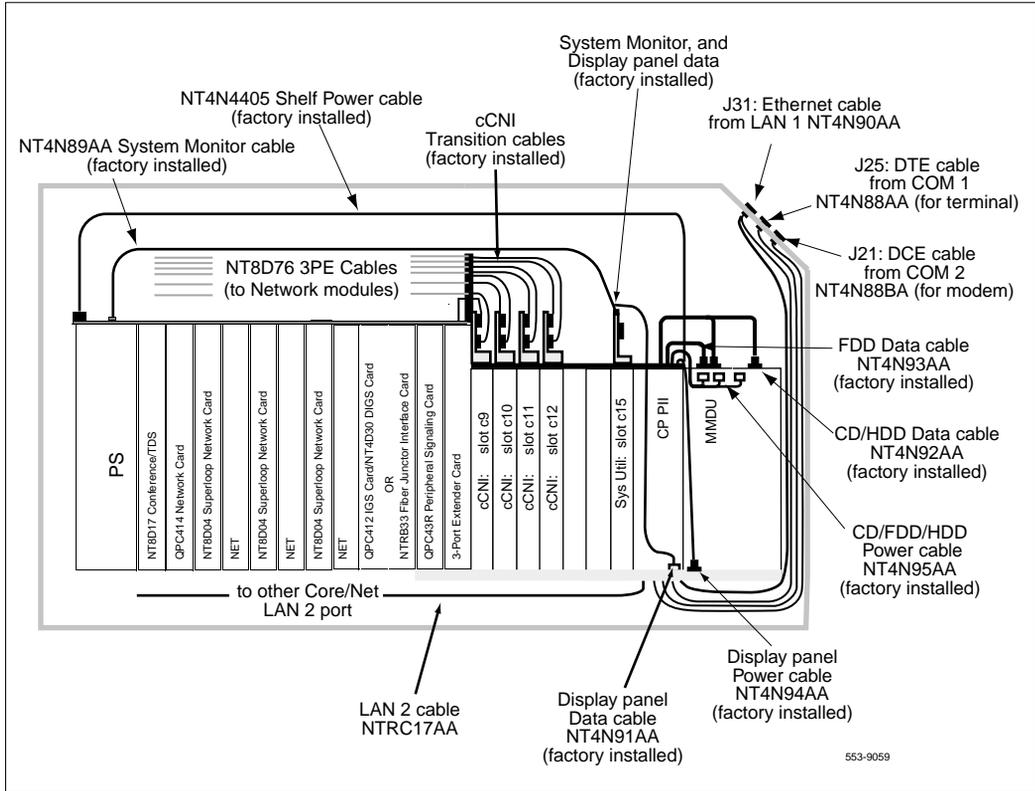
**Figure 36**  
**Location of Transition cards**



## Check for the shelf power cable

Check that the NT4N4405 shelf power cable is installed in the NT4D46 card cage backplane. See Figure 37 on page 242 for the cable location.

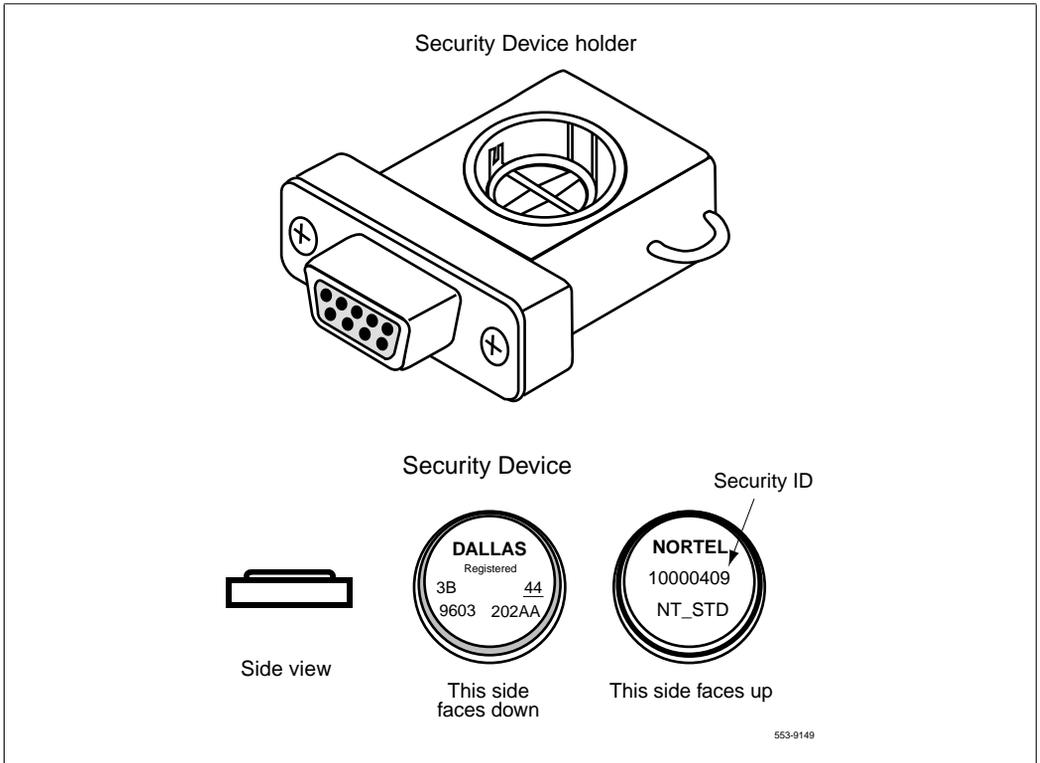
**Figure 37**  
**Core/Net cable connections**



## Install the Security Device

The Security Device fits into the Security Device holder (see Figure 38 on page 243) which attaches to the System Utility Transition card located on the core backplane.

**Figure 38**  
**Security Device and holder**



To install the Security Device:

- 1     If the original system had an IODU/C, remove the Security Device from the IODU/C for reuse.
  - a.    Unlock the latches and remove the IODU/C card.
  - b.    Remove the round 1/2" diameter IODU/C Security Device from the round black Security Device holder on the top right corner of the IODU/C card.

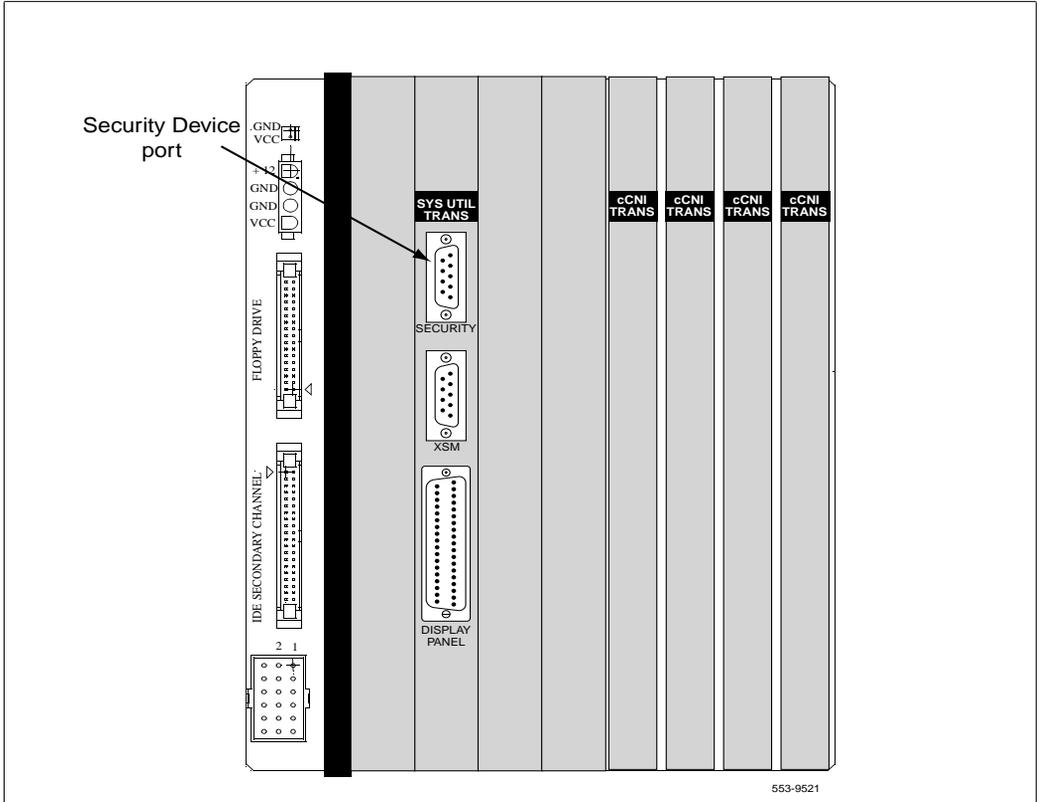
Or

If the original system did not have an IODU/C, use the Security Device provided with the CP PII Software kit.

Locate the Security Device holder in the plastic bag taped to the top of the card cage.

- 2     Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.
- 3     Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 39 on page 245).
- 4     Check that the Security Device is securely in place.

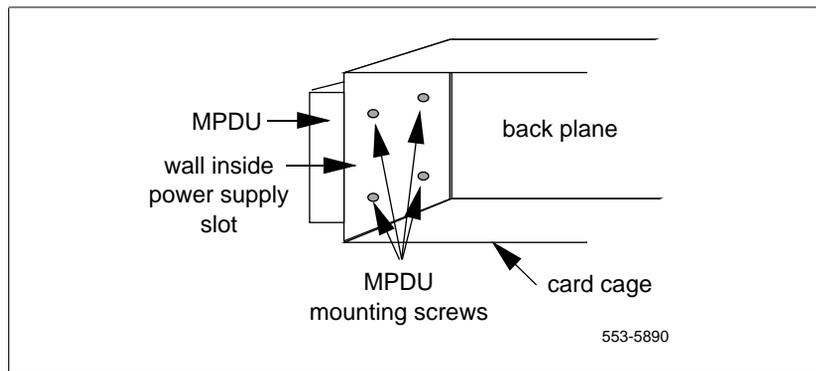
**Figure 39**  
**Security Device installation (System Utility Transition card)**



## Install the NT4N46 Core/Net 0 card cage

- 1 Check that the card cage is configured as Core 0. See “Check the Core ID switches” on page 38 for instructions.
- 2 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the CP PII card cage. Install the new MPDU, part of the cPCI Upgrade kit, to the side on the NT4N46 card cage. The screws that secure the MPDU are accessible from the power supply slot. See Figure 24 on page 197.

**Figure 40**  
**Location of the screws for the MPDU**



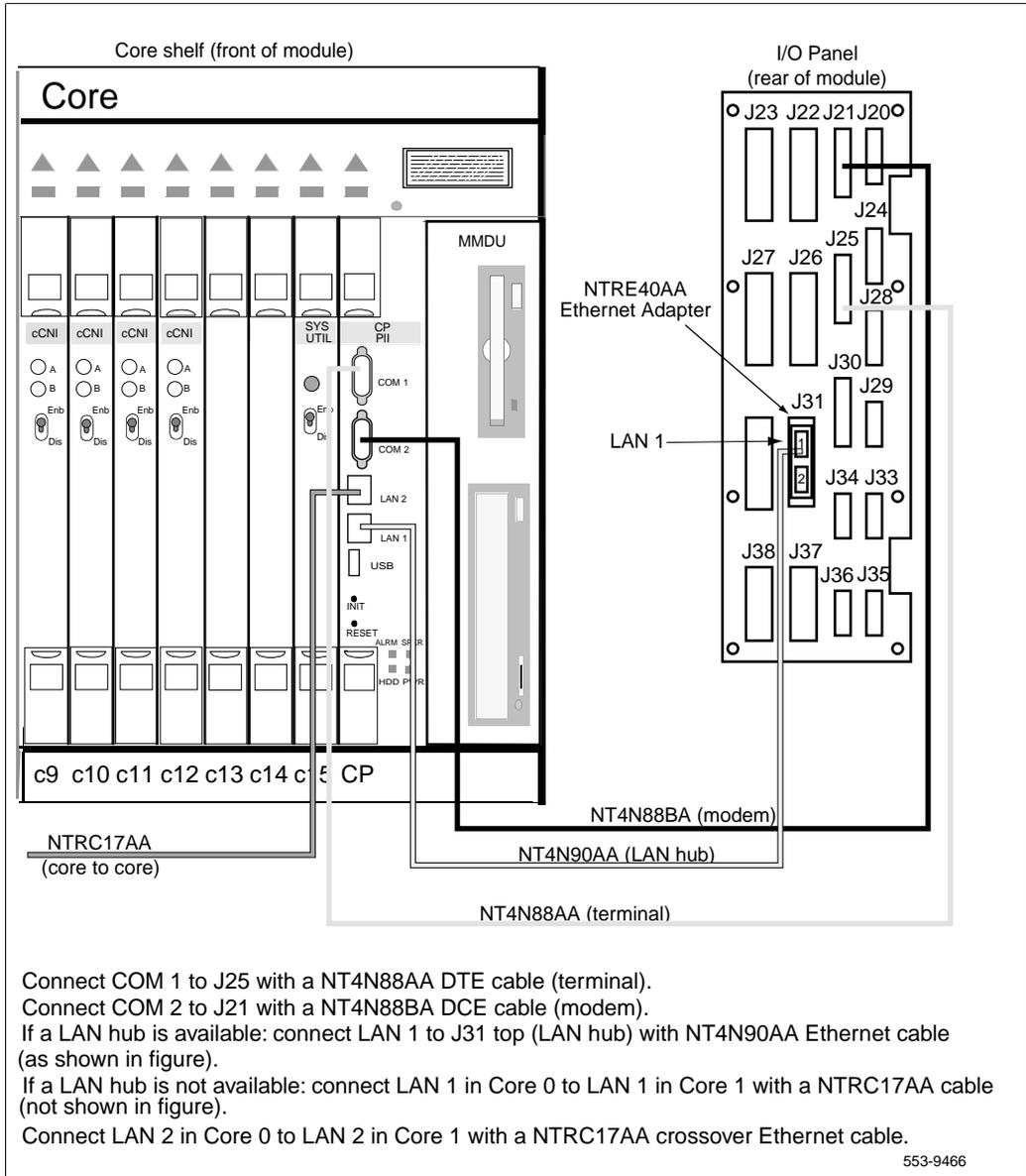
- 3 Check that the power harness at the right rear corner of the card cage has been transferred from the old card cage to CP PII card cage.
- 4 Slide the CP PII card cage halfway into the module.
- 5 Hold the card cage firmly and make the following connections at the rear of the module.
  - a. In AC powered systems, connect the remaining module power connectors to J2 on the MPDU.  
In DC powered systems, connect the module power connectors to each other.
  - b. Attach the system monitor ribbon cables:
    - connect the ribbon cable that goes down to the pedestal to connector J1 on the backplane.
    - connect the ribbon cable that goes up the column to J2 on the backplane.

- c. Attach the green ground wire to the frame ground bolt on the module. (a 11/32" socket wrench is used to attach the wire.) 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 blot 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. (You need a 1/4" or 2/8" socket wrench.)
- 6 Slide the card cage all the way into the module.
  - 7 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
  - 8 Pre-route cables NT4N88AA, NT4N88BA and NT4N90AA before you secure the card cage. (See Figure 41 on page 248.)
    - a. Route cable NT4N88AA from COM1 on the CP PII faceplate to J25 on the I/O panel. (NT4N88AA is used to connect a terminal.)
    - b. Route cable NT4N88BA from COM2 on the CP PII faceplate to J21 on the I/O panel. (NT4N88BA is used to connect a modem.)
    - c. Route cable NT4N90AA from LAN 1 on the CP PII faceplate to J31 (top) of the I/O panel.

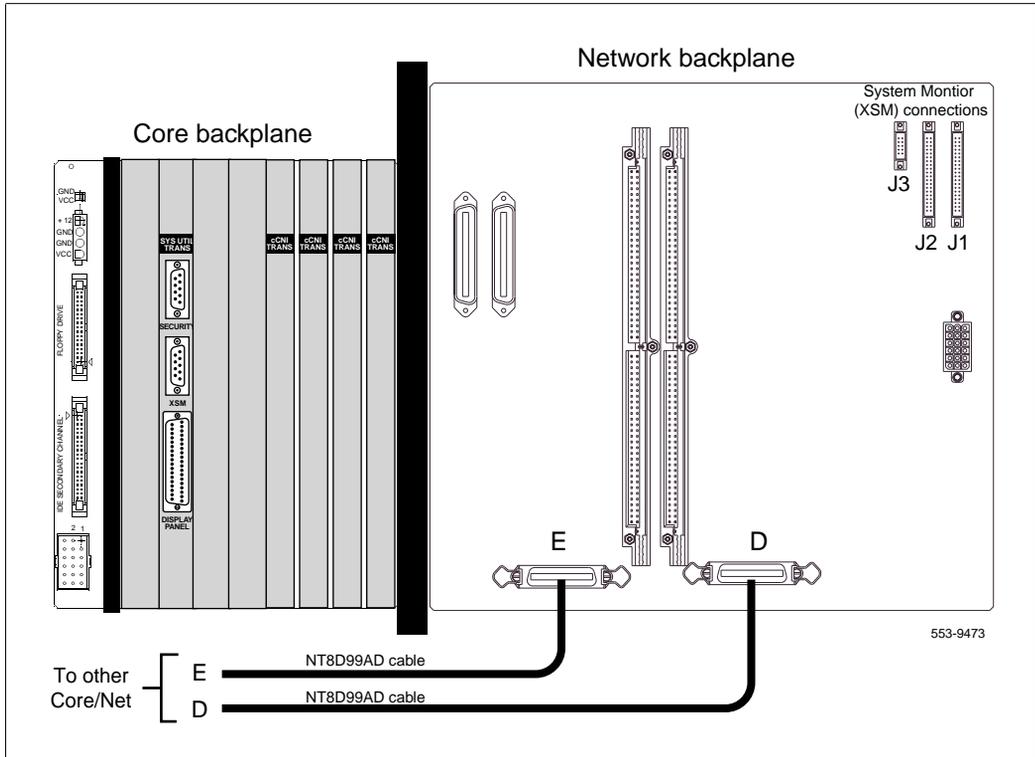
**Figure 41**  
**COM and LAN connections to the Core/Net I/O panel**



553-9466

- 9 Secure the card cage to the module with the three short screws in the front and the two long screws in the rear.  
**Note:** You need a minimum 12" long, 3/8" hex head nut driver for the two screws in the rear of the card cage.
- 10 Replace the front cover plates on both sides of the card cage.
- 11 Install the installing screws at the back of the card cage, the same way you removed them.
- 12 Reconnect cables, plugs, and wires to the backplane:
  - a. Connect all plugs, wires, and cables to the backplane. Figure 42 on page 250 shows the existing D and E cables that connect the network sides.
  - b. Position the I/O safety panel. Tighten the screws
- 13 Install either the NT6D41 DC power supply (see Figure 26 on page 173, for details) or the NT8D29 AC power supply (see Figure 27 on page 174, for details).

**Figure 42**  
**Connections on the Network backplane**



## **Cable COM 1 and COM 2 to the I/O panel**

- 1 Connect COM1 on the CP PII faceplate to J25 on the I/O panel with cable NT4N88AA.
- 2 Connect COM2 on the CP PII faceplate to J21 on the back of the I/O panel with cable NT4N88BA.

## **Connect a terminal and modem to the I/O panel**

- 1 Connect J25 to a terminal for use during the upgrade. Use a separate terminal for each Core if available. J25 can also be connected to an A/B box to share a terminal between both Cores.
- 2 Connect J21 to the device connected in the original system (such as a modem or A/B box)

## **Connect LAN 1**

The LAN 1 port is used to enable redundancy features between the two Core/Net modules. LAN 1 can also be connected to a local area network (LAN) for use with LAN based administration tools such as MAT.

The options for the LAN 1 connections are shown in Figure 43 on page 253.

### **If the system will be connected to a LAN**

- 1 Connect the “Dual Ethernet Adapter (RJ45) for I/O Panel” (NTRE40AA) to J31. Secure the adapter to J31 with the two screws included in the shipment.  
Insert the adapter from the inside of the I/O panel.
- 2 Connect LAN 1 (Ethernet) on the CP PII faceplate to J31 (top) of the I/O panel with cable NT4N90AA. This connection can only be made *after* the Dual Ethernet Adapter is installed (see step 3 above).
- 3 Connect J31 to a LAN hub.

**If a LAN is not available, connect LAN 1 directly to LAN 1**

If a LAN hub is not available, do NOT connect LAN 1 to the I/O panel. The NTRE40AA Adapter and NT4N90AA cable are NOT installed.

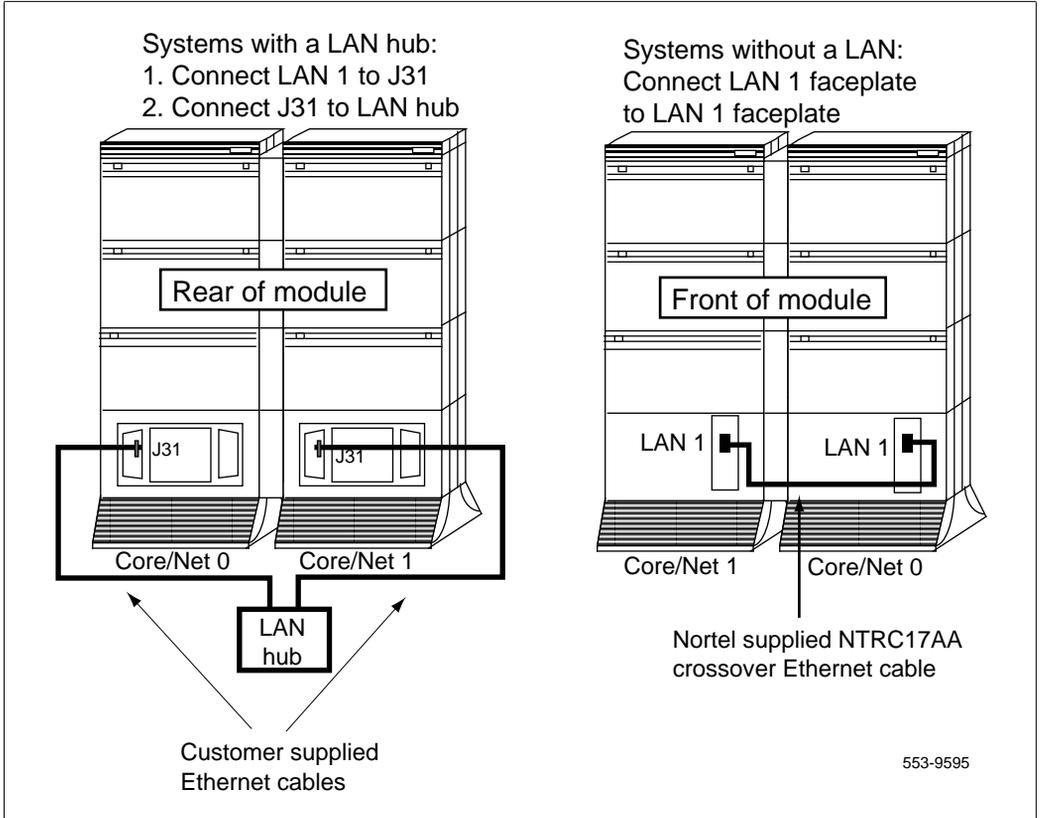
- 1        Connect a crossover Ethernet cable (NTRC17AA) to the LAN 1 port on the CP PII faceplate of Core/Net 0.
- 2        To ensure EMI shielding, route the cable along the front of the card cage and through the sides of the Core/Net modules.
- 3        Connect the other end of the cable to the LAN 1 port on the CP PII faceplate in Core/Net 1.

**Connect LAN 2 in Core/Net 0 to LAN 2 in Core/Net 1**

The LAN 2 ports on the CP PII faceplates are directly connected with a NTRC17AA cable. This connection is for Core redundancy.

- 1        Connect a crossover Ethernet cable (NTRC17AA) to the LAN 2 port on the CP PII faceplate of Core/Net 0. (Figure 41 on page 248).
- 2        To ensure EMI shielding, route the cable along the front of the card cage and through the sides of the Core/Net modules.
- 3        Connect the other end of the cable to the LAN 2 port on the CP PII faceplate in Core/Net 1.

**Figure 43**  
**Options for LAN 1 connection**



## Faceplate disable the cCNI cards

In Core/Net 0, hardware disable all cCNI cards from the backplane and disable the faceplate switch on all cCNI cards.

## Faceplate enable the System Utility Main card

In Core/Net 0, faceplate enable the System Utility Main card.

## Option 81C only: Move Network cards to NT4N41 Core/Net 0

- 1        Remove each network card from the NT5D21 Core/Net 0.
- 2        Reinstall each card in the same network slot in the NT4N41 Core/Net 0.
- 3        Connect the tagged cables to the relocated cards.

## Install the 3PE cables

NT8D76 cables connect between the Core/Net Termination Panel and the 3PE cards:

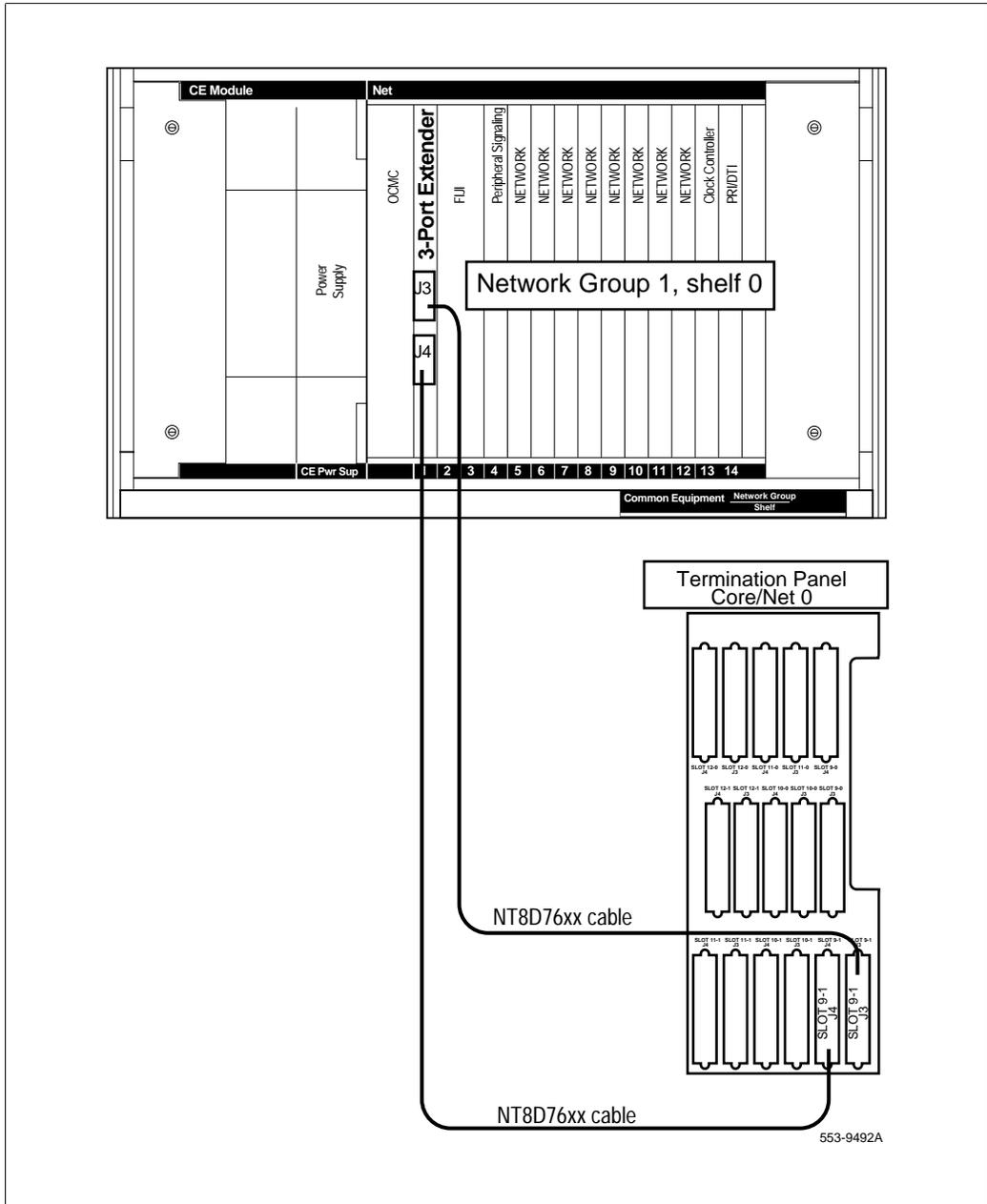
- This procedure applies to systems with columns in a single row. This procedure does not apply to systems with columns in separate aisles.
- Network group assignments for the cCNI ports in the CP PII card cage must be the same as the original system. Check to make sure that the cables are installed according to the port assignments in the existing database.
- The new NT8D76 3PE cables must be routed and in place before this procedure is begun. Refer to “Route the 3PE to cCNI (NT8D76) cables” on page 70.
- Remember to label all cables with the connection information. Labels are necessary to perform troubleshooting or future upgrades
- Figure 44 on page 256 shows the connection information on the Termination Panel.
- Table 35 on page 257 contains connection information for 3PE faceplates and the Core/Net Termination Panel.
- Figure 45 on page 258 shows the connection information for cCNI Transition Cables to the Termination Panel (seven group version)

- Figure 46 on page 259 shows the connection information for cCNI Transition Cables to the Termination Panel (eight group version)
- Figure 47 on page 260 shows the top view connection information for 3PE Termination Panel in the Core/Net module (group 0 in the Core/Net module)
- Figure 48 on page 261 shows the top view connection information for the 3PE Termination Panel in the Core/Net module (group 0 in a Network module Core/Net)

### **Connect the 3PE cables in the shelf 0 Network modules**

- 1 Disconnect the old cables from the J3 and J4 connectors on the 3PE cards in shelf 0 of each Network group.
- 2 Connect the new NT8D76 cables to J3 and J4 of the 3PE cards. See Figure 44 on page 256 and Table 35 on page 257 for connection information.
- 3 Connect the new NT8D76 cables to the Termination Panel in Core/Net 1. See Figure 45 on page 258 and Table 35 on page 257.  
**Note:** The old, unused CNI to 3PE cables can be removed or left in place. If the cables are left in place, label them “no longer used” and tie them out of the way
- 4 If the system has XSDI cards, reinstall the cards and attach the cables.

**Figure 44**  
**3PE Termination Panel (rear module view)**

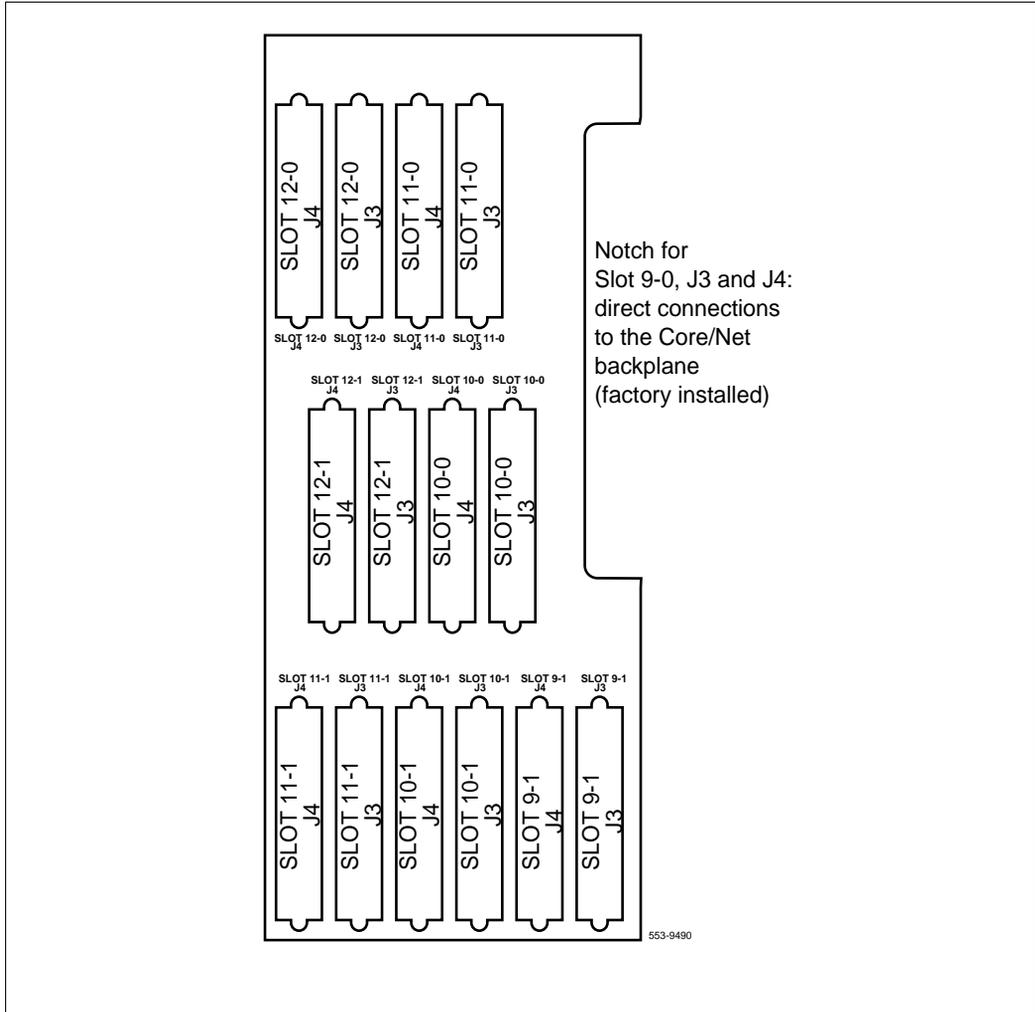


**Table 35**  
**Termination Panel to 3PE card connectors**

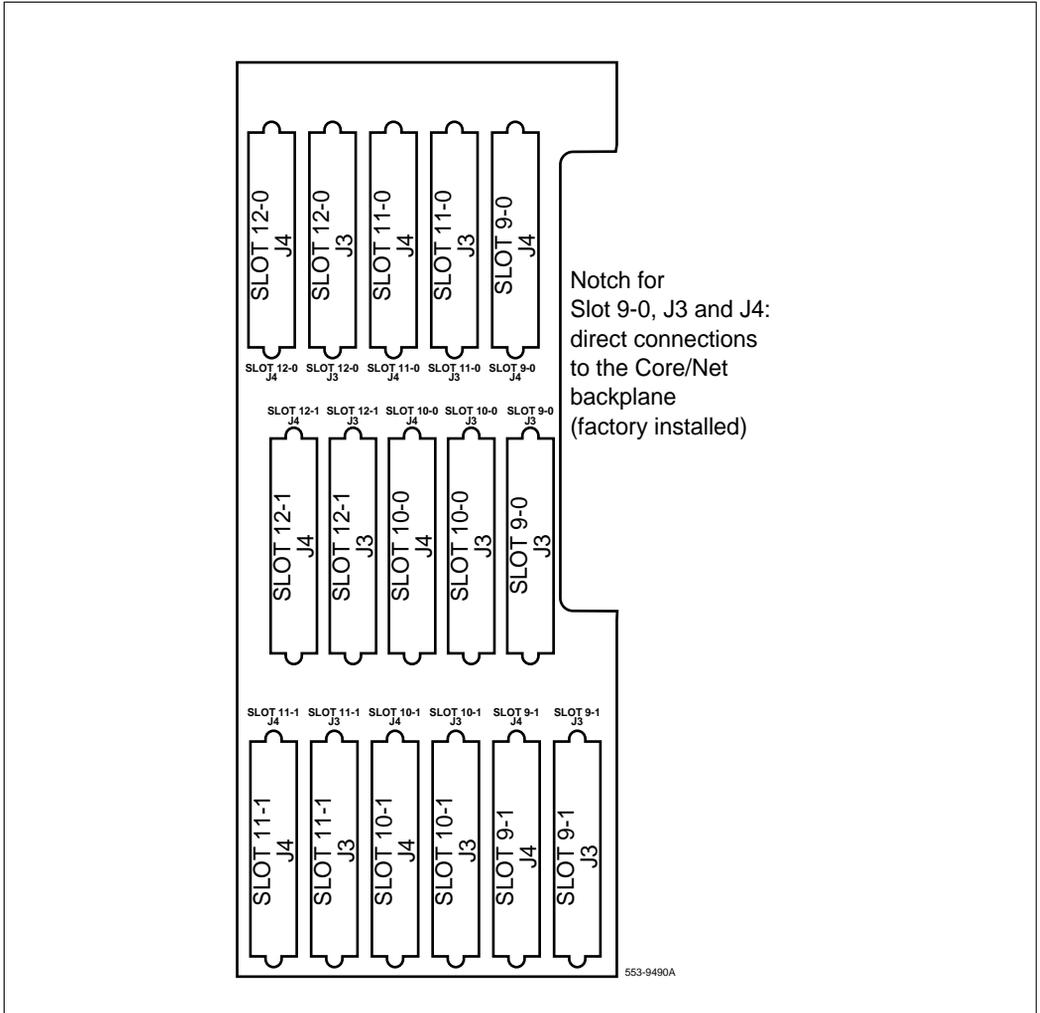
Group Number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

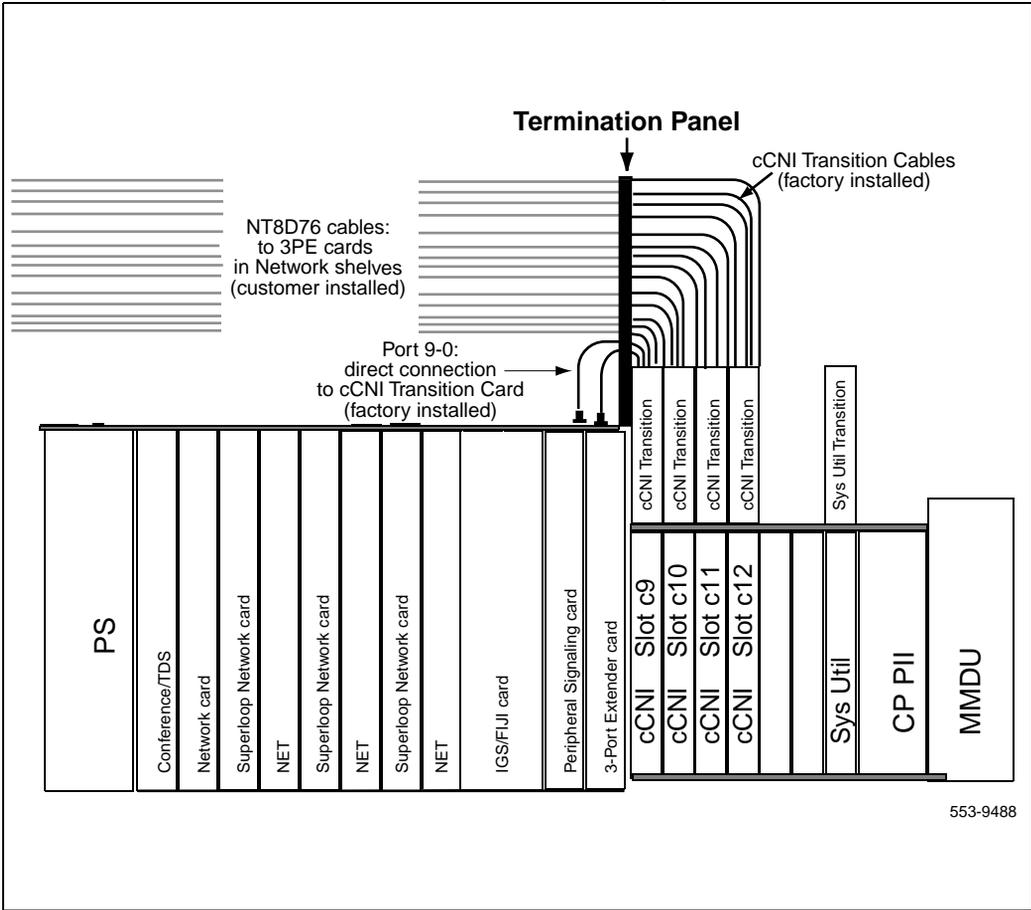
**Figure 45**  
**Connectors for cCNI Transition Cables to the Termination Panel (seven group version)**



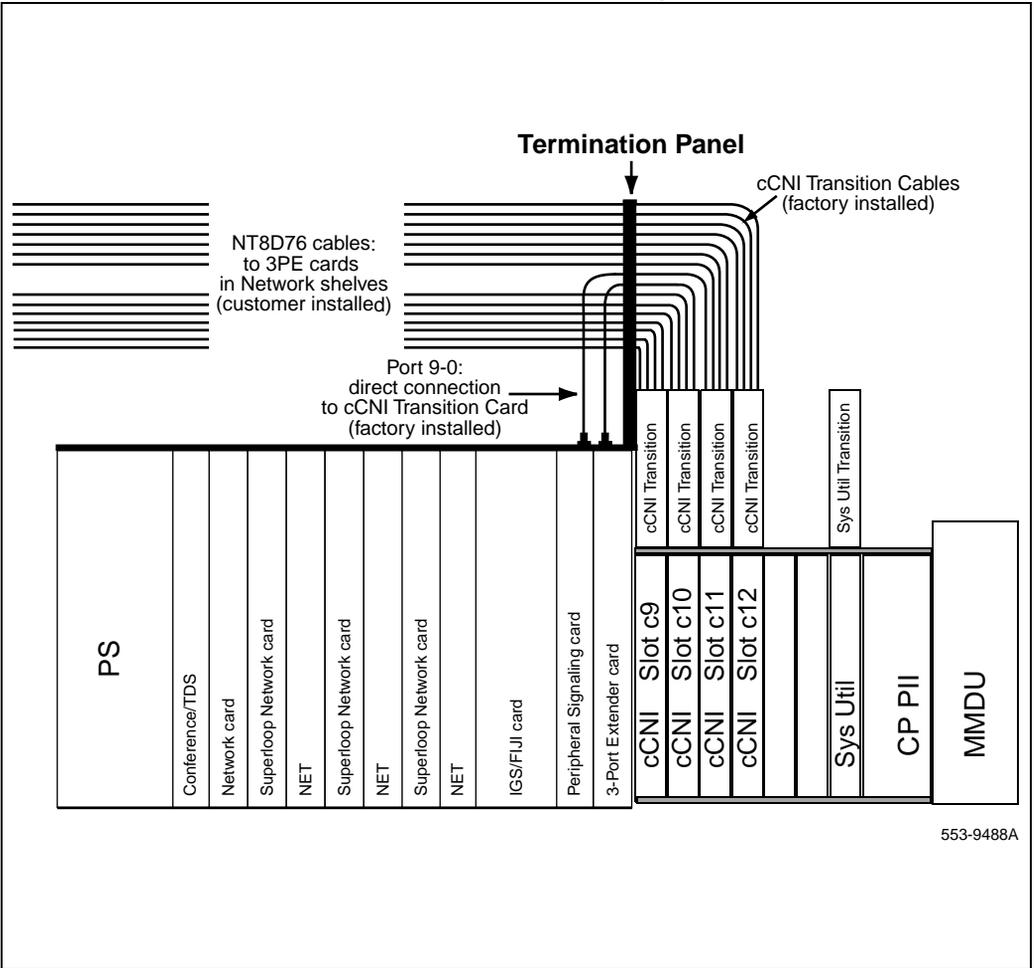
**Figure 46**  
**Connectors for cNI Transition Cables to the Termination Panel (eight group version)**



**Figure 47**  
**3PE Termination Panel in the Core/Net module (top view - group 0 in the Core/Net module)**



**Figure 48**  
**3PE Termination Panel in the Core/Net module (top view - group 0 in a Network module)**



## Power up and complete the Core/Net 0 upgrade

### Power up the system

Turn on power to the module:

- For AC-powered systems, set the main circuit breaker to ON (top position) in the rear of the pedestal, then set the MPDU circuit breaker located at the left end of the module to ON (top position).
- For DC-powered systems, set the breaker to ON (up position) in the pedestal.

### Confirm that the Network cards are working

Confirm that the Network and I/O cards have working power.

### Install software and convert the database on Core/Net 0

- 1 Check that a terminal is connected to J25 on Core/Net 0.
- 2 In Core/Net 0, install the CD-ROM into the CD-ROM drive in the MMDU:
  - 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. Do not push the holder in by hand.

**Note:** If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

- 3 Place the CP PII Install floppy disk into the MMDU floppy drive.

**Note:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.
- 4 Press the manual RESET button on the CP PII card faceplate.

- 5** Before the install runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:
- Testing partition 0  
0 percent done...1 percent done.....99 percent done....100 percent done
- Testing partition 1  
0 percent done...1 percent done.....99 percent done....100 percent done
- Testing partition 2  
0 percent done...1 percent done.....99 percent done....100 percent completed!
- Disk physical checking is completed!  
There are 3 partitions in disk 0:  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
Disk partitions and sectors checking is completed!
- 6** At the terminal, press <cr> to start the software installation.
- 7** When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.
- <a> Continue with keycode validation  
<y> Confirm that the keycode matches the CD-ROM release
- 8** When the screen displays the Install Menu, select the following options in sequence when prompted to do so:
- <b> Install software, database, and CP-BOOT ROM  
<a> Verify that the CD-ROM is now in drive
- The Installation Status Summary screen appears that lists the options to be installed.
- <a> Continue with Upgrade

### Pre-Release 3 language groups

- 9     Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### Select one of the six PSDL files

- <1>    Global 10 Languages
- <2>    Western Europe 10 Languages
- <3>    Eastern Europe 10 Languages
- <4>    North America 6 Languages
- <5>    Spare Group A
- <6>    North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### Release 3 language groups

- 10    Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### Select one of the six PSDL files

- <1>    Global 10 Languages
- <2>    Western Europe 10 Languages
- <3>    Eastern Europe 10 Languages
- <4>    North America 6 Languages

<5> Spare Group A

<6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.
- 5 – Spare Group A.
- 6 – Spare Group B.

11 Continue with upgrade when prompted. Select a database to install.

<cr> Enter carriage return to continue.

- <a>     Continue with CP BOOTROM installation
- <a>     Install the CP BOOTROM from hard disk
- <a>     Start installation
- <a>     Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, Database, and CP-BOOTROM were installed.

- <cr>    Continue
- <q>     Quit (remove any diskettes and the CD-ROM from the MMDU drives)
- <y>     Confirm quit
- <a>     Reboot the system

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for "DONE" and then "INI" messages to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

```
DATA CONVERSION  
RELEASE XX.XX TO RELEASE 25.
```

Confirm that the Release 25 software is installed and functional on Core/Net 0:

**LD 135** to load the program

**STAT CPU** to display the CPU status

## Check for Peripheral Software Download to Core/Net 0

Load LD 22 and print Target peripheral software version. (the Source peripheral software version was printed during the procedure to "Print site data" on page 40.

If there is a difference between the Source and Target peripheral software version:

- A forced download occurs during initialization when coming out of parallel reload.
- System initialization takes longer.
- The system drops established calls on IPE.

### LD 22

<b>REQ</b>	PRT.
<b>TYPE</b>	PSWV.
<b>ISSP</b>	Print System and Patch Information.
<b>SLT</b>	Print System Limits.
<b>TID</b>	Print the Tape ID.
<b>****</b>	Exit program.

## Enable cCNI cards and reboot Core/Net 0

- 1 Enable the cCNIs on Core/Net 0.
- 2 Reboot Core/Net 0.

**Note:** Once the *inactive* Core (Core/Net 0) is rebooted, the system will operate in full redundant mode.

- 3 For Option 71 only:
  - a. In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35 but leave LD 37 selected.
  - b. Check the status of the clocks, swap clocks, and verify status:

<b>LD 60</b>	To load the program.
<b>SSCK 0</b>	Get the status of Clock Controller 0.
<b>SSCK 1</b>	Get the status of Clock Controller 1.
<b>SWCK</b>	Swap active clocks.
<b>SSCK 0</b>	Confirm that Clock Controller 0 is active.

**SSCK 0**  
**\*\*\*\***

Confirm that Clock Controller 1 is active.  
Exit the program.

## Complete the CP PII upgrade

### Test Core/Net 1 and Core/Net 0

From Core/Net 1, perform these tests for both Cores:

- 1 Perform a redundancy sanity test:

**LD 135**

**STAT CPU**        Get status of CPU and memory.

**TEST CPU**        Test the CPU.

- 2 Check the LED and LCD states

a. Perform a visual check of the LEDs and LCDs.

b. Test LEDs and LCDs:

**LD 135**

**TEST LEDs**        Test LEDs.

**TEST LCDs**        Test LCDs.

**DSPL ALL**

c. Check that the LED and LCD displays match the software check.

- 3 Test the System Utility cards and the cCNI cards:

**LD 135**

**STAT SUTL**        Get the status of the System Utility (main and Transition) cards.

**TEST SUTL**        Test the System Utility (main and Transition) cards.

**STAT CNI c s**        Get status of cCNI cards (core, slot).

**TEST CNI c s**        Test cCNI (core, slot).

- 4 Switch Cores and repeat the tests to confirm that the data is consistent.:

**LD 135**

<b>SCPU</b>	Switch cores.
<b>STAT CPU</b>	Get status of the CPU.
<b>TEST CPU</b>	Test the inactive Core.
<b>TEST LEDs</b>	Test LEDs.
<b>TEST LCDs</b>	Test LCDs.
<b>DSPL ALL</b>	
<b>STAT SUTL</b>	Get status of System Utility (both main and Transition) cards.
<b>TEST SUTL c s</b>	Test System Utility cards, both main and Transition cards.
<b>STAT CNI c s</b>	Get status of cCNI cards, both main and Transition cards (core, slot).
<b>TEST CNI c s</b>	Test cCNI cards, both main and Transition cards (core, slot).

- 5 Test system redundancy:

**LD 137**

<b>TEST RDUN</b>	Test redundancy.
<b>DATA RDUN</b>	
<b>TEST CMDU</b>	Test the MMDU card.

- 6 Install the two system monitors. Test that the system monitors are working.:

<b>LD 37</b>	Load the program.
<b>STAT XSM</b>	Check the system monitors
<b>****</b>	Exit the program.

- 7 Clear the display and minor alarms on both Cores:

**LD 135**

<b>CDSP</b>	Clear the displays on the cores.
<b>CMAJ</b>	Clear major alarms.
<b>CMIN ALL</b>	Clear minor alarms.

- 8        Get the status of the Cores, cNIS, and memory.
  - STAT CPU**        Get the status of CPUs and redundancy.
  - STAT CNI c s**    Get the status of cCNI cards (core, slot).

*Note:* You may need to execute the STAT CNI command twice before receiving a response from the system.

\*\*\*\*                    Exit program.

## Perform a data dump

Perform a data dump to backup the customer database:

- 1        Log into the system.
- 2        Load the Equipment Data Dump Program (LD 43). At the prompt, enter
  - LD 43**                Load the program.
- 3        Insert a floppy disk into the MMDU to back up the database.
- 4        When "EDD000" appears on the terminal, enter
  - EDD**                Begin the data dump.



### **CAUTION**

#### **Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

The Option 71/81/81C upgrade to Option 81C with CP PII is complete.

---

# Option 81 upgrade to Fiber Network Fabric

---

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## Reference list

The following are the references in this section:

- *Administration* (553-3001-311)
- *Maintenance* (553-3001-511)

Once the steps in “Prepare for upgrade to Option 81C and Option 81C CP PII” on page 19 are complete, follow the procedures listed below in sequence.



### CAUTION

#### System Failure

All tasks in the “Prepare for upgrade to Option 81C and Option 81C CP PII” on page 19 must be completed before the upgrade is begun:

- ✓ “Check power supply version (DC power only)”
- ✓ “Check minimum FNF system requirements”
- ✓ “Check 3PE settings”
- ✓ “Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)”
- ✓ “Connect a terminal”
- ✓ “Print site data”
- ✓ “Pre-route cables”
- ✓ “Perform a template audit”
- ✓ “Backup the database”

Failure to complete these tasks will result in increased downtime and possible system failure.

## Verify Core 0 is active

- 1 Get the status of the CPUs. Verify that all common equipment is enabled.

**LD 135** to load the program  
**STAT CPU** to get the status of both Cores

- 2 Ensure Core 0 is active.

If Core 1 is active, switch Cores.

**STAT CPU** to get the status of the Cores  
**SCPU** to switch to Core 0  
**\*\*\*\*** to exit the program

- 3 Ensure Clock Controller 0 is active and tracking.

**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 0

## Split the Cores

- 1        Be sure Core 0 is active and Core 1 is standby. You may need to switch Cores:

**LD 135**            to load the program  
**STAT CPU**        to get the status of both Cores  
**\*\*\*\***            exit program

- 2        Verify that IODU/C 0 is active. You may need to switch IODU/Cs.

**LD 137**  
**STAT**            Get the status of IODU/C  
**SWAP**            Switch IODU/Cs if necessary  
**\*\*\*\***            exit program

- 3        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
- 4        Place Core 0 in Maintenance by setting the MAINT/NORM switch to MAINT.
- 5        In Core 1, disable the NT6D65 or NTRB34 Core to Network Interface (CNI) cards by setting the ENB/DIS faceplate switches to DIS.

## Upgrade Side 1

Core 1 must be *inactive* to complete these procedures. A terminal must be connected to the J25 port on Core 1. See “Connect a terminal” on page 38.

### Upgrade the Core 1 software

Complete the steps below to install new software in Core/Net 1.

- 1        Place the CP Install disk that corresponds with the installed CP card type into the IODU/C in Core/Net 1.
- 2        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 drive
  - d. press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 3 In Core/Net 1, perform the following three steps in uninterrupted sequence:
  - a. press and hold the MAN RST button on the CP card
  - b. set the MAINT/NORM switch on the CP card to MAINT
  - c. release the MAN RST button

A sysload will begin (cold start). Wait for the Main Menu to appear on the terminal before proceeding.

**Note 1:** If the CD-ROM is not in the CD drive of the IODU/C, the installation procedure will not continue. Insert the CD-ROM into the drive to continue.

**Note 2:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.
- 4 Press <CR> to continue.
- 5 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

- 6      When the Install Menu is displayed, select the following options in sequence when you are prompted to do so
- <a>      to install software, CP-BOOT ROM, and IOP-ROM
  - <a>      to verify that the CD-ROM is now in drive
- The Installation Status Summary screen appears that lists the options to be installed.
- <y>      Yes, start Installation
  - <a>      Continue with Upgrade

### **Pre-Release 3 language groups**

- 7      Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>      Global 10 Languages
- <2>      Western Europe 10 Languages
- <3>      Eastern Europe 10 Languages
- <4>      North America 6 Languages
- <5>      Spare Group A
- <6>      North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 8** Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

9    When the ROM installation screen appears, select the following prompts in sequence:

<a>    Continue with ROM Upgrade

The following message appears:

Software Release XXXX was installed successfully on Core 1.  
All files were copied from CDROM to the hard disk.

Please press <CR> to continue when ready...

<a>    Continue with ROM upgrade

<a>    Yes, start Installation

<a>    Continue with ROM upgrade

When the Installation Status Summary screen appears, press <CR> when ready...

<cr>    Are you sure you want to continue with IOP ROM

<a>    to install the IOP-ROM from hard disk

<y>    Yes, start installation

<a>    to continue with ROM upgrade

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

<cr>    press return to continue

<q>    to quit (remove any diskettes from the floppy drive)

<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. Wait for “DONE” and then “INI” messages to be displayed before continuing.

**Software installation on Core 1 is complete.**

**Note:** If the system fails to load, or system messages indicate data corruption, back out of the parallel reload process by performing the steps in “Back out of a system software upgrade” on page 279.

## Back out of a system software upgrade

- 1 Place the original Install disk 1 into the IODU/C in Side 1.
- 2 In Side 1, press the MAN RST button.
- 3 Select <u> to initiate the Install Tool.
- 4 Remove the CP Install diskette and insert the source keycode diskette.
- 5 Select <a> to continue with keycode validation.
- 6 When the install screen appears, select the following options in sequence, and insert the **source** database diskette when you are prompted to do so.
  - <b> to install software, database, CP-BOOT ROM, and IOP-ROM
  - <a> to start installation
  - <a> continue with upgrade
- 7 When the database installation screen appears, select the following:
  - <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
- 8 When the ROM installation screen appears, select the following:
  - <a> to continue with the ROM upgrade
- 9 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)
- 10 Remove the disk from the IODU/C in Side 1.
- 11 From the main menu, select the following options to quit and reload the system:
  - <q> to quit
  - <y> to confirm quit

- 12    Remove any diskettes from the floppy drive, and type  
      <a>                    to reboot the system
  
- 13    In Side 1, perform the following steps:
  - a.    enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB
  - b.    press and release the MAN RST button on the CP card
  - c.    When SYS700 messages appear on the CP 1 LCD display
  - d.    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 Side 0 CPSI or SDI TTY indicates the memory synchronization is complete. Wait until the memory synchronization is complete before continuing.

- 14    In Side 0, set the MAINT/NORM switch on the CP card to NORM.
- 15    Perform a redundancy sanity test.

**LD 135**

- TEST CPU**            Test the standby (inactive) Side.
- SCPU**                Switch the Cores.
- CDSP**                Clear display.
- TEST CPU**            Test the standby (inactive) Side.
- SCPU**                Switch the Cores.

- 16    Testing the CPs can take up to 20 minutes for each test. When the test is complete, the memories are automatically synchronized.

- 17    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**

- STAT CMDU**            Get the status of both CMDUs.
- SYNC**                Synchronize disks.
- TEST CMDU**            Performs hard and floppy disk test.

You are now out of the parallel reload process, and have returned to the **Source** software.

## Upgrade Side 1 hardware

Follow the procedures below in sequence:

- 1 Software disable the IGS/DIGS cards in Side 1 (IGS/DIGS odd-numbered cards, 1 - 19):

**LD 39** to load the program

**DISI IGS xx** xx is the IGS card number 1 - 19

**Note:** See the *Maintenance* (553-3001-511) for more information on overlay 39 commands.

- 2 Faceplate disable the IGS/DIGS cards in Side 1.
- 3 Tag and disconnect the IGS/DIGS cables.
- 4 Remove the IGS/DIGS cards from Side 1.

**Note:** If you did not check the 3PE switch settings previously, check the 3PE switch settings now. See “Check 3PE settings” on page 33.

- 5 Faceplate enable the FIJI cards.
- 6 Insert the FIJI cards in Side 1. Do not seat the FIJI cards.

**Note:** FIJI cards are installed in slots 2 and 3 of the Network modules, and slots 8 and 9 of the Core modules.

## Connect the shelf 1 FIJI Ring cables

To create the shelf 1 fiber optic loop, connect the FIJI cards in each Network shelf 1 in descending order, from Tx to Rx (Figure 49 on page 283 and Table 36 on page 284).

Remove the black cap from the end of each cable before it is connected.

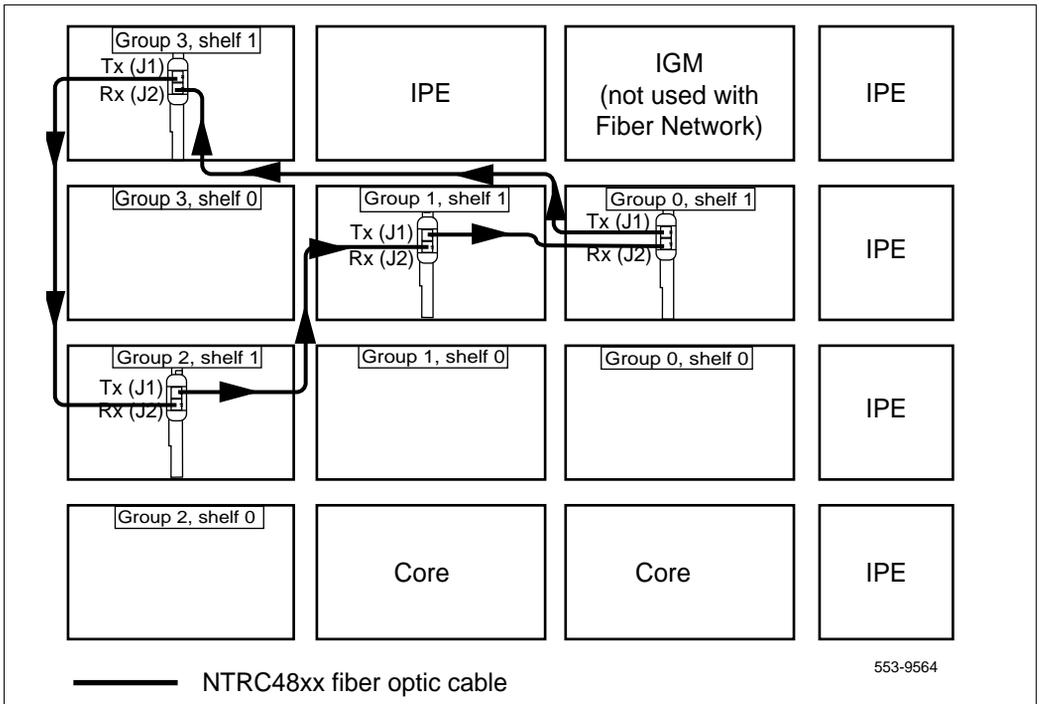
**Note:** Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- a. Start with Network Group 0, shelf 1.

- b.** Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 0, shelf 1 to the Rx (J2) port of the FIJI card in the highest Network Group, shelf 1.
- c.** Connect a NTRC48 cable from the Tx (J1) port of the FIJI card from the Tx (J1) port in the highest Network Group, shelf 1 to the Rx (J2) port in the second highest Network Group, shelf 1.
- d.** Continue to connect NTRC48 FIJI Fiber Ring cables of the appropriate length from the Tx (J1) port to the Rx (J2) port in shelf 1 of each Network Group. Connect these cables in descending order of Network Groups.

- e. To complete the Ring, connect a final cable from Tx in Group 1, shelf 1 to Rx in Group 0, shelf 1.

**Figure 49**  
**Shelf 1 descending fiber optic Ring (Option 81 example)**



**Note:** Connect the Side 1 FIJI Ring cables only. DO NOT connect the Side 0 cables.

**Table 36**  
**FIJI Ring 1 connections**

<b>Groups 0 - X are cabled in descending order</b>		
<b>Group/shelf</b>	<b>NTRC48 fiber cable connector</b>	<b>FIJI card connector</b>
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1
6/1	P2	Rx - J2
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2

## Turn module power off

**CAUTION****Service Interruption**

Call processing will be interrupted for approximately 30 minutes while the procedures are completed.

To reduce downtime, verify that all cables are pre-routed. See “Pre-route cables” on page 51.

Power down the modules with the module power switch. **DO NOT** power down the columns at the PDU:

- 1 Power down Core Module 0.
- 2 Power down Core Module 1.
- 3 Power down all Network Modules.

## Seat the FIJI cards in Side 1

The FIJI cards in side 1 can now be seated. Push the faceplate latches forward to lock the cards in place. Verify that the cards are faceplate *enabled*.

## Upgrade Side 0

### Install Side 0 FIJI cards

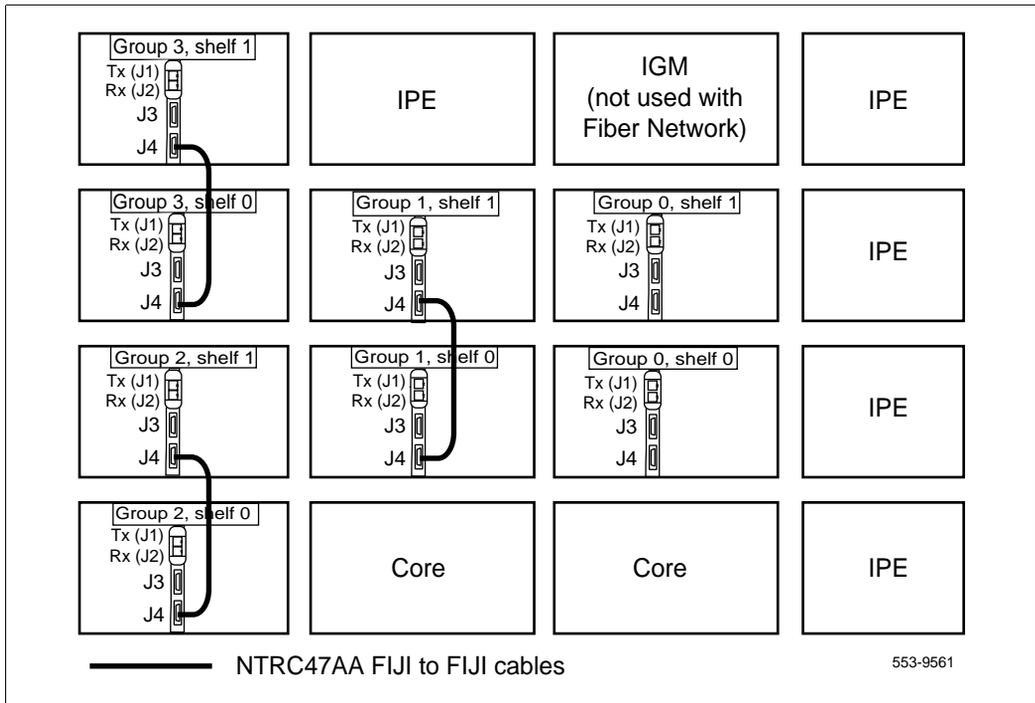
- 1 Tag and disconnect the IGS/DIGS cables.
- 2 Remove the IGS/DIGS cards from Side 0.
- 3 Insert and seat the FIJI cards in Side 0.
- 4 Faceplate enable the FIJI cards.

## Connect the FIJI to FIJI cables

- 1     Connect P2 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 0, except Group 0.
- 2     Connect P1 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 1, except Group 0.

*Note:* The FIJI cards in Group 0 do not receive a FIJI to FIJI cable.

**Figure 50**  
**FIJI to FIJI cable connections (Option 81 example)**



## Connect the shelf 0 FIJI Ring cables

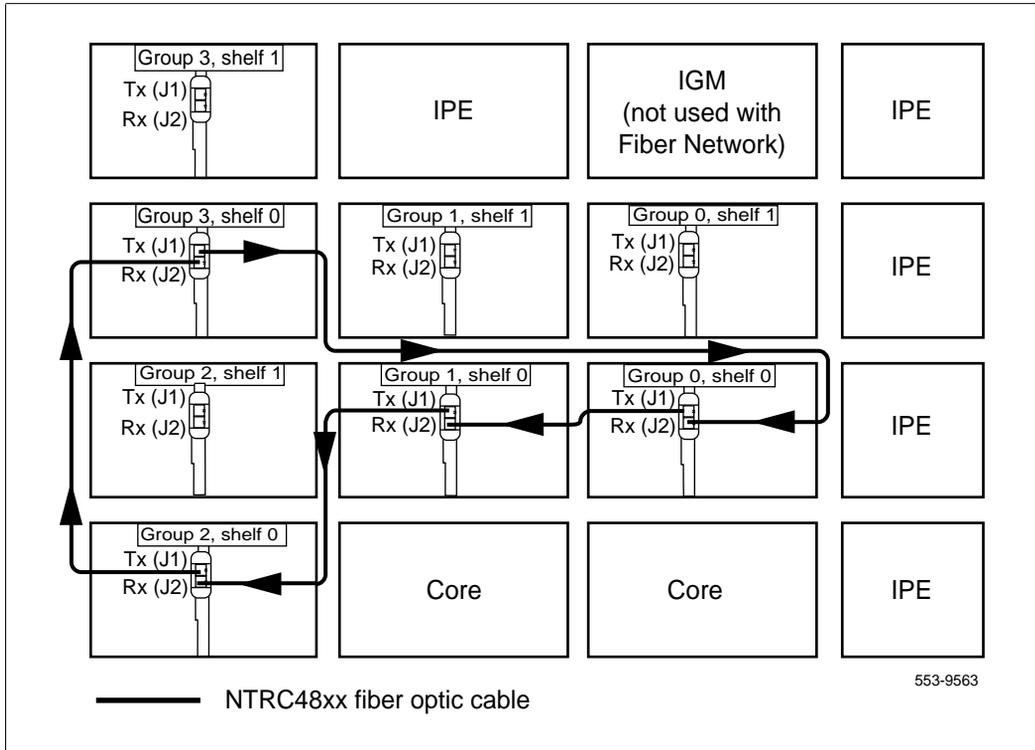
To create the shelf 0 fiber optic loop, connect the FIJI cards in each Network shelf 0 in **ascending** order, from Tx to Rx ports (Figure 51 on page 288 and Table 37 on page 288).

Remove the black cap from the end of each cable before it is connected.

*Note:* Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- a. Start with Group 0, shelf 0.
- b. Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 0, shelf 0 to the Rx (J2) port of the FIJI card in Group 1, shelf 0.
- c. Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 1, shelf 0 to the Rx (J2) port of the FIJI card in Group 2, shelf 0.
- d. Continue to connect NTRC48 FIJI Fiber Ring cables of the appropriate length from the Tx (J1) port to the Rx (J2) port in shelf 0 of each Network Group. Connect these cables in ascending order of Network Groups.
- e. To complete the Ring, connect a final cable from the Tx (J1) port in the highest number group back to the Rx (J2) port in Group 0, shelf 0.

**Figure 51**  
**Shelf 0 ascending fiber optic Ring (Option 81 example)**



**Table 37**  
**FIJI Ring 0 connections (Part 1 of 2)**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2

**Table 37**  
**FIJI Ring 0 connections (Part 2 of 2)**

<b>Groups X - 0 are cabled in ascending order</b>		
<b>Group/shelf</b>	<b>NTRC48 fiber cable connector</b>	<b>FIJI card connector</b>
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2

## Move the Clock Controllers

### Move Clock Controller 0

- 1      Faceplate disable Clock Controller 0.
- 2      Label and disconnect the cable from the J11 connector in the NT8D36 Intergroup Module at the junctor board.
- 3      Disconnect the cable from the faceplate connector on the Clock Controller card.

Primary and secondary Clock reference cables that are connected to the faceplate should be disconnected next and labeled.

- 4      Remove Clock Controller 0 from the Core module.
- 5      Set the Clock Controller 0 switch settings (see Table 38 on page 291).

**Note:** Option 81 systems equipped with Fiber Network must use the Option 81C switch settings to enable Clock Hunt software.

- 6      Install Clock Controller 0 on a Network shelf 0, slot 13.

**Note:** The Clock Controller can be installed in any Network Group, however Nortel Networks recommends that Clock Controller 0 and 1 be located in different Network Groups.

- 7      Reconnect the Clock 0 Reference cables.
- 8      Faceplate enable the Clock Controller.

### Move Clock Controller 1

- 1      Faceplate disable Clock Controller 1.
- 2      Label and disconnect the cable from the J12 connector in the NT8D36 Intergroup Module at the junctor board.
- 3      Disconnect the cable from the faceplate connector on the Clock Controller card.

Primary and secondary Clock reference cables that are connected to the faceplate should be disconnected next and labeled.

- 4      Remove Clock Controller 1 from the Core module.
- 5      Set the Clock Controller 0 switch settings (see Table 38 on page 291).

**Note:** Option 81 systems equipped with Fiber Network must use the Option 81C switch settings to enable Clock Hunt software.

- 6 Install Clock Controller 1 on a Network shelf 1, slot 13.  
**Note:** The Clock Controller can be installed in any Network Group, however Nortel Networks recommends that Clock Controller 0 and 1 be located in different Network Groups.
  - 7 Reconnect the Clock 0 Reference cables.
  - 8 Faceplate enable the Clock Controller.
- Option 81 systems equipped with Fiber Network must use Option 81C switch settings to enable Clock Hunt software.

**Table 38**  
**Clock Controller switch settings**

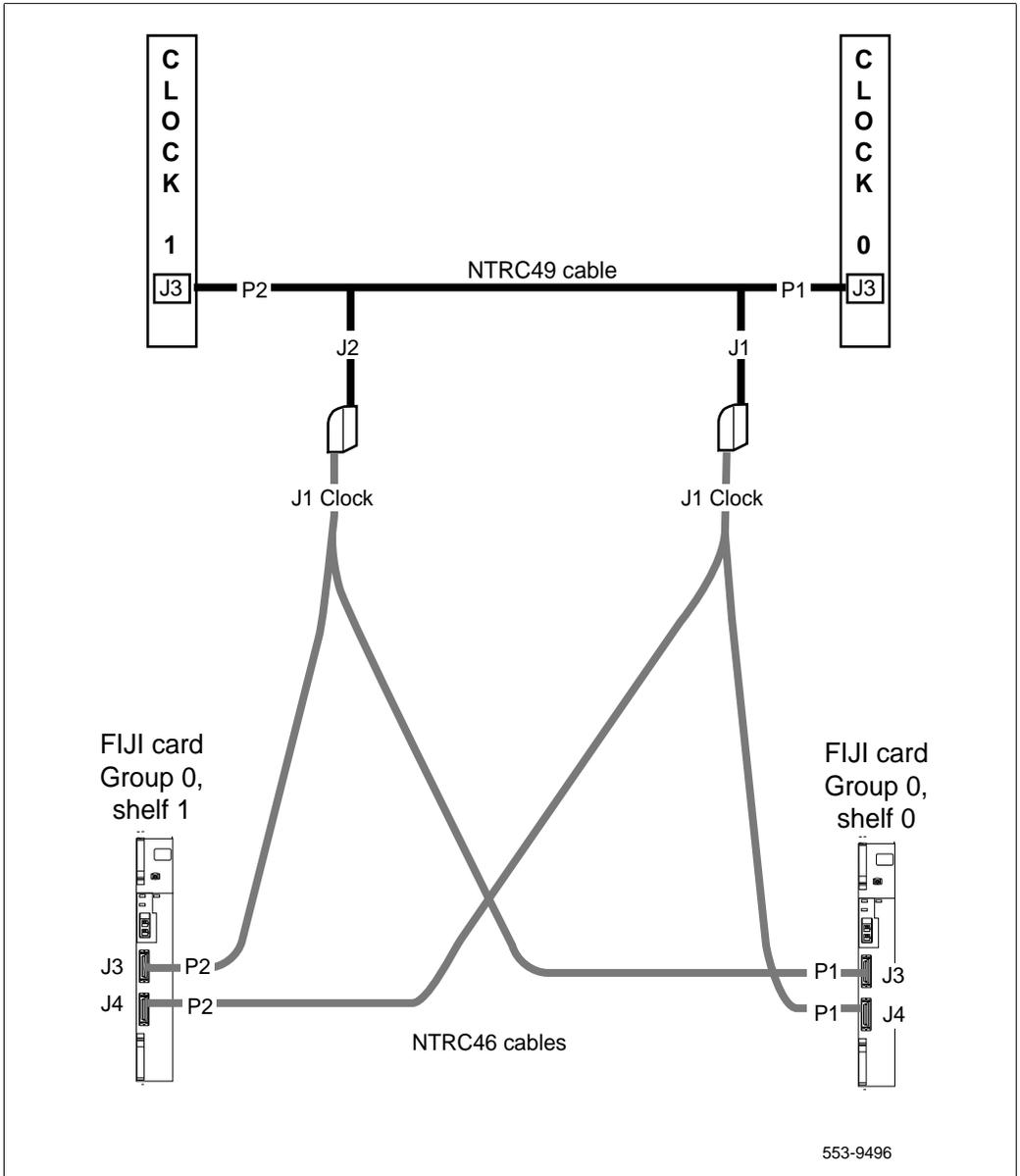
Option 81 systems equipped with Fiber Network must use the Option 81C switch settings to enable Clock Hunt software. DO NOT use the Option 81 switch settings.											
SW1				SW2				SW4			
1	2	3	4	1	2	3	4	1	2	3	4
on	off	**	on	*	*						
*Cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft.)										off	off
4.6–6.1 m (15–20 ft.)										off	on
6.4–10.1 m (21–33 ft.)										on	off
10.4–15.2 m (34–50 ft.)										on	on
* If there is only one Clock Controller card in the system, set to OFF. If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch positions for this cable length, as shown above. The maximum total (combined) length is 50 ft. Set the switches on both cards to the same settings.											
** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.											
<b>Note:</b> For FNF based-systems, the total clock path length is equal to the length of the NTRC49 cable used to connect between the two clock controller cards.											

## Cable the Clock Controllers

Connect the cables to the Clock Controllers as shown in Figure 52 on page 293:

- 1**      Connect the Clock to Clock cable:
  - a.**    Connect P1 of the NTRC49 cable to port J3 of Clock Controller 0.
  - b.**    Connect P2 of the NTRC49 cable to port J3 of Clock Controller 1.
  
- 2**      Connect the Clock 0 to FIJI cable:
  - a.**    Connect P1 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 0.
  - b.**    Connect P2 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 1.
  
- 3**      Connect the Clock 1 to FIJI cable:
  - a.**    Connect P1 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 0.
  - b.**    Connect P2 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 1.

Figure 52  
Clock Controller cable configuration



## Remove the 3PE card in the Core shelves

In Option 81 systems, the 3PE card must be removed from the Core shelves. This 3PE card (in the Core shelves) is no longer used with Fiber Network.

**Note:** This procedure is for Option 81 systems with Core shelves. This procedure is NOT necessary for Option 81C systems with Core/Net shelves.

To remove the 3PE card from both Cores:

- 1        In Core 1, hardware disable the 3PE card.
- 2        In Core 0, hardware disable the 3PE card.
- 3        Remove the 3PE faceplate cable.
- 4        Remove the 3PE cards from Core 1 and 0.

## Prepare Core cards for power-up

- 1        Verify that a terminal is connected to the J25 I/O panel connector on Core 1. See "Connect a terminal" on page 38.
- 2        Verify that both CP cards in the Core modules are in MAINT position.
- 3        Unseat the CP card in Core 0
- 4        Faceplate *disable* the CNI cards in Core 0.
- 5        Faceplate *disable* the IODU/C in Core 0.
- 6        Unseat the IODU/C in Core 0.
- 7        Faceplate *enable* the CNI cards in Core 1.

## Restore power

Restore power to the modules below:

- 1        Restore power to Core 1.
- 2        Restore power to Core 0.
- 3        Restore power to the Network modules.
- 4        Wait for the system to load/init.
- 5        Re-initialize Core 1.

**Note:** Re-initializing Core 1 stops the midnight routines from running.

---

## Verify the Fiber Ring status

See *Maintenance* (553-3001-511) for more information on Overlay 39 commands.

- 1 Check that Fiber Ring 1 operates correctly:  
**LD 39** to load the program  
**STAT RING 1** to check the status of Ring 1
  
- 2 Reset the Rings:  
**RSET** to reset the Rings and prepare them for redundancy  
**RSTR** to restore both Rings to HALF state
  
- 3 Check that the Rings operate correctly:  
**STAT RING 0** to check the status of Ring 0 (HALF/HALF)  
**STAT RING 1** to check the status of Ring 1 (HALF/HALF)
  
- 4 If any Ring problems occur, correct them now.  
**STAT ALRM <X> <Y>** to check the alarm status of individual FIJI cards or all FIJI cards. See *Administration* (553-3001-311) for more information.
  
- 5 Verify that call processing operates correctly: this includes, but is not limited to the following:
  - Check for dial tone.
  - Make internal, external, and network calls.
  - Check attendant console activity.
  - Check DID trunks.
  - Check any auxiliary processors.

## Upgrade Core 0 software

- 1     Seat the IODU/C. Verify the status on the display (A1).
- 2     Faceplate enable the IODU/C.
- 3     Insert the CP Install Program diskette into IODU/C floppy drive in Core 0.
- 4     Verify that the CP card in Core 0 is in MAINT mode.
- 5     Seat the CP card.
- 6     Connect a terminal to the J25 port on the I/O panel in Core 0.
- 7     Press the MAN RST button on the CP card in Core 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.)
- 8     Initiate the installation by selecting the following prompt from the menu:  
`<cr> <u>>`     to Install menu
- 9     Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.  
`<a>`             continue with keycode validation
- 10    Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core 0.
- 11    When the main menu appears, select the following option to copy the software from Core 1 to Core 0 and exit the Main Menu:  
`<o>`             to copy system software from the other Core
- 12    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.
- 13    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.

**14** From the Main Menu, select the following options in sequence to copy the customer database from Core 1 to Core 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

**15** From the Main Menu, select the following options to quit and reload the system:

<q> to quit  
<y> to confirm quit

**16** Reboot the Core 0 CPU:

<a> to reboot the system

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

## Complete the upgrade

Follow the procedures below in sequence. If an error occurs at any time, resolve the problem before continuing.

### Exit split mode

- 1        Perform the following in uninterrupted sequence:
  - Press and release the MAN RST button in Core 0.
  - When SYS700 messages appears on LCD display on Core 0, set the MAINT/NORM switch to NORM in Core 0.

In 60 seconds, the LCD will display and confirm your processes with:

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

- 2        An HWI534 message indicates the start of memory synchronization. In 10 minutes, an HWI533 message on Core 1 CSPI or SDI terminal indicates the memory synchronization is complete.

**Note:** The HWI messages are displayed on the TTY device connected to the active core.

- 3        Once the synchronization is complete, enable the CNI cards in Core 0 (set the ENB/DIS faceplate switch to ENB).
- 4        Check the status of the CPU and CNI cards in Core 1:

**LD 135**

<b>STAT CPU</b>	Get status of CPU and memory
<b>STAT CNI</b>	Get status of CNI cards

- 5        Enable the CNI ports if necessary:  
**ENL CNI *c s p***        Enable the CNI in *core, slot, port*
- 6        In Core 1, set the MAINT/NORM switch on the CP card to NORM.

---

## Synchronize the hard disks

- 1 Load LD 137 and synchronize the hard disks. Synchronization may take up to seven minutes. To be sure that the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled.  
**LD 137**  
**STAT** Get the status of the IODU/C and redundancy  
**SYNC** Enter "Yes" to synchronize disks. Wait until the memory synchronization successfully completes before continuing.  
**TEST CMDU** Performs hard and floppy disk test.
  
- 2 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch if necessary.  
**STAT** Get the status of IODU/C and redundancy  
**SWAP** Switch CMDU if necessary  
**STAT CMDU** Get the status of the IODU/Cs. Be sure the same IODU/C and CPU are active.  
**\*\*\*\*** exit program

## Verify Core redundancy

To verify redundancy, switch the active Cores back and forth to verify that both sides operate without problems.

- LD 135**
- SCPU** to switch the active Core
- SCPU** to switch the active Core again

## Test Core 1 and Core 0

- 1     Perform a redundancy sanity test using the following sequence:

**LD 135**

<b>STAT CNI</b>	Get status of CNI cards
<b>STAT CPU</b>	Get status of CPU and memory
<b>TEST CPU</b>	Test the inactive Core
<b>TEST CNI c s</b>	Test each inactive CNI card

- 2     Switch Cores and test the other side (Core 0)

<b>SCPU</b>	Switch Cores
<b>TEST CPU</b>	Test the inactive Core
<b>TEST CNI c s</b>	Test each inactive CNI card

**Note:** Testing the CP and CNI cards and synchronizing memory can take up to 20 minutes for each test. When the CP test is complete, the CP memory is automatically synchronized.

- 3     Clear the display and minor alarms on both Cores.

<b>CDSP</b>	Clear the displays on the Cores
<b>CMAJ</b>	Clear major alarms
<b>CMIN ALL</b>	Clear minor alarms

- 4     Get the status of the Cores, CNIs, and memory.

<b>STAT CPU</b>	Get the status of both Cores
<b>STAT CNI</b>	Get the status of all configured CNIs and memory

**Note:** You may need to execute the STAT CNI command twice before receiving a response from the system.

\*\*\*\*            exit program

---

## Switch the Clocks

- 1      Verify that the clock controller is assigned to the *active* Core.  
**LD 60**            to lead the program  
**SSCK x**           to get the status of the clock controllers (*x* is “0” or “1” for Clock 0 or Clock 1).  
**SWCK**            to switch the Clock if necessary  
**\*\*\*\***             exit program
  
- 2      Verify that the Clock Controllers are switching correctly:  
**LD 60**            to load the program  
**SWCK**            to switch the Clock  
**SWCK**            to switch the Clock again

## Check Fiber Ring Status

See the *Maintenance* (553-3001-511) for more information on overlay 39 commands.

- 1      Check that the Fiber Rings operate correctly:  
**LD 39**            to load the program  
**STAT RING 0**    to check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**    to check the status of Ring 1 (HALF/HALF)
  
- 2      If necessary, restore the Rings to Normal State:  
**RSET**            to reset the Rings  
**RSTR**            to restore both Rings to HALF state
  
- 3      Check that the Rings operate correctly:  
**STAT RING 0**    to check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**    to check the status of Ring 1 (HALF/HALF)
  
- 4      Check the status of the FIJI alarms  
**STAT ALRM**     to query the alarm condition for all FIJI cards in all Network Groups

## Backup the database

- 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



### **CAUTION**

#### **Loss of Data**

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

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

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

- 4      Removal of unused Intergroup cables and module

Once the system is operating and stable with Fiber Network, the unused Intergroup cables and Intergroup module can be removed if desired. Removal of the Intergroup cables and module is not required. Unused Intergroup equipment can be left in place.



### **CAUTION**

#### **Service Interruption**

If the Intergroup cables and module are removed from the Fiber Network system, be careful not to dislodge or damage any working cables or equipment.

The Intergroup (IGS) module can also be converted into an IPE module with the IPE Expansion kit.

---

# Option 81C upgrade to Fiber Network Fabric

---

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## Reference list

The following are the references in this section:

- *Administration* (553-3001-311)
- *Maintenance* (553-3001-511)

**CAUTION****System Failure**

All tasks in the “Prepare for upgrade to Option 81C and Option 81C CP PII” on page 19 must be completed before the upgrade is begun:

- ✓ “Check power supply version (DC power only)”
- ✓ “Check minimum FNF system requirements”
- ✓ “Check 3PE settings”
- ✓ “Prepare to move the Clock Controllers (Option 61C and 81 to 81C with Fiber Network Fabric)”
- ✓ “Connect a terminal”
- ✓ “Print site data”
- ✓ “Pre-route cables”
- ✓ “Perform a template audit”
- ✓ “Backup the database”

Failure to complete these tasks will result in increased downtime and possible system failure.

Once the steps in “Prepare for upgrade to Option 81C and Option 81C CP PII” on page 19 are complete, follow the procedures listed below in sequence.

## Verify Core/Net 0 is active

- 1 Get the status of the CPUs. Verify that all common equipment is enabled.

**LD 135** to load the program

**STAT CPU** to get the status of both Core/Nets

- 2 Ensure Core/Net 0 is active.

If Core/Net 1 is active, switch Core/Nets.

**STAT CPU** to get the status of the Core/Nets

**SCPU** to switch to Core/Net 0

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

- 3 Ensure Clock Controller 0 is active and tracking.

**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 0

## Split the Core/Nets

- 1        Be sure Core/Net 0 is active and Core/Net 1 is standby. You may need to switch Cores:

**STAT CPU**

\*\*\*\*            exit program

- 2        Verify that IODU/C 0 is active. You may need to switch IODU/Cs.

**LD 137**

**STAT**            Get the status of IODU/C

**SWAP**           Switch IODU/Cs if necessary

\*\*\*\*            exit program

- 3        Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the Core/Net. 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

- 4        Place Core/Net 0 in Maintenance by setting the MAINT/NORM switch to MAINT.
- 5        In Core/Net 1, disable the NT6D65 Core to Network Interface (CNI) cards by setting the ENB/DIS faceplate switches to DIS.

## Upgrade Side 1

Core/Net 1 must be *inactive* to complete these procedures. A terminal must be connected to the J25 connector on Core/Net 1 to complete this procedure. See “Connect a terminal” on page 38.

### Upgrade the Core/Net 1 software

Complete the steps below to install new software in Core/Net 1.

- 1        Place the CP Install disk that corresponds with the installed CP card type into the IODU/C in Core/Net 1.
- 2        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 drive
  - d. press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 3** In Core/Net 1, perform the following three steps in uninterrupted sequence:

- a. press and hold the MAN RST button on the CP card
- b. set the MAINT/NORM switch on the CP card to MAINT
- c. release the MAN RST button

A sysload will begin (cold start). Wait for the Main Menu to appear on the terminal before proceeding.

**Note 1:** If the CD-ROM is not in the CD drive of the IODU/C, the installation procedure will not continue. Insert the CD-ROM into the drive to continue.

**Note 2:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

**4** Press <CR> to continue.

**5** 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

- 6      When the Install Menu is displayed, select the following options in sequence when you are prompted to do so
- <a>      to install software, CP-BOOT ROM, and IOP-ROM
  - <a>      to verify that the CD-ROM is now in drive
- The Installation Status Summary screen appears that lists the options to be installed.
- <y>      Yes, start Installation
  - <a>      Continue with Upgrade

### **Pre-Release 3 language groups**

- 7      Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>      Global 10 Languages
- <2>      Western Europe 10 Languages
- <3>      Eastern Europe 10 Languages
- <4>      North America 6 Languages
- <5>      Spare Group A
- <6>      North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 8** Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

9    When the ROM installation screen appears, select the following prompts in sequence:

<a>    Continue with ROM Upgrade

The following message appears:

Software Release XXXX was installed successfully on Core 1.  
All files were copied from CDROM to the hard disk.

Please press <CR> to continue when ready...

<a>    Continue with ROM upgrade

<a>    Yes, start Installation

<a>    Continue with ROM upgrade

When the Installation Status Summary screen appears, press <CR> when ready...

<cr>    Are you sure you want to continue with IOP ROM

<a>    to install the IOP-ROM from hard disk

<y>    Yes, start installation

<a>    to continue with ROM upgrade

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

<cr>    press return to continue

<q>    to quit (remove any diskettes from the floppy drive)

<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. Wait for “DONE” and then “INI” messages to be displayed before continuing.

**Software installation on Core/Net 1 is complete.**

**Note:** If the system fails to load, or system messages indicate data corruption, back out of the parallel reload process by performing the steps in “Back out of a system software upgrade” on page 279.

---

## Upgrade Side 1 hardware

Follow the procedures below in sequence:

- 1 Software disable the IGS/DIGS cards in Side 1 (IGS/DIGS odd-numbered cards, 1 - 19):

**LD 39** to load the program

**DISI IGS xx** xx is the IGS card number 1 - 19

**Note:** See the *Maintenance* (553-3001-511) for more information on overlay 39 commands.

- 2 Faceplate disable the IGS/DIGS cards in Side 1.
- 3 Tag and disconnect the IGS/DIGS cables.
- 4 Remove the IGS/DIGS cards from Side 1.

**Note:** If you did not check the 3PE switch settings before, check the 3PE switch settings now. See “Check 3PE settings” on page 33.

- 5 Faceplate enable the FIJI cards.
- 6 Insert the FIJI cards in Side 1. Do not seat the FIJI cards.

**Note:** FIJI cards are installed in slots 2 and 3 of the Network modules, and slots 8 and 9 of the Core/Net modules.

## Connect the shelf 1 FIJI Ring cables

To create the shelf 1 fiber optic loop, connect the FIJI cards in each Network shelf 1 in **descending** order, from Tx to Rx (Figure 53 on page 312 and Table 39 on page 313).

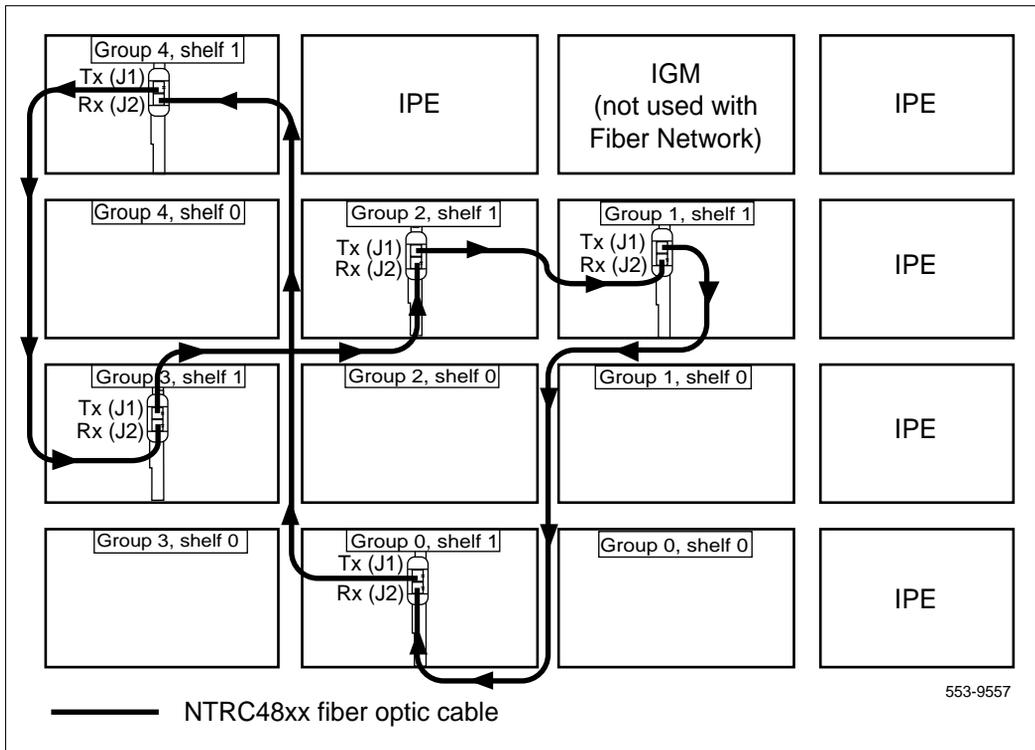
Remove the black cap from the end of each cable before it is connected.

**Note:** Each end of the NTRC48 cable is labeled “Tx” or “Rx” in the factory.

- a. Start with Network Group 0, shelf 1.
- b. Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 0, shelf 1 to the Rx (J2) port of the FIJI card in the highest Network Group, shelf 1.

- c. Connect a NTRC48 cable from the Tx (J1) port of the FIJI card from the Tx (J1) port in the highest Network Group, shelf 1 to the Rx (J2) port in the second highest Network Group, shelf 1.
- d. Continue to connect NTRC48 FIJI Fiber Ring cables of the appropriate length from the Tx (J1) port to the Rx (J2) port in shelf 1 of each Network Group. Connect these cables in descending order of Network Groups.
- e. To complete the Ring, connect a final cable from Tx in Group 1, shelf 1 to Rx in Group 0, shelf 1.

**Figure 53**  
**Shelf 1 descending fiber optic Ring (Option 81C example)**



**Note:** Connect the Side 1 FIJI Ring cables only.

**Table 39**  
**FIJI Ring 1 connections**

<b>Groups 0 - X are cabled in descending order</b>		
<b>Group/shelf</b>	<b>NTRC48 fiber cable connector</b>	<b>FIJI card connector</b>
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1
6/1	P2	Rx - J2
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2

## Turn module power off



### **CAUTION**

#### **Service Interruption**

Call processing will be interrupted for approximately 30 minutes while the procedures are completed.

To reduce downtime, verify that all cables are pre-routed. See “Pre-route cables” on page 51.

Power down the modules with the module power switch. **DO NOT** power down the columns at the PDU:

- 1 Power down Core/Net Module 0.
- 2 Power down Core/Net Module 1.
- 3 Power down all Network Modules.

## Seat the FIJI cards in Side 1

The FIJI cards in side 1 can now be seated. Push the faceplate latches forward to lock the cards in place. Verify that the cards are faceplate *enabled*.

## Upgrade Side 0

### **Install Side 0 FIJI cards**

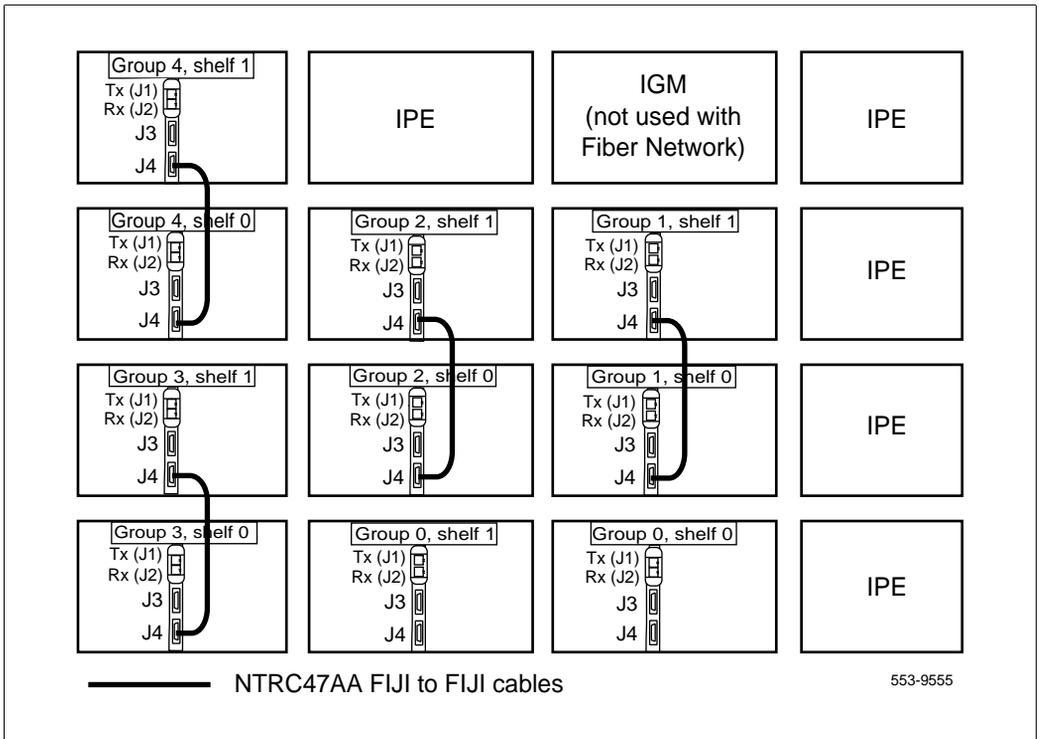
- 1 Tag and disconnect the IGS/DIGS cables.
- 2 Remove the IGS/DIGs cards from Side 0.
- 3 Insert and seat the FIJI cards in Side 0.
- 4 Faceplate enable the FIJI cards.

## Connect the FIJI to FIJI cables

- 1 Connect P2 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 0, except Group 0.
- 2 Connect P1 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 1, except Group 0.

*Note:* The FIJI cards in Group 0 do not receive a FIJI to FIJI cable.

**Figure 54**  
**FIJI shelf 0 to FIJI shelf 1 connections (Option 81C example)**



## Connect the shelf 0 FIJI Ring cables

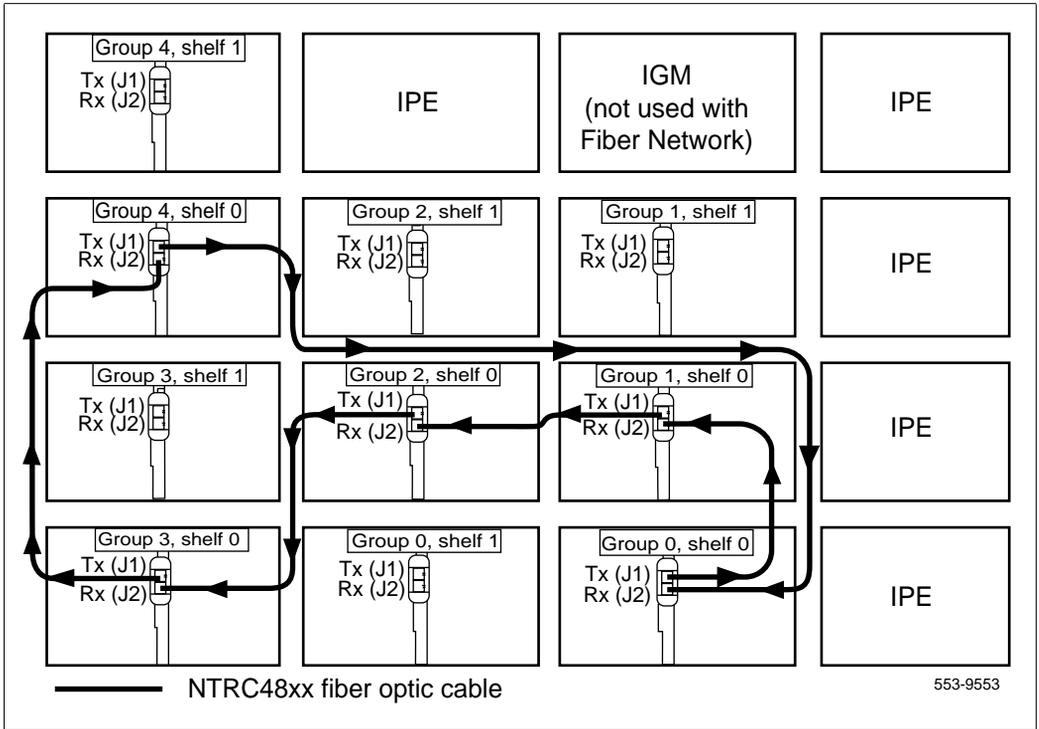
To create the shelf 0 fiber optic loop, connect the FIJI cards in each Network shelf 0 in ascending order, from Tx to Rx ports (Figure 55 on page 317 and Table 40 on page 317).

Remove the black cap from the end of each cable before it is connected.

**Note:** Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- a. Start with Group 0, shelf 0.
- b. Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 0, shelf 0 to the Rx (J2) port of the FIJI card in Group 1, shelf 0.
- c. Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 1, shelf 0 to the Rx (J2) port of the FIJI card in Group 2, shelf 0.
- d. Continue to connect NTRC48 FIJI Fiber Ring cables of the appropriate length from the Tx (J1) port to the Rx (J2) port in shelf 0 of each Network Group. Connect these cables in ascending order of Network Groups.
- e. To complete the Ring, connect a final cable from the Tx (J1) port in the highest number group back to the Rx (J2) port in Group 0, shelf 0.

**Figure 55**  
**Shelf 0 ascending fiber optic Ring (Option 81C example)**



**Table 40**  
**FIJI Ring 0 connections**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2

**Table 40**  
**FIJI Ring 0 connections**

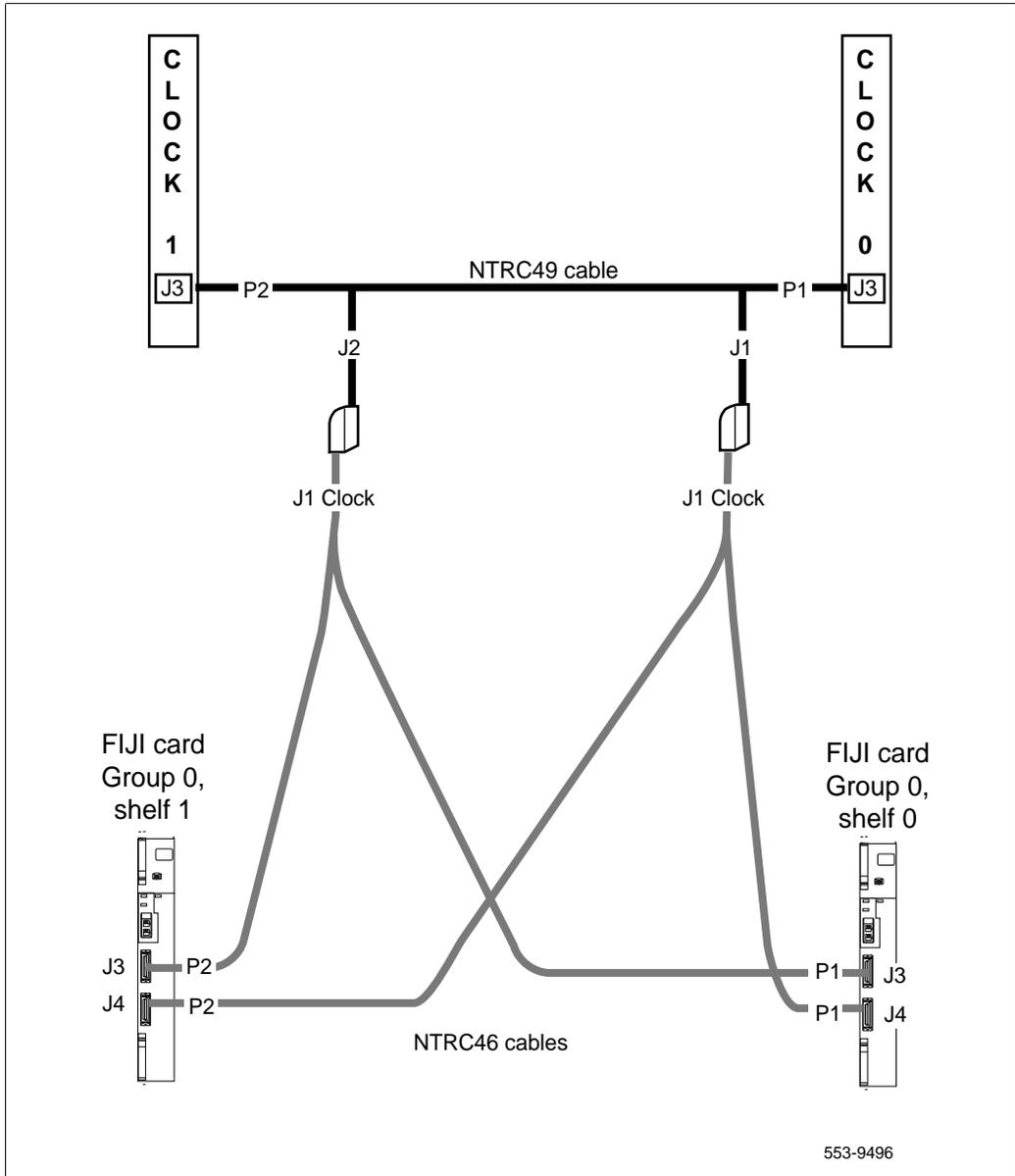
<b>Groups X - 0 are cabled in ascending order</b>		
<b>Group/shelf</b>	<b>NTRC48 fiber cable connector</b>	<b>FIJI card connector</b>
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2

## Cable the Clock Controllers

Connect the cables to the Clock Controllers as shown in Figure 56 on page 320:

- 1** Connect the Clock to Clock cable:
  - a.** Connect P1 of the NTRC49 cable to port J3 of Clock Controller 0.
  - b.** Connect P2 of the NTRC49 cable to port J3 of Clock Controller 1.
- 2** Connect the Clock 0 to FIJI cable:
  - a.** Connect P1 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 0.
  - b.** Connect P2 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 1.
- 3** Connect a Clock 1 to FIJI cable:
  - a.** Connect P1 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 0.
  - b.** Connect P2 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 1.

Figure 56  
Clock Controller cable configuration



553-9496

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## Prepare Core cards for power-up

- 1 Verify that a terminal is connected to the J25 I/O panel connector on Core/Net 1. See “Connect a terminal” on page 38.
- 2 Verify that both CP cards in the Core modules are in MAINT position.
- 3 Unseat the CP card in Core/Net 0.
- 4 Faceplate *disable* the CNI cards in Core/NET 0.
- 5 Faceplate *disable* the IODU/C in Core/Net 0.
- 6 Unseat the IODU/C in Core/Net 0.
- 7 Faceplate *enable* the CNI cards in Core/Net 1.

## Restore power

Restore power in the order below:

- 1 Restore power to Core/Net 1.
- 2 Restore power to Core/Net 0.
- 3 Restore power to the Network modules.
- 4 Wait for the system to load/init.
- 5 Re-initialize Core/Net 1.

**Note:** Re-initializing Core/Net 1 stops the midnight routines from running.

## Verify the Fiber Rings

See the *Maintenance* (553-3001-511) for more information on Overlay 39 commands.

- 1 Check that Fiber Ring 1 operates correctly:
  - LD 39** to load the program
  - STAT RING 1** to check the status of Ring 1 (HALF/HALF)
- 2 Reset the Rings:
  - RSET** to reset the Rings and prepare them for redundancy
  - RSTR** to restore both Rings to HALF state

- 3      Check that the Rings operate correctly:  
**STAT RING 0**      to check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**      to check the status of Ring 1 (HALF/HALF)
  
- 4      If any Ring problems occur, correct them now.  
**STAT ALRM <X> <Y>**      to check the alarm status of individual FIJI cards or all FIJI cards. See *Administration* (553-3001-311) for more information.
  
- 5      Verify that call processing operates correctly: this includes, but is not limited to the following:
  - Check for dial tone.
  - Make internal, external, and network calls.
  - Check attendant console activity.
  - Check DID trunks.
  - Check any auxiliary processors.

## Upgrade Core/Net 0 software

- 1      Seat the IODU/C. Verify the status on the display (A1).
- 2      Faceplate enable the IODU/C.
- 3      Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 4      Verify that the CP card in Core/Net 0 is in MAINT mode.
- 5      Seat the CP card.
- 6      Connect a terminal to the J25 port on the I/O panel in Core/Net 0.
- 7      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.)
- 8      Initiate the installation by selecting the following prompt from the menu:  
**<cr> <u>>**      to Install menu

- 
- 9** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
- <a>** continue with keycode validation
- 10** Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net/Net 0.
- 11** When the main menu appears, select the following option to copy the software from Core//Net 1 to Core/Net/Net 0 and exit the Main Menu:
- <o>** to copy system software from the other Core/Net
- 12** 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.
- 13** 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.

- 14** From the Main Menu, select the following options in sequence to copy the customer database from Core/Net/Net 1 to Core/Net/Net 0.:
- <d>** to go to the Database menu
- <d>** to copy the database from Core/Net 1 to Core/Net 0
- <y>** to confirm the installation status summary
- <a>** to confirm database copy
- 15** From the Main Menu, select the following options to quit and reload the system:
- <q>** to quit
- <y>** to confirm quit

- 16     Reboot the Core/Net/Net 0 CPU:  
      <a>                    to reboot the system

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

## Complete the upgrade

Follow the procedures below in sequence. If an error occurs at any time, resolve the problem before continuing.

### Exit split mode

- 1     Perform the following in uninterrupted sequence:
- Press and release the MAN RST button in Core/Net 0.
  - When SYS700 messages appears on LCD display on Core/Net 0, set the MAINT/NORM switch to NORM in Core/Net 0.

In 60 seconds, the LCD will display and confirm your processes with:

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

- 2     An HWI534 message indicates the start of memory synchronization. In 10 minutes, an HWI533 message on Core/Net 1 CSPI or SDI terminal indicates the memory synchronization is complete.

**Note:** The HWI messages are displayed on the TTY device connected to the active core.

- 3     Once the synchronization is complete, enable the CNI cards in Core/Net 0 (set the ENB/DIS faceplate switch to ENB).

- 4     Check the status of the CPU and CNI cards in Core/Net 1:

**LD 135**

**STAT CPU**                    Get status of CPU and memory

**STAT CNI**                    Get status of CNI cards

- 5     Enable the CNI ports if necessary:

**ENL CNI c s p**                Enable CNI on *core, slot, port*

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

---

## Synchronize the hard disks

- 1 Load LD 137 and synchronize the hard disks. Synchronization may take up to seven minutes. To be sure that the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled.

### LD 137

**STAT** Get the status of the IODU/C and redundancy  
**SYNC** Enter "Yes" to synchronize disks. Wait until the memory synchronization successfully completes before continuing.  
**TEST CMDU** Performs hard and floppy disk test.

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

**STAT** Get the status of IODU/C and redundancy  
**SWAP** Switch CMDU if necessary  
**STAT CMDU** Get the status of the IODU/Cs. Be sure the same IODU/C and CPU are active.  
**\*\*\*\*** exit program

## Verify Core/Net redundancy

To verify redundancy, switch the active Cores back and forth to verify that both sides operate without problems.

### LD 135

**SCPU** to switch the active Core/Net  
**SCPU** to switch the active Core/Net again

## Test Core/Net 1 and Core/Net 0

- 1      Perform a redundancy sanity test using the following sequence:

**LD 135**

<b>STAT CNI</b>	Get status of CNI cards
<b>STAT CPU</b>	Get status of CPU and memory
<b>TEST CPU</b>	Test the inactive Core/Net/Net
<b>TEST CNI c s</b>	Test each inactive CNI card

- 2      Switch Core/Nets and test the other side (Core/Net 0)

<b>SCPU</b>	Switch Core/Nets
<b>TEST CPU</b>	Test the inactive Core/Net/Net
<b>TEST CNI c s</b>	Test each inactive CNI card

**Note:** Testing the CP and CNI cards and synchronizing memory can take up to 20 minutes for each test. When the CP test is complete, the CP the memory is automatically synchronized.

- 3      Clear the display and minor alarms on both Core/Nets.

<b>CDSP</b>	Clear the displays on the Core/Nets
<b>CMAJ</b>	Clear major alarms
<b>CMIN ALL</b>	Clear minor alarms

- 4      Get the status of the Core/Nets, CNIs, and memory.

<b>STAT CPU</b>	Get the status of both Core/Nets
<b>STAT CNI</b>	Get the status of all configured CNIs and memory

**Note:** You may need to execute the STAT CNI command twice before receiving a response from the system.

\*\*\*\*            exit program

---

## Switch the Clocks

- 1      Verify that the clock controller is assigned to the *active* Core.  
**LD 60**            to lead the program  
**SSCK x**           to get the status of the clock controllers (*x* is “0” or “1” for Clock 0 or Clock 1).  
**SWCK**            to switch the Clock if necessary  
**\*\*\*\***             exit program
  
- 2      Verify that the Clock Controllers are switching correctly:.  
**SWCK**            to switch the Clock  
**SWCK**            to switch the Clock again

## Check Fiber Ring status

See the *Maintenance* (553-3001-511) for more information on overlay 39 commands.

- 1      Check that the Fiber Rings operate correctly:  
**LD 39**            to load the program  
**STAT RING 0**     to check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**     to check the status of Ring 1 (HALF/HALF)
  
- 2      If necessary, restore the Rings to Normal State:  
**RSTR**            to restore both Rings to (HALF/HALF) state
  
- 3      Check that the Rings operate correctly:  
**STAT RING 0**     to check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**     to check the status of Ring 1 (HALF/HALF)
  
- 4      Check the status of the FIJI alarms  
**STAT ALRM**      to query the alarm condition for all FIJI cards in all Network Groups

## Backup the database

- 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



### CAUTION

#### Loss of Data

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

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

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

## Removal of unused Intergroup cables and module

Once the system is operating and stable with Fiber Network, the unused Intergroup cables and Intergroup module can be removed if desired. Removal of the Intergroup cables and module is not required. Unused Intergroup equipment can be left in place.



### CAUTION

#### Service Interruption

If the Intergroup cables and module are removed from the Fiber Network system, be careful not to dislodge or damage any working cables or equipment.

The Intergroup (IGS) module can also be converted into an IPE module with the IPE Expansion kit.

---

# XT and Option 71 cabinet upgrade to Option 81C

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## 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)
- *Administration* (553-3001-311)
- *Capacity Engineering* (553-3001-149)

## Upgrade outline

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, 81, 81C upgrade to an Option 81C CP PII” on page 165.

Fiber Network Fabric (FNF) network groups in both SL-1 cabinets and in Meridian 1 modular column stacks (mixed cabinets) is not supported.

To upgrade XT or Option 71 mixed cabinets systems with FNF, perform the following upgrade procedures:

- 1 “XT and Option 71 cabinet upgrade to Option 81C” on page 329.
- 2 “Option 81C upgrade to Fiber Network Fabric” on page 303.

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 57 on page 332), or for customers with limited space, both Core/Net modules may be installed in one column (see Figure 58 on page 333). 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 NT4N41 cCPI 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 cCPI 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 cCPI Core/Net module Upgrade Package. All existing equipment that will be retained must be compatible with software Release 25. Order replacements for all equipment that does not comply.

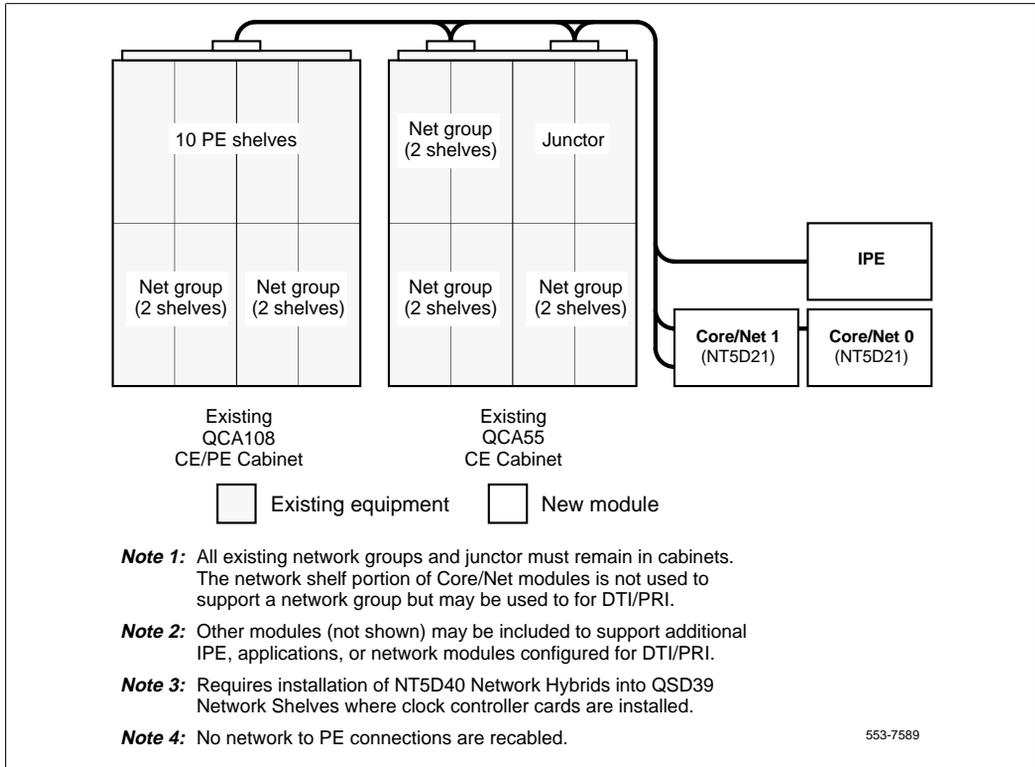
Verify that any existing QPC441 3-Port Extender cards in the system are 'F' or later, for Release 25. If any 3PE card in the system is not one of these vintages, replace it with a card of acceptable vintage. All 3PE cards in the system must be of the same vintage.

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

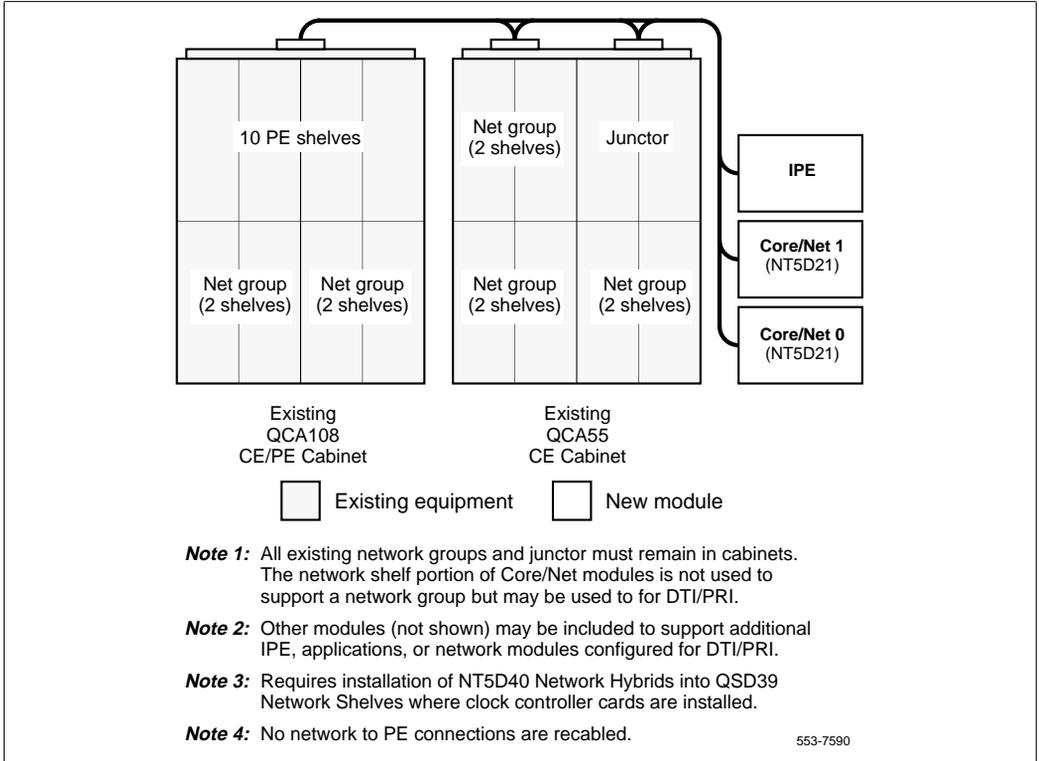
Before you begin the upgrade, perform an inventory to ensure that all required equipment is available on site.

Figure 57 on page 332 shows the upgrade from XT/Option 71 to Option 81C in a multi-column installation. Figure 58 on page 333 shows the upgrade in a single-column installation.

**Figure 57**  
**Core/Net module upgrade, multi-column installation**



**Figure 58**  
**Core/Net module upgrade, single-column installation**



## Equipment required

Table 41 on page 334 and Table 42 on page 336 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 41**  
**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	NT4D41	cPCI Core/Network Module AC
1	NT5D40AA	Hybrids Kit
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	NT8D46AD	System Monitor to SDI Cable (60 In.)

**Table 41**  
**Hardware requirements for an AC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
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
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set

**Table 41**  
**Hardware requirements for an AC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
2	NTRB53 or QPC471H or QPC775 E	Clock Controller
1	QPC841C	Four-port SDI
<p><b>Note:</b> 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> <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 42**  
**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 42**  
**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 42**  
**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	NTRB53 or QPC471H or QPC775 E	Clock Controller
1	QPC841	Four-port SDI
<p><b>Note:</b> QPC471 Clock Controller cards must be vintage H or later, QPC771 Clock Controller cards must be vintage E 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 software 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 59 on page 341):

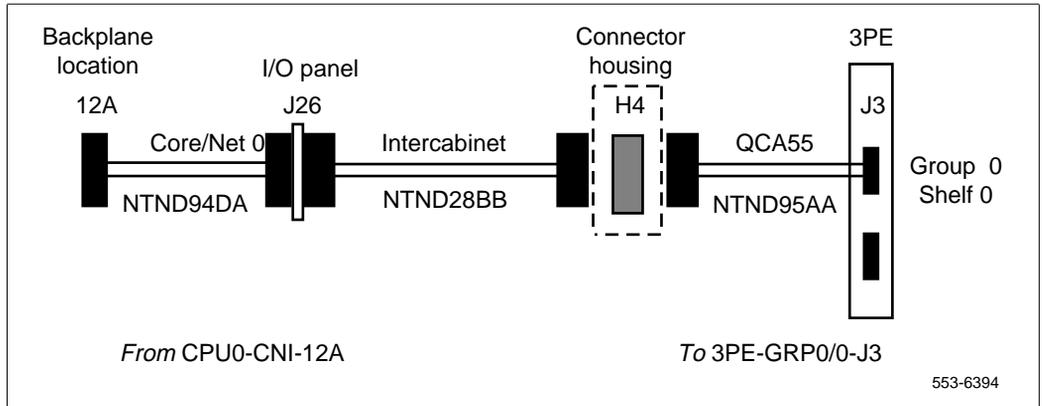
- An NTND94DA cable (from CPU0-CNI-12A) in Core/Net 0 connects to the following:
  - a CNI port at backplane position 12A
  - the inside of the I/O panel at connector J26
- An NTND28BB cable connects to the following:
  - the outside of the I/O panel at connector J26
  - position H4 on the connector 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**  
**Service Interruption**  
 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.

**Figure 59**  
**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**

**Service Interruption**

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



**CAUTION**

**Loss of Data**

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

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

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

- 4 In the tape shelf of the XT system CE cabinet, set the ENB/DIS switch on the QPC173 Power Monitor card to DIS.

- 5 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.

- 6 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 9 on page 347 on page 347):

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

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

<b>LD 35</b>	to load the program
<b>TEST CPU</b>	to test the CPUs
<b>SCPU</b>	to switch to CPU 0 (if necessary)
<b>****</b>	to exit the program

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

<b>LD 60</b>	to load the program
<b>SSCK 1</b>	to get the status of clock controller 1
<b>SWCK</b>	to switch to clock controller 0

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

<b>SSCK 0</b>	to get the status of clock controller 0
<b>DIS CC 1</b>	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 43 on page 344).

**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 43**  
**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.

- 7 If necessary, install a new clock controller card in CPU 0:
  - a. If CPU 0 is active, switch to CPU 1:
 

<b>LD 35</b>	to load the program
<b>TEST CPU</b>	to test the CPUs
<b>SCPU</b>	to switch to CPU 1 (if necessary)
<b>****</b>	to exit the program
  - b. Make clock controller 1 active:
 

<b>LD 60</b>	to load the program
<b>SSCK 0</b>	to get the status of clock controller 0
  - c. If clock controller 0 is active, switch clocks:
 

<b>SWCK</b>	to switch to clock controller 1
-------------	---------------------------------
  - d. Make sure clock controller 1 is active:
 

<b>SSCK 1</b>	to get the status of clock controller 1
---------------	---
  - e. Disable clock controller 0:
 

<b>DIS CC 0</b>	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 43 on page 344).

**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

- 8** 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

- 9 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 44 on page 347). Make sure Jumper RN27 at location E35 is set to A.

**Table 44**  
**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
<b>Note:</b> Jumper RN27 at location E35: set to A								

- 10 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 45 on page 348). Make sure Jumper RN27 at location E35 is set to A.

**Table 45**  
**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

- 11 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.

- 12 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 software 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 60 on page 350 for cable paths):
  - a.** Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA55 cabinet cables (see Table 46 on page 349).
  - b.** Label each cable as listed in Table 46 on page 349. For each cable, label both ends the same.

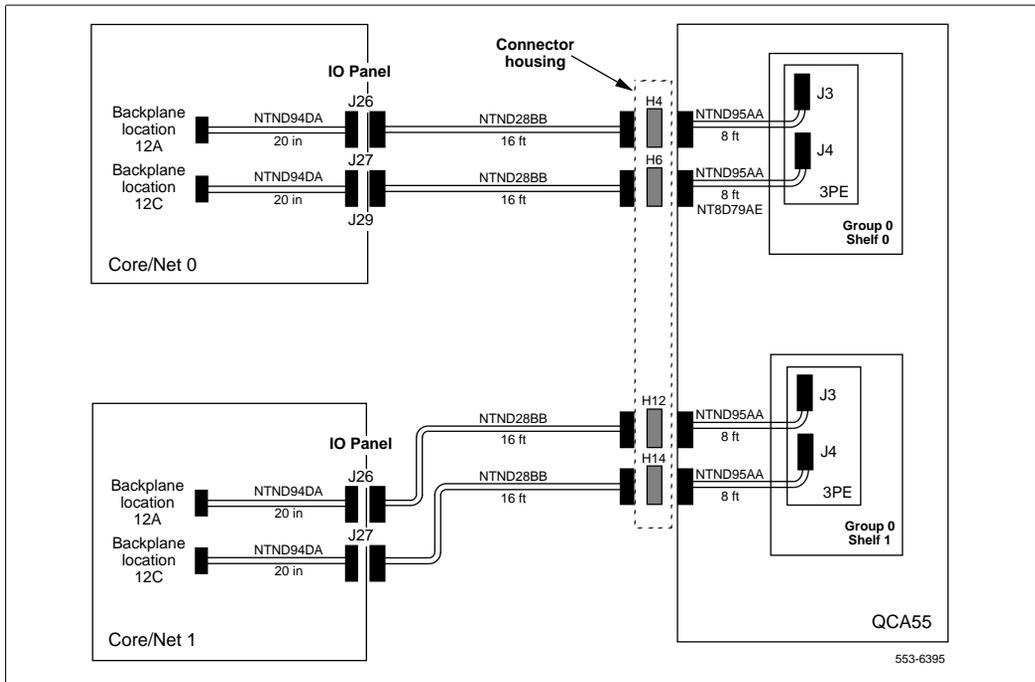
**Table 46**  
**NTND33CD Group 0 cable labels (Part 1 of 2)**

<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

**Table 46**  
**NTND33CD Group 0 cable labels (Part 2 of 2)**

QCA55 cabinet cable:	Label both ends:
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 60**  
**NTND33CD Group 0 cable paths**



553-6395

- 2 For Groups 1 and 2 (if equipped), label cables in the NTND33CC cable kit (see Figure 61 on page 353 for cable paths):
  - a. Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA55 cabinet cables (see Table 47 on page 351).
  - b. Label each cable as listed in Table 47 on page 351. For each cable, label both ends the same.

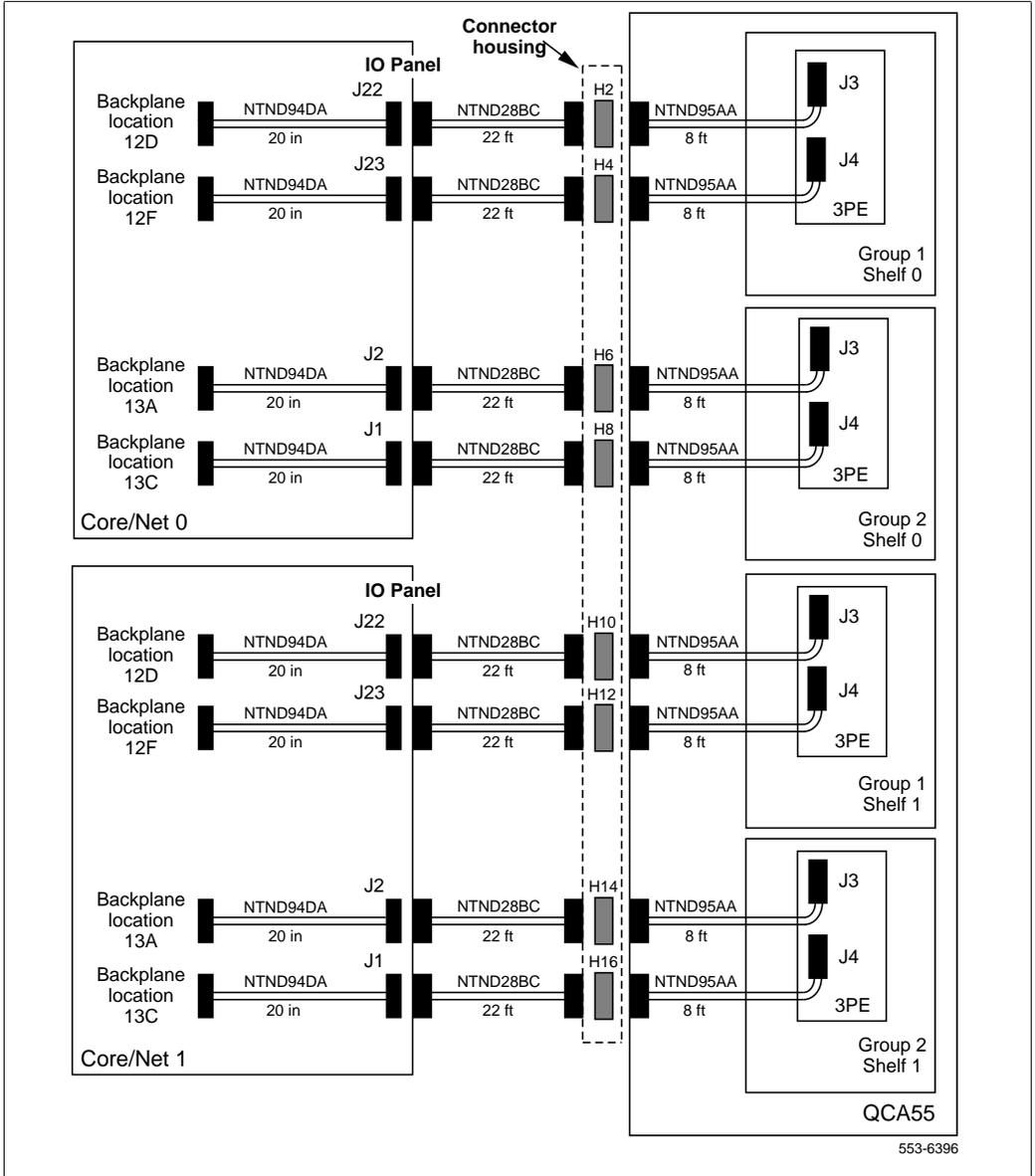
**Table 47**  
**NTND33CC Groups 1 and 2 cable labels (Part 1 of 2)**

<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

**Table 47**  
**NTND33CC Groups 1 and 2 cable labels (Part 2 of 2)**

NTND28BC	CPU1-CNI-13C to 3PE-GRP2/1-J4
<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 61**  
**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 62 on page 356 for cable paths):
  - a. Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA108 cabinet cables (see Table 48 on page 354).
  - b. Label each cable as listed in Table 48 on page 354. For each cable, label both ends the same.

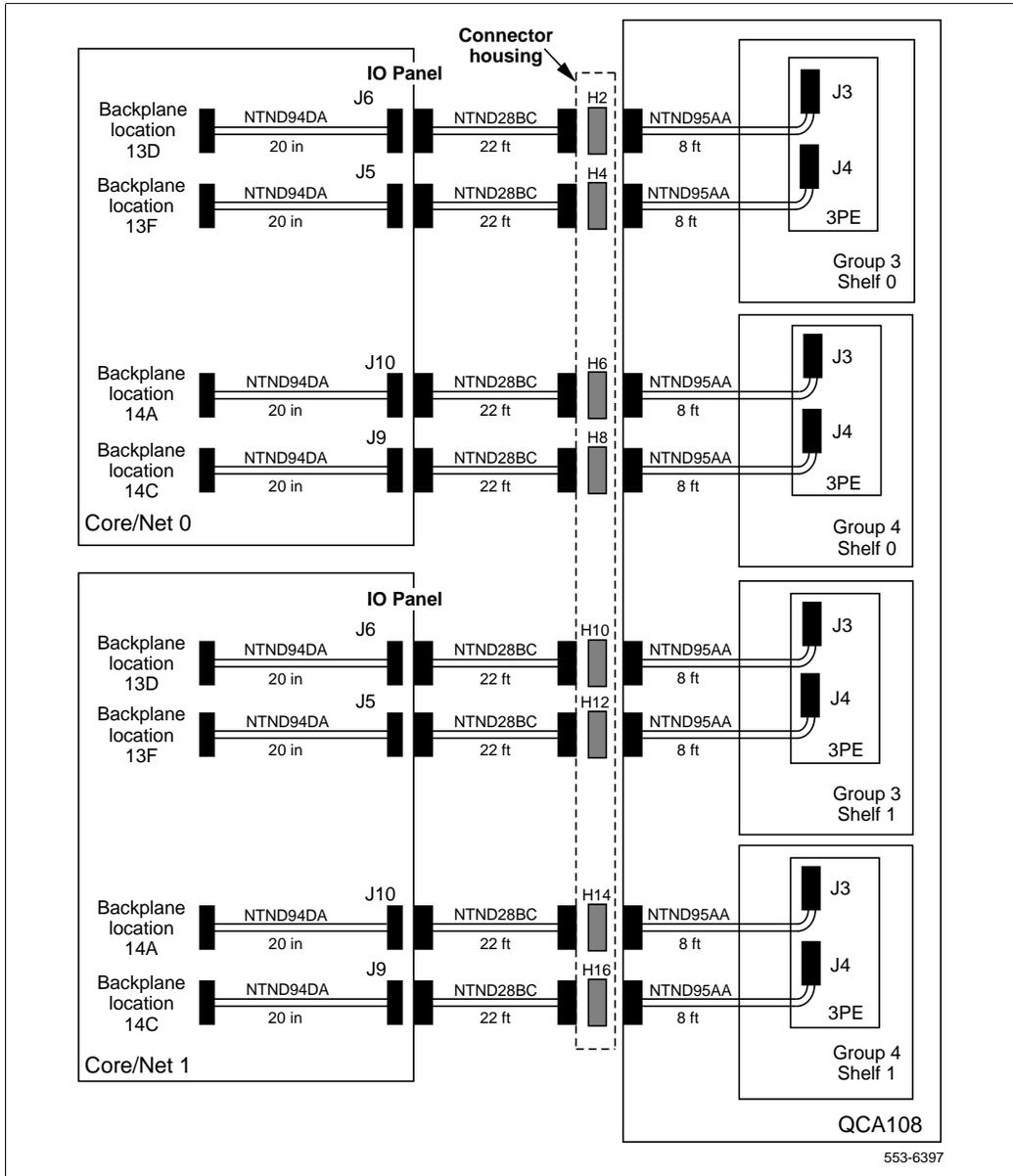
**Table 48**  
**NTND33CC Groups 3 and 4 cable labels (Part 1 of 2)**

<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

**Table 48**  
**NTND33CC Groups 3 and 4 cable labels (Part 2 of 2)**

NTND28BC	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND28BC	CPU1-CNI-14C to 3PE-GRP4/1-J4
<b>QCA108 cabinet cable</b>	<b>Label both ends:</b>
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 62**  
**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.

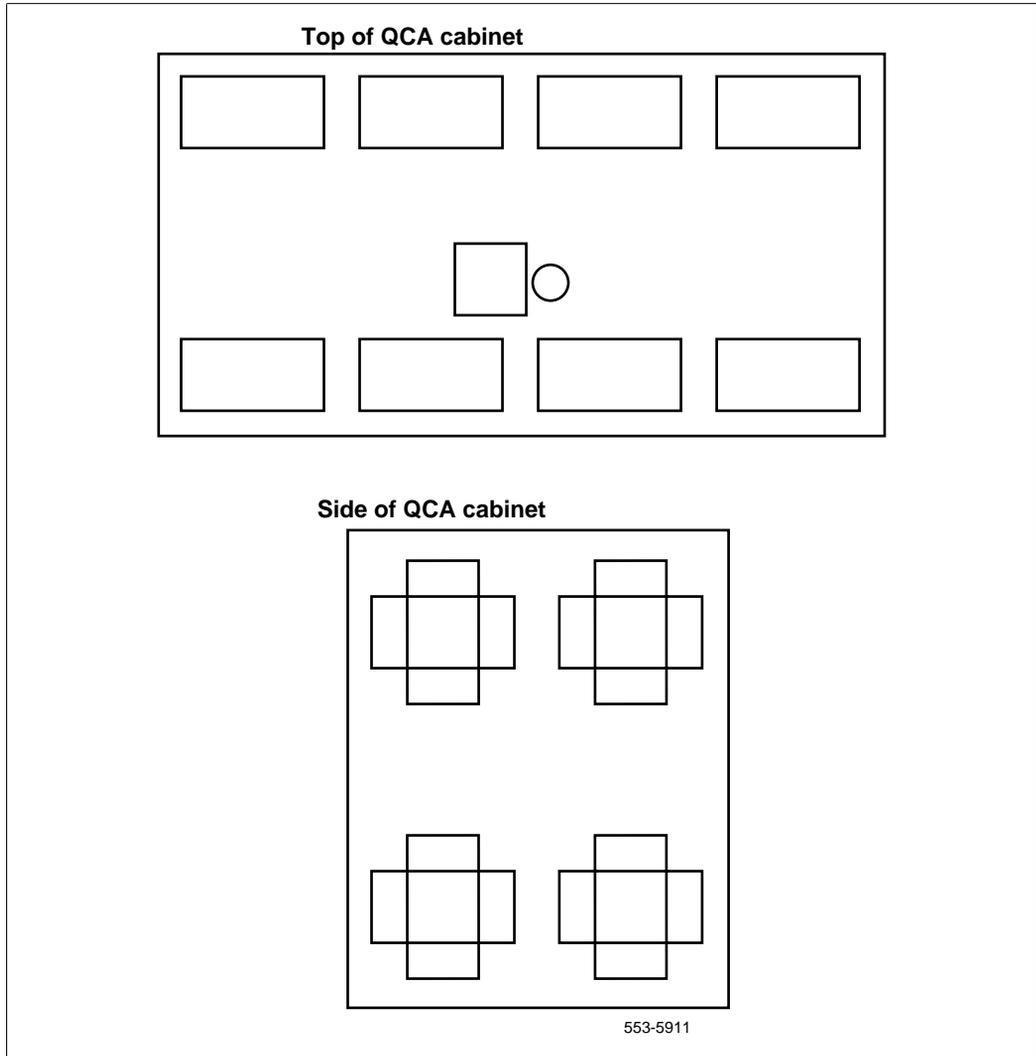
There are several possible mounting locations (see Figure 63 on page 358) for the housings. The housing may be mounted at one of nine locations on the top of the cabinet:

- 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 63**  
**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.

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**

**Damage to Equipment**

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

- h.** Mount the connector bracket to the connector housing using the screws provided.
- i.** 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.
- j.** 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.
- k.** 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.
- l.** Route the cables for Group 0 (listed in Table 49 on page 361) from within the QCA55 cabinet to the connector housing (as shown in Figure 64 on page 361). Secure all NTND95 cables with bail locks.
- m.** Route the cables for Groups 1 and 2 (listed in Table 50 on page 362) and for Groups 3 and 4 (listed in Table 51 on page 362) from within the QCA55 cabinet to the connector housing (as shown in Figure 64 on page 361). Secure all cables with bail locks.
- n.** Mount the remaining cover plates to the connector housing.
- o.** 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.

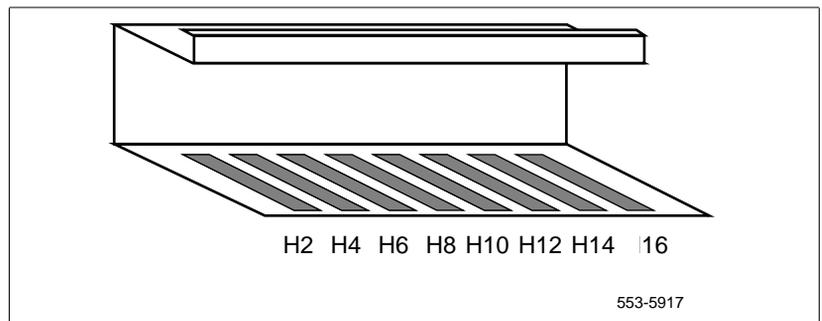
- p. If you are installing the bracket on the front of the connector housing (cables entering from the front), mount the cover plate with the connector designations label to the top of the housing.

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

**Table 49**  
**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 64**  
**Connector positions on the connector bracket**



553-5917

**Table 50**  
**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 51**  
**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

**Table 51**  
**Group 3 and Group 4 internal cabinet cables**

Cable	Cable label	Connector housing position
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.
 

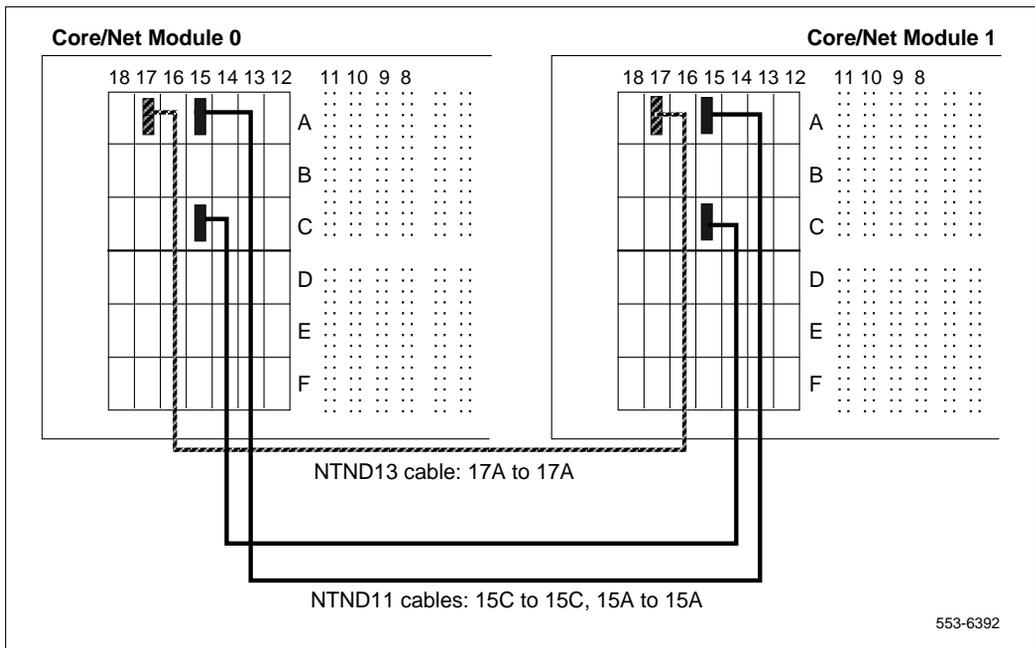
**Note:** If only Group 0 and Group 1 are equipped, you do not need to remove the right I/O panel. If you remove the right I/O panel, replace it with a P0745713 I/O panel from the upgrade package.
- 11 Remove the I/O panels.
- 12 Connect system monitor cables with the following exception in Core/Net 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 65 on page 366).
 

**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 65**  
**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 52 on page 367.
- 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 52 on page 367.

**Table 52**  
**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:

- 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 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 52 on page 367).
- 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 52 on page 367.
- 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 52 on page 367.
- 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:

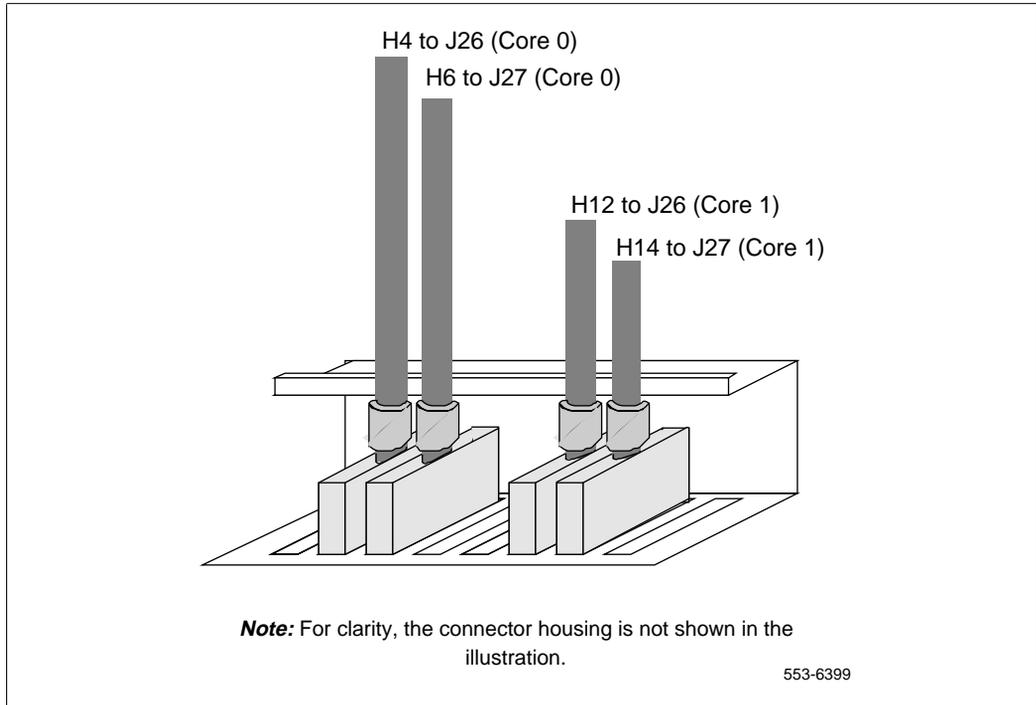
9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

- 29** For Group 0, connect the intercabinet cables from the NTND33CC cable kit:
- a.** Mount and screw-lock the intercabinet cables listed in Table 53 on page 369 to the Group 0 connector housing on the top of the QCA55 cabinet (see Figure 66 on page 370). 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 53 on page 369, and secure the cables with the screw-locks.

**Table 53**  
**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 66**  
**Group 0 cables connecting to the connector bracket**

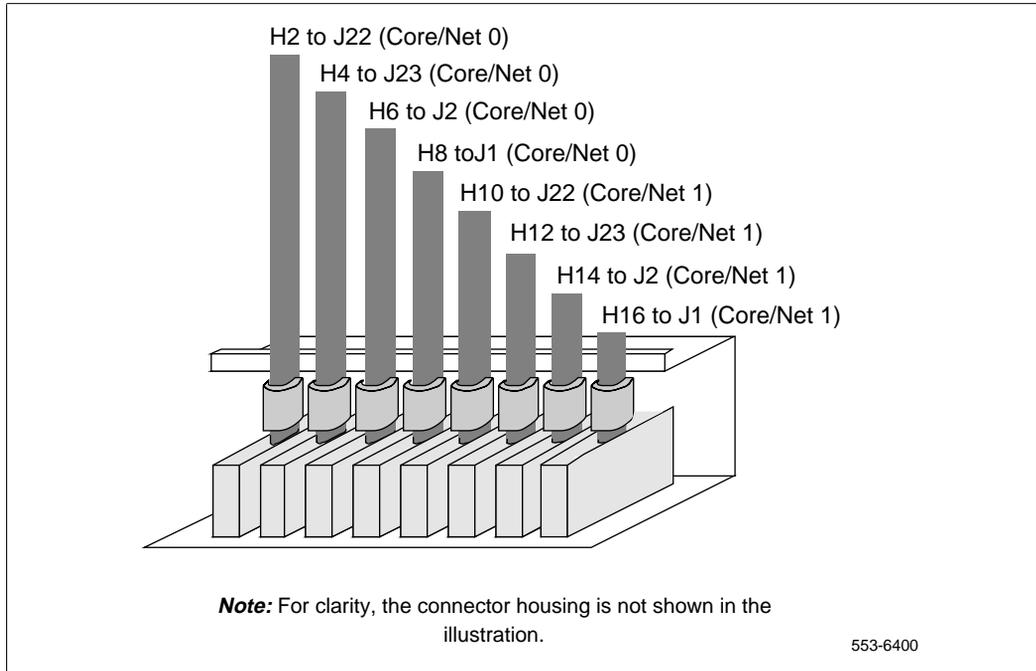


- 30** For Group 1 and Group 2 (if equipped), connect the intercabinet cables from the NTND33CC cable kit:
- a.** Mount and screw-lock the intercabinet cables listed in Table 54 on page 371 to the connector housing on the top of the QCA55 cabinet (see Figure 67 on page 372).
  - b.** Route the cables 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 54 on page 371, and secure the cables with the screw-locks.

**Table 54**  
**Groups 1 and 2 intercabinet cables**

<b>Cable</b>	<b>Cable label</b>	<b>Connector housing location</b>	<b>I/O panel location</b>
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 67**  
**Group 1 and 2 cables connecting to the connector bracket**

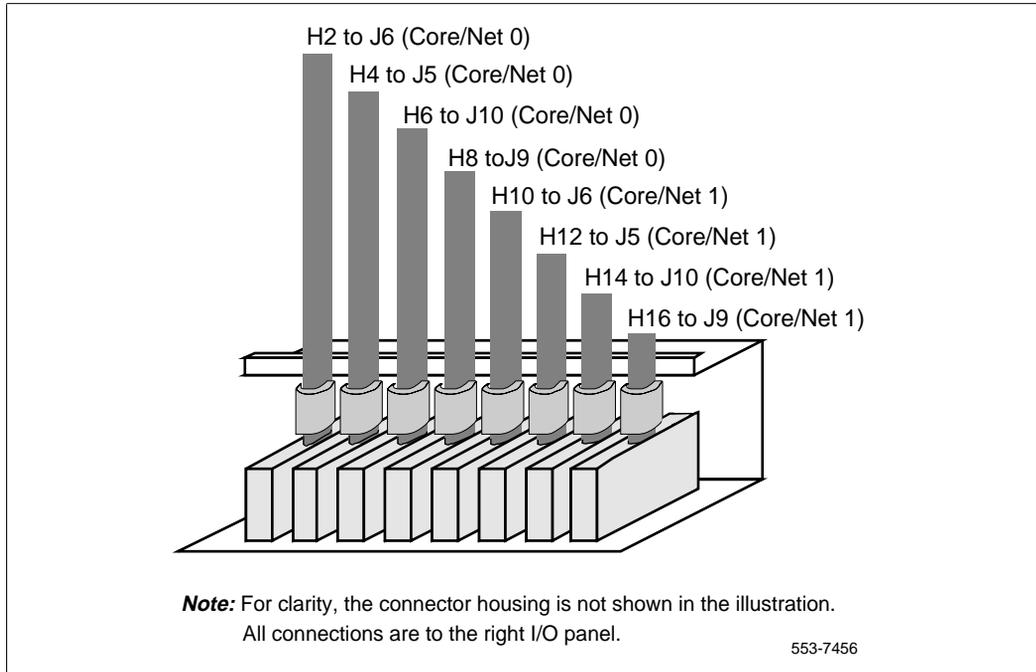


- 31** For Group 3 and Group 4 (if equipped), connect the intercabinet cables from the NTND33CC cable kit:
- a.** Mount and screw-lock the intercabinet cables listed in Table 55 on page 373 to the connector housing on the top of the QCA108 cabinet (see Figure 68 on page 374).
  - b.** Route the cables 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 55 on page 373, and secure the cables with the screw-locks.

**Table 55**  
**Group 3 and Group 4 intercabinet cables**

<b>Cable</b>	<b>Cable label</b>	<b>Connector housing position</b>	<b>I/O panel connector</b>
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 68**  
**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



### CAUTION

#### Loss of Data

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

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

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

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:

- 4 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

5 Test and switch CPUs:

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

6 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.

7 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

8 Verify that CPU 0 is enabled (CPU 1 is idle).

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

10 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

- 11** Set the QPC215 Segmented Bus Extenders (SBE) ENB/DIS switch to DIS in CPU 1.
- 12** Software disable the QPC742 FDI, QPC584 MSI, or NT9D34 EMSI card in CPU 0.  
**DIST** to disable the card
- 13** Set the ENB/DIS switch to DIS on the QPC584 or QPC742 card in CPU 0.
- 14** 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 software 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).

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**

#### **Damage to Equipment**

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.

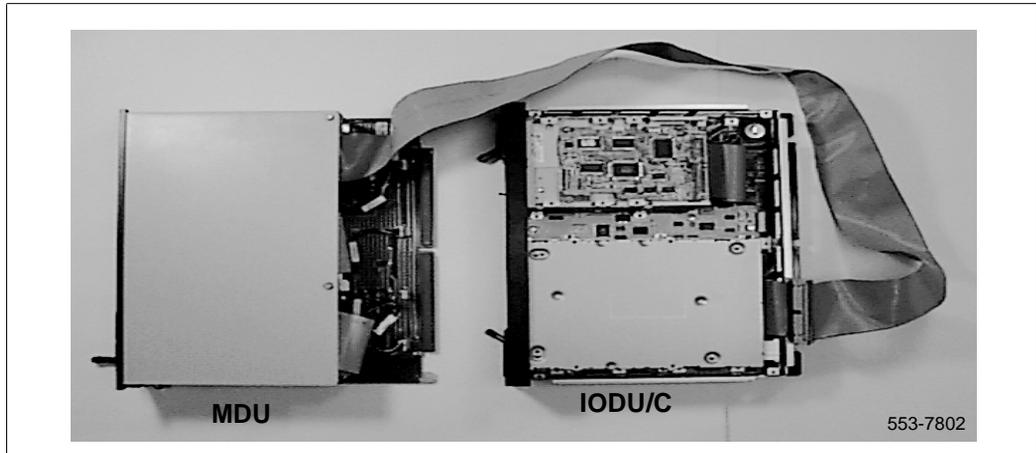
## MDU cabling

- 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 69, on page 380). 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 69**  
**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 (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 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 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



**CAUTION**

**Loss of Data**

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

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

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

- 12 Set date and time:

**LD 2** to load the overlay

**STAD** DD MM YY HR MN SC

Continue with “Configuring the system” on page 386.

## 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 56 on page 387). See *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 *Administration* (553-3001-311) for procedures describing adding and removing groups.

- 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.

**Table 56**  
**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

*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:

**LD 22** to load the program

**REQ PRT** to select the print option

**TYPE CFN** to print the configuration

**\*\*\*\*** 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



**CAUTION**

**Loss of Data**

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

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

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

- 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.

If you are installing clock controller 1 in a QSD40 Network shelf, skip this step and continue with step 7 on page 388. 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 935 for installation procedures



**CAUTION**

**Service Interruption**

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 7 on page 388.

- 7 Set the switches on clock controller 1 (see Table 57 on page 389). 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 57**  
**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.

- 8 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.
- 9 Reroute the cable from the junctor board and connect them to the faceplate of clock controller card 1.

Connect the NT1R04AA cable first to the connector on the controller card, then to the connector on the junctor panel.



**CAUTION**  
**Service Interruption**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 10 On the QPC441 3PE cards in network Shelf 1 of all groups, tag and disconnect the cables connected to QPC215 SBE cards.

- 11 As listed in Table 58 on page 390, connect NTND95AA cables to the 3PE faceplates in network Shelf 1 of all equipped network groups.
- 12 Set the ENB/DIS switch to ENB on the clock controller card in slot 13 of Group 1, Shelf 1.

**Table 58**  
**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

#### Service Interruption

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 on page 392.
  - 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:

<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** 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.

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 935 for installation procedures.

	<p><b>CAUTION</b>  <b>Service Interruption</b>                  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.</p>
---	---

When the network hybrids are installed, continue with step 14 on page 395.

- 14** Set switches on clock controller 0 as shown in Table 59 on page 395.
- 15** 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 59**  
**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.

- 16 Connect the cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
- 17 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.
- 18 Verify that the ENB/DIS switch on the clock controller cards is set to DIS.



**CAUTION**

**Service Interruption**

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 19 On the QPC441 3PE cards in network Shelf 0 of all groups, label and disconnect the cables connected to QPC215 SBE cards.

- 20 As listed in Table 60 on page 397, connect NTND95AA cables to the 3PE faceplates in network Shelf 0 of all equipped network groups.

**Table 60**  
**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

- 21 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
- 22 Set the ENB/DIS switch on all CNI cards in Core/Net 0 to ENB.
- 23 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 HW1533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized.
- 24 Set the NORM/MAINT switch to NORM on the CP card in Core/Net 1.

25 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.

26 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

27 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

28 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.

**29** 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

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

**31** 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

**32** 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



**CAUTION**  
**Loss of Data**

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

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

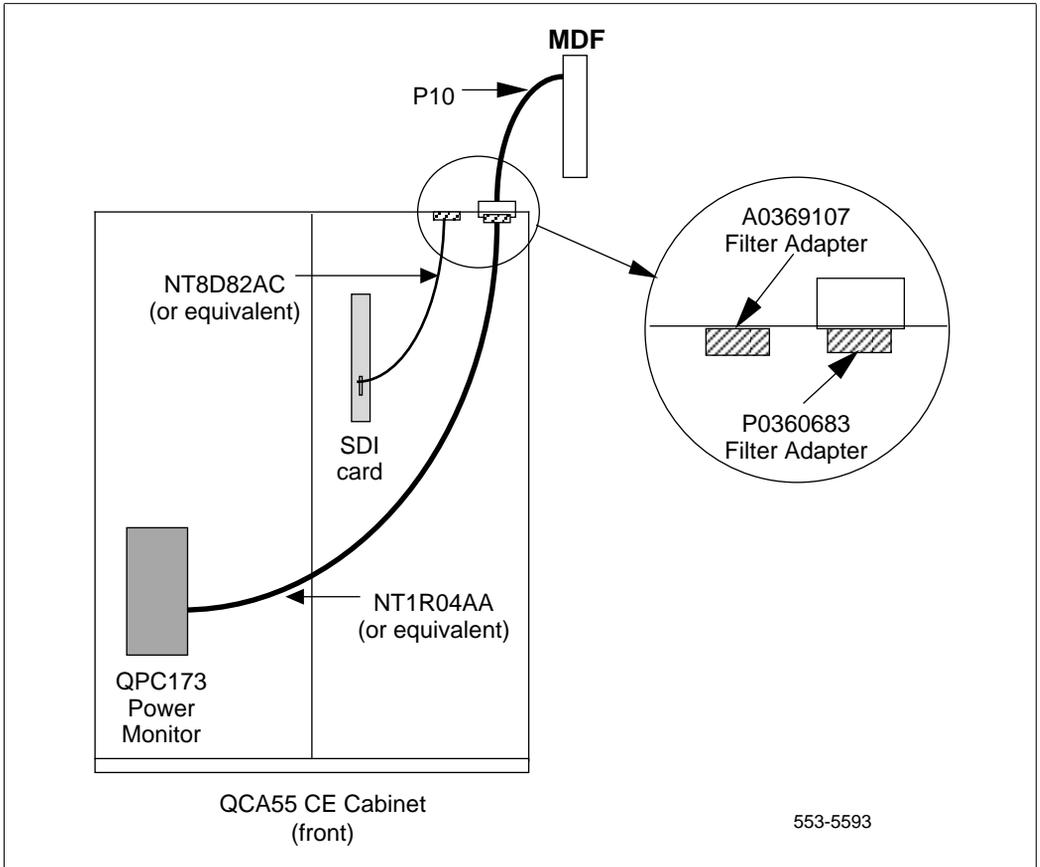
\*\*\*\* to exit the program

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

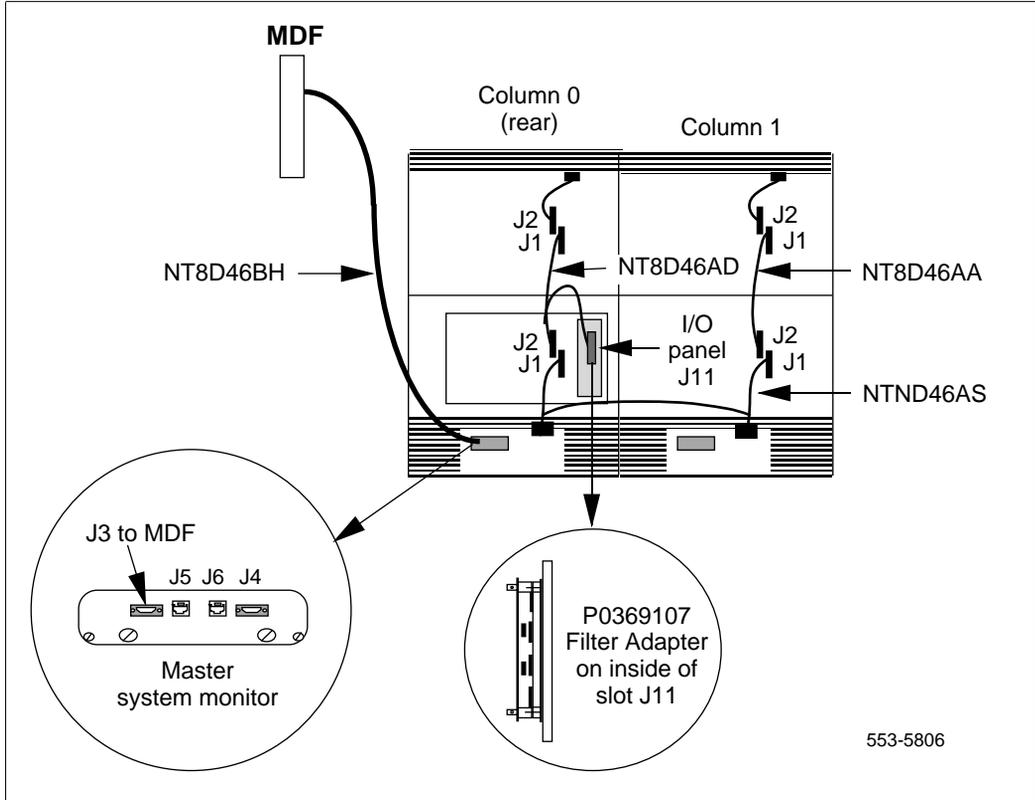
- 1 Install two alarm termination plugs (P0623569) in the QCA55 cabinet:
  - a. Install one plug at a convenient location on the cabinet frame near each CPU.
  - b. Disconnect the power monitor cable from each CPU shelf and plug it into a termination plug.
- 2 Power down the CPU shelves in the XT/71 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 70 on page 401):
  - 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 Figure 71 on page 402 and Figure 72 on page 403):
  - 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 Figure 73 on page 404 and Figure 74 on page 405).

**Figure 70**  
**Power monitor and SDI connections in the QCA55 cabinet**

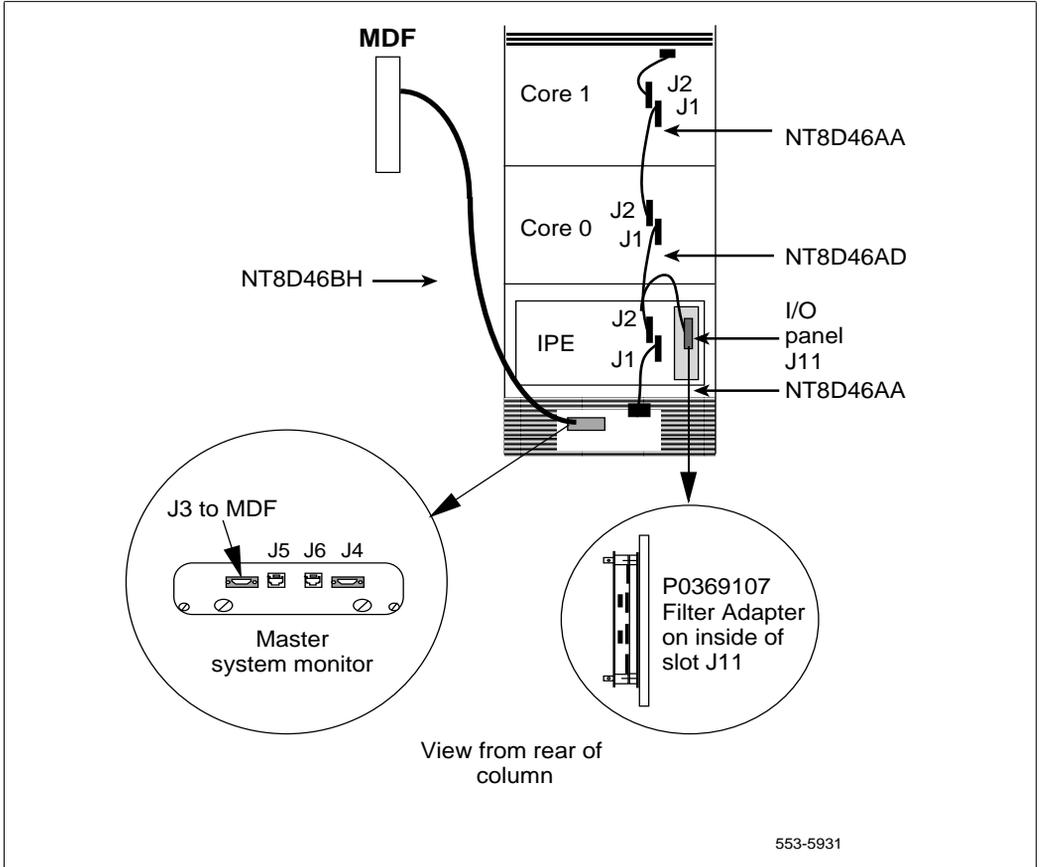


- 6 Connect the NT8D95BJ cable to location J11 on the right I/O panel in Core/Net 0.

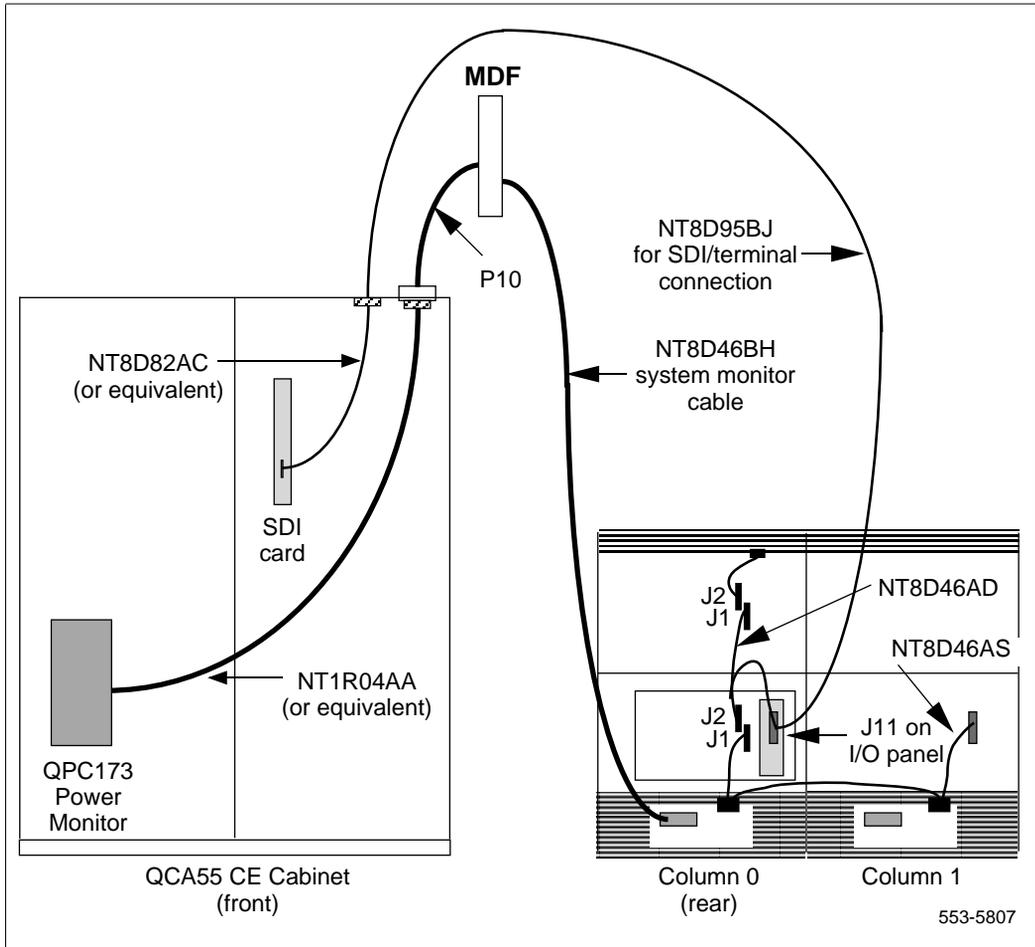
**Figure 71**  
**System monitor and SDI filter adapter connections in dual-column installations**



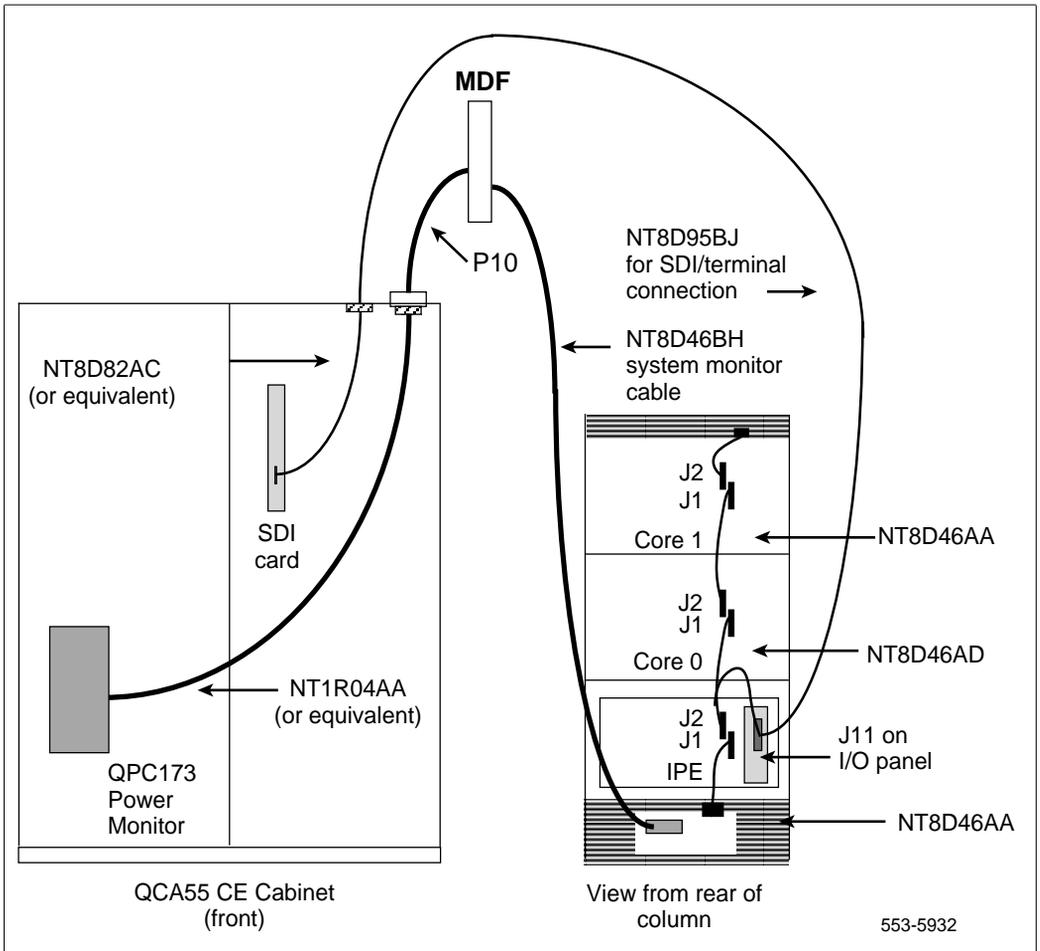
**Figure 72**  
**System monitor and SDI filter adapter connections in single-column installations**



**Figure 73**  
**System monitor and SDI connections between XT/71 and Core/Net modules**  
**in dual-column installations**

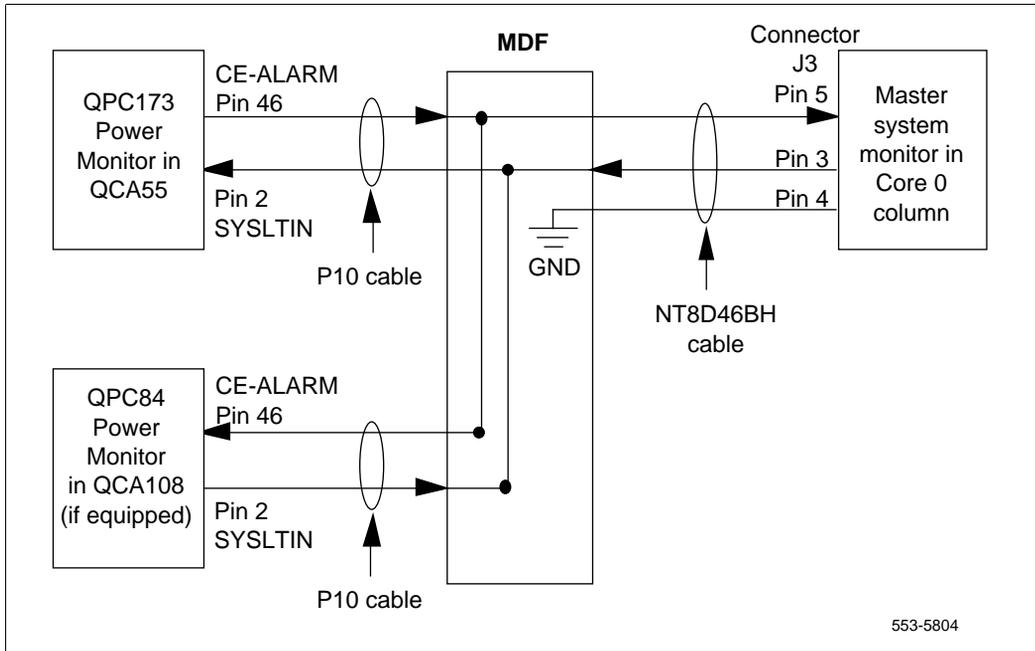


**Figure 74**  
**System monitor and SDI connections between XT/71 and Core/Net modules**  
**in single-column installations**



- 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 Figure 73 on page 404, Figure 74 on page 405, and Figure 75 on page 406):
  - 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 75**  
**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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## 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)
- *Administration* (553-3001-311)
- *Hardware Replacement* (553-3001-520)

## Upgrade outline

This section covers Core/Net and Network module upgrades from XT systems to Option 81C. The Core/Net and Network module upgrade consists of:

- Installing two Core/Net module columns.
  - One column will contain an NT8D36 InterGroup module.
  - At least one column will contain NT8D35 Network modules.
  - Additional columns may be installed optionally.
  - One or more columns may contain NT8D37 Intelligent Peripheral Equipment (IPE) modules for new, expanded IPE.
- Installing network to peripheral equipment cabling.
- Moving network components into Network modules.

To equip an XT Core/Net system upgraded to 81C with FNF, follow upgrade procedures “Option 81C upgrade to Fiber Network Fabric” on page 303.

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 software Release 25. Order replacements for equipment that does not comply. Refer to *Product Compatibility* (553-3001-156) for vintage requirements.

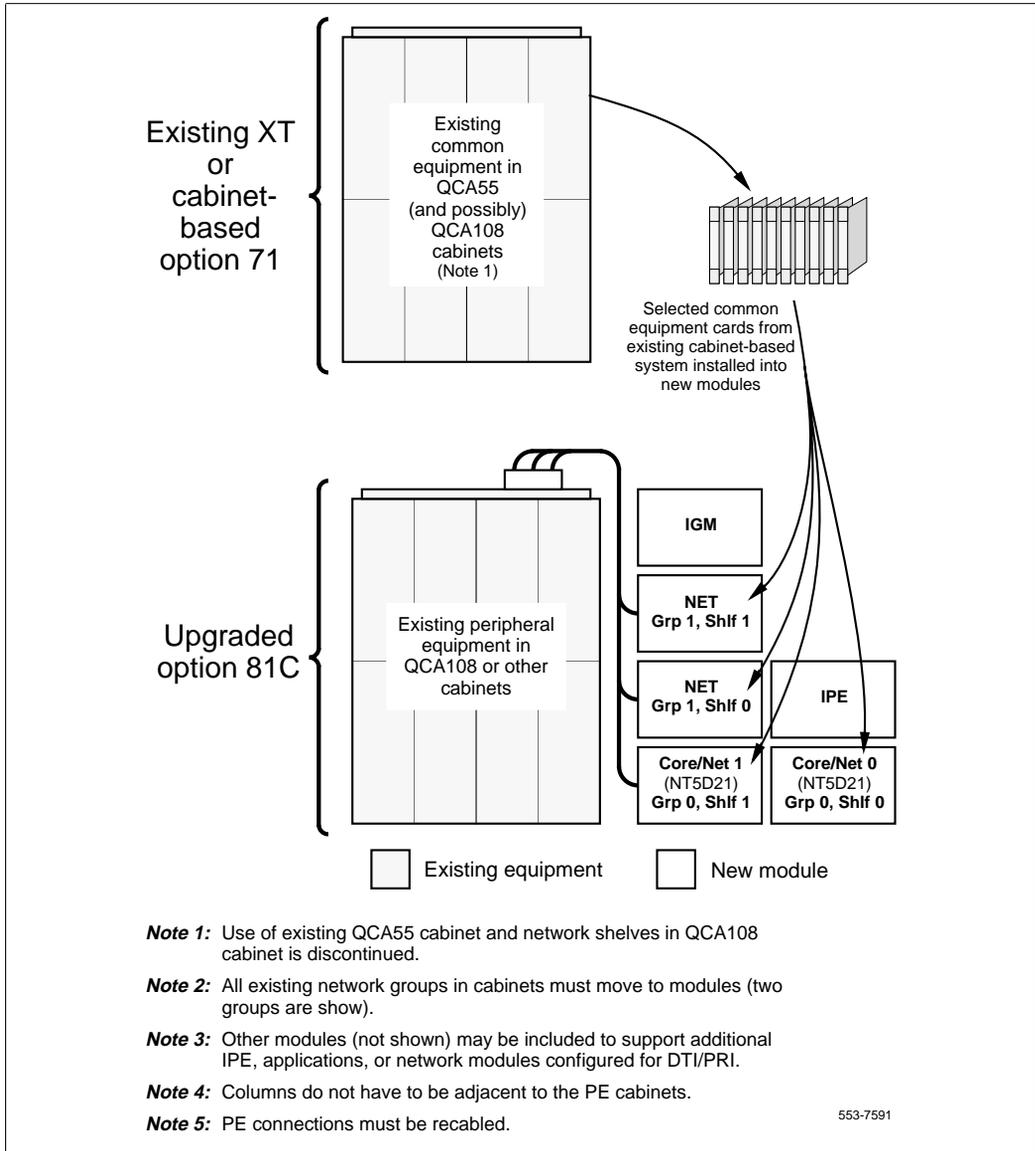
Verify that any existing QPC441 3-Port Extender cards in the system are vintage ‘F’ or later and that all 3PE cards in the system are the same vintage. Replace any 3PE card that is not vintage ‘F’ or later.

Verify that NTRB53 Clock Controller cards in the system are vintage A or later and 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:** NTRB53, QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

Figure 76 on page 412 shows the upgrade from an XT system to Option 81C.

**Figure 76**  
**Upgrade from an XT system to an Option 81C**



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

Table 61 on page 414 and Table 62 on page 416 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 61**  
**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 61**  
**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	NTRB53 or QPC775 or QPC471H	Clock Controller
1	QPC841C	Four-port SDI

**Note:** NTRB53 Clock Controller cards must be vintage A or later, 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.

**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 62**  
**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 62**  
**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	NTRB 35 or QPC471H or QPC775E	Clock Controller
1	QPC841	Four-port SDI

**Note:** NTRB53 Clock Controller cards must be vintage A or later, 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.

**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 NTRB53 Clock Controller cards in the system are vintage A or later and 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:** NTRB 53, 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 software 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 NTRB53 Clock Controller cards in the system are vintage A or later and 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



**CAUTION**  
**Loss of Data**

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

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

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

- 11** 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 Table 63 on page 422 and Table 64 on page 423).
- 6 Install a QPC441F 3PE card in slot 11 of each Core/Net module, but leave the cards unseated.

**Table 63**  
**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 64**  
**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).

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

#### Damage to Equipment

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.

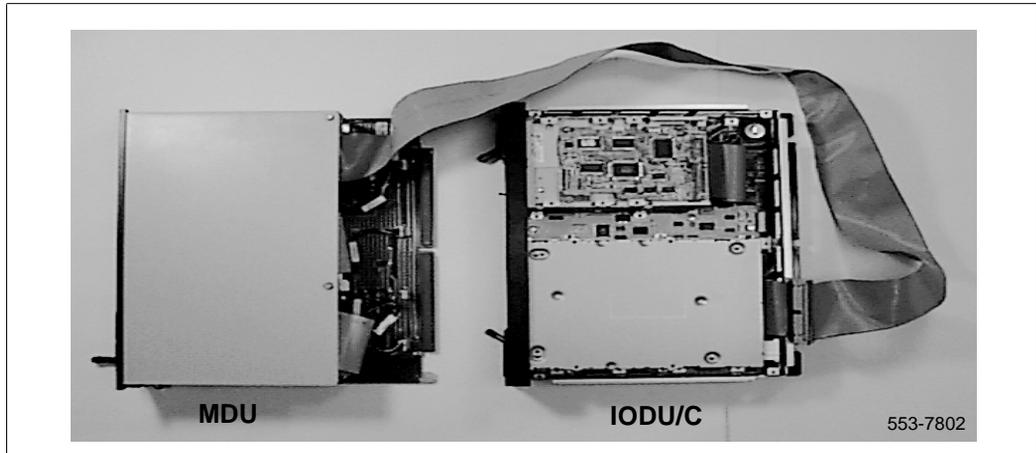
## MDU cabling

- 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 77 on page 426). 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 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.

**Figure 77**  
**Cabling the MDU to the IODU/C card**



- 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 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 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



**CAUTION**

**Loss of Data**

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

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

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

- 10 Set date and time:

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

- 11 Continue with “Configuring the system” on page 431.

## 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 65 on page 432.

**Table 65**  
**Option 81C CNI network group default configuration**

<b>CNI card slot</b>	<b>Port</b>	<b>Network group</b>
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 66 on page 433 to assist you in configuring the CNI network groups.

**Table 66**  
**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.		

- 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:

Prompt	Response	Comments
<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.

<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>ADAN</b>	<b>CHG aaa x</b>	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
<b>GRP</b>	<b>g</b>	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:

<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>PARAM</b>	<b>YES</b>	
...		
<b>500 B</b>	<b>1000</b>	use 1000 as a minimum value
...		
<b>NCR</b>	<b>2000</b>	use 2000 as a minimum value
...		
.	<b>****</b>	to exit the program

- 5 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
<b>****</b>	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
- 8 When “EDD000” appears on the terminal, enter:  
**EDD** to begin the data dump



**CAUTION**

**Loss of Data**

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

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

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

## 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 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.
- 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

**CAUTION****Loss of Data**

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

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

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

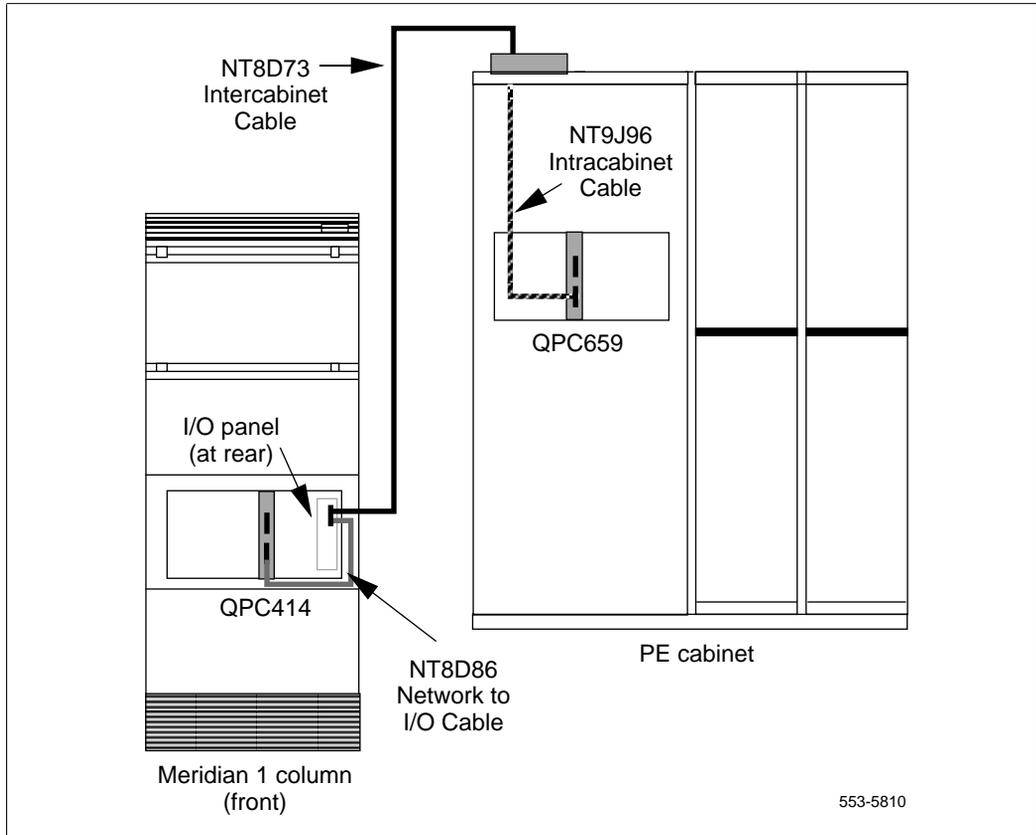
## 9 Installing network-to-PE cabling and connector housings

There are three cables for each network-to-PE connection (see Figure 78 on page 442):

- 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.

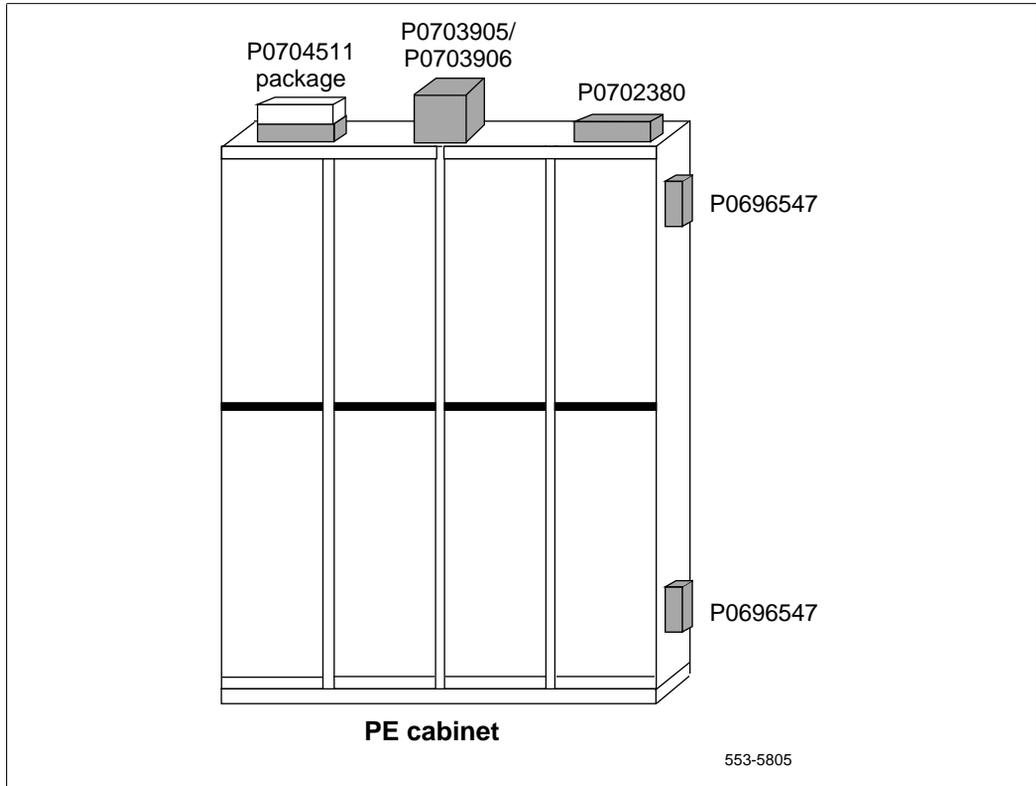
**Figure 78**  
**Cabling path for network-to-PE connections**



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 79 on page 444):

- 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 79**  
**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 456. 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 449
  - c. P0703905 / P0703906 Connector Housing unit: refer to “Mounting the P0703905/P0703906 Connector Housing” on page 452

P0704511 Connector Housing Package: refer to “Mounting the P0704511 Connector Housing Package” on page 454



**CAUTION**

**Damage to Equipment**

While mounting connector housings, do not drop screws or other hardware through the openings in the top panel.

**Mounting the P0696547 Connector Housing**

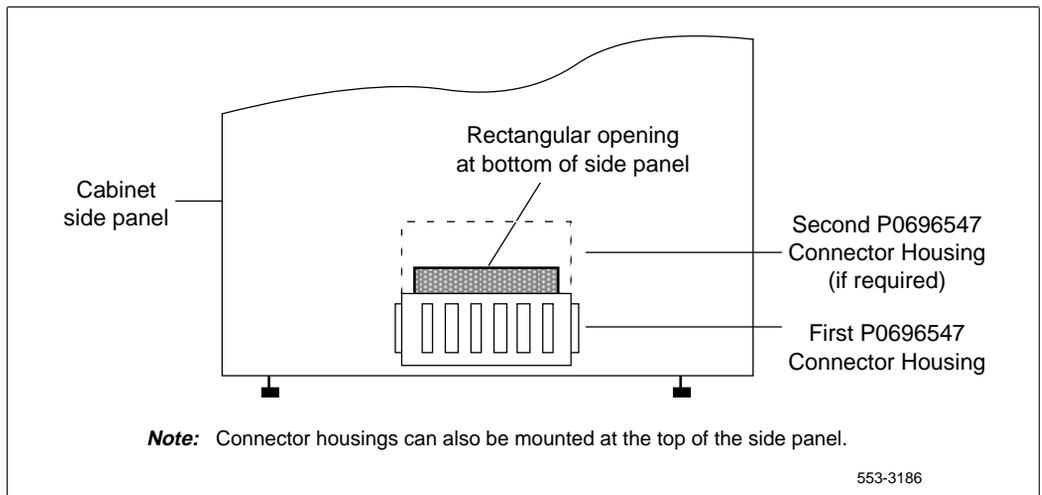
The following tools are required for drilling holes in the side panels when mounting the P0696547 Connector Housing:

- a drill with a #31 (.120 in.) bit capable of piercing sheet metal
- a center punch and hammer

Refer to Figure 80 on page 447 and Figure 81 on page 448 when installing the housings.

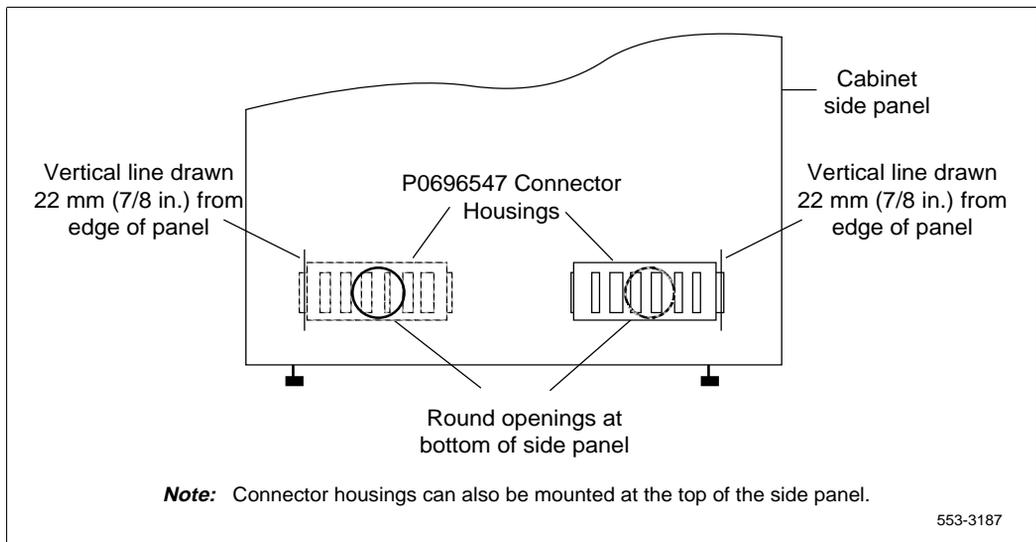
- 1 Remove the sliding cover or square cover (whichever is equipped) over the cable opening on the side panel of the cabinet.
- 2 Perform this step only if the opening is rectangular:
  - a. Center the P0696547 Connector Housing over the cutout area on the side panel.
  - b. If the opening is to be equipped 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 80 on page 447).
  - 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 80**  
**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 81 on page 448).

**Figure 81**  
**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.

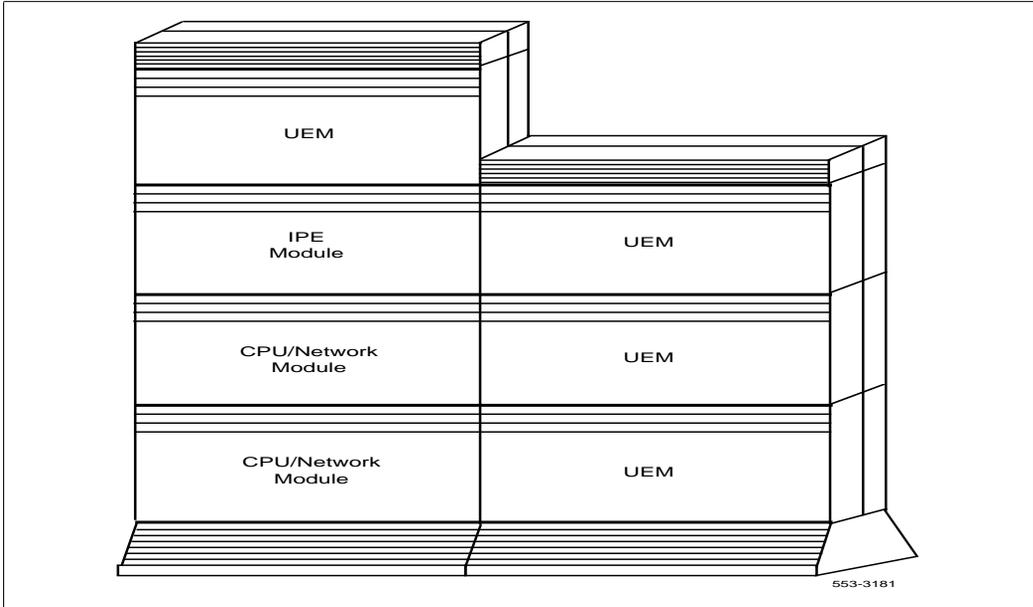
**7** Connect the NT8D73 cables from the Network modules to the outside of the P0696547 Connector Housing.

### **Mounting the P0702380 Connector Housing**

Refer to Figure 82 on page 450 and Figure 83 on page 451 while performing these steps:

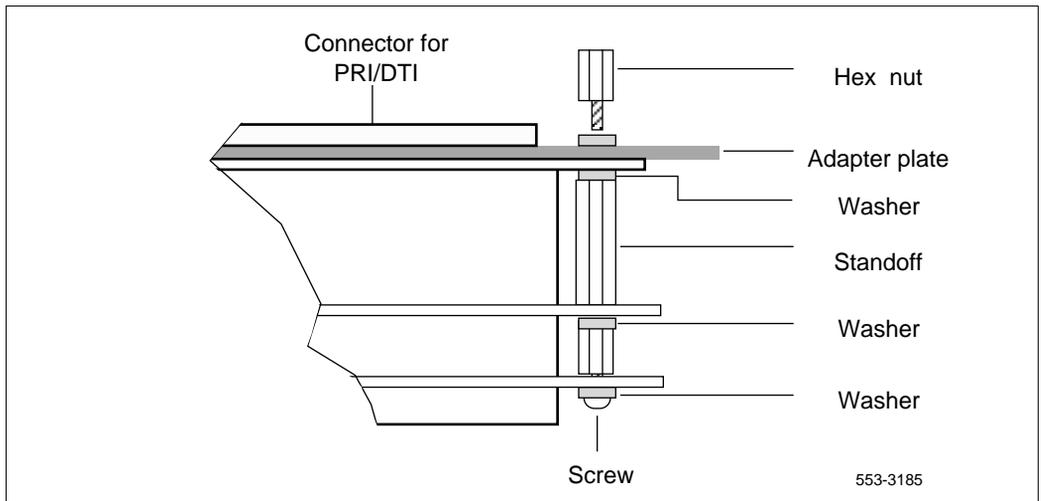
**1** On the top of the PE cabinet, remove the cover from the selected opening on the I/O panel. Keep the four screws for reuse.

**Figure 82**  
**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 83 on page 451).

**Figure 83**  
**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**

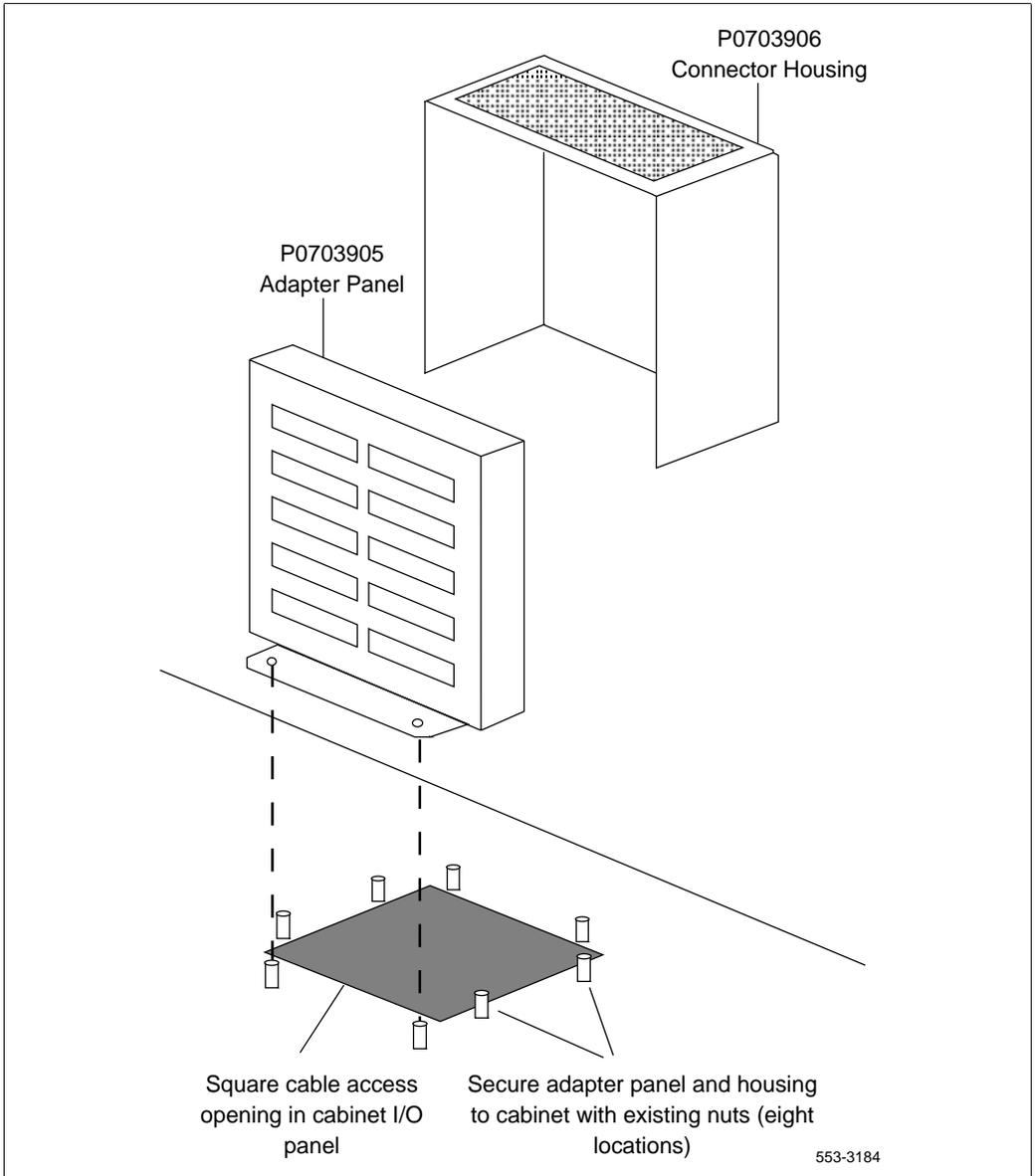
This unit is composed of the P0703905 Adapter Panel and P0703906 Connector Housing. Refer to Figure 84 on page 453.

- 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 84**  
**P0703905/P0703906 Connector Housing Unit**



### Mounting the P0704511 Connector Housing Package

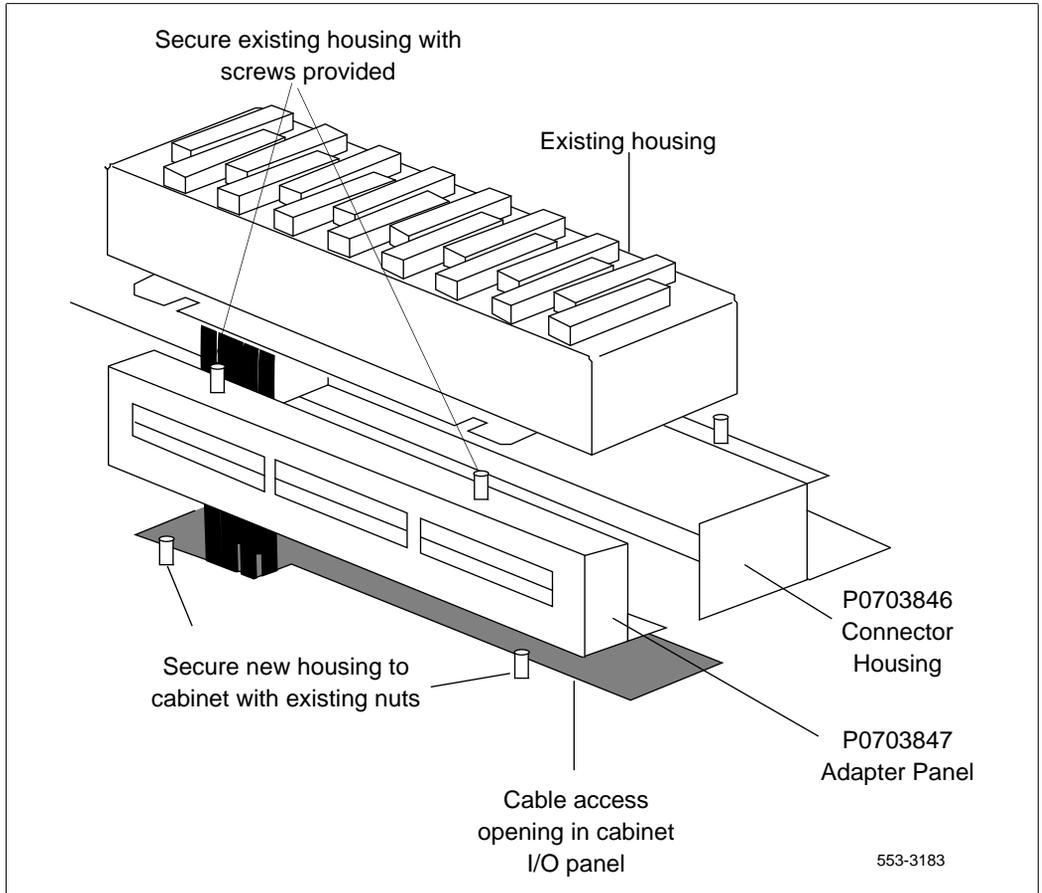
This package is composed of the P0703846 Connector Housing and P0703847 Adapter Panel. The P0704511 Connector Housing Package is placed underneath an existing connector housing. Refer to Figure 85 on page 455 while performing these steps.

- 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 85**  
**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” on page 456, 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 460.

### 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 67 on page 457). 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 67**  
**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.

- 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 68 on page 458). 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 68**  
**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.

- 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 69 on page 459.

**Table 69**  
**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.		

- 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.
- 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 464.

**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**

**Service Interruption**

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 70 on page 461). 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 1:** Install a new clock controller card; do not use one of the clock controller cards from the XT system.

**Note 2:** Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

**Note 3:** 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 70**  
**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.

- 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 71 on page 462). 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 71**  
**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
<p><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.</p>												

- 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 72 on page 463).

**Table 72**  
**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.		

- 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.
- 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 72 on page 463. 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 on page 463 through step 15 on page 464 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 801.

- 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



**CAUTION**  
**Loss of Data**

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

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

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

- 14** 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
- 15** 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
- 16** Remove any remaining cables that are no longer used.
- 17** Verify the system by using test procedures described in *System Installation Procedures* (553-3001-210) and *Administration* (553-3001-311). Clear any faults discovered during testing.
- 18** 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.



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# Option 21E upgrade to Option 61C

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## Contents

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## 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)
- *Administration* (553-3001-311)

## Upgrade outline



### **CAUTION**

#### **Service Interruption**

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 software 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.



### **CAUTION**

#### **Service Interruption**

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

Table 77 on page 530 and Table 74 on page 474 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 73**  
**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 73**  
**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	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 3)

**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:** 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.

**Note 4:** If the Option 61C will have PRI or DTI cards installed, you must have two NTRB53 Clock Controller cards (vintage A) or two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

**Table 74**  
**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

**Table 74**  
**Hardware requirements for a DC-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	NT8D52DD	Pedestal Blower Unit, DC
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	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 4)

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

**Note 2:** One NT6D42CC Ringing Generator, DC, must be added for each IPE module in which analog-type peripheral cards are to be used.

**Note 3:** 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.

**Note 4:** If the Option 61C will have PRI or DTI cards installed, you must have two NTRB53 Clock Controller cards (vintage A) or 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 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

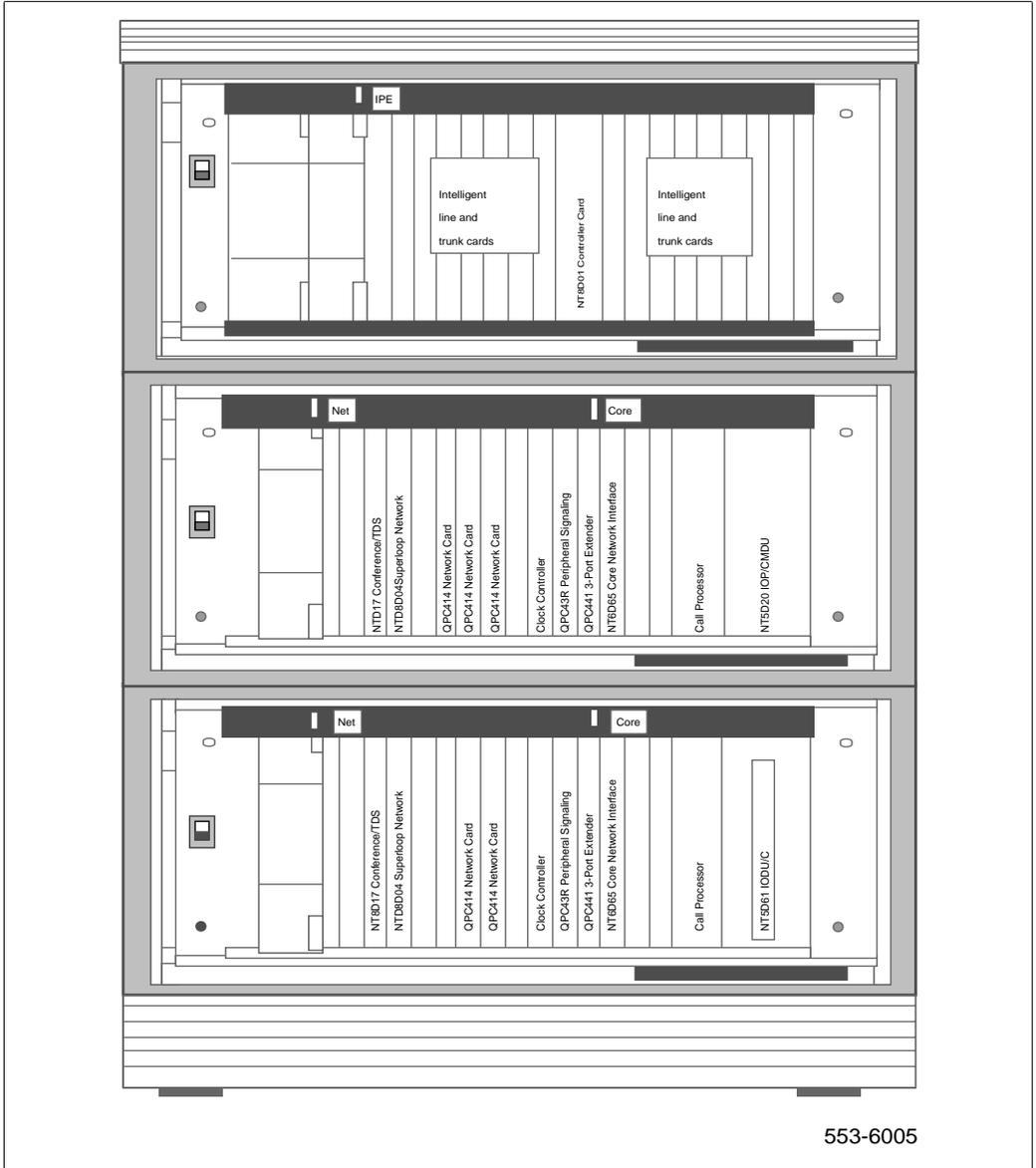
Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IOP/CMDUs and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 88 on page 509 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 511).

**Figure 86**  
**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



### CAUTION

#### Loss of Data

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

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

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

## Converting the customer database to Release 21

If the Option 21E is running software 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 483.

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****Service Interruption**

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



**CAUTION**

**Loss of Data**

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

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

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

- 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

**CAUTION****Loss of Data**

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

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

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

- 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



**CAUTION**

**Loss of Data**

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

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

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

24 Verify the system by using the test procedures described in *System Installation Procedures (553-3001-210)* and *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” on page 483.

## Converting the SL-1 hardware



### CAUTION

#### Service Interruption

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 *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 *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 *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 *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

**CAUTION****Loss of Data**

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

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

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

7    Remove the database diskettes from the disk drives in the Option 21E.

### **IODU/C cabling**



#### **CAUTION**

##### **Damage to Equipment**

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.

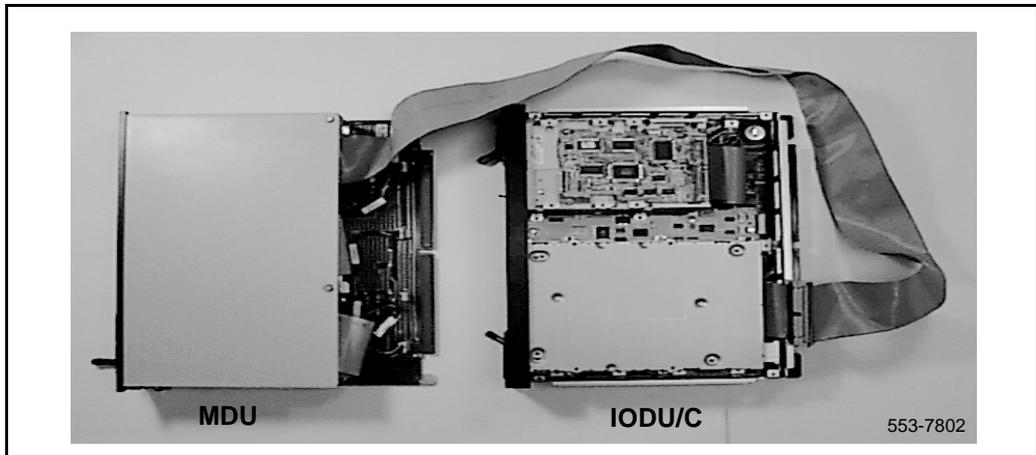
## MDU cabling

- 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 87 on page 488). 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 87**  
**Cabling the MDU to the IODU/C card**



- 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 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 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

**CAUTION****Loss of Data**

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

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

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

- 10 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
------------	------------------------



#### **CAUTION**

##### **Loss of Data**

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

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

<b>****</b>	to exit the program
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## **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 *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 *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 software Release 25 system is now operational. Install all module covers to complete the upgrade.

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# Option 51 upgrade to Option 61C

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## Contents

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## 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)
- *Administration* (553-3001-311)

## Upgrade outline



### **CAUTION**

#### **Loss of Data**

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 software 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**

Table 75 on page 504 and Table 76 on page 506 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 75**  
**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 75**  
**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	NTRB53 or QPC471H or QPC775	Clock Controller cards (see note 4)

**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:** 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.

**Note 4:** If the Option 61C will have PRI or DTI cards installed, you must have two NTRB53 Clock Controller cards (vintage A) or two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

**Table 76**  
**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.)

**Table 76**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
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	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 4)

**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:** 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.

**Note 4:** If the Option 61C will have PRI or DTI cards installed, you must have two NTRB53 Clock Controller cards (vintage A) or two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

### **Installing Option 61C hardware**

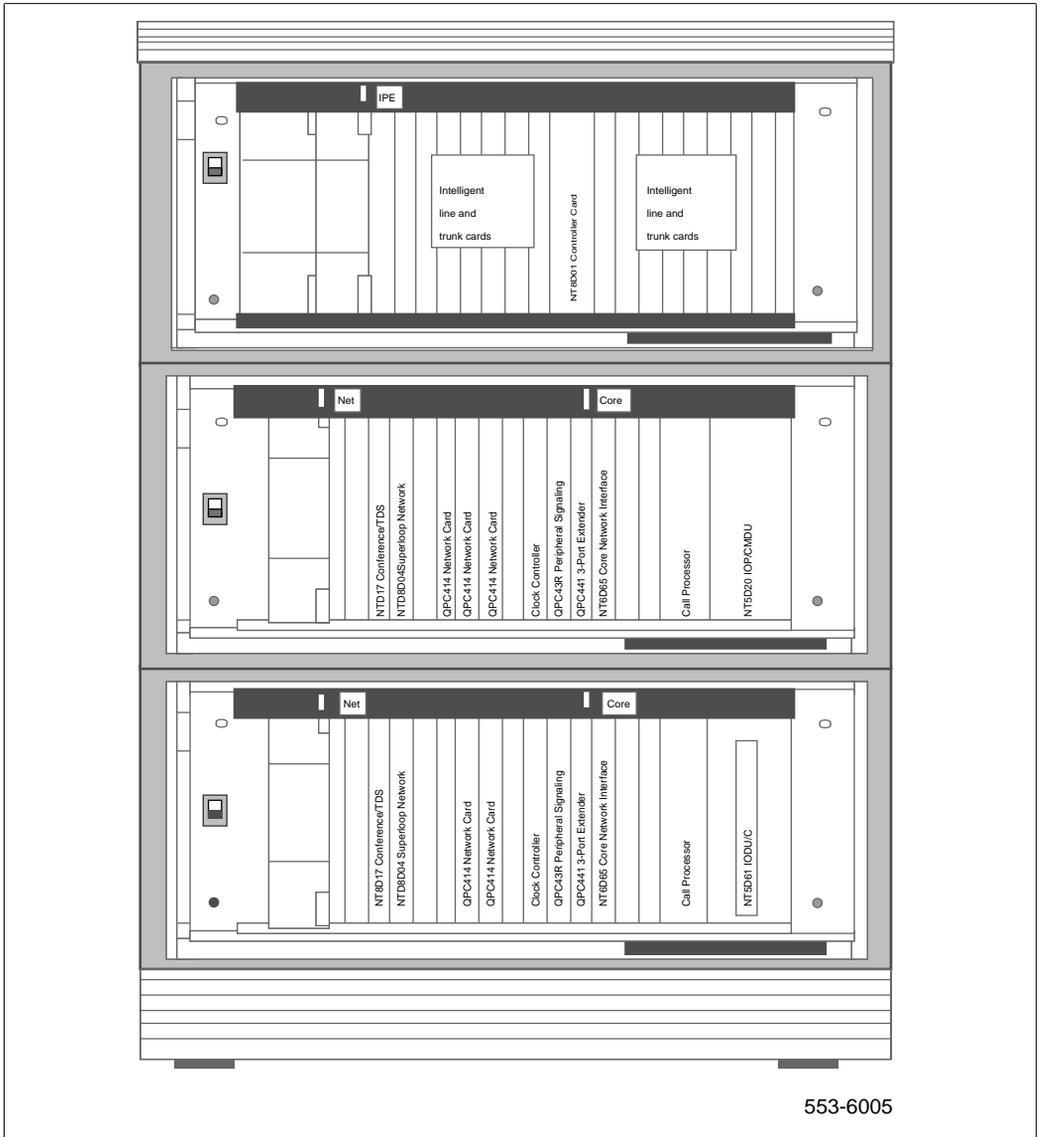
The Option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 88 on page 509 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 511).

**Figure 88**  
**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



#### **CAUTION**

##### **Loss of Data**

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

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

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

### Converting the hardware



#### **CAUTION**

##### **Service Interruption**

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 801.
  - 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****Damage to Equipment**

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.

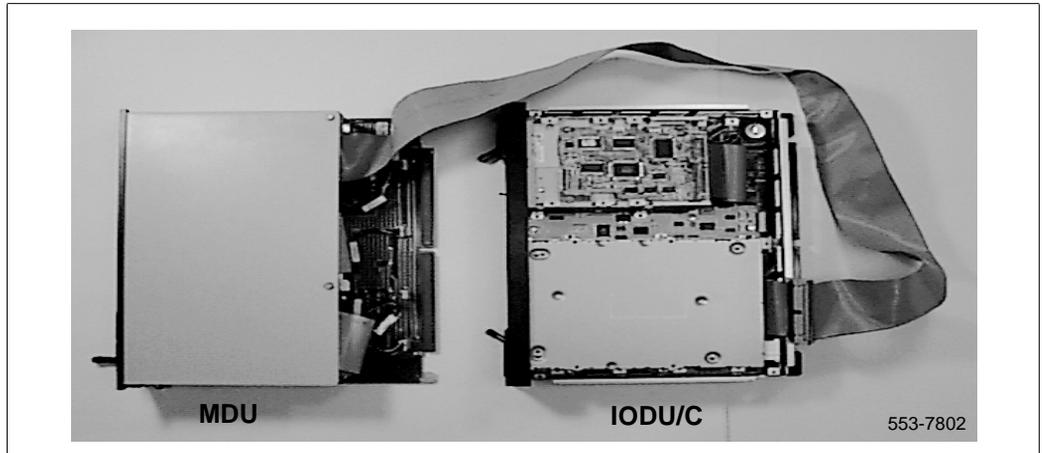
## MDU cabling

- 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 89, on page 515). 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 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.

**Figure 89**  
**Cabling the MDU to the IODU/C card**



- 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 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 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



**CAUTION**

**Loss of Data**

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

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

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

- 10   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 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.

- 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.

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
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**CAUTION**

**Loss of Data**

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

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

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

## 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 *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 *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 software Release 25 system is now operational.

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# Option 51C upgrade to Option 61C

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## Contents

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## 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)

## Upgrade outline



### **CAUTION**

#### **Service Interruption**

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 software 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**

Table 77 on page 530 and Table 78 on page 532 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.

## 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.

**Table 77**  
**Hardware requirements for an AC-powered Option 61C (Part 1 of 2)**

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
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 77**  
**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	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	NTRB53 or QPC471H or QPC775E	Clock Controller cards (see note 5)

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

**Note 2:** 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.

**Note 3:** One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.

**Note 4:** 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.

**Note 5:** If the Option 61C will have PRI or DTI cards installed, you must have two NTRB53 Clock Controller cards (vintage A) or two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

**Table 78**  
**Hardware requirements for a DC-powered Option 61C (Part 1 of 2)**

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 2 2	NT9D19 or NT5D10 or NT5D03	Call Processor cards (CP) (see note 1)
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
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.)

**Table 78**  
**Hardware requirements for a DC-powered Option 61C (Part 2 of 2)**

Qty	Part number	Description
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	NTRB53 or QPC471H QPC775E	Clock Controller cards (see note 5)

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

**Note 2:** 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.

**Note 3:** One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.

**Note 4:** 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.

**Note 5:** If the Option 61C will have PRI or DTI cards installed, you must have two NTRB53 Clock Controller cards (vintage A) or two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.

### **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**

##### **Loss of Data**

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 536.

**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



#### **CAUTION**

##### **Loss of Data**

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

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

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

### 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**  
**RELEASE xx.xx TO Release 25.xx**

- 14 Confirm that the 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 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:

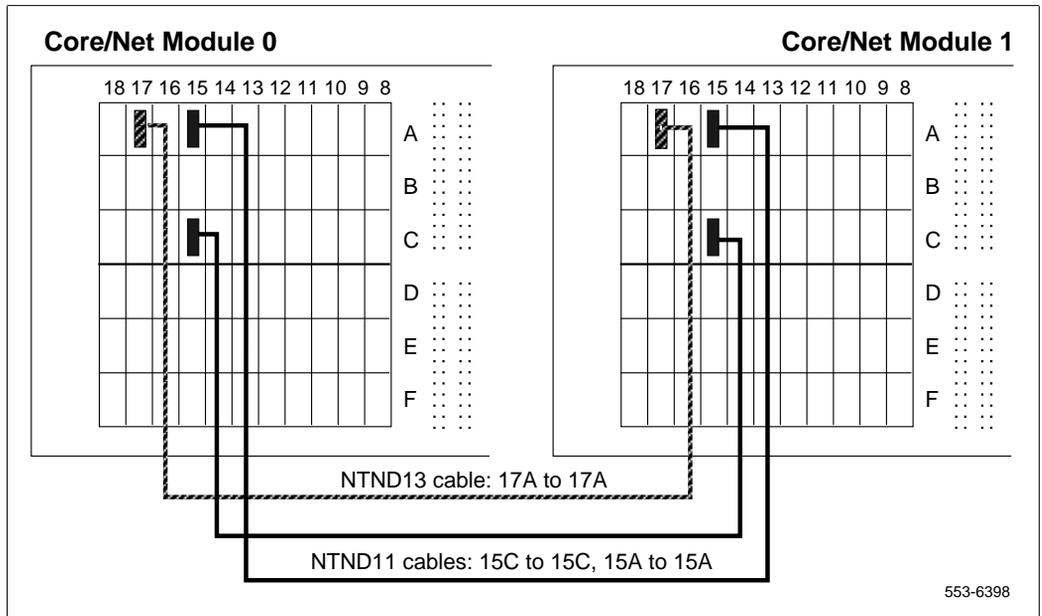
- e. Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
  - f. Verify that all cables are properly and securely connected in the front and rear of the module.
  - 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 90 on page 541.

## 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.)

**Figure 90**  
**NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables**



- 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

- 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
--------------	---------------------

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

<b>EDD</b>	to begin the data dump
------------	------------------------



**CAUTION**  
**Loss of Data**

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

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

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

**8** 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

**9** 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 load the program  
**TRCK aaa** if necessary, to set tracking  
**ENLL loop** to enable the specified network loop and associated PRI/DTI card  
 \*\*\*\* to exit the program

**10** 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

**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 51/51C upgrade to Option 81C CP PII with FNF

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## Reference list

The following are the references in this section:

- *System Installation Procedures (553-3001-210)*
- *Maintenance (553-3001-511)*

## Upgrade outline

Options 51 and 51C can be upgraded to Option 81C only with both Call Processor PII (CP PII) and Fiber Network Fabric. Upgrades from Option 51 or 51C to CP PII alone or to Fiber Network Fabric alone are not supported.

This upgrade takes an Option 51 or 51C to a two group Option 81C with CP PII and Fiber Network Fiber. Additional groups may be added by following the procedure “Add a Network Group to Option 81C with FNF” on page 893.

## Overview of Option 51/51C to CP PII with FNF upgrade

To upgrade an Option 51C system to CP PII with Fiber Network Fabric:

- The card cage in the existing Core/Net module is replaced with a CP PII card cage.
- An additional CP PII Core/Net module is installed to the left of the existing equipment.

**Note:** Always install CP PII Core/Net modules side by side directly on top of the pedestals. This ensures power and cooling redundancy as well as proper cooling from the pedestal fans.

- New CP PII cards are located in the Core side of the Core/Net module or card cage.
- Existing network cards are relocated to the CP PII card cage.
- Two new Network modules are installed on top of the new CP PII Core/Net module. This provides the new system with a minimum of two full Network groups.
- The existing Clock Controller is moved from the Core/Net to a Network shelf.
- New cards for Fiber Network Fabric are added: NTRB33 Fiber Junctor Interface (FIJI) card and the NTRE39 Optical Cable Management Card (OCMC).
- An IPE module may be installed on the top of the new column.



**CAUTION**

**Service Interruption**

To perform this upgrade, the system must be shut down. Schedule the upgrade procedure for a time when the loss of call processing has minimal impact.

Figure 91 on page 551 shows an upgrade from an Option 51C to Option 81C with Call Processor PII and Fiber Network Fabric.

Figure 92 on page 552 shows the layout of a CP PII Core/Net Module

**Figure 91**  
**Option 51C upgrade to CP PII**

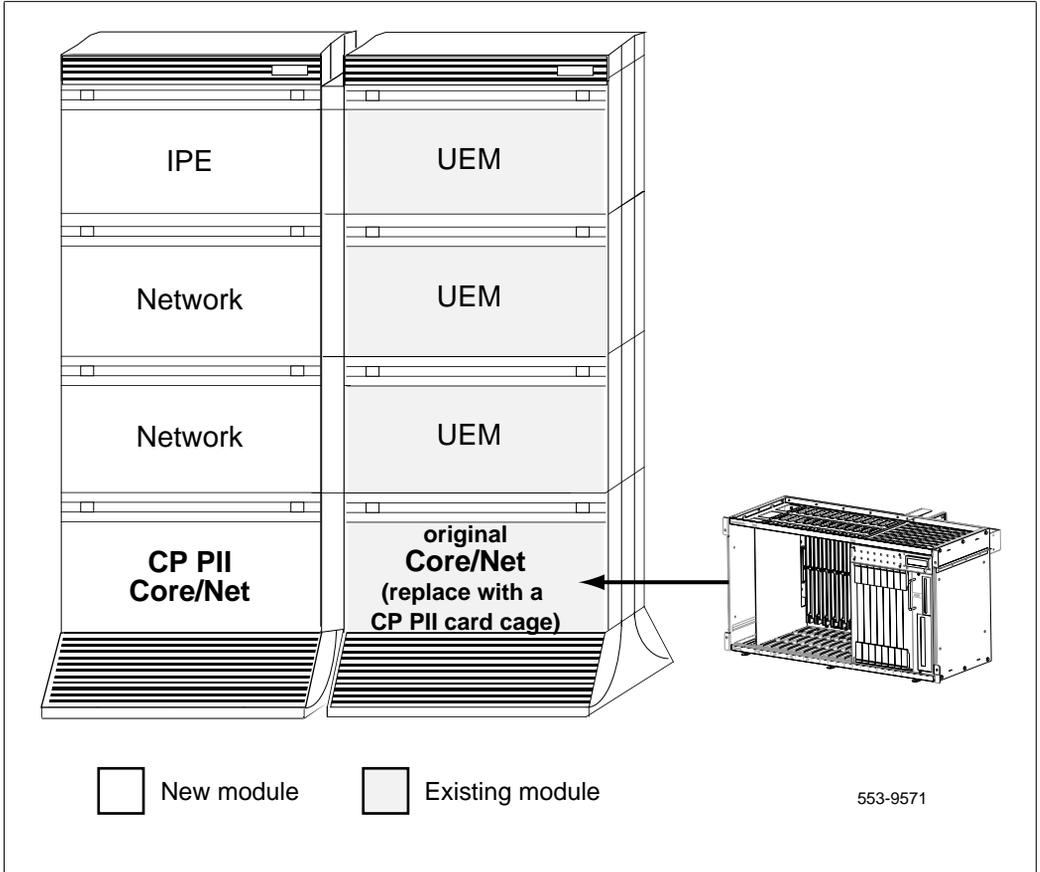
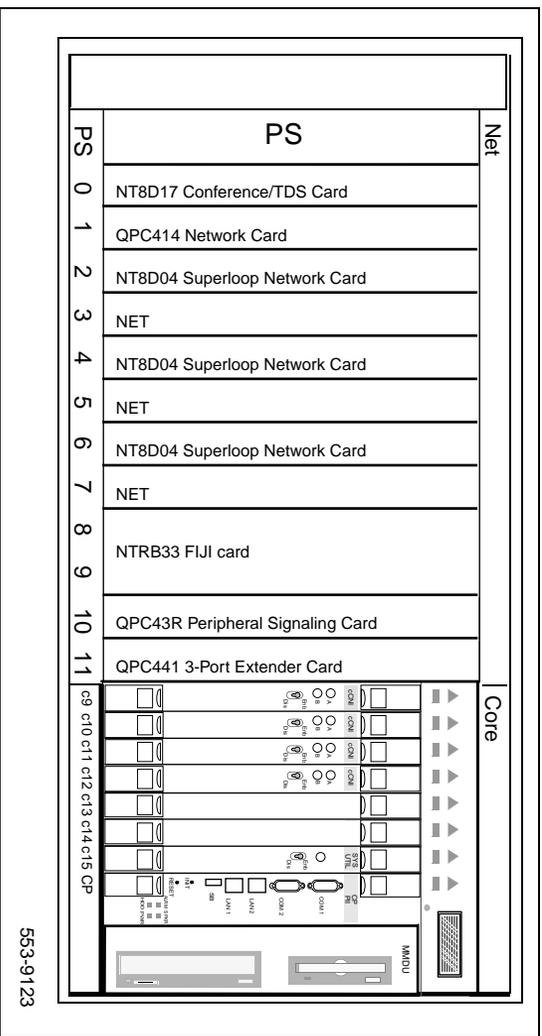


Figure 92  
CP PII Core/Net Module



553-9123

## Review upgrade requirements

- “Check personnel requirements” on page 559
- “Database requirements” on page 559

This section describes the **minimum** equipment required for CP PII. Additional equipment may also be installed during the upgrade. Verify that *all* equipment has been received.

### Check equipment received

Before the upgrade, check that the equipment on the order form is also on the packing slip. Check that all equipment has been received. If any items are missing, contact your supplier for replacements before you begin the upgrade.

**CAUTION****Service Interruption**

DO NOT proceed with the upgrade if any of the required equipment is missing. All equipment must be received to complete the upgrade.

### Check required software

The following software packages are required to upgrade a system to Option 81C with CP PII:

- software Release 25
- Call Processor PII software package 368
- Fiber Network Fabric software package 365
- Option 81C Software Package 299
- Software Install Kit

## Check vintage requirements for existing hardware

Check the list below to make sure that existing hardware meets the minimum vintage requirements for CP PII.

If any of the equipment listed does not meet the requirements, replace the equipment before you begin the upgrade.



### **CAUTION**

#### **Service Interruption**

Equipment that does not meet the minimum vintage requirements will cause system malfunctions and loss of call processing.

- The QPC441 3-Port Extender (3PE) cards must be minimum vintage F.
- The NTRB53 Clock Controller cards must be minimum vintage A.
- The QPC471 Clock Controller cards must be minimum vintage H.
- The QPC775 Clock Controller cards (all countries except USA) must be minimum vintage E.
- If the Clock Controllers are moved in Option 51 or 51C systems, the new Clock Controller cables must be the correct length. Order new NT8D79 or NTCG03 PRI/DTI to Clock Controller cables if necessary.

*Note:* QPC720 PRI cards require NT8D79 cables. NT5D12 Dual PRI/DTI cards require NTCG03 cables.

- The QPC43 Peripheral Signaling cards must be minimum vintage R.

## Check required hardware

Table 79 on page 555 describes the *minimum* equipment required to upgrade a system to CP PII. Table 80 on page 558 and Table 81 on page 558 list the DC and AC power equipment requirements. Additional equipment for increased Network capacity is ordered separately.

**Table 79**  
**Minimum requirements for Option 51 and 51C systems (Part 1 of 3)**

Order number	Description	Quantity per system
NT4N64AA	CP PII Call Processor Card (256MB Memory)	2
NT1R91AA	Modem Kit	1
NT4N43AA	cPCI Multi-Media Disk Unit	2
NT4N46AA	cPCI Core/Network Card Cage AC/DC	2
NT4N65AB	cPCI Core Network Interface Card (2 ports)	2
NT4N66AB	cPCI Core Network Interface Transition Card	2
NT4N67AA	cPCI System Utility Card	2
NT4N68AA	cPCI System Utility Transition Card	2
NT4N6809	Security Device Holder	2
NT4N88AA	CP PII to I/O Panel DTE Cable (48 in.)	2
NT4N88BA	CP PII to I/O Panel DCE Cable (48 in.)	2
NT4N89AA	System Utility to System Monitor Cable	2
NT4N90AA	CP PII to I/O Panel Ethernet Cable (48 in.)	2
NT8D01BC	Controller - Four Card	1
NT8D04BA	Superloop Network Card	
NT8D17FA	Conference/TDS Card	
NT8D22AC	System Monitor	

**Table 79**  
**Minimum requirements for Option 51 and 51C systems (Part 2 of 3)**

Order number	Description	Quantity per system
NT8D35BA/ NT8D35EA	Network Module AC/ Network Module DC	2
NT8D37BA/ NT8D37EC	Intelligent Peripheral Equipment Module AC/ Intelligent Peripheral Equipment Module DC	1
NT8D41BA	Quad SDI Paddle Board	1
NT8D46AD	System Monitor to SDI Cable (60 in.)	1
NT8D46AL	System Monitor Serial Link Cable (7 ft.)	1
NT8D46AS	System Monitor InterCPU Cable (30 in.)	1
NT8D49AA	Column Spacer Kit (2.75 in.)	
NT8D76BE	IGS to IGM or cCNI to 3PE Cable (6 ft)	2
NT8D76BF	IGS to IGM or cCNI to 3PE Cable (10 ft)	2
NT8D80BZ	CPU Interface Cable (5 ft.)	
NT8D84AA	SDI Paddleboard to I/O Cable (18 in.)	
NT8D90AF	SDI Multi-Port Extension Cable (10 ft)	
NT8D91AD	Network to Controller Cable (6 ft)	
NT8D99AB	CPU to Network Cable (2 ft)	2
NT8D99AD	CPU to Network Cable (6 ft)	2
NT9D18AA	Module Side Cover	
NTRB33AA	Fiber Junctor Interface (FIJI) Card	

**Table 79**  
**Minimum requirements for Option 51 and 51C systems (Part 3 of 3)**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NTRC17AA	CP PII Ethernet to Ethernet Cable (8.5 ft)	2
NTRC46BB	Clock - FIJI Cable (1.7M - 2.4M (5.5 ft - 8 ft))	
NTRC47AA	FIJI - FIJI Synch Cable	
NTRC48AA	FIJI Fiber Ring Cable (2M (6 ft))	
NTRC49AA	Clock - Clock Symch Cable	
NTRD25AA	AC Pedestal Assembly	
NTRE39AA	Optical Cable Management Card (OCMC)	
NTRE40AA	Dual Ethernet Adapter (RJ45) for I/O Panel	2
P0745716	Rear I/O Panel	2
P0906308	cPCI Card Slot Filler Panel	16

## Check required power equipment

- Table 80 on page 558 lists the equipment required for DC powered systems.
- Table 81 on page 558 lists the equipment required for AC powered systems.

**Table 80**  
**DC power requirements for Option 51/51C upgrades**

Order number	Description	Quantity per system
NT6D41CA	Core/Network Power Supply DC	2
NT4N97BA	cPCI Upgrade Kit DC (Misc. Card Cage Components)	2

**Table 81**  
**AC power requirements for Option 51/51C upgrades**

Order number	Description	Quantity per system
NT8D29BA	Core/Network Power Supply AC	2
NT4N97AA	cPCI Upgrade Kit AC (Misc. Card Cage Components)	2

## **Check required tools**

With standard tools required to service a Meridian 1, use the following special tools for the upgrade:

- a 12" long, 3/8" hex head nut driver (to secure the screws in the back of the card cage)
- a flashlight

## **Check personnel requirements**

Nortel Networks recommends that a minimum of two people perform the card cage upgrade.

## **Database requirements**

Option 51 systems must be sent to Nortel Networks for software conversion.

If your software is pre-Release 19, you must send the database to Nortel Networks to be converted.

## Prepare for upgrade

Follow the list of instructions under the heading for “Prepare for upgrade for Option 51/51C to CP PII and FNF” on page 22 and return to “Install Core 1 hardware” on page 560.

## Install Core 1 hardware

### Install the new column

After completing the steps in “Prepare for upgrade” on page 560, you must install the new column.

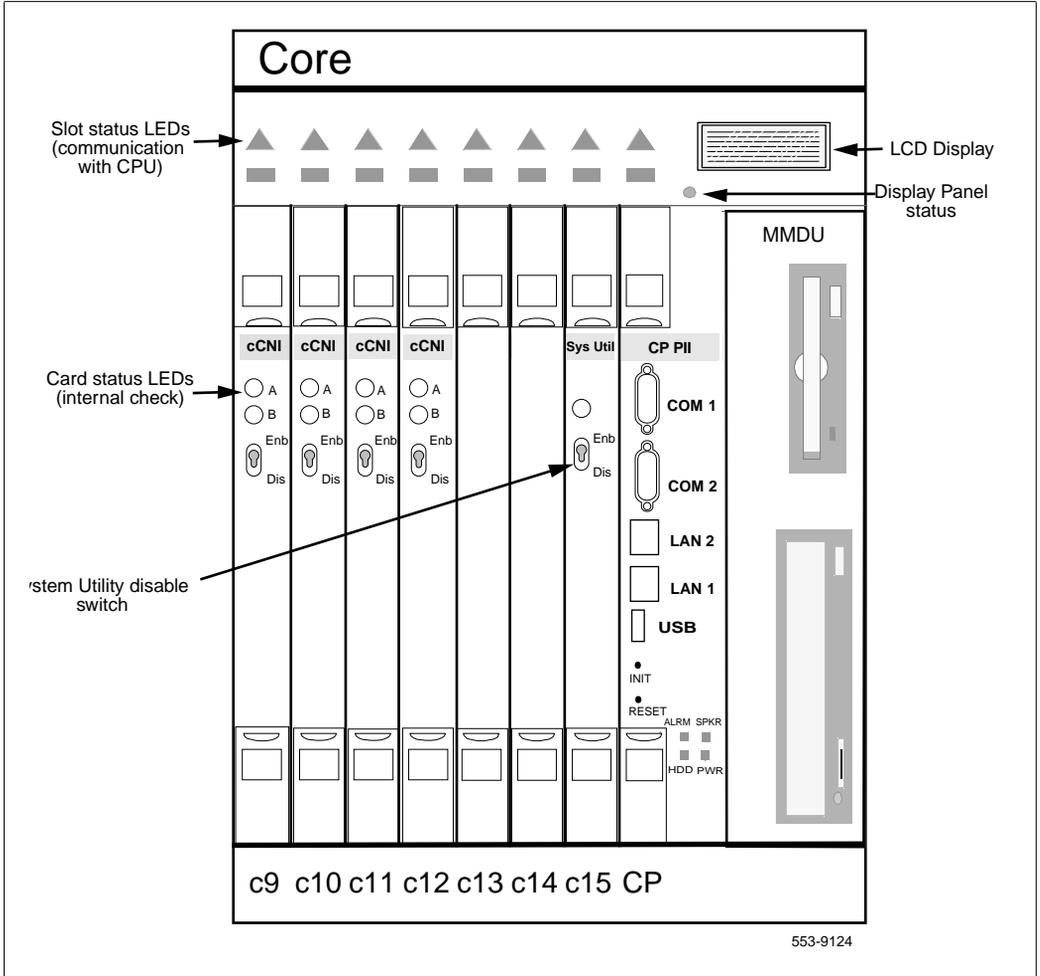
- 1        Install the NT4N41 CP PII Core/Net 1 module to the left of the existing Core/Net 0 column. See *System Installation Procedures (553-3001-210)*, *Adding a module to the base of a column*.
- 2        Configure the power and System Monitor connections. See *System Installation Procedures (553-3001-210)*, *Configure the system monitor*.
- 3        Install two NT8D35 Network modules on top of the CP PII Core/Net 1 module. See *System Installation Procedures (553-3001-210)*, *Adding a module to a column*.

### Check that the main Core cards are installed

The main Core cards including the MMDU (with the cables for power and data) are installed in the factory (see Figure 93 on page 561):

- **NT4N65AB cPCI Core Network Interface (cCNI) cards:** Each system contains between one and four NT4N65 cCNI cards per Core/Net Module. The cCNI cards are located in slots c9-c12. If not already installed, install a P0906308 cPCI Card Slot Filler Panel to cover any of slots c10 - c 12 which do not contain cCNIs.
- Slots c13 and c14 are left empty. If not already installed, install a P0906308 cPCI Card Slot Filler Panel in each slot.
- **NT4N67AA System Utility (Sys Util) card** is located in slot c15.
- **NT4N64AA Call Processor PII (CP II)** is located in the slot marked CP.
- **NT4N43AA cPCI Multi-Media Disk Unit (MMDU)** is located in the extreme right hand slot next to the CP PII card. The MMDU contains the hard drive, floppy drive and CD-ROM drive.

**Figure 93**  
**Core card placement in the NT4N41 Core/Net Module (front)**



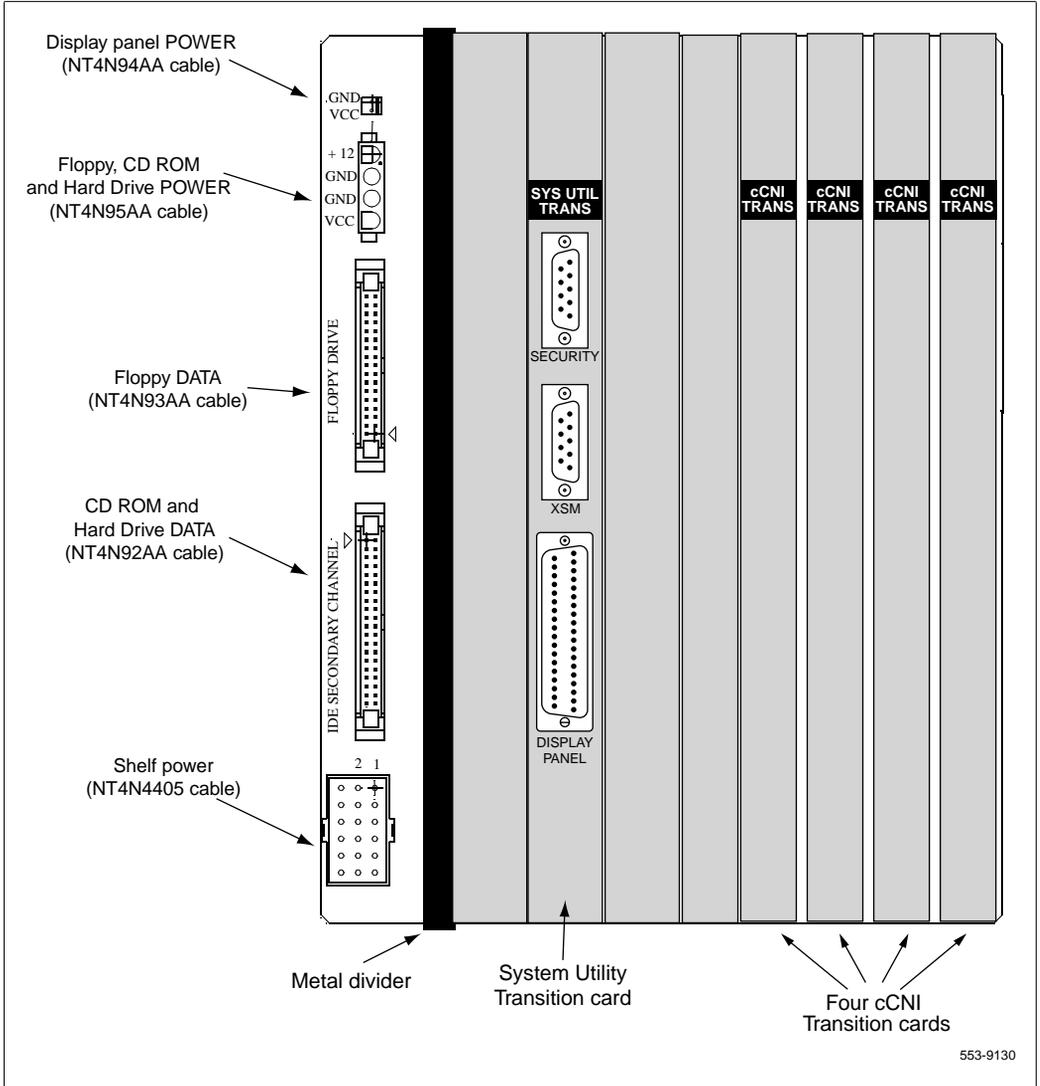
## Check that the Core Transition cards are installed

The Core Transition cards are located directly behind the corresponding main cards (on the rear of the Core backplane). Core Transition cards are installed in the factory:

- **NT4N66AB cCNI Transition Cards:** Each system contains four cCNI Transition cards.
- **NT4N68AA System Utility Transition card:** The System Utility Transition card is installed directly behind the System Utility card and contains connections for the Security Device, the System Monitor (XSM) and the Display Panel.

Figure 94 on page 563 displays the location of the Core Transition cards.

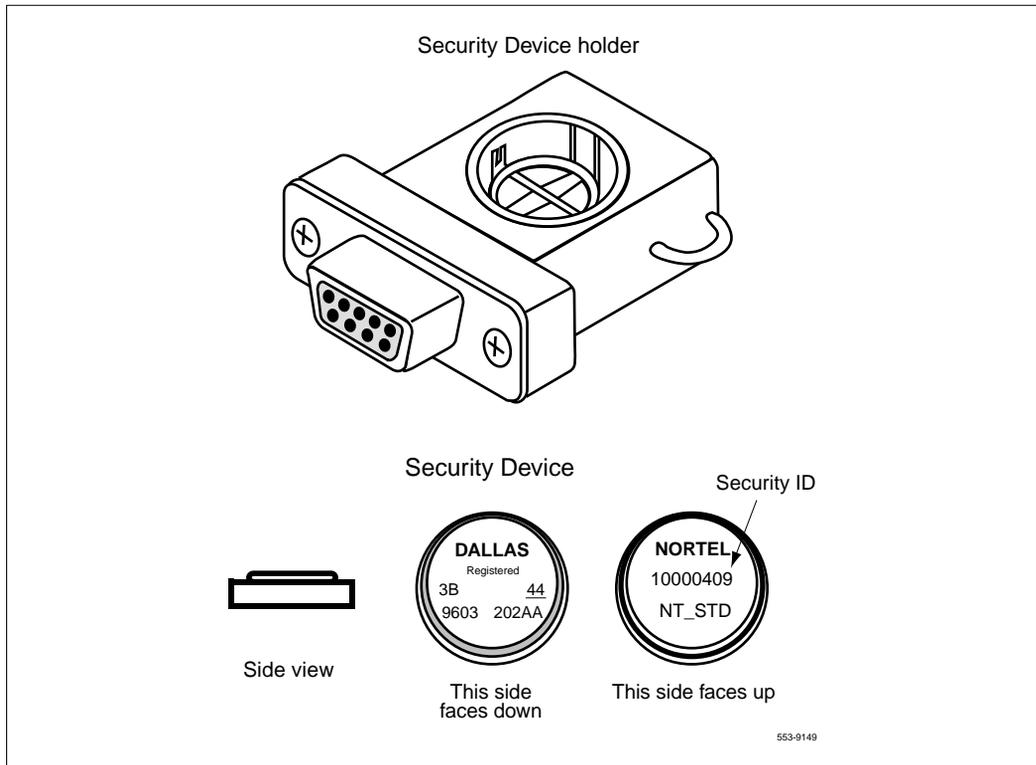
**Figure 94**  
**Location of Transition cards**



## Install the Security Device

The Security Device fits into the Security Device holder (see Figure 95 on page 564). This assembly attaches to the System Utility Transition card located on the back of the core backplane.

**Figure 95**  
**Security Device and holder**



To install the Security Device:

- 1** If the original system had an IODU/C, remove the Security Device from the IODU/C for reuse.
  - a.** Unlock the latches and remove the IODU/C card.
  - b.** Remove the round 1/2" diameter IODU/C Security Device from the round black Security Device holder on the top right corner of the IODU/C card.

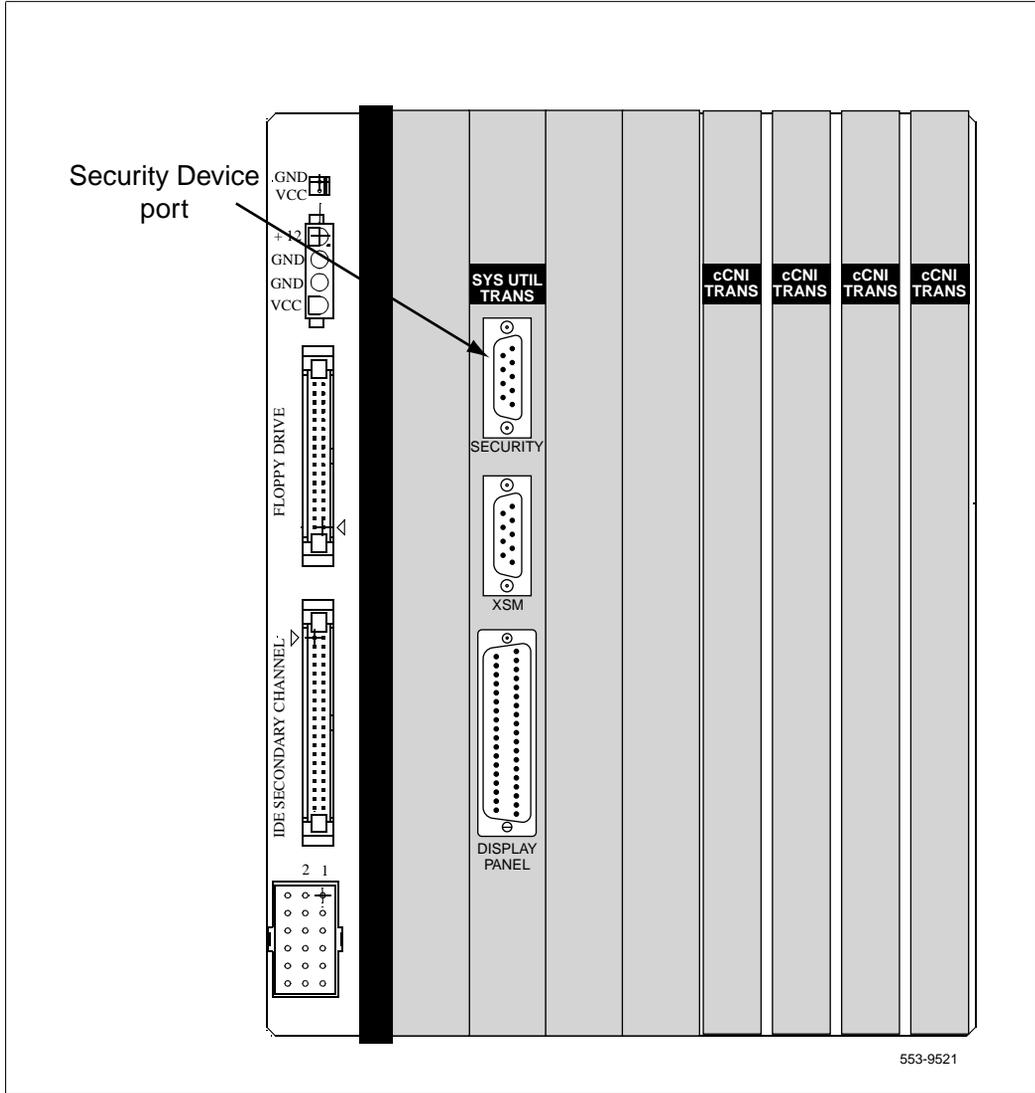
Or

If the original system did not have an IODU/C, use the Security Device provided with the CP PII Software kit.

Locate the Security Device holder in the plastic bag taped to the top of the card cage.

- 2** Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.
- 3** Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 96 on page 566).
- 4** Check that the Security Device is securely in place.

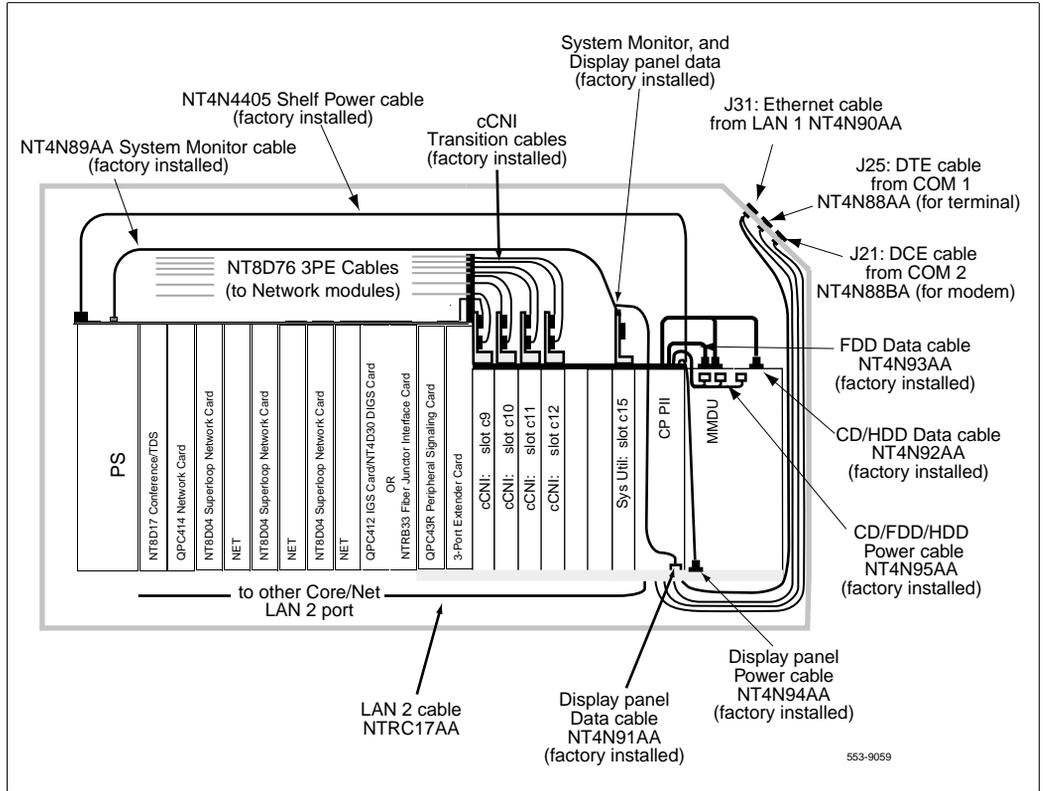
**Figure 96**  
**Security Device installation (System Utility Transition card)**



## Check for the shelf power cable

Check that the NT4N4405 Shelf Power Cable is installed in the CP PII card cage backplane. See Figure 97 on page 567 for cable location.

**Figure 97**  
**Core/Net cable connections (top view)**



## Check the location of Clock Controller 1 and switch settings

For Option 51/51C upgrades to Option 81C with CP PII and Fiber Network Fabric, Clock Controller 1 is factory installed in Network group 1, shelf 1, slot 13:

- 1 If Clock Controller 1 is not installed in that slot, move it there now.
- 2 Verify Clock Controller switch settings. See Table 82 on page 568.

**Table 82**  
**Clock Controller switch settings**

<b>Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table. DO NOT use any other switch settings.</b>											
<b>SW1</b>				<b>SW2</b>				<b>SW4</b>			
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
on	off	off	off	off	off	off	off	**	on	*	*
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
<p>* If there is only one Clock Controller card in the system, set to OFF.                      If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above.                      Set the switches on both cards to the same settings.</p> <p>** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.</p>											



## Cable Core 1

### In Core 1, route and connect the 3PE to cCNI (NT8D76) cables

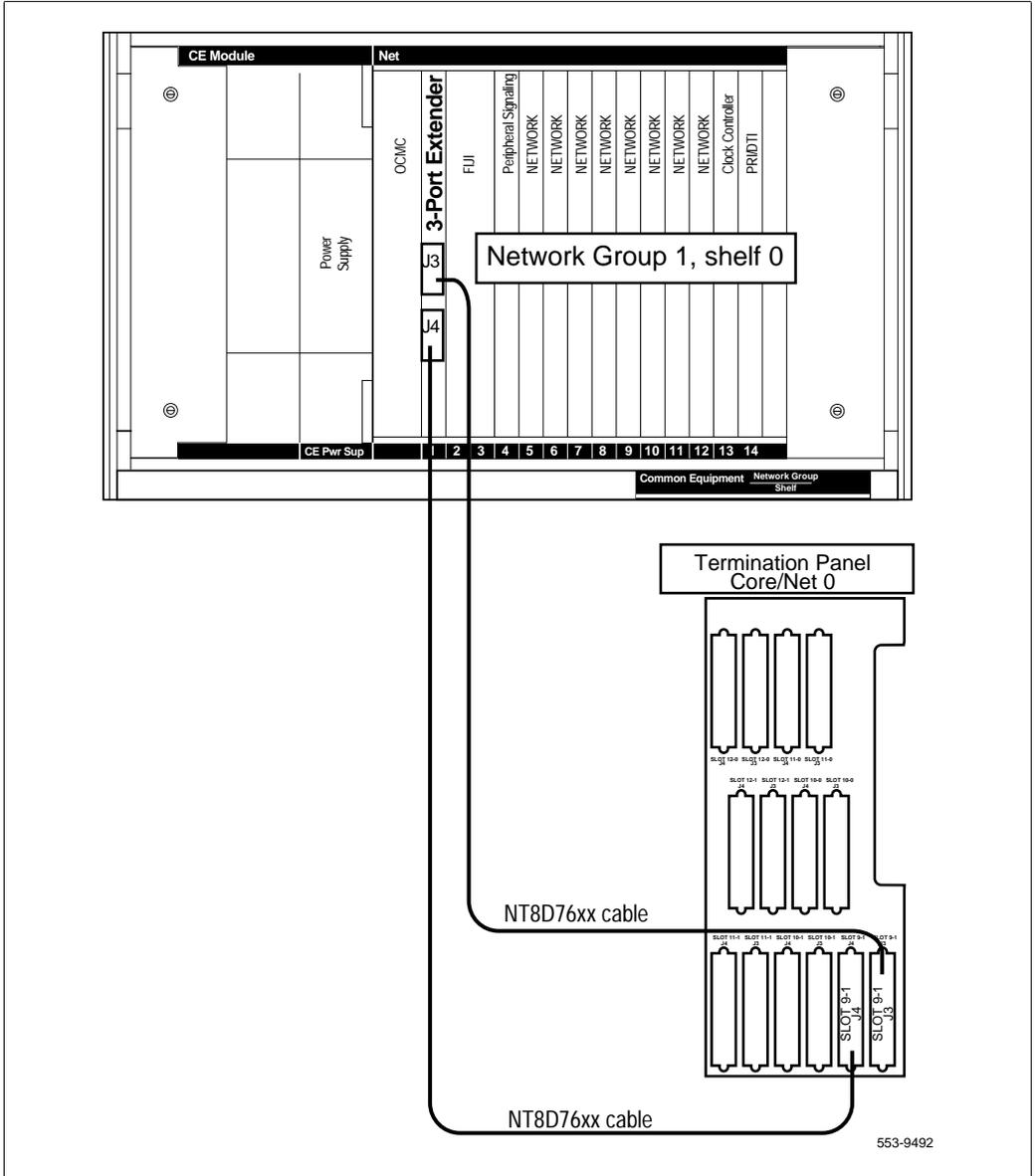
The cCNI to 3PE cables in CP PII are different from existing CNI to 3PE cables. New NT8D76 cables must be installed for both existing Network groups and new Network equipment. See Figure 99 on page 571.

Cables are routed to a module alongside the Core module. To route the 3PE to cCNI cables:

- 1 Label each cable at both ends with:
  - a. the Network group number
  - b. Shelf 0 or Shelf 1 of the Network group
  - c. J3 or J4 (of the 3PE card)
- 2 Remove the module trim panels where the cables will be routed.
- 3 In Core 1, route the cables from the Shelf 1 3PE cards to a module adjacent to Core 1.

**Note:** Route the cables along the right side of the Core module to avoid interference from the power cards.
- 4 In Core 1, pull the new NT8D76 cables inside the UEM. Connect the new NT8D76 cables to J3 and J4 of the 3PE cards. See Figure 99 on page 571 and Table 83 on page 572 for connection information.
- 5 Connect the new NT8D76 cables to the Termination Panel in Core/Net 1. See Figure 100 on page 573 and Table 83 on page 572.
- 6 Install the new NT8D80BZ cables between the 3PE cards located in the existing Core 0 and the 3PE reinstalled in the new Core 1 module. Connect the first cable to J3 on each card and the second cable to J4 on each card.
- 7 If the system has XSDI cards, reinstall the cards and attach the cables.

**Figure 99**  
**3PE Termination Panel connectors**

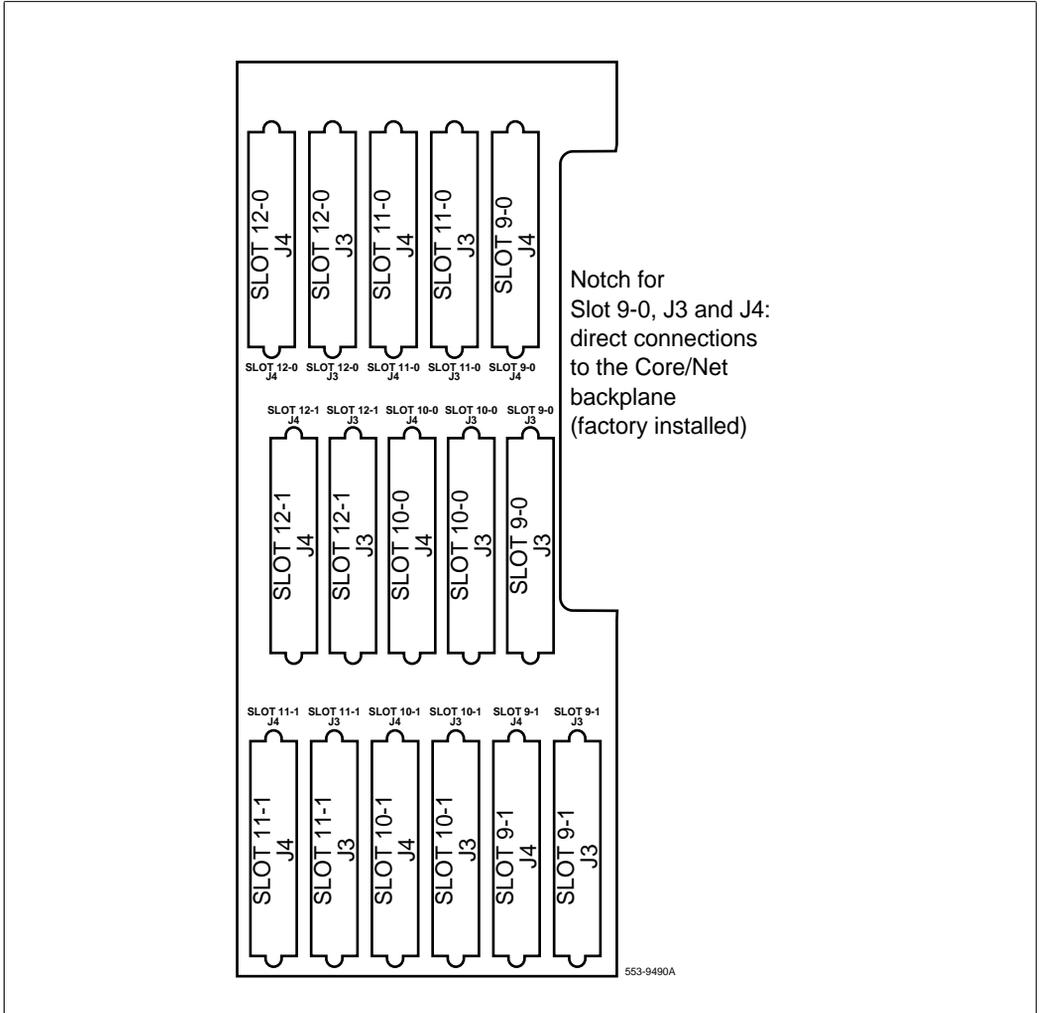


**Table 83**  
**Termination Panel to 3PE card connectors**

Group Number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

**Figure 100**  
**Connectors for cCNI Transition Cables to the Termination Panel**

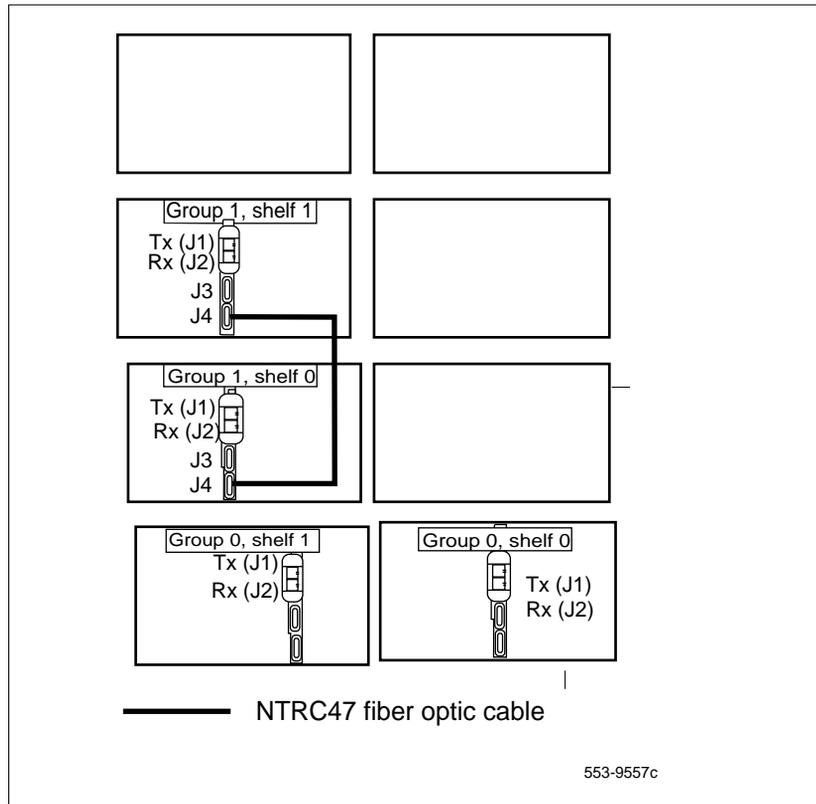


## Connect FIJI to FIJI cables

- 1    Connect P2 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 0, except Group 0.
- 2    Connect P1 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 1, except Group 0.

The FIJI cards in Group 0 do not receive a FIJI to FIJI cable.

**Figure 101**  
**FIJI to FIJI cables**



## Route and connect the Shelf 1 FIJI Fiber Ring Cables

Carefully route the NTRC48 cables before installation. Always label both ends of each cable to simplify installation, reduce confusion and assist in troubleshooting.

### Route Shelf 1 fiber optic cables (descending)

Route the NTRC48 cables between the FIJI cards in each Network shelf 1 in *descending* order (Table 84 on page 577 and Figure 102 on page 576).

**Note:** Each end of the NTRC48 cable is labeled “Tx” or “Rx” in the factory.

- 1 Start with the Tx (J1) port in Group 0, shelf 1.
- 2 Route a NTRC48 FIJI fiber Ring cable from the FIJI card in Group 1, shelf 1 to the FIJI card in Group 1, shelf 1.
- 3 To complete the Ring, route a final cable from Group 1, shelf 1 to Group 0, shelf 1.

### Connect Shelf 1 fiber optic cables (descending)

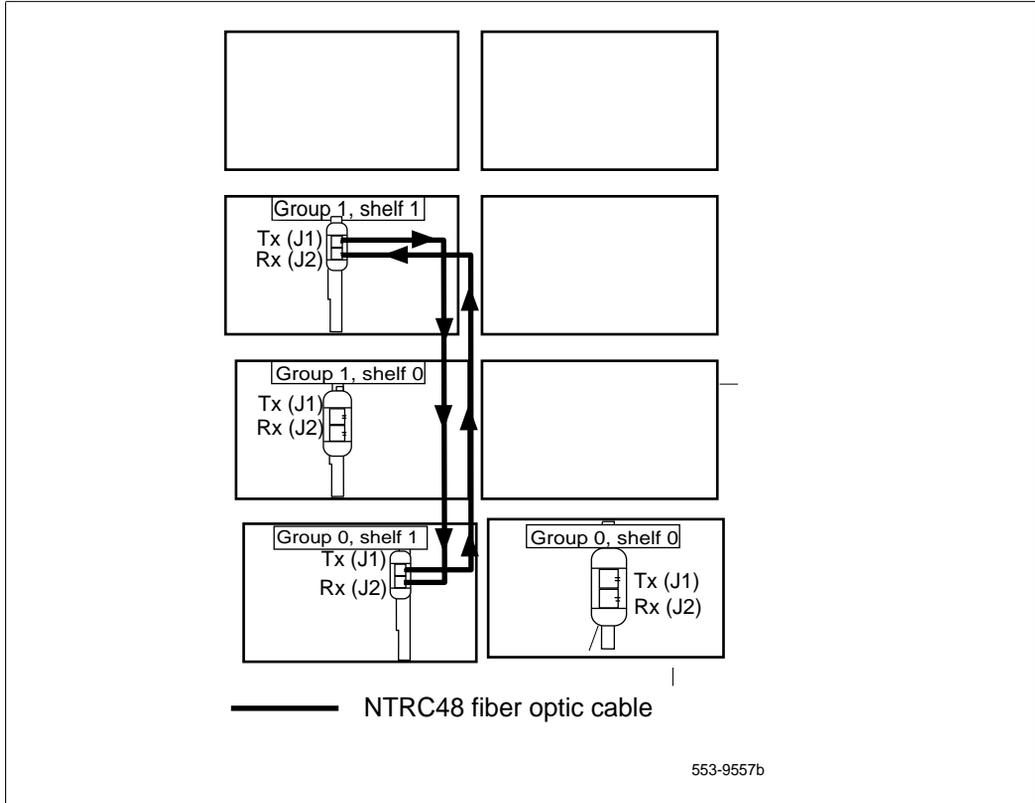
Remove the black cap from the end of each cable before it is connected.

**Note:** Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- 1 Start with Network Group 1, shelf 1.
- 2 Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 1, shelf 1 to the Rx (J2) port of the FIJI card in the Group 0, shelf 1.
- 3 To complete the Ring, connect a final cable from Tx in Group 0, shelf 1 to Rx in Group 1, shelf 1.

..

**Figure 102**  
**Shelf 1 descending fiber optic Ring (Option 51C example)**



**Table 84**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1
6/1	P2	Rx - J2
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2

**Note:** Groups 2 through 7 are shown for reference only.

## Remove the system monitors from Core 1 and Core 0

- 1 In **Core 0**, software disable the master system monitor (NT8D22):  
**LD 37**  
**DIS TTY #**      Disable the master system monitor TTY interface.
- 2 For both Core 1 and Core 0, remove J3 and J4 cables on both system monitors.
- 3 For both Core 1 and Core 0, remove the system monitors from the rear of the pedestals.  
Do *not* turn off the blower units in the front of the pedestals.



### **CAUTION**

#### **System Failure**

The system may shut down if the system monitors are not removed. Remove the monitors and keep the cooling fans ON.

## Power up Core 1

### Prepare for power up

- 1 Check that a terminal is connected to the J25 I/O panel connector on Core/Net 1.  
  
A maintenance terminal is required to access the Core/Net modules during the upgrade. Connect a terminal to the J25 port on the I/O panel in the *inactive* Core. The settings for the terminal are:  
  
9600 Baud, 7 data, space parity, 1 stop bit, full duplex, XOFF  
  
If only one terminal is used for both Cores, the terminal will have to be switched from side to side to access each module. An "A/B" switch box can also be installed to switch the terminal from side to side.
- 2 Faceplate *enable* the cCNI cards in Core 1.
- 3 Check that the FIJI cards in Core 1 are unseated.

### Power up Core 1

- 1 Power up the Core/Net Module.
- 2 Power up the Network modules.

- 3 Wait for the system to load/initialize.

## Confirm Core 1 cards are working

Check that the Network and I/O cards have working power.

## Install software on Core 1

- “Reconfigure I/O ports and call registers” on page 586
  - “Reboot Core 1” on page 587
- 1 In Core/Net 1, install the CD-ROM into the CD-ROM drive in the MMDU:
    - 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. Do not push the holder in by hand.

**Note:** If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

- 2 Place the CP PII Install floppy disk into the MMDU floppy drive.

**Note:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

- 3 Press the manual RESET button on the CP PII card faceplate.

- 4 Before the install runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:

Testing partition 0

0 percent done...1 percent done.....99 percent done....100 percent done

Testing partition 1

0 percent done...1 percent done.....99 percent done....100 percent done

Testing partition 2

0 percent done...1 percent done.....99 percent done....100 percent completed!

Disk physical checking is completed!

There are 3 partitions in disk 0:

The size of partition 0 of disk 0 is XX MB

The size of partition 0 of disk 0 is XX MB

The size of partition 0 of disk 0 is XX MB

Disk partitions and sectors checking is completed!

- 5        At the terminal, press <cr> to start the software installation.
- 6        When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.
  - <a>      Continue with keycode validation
  - <y>      Confirm that the keycode matches the CD-ROM release
- 7        When the screen displays the Install Menu, select the following options in sequence when prompted to do so:
  - <b>      Install software, database, and CP-BOOT ROM
  - <a>      Verify that the CD-ROM is now in driveThe Installation Status Summary screen appears that lists the options to be installed.
  - <a>      Continue with Upgrade

### **Pre-Release 3 language groups**

- 8        Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>      Global 10 Languages
- <2>      Western Europe 10 Languages
- <3>      Eastern Europe 10 Languages
- <4>      North America 6 Languages
- <5>      Spare Group A
- <6>      North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 9** Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

**10**    Continue with upgrade when prompted. Select a database to install.

- <cr>**    Enter carriage return to continue.
- <a>**    Continue with CP BOOTROM installation
- <a>**    Install the CP BOOTROM from hard disk
- <a>**    Start installation
- <a>**    Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, Database, and CP-BOOTROM were installed.

- <cr>**    Continue
- <q>**    Quit (remove any diskettes and the CD-ROM from the MMDU drives)
- <y>**    Confirm quit
- <a>**    Reboot the system

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for "DONE" and then "INI" messages to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

```
DATA CONVERSION  
RELEASE XX.XX TO RELEASE 25.
```

Confirm that the Release 25 software is installed and functional on Core/Net 0:

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

## Configure the IP addresses

Two unique IP address are required for the CP PII system to communicate with the LAN. One IP number is defined for the *active* Core. The second IP address is defined for the *inactive* Core.

Contact your systems administrator to identify these IP numbers.

**1** Configure the primary (*active*) and secondary (*inactive*) IP addresses:

<b>LD 117</b>	To load the program.
<b>new host <i>name 1</i> IP address</b>	To define the first IP address: “name 1” is an alias for the IP address such as “primary”. The IP address is the IP number.
<b>chg elnk active <i>name 1</i></b>	To assign the “name 1” address to the <i>active</i> Core.
<b>new host ‘<i>name 2</i>’ IP address’</b>	To define the second IP address: “name 2” is an alias for the IP address such as “secondary”. The IP address is the IP number.
<b>chg elnk inactive <i>name 2</i></b>	To assign the “name 2” address to the <i>inactive</i> Core.
<b>chg mask 255.255.240.0</b>	To set the sub-net per local site. This number allows external sub-nets to connect to the system.
<b>new route 0.0.0.0 <i>ip address</i></b>	Sub-net router address, if required.
<b>prt route</b>	To print the route data. This returns a value assigned to the route used in the next step.
<b>enl route #</b>	To enable the route table entry: the value is from the step above.

**2** Enable the new Ethernet interface:

<b>LD 137</b>	To load the program.
<b>dis elnk</b>	To <i>disable</i> the old IP interface values.
<b>enl elnk</b>	To <i>enable</i> the new IP interface values.

## Check for Peripheral Software Download to Core 1

Load LD 22 and print Target peripheral software version. The Source peripheral software version was printed during the procedure to "Print site data" on page 40.

If there is a difference between the Source and Target peripheral software version:

- A forced download occurs during initialization when coming out of parallel reload.
- System initialization takes longer.
- The system drops established calls on IPE.

### LD 22

**REQ**

PRT

**TYPE**

PSWV.

**ISSP**

Print System and Patch Information.

**SLT**

Print System Limits.

**TID**

Print the Tape ID.

\*\*\*\*

Exit program.

---

## For systems with fewer than eight groups, delete CNIs

Software has configured the system for eight groups.

If your system has eight groups, skip this procedure.

If your system has fewer than eight groups, you must software remove the CNIs not used in your system configuration:

- 1 In Core/Net 1, disable all CNI cards using LD 135:

<b>LD 135</b>	To load the program.
<b>STAT CNI</b>	Get the status of all CNI cards.
<b>DIS CNI x s p</b>	Disable CNI cards where: x = extender number (0 or 1) s = card slot (9-12) p = port (0 or 1)
<b>STAT CNI</b>	Confirm that CNI cards are disabled.
<b>****</b>	Exit the program.

- 2 Use LD 17 to remove the extra CNI cards.

<b>LD 17</b>	To load the program.
<b>CHG</b>	
<b>CFN</b>	
<b>CEQU YES</b>	
<b>EXTO 3PE</b>	Core/Net 0 extended to 3PE.
<b>CNI s p xg</b>	Out the CNI card, where: s = card slot (9-12) p = port (0 or 1) xg = out network group (x0-x4)
<b>EXTI 3PE</b>	Core/Net 1 extended to 3PE
<b>CNI s p xg</b>	Out the CNI card, where: s = card slot (9-12) p = port (0 or 1) xg = out network group (x0 - x4)
<b>****</b>	Exit the program.

## Reconfigure I/O ports and call registers

- 1     Remap 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

**LD 17**            Load the program.

**CHG**

**CFN**

**CHG aaa x**        aaa = terminal type (such as tty or aml).  
                      x = terminal number (0 -15).

**g**                 g = network group (0 - 4).

- 2     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 *Meridian 1 Capacity Engineering*.

      If changes are required, reconfigure the values in LD 17:

**LD 17**            Load the program.

**CHG**

**CFN**

**PARM YES**

**500B 1000**        Use 1000 as a minimum value.

**NCR 20000**        Use 20000 as a minimum value.

**\*\*\*\***             To exit the program.

- 3     Print the Configuration Record to confirm the changes made above:

**LD 22**            Load the program.

**REQ PRT**         Set the print Option.

**TYPE CFN**        Print the configuration.

**\*\*\*\***             To exit the program.

- 4 Perform a data dump to save the customer database to the hard drive:
  - a. Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** To load the program.
  - b. When "EDD000" appears on the terminal, enter  
**EDD** To begin the data dump.



**CAUTION**

**Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

## Reboot Core 1

Press the RESET button on the CP PII card faceplate to reboot the system.

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for "DONE" and then "INI" messages to display before you continue.

## Disable and remove equipment from Core 0

### Turn module power off



#### **CAUTION**

#### **Service Interruption**

Call processing will be interrupted for approximately 30 minutes while the procedures are completed.

Power down the modules with the module power switch. **DO NOT** power down the columns at the PDU:

- 1 Power down Core/Net Module 0.
- 2 Power down Core/Net Module 1.
- 3 Power down all Network Modules.

## Move Clock Controller 0 to Network group 1 shelf 0, slot 13

The existing Clock Controller in the Option 51 or 51C must be moved to a Network module according to the guidelines on "Prepare to move Clock Controllers on Option 51/51C" on page 47.

- 1 Label and disconnect the Clock Controller Junctor cable from the J12 connector in the InterGroup Module junctor board.
- 2 Disconnect the Junctor cable from the Clock Controller 0 faceplate card.
- 3 If primary and secondary clock reference cables are connected to the Clock Controller faceplate, disconnect them last.
- 4 Remove Clock Controller 0 from the Core module.
- 5 Set the Clock Controller 0 switch settings according to Table 85 on page 590.
- 6 Move Clock Controller 0 to Network shelf 1-0, slot 13.  
Seat Clock Controller 0 but do not enable the card.

**Note:** The Clock Controllers may be installed in any Network group; however, a two group option 81C has only two Network Modules. In this case, both Clock Controllers must be installed in Group 1. If in the future the Option 81C is upgraded to more than two Network groups, Nortel Networks recommends that Clock Controller 0 and 1 be located in different Network groups. Refer to the guidelines on "Prepare to move Clock Controllers on Option 51/51C" on page 47 to determine Clock Controller placement.

- 7 In Core 0, disable any ISDN PRI cards.
- 8 In Core 0, disable the CNI card (phantom group 5):

**LD 135** To load the program.

**DIS CNI 0 8 0** Disable the CNI card in Core module 0, slot 8, port 0.

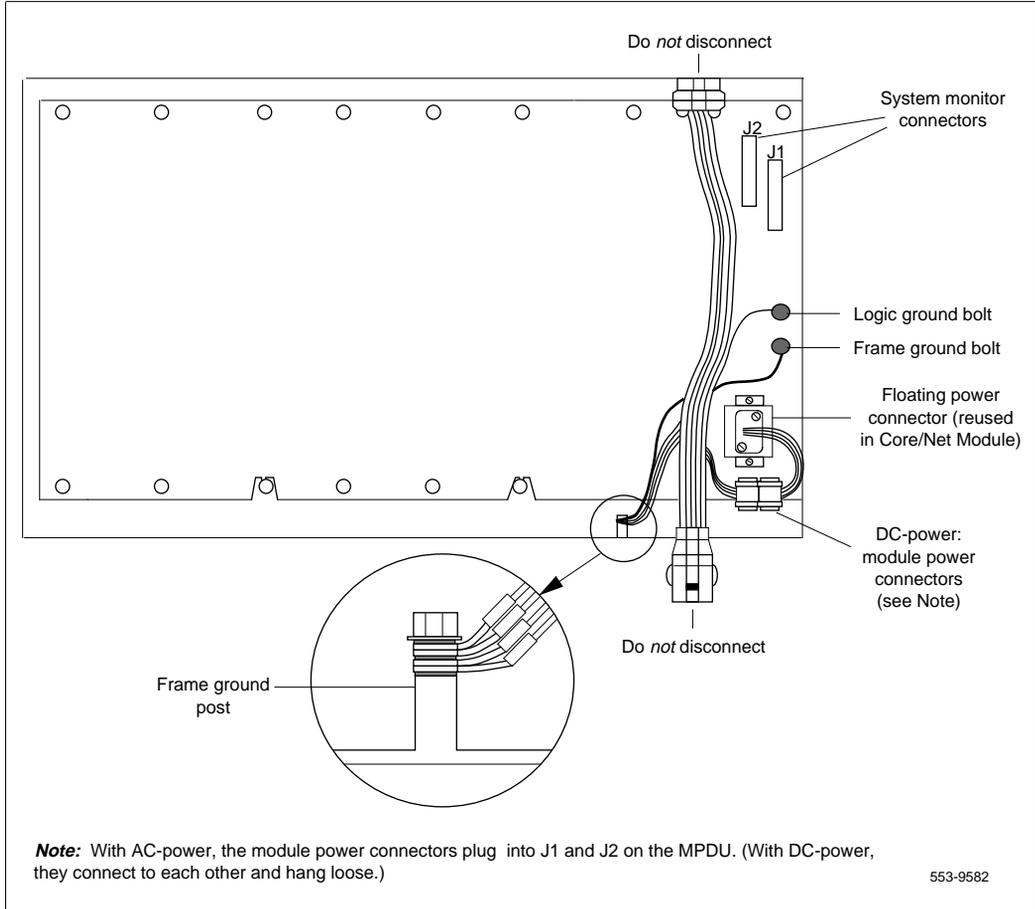
**Table 85**  
**Clock Controller 0 switch settings**

Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table. DO NOT use any other switch settings.											
SW1				SW2				SW4			
1	2	3	4	1	2	3	4	1	2	3	4
on	off	**	on	*	*						
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
<p>* If there is only one Clock Controller card in the system, set to OFF.                      If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above.                      Set the switches on both cards to the same settings.</p> <p>** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.</p>											

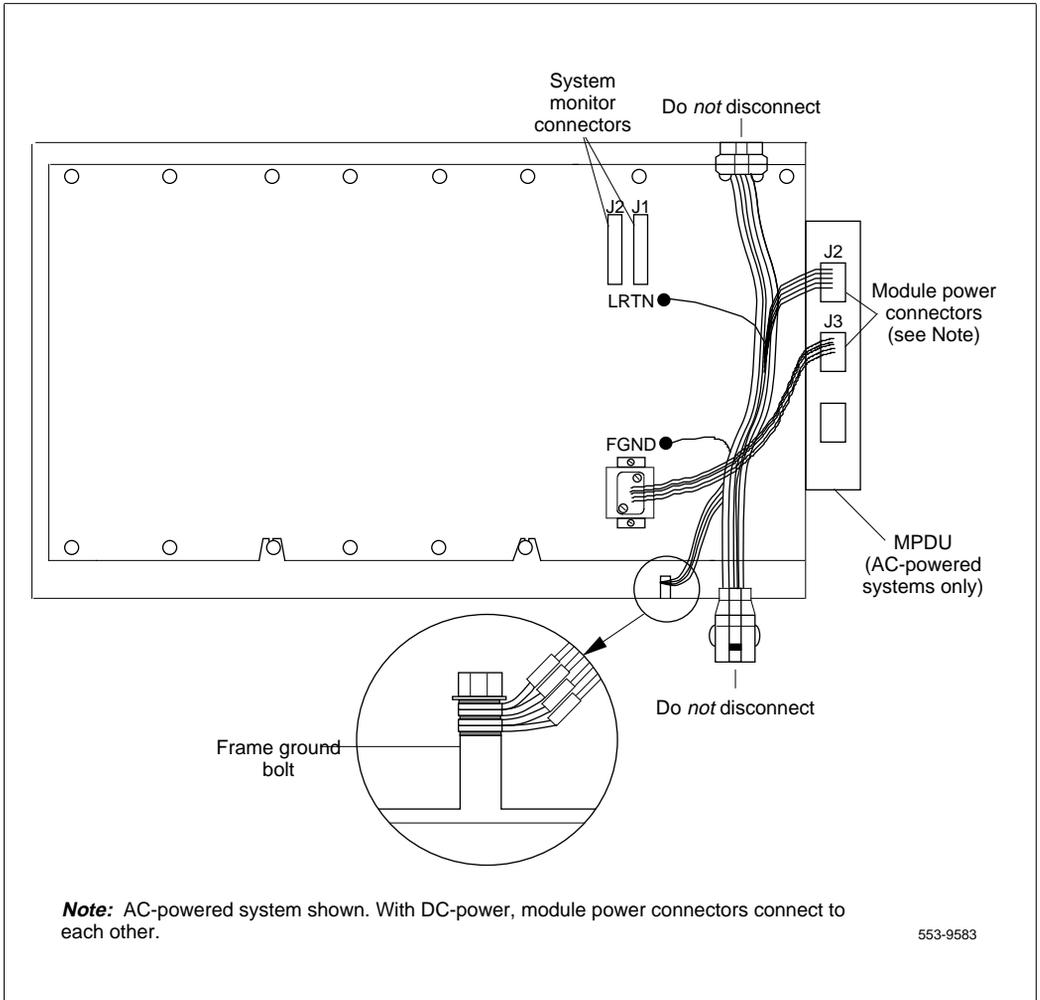
## Remove Core 0 cables and card cage

- 1 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.
- 2 Remove the I/O safety panel by turning the screws on each side. Set the cover aside.
- 3 Tag and disconnect all cables from the backplane to the interior of the I/O assembly.
- 4 Tag and disconnect all plugs, wires, and cables to the backplane.  
**Note 1:** Leave the network cards in the card cage. You will relocate them to the CP PII card cage later in the upgrade procedure.  
**Note 2:** Two people are needed to remove the Core card cage because of the weight of the card cage with the cards left installed.
- 5 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 use with the CP PII card cage. (You need a 1/4" nut driver to remove the screws.)
- 6 Remove the front trim panels on both sides of the card cage.
- 7 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Save the screws for use with the CP PII card cage.
- 8 Pull the card cage forward until it is halfway out of the module.
- 9 Disconnect cables, plugs, and wires from the rear of the module to the backplane:
- 10 Remove the logic return (LTRN) (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.  
See Figure 103 on page 592 for DC power connectors.  
See Figure 104 on page 593 for AC power connectors.

**Figure 103**  
**DC power connectors on the Core module backplane**



**Figure 104**  
**AC power connectors on the Core module backplane**



- 11 Remove the frame ground (FGND) (green) wire from the frame ground bolt on the module.
- 12 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.
- 13 Label and disconnect the system monitor ribbon cables to J1 and J2.
- 14 Remove the Core card cage from the module.
- 15 Remove and reinstall the module to module power harness. The power harness is located at the right rear lower corner and plugs into the rear of the power supply.
  - For AC systems, relocate power harness NT8D80AM.
  - for DC systems, relocate power harness NT7D11.



**CAUTION**

**Service Interruption**

Be sure to perform the following step. If you do not tape the EMI shield in position, you will not be able to install the card cage in the module correctly.

- 16 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.
- 17 In AC-power 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).



**CAUTION**

**Damage to Equipment**

Check for and remove any debris (such as screws) that may have fallen into the base of the UEM module.

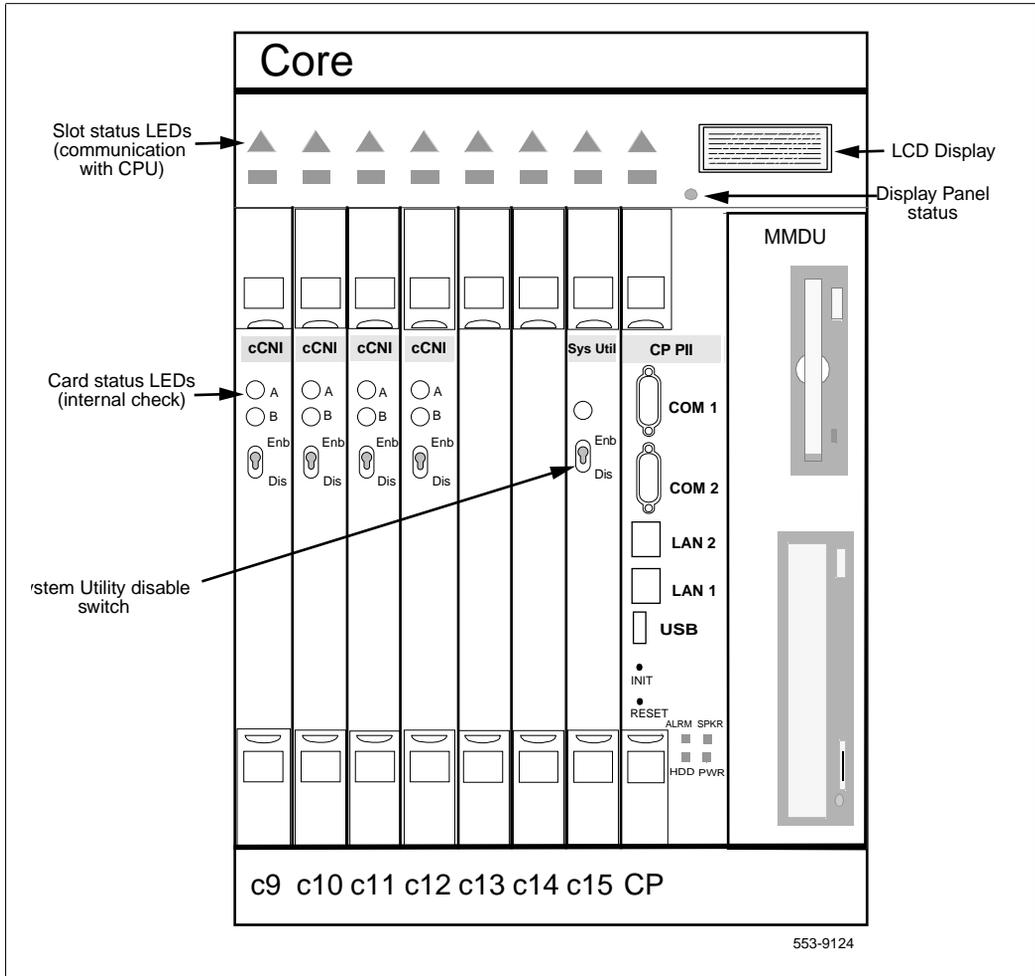
## Upgrade Core 0 hardware

### Check that the main Core cards (front side) are installed

The main Core cards including the MMDU (with the cables for power and data) are installed in the factory (see Figure 105 on page 596):

- **NT4N65AB cPCI Core Network Interface (cCNI) cards:** Each system contains between one and four NT4N65 cCNI cards per Core/Net module. The cCNI cards are located in slots c9-c12. If not already installed, install a P0906308 cPCI Card Slot Filler Panel to cover any of slots c10 - c 12 which do not contain cCNIs.
- Slots c13 and c14 are left empty. If not already installed, install a P0906308 cPCI Card Slot Filler Panel in each slot.
- **NT4N67AA System Utility (Sys Util) card:** is located in slot c15.
- **NT4N64AA Call Processor PII (CP II):** is located in the slot marked CP.
- **NT4N43AA cPCI Multi-Media Disk Unit (MMDU):** is located in the extreme right hand slot next to the CP PII card. The MMDU contains the hard drive, floppy drive and CD-ROM drive.

**Figure 105**  
**Core card placement in the CP PII Core/Net (front)**



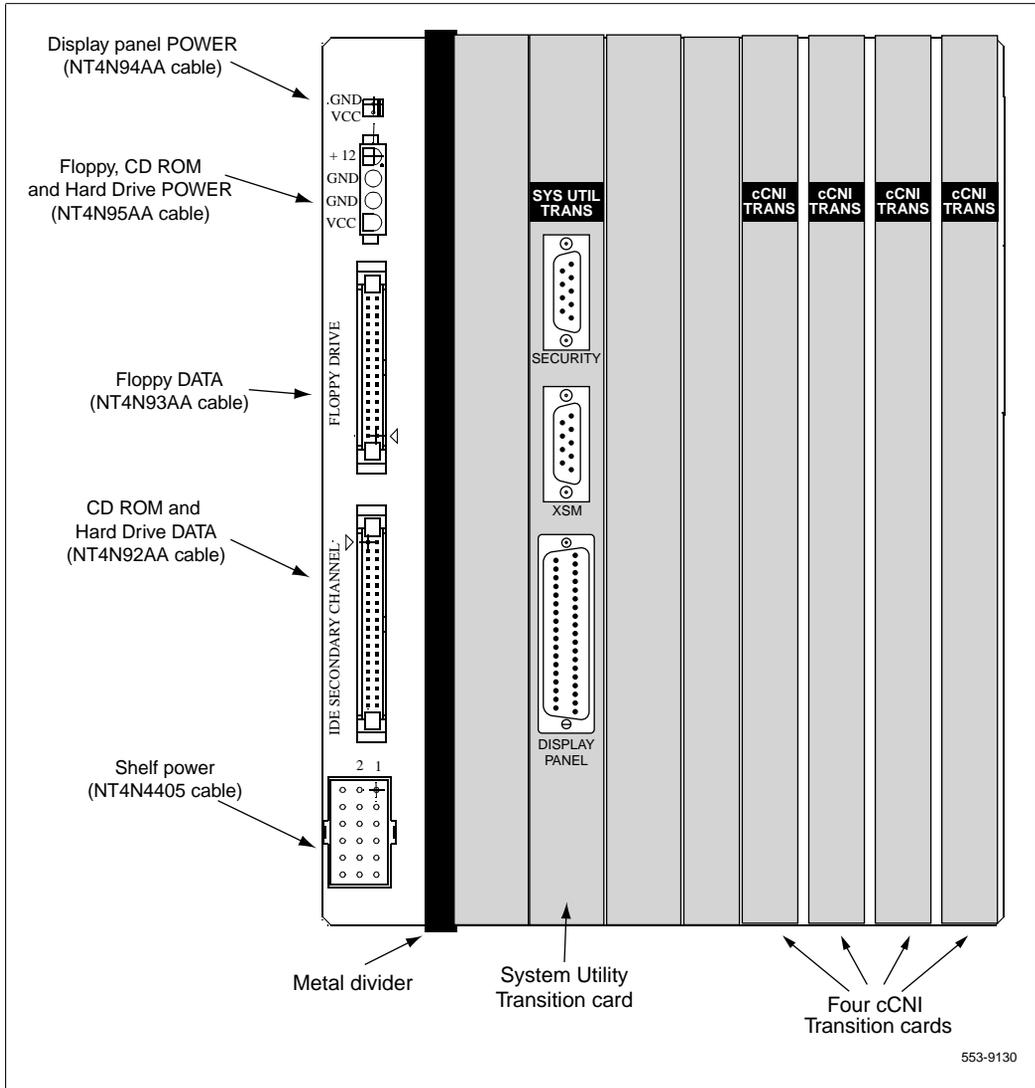
## Check that the Core Transition cards are installed

The Core Transition cards are located directly behind the corresponding main cards (on the rear of the Core backplane). Core Transition cards are installed in the factory:

- **NT4N66AA cCNI Transition cards:** Each system contains four of these cards.
- **NT4N68AA System Utility Transition card:** The System Utility Transition card is installed directly behind the System Utility card and contains connections for the Security Device, the System Monitor (XSM) and the Display Panel.

Figure 106 on page 598 displays the location of the Core Transition cards.

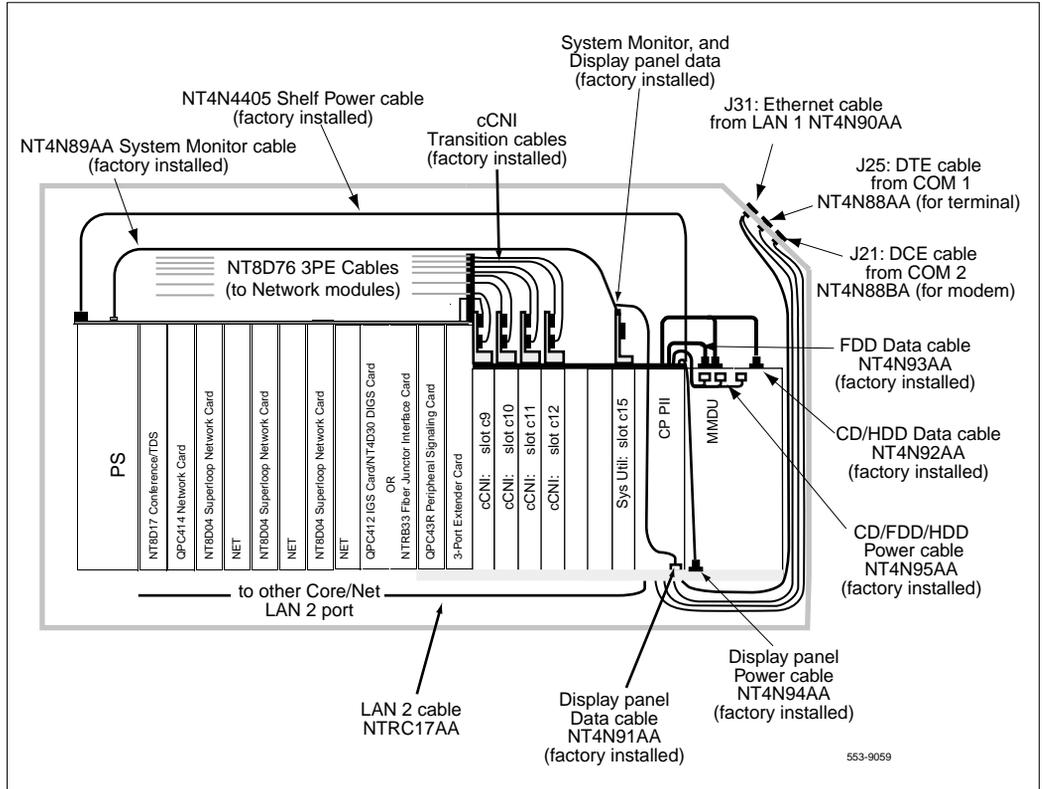
**Figure 106**  
**Location of Transition cards**



## Check for the shelf power cable

Check that the NT4N4405 shelf power cable is installed in the CP PII card cage backplane. See Figure 107 on page 599 for the cable location.

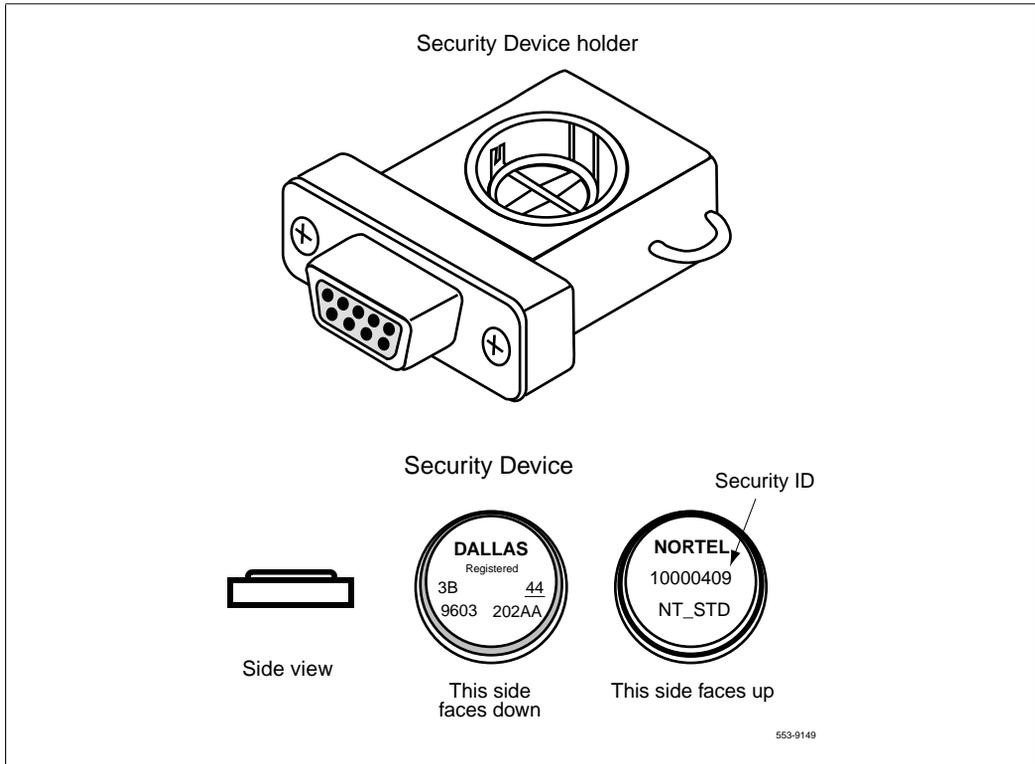
**Figure 107**  
**Core/Net cable connections**



## Install the Security Device

The Security Device fits into the Security Device holder (see Figure 108 on page 600) which attaches to the System Utility Transition card located on the core backplane.

**Figure 108**  
**Security Device and holder**



To install the Security Device:

- 1 If the original system had an IODU/C, remove the Security Device from the IODU/C for reuse.
  - a. Unlock the latches and remove the IODU/C card.
  - b. Remove the round 1/2" diameter IODU/C Security Device from the round black Security Device holder on the top right corner of the IODU/C card.

Or

If the original system did not have an IODU/C, use the Security Device provided with the CP PII Software kit.

Locate the Security Device holder in the plastic bag taped to the top of the card cage.

- 2 Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.
- 3 Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 109 on page 602).
- 4 Check that the Security Device is securely in place.

## Seat the Core 1 and Core 0 FIJI cards

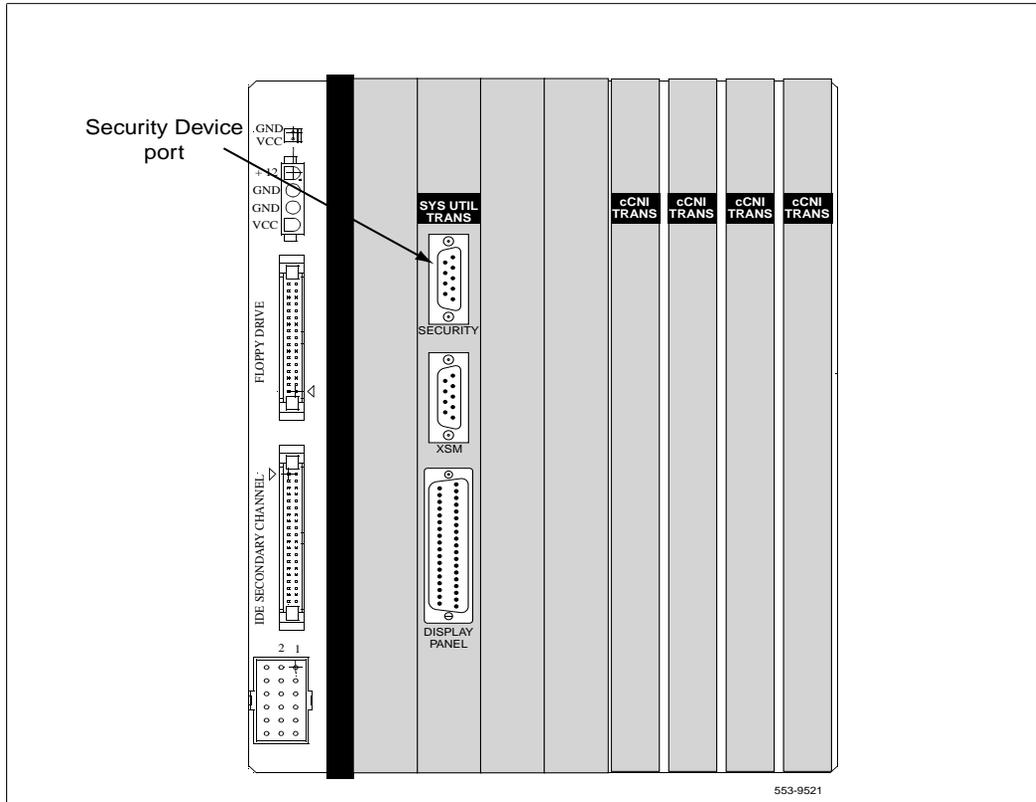
The FIJI cards in both Cores can now be seated.

- 1 Push the faceplate latches forward to lock the cards in place.
- 2 Verify that the cards are faceplate enabled.

## Install the CP PII card cage in Core 0

- 1 Check that the card cage is configured as Core 0. See "Check the Core ID switches" on page 38 for instructions.
- 2 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the CP PII card cage. Install the new MPDU, part of the cPCI Upgrade kit, to the side on the NT4N46 card cage. The screws that secure the MPDU are accessible from the power supply slot. See Figure 110 on page 603.
- 3 Check that the power harness at the right rear corner of the card cage has been transferred from the old card cage to the CP PII card cage.
- 4 Slide the CP PII card cage halfway into the module.

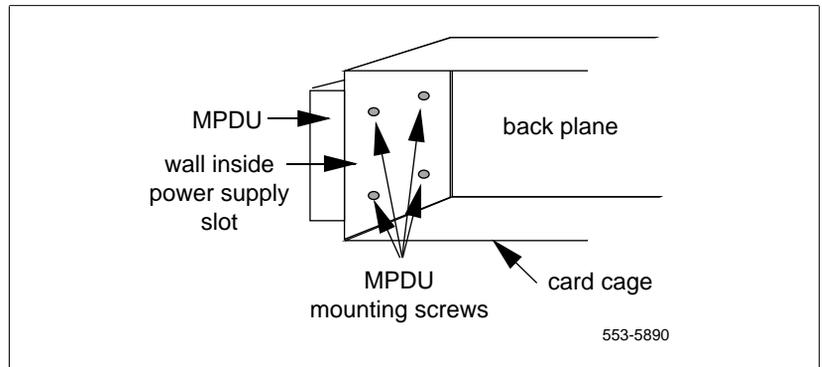
**Figure 109**  
**Security Device installation (System Utility Transition card)**



- 5** Hold the card cage firmly and make the following connections at the rear of the module.
  - a.** In ac powered systems, connect the remaining module power connectors to J2 on the MPDU.

In dc powered systems, connect the module power connectors to each other.

**Figure 110**  
**Location of the screws for the MPDU**



- b.** Attach the system monitor ribbon cables:

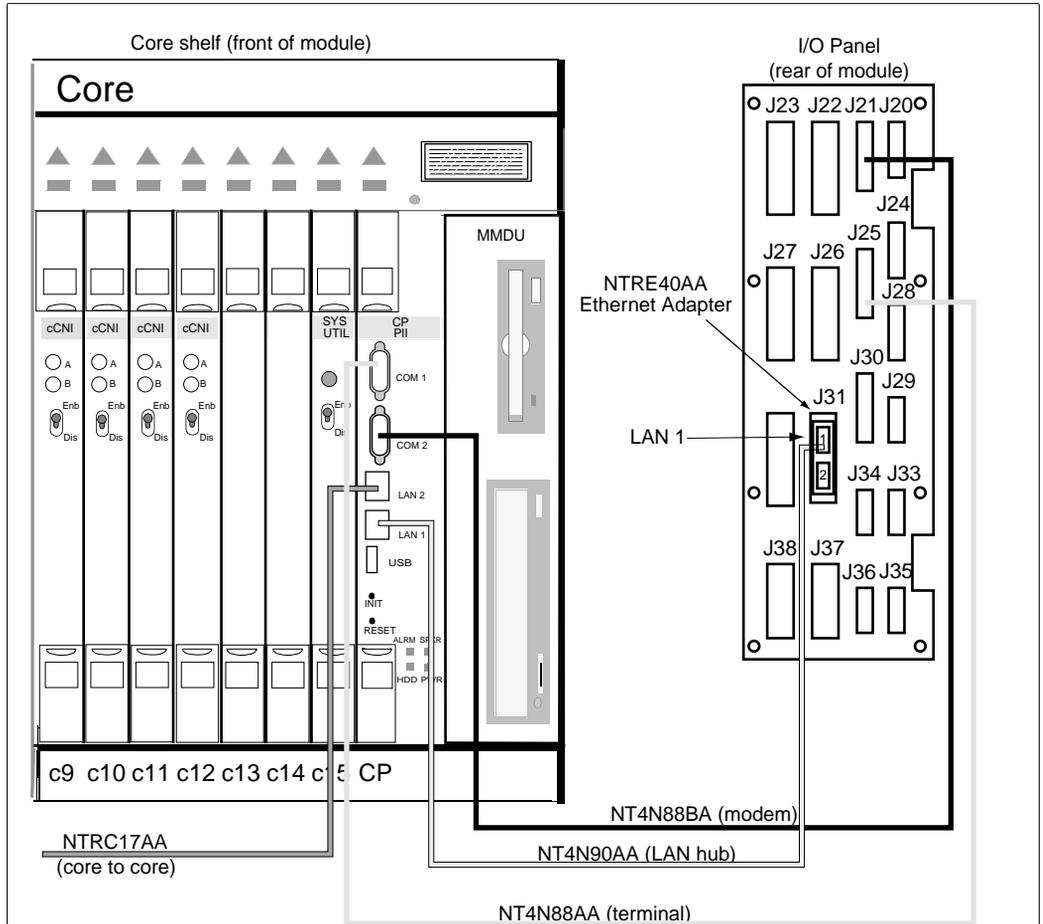
  - connect the ribbon cable that goes down to the pedestal to connector J1 on the backplane.
  - connect the ribbon cable that goes up the column to J2 on the backplane.
- c.** Attach the green ground wire to the frame ground bolt on the module. (a 11/32" socket wrench is used to attach the wire.) Remove 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 blot 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. (You need a 1/4" or 2/8" socket wrench.)
- 6** Slide the card cage all the way into the module.
- 7** Check the position of the EMI shield. If the EMI shield has shifted, reposition it. Remove the tape holding the EMI shield.
- 8** Pre-route cables NT4N88AA, NT4N88BA and NT4N90AA before you secure the card cage. (See Figure 111 on page 605.)

- a. Route cable NT4N88AA from COM1 on the CP PII faceplate to J25 on the I/O panel. (NT4N88AA is used to connect a terminal.)
- b. Route cable NT4N88BA from COM2 on the CP PII faceplate to J21 on the I/O panel. (NT4N88BA is used to connect a modem.)

Route cable NT4N90AA from LAN 1 on the CP PII faceplate to J31 (top) of the I/O panel.

**Figure 111**  
**COM and LAN connections to the Core/Net I/O panel**



Connect COM 1 to J25 with a NT4N88AA DTE cable (terminal).  
 Connect COM 2 to J21 with a NT4N88BA DCE cable (modem).  
 If a LAN hub is available: connect LAN 1 to J31 top (LAN hub) with NT4N90AA Ethernet cable (as shown in figure).  
 If a LAN hub is not available: connect LAN 1 in Core 0 to LAN 1 in Core 1 with a NTRC17AA cable (not shown in figure).  
 Connect LAN 2 in Core 0 to LAN 2 in Core 1 with a NTRC17AA crossover Ethernet cable.

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## Relocate Network cards to CP PII Core 0

- 1        Remove all remaining network cards from the Option 51/51C Core 0.
- 2        When you move the 3PE card, check the switch settings and jumpers. Figure on page 33 shows a side view of the 3PE card and the location of the switch settings.
  - a.      All 3PE cards must be vintage F or later.
  - b.      Check that the RN27 Jumper is set to "A".
  - c.      The settings for 3PE cards in Core/Net shelves are different from those in all other shelves: Table 86 on page 607 shows the 3PE settings for cards installed in CP PII Core/Net Modules.

*Note:* For 3PE settings for cards installed in Network Modules, see Figure on page 33.

- 3        Reinstall each removed card in the same network slot in the CP PII Core/Net 0.
- 4        Connect the tagged cables to the relocated cards.

**Table 86**  
**QPC441 3PE Card installed in the CP PII Core/Net modules**

<b>Jumper Settings: Set Jumper RN27 at E35 to "A".</b>									
<b>Switch Settings</b>									
<b>Module</b>		<b>D20 switch position</b>							
CP PII Core/Net modules only		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Core/Net 0 (Shelf 0)	Group 0	off	on	on	off	on	on	on	on
	Group 1	off	on	on	off	on	on	off	on
	Group 2	off	on	on	off	on	off	on	on
	Group 3	off	on	on	off	on	off	off	on
	Group 4	off	on	on	off	off	on	on	on
	Group 5	off	on	on	off	off	on	off	on
	Group 6	off	on	on	off	off	off	on	on
	Group 7	off	on	on	off	off	off	off	on
Core/Net 1 (Shelf 1)	Group 0	off	on	on	off	on	on	on	off
	Group 1	off	on	on	off	on	on	off	off
	Group 2	off	on	on	off	on	off	on	off
	Group 3	off	on	on	off	on	off	off	off
	Group 4	off	on	on	off	off	on	on	off
	Group 5	off	on	on	off	off	on	off	off
	Group 6	off	on	on	off	off	off	on	off
	Group 7	off	on	on	off	off	off	off	off

## Cable Core 0

### Cable COM 1 and COM 2 to the I/O panel

- 1      Connect COM1 on the CP PII faceplate to J25 on the I/O panel with cable NT4N88AA.
- 2      Connect COM2 on the CP PII faceplate to J21 on the back of the I/O panel with cable NT4N88BA.

### Connect a terminal and modem to the I/O panel

- 1      Connect J25 to a terminal for use during the upgrade. Use a separate terminal for each Core if available. J25 can also be connected to an A/B box to share a terminal between both Cores.
- 2      Connect J21 to the device connected in the original system (such as a modem or A/B box)

### Connect LAN 1

The LAN 1 port is used to enable redundancy features between the two Core/Net modules. LAN 1 can also be connected to a local area network (LAN) for use with LAN based administration tools such as the Meridian Administration Tool (MAT).

The options for the LAN 1 connections are shown in Figure 112 on page 609.

#### If the system will be connected to a LAN

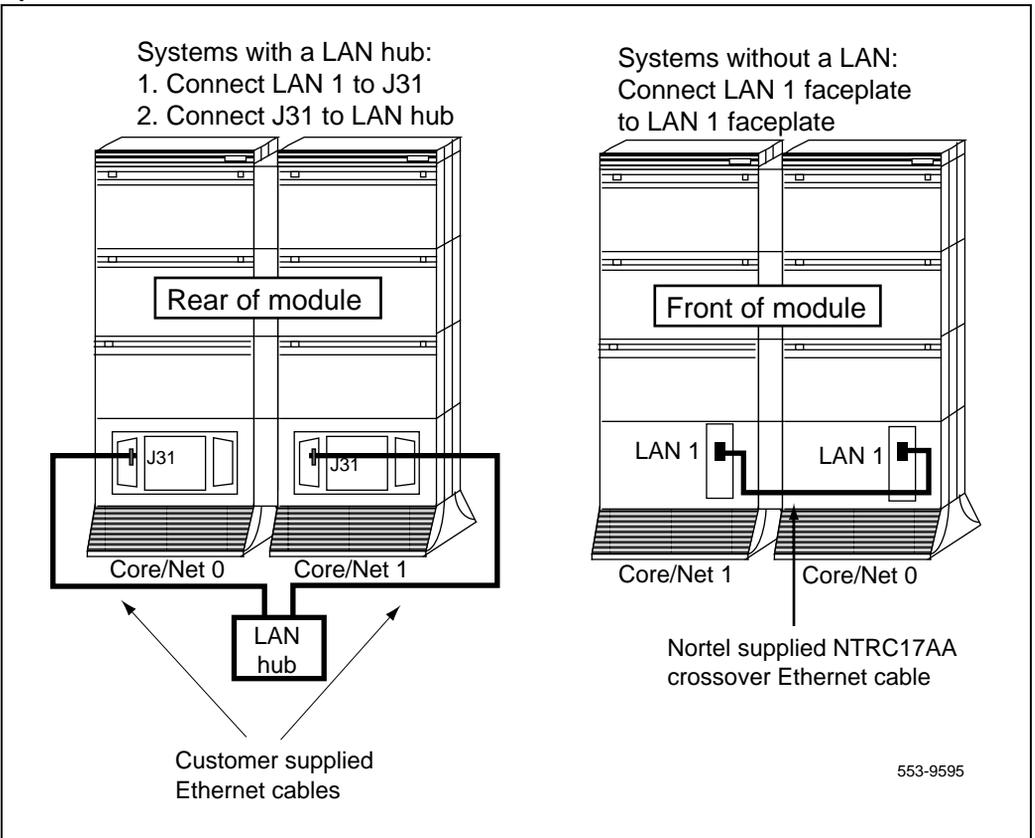
- 1      Connect the "Dual Ethernet Adapter (RJ45) for I/O Panel" (NTRE40AA) to J31. Secure the adapter to J31 with the two screws included in the shipment.  
Insert the adapter from the inside of the I/O panel.
- 2      Connect LAN 1 (Ethernet) on the CP PII faceplate to J31 (top) of the I/O panel with cable NT4N90AA.  
This connection can only be made *after* the Dual Ethernet Adapter is installed (see step 1 above).
- 3      Connect J31 to a LAN hub.

If a LAN is not available, connect LAN 1 directly to LAN 1

If a LAN hub is not available, do NOT connect LAN 1 to the I/O panel. The NTRE40AA Adapter and NT4N90AA cable are NOT installed.

- 1 Connect a crossover Ethernet cable (NTRC17AA) to the LAN 1 port on the CP PII faceplate of Core/Net 0.
- 2 To ensure EMI shielding, route the cable along the front of the card cage and through the sides of the Core/Net modules.
- 3 Connect the other end of the cable to the LAN 1 port on the CP PII faceplate in Core/Net 1.

**Figure 112**  
**Options for LAN 1 connection**



## Connect pre-routed cCNI to 3PE cables

NT8D76 cables connect between the Core/Net Termination Panel and the 3PE cards:

- This procedure applies to systems with columns in a single row. This procedure does not apply to systems with columns in separate aisles.
- Network group assignments for the cCNI ports in the CP PII card cage must be the same as the original system. Check to make sure that the cables are installed according to the port assignments in the existing database.
- The new NT8D76 3PE cables must be routed and in place before this procedure is begun. Refer to “Pre-route cables” on page 51.
- Remember to label all cables with the connection information. Labels are necessary to perform troubleshooting or future upgrades
- Table 87 on page 612 contains connection information for 3PE faceplates and the Core/Net Termination Panel.
- Figure 114 on page 613 shows the connection information on the Termination Panel.

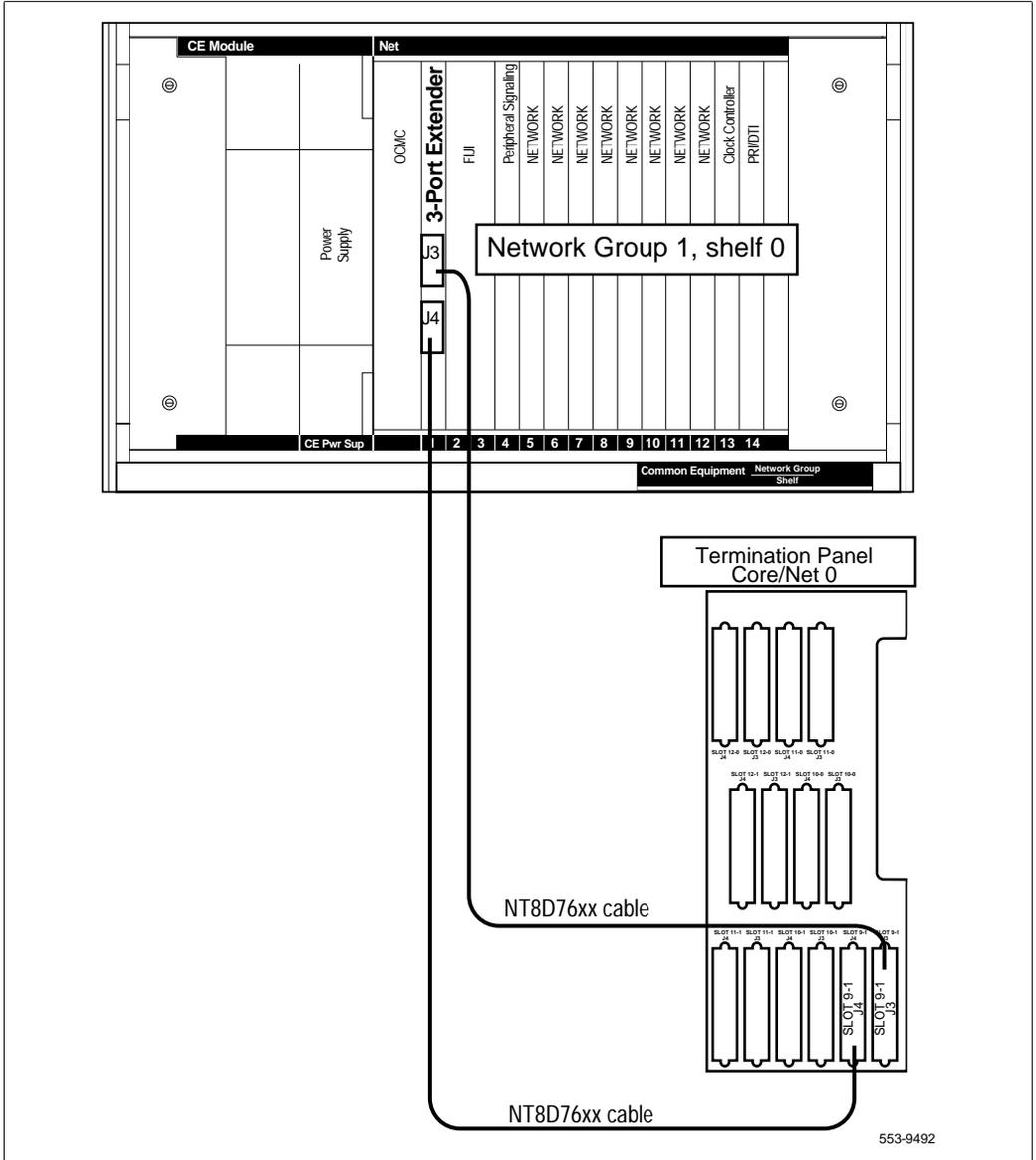
### Connect the 3PE cables in the shelf 0 Network modules

- 1 Disconnect the old cables from the J3 and J4 connectors on the 3PE cards in shelf 0 of each Network group.
- 2 Pull the new Nt8D76 cables inside the UEM. Connect the new NT8D76 cables to J3 and J4 of the 3PE cards. See Figure 113 on page 611 and Table 87 on page 612 for connection information.
- 3 Connect the new NT8D76 cables to the Termination Panel in Core/Net 1. See Figure 114 on page 613 and Table 87 on page 612.

**Note:** Remove the old unused CNI to 3PE cables

- 4 If the system has XSDI cards, reinstall the cards and attach the cables.

**Figure 113**  
**3PE Termination Panel connectors**



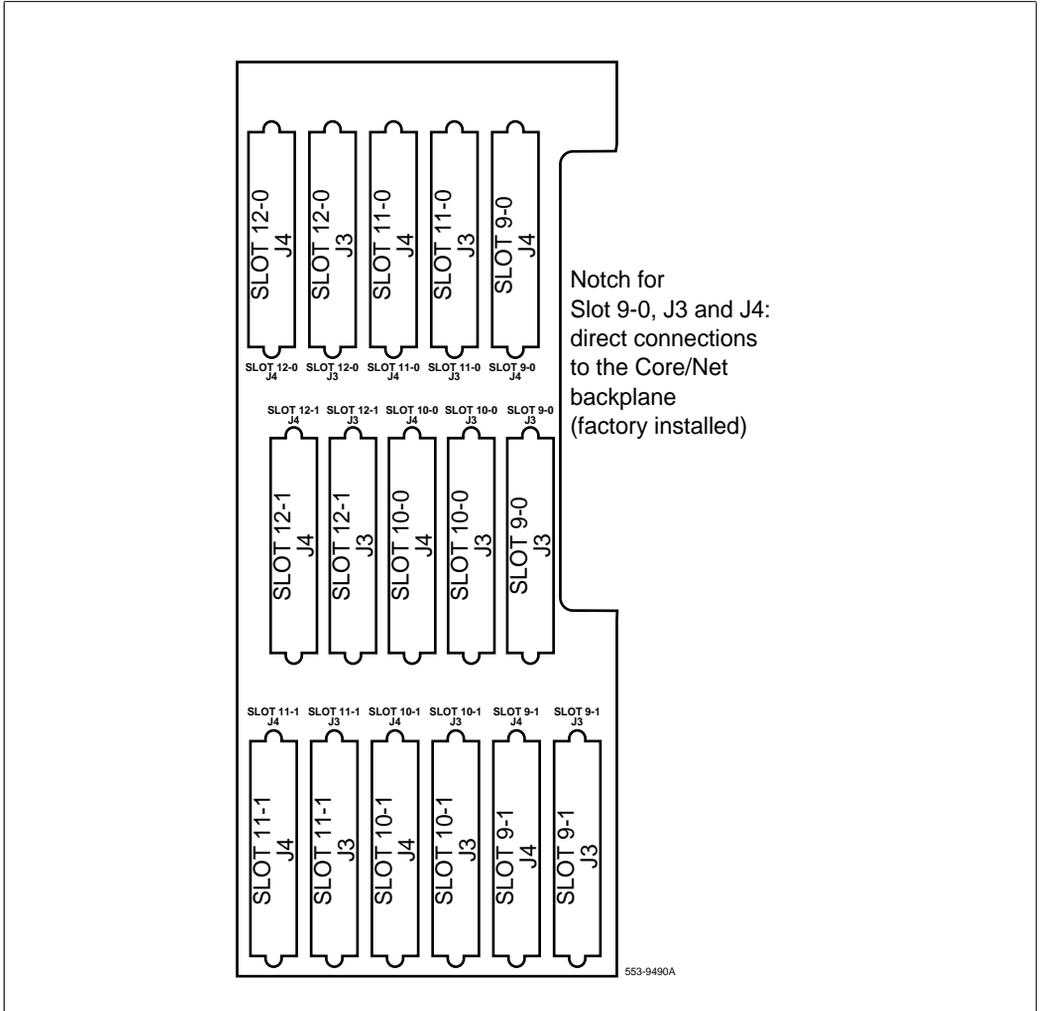
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**Table 87**  
**Termination Panel to 3PE card connectors**

Group Number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

**Figure 114**  
**Connectors for cCNI Transition Cables to the Termination Panel**



## Connect the Shelf 0 FIJI Fiber Ring Cables

To create the shelf 0 fiber optic Ring 0, connect the FIJI cards in each Network shelf 0 in ascending order, from Tx to Rx ports (Table 88 on page 616).

Remove the black cap from the end of each cable before it is connected.

**Note:** Each end of the NTRC48 cable is labeled "Tx" or "Rx" in the factory.

- 1        Start with Group 0, shelf 0.
- 2        Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 0, shelf 0 to the Rx (J2) port of the FIJI card in the Group 1, shelf 0.
- 3        To complete the Ring, connect a final cable from Tx in Group 1, shelf 0 back to the to Rx (J2) port in Group 0.

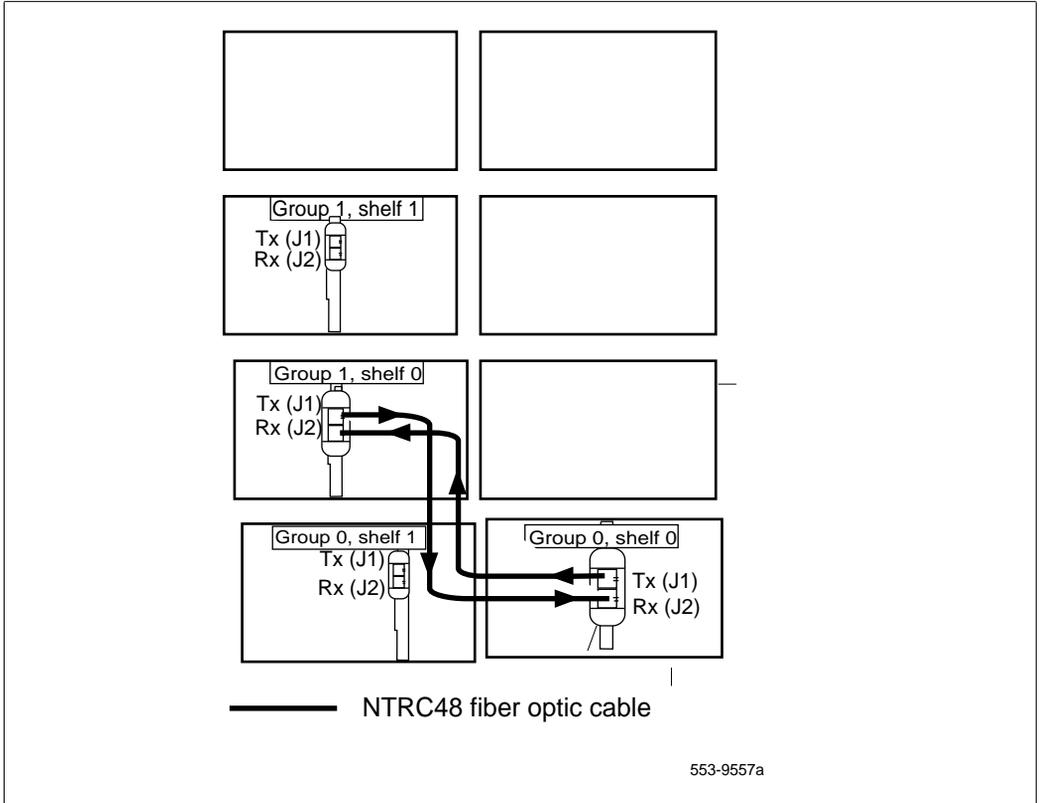
## Cable the Clock Controllers

Earlier in the upgrade, you checked that Clock Controller 1 is installed in Network 1 shelf 1, slot 13; and Clock Controller 0 has been moved to Network group 1 shelf 0, slot 13.

Connect the cables to the Clock Controllers as shown in Figure 116 on page 617:

- 1        Connect the Clock to Clock cable:
  - a.      Connect J1 of the NTRC49 cable to port J3 of Clock Controller 0.
  - b.      Connect J2 of the NTRC49 cable to port J3 of Clock Controller 1.
- 2        Connect the Clock 0 to FIJI cable:
  - a.      Connect J1 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 0.
  - b.      Connect J2 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 1.
- 3        Connect a Clock 1 to FIJI cable:
  - a.      Connect J1 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 0.

**Figure 115**  
**Shelf 0 ascending fiber optic Ring (Option 51C example)**

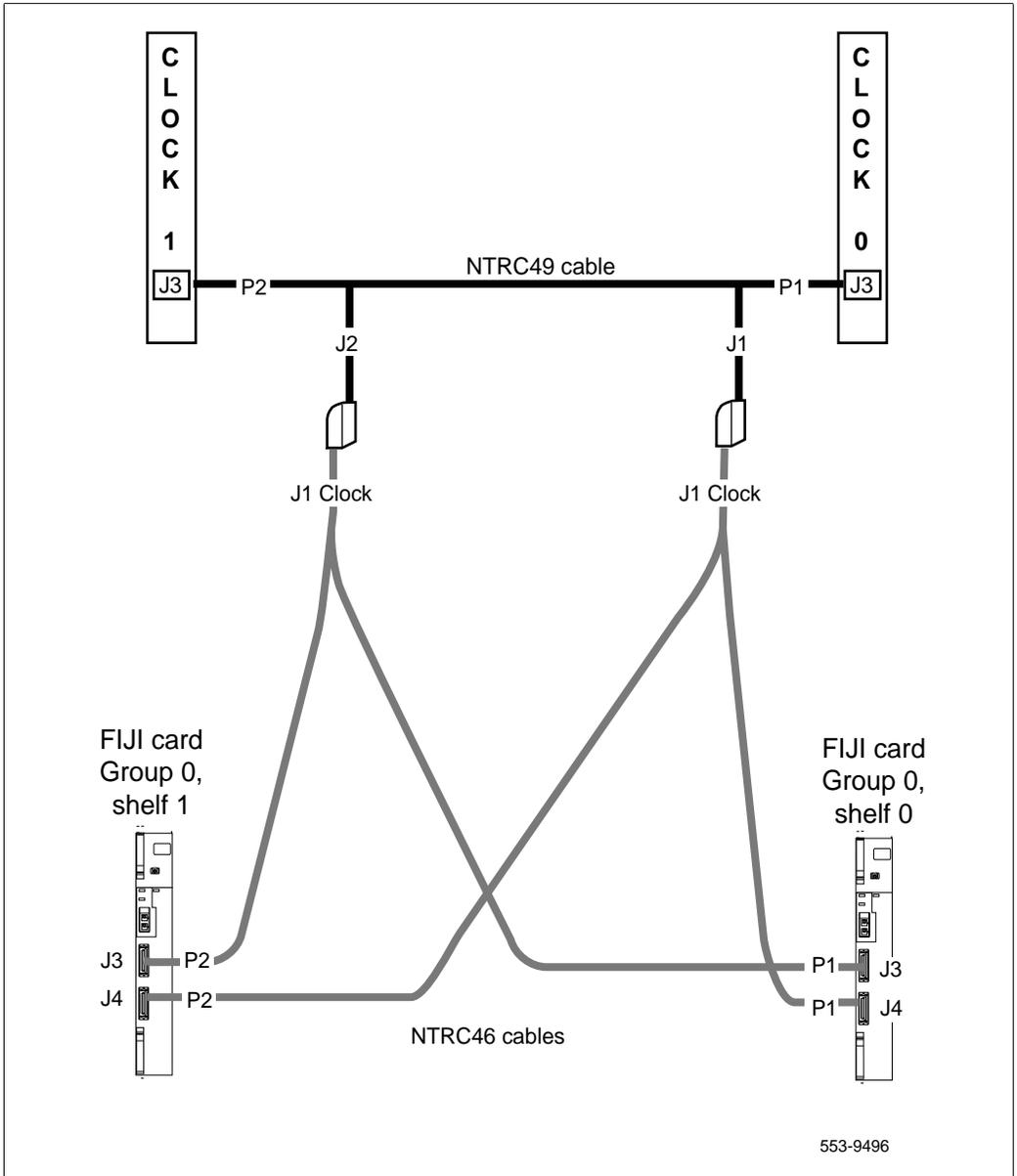


- b.** Connect J2 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 1.

**Table 88**  
**FIJI Ring 0 connections**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2
<p><b>Note:</b> Groups 2 through 7 are shown for reference only.</p>		

Figure 116  
Clock Controller cable configuration

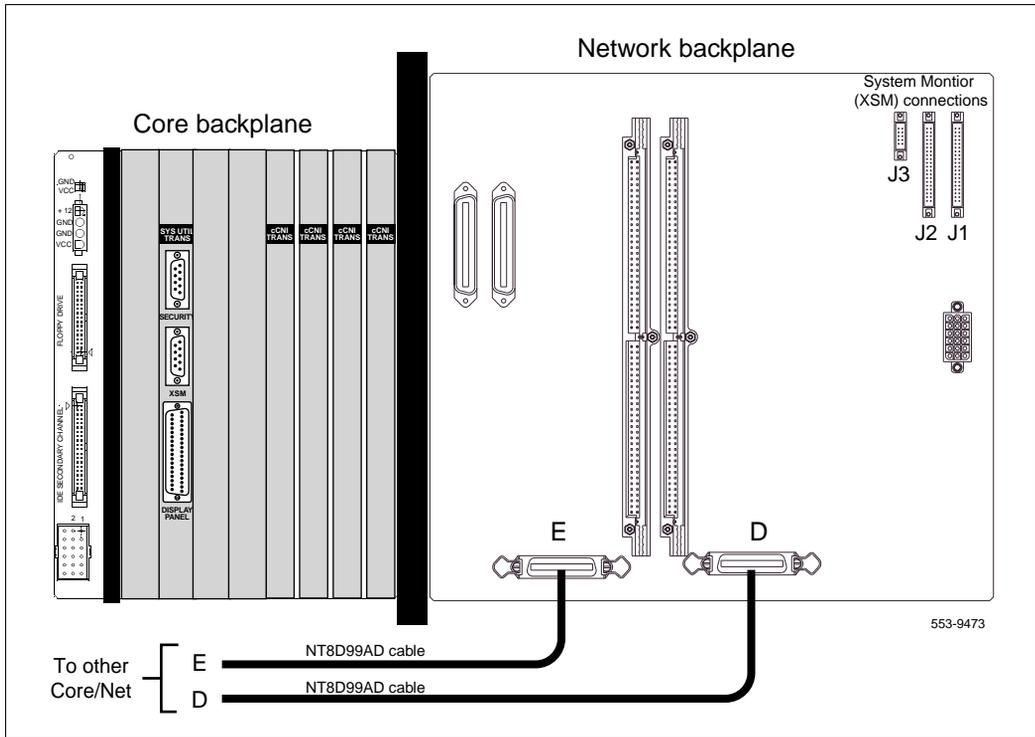


## Connect inter-module cables

### Connect D and E cables

Connect D and E cables as shown in Figure 117 on page 618.

**Figure 117**  
Connections on the network side of the CP PII Core/Net backplane



## Connect LAN 2 in Core/Net 0 to LAN 2 in Core/Net 1

The LAN 2 ports on the CP PII faceplates are directly connected with a NTRC17AA cable. This connection is for Core redundancy.

- 1 Connect a crossover Ethernet cable (NTRC17AA) to the LAN 2 port on the CP PII faceplate of Core/Net 0. (Figure 111 on page 605).
- 2 To ensure EMI shielding, route the cable along the front of the card cage and through the sides of the Core/Net modules.
- 3 Connect the other end of the cable to the LAN 2 port on the CP PII faceplate in Core/Net 1.

## Restore power

### Prepare Core cards for power up

- 1 In Core 0, disable the cCNI cards:
  - a. Hardware disable all cCNI cards from the backplane.
  - b. Disable the faceplate switch on all cCNI cards.
- 2 In Core 1, faceplate enable the cCNI cards.
- 3 Faceplate enable the System Utility Main card.

### Restore power

Restore power in the order below:

- 1 Restore power to Core/Net 1.
- 2 Restore power to Core/Net 0.
- 3 Restore power to the network modules
- 4 Wait for the system to load/initialize.
- 5 Re-initialize Core/Net 1.

**Note:** Re-initializing Core/Net 1 stops the midnight routines from running.

## Install software on Core 0

### Install software on Core 0

- 1      Check that a terminal is connected to J25 on Core/Net 0.
- 2      In Core/Net 0, install the CD-ROM into the CD-ROM drive in the MMDU:
  - 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.  
Do not push the holder in by hand.

*Note:* If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

- 3      Place the CP PII Install floppy disk into the MMDU floppy drive.

*Note:* If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

- 4      Press the manual RESET button on the CP PII card faceplate.
- 5      Before the install runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:

Testing partition 0

0 percent done...1 percent done.....99 percent done....100 percent done

Testing partition 1

0 percent done...1 percent done.....99 percent done....100 percent done

Testing partition 2

0 percent done...1 percent done.....99 percent done....100 percent completed!

Disk physical checking is completed!

There are 3 partitions in disk 0:  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB

Disk partitions and sectors checking is completed!

- 6 At the terminal, press <cr> to start the software installation.
- 7 When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.
  - <a> Continue with keycode validation
  - <y> Confirm that the keycode matches the CD-ROM release
- 8 When the screen displays the Install Menu, select the following options in sequence when prompted to do so:
  - <b> Install software, database, and CP-BOOT ROM
  - <a> Verify that the CD-ROM is now in driveThe Installation Status Summary screen appears that lists the options to be installed.
  - <a> Continue with Upgrade

### Pre-Release 3 language groups

- 9 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### Select one of the six PSDL files

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 10**    Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>    Global 10 Languages
- <2>    Western Europe 10 Languages
- <3>    Eastern Europe 10 Languages
- <4>    North America 6 Languages
- <5>    Spare Group A
- <6>    North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

11 Continue with upgrade when prompted. Select a database to install.

**<cr>** Enter carriage return to continue.

**<a>** Continue with CP BOOTROM installation

**<a>** Install the CP BOOTROM from hard disk

**<a>** Start installation

**<a>** Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, Database, and CP-BOOTROM were installed.

**<cr>** Continue

**<q>** Quit (remove any diskettes and the CD-ROM from the MMDU drives)

**<y>** Confirm quit

**<a>** Reboot the system

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for "DONE" and then "INI" messages to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION

RELEASE XX.XX TO RELEASE 25.

Confirm that the Release 25 software is installed and functional on Core/Net 0:

**LD 135** to load the program

**STAT CPU** to display the CPU status

## Check for Peripheral Software Download to Core 0

Load LD 22 and print Target peripheral software version. The Source peripheral software version was printed during the procedure to "Print site data" on page 40.

If there is a difference between the Source and Target peripheral software version:

- A forced download occurs during initialization when coming out of parallel reload.
- System initialization takes longer.
- The system drops established calls on IPE.

**LD 22**

<b>REQ</b>	PRT
<b>TYPE</b>	PSWV.
<b>ISSP</b>	Print System and Patch Information.
<b>SLT</b>	Print System Limits.
<b>TID</b>	Print the Tape ID.
<b>****</b>	Exit program.

**12** Perform a data dump to save the customer database to the hard drive:

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

**LD 43** To load the program.

- b.** When "EDD000" appears on the terminal, enter

**EDD** To begin the data dump.



**CAUTION**

**Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

**Enable the conference/TDS card**

- 1 Plug in the Conf/TDS card in Group 1. Push the latches forward to lock the card in place.
- 2 Faceplate enable the Conf/TDS cards.:
- 3 Enable the Conf/TDS cards:
  - LD 34** To load the program.
  - ENLX x (loop)** To enable the Conf/TDS card.
  - \*\*\*\*** To exit the program

**On Core 1, reconfigure Group 0 and both sides of Group 1**

Configure Conference/TDS card (as a minimum) and any other network cards.

Configure both sides of Group 1 for a two-group system.

**Enable the Peripheral Signaling card**

- 1 Enable the Peripheral Signaling (Per Sig) card in Group 1:
  - LD 32** to load the program.
  - ENPS x (slot)** To enable the Peripheral Signaling card.
  - \*\*\*\*** To exit the program.

For example:

- ENPS 12** To enable slot 12 (Group 6).
- ENPS 13** To enable slot 12 (Group 6).
- \*\*\*\*** to exit the program

## Make the system redundant

To enable system redundancy, enable cCNI cards and reboot Core/Net 0:

- 1 On Core/Net 0 and Core/Net 1, enable the cCNIs.
- 2 Reboot Core/Net 0.

*Note:* Once the *inactive* Core (Core/Net 0) is rebooted, the system will operate in full redundant mode with Core/Net 0 active.

## Complete the CP PII upgrade

### Test Core/Net 1 and Core/Net 0

From Core/Net 1, perform these tests for both Cores:

- 1 Perform a redundancy sanity test:

**LD 135**

**STAT CPU** Get status of CPU and memory.

**TEST CPU** Test the CPU.

- 2 Check the LED and LCD states

a. Perform a visual check of the LEDs and LCDs.

b. Test LEDs and LCDs:

**LD 135**

**TEST LEDs** Test LEDs.

**TEST LCDs** Test LCDs.

**DSPL ALL**

c. Check that the LED and LCD displays match the software check.

- 3 Test the System Utility cards and the cCNI cards:

**LD 135**

**STAT SUTL** Get the status of the System Utility (main and Transition) cards.

**TEST SUTL** Test the System Utility (main and Transition) cards.

**STAT CNI c s** Get status of cCNI cards (core, slot).

**TEST CNI c s** Test cCNI (core, slot).

- 4 Switch Cores and repeat the tests to confirm that the data is consistent.:

**LD 135**

<b>SCPU</b>	Switch cores.
<b>STAT CPU</b>	Get status of the CPU.
<b>TEST CPU</b>	Test the inactive Core.
<b>TEST LEDs</b>	Test LEDs.
<b>TEST LCDs</b>	Test LCDs.
<b>DSPL ALL</b>	
<b>STAT SUTL</b>	Get status of System Utility (both main and Transition) cards.
<b>TEST SUTL c s</b>	Test System Utility cards, both main and Transition cards.
<b>STAT CNI c s</b>	Get status of cCNI cards, both main and Transition cards (core, slot).
<b>TEST CNI c s</b>	Test cCNI cards, both main and Transition cards (core, slot).

- 5 Test system redundancy:

**LD 137**

<b>TEST RDUN</b>	Test redundancy.
<b>DATA RDUN</b>	
<b>TEST CMDU</b>	Test the MMDU card.

- 6 Install the two system monitors. Test that the system monitors are working:

<b>LD 37</b>	Load the program.
<b>STAT XSM</b>	Check the system monitors
<b>****</b>	Exit the program.

- 7 Clear the display and minor alarms on both Cores:

**LD 135**

<b>CDSP</b>	Clear the displays on the cores.
<b>CMAJ</b>	Clear major alarms.
<b>CMIN ALL</b>	Clear minor alarms.

- 8        Get the status of the Cores, cNIS, and memory.
  - STAT CPU**        Get the status of CPUs and redundancy.
  - STAT CNI c s**    Get the status of cCNI cards (core, slot).

*Note:* You may need to execute the STAT CNI command twice before receiving a response from the system

- 9        Test the clocks:
  - a.    Verify that the clock controller is assigned to the *active* Core.

- LD 60**            To load the program.
- SSCK x**          To get the status of the clock controllers (x is "0" or "1" for Clock 0 or Clock 1.
- SWCK**            To switch the Clock if necessary.
- \*\*\*\***             Exit program.

- b.    Verify that the Clock Controllers are switching correctly:.

- SWCK**            To switch the Clock.
- SWCK**            to switch the Clock again.

- 10      Test the Fiber Rings

See the *Maintenance* (553-3001-511) for more information on overlay 39 commands.

- a.    Check that the Fiber Rings operate correctly:

- LD 39**            To load the program.
- STAT RING 0**    To check the status of Ring 0 (HALF/HALF)
- STAT RING 1**    To check the status of Ring 1 (HALF/HALF)

- b.    If necessary, restore the Rings to Normal State:

- RSTR**            To restore both Rings to Half state.

- c.    Check that the Rings operate correctly:

- STAT RING 0**    To check the status of Ring 0 (HALF/HALF)
- STAT RING 1**    To check the status of Ring 1 (HALF/HALF)

- 11 Check the status of the FIJI alarms  
**STAT ALRM** to query the alarm condition for all FIJI cards in all Network Groups  
  
\*\*\*\* Exit program.

## Perform a data dump

Perform a data dump to backup the customer database:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** Load the program.
- 3 Insert a floppy disk into the MMDU to back up the database.
- 4 When "EDD000" appears on the terminal, enter  
**EDD** Begin the data dump.



### CAUTION

#### Loss of Data

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

## Add an IPE module, if required

Place an IPE module on top of Core 1 column, if required. Refer to *System Installation Procedures* (553-3001-210).

Refer to Engineering Guidelines for Option 81C to re-engineer the system, if required.

The Option 51/51C upgrade to Option 81C with CP PII and Fiber Network Fabric is complete.



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# Option 61 upgrade to Option 61C

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## Contents

The following are the topics in this section:

Reference list .....	779
Equipment required ..	781
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Installing the card cage .....	784
Transferring the database from 4 MB to IODU/C .....	795
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Installing intermodule cables .....	802
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Returning the system to redundant mode .....	807
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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)*

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**  
**Service Interruption**

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**  
**Service Interruption**

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 software 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 89 on page 633 lists the equipment required to upgrade a Meridian 1 Option 61 system to a Meridian 1 Option 61C system.

**Table 89**

### 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

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

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
- NTRB53 Clock Controller card vintage A
- 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 12. 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 943 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



#### **CAUTION** **Loss of Data**

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

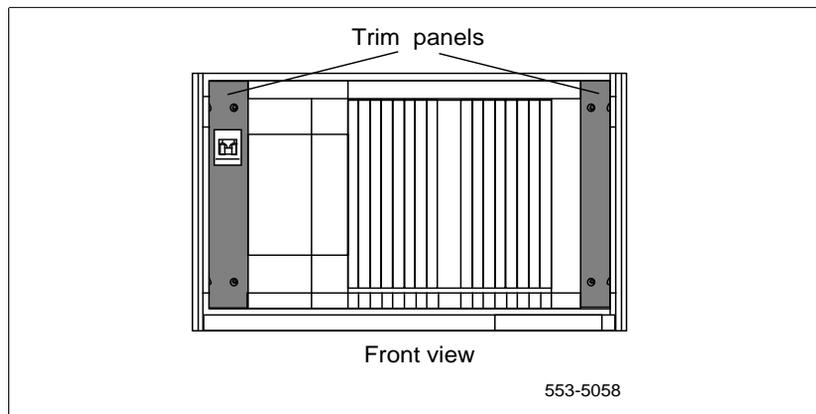
When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter

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

## 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 118 on page 636). Keep the screws for reuse.

**Figure 118**  
**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.

**CAUTION****Service Interruption**

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.)

**CAUTION****Damage to Equipment**

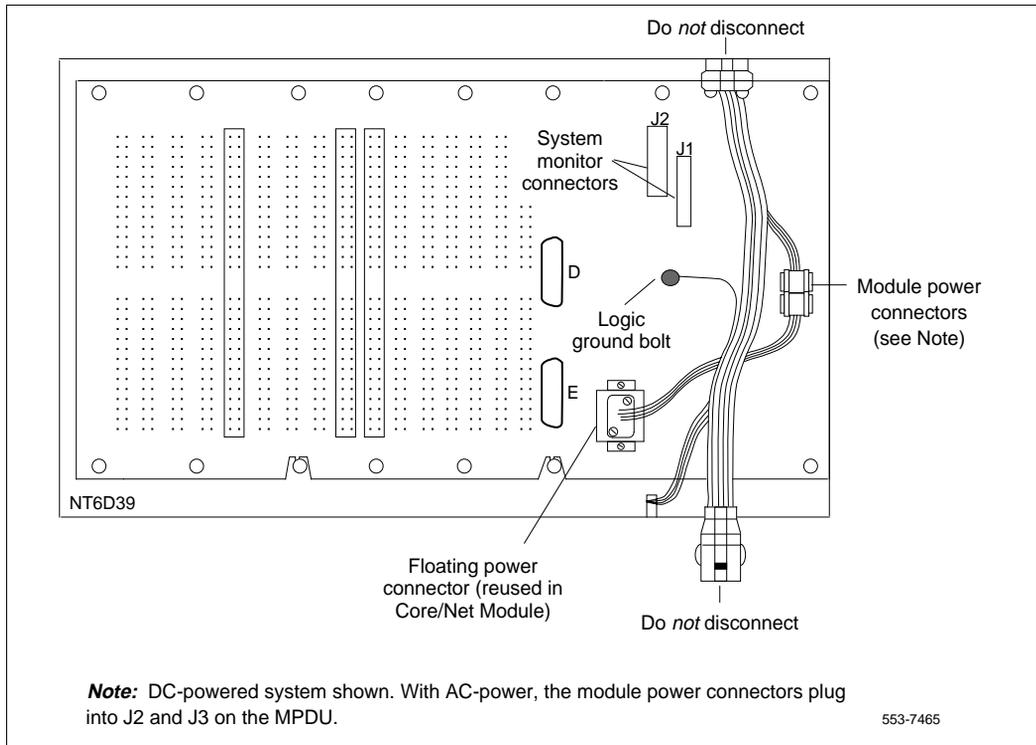
Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 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 119 on page 638)

**CAUTION****Service Interruption**

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

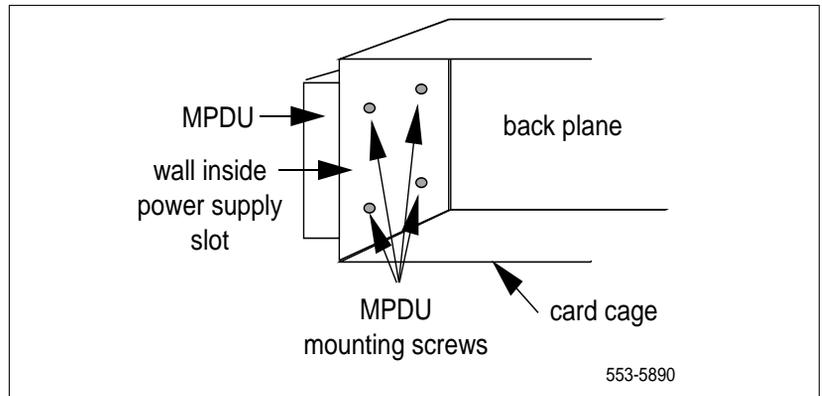
**Figure 119**  
**Power connectors on the rear of the CPU/Network module backplanes**



- 11 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 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 120 on page 639).

**Figure 120**  
**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 90 on page 640 and Figure 121 on page 641). The jumpers are located on the bottom, front side of the backplane near slot 14.



**CAUTION**

**Service Interruption**

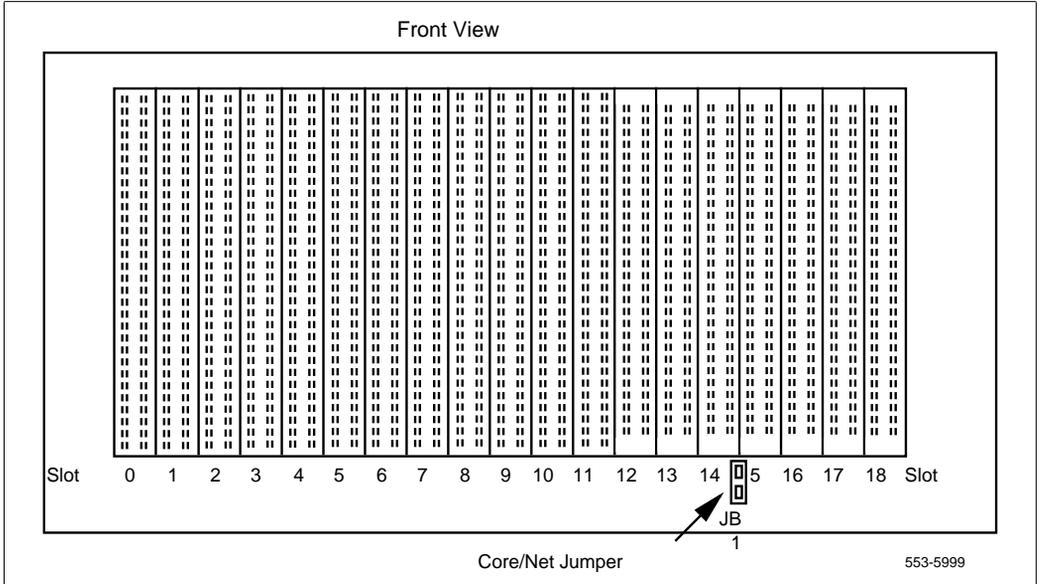
If the Core/Net module jumpers are set incorrectly, the system will not load and operate correctly.

**Table 90**  
**Backplane jumper settings for NT5D21 Core/Network module**

<b>Module</b>	<b>Jumper configuration</b>
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. The tape will be removed later.

**Figure 121**  
**Location of the jumper on the NT5D21 backplane**

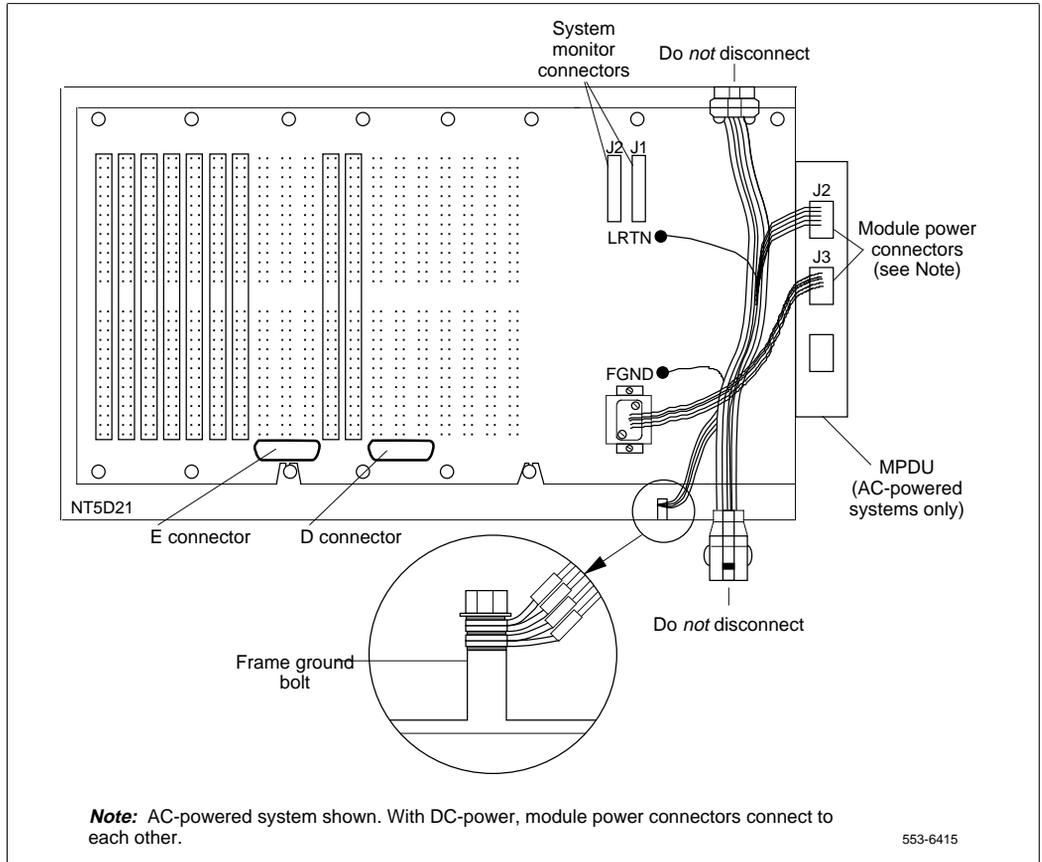


- 18** Slide the Core/Net 0 card cage about halfway into the lower module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 122 on page 643):

  - 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.

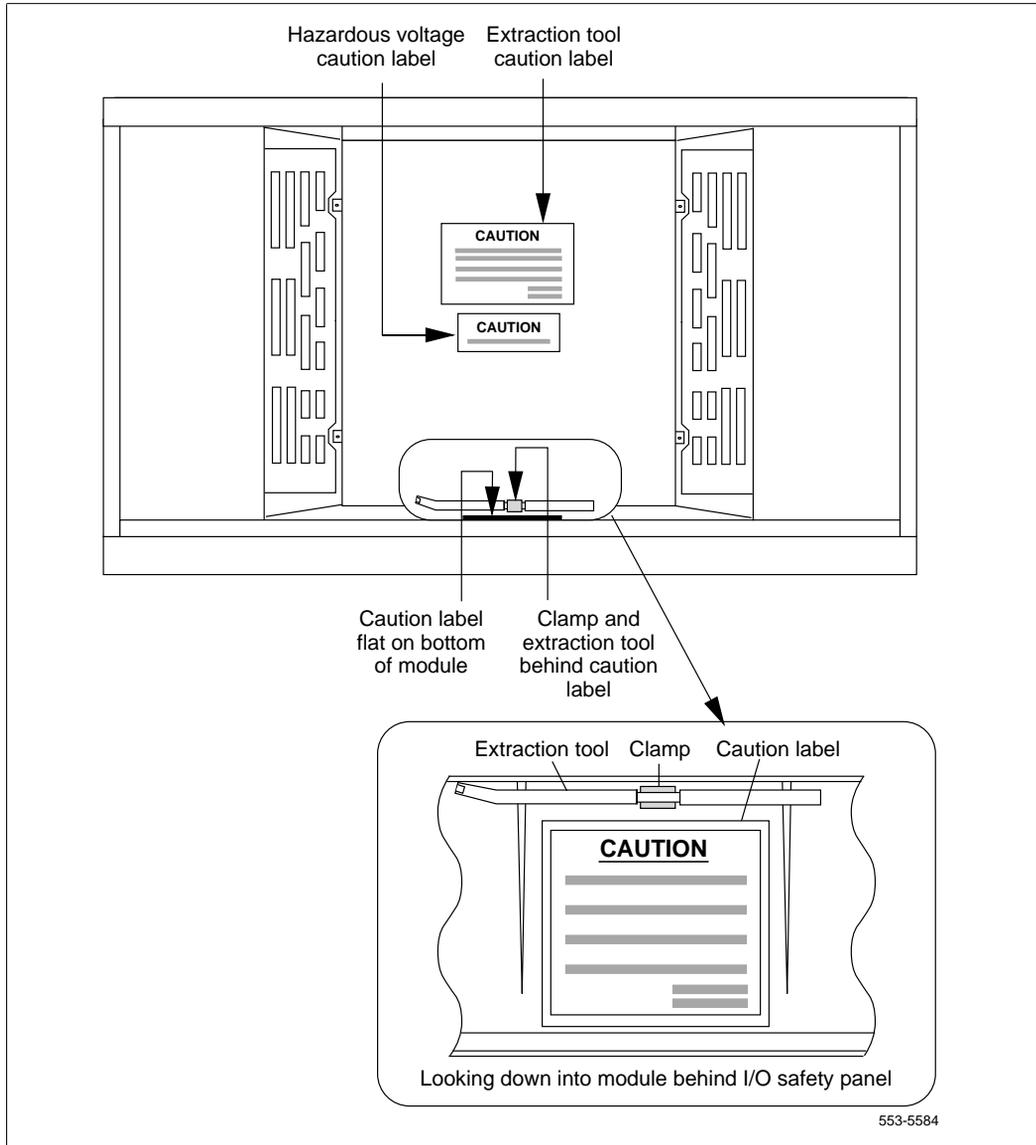
*Note:* For all of the connectors to fit on the post, you need to remove one of the lock washers. You must leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third, or the third and fourth, connectors.
  - b.** Attach the logic ground (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 123 on page 644).
- 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.

**Figure 122**  
**Power connectors on the rear of the NT5D21 Core/Network module**



- 26** Snap the P0741489 Extraction Tool into the clamp.
- 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 123**  
**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 90 on page 640).
- 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 91 on page 646). Place the card in slot 11.

**Table 91**  
**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.
- 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 92 on page 647. 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 126 on page 656).

**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 92**  
**Slot number translation for network cards**

<b>NT6D39 CPU/Net 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

## 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

#### Damage to Equipment

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 124, on page 650). 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).



- 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 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



**CAUTION**

**Loss of Data**

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

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

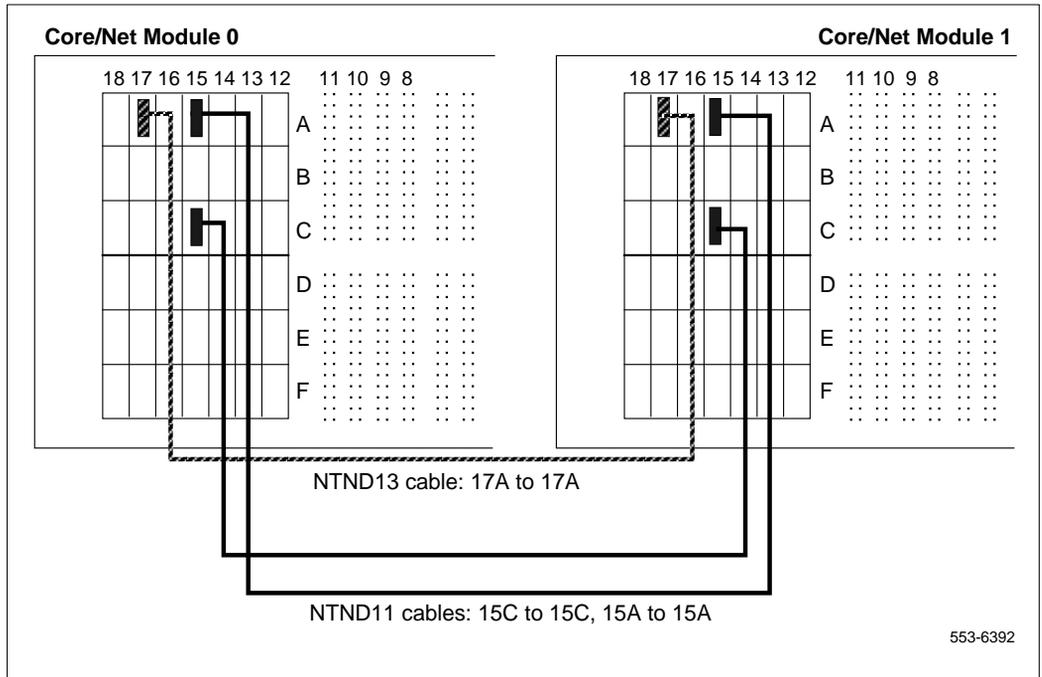
**\*\*\*\***         to exit the program

**10**   Power down the column containing Core/Net 1 and 0.

## Installing intermodule cables

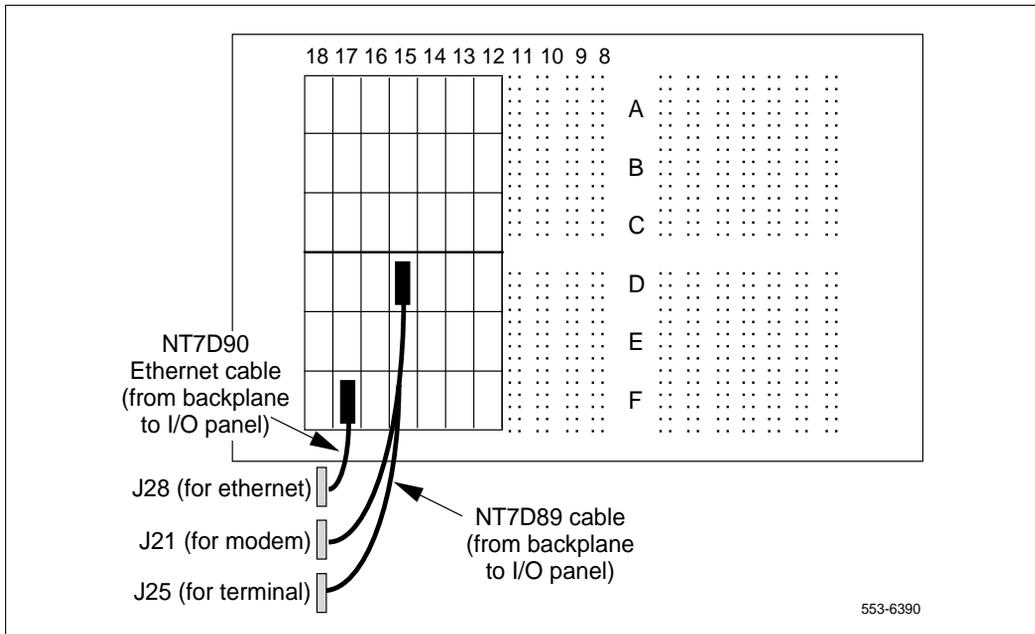
- 1 Install the NTND13 SCSI cable from backplane connector 17A in Core/Net 0 to connector 17A in Core/Net 1 (see Figure 125 on page 655).
- 2 Install the first NTND11 CP-to-CP cable from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 (see Figure 125 on page 655).
- 3 Install the second NTND11 CP-to-CP cable from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 125 on page 655).
- 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 126 on page 656)

**Figure 125**  
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 backplane connector labeled E in Core/Net 1.

**Figure 126**  
**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 943 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:
  - <0>                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



**CAUTION**

**Loss of Data**

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

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

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

## 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

	<p><b>CAUTION</b> <b>Loss of Data</b> If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.</p>
---	--

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

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

The upgrade is complete; the Option 61C is running Release 25. Continue with “Completing the upgrade” on page 662 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 61/61C upgrade to Option 81C CP PII with FNF

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Restore power . . . . .	881
Install software on Core 0 . . . . .	881
Install software on Core 0 . . . . .	882
Check for Peripheral Software Download to Core 0 . . . . .	885
On Core 1, reconfigure Group 0 and both sides of Group 1 . . . . .	886
Make the system redundant . . . . .	887
Complete the CP PII upgrade . . . . .	887
Test Core/Net 1 and Core/Net 0 . . . . .	887
Perform a data dump . . . . .	890
Add an IPE module, if required . . . . .	891

## Reference list

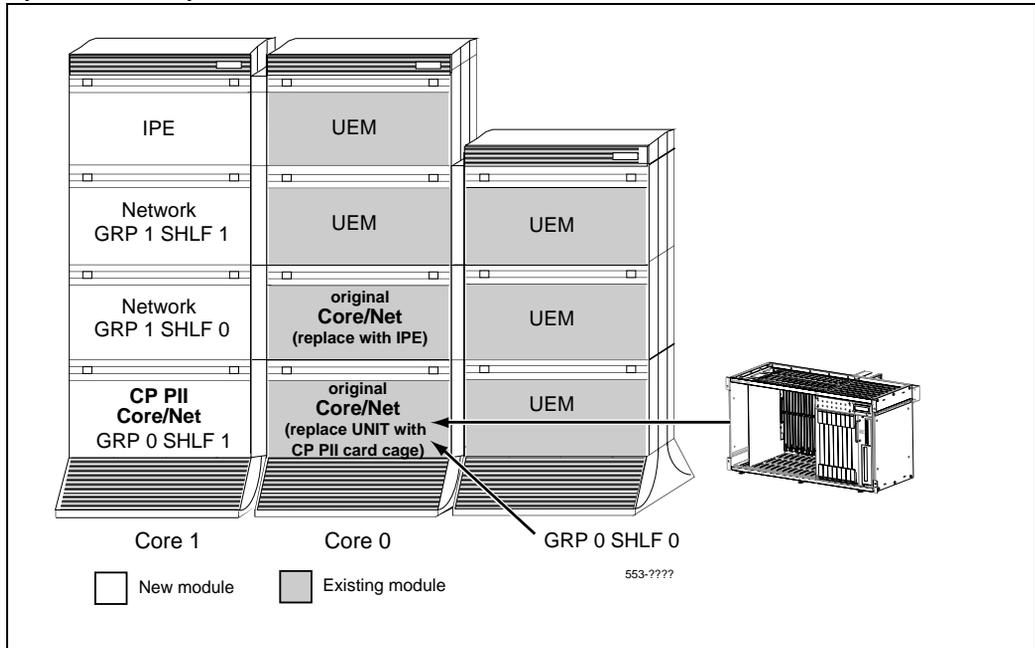
The following are the references in this section:

- *Capacity Engineering* (553-3001-149)
- *System Installation Procedures* (553-3001-210)
- *Maintenance* (553-3001-511)

## Overview of Option 61/61C to CP PII with FNF upgrade

Figure 127 on page 668 shows an upgrade from an Option 61C to Option 81C with Call Processor PII and Fiber Network Fabric.

**Figure 127**  
**Option 61C to Option 81C with CP PII and FNF**



Options 61 and 61C can be upgraded to Option 81C only with both Call Processor PII (CP PII) and Fiber Network Fabric. Upgrades from Option 61 or 61C to CP PII alone or to Fiber Network Fabric alone are not supported.

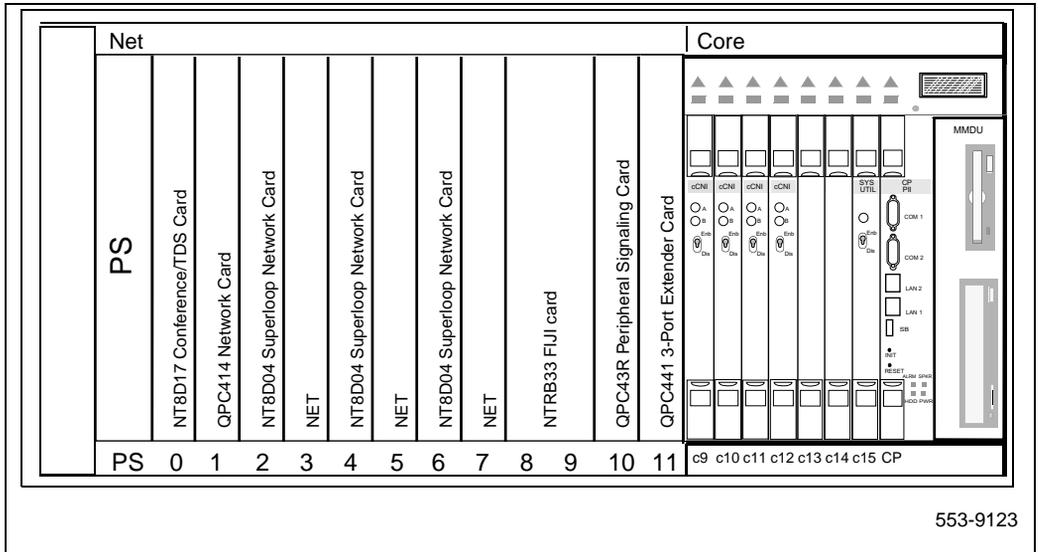
This upgrade takes an Option 61 or 61C to a two group Option 81C with CP PII and Fiber Network Fabric. Additional groups can be added by following the procedure “Add a Network Group to Option 81C with FNF” on page 893.

To upgrade an Option 61C system to CP PII with Fiber Network Fabric:

- The card cages in the existing Core/Net modules are replaced with CP PII card cages.
- The CP PII Core/Net modules side by side directly on top of the pedestals. This ensures power and cooling redundancy as well as proper cooling from the pedestal fans.
- New CP PII cards are located in the Core/Net modules or card cage.

- Existing network cards are relocated to the CP PII card cage.
- Two new Group 1 Network modules are installed on top of the new CP PII Core/Net 1 module. This provides the new system with a minimum of two full Network groups.
- The existing Clock Controllers are moved from the Core/Net to the Network shelves.
- New cards for Fiber Network Fabric are added: NTRB33 Fiber Junctor Interface (FIJI) card and the NTRE39 Optical Cable Management Card (OCMC).
- An IPE module can be installed on top of CP PII Core/Net 0 module.

**Figure 128**  
**CP PII Core/Net Module**



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## Review upgrade requirements

This section describes the **minimum** equipment required for CP PII. Additional equipment can also be installed during the upgrade. Verify that *all* equipment has been received.

### Check equipment received

Before the upgrade, check that the equipment on the order form is also on the packing slip. Check that all equipment has been received. If any items are missing, contact your supplier for replacements before you begin the upgrade.



#### **CAUTION**

##### **Service Interruption**

DO NOT proceed with the upgrade if any of the required equipment is missing. All equipment must be received to complete the upgrade.

### Check required software

The following software packages are required to upgrade a system to Option 81C with CP PII:

- software Release 25
- Call Processor PII software package 368
- Fiber Network Fabric software package 365
- Option 81C Software Package 299
- Software Install Kit

## Check vintage requirements for existing hardware

Check the list below to make sure that existing hardware meets the minimum vintage requirements for CP PII.

If any of the equipment listed does not meet the requirements, replace the equipment before you begin the upgrade.



### **CAUTION**

#### **Service Interruption**

Equipment that does not meet the minimum vintage requirements will cause system malfunctions and loss of call processing.

- The QPC441 3-Port Extender (3PE) cards must be minimum vintage F.
- The NTRB53 Clock Controller cards must be minimum vintage A.
- The QPC471 Clock Controller cards must be minimum vintage H.
- The QPC775 Clock Controller cards (all countries except USA) must be minimum vintage E.
- If the Clock Controllers are moved in Option 61 or 61C systems, the new Clock Controller cables must be the correct length. Order new NT8D79 or NTCG03 PRI/DTI to Clock Controller cables if necessary.

*Note:* QPC720 PRI cards require NT8D79 cables. NT5D12 Dual PRI/DTI cards require NTCG03 cables.

- The QPC43 Peripheral Signaling cards must be minimum vintage R.

## Check required hardware

Table 93 on page 672 describes the *minimum* equipment required to upgrade a system to CP PII. Table 94 on page 674 and Table 95 on page 675 list the DC and AC power equipment requirements. Additional equipment for increased Network capacity is ordered separately.

**Table 93**  
**Minimum requirements for Option 61 and 61C systems**

Order number	Description	Quantity per system
NT4N64AA	CP PII Call Processor Card (256MB Memory)	2
NT1R91AA	Modem Kit	1
NT4N43AA	cPCI Multi-Media Disk Unit	2
NT4N46AA	cPCI Core/Network Card Cage AC/DC	2
NT4N65AB	cPCI Core Network Interface Card (2 ports)	2
NT4N66AB	cPCI Core Network Interface Transition Card	2
NT4N67AA	cPCI System Utility Card	2
NT4N68AA	cPCI System Utility Transition Card	2
NT4N6809	Security Device Holder	2
NT4N88AA	CP PII to I/O Panel DTE Cable (48 in.)	2
NT4N88BA	CP PII to I/O Panel DCE Cable (48 in.)	2
NT4N89AA	System Utility to System Monitor Cable	2
NT4N90AA	CP PII to I/O Panel Ethernet Cable (48 in.)	2
NT8D01BC	Controller - Four Card	1
NT8D04BA	Superloop Network Card	
NT8D17FA	Conference/TDS Card	
NT8D22AC	System Monitor	

**Table 93**  
**Minimum requirements for Option 61 and 61C systems**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NT8D35BA/ NT8D35EA	Network Module AC/ Network Module DC	2
NT8D37BA/ NT8D37EC	Intelligent Peripheral Equipment Module AC/ Intelligent Peripheral Equipment Module DC	1
NT8D41BA	Quad SDI Paddle Board	1
NT8D46AD	System Monitor to SDI Cable (60 in.)	1
NT8D46AL	System Monitor Serial Link Cable (7 ft.)	1
NT8D46AS	System Monitor InterCPU Cable (30 in.)	1
NT8D49AA	Column Spacer Kit (2.75 in.)	
NT8D76BE	IGS to IGM or cCNI to 3PE Cable (6 ft)	2
NT8D76BF	IGS to IGM or cCNI to 3PE Cable (10 ft)	2
NT8D80BZ	CPU Interface Cable (5 ft.)	
NT8D84AA	SDI Paddleboard to I/O Cable (18 in.)	
NT8D90AF	SDI Multi-Port Extension Cable (10 ft)	
NT8D91AD	Network to Controller Cable (6 ft)	
NT8D99AB	CPU to Network Cable (2 ft)	2
NT8D99AD	CPU to Network Cable (6 ft)	2
NT9D18AA	Module Side Cover	
NTRB33AA	Fiber Junctor Interface (FIJI) Card	

**Table 93**  
**Minimum requirements for Option 61 and 61C systems**

Order number	Description	Quantity per system
NTRC17AA	CP PII Ethernet to Ethernet Cable (8.5 ft)	2
NTRC46BB	Clock - FIJI Cable (1.7M - 2.4M (5.5 ft - 8 ft))	
NTRC47AA	FIJI - FIJI Synch Cable	
NTRC48AA	FIJI Fiber Ring Cable (2M (6 ft))	
NTRC49AA	Clock - Clock Symch Cable	
NTRD25AA	AC Pedestal Assembly	
NTRE39AA	Optical Cable Management Card (OCMC)	
NTRE40AA	Dual Ethernet Adapter (RJ45) for I/O Panel	2
P0745716	Rear I/O Panel	2
P0906308	cPCI Card Slot Filler Panel	16

### Check required power equipment

Table 94 on page 674 lists the equipment required for DC powered systems.

Table 95 on page 675 lists the equipment required for AC powered systems..

**Table 94**  
**DC power requirements for Option 61/61C upgrades**

Order number	Description	Quantity per system
NT6D41CA	Core/Network Power Supply DC	2
NT4N97BA	cPCI Upgrade Kit DC (Misc. Card Cage Components)	2

**Table 95**  
**AC power requirements for Option 61/61C upgrades**

<b>Order number</b>	<b>Description</b>	<b>Quantity per system</b>
NT8D29BA	Core/Network Power Supply AC	2
NT4N97AA	cPCI Upgrade Kit AC (Misc. Card Cage Components)	2

### **Check required tools**

With standard tools required to service a Meridian 1, use the following special tools for the upgrade:

- a 12" long, 3/8" hex head nut driver (to secure the screws in the back of the card cage)
- a flashlight

### **Check personnel requirements**

Nortel Networks recommends that a minimum of two people perform the card cage upgrade.

### **Database requirements**

Option 61 systems must be sent to Nortel Networks for software conversion.

If your software is pre-Release 19, you must send the database to Nortel Networks to be converted.

### **Prepare for upgrade**

Follow the list of instructions under the heading for "Prepare for upgrade for Option 61/61C to CP PII and FNF" on page 23 and return to "Install Core 1 hardware" on page 676.

## Install Core 1 hardware

### Install the new column

After completing the steps in “Prepare for upgrade” on page 675, you must install the new column. Follow the instructions in *System Installation Procedures* (553-3001-210) to correctly install the column and configure the power and System Monitor connections.

### Check that the main Core cards are installed

The main Core cards including the MMDU (with the cables for power and data) are installed in the factory, as shown in Figure 129 on page 677:

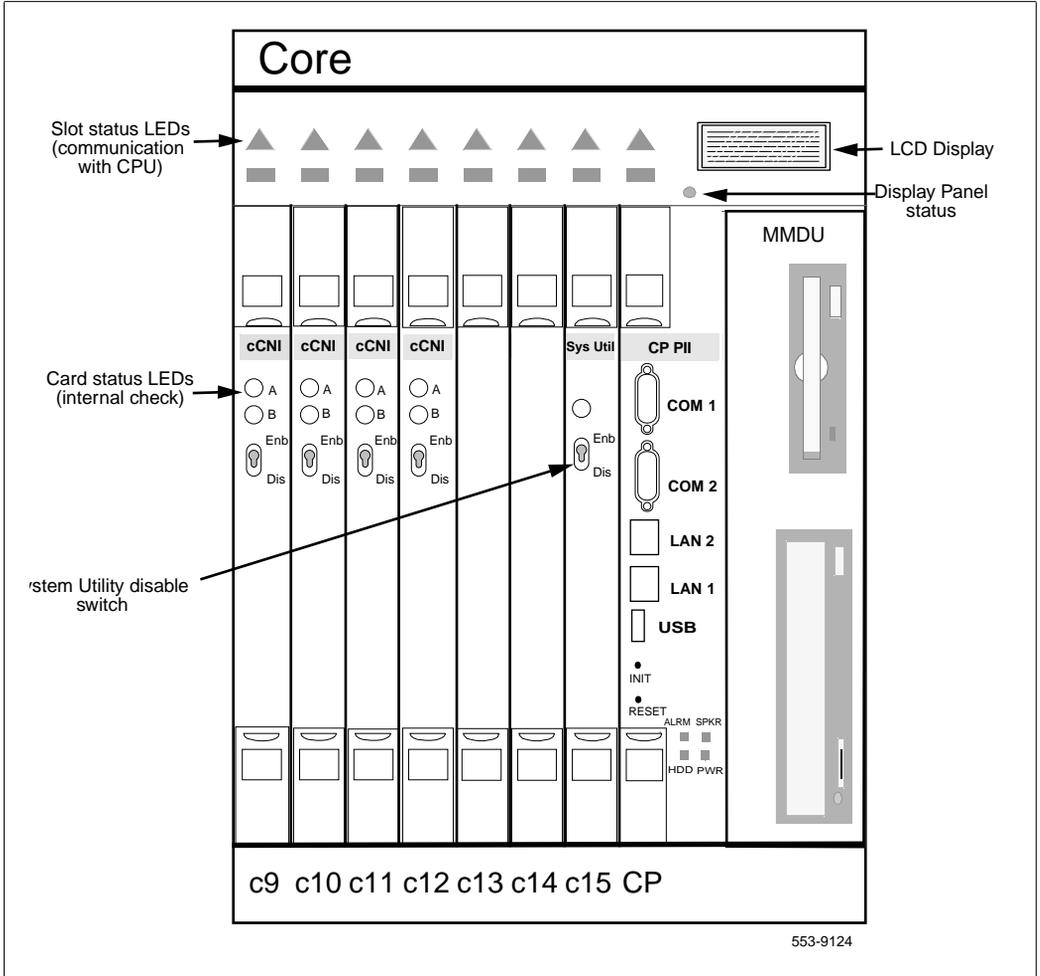
- **NT4N65AB cPCI Core Network Interface (cCNI) cards:** Each system contains between one and four NT4N65 cCNI cards per Core/Net Module. The cCNI cards are located in slots c9-c12. If not already installed, install a P0906308 cPCI Card Slot Filler Panel to cover any of slots c10 - c 12 which do not contain cCNIs.
- Slots c13 and c14 are left empty. If not already installed, install a P0906308 cPCI Card Slot Filler Panel in each slot.
- NT4N67AA System Utility (Sys Util) card is located in slot c15.
- NT4N64AA Call Processor PII (CP II) is located in the CP slot.
- NT4N43AA cPCI Multi-Media Disk Unit (MMDU) is located in the extreme right hand slot next to the CP PII card. The MMDU contains the hard drive, floppy drive and CD-ROM drive.

### Check that the Core Transition cards are installed

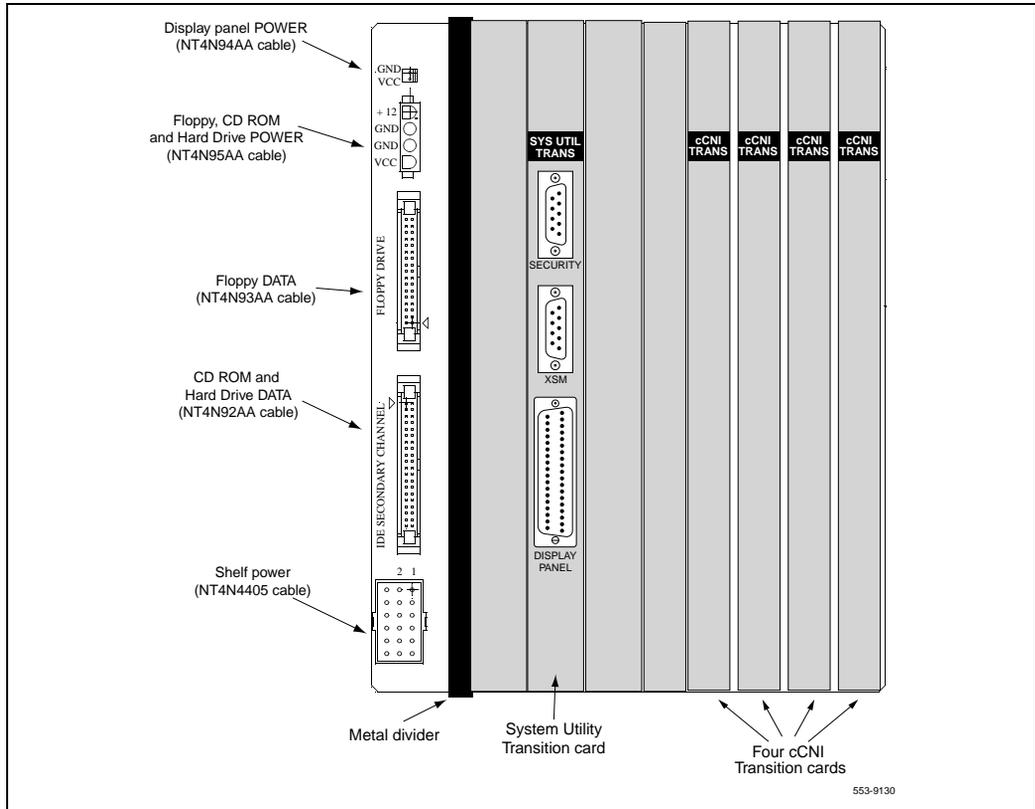
The Core Transition cards are located directly behind the corresponding main cards (on the rear of the Core backplane). Core Transition cards are installed in the factory:

- **NT4N66AB cCNI Transition Cards:** Each system contains four cCNI Transition cards.
- **NT4N68AA System Utility Transition card:** The System Utility Transition card is installed directly behind the System Utility card and contains connections for the Security Device, the System Monitor (XSM) and the Display Panel.

**Figure 129**  
**Core card placement in the NT4N41 Core/Net Module (front)**



**Figure 130**  
**Location of Transition cards**



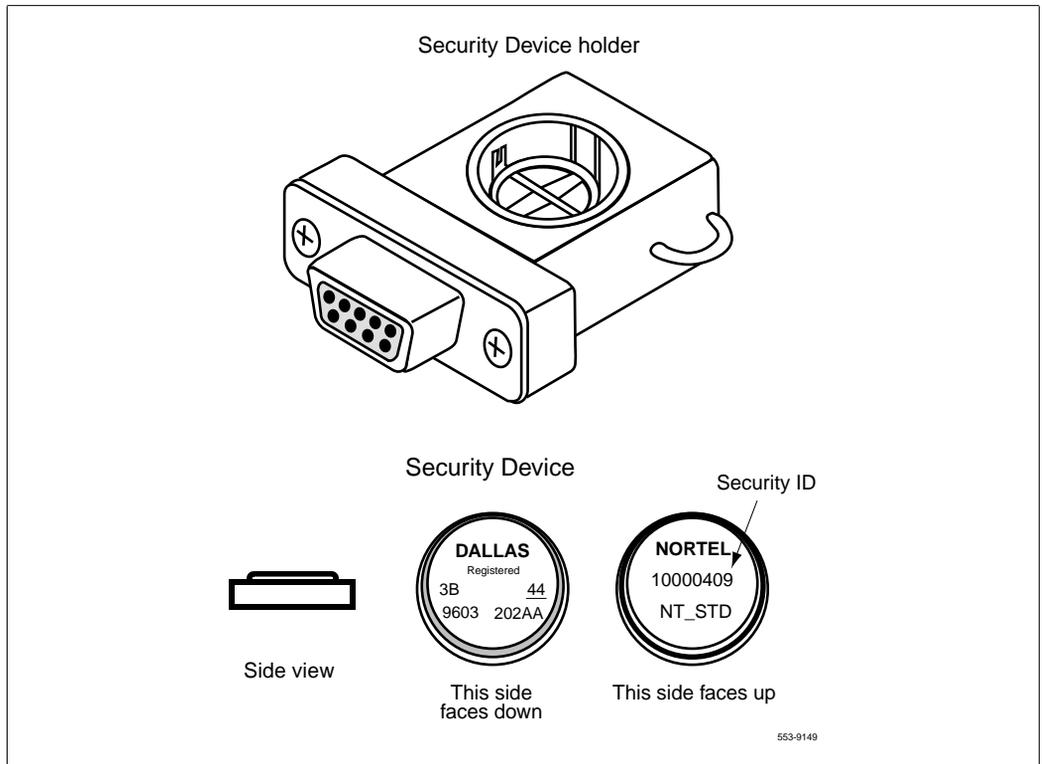
553-9130

## Install the Security Device

The Security Device fits into the Security Device holder (Figure 131 on page 679). This assembly attaches to the System Utility Transition card located on the back of the core backplane.

To install the Security Device:

- 1 If the original system had an IODU/C, remove the Security Device from the IODU/C for reuse.
  - a. Unlock the latches and remove the IODU/C card.

**Figure 131**  
**Security Device and holder**

- b.** Remove the round 1/2" diameter IODU/C Security Device from the round black Security Device holder on the top right corner of the IODU/C card.

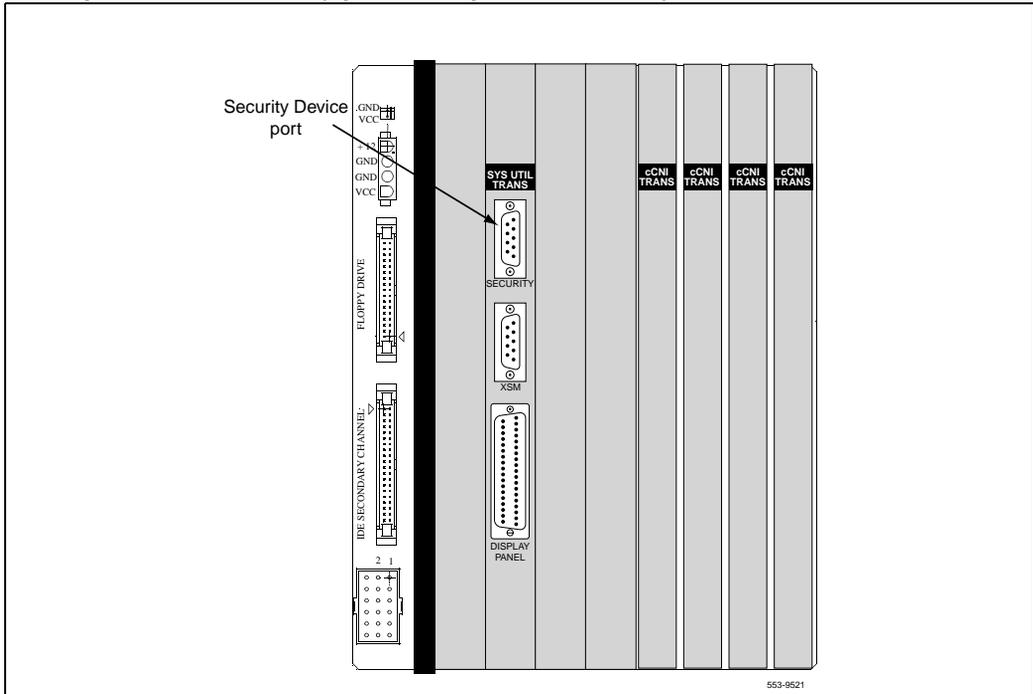
Or

If the original system did not have an IODU/C, use the Security Device provided with the CP PII Software kit. Locate the Security Device holder in the plastic bag taped to the top of the card cage.

- 2** Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.

- 3    Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 132 on page 680).
- 4    Check that the Security Device is securely in place.

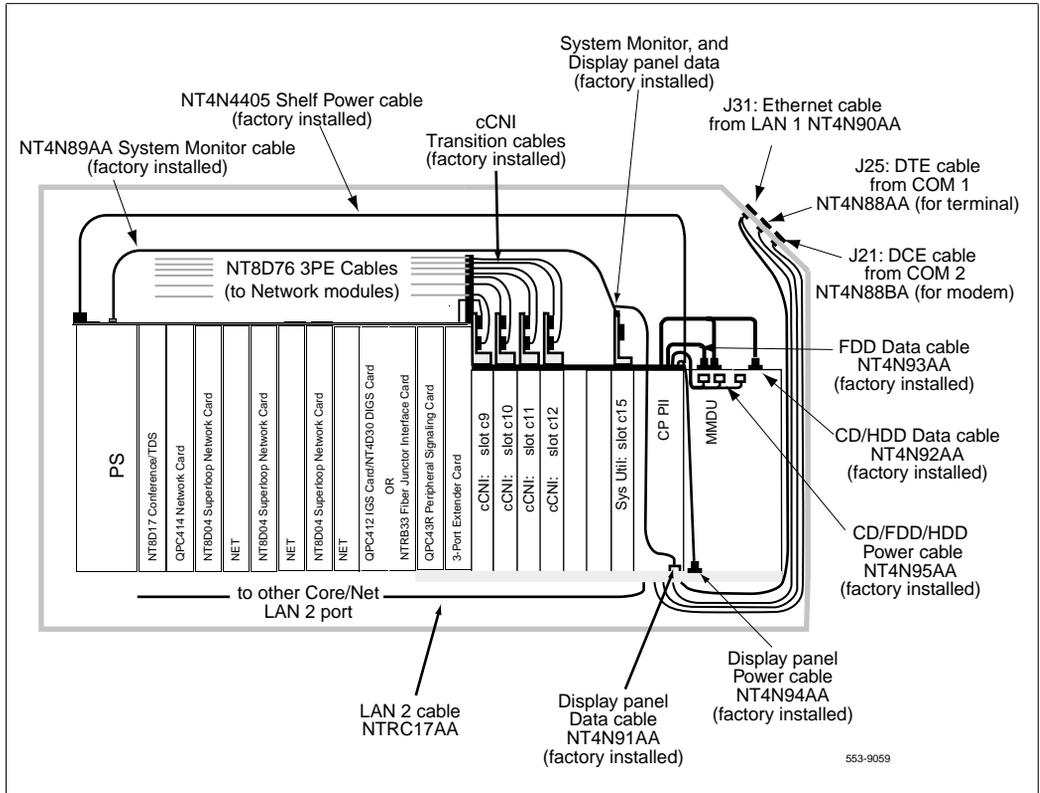
**Figure 132**  
**Security Device installation (System Utility Transition card)**



### Check for the shelf power cable

Check that the NT4N4405 Shelf Power Cable is installed in the CP PII card cage backplane. See Figure 133 on page 681 for cable location.

**Figure 133**  
**Core/Net cable connections (top view)**



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## Check the location of Clock Controller 1 and switch settings

For Option 61/61C upgrades to Option 81C with CP PII and Fiber Network Fabric, Clock Controller 1 is factory installed in Network group 1, shelf 1, slot 13:

- 1 If Clock Controller 1 is not installed in that slot, move it there now.
- 2 Verify Clock Controller switch settings. See Table 96 on page 682.

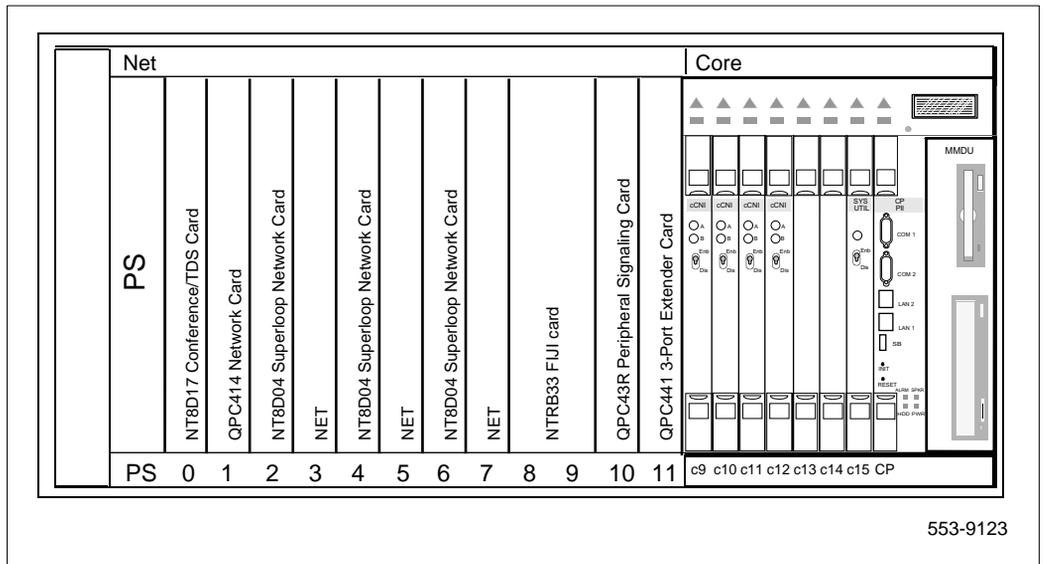
**Table 96**  
**Clock Controller switch settings**

<b>Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table. DO NOT use any other switch settings.</b>											
<b>SW1</b>				<b>SW2</b>				<b>SW4</b>			
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
on	off	off	off	off	off	off	off	**	on	*	*
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
<p>* If there is only one Clock Controller card in the system, set to OFF.                      If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above.                      Set the switches on both cards to the same settings.</p> <p>** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.</p>											

## Check that the Network cards are installed

- 1 Check that the Network cards are installed in Network shelves as shown in the system layout.
- 2 Check that the cards in the network side of the CP PII Core/Net Module are installed according to the system layout. See Figure 134 on page 683.
  - The NTRB33 Fiber Junctor Interface (FJJI) card is a double width card located either in slots 2 and 3 of each Network module, or in slots 8 and 9 in each Core/Net shelf. Do not seat the FJIJs yet.
  - The NTRE39 Optical Cable Management Card (OCMC) is a single width card installed between the power supply and slot 1 of a Network module.

**Figure 134**  
**Card layout in the CP PII Core/Net Module**



## Disable Core 1

### Check that Core 0 is active

To upgrade Core 1, verify that Core 0 is the active side performing call processing:

- 1        Verify that Core 0 is active.  
**LD 135**        To load the program  
**STAT CPU**        Get the status of the CPUs
  
- 2        If Core 1 is active, make Core 0 active:  
**SCPU**        Switch to Core 0 (if necessary)  
**\*\*\*\***        Exit the program

### Check that Clock Controller 0 is active

- 1        Check the status of the Clock Controllers:  
**LD 60**        to load the program  
**SSCK 0**        Get the status of Clock Controller 0  
**SSCK 1**        Get the status of Clock Controller 1
  
- 2        If Clock Controller 1 is active, switch to Clock Controller 0.  
**SWCK**        If necessary, switch to Clock Controller 0  
**DIS CC 1**        Disable Clock Controller 1  
**\*\*\*\***        Exit the program
  
- 3        Faceplate disable Clock Controller 1.

## Check that Ring 0 is active

- 1 Check the status of Ring 0.  
**LD 39** to load the program  
**STAT RING 0** to get the status of Ring 0. Ring state should be HALF/HALF.
  
- 2 Disable Ring auto recovery.  
**LD 39** to load the program  
**ARCV ON/OFF** Set or reset auto-recovery operation for ring
  
- 3 Swap to Ring 0.  
**LD 39** to load the program  
**SWRG 0** Switch call processing to ring 0
  
- 4 Disable Ring 1.  
**LD 39** to load the program  
**DIS RING 1** Disables all FIJI cards on side 1

## Split the Cores

- 1 In Core 0, set the NORM/MAINT switch on the CP card to MAINT.
- 2 In Core 1, set the ENB/DIS switch on all NT6D65 CNI cards to DIS.
- 3 In Core 1, set the NORM/MAINT switch on the CP card to MAINT.

The system is now in split mode, with call processing on Core 0.

## Disable and remove equipment from Core 1

### Move Clock Controller 1



#### **CAUTION**

##### **Service Interruption**

Move only Clock Controller 1 at this point in the upgrade.

Do not move Clock Controller 0 at this time.

- 1      Label and disconnect the Clock Controller 1.
- 2      Disconnect the cable from the Clock Controller 1 faceplate card.
- 3      If primary and secondary clock reference cables are connected to the Clock Controller 1 faceplate, disconnect them last.
- 4      Remove Clock Controller 1 from the Core module.
- 5      Set the Clock Controller 1 switch settings according to Table 1 on page 687.
- 6      Move Clock Controller 1 to Group 1 Network Shelf 1, slot 13.  
        Seat Clock Controller 1 but do not enable the card.  
  
        **Note:** The Clock Controllers (0 and 1) must be located in different Network groups in different columns. Refer to the guidelines on "Prepare to move Clock Controllers on Option 61/61C" on page 48 to determine Clock Controller placement.
- 7      Reconnect the Clock Controller 1 cables.
- 8      Disable any ISDN PRI card in the Core module.
- 9      Disable the CNI card in Core module (phantom group 5):  
        **LD 135**            To load the program.  
        **DIS CNI 1 8 0**    Disable the CNI card in Core module 1, slot 8, port 0.

**Table 1**  
**Clock Controller 1 switch settings**

<b>Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table.</b>											
<b>SW1</b>				<b>SW2</b>				<b>SW4</b>			
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
on	off	off	off	off	off	off	off	**	on	*	*
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
* If there is only one Clock Controller card in the system, set to OFF. If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above. Set the switches on both cards to the same settings.											
** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.											

This is the end of the procedure to move Clock Controller 1.

## Software disable Network cards in Core/Net 1

Prepare to software disable all cards in the network slots of Core/Net 1.



### CAUTION

#### Service Interruption

At this point, the upgrade interrupts service.

Cards in the Network slots include the following:

- NT8D04 Superloop Network card

- QPC414 Network card
- QPC441 Three-Port Extender (3PE) card
- QPC43R Peripheral Signaling card
- QPC513 Enhanced Serial Data Interface (ESDI) card
- NT8D41 Extended Serial Data Interface (XSDI) card
- QPC536 Digital Trunk Interface (DTI) card
- NT8D72 Primary Rate Interface (PRI) card
- NT6D80 Multipurpose Serial Data Link (MSDL) card

**Software disable cards in network slots of Core/Net 1:**

- 1     In Core/Net 1 only, software disable all network and I/O cards such as XNET, TTY, Conf/TDS and ISDN cards:
  - a.    In Core/Net 1 only, disable XNET.
  - b.    In Core/Net 1 only, disable ENET.



**CAUTION**

**Service Interruption**

If the system terminal is assigned to an SDI port that you are disabling, assign it to another port before you disable the SDI.

- c.    In Core/Net 1 only, software disable each port on the SDI cards:

**LD 37**

**DIS TTY x**     x = the number of the interface device attached to a port.

\*\*\*\*             Exit the program

- d.    In Core/Net 1 only, disable DTI cards.
      - e.    In Core/Net 1 only, disable PRI cards.
      - f.    In Core/Net 1 only, disable MSDL cards.

- 2** In Core/Net 1 only, software disable the QPC43 Peripheral Signaling Card:

**LD 32****DSPS x**

Table 97 on page 689 lists Peripheral Signaling Card numbers specified by "x"

\*\*\*\*

Exit the program.

**Table 97**  
**Peripheral Signaling Card numbers**

<b>Group/ shelf</b>	<b>Peripheral Signaling Card</b>	<b>Loops disabled/enabled</b>			
0 / 0	0	0	–	15	
0 / 1	1	16	–	31	
1 / 0	2	32	–	47	
1 / 1	3	48	–	63	
2 / 0	4	64	–	79	
2 / 1	5	80	–	95	
3 / 0	6	96	–	111	
3 / 1	7	112	–	127	
4 / 0	8	128	–	143	
4 / 1	9	144	–	159	
5 / 0	10	160	–	175	
5 / 1	11	176	–	191	
6 / 0	12	192	–	207	
6 / 1	13	208	–	223	
7 / 0	14	224	–	239	
7 / 1	15	240	–	255	

- 3** In Core/Net 1 only, disable the 3PE card:

Set the ENB/DIS switch on the 3PE card to DIS.

This is the end of the procedure to software disable cards in the network slots.

## **Cable Core 1**

### **In Core 1, route and connect the 3PE to cCNI (NT8D76) cables**

The cCNI to 3PE cables in CP PII are different from existing CNI to 3PE cables. New NT8D76 cables must be installed for both existing Network groups and new Network equipment. See Figure 135 on page 691.

Cables are routed to a module alongside the Core module. To route the 3PE to cCNI cables:

- 1      Label each cable at both ends with:
  - a.    the Network group number
  - b.    Shelf 0 or Shelf 1 of the Network group
  - c.    J3 or J4 (of the 3PE card)
- 2      Remove the module trim panels where the cables will be routed.
- 3      In Core 1, route the cables from the Shelf 1 3PE cards to a module adjacent to Core 1.

**Note:** Route the cables along the right side of the Core module to avoid interference from the power cards.
- 4      In Core 1, pull the new NT8D76 cables inside the UEM. Connect the new NT8D76 cables to J3 and J4 of the 3PE cards. See Figure 135 on page 691 and Table 98 on page 692 for connection information.
- 5      Connect the new NT8D76 cables to the Termination Panel in Core/Net 1. See Figure 136 on page 693 and Table 98 on page 692.
- 6      If the system has XSDI cards, reinstall the cards and attach the cables.

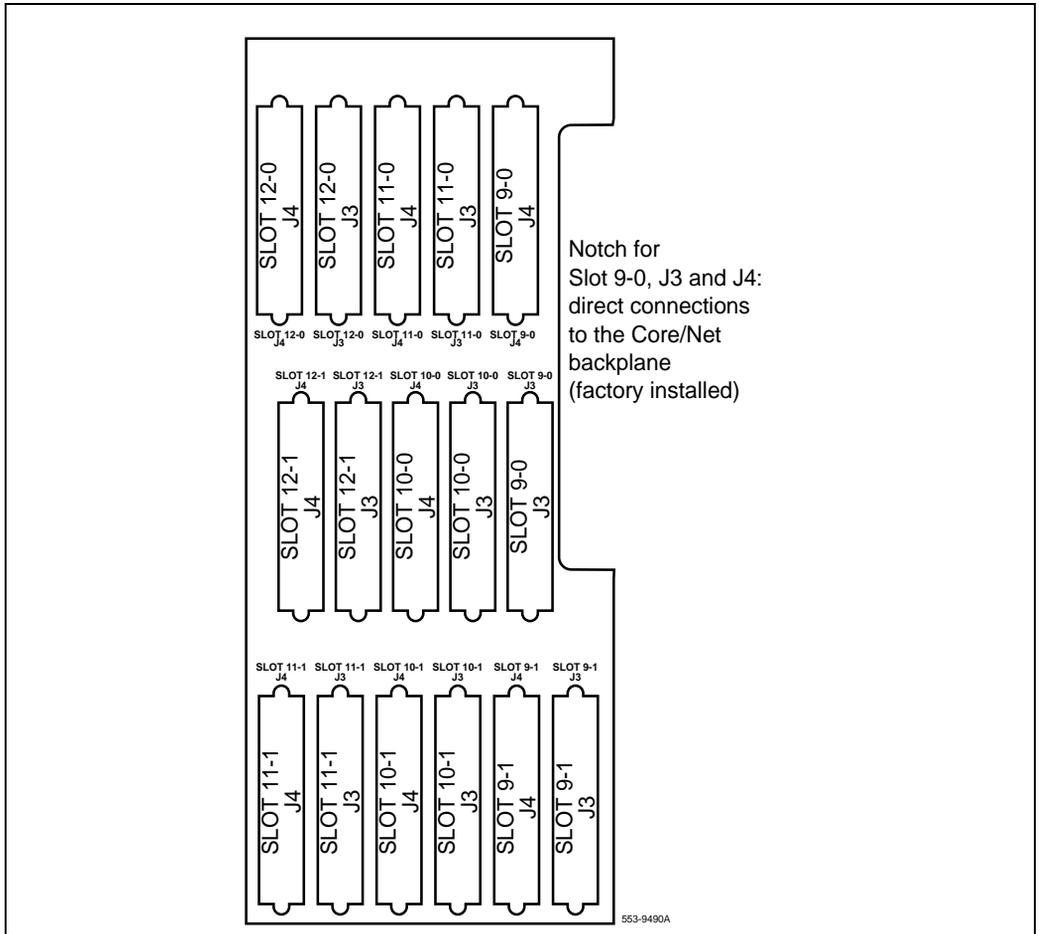


**Table 98**  
**Termination Panel to 3PE card connectors**

Group Number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

**Figure 136**  
**Connectors for cCNI Transition Cables to the Termination Panel**

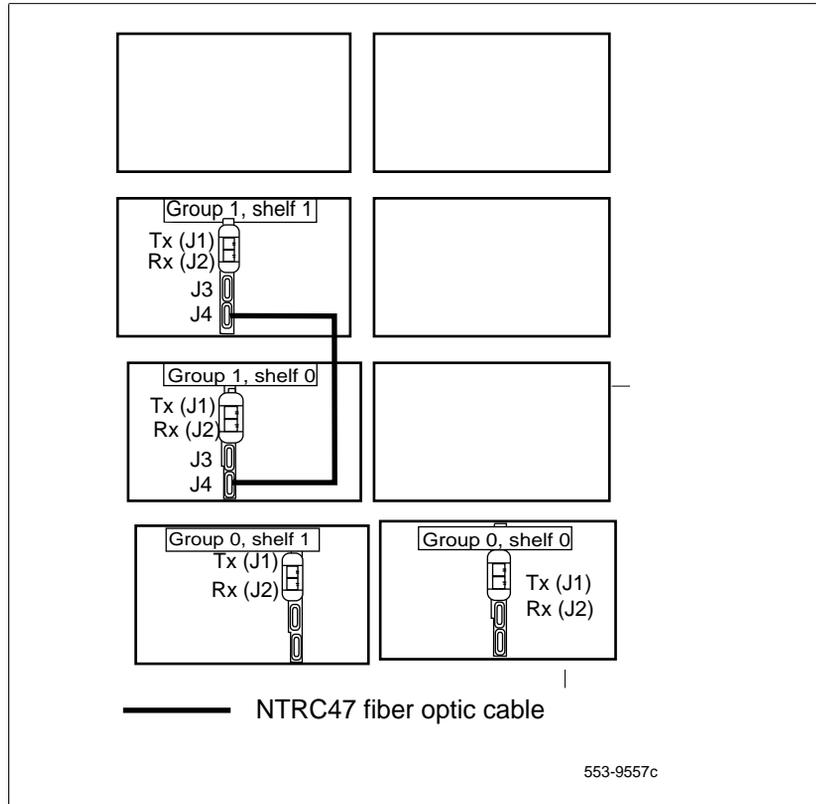


**Connect FIJI to FIJI cables**

- 1 Connect P2 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 0, except Group 0.
- 2 Connect P1 of a NTRC47 FIJI to FIJI cable to J4 of the FIJI cards in each Network shelf 1, except Group 0.

The FIJI cards in Group 0 do not use a FIJI to FIJI cable.

**Figure 137**  
**FIJI to FIJI cables**



### Route and connect the Shelf 1 FIJI Fiber Ring Cables

Carefully route the NTRC48 cables before installation. Always label both ends of each cable to simplify installation, reduce confusion and assist in troubleshooting.

#### Route Shelf 1 fiber optic cables (descending)

Route the NTRC48 cables between the FIJI cards in each Network shelf 1 in *descending* order (Table 99 on page 697 and Figure 138 on page 696).

**Note:** Each end of the NTRC48 cable is labeled “Tx” or “Rx” in the factory.

- 1 Start with the Tx (J1) port in Group 0, shelf 1.
- 2 Route a NTRC48 FIJI fiber Ring cable from the FIJI card in Group 1, shelf 1 to the FIJI card in Group 1, shelf 1.
- 3 To complete the Ring, route a final cable from Group 1, shelf 1 to Group 0, shelf 1.

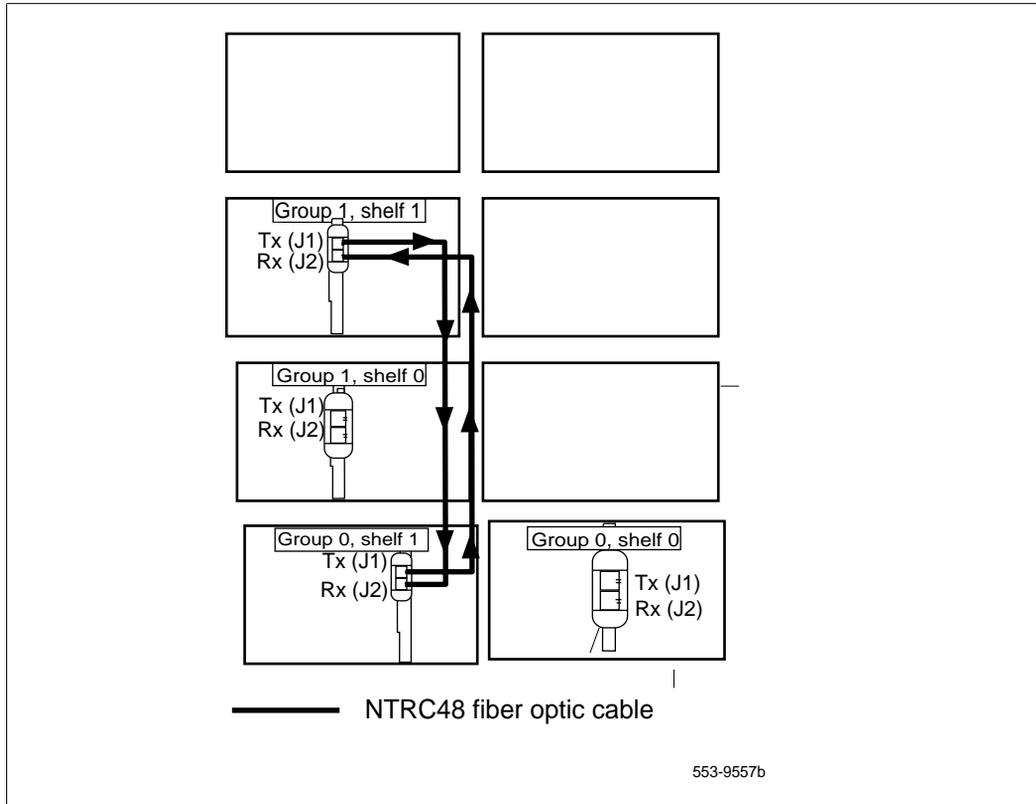
**Connect Shelf 1 fiber optic cables (descending)**

Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- 1 Remove the black cap from the end of each cable before it is connected.
- 2 Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 1, shelf 1 to the Rx (J2) port of the FIJI card in the Group 0, shelf 1.
- 3 To complete the Ring, connect a final cable from Tx in Group 0, shelf 1 to Rx in Group 1, shelf 1.

..

**Figure 138**  
**Shelf 1 descending fiber optic Ring (Option 61C example)**



**Table 99**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1
6/1	P2	Rx - J2
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2
<b>Note:</b> Groups 2 through 7 are shown for reference only.		

## Remove the system monitors from Core 1 and Core 0

- 1     In **Core 0**, software disable the master system monitor (NT8D22):  
    **LD 37**  
    **DIS TTY #**     Disable the master system monitor TTY interface.
- 2     For both Core 1 and Core 0, remove J3 and J4 cables on both system monitors.  
  
    **Note:** Do *not* turn off the blower units in the front of the pedestals
- 3     For both Core 1 and Core 0, remove the system monitors from the rear of the pedestals.



### **CAUTION**

#### **Service Interruption**

The system can shut down if the system monitors are not removed. Remove the monitors and keep the cooling fans ON.

## Power up Core 1

### Prepare for power up

- 1     Check that a terminal is connected to the J25 I/O panel connector on Core/Net 1.  
  
    **Note:** A maintenance terminal is required to access the Core/Net modules during the upgrade.
- 2     Connect a terminal to the J25 port on the I/O panel in the *inactive* Core.

3 Check the terminal settings as follows:

- 9600 Baud
- 7 data
- space parity
- 1 stop bit
- full duplex
- XOFF

**Note:** If only one terminal is used for both Cores, the terminal will have to be switched from side to side to access each module. An "A/B" switch box can also be installed to switch the terminal from side to side.

4 Faceplate *enable* the cCNI cards in Core 1.

5 Check that the FIJI cards in Core 1 are unseated.

## Power up Core 1

1 Power up the Core/Net Module.

2 Power up the Network modules.

3 Wait for the system to load/initialize.

## Confirm Core 1 cards are working

1 Check that the Network and I/O cards have working power.

## Install software on Core 1

1 In Core/Net 1, install the CD-ROM into the CD-ROM drive in the MMDU:

- 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. Do not push the holder in by hand.

**Note:** If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

- 2        Place the CP PII Install floppy disk into the MMDU floppy drive.  
**Note:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.
- 3        Press the manual RESET button on the CP PII card faceplate.
- 4        Before the install runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:  
Testing partition 0  
          0 percent done... 1 percent done... 99 percent done.... 100 percent done....  
Testing partition 1  
          0 percent done... 1 percent done... 99 percent done... 100 percent done....  
Testing partition 2  
          0 percent done... 1 percent done... 99 percent done.... 100 percent completed!  
Disk physical checking is completed!  
There are 3 partitions in disk 0:  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
Disk partitions and sectors checking is completed!
- 5        At the terminal, press <cr> to start the software installation.
- 6        When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.  
**<a>**    Continue with keycode validation  
**<y>**    Confirm that the keycode matches the CD-ROM release
- 7        When the screen displays the Install Menu, select the following options in sequence when prompted to do so:  
**<b>**    Install software, database, and CP-BOOT ROM  
**<a>**    Verify that the CD-ROM is now in drive

The Installation Status Summary screen appears that lists the options to be installed.

<a> Continue with Upgrade

### **Pre-Release 3 language groups**

- 8** Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 9     Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>    Global 10 Languages
- <2>    Western Europe 10 Languages
- <3>    Eastern Europe 10 Languages
- <4>    North America 6 Languages
- <5>    Spare Group A
- <6>    North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

**10** Continue with upgrade when prompted. Select a database to install.

**<cr>** Enter carriage return to continue.

**<a>** Continue with CP BOOTROM installation

**<a>** Install the CP BOOTROM from hard disk

**<a>** Start installation

**<a>** Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, Database, and CP-BOOTROM were installed.

**<cr>** Continue

**<q>** Quit (remove any diskettes and the CD-ROM from the MMDU drives)

**<y>** Confirm quit

**<a>** Reboot the system

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for “DONE” and then “INI” messages to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION

RELEASE XX.XX TO RELEASE 25.

Confirm that the Release 25 software is installed and functional on Core/Net 0:

**LD 135** to load the program

**STAT CPU** to display the CPU status

## Configure the IP addresses

Two unique IP address are required for the CP PII system to communicate with the LAN. One IP number is defined for the *active* Core. The second IP address is defined for the *inactive* Core.

- 1        Contact your systems administrator to identify these IP numbers.
- 2        Configure the primary (*active*) and secondary (*inactive*) IP addresses:

<b>LD 117</b>	To load the program.
<b>new host name 1 IP address</b>	To define the first IP address: “name 1” is an alias for the IP address such as “primary”. The IP address is the IP number.
<b>chg elnk active name 1</b>	To assign the “name 1” address to the <i>active</i> Core.
<b>new host ‘name 2’ ‘IP address’</b>	To define the second IP address: “name 2” is an alias for the IP address such as “secondary”. The IP address is the IP number.
<b>chg elnk inactive name 2</b>	To assign the “name 2” address to the <i>inactive</i> Core.
<b>chg mask 255.255.240.0</b>	To set the sub-net per local site. This number allows external sub-nets to connect to the system.
<b>new route 0.0.0.0 ip address</b>	Sub-net router address, if required.
<b>prt route</b>	To print the route data. This returns a value assigned to the route used in the next step.
<b>enl route #</b>	To enable the route table entry: the value is from the step above.

- 3        Enable the new Ethernet interface:

<b>LD 137</b>	To load the program.
---------------	----------------------

<b>dis elnk</b>	To <i>disable</i> the old IP interface values.
<b>enl elnk</b>	To <i>enable</i> the new IP interface values.

## Check for Peripheral Software Download to Core 1

Load LD 22 and print Target peripheral software version. The Source peripheral software version was printed during the procedure to “Print site data” on page 40.

If there is a difference between the Source and Target peripheral software version:

- A forced download occurs during initialization when coming out of parallel reload.
- System initialization takes longer.
- The system drops established calls on IPE

1 Load LD 22 and print Target peripheral software version.

### **LD 22**

<b>REQ</b>	PRT
<b>TYPE</b>	PSWV.
<b>ISSP</b>	Print System and Patch Information.
<b>SLT</b>	Print System Limits.
<b>TID</b>	Print the Tape ID.
<b>****</b>	Exit program.

## For systems with fewer than eight groups, delete CNIs

Software has configured the system for eight groups.

If your system has eight groups, skip this procedure.

If your system has fewer than eight groups, you must software remove the CNIs not used in your system configuration:

- 1        In Core/Net 1, disable all CNI cards using LD 135:

<b>LD 135</b>	To load the program.
<b>STAT CNI</b>	Get the status of all CNI cards.
<b>DIS CNI x s p</b>	Disable CNI cards where: x = extender number (0 or 1) s = card slot (9-12) p = port (0 or 1)
<b>STAT CNI</b>	Confirm that CNI cards are disabled.
<b>****</b>	Exit the program.

- 2        Use LD 17 to remove the extra CNI cards.

<b>LD 17</b>	To load the program.
<b>CHG</b>	
<b>CFN</b>	
<b>CEQU YES</b>	
<b>EXTO 3PE</b>	Core/Net 0 extended to 3PE.
<b>CNI s p xg</b>	Out the CNI card, where: s = card slot (9-12) p = port (0 or 1) xg = out network group (x0-x4)
<b>EXTI 3PE</b>	Core/Net 1 extended to 3PE
<b>CNI s p xg</b>	Out the CNI card, where: s = card slot (9-12) p = port (0 or 1) xg = out network group (x0 - x4)
<b>****</b>	Exit the program.

---

## Reconfigure I/O ports and call registers

- 1 Remap 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

**LD 17** Load the program.

**CHG**

**CFN**

**CHG aaa x** aaa = terminal type (such as tty or aml).  
x = terminal number (0 -15).

**g** g = network group (0 - 4).

- 2 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:

**LD 17** Load the program.

**CHG**

**CFN**

**PARM YES**

**500B 1000** Use 1000 as a minimum value.

**NCR 20000** Use 20000 as a minimum value.

**\*\*\*\*** To exit the program.

- 3 Print the Configuration Record to confirm the changes made above:

**LD 22** Load the program.

**REQ PRT** Set the print Option.

**TYPE CFN** Print the configuration.

**\*\*\*\*** To exit the program.

- 4 Perform a data dump to save the customer database to the hard drive:

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

**LD 43**            To load the program.

- b. When "EDD000" appears on the terminal, enter

**EDD**            To begin the data dump.



**CAUTION**  
**Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

## Reboot Core 1

- 1            Press the RESET button on the CP PII card faceplate to reboot the system.

**Note:** The system will automatically perform a sysload: several messages appear on the system terminal.

- 2            Wait for "DONE" and then "INI" messages to display before you continue.

## Disable and remove equipment from Core 0

### Turn module power off



#### **CAUTION**

#### **Service Interruption**

Call processing will be interrupted for approximately 30 minutes while the procedures are completed.

Power down the modules with the module power switch. **DO NOT** power down the columns at the PDU:

- 1 Power down Core/Net Module 0.
- 2 Power down Core/Net Module 1.
- 3 Power down all Network Modules.

### **Move Clock Controller 0 to Network group 1 shelf 0, slot 13**

The existing Clock Controller in the Option 61 or 61C must be moved to a Network module according to the guidelines on page 48.

- 1 Label and disconnect the Clock Controller Junctor cable from the J12 connector in the InterGroup Module junctor board.
- 2 Disconnect the Junctor cable from the Clock Controller 0 faceplate card.
- 3 If primary and secondary clock reference cables are connected to the Clock Controller faceplate, disconnect them last.
- 4 Remove Clock Controller 0 from the Core module.
- 5 Set the Clock Controller 0 switch settings according to Table 100 on page 711.

- 6        Move Clock Controller 0 to Network shelf 1-0, slot 13.  
          Seat Clock Controller 0 but do not enable the card.

**Note:** The Clock Controllers can be installed in any Network group, except group 0. However, a two group option 81C has only two Network Modules. In this case, both Clock Controllers must be installed in Group 1.

If in the future the Option 81C is upgraded to more than two Network groups, Nortel Networks recommends that Clock Controller 0 and 1 be located in different Network groups. Refer to the guidelines on page 48 to determine Clock Controller placement.

- 7        In Core 0, disable any ISDN PRI cards.

- 8        In Core 0, disable the CNI card (phantom group 5):

**LD 135**            To load the program.

**DIS CNI 0 8 0**    Disable the CNI card in Core module 0, slot 8,  
                          port 0.

**Table 100**  
**Clock Controller 0 switch settings**

Systems upgraded to CP PII must use the Option 81C switch settings to enable Clock Hunt software. Use the settings in this table. DO NOT use any other switch settings.											
SW1				SW2				SW4			
1	2	3	4	1	2	3	4	1	2	3	4
on	off	**	on	*	*						
*Total cable length between the J3 faceplate connectors:											
0–4.3 m (0–14 ft)										off	off
4.6–6.1 m (15–20 ft)										off	on
6.4–10.1 m (21–33 ft)										on	off
10.4–15.2 m (34–50 ft)										on	on
* If there is only one Clock Controller card in the system, set to OFF. If there are two Clock Controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch position for this cable length, as shown above. Set the switches on both cards to the same settings.											
** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.											

## Remove Core 0 cables and card cage

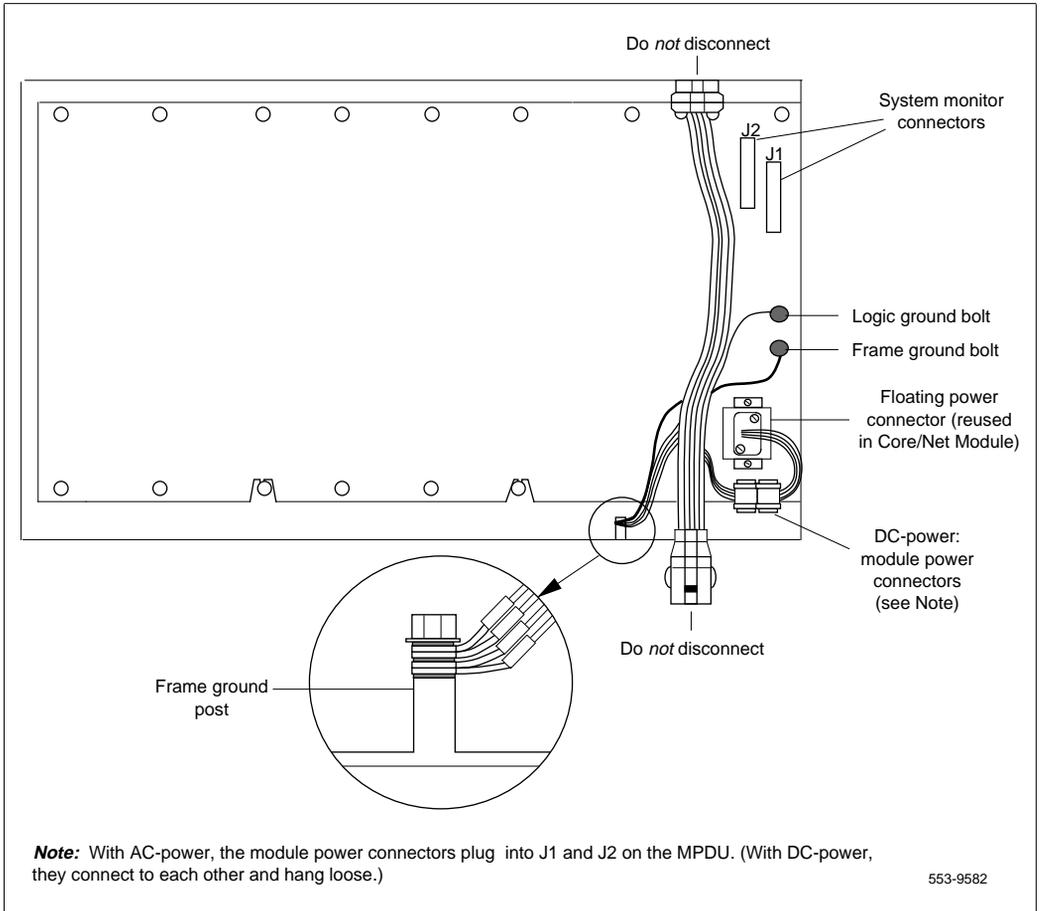
- 1 Label and disconnect all cables to the front of the module.
- 2 Tape over the contacts to avoid grounding.
- 3 Tie all cables to the sides so the working area in front of the card cage is totally clear.
- 4 Remove the I/O safety panel by turning the screws on each side. Set the I/O safety panel aside.
- 5 Tag and disconnect all cables from the backplane to the interior of the I/O assembly.
- 6 Tag and disconnect all plugs, wires, and cables to the backplane.

**Note 1:** Leave the network cards in the card cage. You will relocate them to the CP PII card cage later in the upgrade procedure.

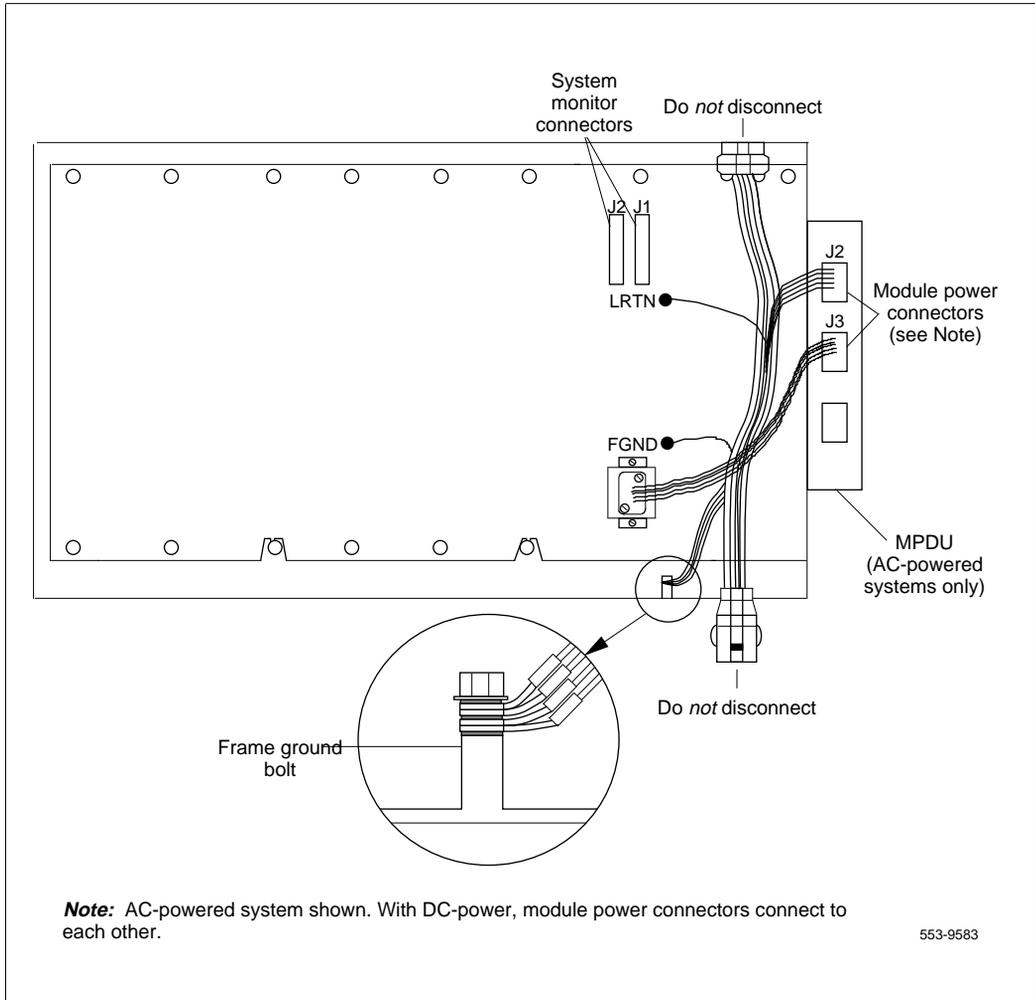
**Note 2:** Two people are needed to remove the Core card cage because of the weight of the card cage with the cards left installed.

- 7     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 use with the CP PII card cage. (You need a 1/4" nut driver to remove the screws.)
- 8     Remove the front trim panels on both sides of the card cage.
- 9     Remove the three mounting screws that secure the front of the card cage to the bottom of the module.  
Save the screws for use with the CP PII card cage.
- 10    Pull the card cage forward until it is halfway out of the module.
- 11    Disconnect cables, plugs, and wires from the rear of the module to the backplane.
- 12    Remove the logic return (LTRN) (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.  
  
See Figure 139 on page 713 for DC power connectors.  
  
See Figure 140 on page 714 for AC power connectors.
- 13    Remove the frame ground (FGND) (green) wire from the frame ground bolt on the module.
- 14    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.
- 15    Label and disconnect the system monitor ribbon cables to J1 and J2.
- 16    Remove the Core card cage from the module.

**Figure 139**  
**DC power connectors on the Core module backplane**



**Figure 140**  
**AC power connectors on the Core module backplane**



- 17 Remove the power harness and reserve it for reinstallation as part of installing the new NT4N46 card cage. The power harness is located at the right rear lower corner and plugs into the rear of the power supply.
- For AC systems, relocate power harness NT8D80AM.
  - for DC systems, relocate power harness NT7D11.

**CAUTION****Service Interruption**

Be sure to perform the following step. If you do not tape the EMI shield in position, you will not be able to install the card cage in the module correctly.

- 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 In AC-power 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).

**CAUTION****Damage to Equipment**

Check for and remove any debris (such as screws) that could have fallen into the base of the UEM module.

## Upgrade Core 0 hardware

### **T**Check that the main Core cards (front side) are installed

The main Core cards including the MMDU (with the cables for power and data) are installed in the factory (see Figure 141 on page 717):

- **NT4N65AA cPCI Core Network Interface (cCNI) cards:** Each system contains between one and four NT4N65 cCNI cards per Core/Net module. The cCNI cards are located in slots c9-c12. If not already installed, install a P0906308 cPCI Card Slot Filler Panel to cover any of slots c10 - c 12 which do not contain cCNIs.

- Slots c13 and c14 are left empty. If not already installed, install a P0906308 cPCI Card Slot Filler Panel in each slot.
- **NT4N67AA System Utility (Sys Util) card** is located in slot c15.
- **NT4N64AA Call Processor PII (CP II)** is located in the CP slot.
- **NT4N43AA cPCI Multi-Media Disk Unit (MMDU)** is located in the extreme right hand slot next to the CP PII card. The MMDU contains the hard drive, floppy drive and CD-ROM drive.

## Check that the Core Transition cards are installed

The Core Transition cards are located directly behind the corresponding main cards (on the rear of the Core backplane). Core Transition cards are installed in the factory:

- **NT4N66AB cCNI Transition cards:** Each system contains four of these cards.
- **NT4N68AA System Utility Transition card:** The System Utility Transition card is installed directly behind the System Utility card and contains connections for the Security Device, the System Monitor (XSM) and the Display Panel.

Figure 142 on page 718 displays the location of the Core Transition cards.

## Check for the shelf power cable

Check that the NT4N4405 shelf power cable is installed in the CP PII card cage backplane. See Figure 143 on page 719 for the cable location.

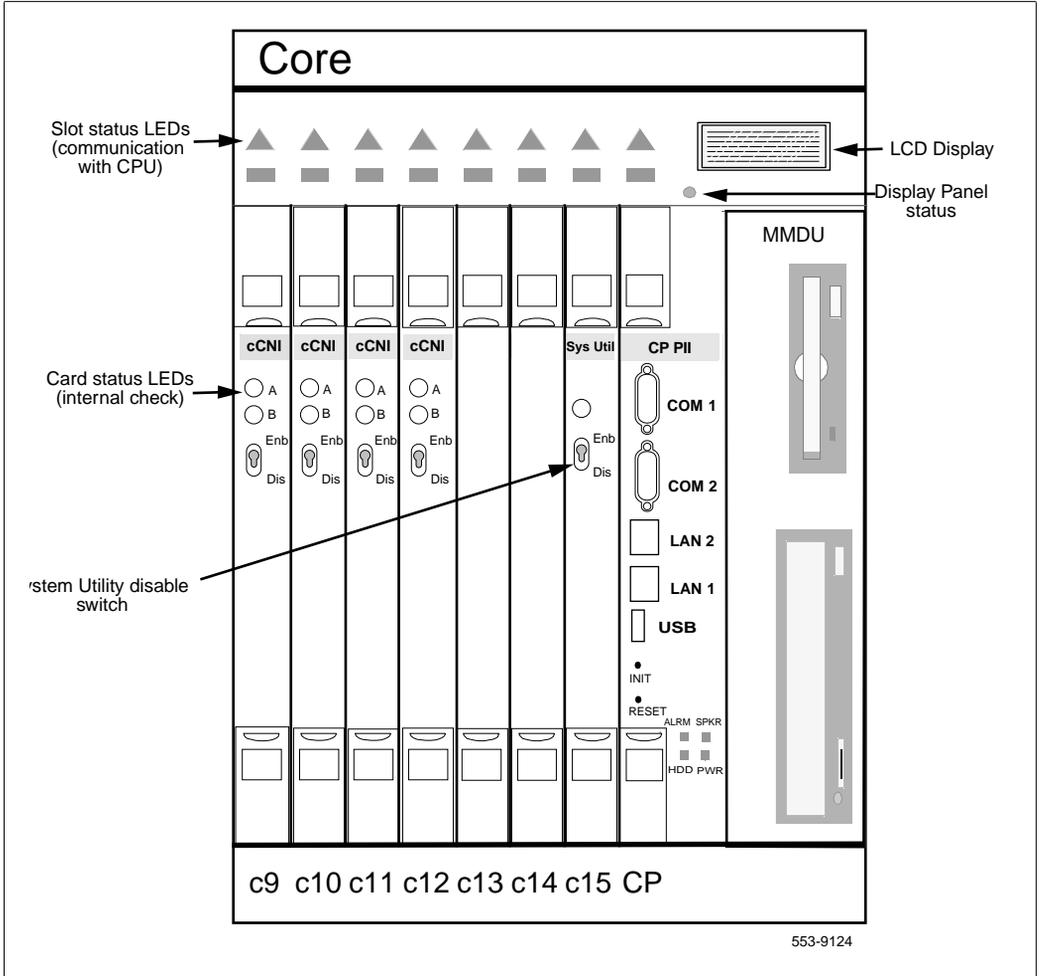
## Install the Security Device

The Security Device fits into the Security Device holder (see Figure 144 on page 720) which attaches to the System Utility Transition card located on the core backplane.

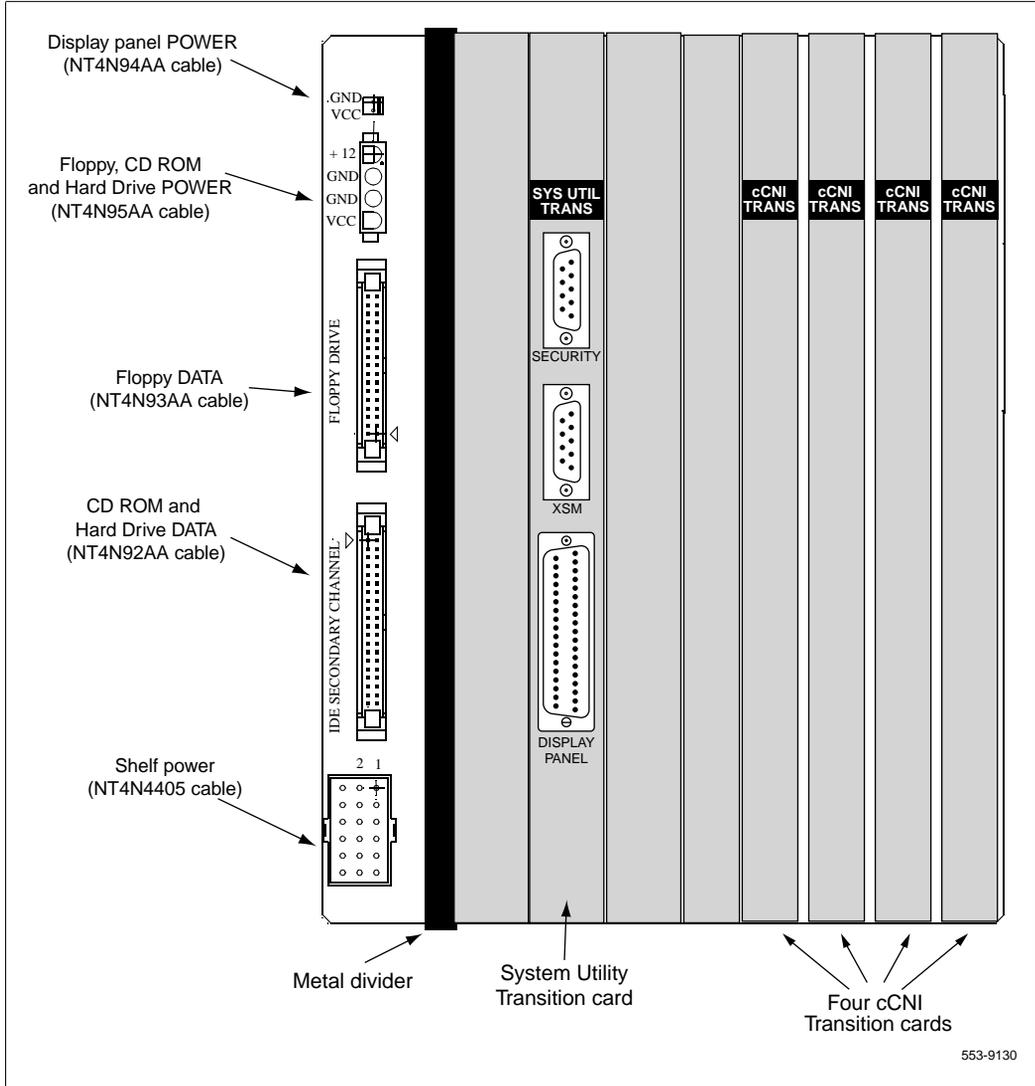
To install the Security Device:

- 1 If the original system had an IODU/C, remove the Security Device from the IODU/C for reuse.
  - a. Unlock the latches and remove the IODU/C card.

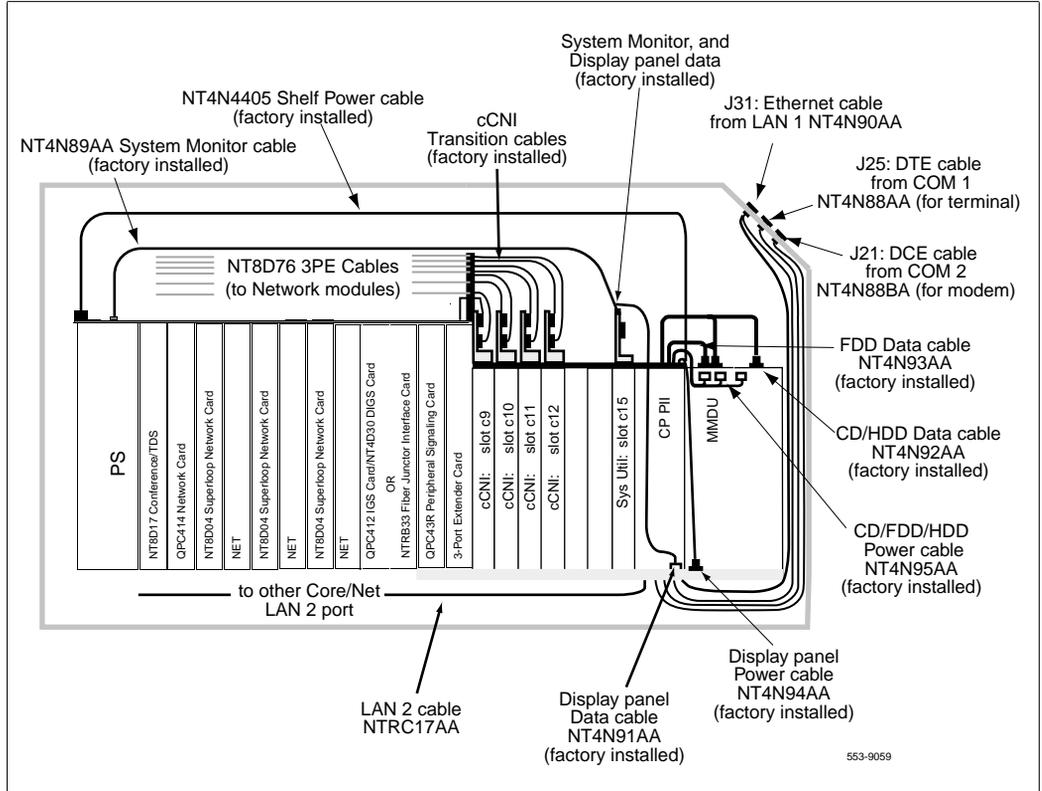
**Figure 141**  
**Core card placement in the CP PII Core/Net (front)**



**Figure 142**  
**Location of Transition cards**



**Figure 143**  
**Core/Net cable connections**



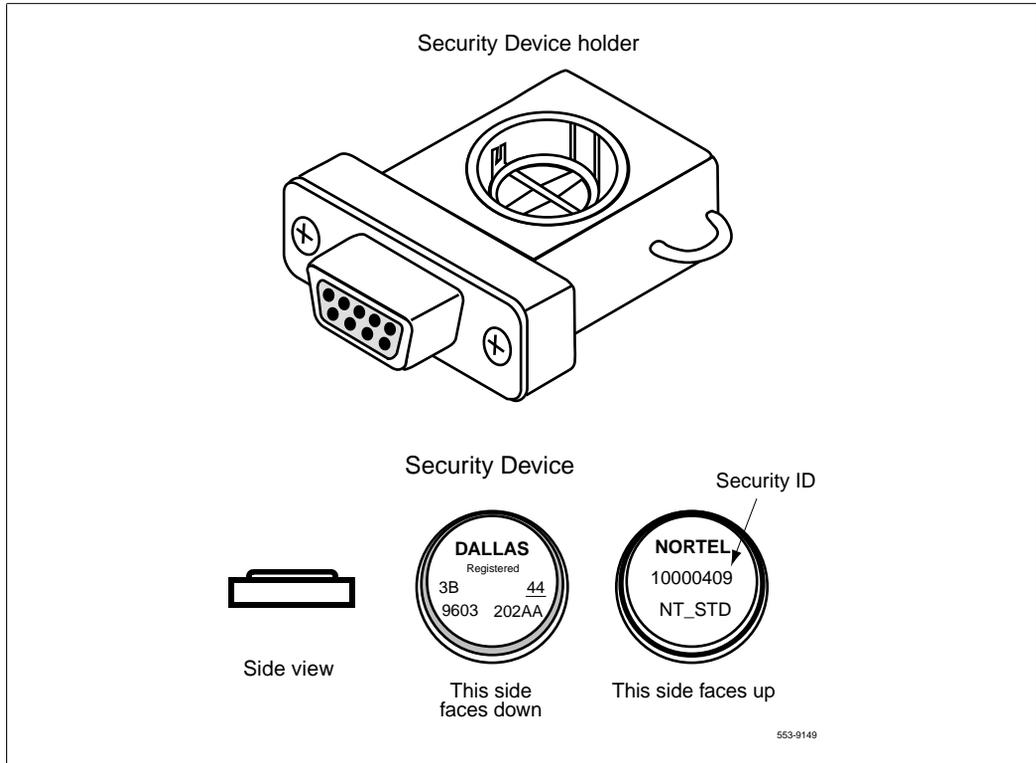
- b.** Remove the round 1/2" diameter IODU/C Security Device from the round black Security Device holder on the top right corner of the IODU/C card.

Or

If the original system did not have an IODU/C, use the Security Device provided with the CP PII Software kit. Locate the Security Device holder in the plastic bag taped to the top of the card cage.

- 2** Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.

**Figure 144**  
**Security Device and holder**



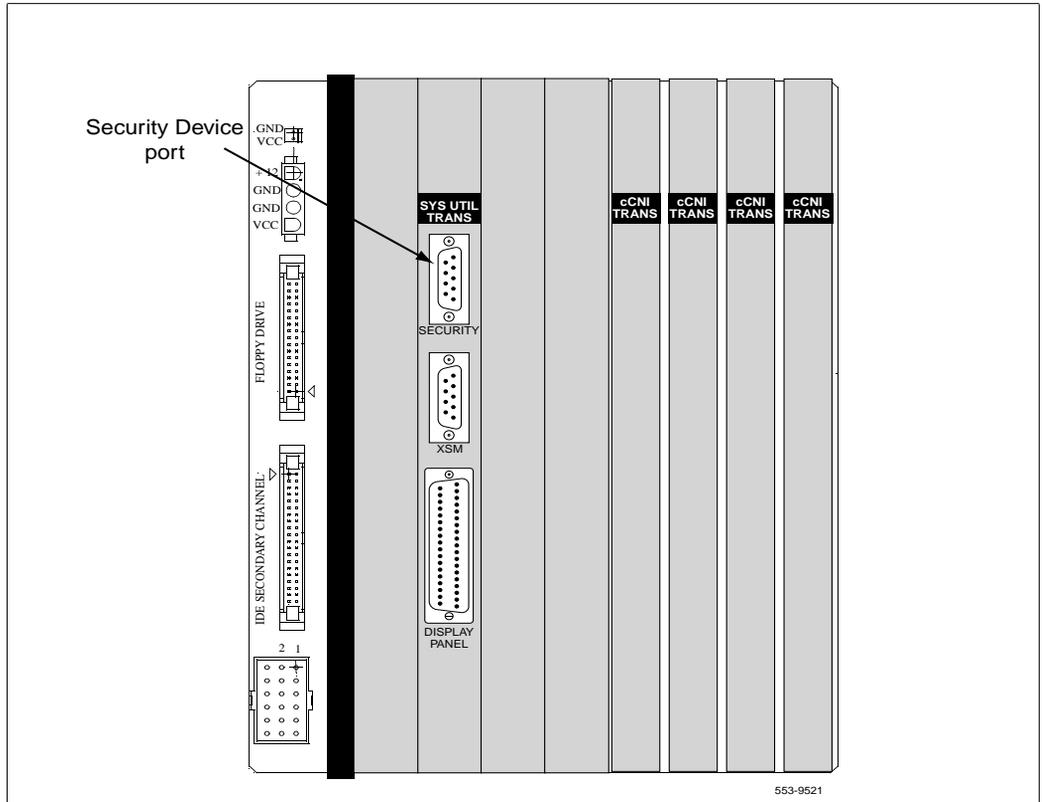
- 3 Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 145 on page 721).
- 4 Check that the Security Device is securely in place.

### **Seat the Core 1 and Core 0 FIJI cards**

The FIJI cards in both Cores can be seated.

- 1 Push the faceplate latches forward to lock the cards in place.
- 2 Verify that the cards are faceplate enabled.

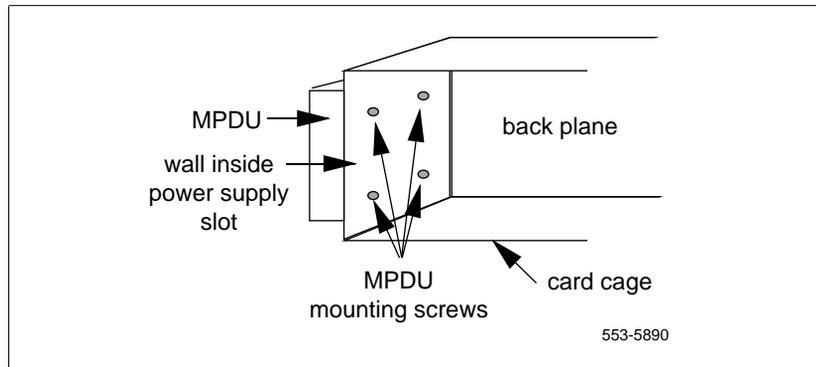
**Figure 145**  
**Security Device installation (System Utility Transition card)**



### Install the CP PII card cage in Core 0

- 1 Check that the card cage is configured as Core 0. See “Check the Core ID switches” on page 38 for instructions.
- 2 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the CP PII card cage. Install the new MPDU, part of the cPCI Upgrade kit, to the side on the NT4N46 card cage. The screws that secure the MPDU are accessible from the power supply slot. See Figure 146 on page 722.
- 3 Check that the power harness at the right rear corner of the card cage has been transferred from the old card cage to the CP PII card cage

**Figure 146**  
**Location of the screws for the MPDU**



- 4 Slide the CP PII card cage halfway into the module.
- 5 Hold the card cage firmly and make the following connections at the rear of the module.
  - a. In AC powered systems, connect the remaining module power connectors to J2 on the MPDU.

In AC-power 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)



**CAUTION**  
**Damage to Equipment**

Check for and remove any debris (such as screws) that may have fallen into the base of the UEM module.

- a. In DC powered systems, connect the module power connectors to each other.
- b. Attach the system monitor ribbon cables:
  - connect the ribbon cable that goes down to the pedestal to connector J1 on the backplane.
  - connect the ribbon cable that goes up the column to J2 on the backplane.

- c. Attach the green ground wire to the frame ground bolt on the module. (a 11/32" socket wrench is used to attach the wire.) 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.

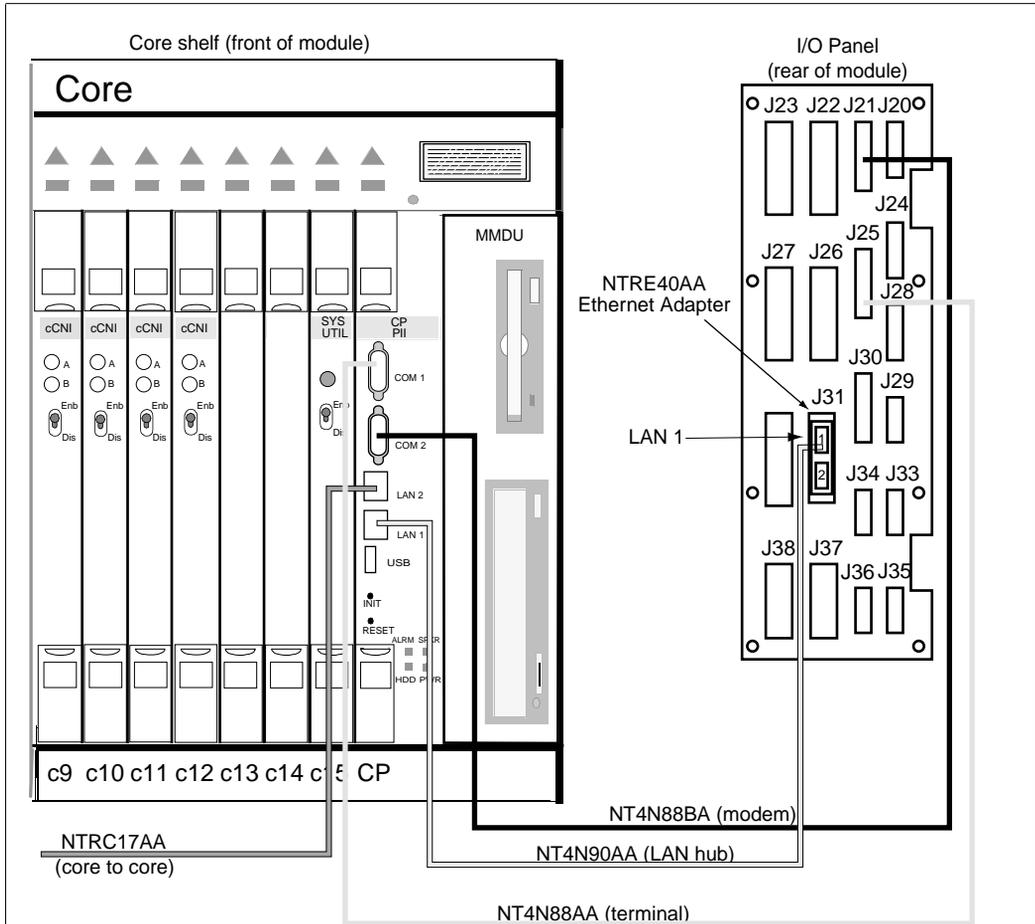
**Note:** For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

- d. Attach the orange logic return wire. Remove one nut and the lock washer from the LRTN blot 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. (You need a 1/4" or 2/8" socket wrench.)
- 6 Slide the card cage all the way into the module.
  - 7 Check the position of the EMI shield. If the EMI shield has shifted, reposition it. Remove the tape holding the EMI shield.
  - 8 Pre-route cables NT4N88AA, NT4N88BA and NT4N90AA before you secure the card cage. (See Figure 147 on page 724.)
    - a. Route cable NT4N88AA from COM1 on the CP PII faceplate to J25 on the I/O panel. (NT4N88AA is used to connect a terminal.)
    - b. Route cable NT4N88BA from COM2 on the CP PII faceplate to J21 on the I/O panel. (NT4N88BA is used to connect a modem.)
  - 9 Route cable NT4N90AA from LAN 1 on the CP PII faceplate to J31 (top) of the I/O panel.

## Relocate Network cards to CP PII Core 0

- 1 Remove all remaining network cards from the Option 61/61C Core 0.
- 2 When you move the 3PE card, check the switch settings and jumpers. Figure on page 33 shows a side view of the 3PE card and the location of the switch settings.
  - a. All 3PE cards must be vintage F or later.
  - b. Check that the RN27 Jumper is set to "A".

**Figure 147**  
**COM and LAN connections to the Core/Net I/O panel**



Connect COM 1 to J25 with a NT4N88AA DTE cable (terminal).  
 Connect COM 2 to J21 with a NT4N88BA DCE cable (modem).  
 If a LAN hub is available: connect LAN 1 to J31 top (LAN hub) with NT4N90AA Ethernet cable (as shown in figure).  
 If a LAN hub is not available: connect LAN 1 in Core 0 to LAN 1 in Core 1 with a NTRC17AA cable (not shown in figure).  
 Connect LAN 2 in Core 0 to LAN 2 in Core 1 with a NTRC17AA crossover Ethernet cable.

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- c. The settings for 3PE cards in Core/Net shelves are different from those in all other shelves: Table 101 on page 725 shows the 3PE settings for cards installed in CP PII Core/Net Modules.

**Note:** For 3PE settings for cards installed in Network Modules, see Table on page 33.

- 3 Reinstall each removed card in the same network slot in the CP PII Core/Net 0.
- 4 Connect the tagged cables to the relocated cards.

**Table 101**  
**QPC441 3PE Card installed in the CP PII Core/Net modules**

<b>Jumper Settings:</b> Set Jumper RN27 at E35 to "A".									
Switch Settings									
Module		D20 switch position							
CP PII Core/Net modules only		1	2	3	4	5	6	7	8
Core/Net 0 (Shelf 0)	Group 0	off	on	on	off	on	on	on	on
	Group 1	off	on	on	off	on	on	off	on
	Group 2	off	on	on	off	on	off	on	on
	Group 3	off	on	on	off	on	off	off	on
	Group 4	off	on	on	off	off	on	on	on
	Group 5	off	on	on	off	off	on	off	on
	Group 6	off	on	on	off	off	off	on	on
	Group 7	off	on	on	off	off	off	off	on
Core/Net 1 (Shelf 1)	Group 0	off	on	on	off	on	on	on	off
	Group 1	off	on	on	off	on	on	off	off
	Group 2	off	on	on	off	on	off	on	off
	Group 3	off	on	on	off	on	off	off	off
	Group 4	off	on	on	off	off	on	on	off
	Group 5	off	on	on	off	off	on	off	off
	Group 6	off	on	on	off	off	off	on	off
	Group 7	off	on	on	off	off	off	off	off

## Cable Core 0

### Cable COM 1 and COM 2 to the I/O panel

- 1      Connect COM1 on the CP PII faceplate to J25 on the I/O panel with cable NT4N88AA.
- 2      Connect COM2 on the CP PII faceplate to J21 on the back of the I/O panel with cable NT4N88BA.

### Connect a terminal and modem to the I/O panel

- 1      Connect J25 to a terminal for use during the upgrade. Use a separate terminal for each Core if available. J25 can also be connected to an A/B box to share a terminal between both Cores.
- 2      Connect J21 to the device connected in the original system (such as a modem or A/B box)

### Connect LAN 1

The LAN 1 port is used to enable redundancy features between the two Core/Net modules. LAN 1 can also be connected to a local area network (LAN) for use with LAN based administration tools such as the Meridian Administration Tool (MAT).

The options for the LAN 1 connections are shown in Figure 148 on page 727.

#### If the system will be connected to a LAN

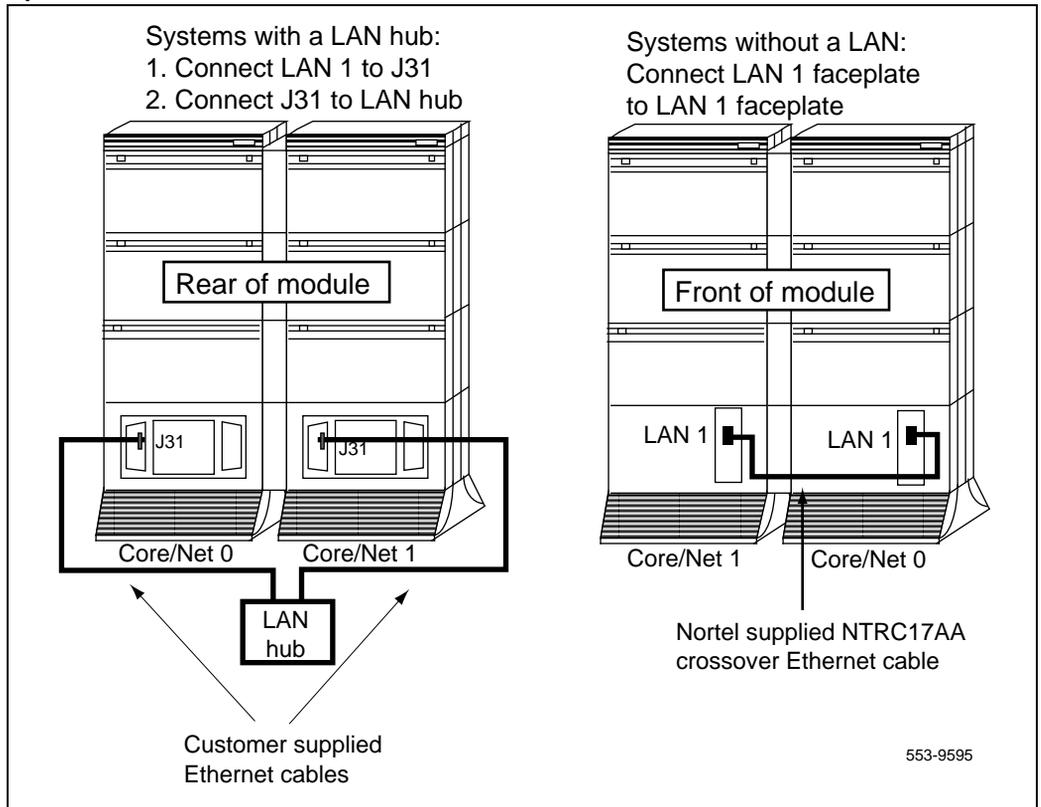
- 1      Connect the "Dual Ethernet Adapter (RJ45) for I/O Panel" (NTRE40AA) to J31. Secure the adapter to J31 with the two screws included in the shipment.  
Insert the adapter from the inside of the I/O panel.
- 2      Connect LAN 1 (Ethernet) on the CP PII faceplate to J31 (top) of the I/O panel with cable NT4N90AA.  
This connection can only be made *after* the Dual Ethernet Adapter is installed (see step 1 above).
- 3      Connect J31 to a LAN hub.

**If a LAN is not available, connect LAN 1 directly to LAN 1**

If a LAN hub is not available, do NOT connect LAN 1 to the I/O panel. The NTRE40AA Adapter and NT4N90AA cable are NOT installed.

- 1 Connect a crossover Ethernet cable (NTRC17AA) to the LAN 1 port on the CP PII faceplate of Core/Net 0.
- 2 To ensure EMI shielding, route the cable along the front of the card cage and through the sides of the Core/Net modules.
- 3 Connect the other end of the cable to the LAN 1 port on the CP PII faceplate in Core/Net 1.

**Figure 148**  
**Options for LAN 1 connection**



## Connect pre-routed cCNI to 3PE cables

NT8D76 cables connect between the Core/Net Termination Panel and the 3PE cards:

- See “Termination Panel to 3PE card connectors” on page 730 for detailed information on the slot and Network group assignments.
- This procedure applies to systems with columns in a single row. This procedure does not apply to systems with columns in separate aisles.
- Network group assignments for the cCNI ports in the CP PII card cage must be the same as the original system. Check to make sure that the cables are installed according to the port assignments in the existing database.
- The new NT8D76 3PE cables must be routed and in place before this procedure is begun. Refer to “Pre-route cables” on page 51.
- Remember to label all cables with the connection information. Labels are necessary to perform troubleshooting or future upgrades
- Table 102 on page 730 contains connection information for 3PE faceplates and the Core/Net Termination Panel.
- Figure 150 on page 731 shows the connection information on the Termination Panel.

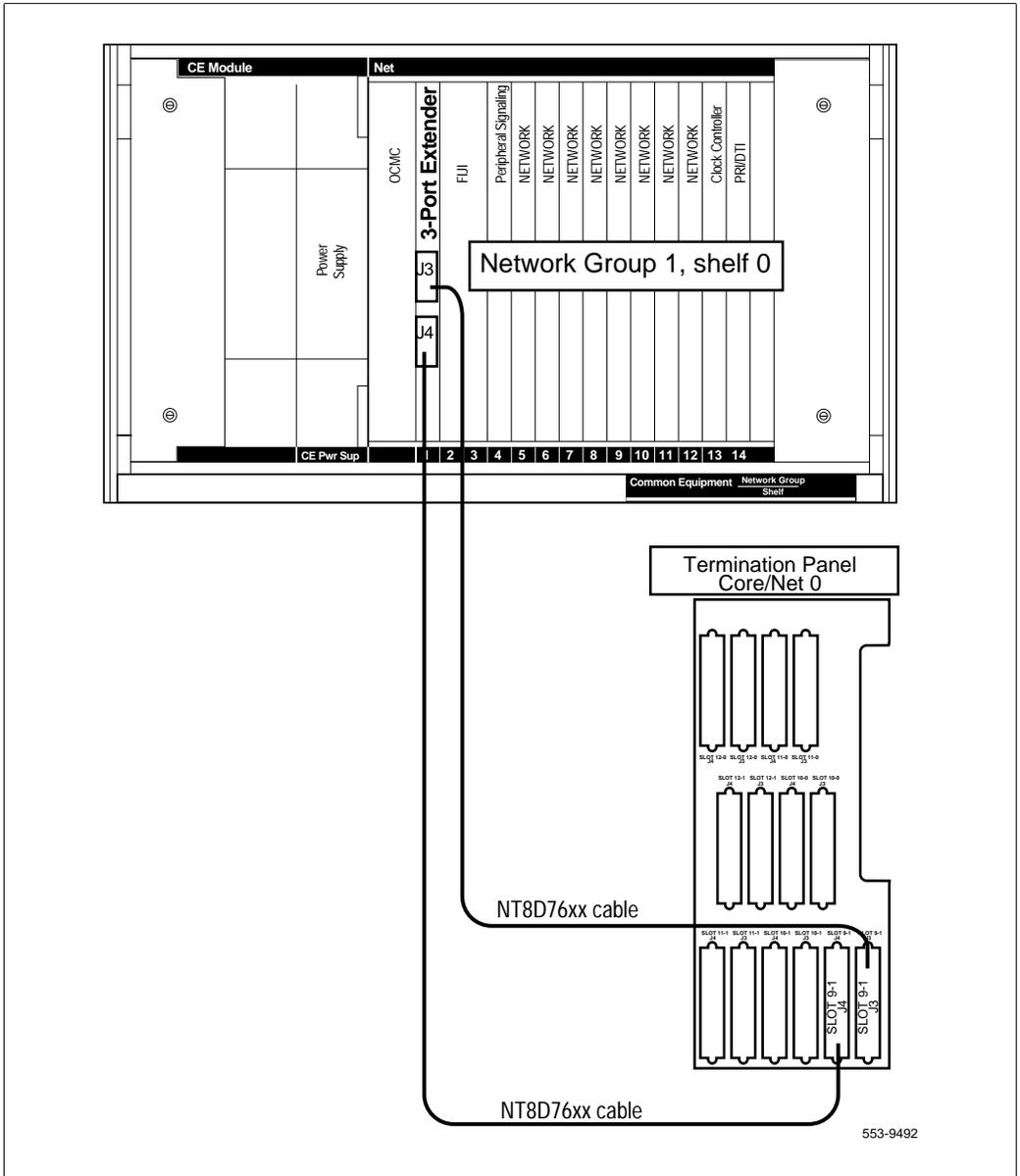
### Connect the 3PE cables in the shelf 0 Network modules

- 1     Disconnect the old cables from the J3 and J4 connectors on the 3PE cards in shelf 0 of each Network group.
- 2     Pull the new NT8D76 cables inside the UEM. Connect the new NT8D76 cables to J3 and J4 of the 3PE cards. See Figure 149 on page 729 and Table 102 on page 730 for connection information.
- 3     Connect the new NT8D76 cables to the Termination Panel in Core/Net 1. See Figure 150 on page 731 and Table 102 on page 730.

**Note:** Remove the old unused CNI to 3PE cables.

- 4     If the system has XSDI cards, reinstall the cards and attach the cables.

**Figure 149**  
**3PE Termination Panel connections**



**Table 102**  
**Termination Panel to 3PE card connectors**

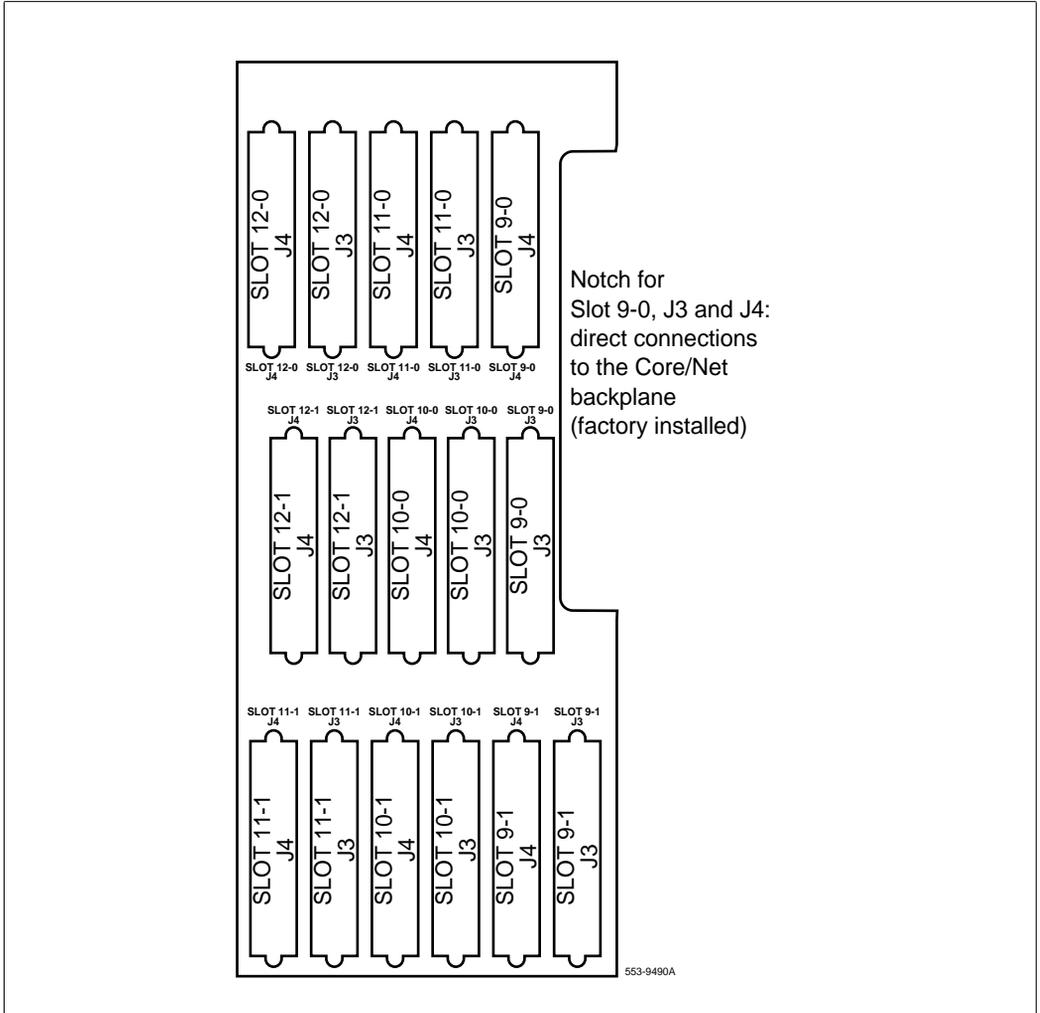
Group Number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

## Connect the Shelf 0 FIJI Fiber Ring Cables

To create the shelf 0 fiber optic Ring 0, connect the FIJI cards in each Network shelf 0 in ascending order, from Tx to Rx ports (Table 103 on page 734).

**Figure 150**  
**Connectors for cCNI Transition Cables to the Termination Panel**



Remove the black cap from the end of each cable before it is connected.

**Note:** Each end of the NTRC48 cable is labeled "Tx" or Rx" in the factory.

- 1      Start with Group 0, shelf 0.
- 2      Connect a NTRC48 FIJI Fiber Ring cable of the appropriate length from the Tx (J1) port of the FIJI card in Group 0, shelf 0 to the Rx (J2) port of the FIJI card in the Group 1, shelf 0.
- 3      To complete the Ring, connect a final cable from Tx in Group 1, shelf 0 back to the to Rx (J2) port in Group 0.

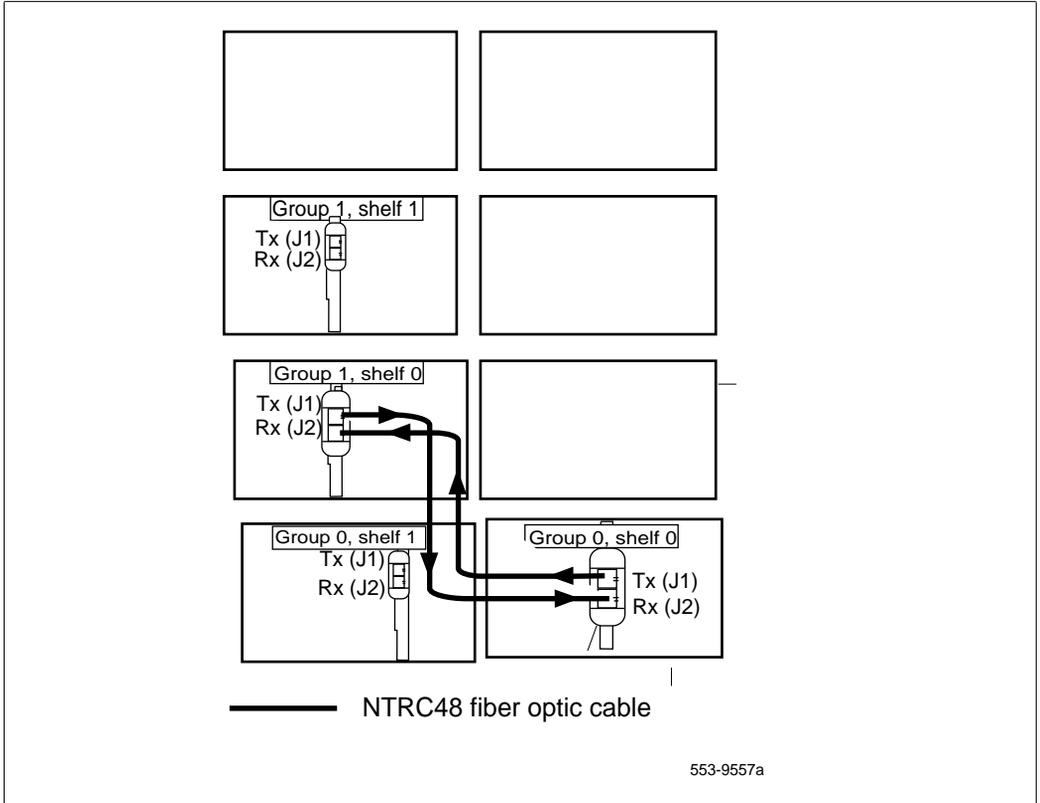
## Cable the Clock Controllers

Earlier in the upgrade, you checked that Clock Controller 1 is installed in Network 1 shelf 1, slot 13; and Clock Controller 0 has been moved to Network group 1 shelf 0, slot 13.

Connect the cables to the Clock Controllers as shown in Figure 152 on page 735:

- 1      Connect the Clock to Clock cable:
  - a.    Connect J1 of the NTRC49 cable to port J3 of Clock Controller 0.
  - b.    Connect J2 of the NTRC49 cable to port J3 of Clock Controller 1.
- 2      Connect the Clock 0 to FIJI cable:
  - a.    Connect J1 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 0.
  - b.    Connect J2 of the NTRC46 cable from Clock 0 to J4 of the FIJI card in Group 0, shelf 1.
- 3      Connect a Clock 1 to FIJI cable:
  - a.    Connect J1 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 0.
  - b.    Connect J2 of the NTRC46 cable from Clock 1 to J3 of the FIJI card in Group 0, shelf 1.

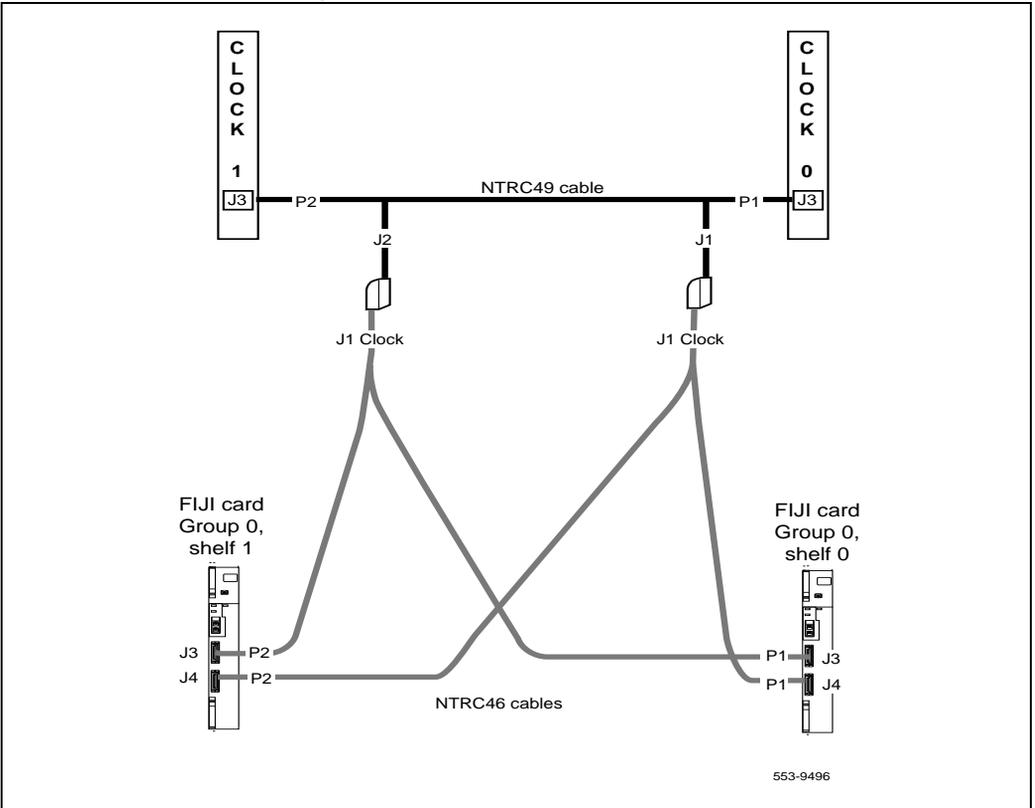
**Figure 151**  
**Shelf 0 ascending fiber optic Ring (Option 61C example)**



**Table 103**  
**FIJI Ring 0 connections**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2
<b>Note:</b> Groups 2 through 7 are shown for reference only.		

**Figure 152**  
**Clock Controller cable configuration**

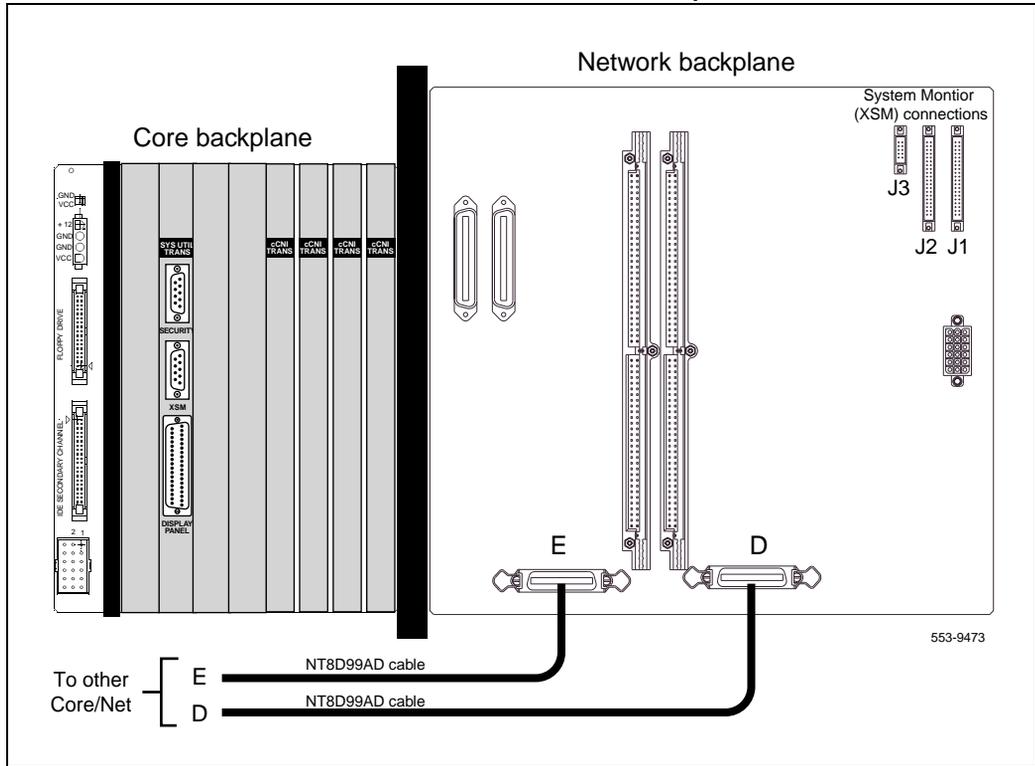


## Connect inter-module cables

### Connect D and E cables

Connect D and E cables as shown in Figure 153 on page 736.

**Figure 153**  
**Connections on the network side of the CP PII Core/Net backplane**



### Connect LAN 2 in Core/Net 0 to LAN 2 in Core/Net 1

The LAN 2 ports on the CP PII faceplates are directly connected with a NTRC17AA cable. This connection is for Core redundancy.

- 1 Connect a crossover Ethernet cable (NTRC17AA) to the LAN 2 port on the CP PII faceplate of Core/Net 0. (Figure 147 on page 724).
- 2 To ensure EMI shielding, route the cable along the front of the card cage and through the sides of the Core/Net modules.
- 3 Connect the other end of the cable to the LAN 2 port on the CP PII faceplate in Core/Net 1.

## Restore power

### Prepare Core cards for power up

- 1 In Core 0, disable the cCNI cards:
  - a. Hardware disable all cCNI cards from the backplane.
  - b. Disable the faceplate switch on all cCNI cards.
- 2 In Core 1, faceplate enable the cCNI cards.
- 3 Faceplate enable the System Utility Main card.

### Restore power

Restore power in the order below:

- 1 Restore power to Core/Net 1.
- 2 Restore power to Core/Net 0.
- 3 Restore power to the network modules
- 4 Wait for the system to load/initialize.
- 5 Re-initialize Core/Net 1.

**Note:** Re-initializing Core/Net 1 stops the midnight routines from running.

## Install software on Core 0

### Install software on Core 0

- 1 Check that a terminal is connected to J25 on Core/Net 0.
- 2 In Core/Net 0, install the CD-ROM into the CD-ROM drive in the MMDU:
  - 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.  
Do not push the holder in by hand.

**Note:** If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

- 3        Place the CP PII Install floppy disk into the MMDU floppy drive.  
**Note:** If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.
- 4        Press the manual RESET button on the CP PII card faceplate.
- 5        Before the install runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:  
  
Testing partition 0  
      0 percent done... 1 percent done... 99 percent done.... 100 percent done  
  
Testing partition 1  
      0 percent done... 1 percent done... 99 percent done.... 100 percent done  
  
Testing partition 2  
      0 percent done... 1 percent done... 99 percent done... 100 percent completed!  
  
Disk physical checking is completed!  
There are 3 partitions in disk 0:  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
The size of partition 0 of disk 0 is XX MB  
Disk partitions and sectors checking is completed!
- 6        At the terminal, press <cr> to start the software installation.
- 7        When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.  
  
<a>    Continue with keycode validation  
<y>    Confirm that the keycode matches the CD-ROM release
- 8        When the screen displays the Install Menu, select the following options in sequence when prompted to do so:  
  
<b>    Install software, database, and CP-BOOT ROM  
<a>    Verify that the CD-ROM is now in drive

The Installation Status Summary screen appears that lists the options to be installed.

<a> Continue with Upgrade

### **Pre-Release 3 language groups**

- 9** Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1> Global 10 Languages
- <2> Western Europe 10 Languages
- <3> Eastern Europe 10 Languages
- <4> North America 6 Languages
- <5> Spare Group A
- <6> North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- \* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
- \* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- \* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
- \* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
- \* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

### **Release 3 language groups**

- 10**    Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series sets.

#### **Select one of the six PSDL files**

- <1>    Global 10 Languages
- <2>    Western Europe 10 Languages
- <3>    Eastern Europe 10 Languages
- <4>    North America 6 Languages
- <5>    Spare Group A
- <6>    North America 6 Languages (Duplicate of <4>)

The languages contained in each selection are outlined as follows:

- 1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.
- 2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.
- 3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
- 4 – North America six Languages (Release 3) English, French,

German, Spanish, Brazilian Portuguese, Japanese Katakana.

- 5 – Spare Group A.
- 6 – Spare Group B.

**11** Continue with upgrade when prompted. Select a database to install.

- <cr> Enter carriage return to continue.
- <a> Continue with CP BOOTROM installation
- <a> Install the CP BOOTROM from hard disk
- <a> Start installation
- <a> Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, Database, and CP-BOOTROM were installed.

- <cr> Continue
- <q> Quit (remove any diskettes and the CD-ROM from the MMDU drives)
- <y> Confirm quit
- <a> Reboot the system

The system will automatically perform a sysload: several messages appear on the system terminal. Wait for “DONE” and then “INI” messages to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION

RELEASE XX.XX TO RELEASE 25.

Confirm that the Release 25 software is installed and functional on Core/Net 0:

**LD 135** to load the program

**STAT CPU** to display the CPU status

## **Check for Peripheral Software Download to Core 0**

Load LD 22 and print Target peripheral software version. The Source peripheral software version was printed during the procedure to “Print site data” on page 40.

If there is a difference between the Source and Target peripheral software version:

- A forced download occurs during initialization when coming out of parallel reload.
- System initialization takes longer.
- The system drops established calls on IPE.

**LD 22**

<b>REQ</b>	PRT
<b>TYPE</b>	PSWV.
<b>ISSP</b>	Print System and Patch Information.
<b>SLT</b>	Print System Limits.
<b>TID</b>	Print the Tape ID.
<b>****</b>	Exit program.

**12**    Perform a data dump to save the customer database to the hard drive:

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

**LD 43**        To load the program.

- b. When "EDD000" appears on the terminal, enter

**EDD**        To begin the data dump.



**CAUTION**

**Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

**Enable the conference/TDS card**

- 1 Plug in the Conf/TDS card in Group 1. Push the latches forward to lock the card in place.
- 2 Faceplate enable the Conf/TDS cards.
- 3 Enable the Conf/TDS cards:
  - LD 34** To load the program.
  - ENLX x (loop)** To enable the Conf/TDS card.
  - \*\*\*\*** To exit the program

**On Core 1, reconfigure Group 0 and both sides of Group 1**

Configure Conference/TDS card (as a minimum) and any other network cards.

Configure both sides of Group 1 for a two-group system.

**Enable the Peripheral Signaling card**

- 1 Enable the Peripheral Signaling (Per Sig) card in Group 1:
  - LD 32** to load the program.
  - ENPS x (slot)** To enable the Peripheral Signaling card.
  - \*\*\*\*** To exit the program.

For example:

- ENPS 12** To enable slot 12 (Group 6).
- ENPS 13** To enable slot 12 (Group 6).
- \*\*\*\*** to exit the program

**Make the system redundant**

To enable system redundancy, enable cCNI cards and reboot Core/Net 0:

- 1 On Core/Net 0 and Core/Net 1, enable the cCNIs.
- 2 Reboot Core/Net 0.

**Note:** Once the *inactive* Core (Core/Net 0) is rebooted, the system will operate in full redundant mode with Core/Net 0 active.

## Complete the CP PII upgrade

### Test Core/Net 1 and Core/Net 0

From Core/Net 1, perform these tests for both Cores:

- 1 Perform a redundancy sanity test:

**LD 135**

**STAT CPU**        Get status of CPU and memory.

**TEST CPU**        Test the CPU.

- 2 Check the LED and LCD states

- a. Perform a visual check of the LEDs and LCDs.

- b. Test LEDs and LCDs:

**LD 135**

**TEST LEDs**        Test LEDs.

**TEST LCDs**        Test LCDs.

**DSPL ALL**

- c. Check that the LED and LCD displays match the software check.

- 3 Test the System Utility cards and the cCNI cards:

**LD 135**

**STAT SUTL**        Get the status of the System Utility (main and Transition) cards.

**TEST SUTL**        Test the System Utility (main and Transition) cards.

**STAT CNI c s**      Get status of cCNI cards (core, slot).

**TEST CNI c s**      Test cCNI (core, slot).

- 4 Switch Cores and repeat the tests to confirm that the data is consistent.:

**LD 135**

**SCPU**              Switch cores.

**STAT CPU**        Get status of the CPU.

**TEST CPU**        Test the inactive Core.

**TEST LEDs**        Test LEDs.

**TEST LCDs** Test LCDs.  
**DSPL ALL**  
**STAT SUTL** Get status of System Utility (both main and Transition) cards.  
**TEST SUTL c s** Test System Utility cards, both main and Transition cards.  
**STAT CNI c s** Get status of cCNI cards, both main and Transition cards (core, slot).  
**TEST CNI c s** Test cCNI cards, both main and Transition cards (core, slot).

5 Test system redundancy:

**LD 137**  
**TEST RDUN** Test redundancy.  
**DATA RDUN**  
**TEST CMDU** Test the MMDU card.

6 Install the two system monitors. Test that the system monitors are working:

**LD 37** Load the program.  
**STAT XSM** Check the system monitors  
**\*\*\*\*** Exit the program.

7 Clear the display and minor alarms on both Cores:

**LD 135**  
**CDSP** Clear the displays on the cores.  
**CMAJ** Clear major alarms.  
**CMIN ALL** **Clear minor alarms.**

8 Get the status of the Cores, cNIS, and memory.

**STAT CPU** Get the status of CPUs and redundancy.  
**STAT CNI c s** Get the status of cCNI cards (core, slot).

**Note:** You will need to execute the STAT CNI command twice before receiving a response from the system

9 Test the clocks:

- a. Verify that the clock controller is assigned to the *active* Core.

**LD 60**            To lead the program.  
**SSCK x**            To get the status of the clock controllers (*x* is “0” or “1” for Clock 0 or Clock 1).  
**SWCK**            To switch the Clock if necessary.  
**\*\*\*\***              Exit program.

- b. Verify that the Clock Controllers are switching correctly:.

**SWCK**            To switch the Clock.  
**SWCK**            to switch the Clock again.

**10**    Test the Fiber Rings

See the *Maintenance* (553-3001-511) for more information on overlay 39 commands.

- a. Check that the Fiber Rings operate correctly:

**LD 39**            To load the program.  
**STAT RING 0**    To check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**    To check the status of Ring 1 (HALF/HALF)

- b. If necessary, restore the Rings to Normal State:

**RSTR**            To restore both Rings to HALF state.

- c. Check that the Rings operate correctly:

**STAT RING 0**    To check the status of Ring 0 (HALF/HALF)  
**STAT RING 1**    To check the status of Ring 1 (HALF/HALF)

**11**    Check the status of the FIJI alarms

**STAT ALRM**      to query the alarm condition for all FIJI cards in all Network Groups

**\*\*\*\***              Exit program.

## Perform a data dump

Perform a data dump to backup the customer database:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter  
**LD 43** Load the program.
- 3 Insert a floppy disk into the MMDU to back up the database.
- 4 When "EDD000" appears on the terminal, enter  
**EDD** Begin the data dump.



### **CAUTION**

#### **Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

## Add an IPE module, if required

Place an IPE module on top of Core 1 column, if required. Refer to *System Installation Procedures* (553-3001-210).

Refer to Engineering Guidelines for Option 81C to re-engineer the system, if required.

The Option 61/61C upgrade to Option 81C with CP PII and Fiber Network Fabric is complete.



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# Database transfer for Option 21E, 51, 61, 71, STE, NT, and XT

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## Contents

The following are the topics in this section:

<a href="#">Using the Database Transfer Utility .....</a>	<a href="#">749</a>
<a href="#">Using the direct cabling method .....</a>	<a href="#">751</a>

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 software 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**  
**Loss of Data**

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 software 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**

#### **Service Interruption**

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****Damage to Equipment**

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 154 on page 753). 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 154**  
**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.

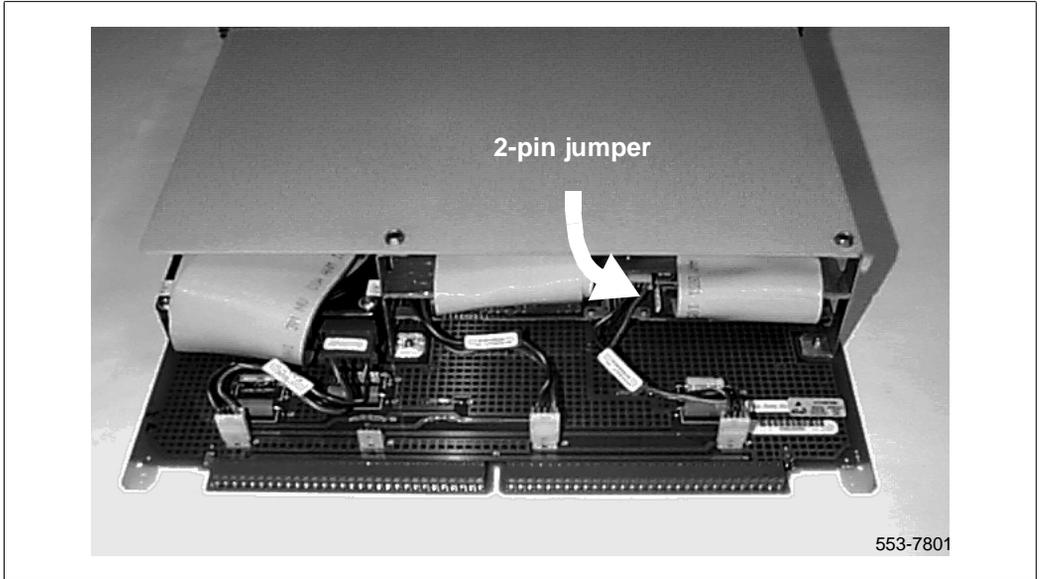
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

**CAUTION****Service Interruption**

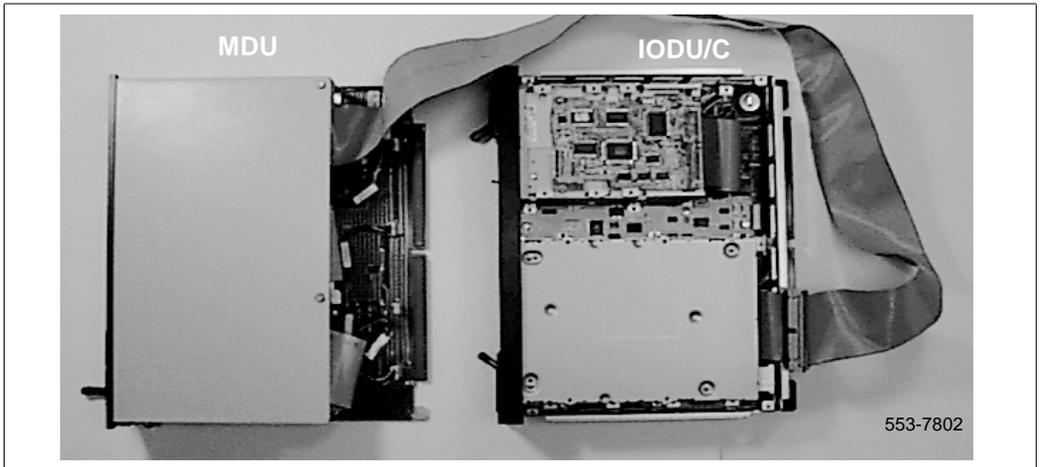
Perform step 3 on page 754 for Option 51C systems only. The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant 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 155 on page 755). The jumper block has 6 pins and three jumpers.
- 4 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 156 on page 755). 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.
- 5 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module (see Figure 157 on page 756). 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).

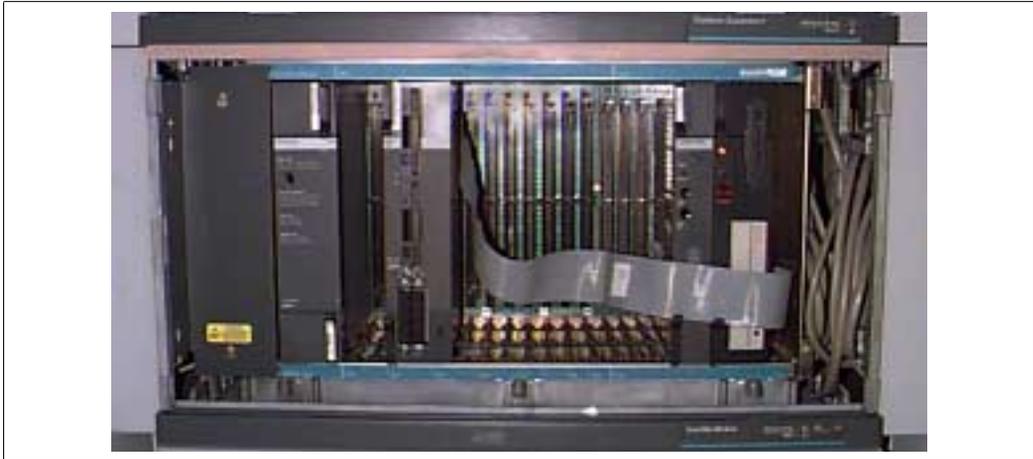
**Figure 155**  
**Option 51C 2-pin jumper location on MDU card**



**Figure 156**  
**Cabling the MDU to the IODU/C card**



**Figure 157**  
**IODU/C and MDU cabled in Core/Net 1**



- 9** Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive (68060 or 68060E).
- 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.

---

# Database transfer for Option 51C, 61C, and 81, with IOP/CMDU

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## Contents

The following are the topics in this section:

Reference list .....	759
Using the Database Transfer Utility .....	759
Using the Copy database command .....	761
Databases on software Release 16 G (Phase 7) .....	762

## 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****Loss of Data**

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 software Release 16 G (Phase 7)

Use the following procedure if your system is equipped with NT8D69 MDU cards running software 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, or 61C, using the procedures in *Hardware Upgrade Procedures* (553-3001-258).
- Install software 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 quit
  - Remove 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 an NT5D10 or NT5D03 CP card

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## Contents

The following are the topics in this section:

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## Reference list

The following are the references in this section:

- *Capacity Engineering* (553-3001-149)



### **CAUTION**

#### **Service Interruption**

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, or 81, systems running software 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.

**Note:** The procedure to upgrade an Option 81C to an NT4N64 Call Processor Pentium II is in the section “Option 71, 81, 81C upgrade to an Option 81C CP PII” on page 165.

Software Release 25 supports Automatic Inline Conversion from software 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 software 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, or 81, 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, or 81, 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



#### **CAUTION**

##### **Loss of Data**

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

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

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

## 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 on page 768. 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 on page 768. 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 software 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 software Release 25, the following message appears on the system terminal:

**DATA CONVERSION**  
**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**

**Service Interruption**

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 776.

- 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:

- LD 137** to load the overlay
- STAT** 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:

<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

**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

<b>LD 43</b>	to load the program
--------------	---------------------

**4** When “EDD000” appears on the terminal, enter

<b>EDD</b>	to begin the data dump
------------	------------------------



### **CAUTION**

#### **Loss of Data**

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

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

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

- 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.

## 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****Service Interruption**

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

**CAUTION****Loss of Data**

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

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

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

## 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**

**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:

**LD 135**           to load the overlay  
**STAT CPU**       to check the CPU status  
**STAT CNI**       to verify CNI functionality  
**\*\*\*\***             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



**CAUTION**

**Loss of Data**

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

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

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

- 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 Options 61C, or 81, 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 767.

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, or 81, 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



**CAUTION**

**Loss of Data**

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

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

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

## 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 on page 768. 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 on page 768. 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 software 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 software Release 25, the following message appears on the system terminal:

**DATA CONVERSION**  
**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****Service Interruption**

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 |

**SYNC** to synchronize the disk drives  
**\*\*\*\*** 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:

**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

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



### CAUTION

#### Loss of Data

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

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

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

- 4 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 779



### **CAUTION**

#### **Service Interruption**

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

**CAUTION****Loss of Data**

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

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

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

## 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)
```

```
=====
```

### MAIN MENU

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**  
**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



**CAUTION**

**Loss of Data**

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

When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

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

- 4 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.

---

# System monitor upgrade installation

---

## Contents

The following are the topics in this section:

Reference list . . . . .	802
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System monitoring in ST and RT systems . . . . .	810
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Configuration 2—ST system with QCA136 and CE/PE Module . . . . .	820
Configuration 3—ST/RT system with QCA137 and CE/PE Module . . . . .	826
Configuration 4—ST system with QCA136, QCA137, and PE Module . . . . .	830
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## Reference list

The following are the references in this section:

- *System Installation Procedures (553-3001-210)*
- *Circuit Card: Installation and Testing (553-3001-211)*
- *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 104 on page 802 provides the SW1 switch settings for the system monitor in upgraded systems.

**Table 104**  
**SW1 system monitor switch settings for system upgrades (Part 1 of 3)**

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).
3	ON	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
	OFF	The entire system is DC powered.
4	ON	The modules are AC powered.
	OFF	The Power Fail Transfer Unit (PFTU) activates when overheating occurs.
	ON	The PFTU will not be activated if overheating occurs.

**Table 104**  
**SW1 system monitor switch settings for system upgrades (Part 2 of 3)**

SW1	Setting	Function
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 104**  
**SW1 system monitor switch settings for system upgrades (Part 3 of 3)**

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.

## System monitoring in NT/XT systems and QCA60-type cabinets

Procedure 1 on page 805 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 on page 810 gives steps for connecting system monitors when the CE is located in a column and the existing cabinets are equipped with QPC84 Power Monitors.

#### **Procedure 1**

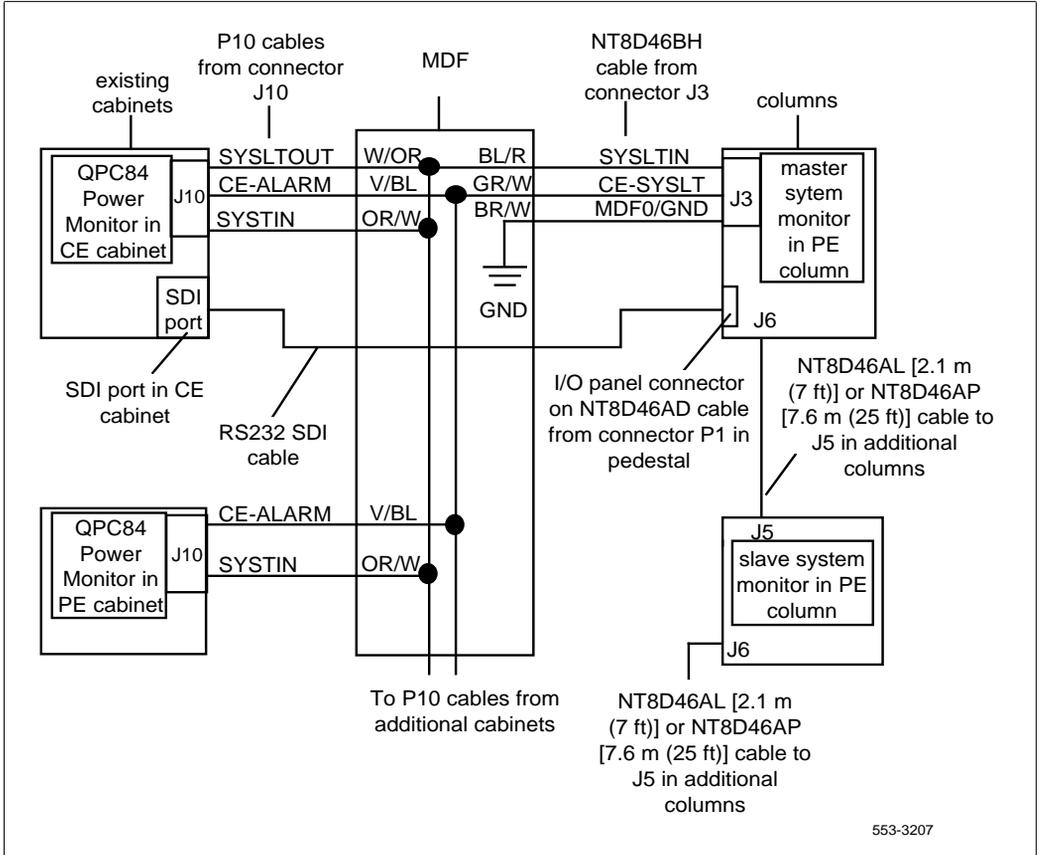
#### **Connecting system monitor—CE remains in a cabinet equipped with a QPC84 or QPC173 Power Monitor**

**Note:** During this procedure, use Figure 158 on page 807 if the CE cabinet is equipped with a QPC84 Power Monitor (typically in an NT system). Use Figure 159 on page 808 if the CE cabinet is equipped with a QPC173 Power Monitor (typically in an XT system).

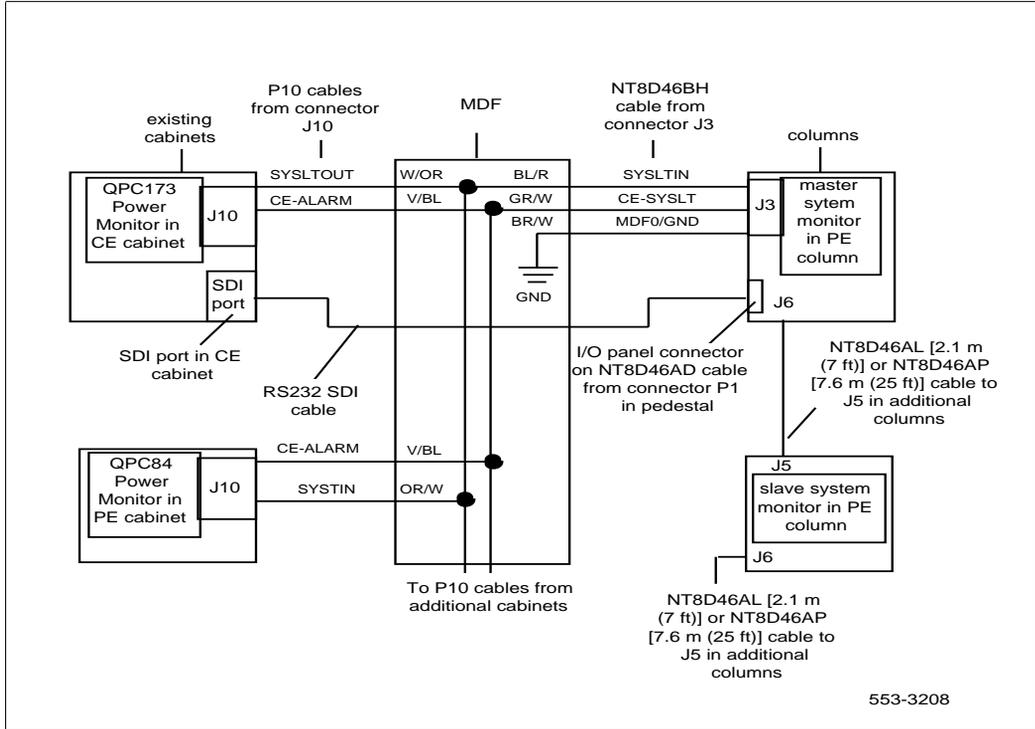
- 1 Make sure that the NT8D46BH alarm cable from connector J3 at the rear of the pedestal housing the master system monitor is terminated at the main distribution frame (MDF). The column containing CPU 0 contains the master system monitor. See *System Installation Procedures* (553-3001-210).
- 2 At the 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 104 on page 802. 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 160 on page 809 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.

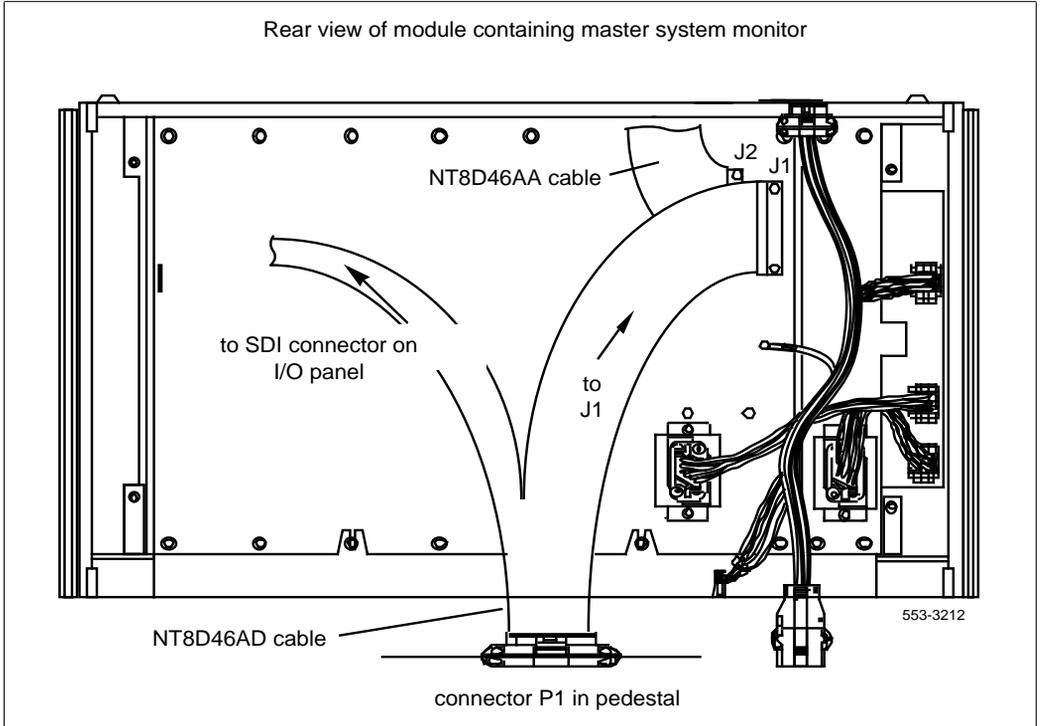
**Figure 158**  
**Common equipment in existing cabinet equipped with a QPC84 Power Monitor**



**Figure 159**  
**Common equipment in existing cabinet equipped with a QPC173 Power Monitor**



**Figure 160**  
**NT8D46AD cable connections**



## Procedure 2

### Connecting system monitor—CE in a column and existing cabinets are equipped with QPC84 Power Monitors

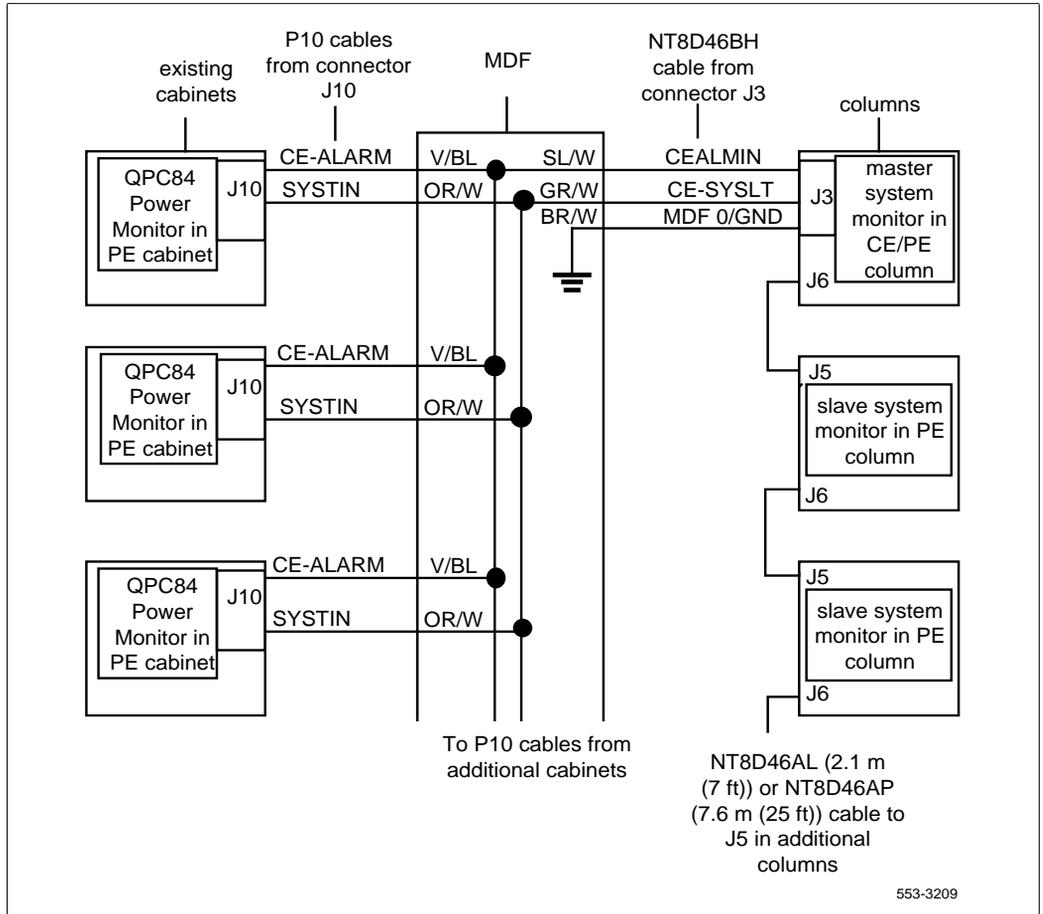
- 1 Make sure that the NT8D46BH alarm cable from connector J3 at the rear of the pedestal housing the master system monitor is terminated at the MDF. The column containing CPU 0 contains the master system monitor. See *System Installation Procedures* (553-3001-210).
- 2 At the MDF, locate the P10 cable from each existing cabinet:
  - a. Make sure that the SYSLTIN connections (OR/W wire) in all P10 cables are connected together. See Figure 161 on page 811.
  - b. Make sure that the CE-ALARM connections (V/BL wire) in all P10 cables are connected together. See Figure 161 on page 811.
- 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 161 on page 811.
- 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 161 on page 811.
  - 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 161 on page 811.
- 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 104 on page 802. 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.

## 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

**Figure 161**  
**Common equipment in module and existing cabinets equipped with QPC84 Power Monitors**



located in the cabinet or in the Meridian 1 module. See Table 105 on page 812.

**Table 105**  
**Hardware requirements (Part 1 of 4)**

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)

**Table 105**  
**Hardware requirements (Part 2 of 4)**

Cabinet type	CPU location	Hardware required (one of each)
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)
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)

**Table 105**  
**Hardware requirements (Part 3 of 4)**

Cabinet type	CPU location	Hardware required (one of each)
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)
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)

**Table 105**  
**Hardware requirements (Part 4 of 4)**

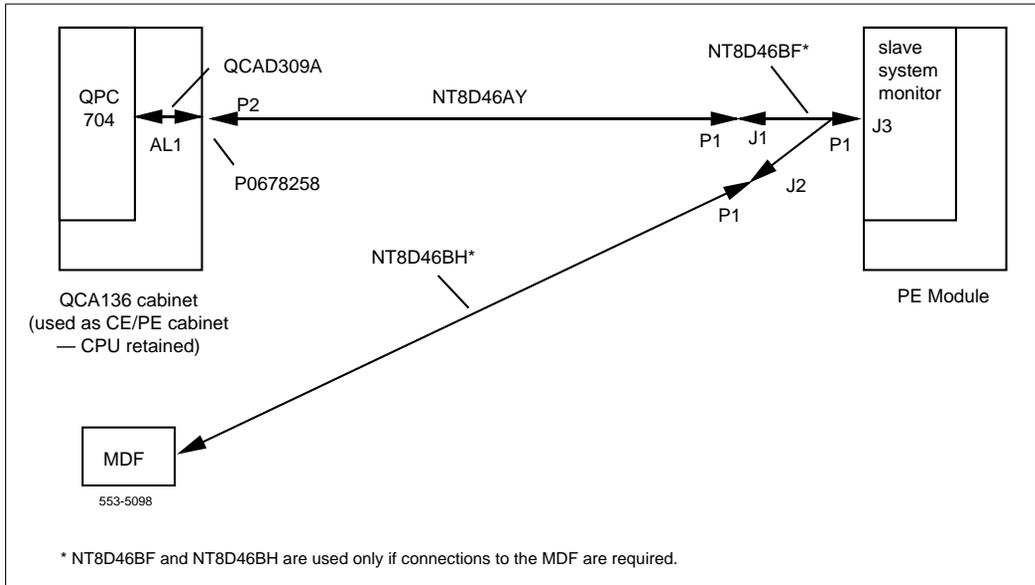
Cabinet type	CPU location	Hardware required (one of each)
<p><b>Note 1:</b> The NT8D46BF and NT8D46BH cables are only required when extending the alarm connections to the main distribution frame (MDF).</p>		
<p><b>Note 2:</b> ST systems consisting of a single QCA136 cabinet require the installation of 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 162 on page 816). The CPU is located in the cabinet.

**Figure 162**  
**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 104 on page 802.

**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 104 on page 802), 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

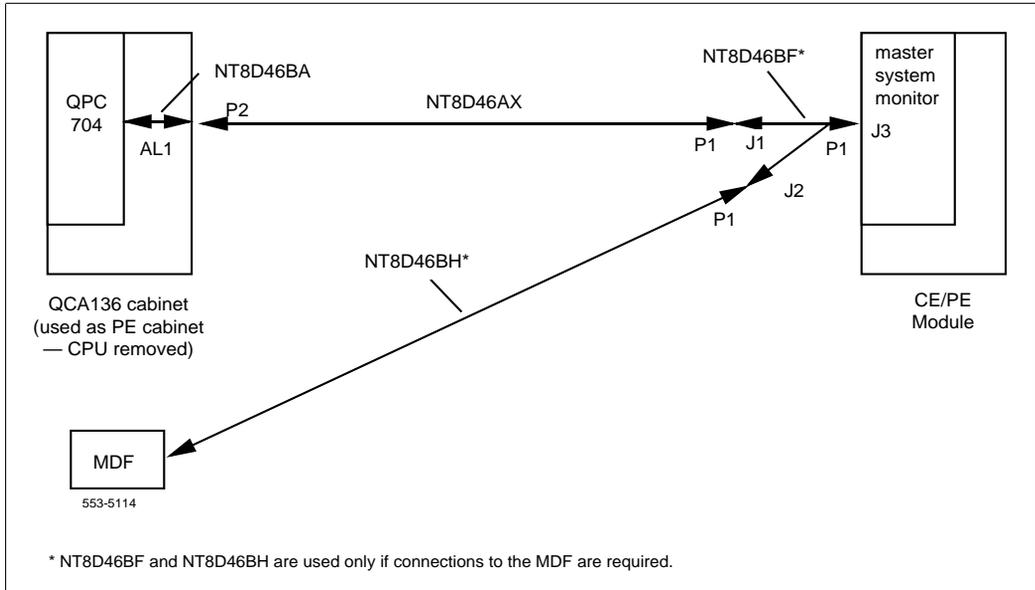
If any test fails, verify that the QCAD309A and NT8D46AY cables are installed properly, and the switch settings on the system monitor are correct for this configuration.

## 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 163 on page 820). The CPU is located in the module.

**Figure 163**  
**Connecting system monitor—Configuration 2**



**Procedure 4**  
**Connecting system monitor—Configuration 2**

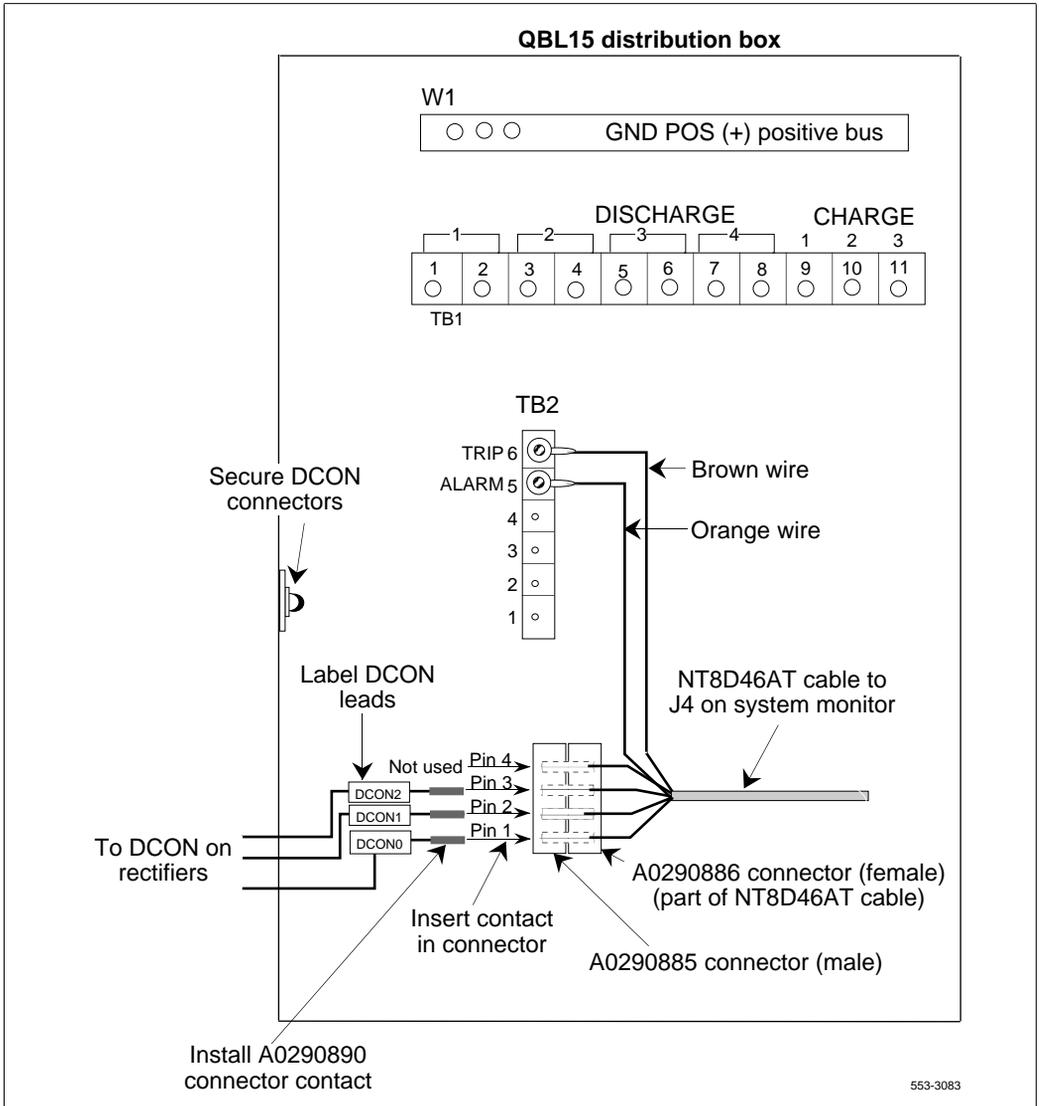
**Note:** This procedure requires powering down the QCA136 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring 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 104 on page 802.
- 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 164 on page 823.

**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 164**  
**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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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
```

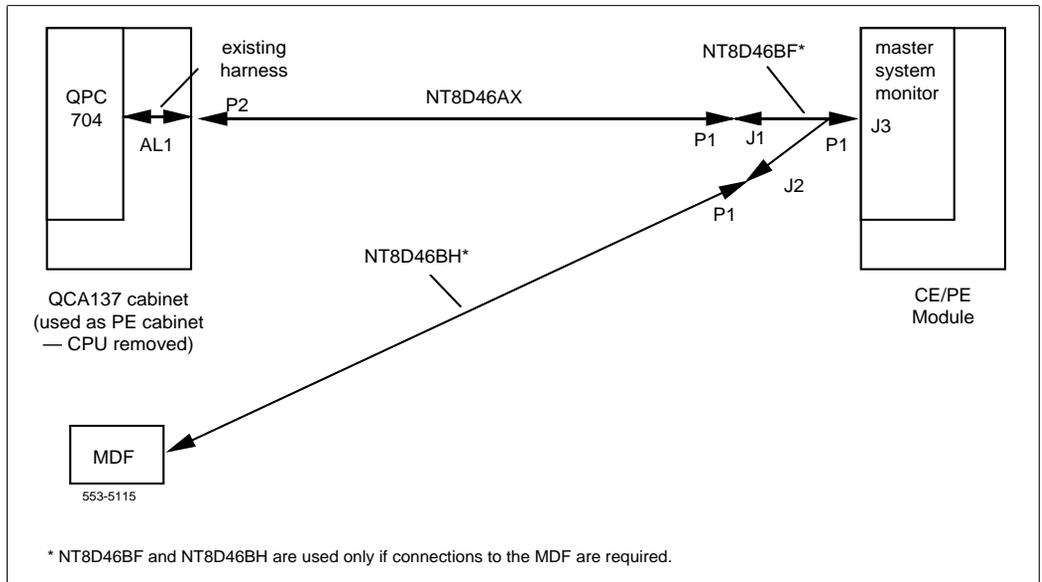
If any test fails, verify that the QCAD309A and NT8D46AY cables are installed properly, and the switch settings on the system monitor are correct for this configuration.

## **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 165 on page 827). The CPU is located in the module.

**Figure 165**  
**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 104 on page 802.
- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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
```

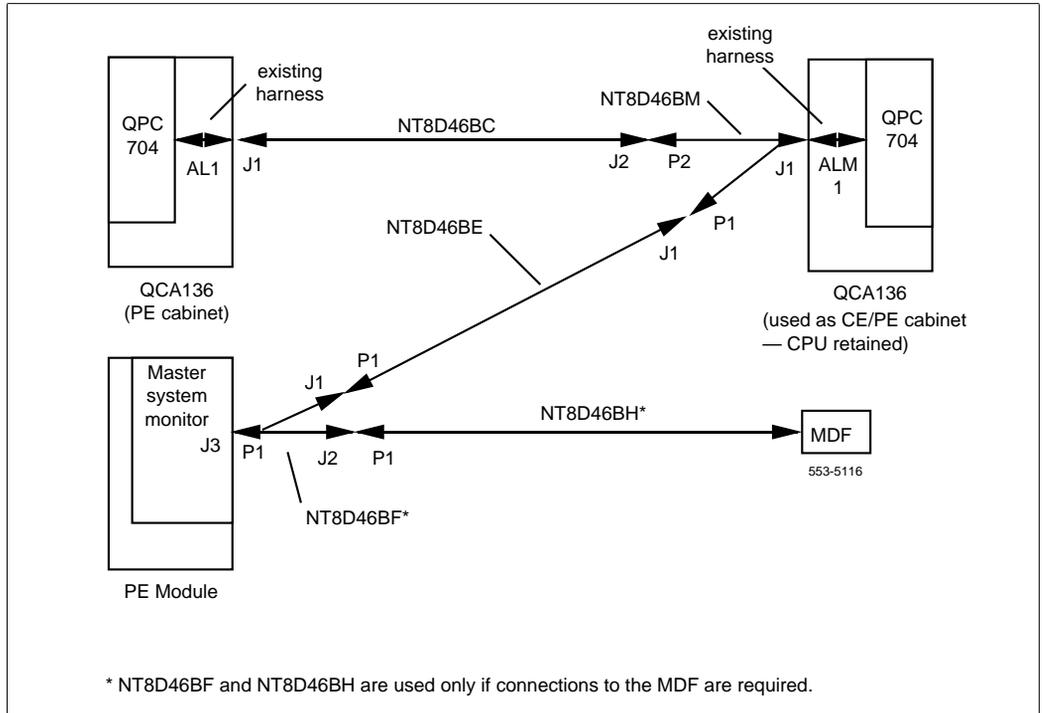
If any test fails, verify that the NT8D46AX cable is installed properly, and the switch settings on the system monitor are correct for this configuration.

## **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 166 on page 831). The CPU is located in the QCA136 cabinet.

**Figure 166**  
**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 104 on page 802.

- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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

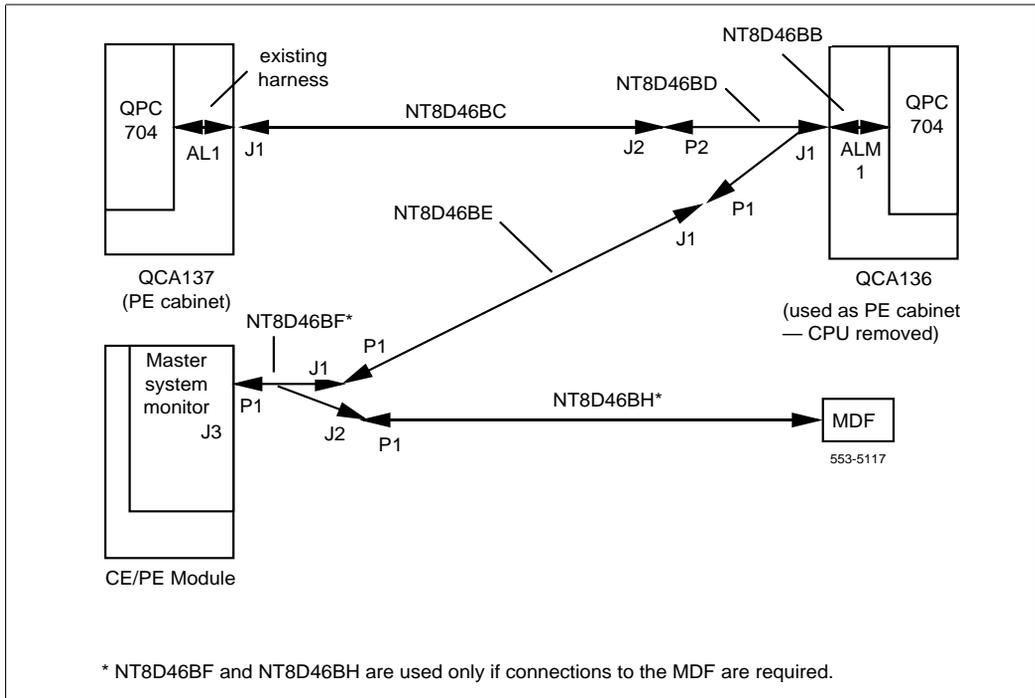
If any test fails, verify that the NT8D46BE and NT8D46BM cables are installed properly, and the switch settings on the system monitor are correct for this configuration. For the QCA137 cabinet, verify that the NT8D46BC and QCAD310 cables are installed properly.

## 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 167 on page 836). The CPU is located in the module.

**Figure 167**  
**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 104 on page 802.
- 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:

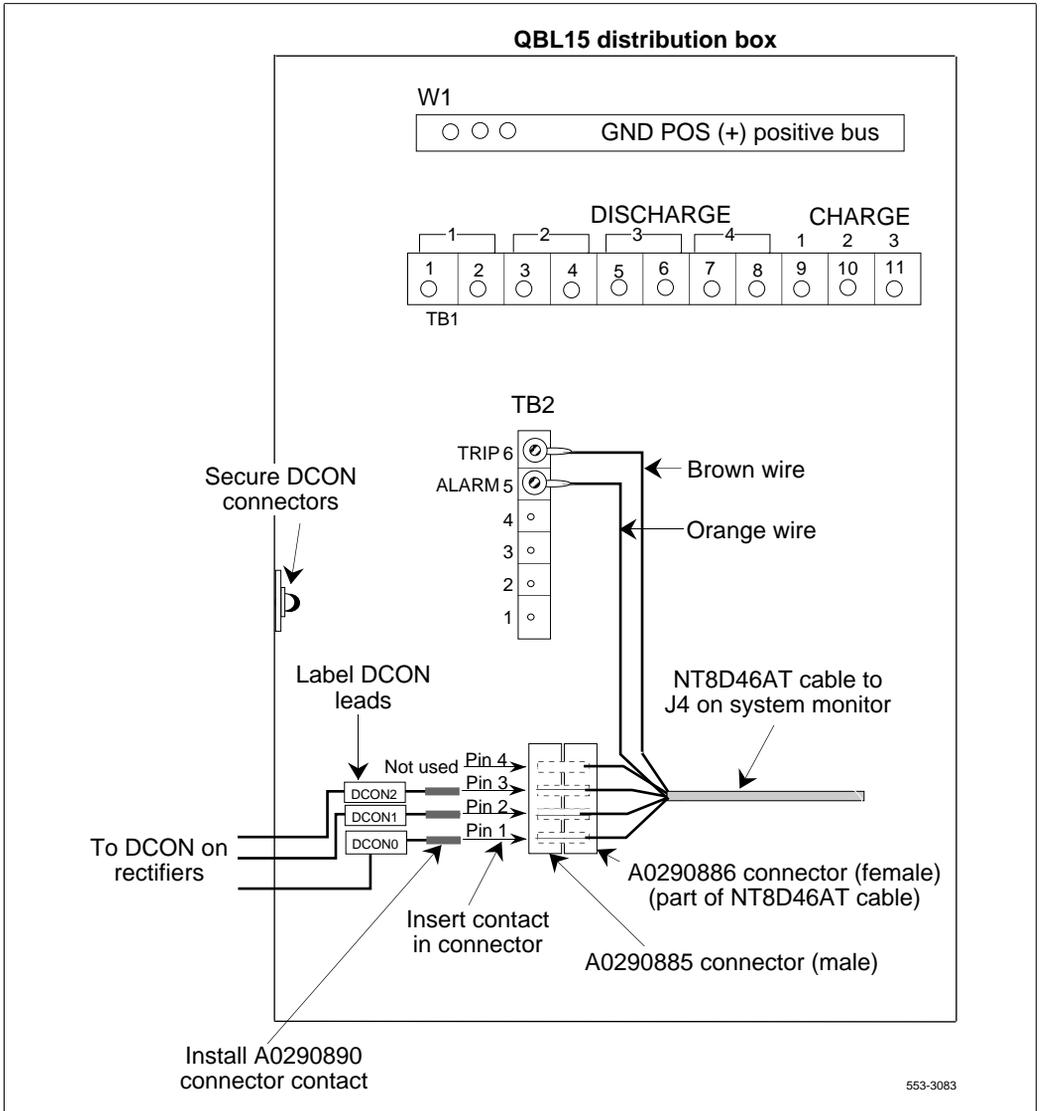
**PWR0054 XSMC 00 0 0**

- 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 168 on page 839.

**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 168**  
**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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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**

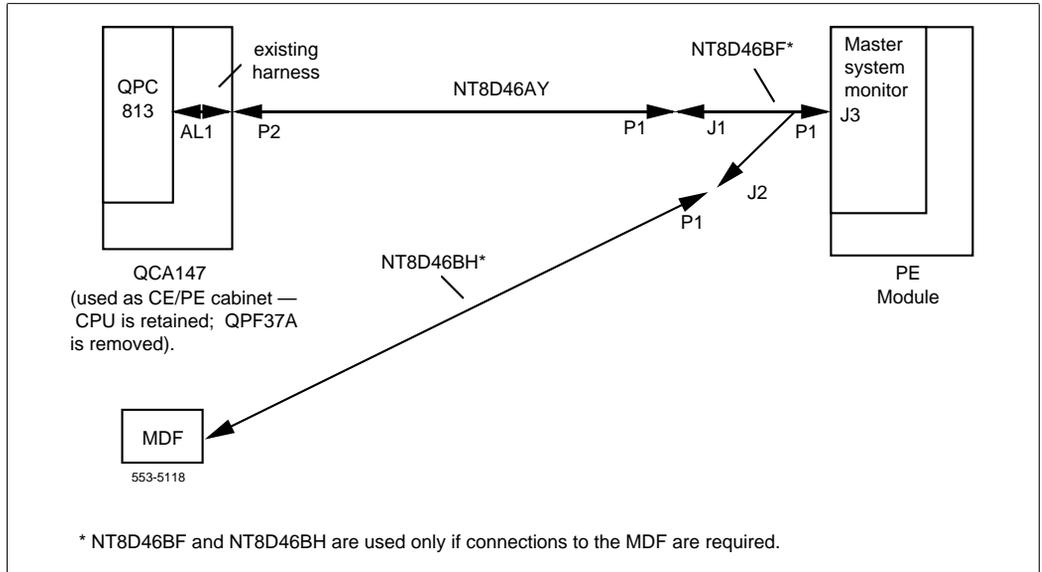
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. On the QCA137 cabinet, verify the installation of the QCAD310 cable.

## **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 169 on page 845). The CPU is located in the QCA147 cabinet.

**Figure 169**  
**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 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 104 on page 802.
- 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 104 on page 802), and reinstall it into the pedestal.
  - c.** Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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

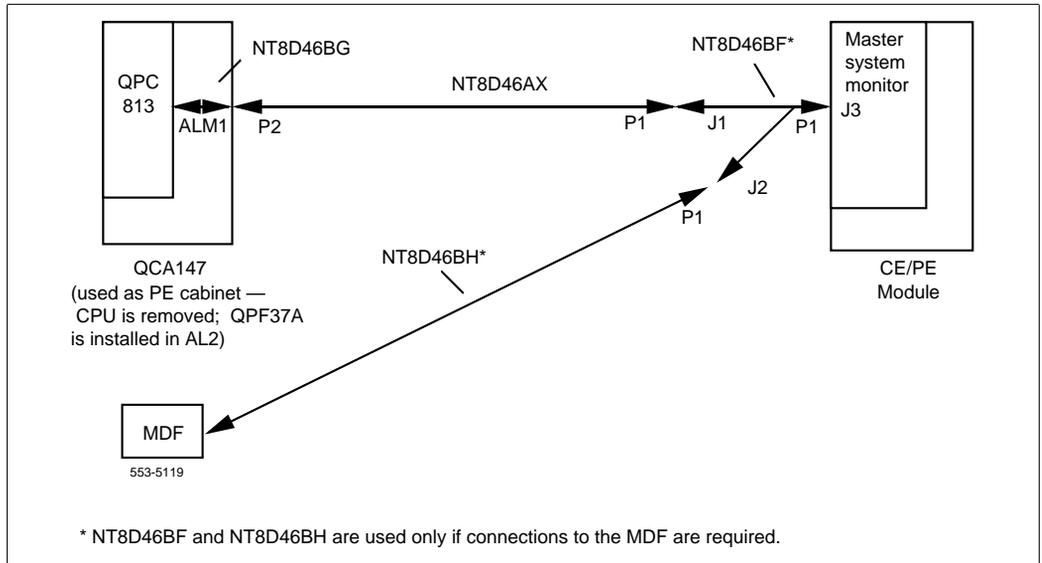
If any test fails, verify that the NT8D46AY cable and the QPF37A Alarm Adapter Plug are installed properly.

## 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 170 on page 849). The CPU is located in the module.

**Figure 170**  
**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 104 on page 802.
- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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
```

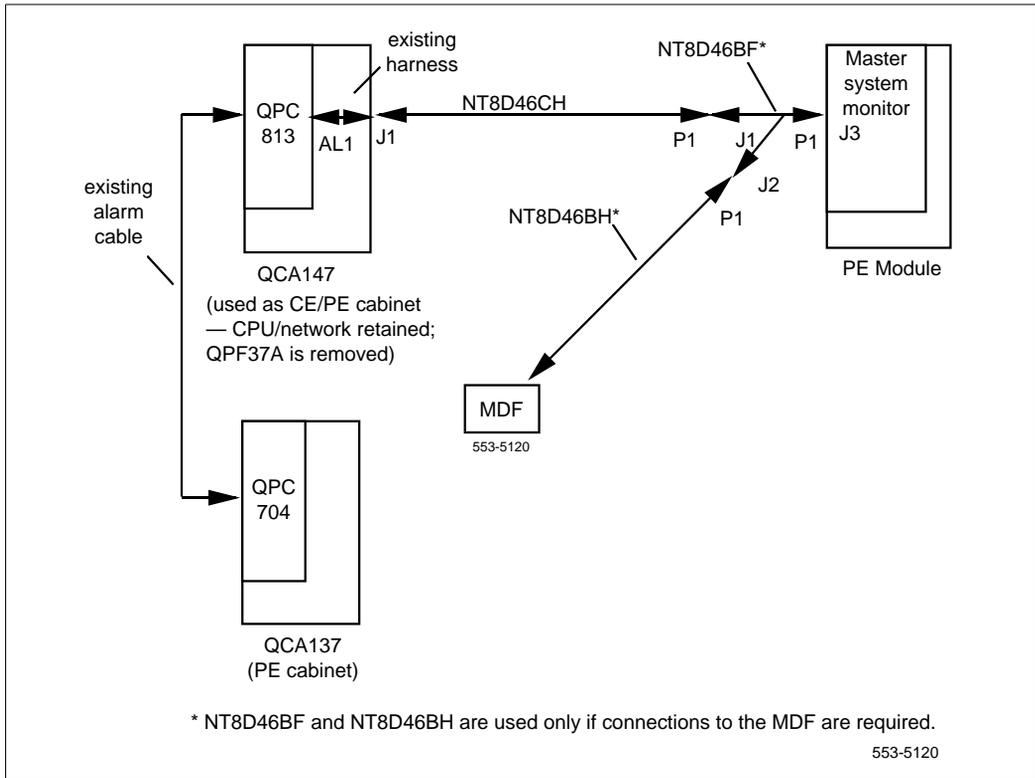
If any test fails, verify that the NT8D46BG and NT8D46AX cables are installed properly, the switch settings on the system monitor are correct for this configuration, and the QPF37A Alarm Adapter Plug is installed in AL2 of the existing harness.

## 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 171 on page 854). The CPU is located in the QCA147 cabinet.

**Figure 171**  
**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 104 on page 802.
- 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 104 on page 802), 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

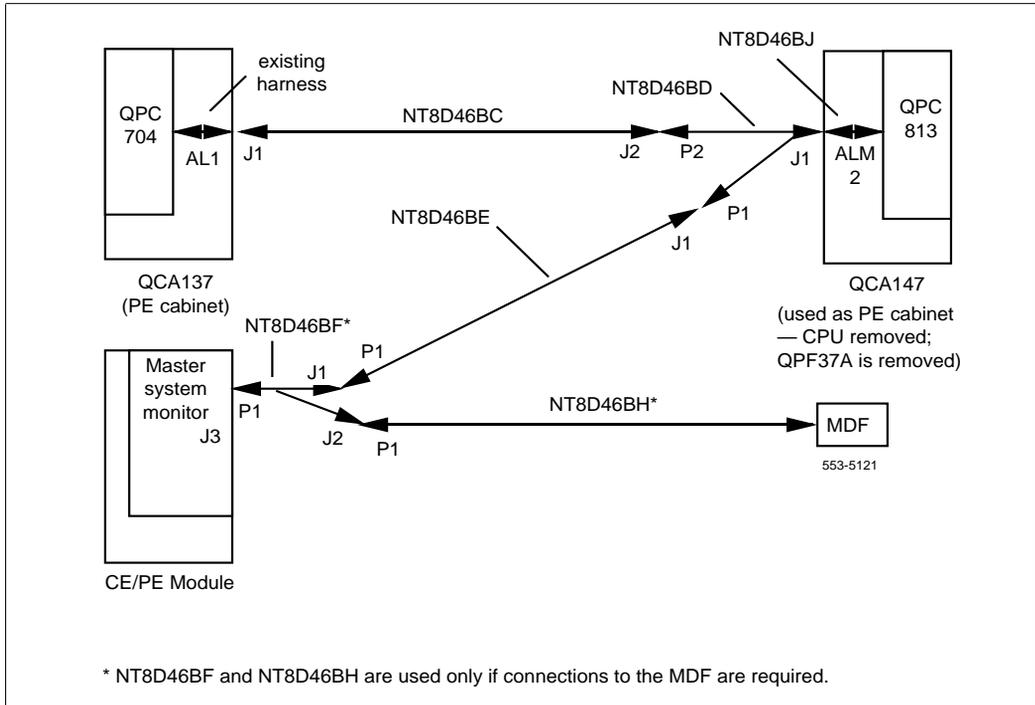
If any test fails, verify that the NT8D46CH cable is installed properly, and the switch settings on the system monitor are correct for this configuration. Verify the N5-25MQ1A cable installation on the QCA137 cabinet.

## **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 172 on page 860). The CPU is located in the module.

**Figure 172**  
**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 104 on page 802.

- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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**

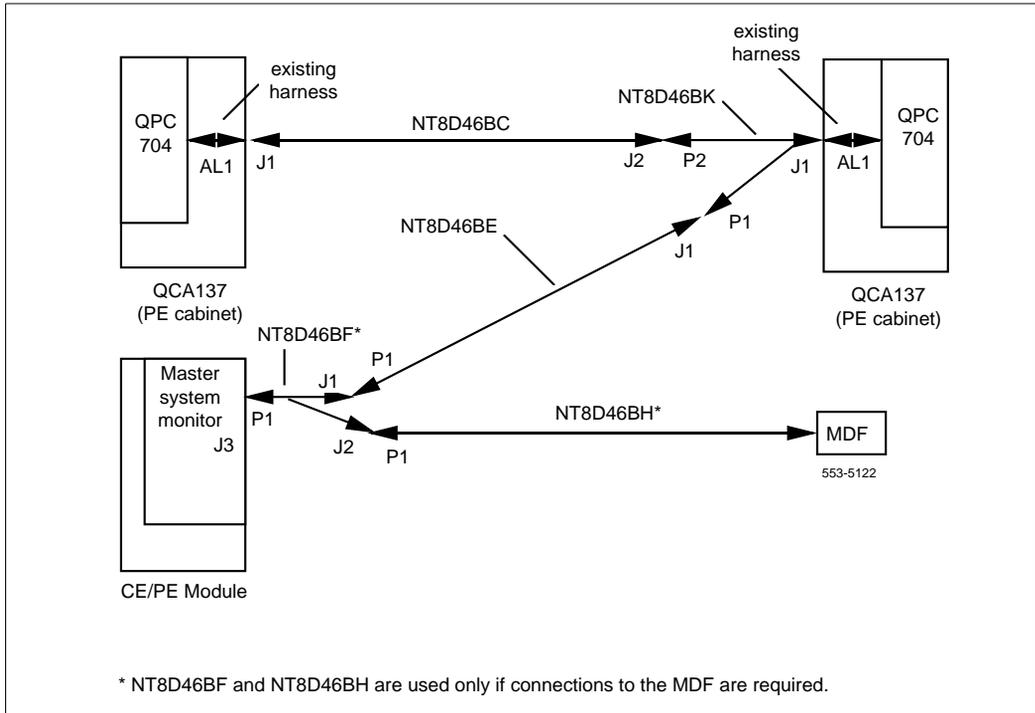
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the QCAD310 cable installation on the QCA137 cabinet.

## 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 173 on page 866). The CPU is located in the module.

**Figure 173**  
**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 104 on page 802.
- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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**

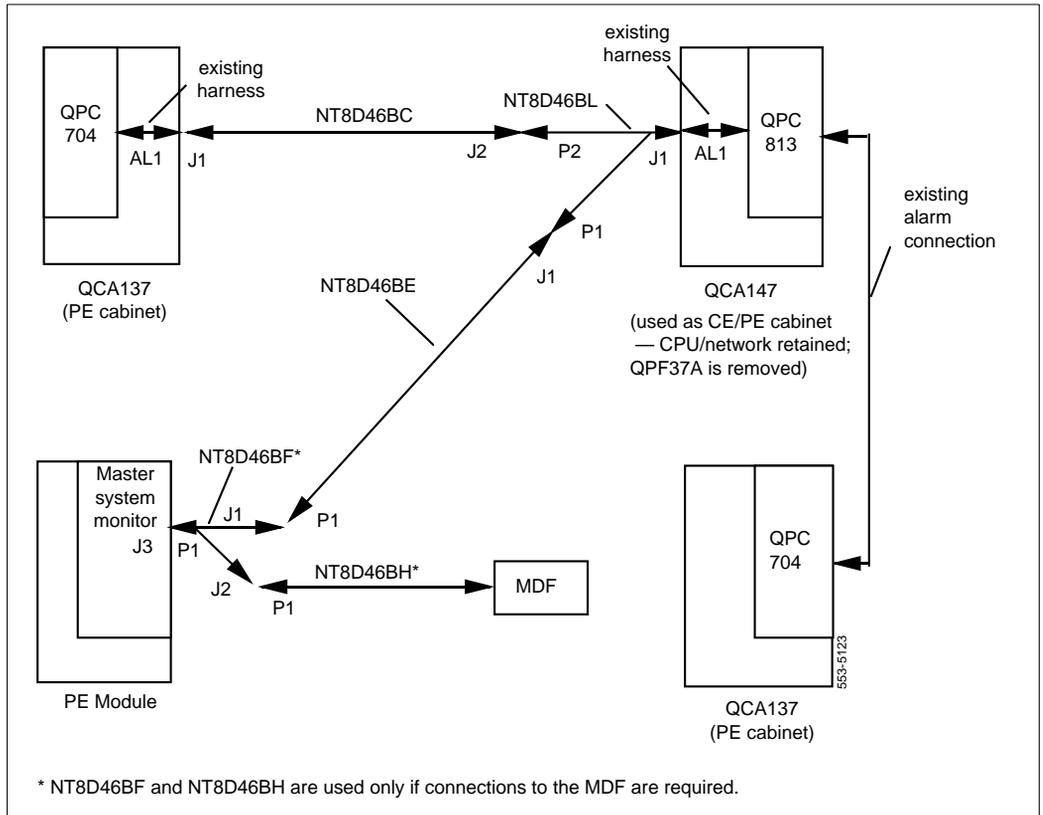
If any test fails, verify that all cables are installed properly, and the switch settings on the system monitor are correct for this configuration. Also verify the QCAD310 cable connections.

## 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 174 on page 871). The CPU is located in the QCA147 cabinet.

**Figure 174**  
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 104 on page 802.
- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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.

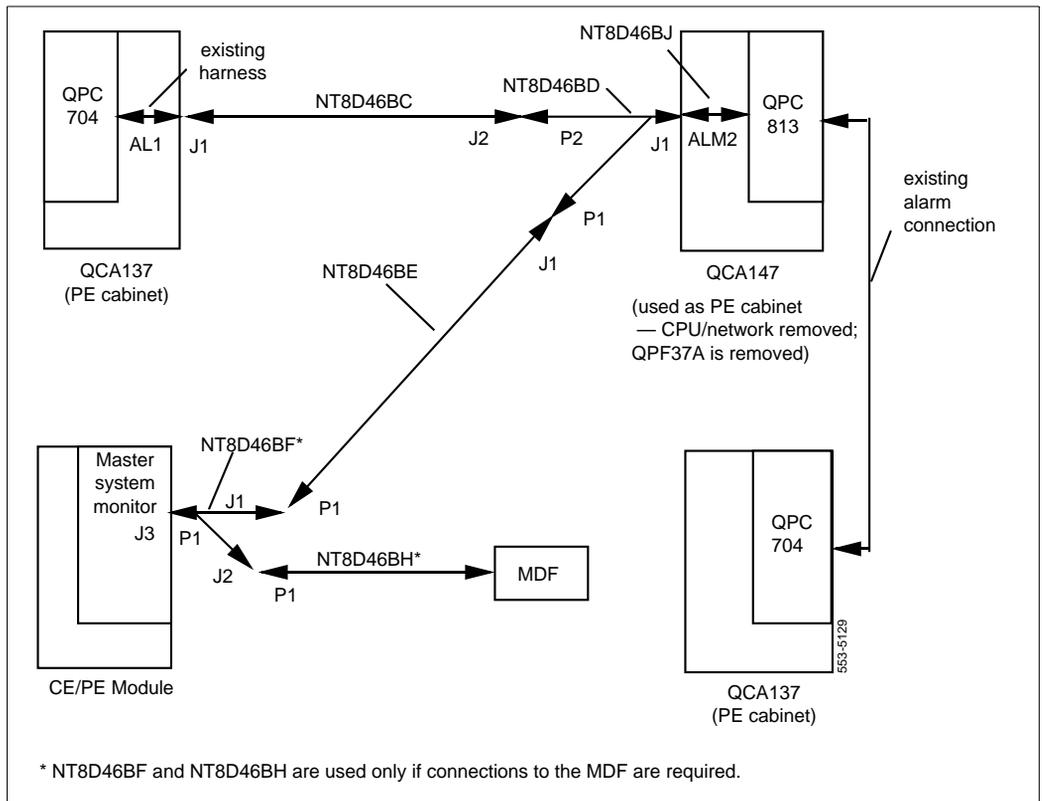
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the NE-25MQ1A and QCAD310 cable installation for the QCA137 cabinets.

## 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 175 on page 877). The CPU is located in the module.

**Figure 175**  
**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 104 on page 802.
- 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 104 on page 802), and reinstall it into the pedestal.
  - b. Use LD 37, Input/Output Diagnostic, and issue the command “STAT XSM” to identify the fault. See *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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## Contents

The following are the topics in this section:

Installing Ground Package P0677580 .....	885
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Installing Ground Package P0677588 .....	890

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:

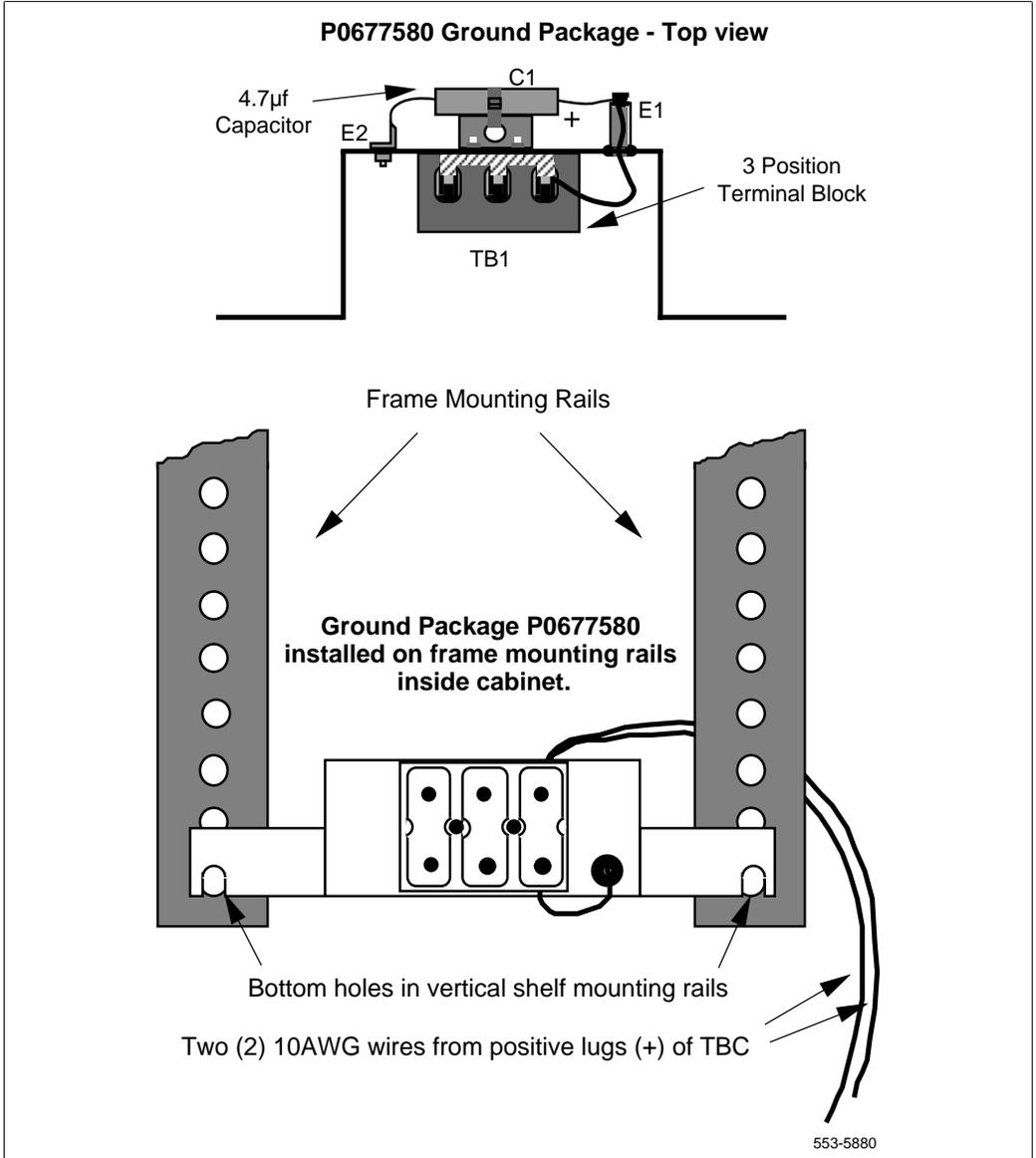
**Note:** Before modifying the ground, a temporary bypass ground wire must be added to avoid interrupting call processing.

- 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 176 on page 887.

- 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 176  
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.

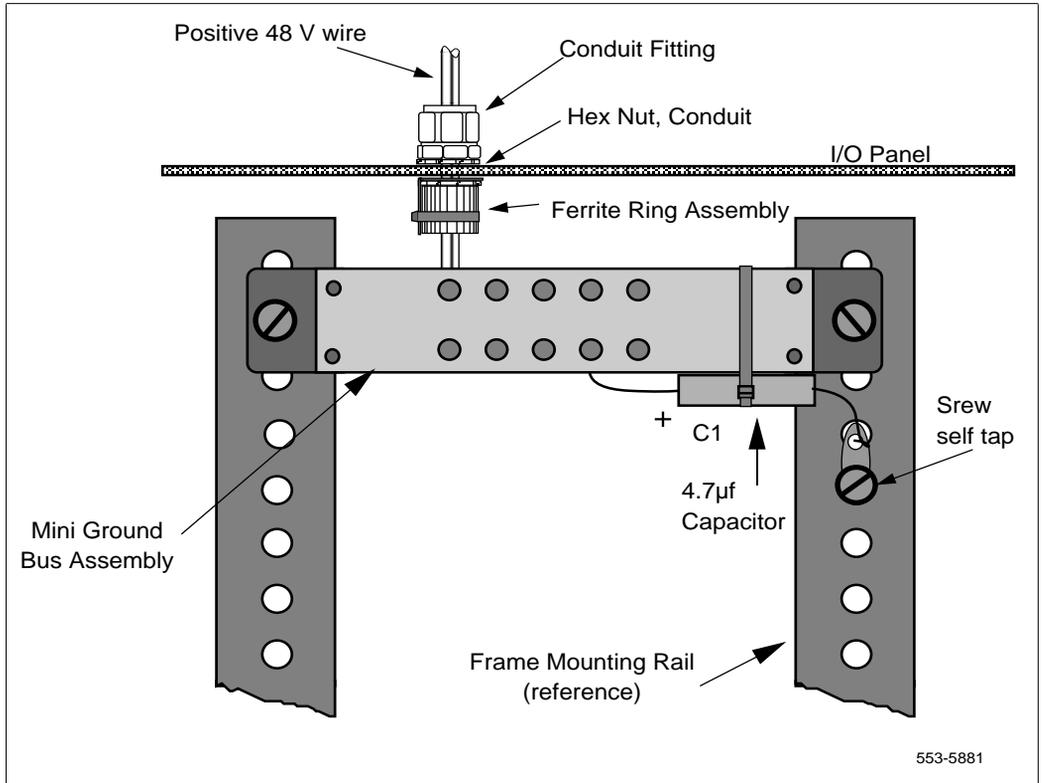
To install those systems that are affected, Nortel Networks has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

**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 177 on page 889.
- 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 177  
Installing Ground Package P0677587



- 3 Disconnect the +48V return wire from the isolated mini ground bus bar. See Figure 177 on page 889. Install the supplied ferrite ring assembly (P0677577) as shown in Figure 177 on page 889. 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 177 on page 889.
- 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.

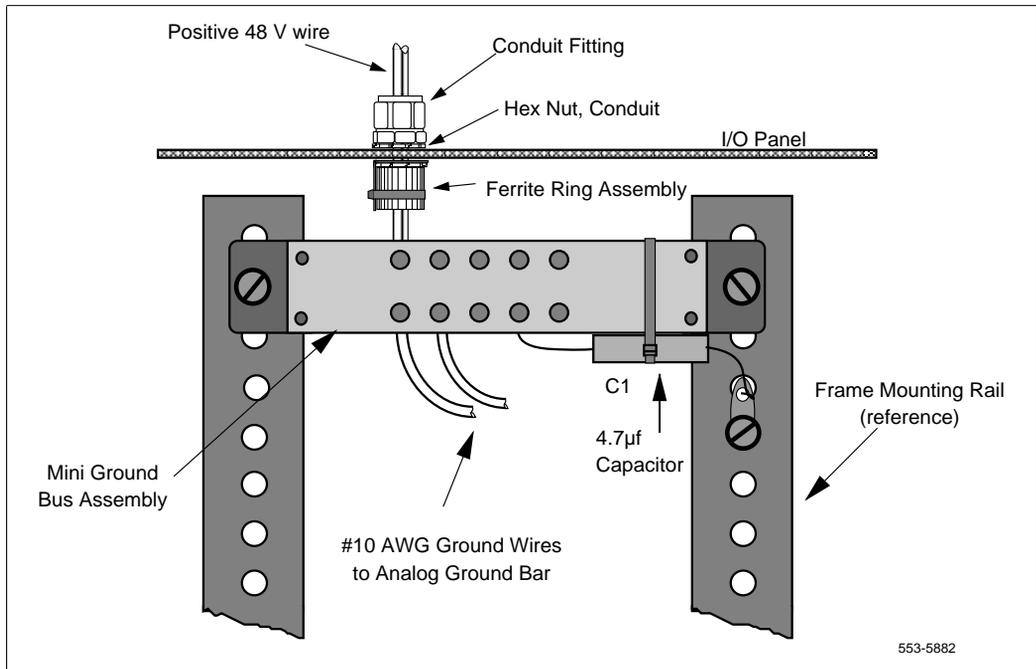
In order to install those systems that are affected, Nortel Networks has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

**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 178 on page 892. 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 178 on page 892. Attach the ground lug from the capacitor to the mounting rail, as shown, using the third screw.

**Figure 178**  
**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 178 on page 892.
- 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.

---

# Add a Network Group to Option 81C with FNF

---

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## Reference list

The following are the references in this section:

- *System Installation Procedures* (553-3001-210)

## Prepare for installation

The procedures in this section are for systems that have already been upgraded to Fiber Network. Follow the procedures in order.

Complete these steps before installation of the new Network Groups. Follow the steps in order.

### Verify removal of 3PE cards from Option 81 Core shelves

In Option 81 systems, the 3PE card must be removed from the Core shelves. This card should have been removed during the upgrade procedure (page 294).

If this card was not removed during the upgrade process, remove it now.

*Note:* This procedure is for Option 81 systems with Core shelves. This procedure is NOT necessary for Option 81C systems with Core/Net shelves.

To remove the 3PE card from both Cores:

- 1 In Core 1, hardware disable the 3PE card.
- 2 In Core 0, hardware disable the 3PE card.
- 3 Remove the 3PE faceplate cable.
- 4 Remove the 3PE cards from Core 1 and 0.

## Add the new Network modules

The new Network modules must be connected to the system. Follow the instructions in *System Installation Procedures* (553-3001-210) to correctly configure the power and System Monitor connections.

## Add CNI cards if necessary

CNI-3 cards are added only if additional ports are required. CNI-3 cards can only be installed in an *inactive* Core module.

### Port assignments

The default port assignments for CNI cards in Option 81 and 81C systems are shown in Table 106 on page 897 and Table 107 on page 898. These assignments can be modified in overlay 17 (LD 17) if necessary.

When a two port CNI card is replaced with a three port CNI-3 card, the original port assignments for the backplane connections remain the same.

### Install the CNI-3 cards

- 1 On the *inactive* Core, software disable the CNI slots where the new cards will be installed:  
**LD 135** to load the program.  
**DIS CNI c s p** (*core slot port*) to disable the card and ports.
- 2 Faceplate disable the CNI cards to be replaced on the *inactive* Core.
- 3 Remove the CNI cards to be replaced, if necessary.
- 4 Install the new CNI-3 cards. The CNI-3 cards must be faceplate disabled before installation.
- 5 Faceplate enable all CNI cards on the *inactive* Core.

### Add a CNI group

- 1 Add CNI group(s).  
**LD 17** to load the program.  
**CNI s p g** (*slot port group*) to add a CNI group.
  
- 2 Software enable the *original* CNI ports on the *inactive* Core. Do NOT activate the CNI ports for the new Network Groups:.  
**LD 135** to load the program.  
**ENL CNI c s p** (*core slot port*) to enable the card and ports.
  
- 3 Switch active Cores:  
**SCPU** to switch Cores
  
- 4 Follow steps 2 through 8 to install the CNI cards on the second Core. Be sure to make the second Core *inactive*.
  
- 5 Verify the status of the CNI cards:  
**STAT CNI** to check the status of the cards and ports.

### Pre-route CNI to 3PE cables

The CNI backplane ports are connected to the 3PE cards with two NTND14 CNI to 3PE cables per port. The third port connects from the CNI-3 faceplate to the 3PE card with two NT9D89 cables.

When a CNI card is upgraded to a CNI-3 card, the original NTND14 backplane cables are left in place; only the NT9D89 CNI-3 to 3PE faceplate cables must be added.

- 1 Label the cables with Network Group, CNI port and connection information.
  
- 2 Route the new CNI to 3PE cables according to the port assignments in Table 106 on page 897 and Table 107 on page 898. Do NOT attach the cables.

**Table 106**  
**Option 81 CNI group assignments**

Group	CNI connection	3PE faceplate connection	Cable
5	8A (Core backplane)	J3	NTND14
5	8C (Core backplane)	J4	NTND14
0	8D (Core backplane)	J3	NTND14
0	8F (Core backplane)	J4	NTND14
1	9A (Core backplane)	J3	NTND14
1	9C (Core backplane)	J4	NTND14
2	9D (Core backplane)	J3	NTND14
2	9F (Core backplane)	J4	NTND14
3	10A (Core backplane)	J3	NTND14
3	10C (Core backplane)	J4	NTND14
4	10D (Core backplane)	J3	NTND14
4	10F (Core backplane)	J4	NTND14
6	9 J1 (CNI-3 faceplate)	J3	NT9D89
6	9 J2 (CNI-3 faceplate)	J4	NT9D89
7	10 J1 (CNI-3 faceplate)	J3	NT9D89
7	10 J2 (CNI-3 faceplate)	J4	NT9D89
<b>Note:</b> The default assignments in this table can be reconfigured with Overlay 17 (LD 17) if necessary.			

**Table 107**  
**Option 81C CNI group assignments**

Group	CNI slot connections	3PE faceplate connection	Cable
1	12D (Core/Net backplane)	J3	NTND14
1	12F (Core/Net backplane)	J4	NTND14
2	12 J1 (CNI-3 faceplate)	J3	NT9D89
2	12 J2 (CNI-3 faceplate)	J4	NT9D89
3	13A (Core/Net backplane)	J3	NTND14
3	13C (Core/Net backplane)	J4	NTND14
4	13D (Core/Net backplane)	J3	NTND14
4	13F (Core/Net backplane)	J4	NTND14
5	13 J1 (CNI-3 faceplate)	J3	NT9D89
5	13 J2 (CNI-3 faceplate)	J4	NT9D89
6	14A (Core/Net backplane)	J3	NTND14
6	14C (Core/Net backplane)	J4	NTND14
7	14D (Core/Net backplane)	J3	NTND14
7	14F (Core/Net backplane)	J4	NTND14

**Note 1:** Group 0 is hard-wired through the Core/Net module backplane; no cable is required.  
**Note 2:** The default assignments in this table can be reconfigured with Overlay 17 (LD 17) if necessary.

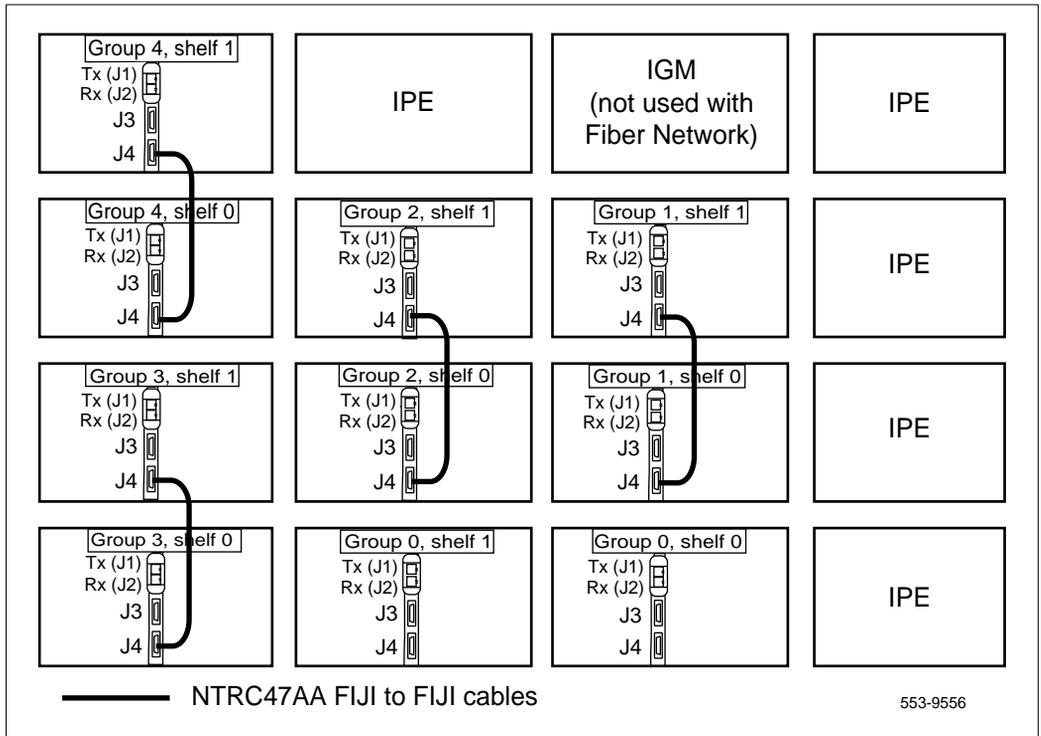
## Pre-route the FIJI cables

To minimize system downtime during the upgrade, all FIJI cables must be in place before the new Network Groups are added.

### Route FIJI to FIJI cables

Route a NTRC47AA cable between the FIJI cards in shelf 0 and shelf 1 of each new Network Group.

**Figure 179**  
Route FIJI to FIJI cables (Option 81C example)



### Label and route the shelf 0 fiber optic cables (ascending)

Route the NTRC48 cables between the FIJI cards in each new Network shelf 0 in *ascending* order (Figure 180 on page 901):



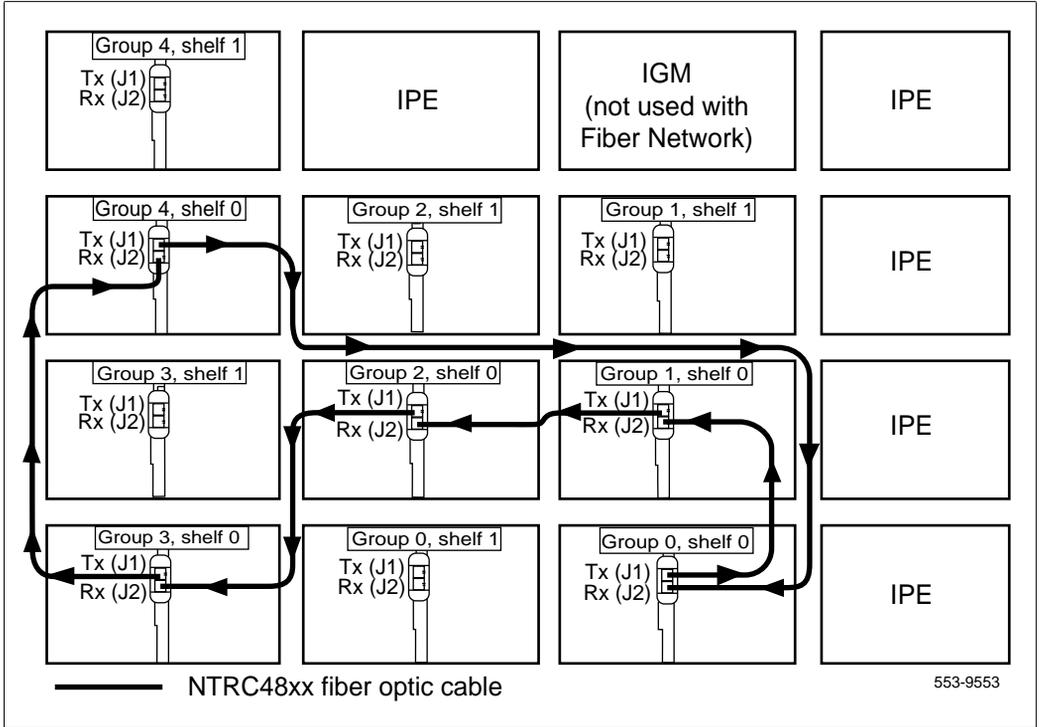
#### **CAUTION**

##### **Damage to Equipment**

Do not excessively bend or cinch the Fiber Ring cables. These cables are easily damaged. Use the Optical Cable Management Card (OCMC) to manage and protect the Fiber Ring cables.

- 1 Start with shelf 0 in the current highest Network Group.
- 2 Label each cable on both sides with the appropriate connection information from Table 108 on page 902.
- 3 Route a NTRC48 FIJI Fiber Ring cable of the appropriate length from the FIJI card in shelf 0 of the current highest Network Group, to the FIJI card in shelf 0 of the new Network Group.
- 4 If more than one Network Group is to be added, route a second NTRC48 cable of the appropriate length to shelf 0 of the second new group.
- 5 Continue to route NTRC48 cable of the appropriate length in ascending order between shelf 0 of each new Network Group.
- 6 To complete the Ring, route a final cable from the highest number group back to Group 0, shelf 0.

**Figure 180**  
**Shelf 0 ascending fiber optic Ring (example)**



**Table 108**  
**FIJI Ring 0 connections**

Groups X - 0 are cabled in ascending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2

**Label and route the shelf 1 fiber optic cables (descending)**

Route the NTRC48 cables between the FIJI cards in each Network shelf 1 in *descending* order (Figure 181 on page 904).

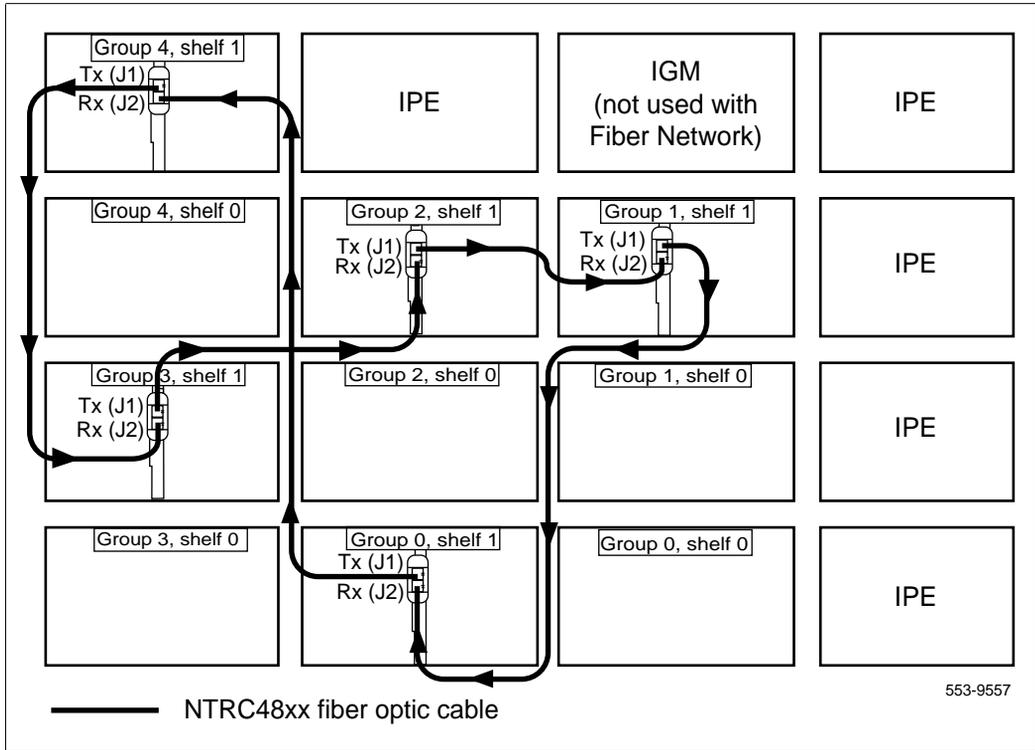
**CAUTION****Damage to Equipment**

Do not excessively bend or cinch the Fiber Ring cables. These cables are easily damaged. Use the Optical Cable Management Card (OCMC) to manage and protect the Fiber Ring cables.

**Note:** Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- 1 Start with Group 0, shelf 1.
- 2 Label each cable on both sides with the appropriate connection information from Table 109 on page 904.
- 3 Route a NTRC48 FIJI Fiber Ring cable of the appropriate length from shelf 1 of the FIJI card in Group 0, to the FIJI card in the new highest Network Group, shelf 1.
- 4 Route a NTRC48 cable from the FIJI card in the new highest Network Group, shelf 1 to the FIJI card in the second highest Network Group, shelf 1.
- 5 Continue to route NTRC48 FIJI Fiber Ring cables of the appropriate lengths between shelf 1 of each new Network Group. Route these cables in descending order of Network Groups.
- 6 Route a final cable to the current highest Network Group, shelf 1.

**Figure 181**  
**Shelf 1 descending fiber optic Ring (example)**



**Table 109**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1
6/1	P2	Rx - J2

**Table 109**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2

## Install cards in the Network modules

Network cards must be installed in the new Network modules as described below. Each card must be installed and enabled or disabled as indicated.

- 1 "Install and enable the 3PE cards" on page 906.
- 2 "Install and enable the Peripheral Signaling (Per Sig) cards" on page 908.
- 3 "Disable and insert the FIJI cards" on page 908.
- 4 "Disable and insert the Conf/TDS cards, if necessary" on page 908.

### Install and enable the 3PE cards

Three steps are required to install the 3PE cards:

- 1 Verify the 3PE card settings:  

The group and shelf number of each Network module is determined by the switch settings on the 3PE card. Use the information in Table 9 on page 33 to verify that the 3PE cards in the new Network modules have the correct switch and jumper settings.

This group and shelf setting is displayed on the FIJI card display.
- 2 Install a 3PE card in slot 1 of each new Network module. Push the latches forward to lock the card in place.
- 3 Attach the cables to the *inactive* 3PE faceplates.
- 4 Faceplate *enable* each 3PE card.

**Table 110**  
**3PE card settings**

Jumper Settings								
Set Jumper RN27 at E35 to "A".								
Switch Settings								
D20 switch position:		1	2	3	4			
81, 81C (Note)		off	on	on	on			
Shelf	Group	D20 switch position:			5	6	7	8

**Table 110**  
**3PE card settings**

<b>Jumper Settings</b>									
Set Jumper RN27 at E35 to "A".									
<b>Switch Settings</b>									
D20 switch position:		1	2	3	4				
<b>0</b> (3PE cards connected to the a CNI in Core or Core/Net 0)	0					on	on	on	on
	1					on	on	off	on
	2					on	off	on	on
	3					on	off	off	on
	4					off	on	on	on
	5					off	on	off	on
	6					off	off	on	on
	7					off	off	off	on
<b>1</b> (3PE cards connected to the a CNI in Core or Core/Net 1)	0					on	on	on	off
	1					on	on	off	off
	2					on	off	on	off
	3					on	off	off	off
	4					off	on	on	off
	5					off	on	off	off
	6					off	off	on	off
	7					off	off	off	off
<b>Note:</b> For option 81C systems, QPC441 vintage F or later must be used in all modules.									

## Install and enable the Peripheral Signaling (Per Sig) cards

- 1 Install a Per Sig card into slot 4 of each new Network module. Push the latches forward to lock the card in place.
- 2 Faceplate *enable* the cards.

## Disable and insert the FIJI cards

- 1 Faceplate *disable* the FIJI cards.
- 2 Insert the FIJI cards into slots 2 and 3 of each new Network module.  
Do not plug the card into the backplane.

## Disable and insert the Conf/TDS cards, if necessary

If Conf/TDS cards are used in the system, follow the procedures below.

- 1 Faceplate *disable* the Conf/TDS cards.
- 2 Insert a Conf/TDS card into each new Network module.  
Do not plug the card into the backplane.

## Enable the CNI cards

**Note:** If you are adding more than one Network Group, it is recommended that you add one group at a time in software. Follow all the remaining procedures in this chapter to complete the addition of one group before starting to add another group.

If new CNI-3 cards are required, they must be installed before the cards are enabled. See “Add CNI cards if necessary” on page 895 to install the cards.

**Note:** CNI cards can be enabled and connected on the *inactive* Core only.

Follow these procedures to connect and activate the new CNI ports:

- 1 Verify that the cables are correctly routed, labeled, and connected to the 3PE cards. See “Pre-route CNI to 3PE cables” on page 896.
- 2 Attach the cables to the *inactive* CNI cards.

See Table 106, “Option 81 CNI group assignments,” on page 897 and Table 107, “Option 81C CNI group assignments,” on page 898 for connection information.



### CAUTION

#### Damage to Equipment

The backplane connector pins are easily bent. Install backplane cables with extreme caution to ensure that these pins are not damaged.

- Carefully line up the cable and press it into place.
- Never force a cable into the slot. If the cable gets stuck, remove it and try again. Damage to the backplane connector pins can make installation of CNI cables impossible.

- 3 Software enable the *new* CNI ports on the *inactive* Core:
  - LD 135** to load the program.
  - ENL CNI c s p** (*core slot port*) to enable the card and ports.
- 4 Switch active Cores:
  - SCPU** to switch Cores
- 5 Repeat steps 1 through 5 to attach the CNI to 3PE cables on the second Core side. Make sure that the second Core is now *inactive*.

## Enable the FIJI cards

The FIJI cards are placed but not inserted and connected in slots 2 and 3 of each new Network shelf. Follow the procedures below to enable the cards:

- 1 Verify that the faceplate switch on each new FIJI card is *disabled*.
- 2 Plug the FIJI cards into the Network module backplane. Push the latches forward to lock the card in place.

- 3 Enable the faceplate switch.

**Note:** The card will not enable until a loop in that Network shelf is defined as described below.

- 4 Wait for the FIJI LED panel to display the Network Group and shelf of the card. This information is based on the 3PE switch settings. Verify that this information matches the printed label on the outside of the module case.

**Note 1:** The time required for the FIJI cards to display group and shelf information will vary.

**Note 2:** For 3PE switch settings, see "Install and enable the 3PE cards" on page 906.

- 5 Define the loops in the new group:

For example:

```
LD 17          to load the program
REQ           CHG
TYPE          CEQU
....
XCT           xxx (enter the new loop)
              xxx
....
```

- 6 Enable the new loops.

```
LD 34          to load the program
ENLX          to enable the newly defined loop
****         to exit the program
```

- 7 Wait for the FIJI card to enable. The time to enable will vary.

## Connect the new groups to the Fiber Network



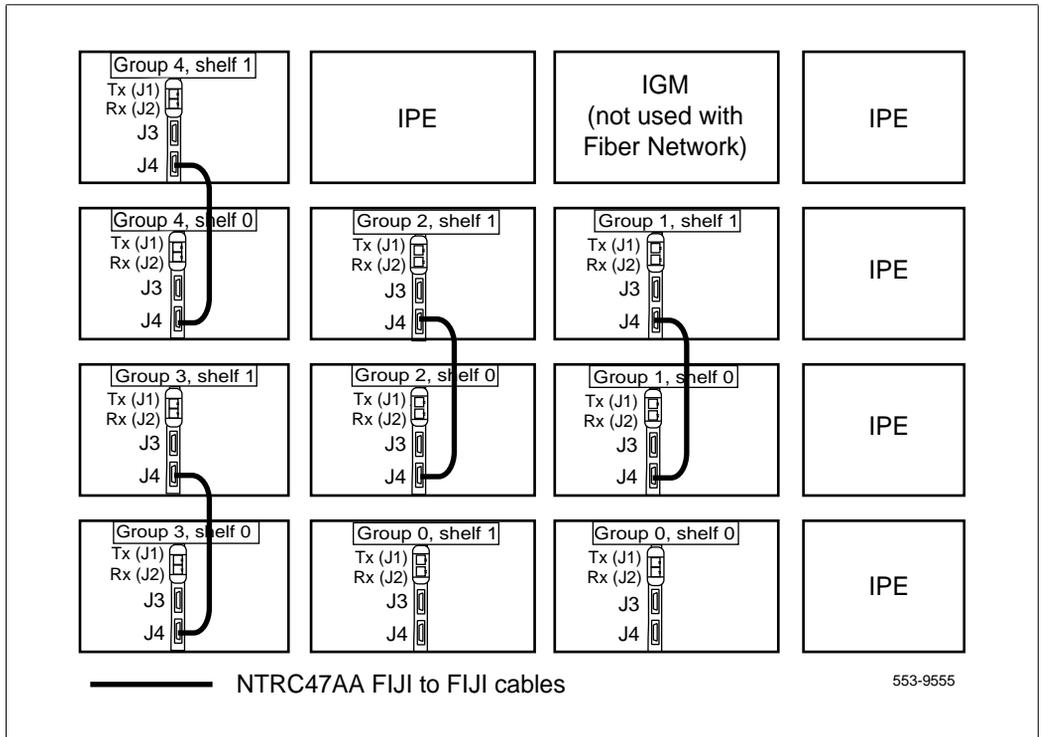
### CAUTION

#### Service Interruption

The Fiber Network Rings must be in Normal mode to complete this procedure. Resolve any faults and restore the Rings to Normal mode before Network Groups are added.

- 1 In each new Network Group, connect a NTRC47AA cable from J4 to J4 of the FIJI cards (see Figure 182 on page 911).

**Figure 182**  
**FIJI shelf 0 to FIJI shelf 1 connections (Option 81C example)**



- 2 Stat the Rings.  
**LD 39** to load the program  
**STAT RING 0** Ring state should be NORMAL STATE  
**STAT RING 1** Ring state should be NORMAL STATE  
**\*\*\*\*** to exit the program
  
- 3 Verify that Clock 1 is *active*. Switch clocks if necessary.  
**LD 60** to load the program  
**SSCK 0** to check if Clock 0 is active or standby  
**SWCK** to switch clocks if necessary  
**\*\*\*\*** to exit the program
  
- 4 Verify that all cables are labeled and in place. Failure to pre-route cables will result in increased downtime and possible system failure. See "Pre-route the FIJI cables" on page 899 if the cables are not already routed.
  
- 5 Break Ring 0 by removing the cable from the current highest Network Group P1 to Group P2. The Rings will switch to SURVIVAL STATE once the Ring is broken.
  
- 6 Attach the new Ring 0 cables in the correct configuration.
  
- 7 Make Clock 0 active.  
**LD 60** to load the program  
**SSCK 0** to check if Clock 1 is active or standby  
**SWCK** to switch to clock 0  
**\*\*\*\*** to exit the program
  
- 8 Break Ring 1 by removing the cable from Group 0 P1 to the current highest Network Group P2.
  
- 9 Attach the new Shelf 1 Fiber Ring cables in the correct configuration.

- 10** Verify that the Rings are in Survival State and FIJI cards are enabled:
- LD 39** to load the program
  - STAT RING 0** to check the status of Ring 0
  - STAT RING 1** to check the status of Ring 1

**Note:** The readout will specify the state of the Rings and which FIJI cards are enabled or disabled.

- 11** Reset the Rings:
- LD 39** to load the program
  - RSET** to reset the Rings
  - RSTR** to restore the Rings

- 12** Check that the Rings operate correctly:
- LD 39** to load the program
  - STAT RING 0** to check the status of Ring 0
  - STAT RING 1** to check the status of Ring 1

**Note 1:** Each Ring should now be in one of three States: None, Full or Half. The Rings should NOT be in Survival state.

**Note 2:** All FIJI cards should be enabled.

- 13** Enable the Per Sig card:
- LD 32** to load the program
  - ENPS x (slot)** to enable the Peripheral Signalling card
  - \*\*\*\*** to exit the program

For example:

- ENPS 12** to enable slot 12 (Group 6)
- ENPS 13** to enable slot 13 (Group 6)

See Table 106, "Option 81 CNI group assignments," on page 897 or Table 107, "Option 81C CNI group assignments," on page 898 for slot and Group assignments.

- 14 Plug in the Conf/TDS cards. Push the latches forward to lock the card in place.
- 15 Faceplate enable the Conf/TDS cards.
- 16 Enable the Conf/TDS cards:
  - LD 34 to load the program
  - ENLX x (loop) to enable the Conf/TDS card
  - \*\*\*\* to exit the program
- 17 Add additional Network cards as required.

The upgrade procedure is complete. The FIJI Ring States should be in Half mode. Verify that phone calls can be made in the new group.

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# Add a Network Group to Option 81C CP PII with FNF

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Connect the network modules to the Core/Net module .....	924
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Install cards in the network modules .....	928
Install and enable the 3PE cards .....	928
Install and enable the Peripheral Signaling (Per Sig) cards .....	930
Disable and insert the FIJI cards .....	930
Disable and insert the Conf/TDS cards .....	930
Enable the network group .....	930
Enable the cCNI cards .....	930
Cable the fiber rings and networks .....	932

## Reference list

The following are the references in this section:

- *System Installation Procedures* (553-3001-210)

The procedures in this section are for adding network groups to Option 81C systems with CP PII processors and Fiber Network Fabric.

## Connect the Power and System Monitor

Follow the instructions in *System Installation Procedures* (553-3001-210) to connect the power and System Monitor.

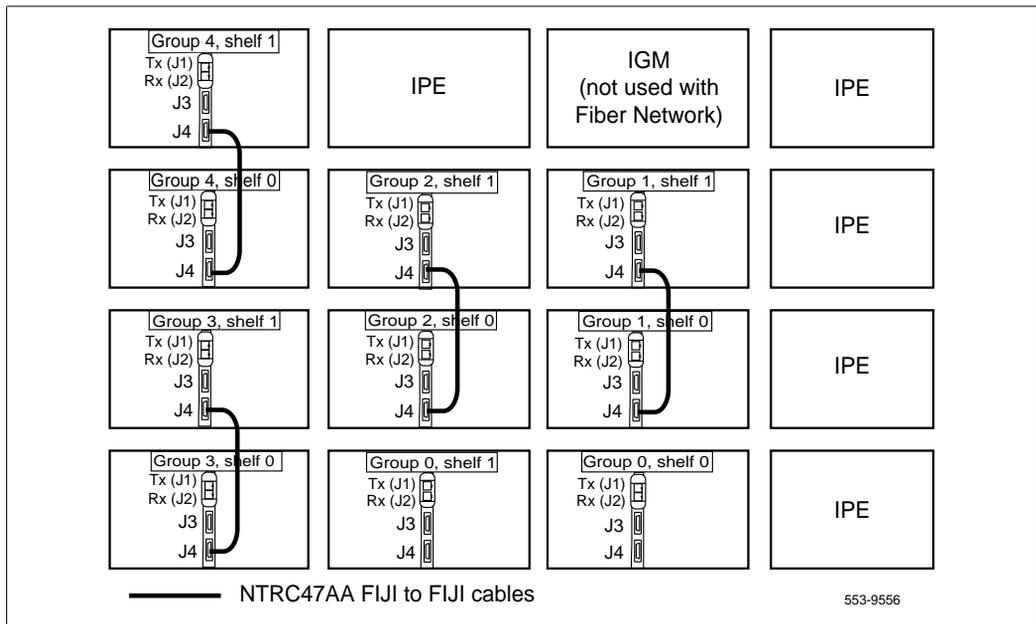
## Pre-route the FIJI cables

To minimize system downtime during the upgrade, all FIJI cables must be in place before the network groups are installed.

### Route FIJI to FIJI cables

- 1 Route a NTRC47AA cable between the FIJI cards in shelf 0 and shelf 1 of each added Network Group. See Figure 183 on page 916.

**Figure 183**  
**FIJI to FIJI cables (Option 81C example)**



**Label and route the shelf 0 fiber optic cables (ascending)**

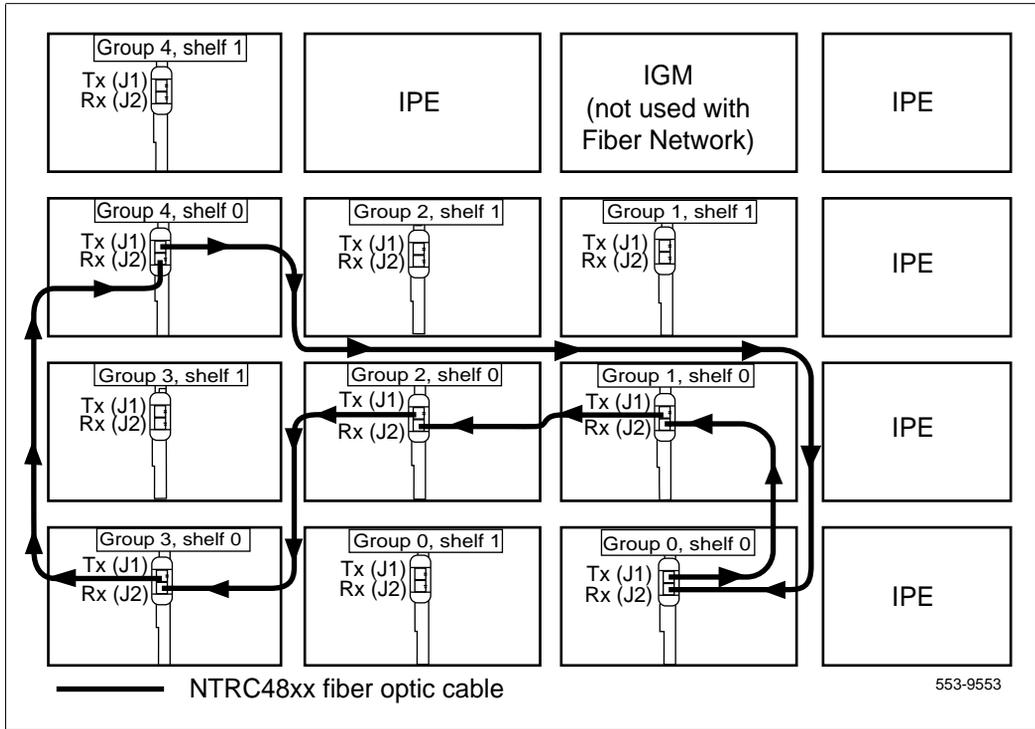
Route the NTRC48 cables between the FIJI cards in each added Network shelf 0 in *ascending* order (Figure 184 on page 918):

**CAUTION****Damage to Equipment**

Do not excessively bend or cinch the Fiber Ring cables. These cables are easily damaged. Use the Optical Cable Management Card (OCMC) to manage and protect the Fiber Ring cables.

- 1 Start with shelf 0 in the current highest Network Group.
- 2 Label each cable on both sides with the appropriate connection information from Table 111 on page 919.
- 3 Route a NTRC48 FIJI Fiber Ring cable of the appropriate length from the FIJI card in shelf 0 of the current highest Network Group, to the FIJI card in shelf 0 of the added Network Group.
- 4 If more than one Network Group is to be added, route a second NTRC48 cable of the appropriate length to shelf 0 of the second added group.
- 5 Continue to route NTRC48 cable of the appropriate length in *ascending* order between shelf 0 of each added Network Group.
- 6 To complete the Ring, route a final cable from the highest number group back to Group 0, shelf 0.

Figure 184  
Shelf 0 ascending fiber optic Ring (example)



**Table 111**  
**FIJI Ring 0 connections**

<b>Groups X - 0 are cabled in ascending order</b>		
<b>Group/shelf</b>	<b>NTRC48 fiber cable connector</b>	<b>FIJI card connector</b>
0/0	P1	Tx - J1
1/0	P2	Rx - J2
1/0	P1	Tx - J1
2/0	P2	Rx - J2
2/0	P1	Tx - J1
3/0	P2	Rx - J2
3/0	P1	Tx - J1
4/0	P2	Rx - J2
4/0	P1	Tx - J1
5/0	P2	Rx - J2
5/0	P1	Tx - J1
6/0	P2	Rx - J2
6/0	P1	Tx - J1
7/0	P2	Rx - J2
7/0	P1	Tx - J1
0/0	P2	Rx - J2

### Label and route the shelf 1 fiber optic cables (descending)

Route the NTRC48 cables between the FIJI cards in each Network shelf 1 in *descending* order (Figure 185 on page 921).



#### **CAUTION**

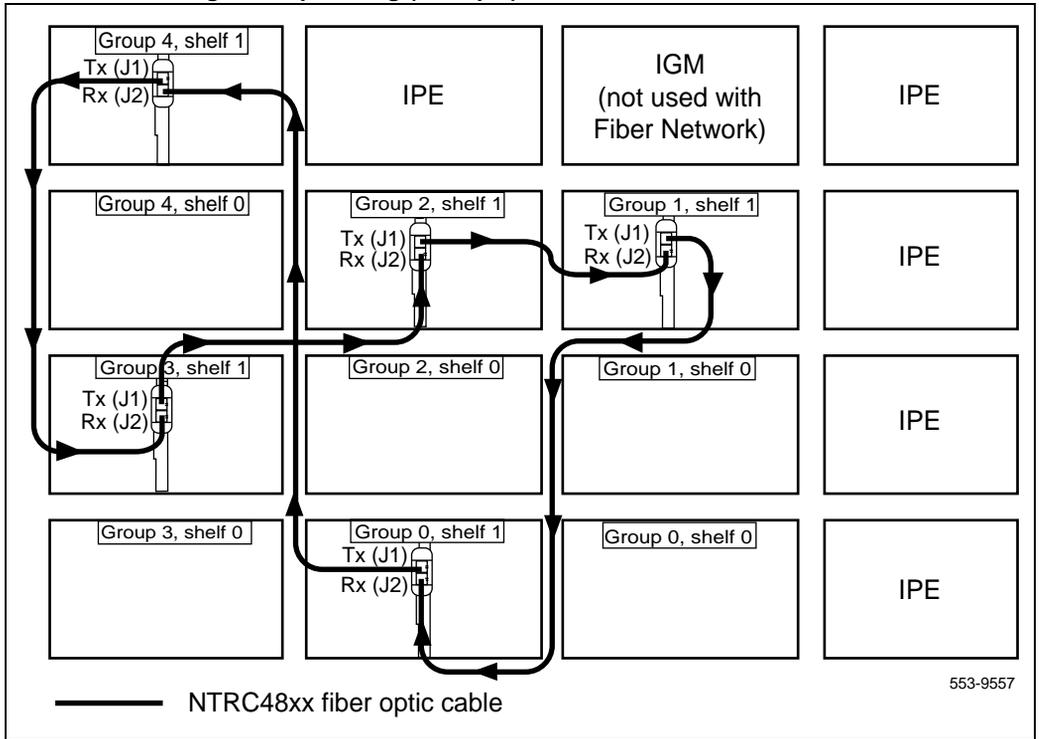
##### **Damage to Equipment**

Do not excessively bend or cinch the Fiber Ring cables. These cables are easily damaged. Use the Optical Cable Management Card (OCMC) to manage and protect the Fiber Ring cables.

**Note:** Each end of the NTRC48 cable is labeled “Tx” or Rx” in the factory.

- 1 Start with Group 0, shelf 1.
- 2 Label each cable on both sides with the appropriate connection information from Table 112 on page 921.
- 3 Route a NTRC48 FIJI Fiber Ring cable of the appropriate length from shelf 1 of the FIJI card in Group 0, to the FIJI card in the added highest Network Group, shelf 1.
- 4 Route a NTRC48 cable from the FIJI card in the added highest Network Group, shelf 1 to the FIJI card in the second highest Network Group, shelf 1.
- 5 Continue to route NTRC48 FIJI Fiber Ring cables of the appropriate lengths between shelf 1 of each added Network Group. Route these cables in *descending* order of Network Groups.
- 6 Route a final cable to the current highest Network Group, shelf 1.

**Figure 185**  
**Shelf 1 descending fiber optic Ring (example)**



**Table 112**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
0/1	P1	Tx - J1
7/1	P2	Rx - J2
7/1	P1	Tx - J1

**Table 112**  
**FIJI Ring 1 connections**

Groups 0 - X are cabled in descending order		
Group/shelf	NTRC48 fiber cable connector	FIJI card connector
6/1	P2	Rx - J2
6/1	P1	Tx - J1
5/1	P2	Rx - J2
5/1	P1	Tx - J1
4/1	P2	Rx - J2
4/1	P1	Tx - J1
3/1	P2	Rx - J2
3/1	P1	Tx - J1
2/1	P2	Rx - J2
2/1	P1	Tx - J1
1/1	P2	Rx - J2
1/1	P1	Tx - J1
0/1	P2	Rx - J2

## Interconnect the network modules

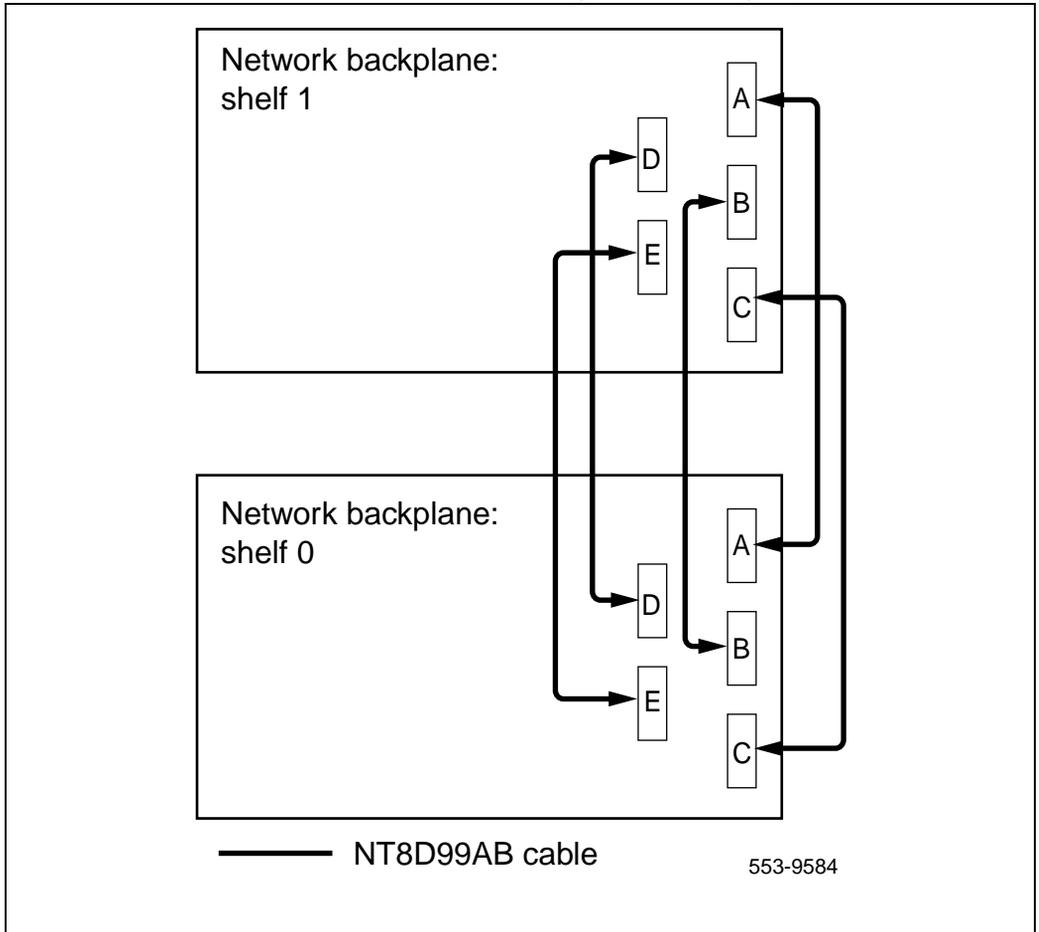
On the back of each network module backplane are five connectors: A, B, C, D and E. See Figure 186 on page 923. The connectors from shelf 0 of each Network group 1 through 7 must be connected to the connectors in shelf 1 of the same Network group.

- 1 Connect an NT8D99AB cable from the A connector in shelf 0 of Network group 1 to the A connector in shelf 1 Network group 1.
- 2 Connect the B connector in shelf 0 to the B connector in shelf 1.
- 3 Connect the C connector in shelf 0 to the C connector in shelf 1.

- 4 Connect the D connector in shelf 0 to the D connector in shelf 1.
- 5 Connect the E connector in shelf 0 to the E connector in shelf 1.
- 6 Connect the A, B, C, D, and E connectors between shelf 0 and shelf 1 for all other Network groups in the system (except group 0)

**Note:** All connections are made with an NT8D99AB cable.

**Figure 186**  
**Network shelf 0 to shelf 1 backplane connections (groups 1 through 7)**





## Connect the 3PE to cCNI cables

The cCNI slot and port connections are labeled on the 3PE Termination Panel. Each 3PE card is connected from J3 and J4 of each 3PE faceplate to the 3PE Termination Panel.

**Note:** See Table 113 on page 925, Figure 188 on page 926, and Figure 189 on page 927 for NT8D76 cable connections.

- 1 Connect the NT8D76 cables to J3 and J4 of the 3PE cards.
- 2 Connect the new NT8D76 cables to the Termination Panel in the Core/Net.

**Table 113**  
Termination Panel to 3PE card connectors

Group Number	Termination Panel connector	3PE card connector
0	9-0, J3	J3
0	9-0, J4	J4
1	9-1, J3	J3
1	9-1, J4	J4
2	10-0, J3	J3
2	10-0, J4	J4
3	10-1, J3	J3
3	10-1, J4	J4
4	11-0, J3	J3
4	11-0, J4	J4
5	11-1, J3	J3
5	11-1, J4	J4
6	12-0, J3	J3
6	12-0, J4	J4
7	12-1, J3	J3
7	12-1, J4	J4

**Note:** Group 0 cables connect from the cCNI Transition card directly to the backplane of Core/Net 0 **OR** to the NT8D76 cable (depending on your CNI group configuration). If the Core/Net module contains a network group other than group 0, use NT4N72AA cables to connect the termination panel to the network portion of the Core/Net backplane.

Figure 188  
Example of 3PE faceplate to 3PE Termination Panel connection

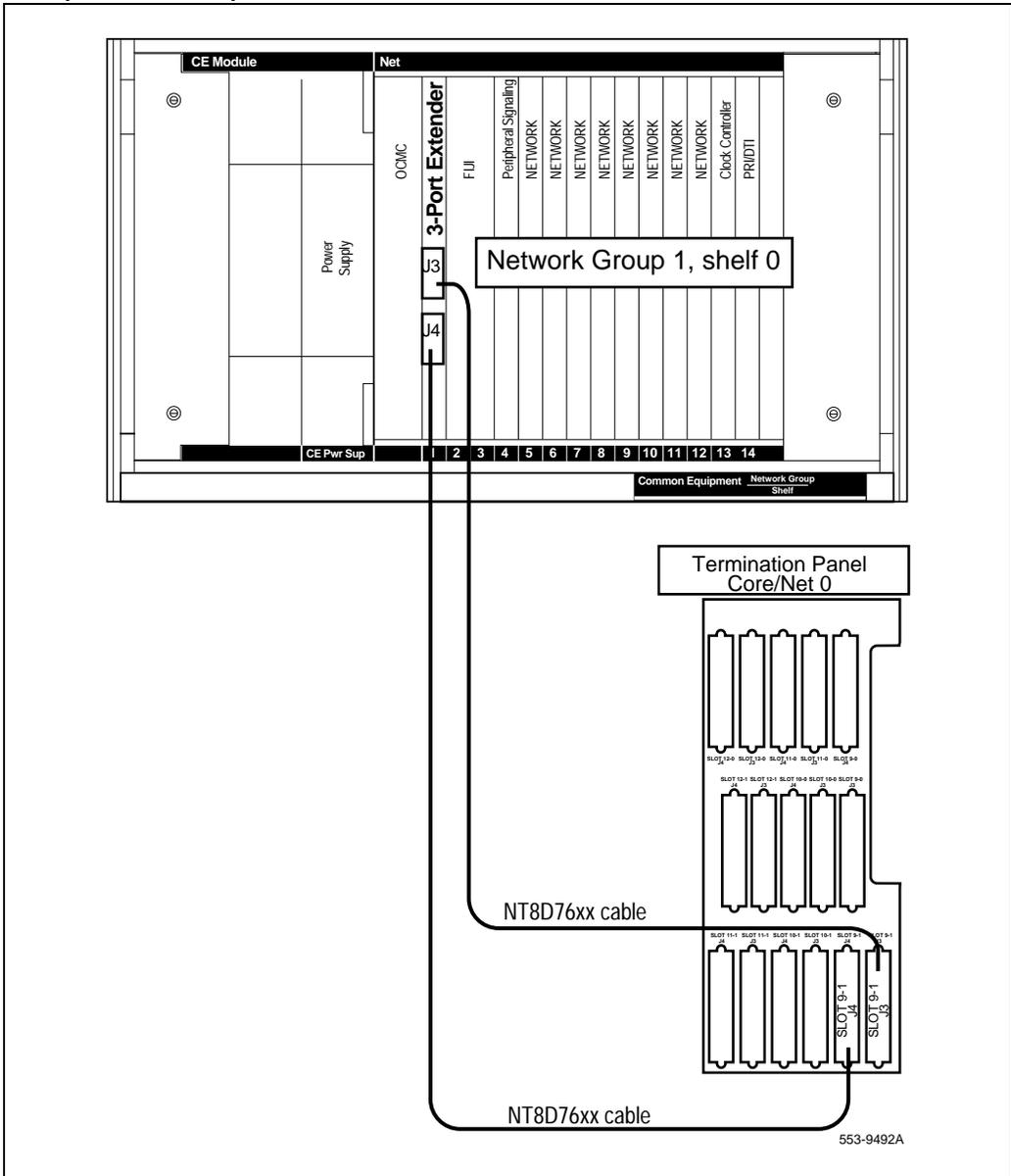
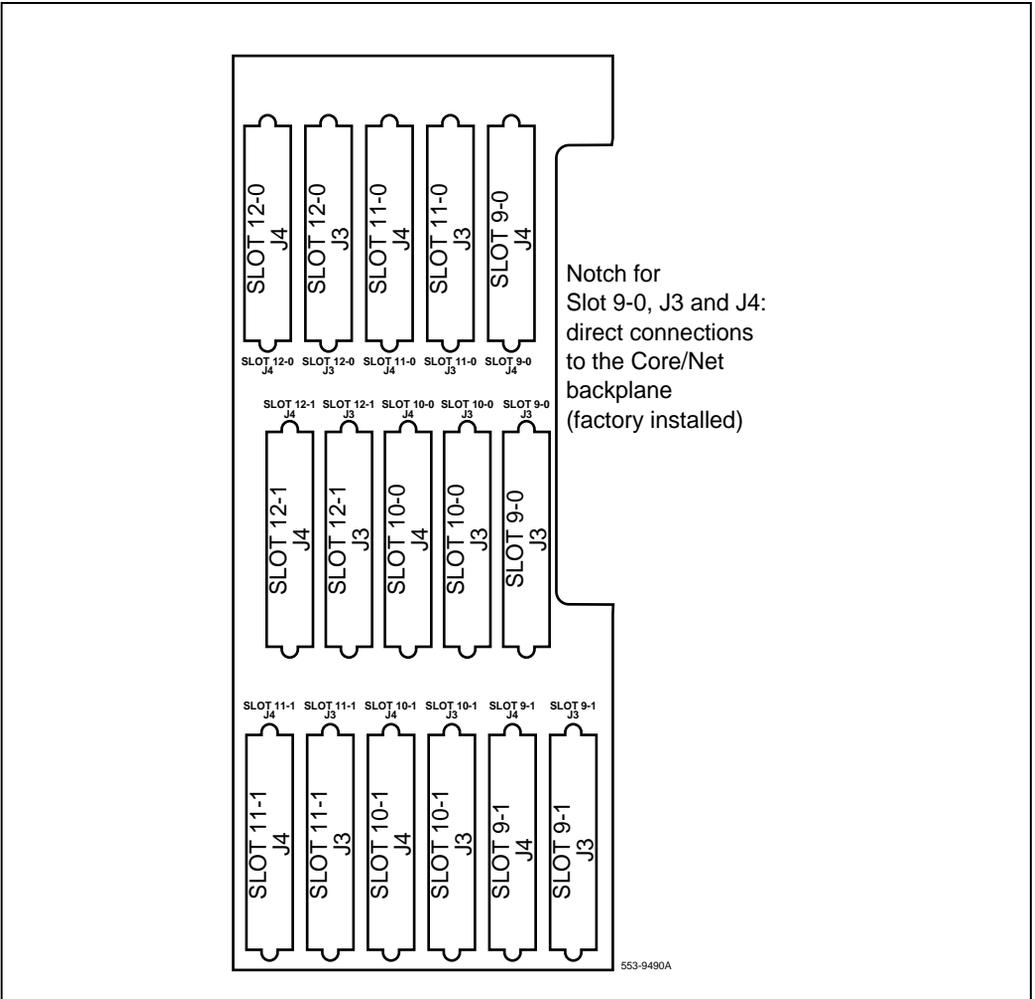


Figure 189  
3PE Termination Panel (Core/Net module)



## Install cards in the network modules

Network cards must be installed in the added Network modules as described below. Each card must be installed and enabled or disabled as indicated.

### Install and enable the 3PE cards

Three steps are required to install the 3PE cards:

**1** Verify the 3PE card settings:

The group and shelf number of each Network module is determined by the switch settings on the 3PE card. Use the information in Table 114 on page 929 to verify that the 3PE cards in the added Network modules have the correct switch and jumper settings.

This group and shelf setting is displayed on the FIJI card display.

**2** Install a 3PE card in slot 1 of each added Network module. Do not seat the cards yet.

**3** Attach the cables to the 3PE faceplates.

**Table 114**  
**3PE card settings**

<b>Jumper Settings</b>								
Set Jumper RN27 at E35 to "A".								
<b>Switch Settings</b>								
D20 switch position:		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>			
81, 81C (Note)		off	on	on	on			
Shelf	Group	D20 switch position:			<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>0</b> (3PE cards connected to the a cCNI in Core or Core/Net 0)	0				on	on	on	on
	1				on	on	off	on
	2				on	off	on	on
	3				on	off	off	on
	4				off	on	on	on
	5				off	on	off	on
	6				off	off	on	on
	7				off	off	off	on
<b>1</b> (3PE cards connected to the a cCNI in Core or Core/Net 1)	0				on	on	on	off
	1				on	on	off	off
	2				on	off	on	off
	3				on	off	off	off
	4				off	on	on	off
	5				off	on	off	off
	6				off	off	on	off
	7				off	off	off	off

**Note:** For option 81C systems, QPC441 vintage F or later must be used in all modules.

## Install and enable the Peripheral Signaling (Per Sig) cards

- 1 Install a Per Sig card into slot 4 of each added Network module. Push the latches forward to lock the card in place.
- 2 Faceplate *enable* the cards.

## Disable and insert the FIJI cards

- 1 Faceplate *disable* the FIJI cards.
- 2 Insert the FIJI cards into slots 2 and 3 of each added Network module.  
Do not plug the card into the backplane.

## Disable and insert the Conf/TDS cards

If Conf/TDS cards are used in the system, follow the procedures below.

- 1 Faceplate *disable* the Conf/TDS cards.
- 2 Insert a Conf/TDS card into each added Network module.  
Do not plug the card into the backplane.

## Enable the network group

**Note:** If you are adding more than one Network Group, add one group at a time in software. Follow all the remaining procedures in this chapter to enable one group before enabling another group.

## Enable the cCNI cards

**Note:** CNI cards can be enabled and connected on the *inactive* Core only.

Follow these procedures to activate the added CNI ports:

- 1 Define the extenders in the added group:

**Note:** See Table 115 on page 931:

LD 17	To load the program.
REQ	CHG
TYPE	CEQU
EXT0 3PE	

**CNI s p g** Core to Network Interface card location where:  
 s = slot (9 to 12)  
 p = port number (0 to 1)  
 g = group number (0 to 7)

**EXT1 3PE**

**CNI s p g** Core to Network Interface card location where:  
 s = slot (9 to 12)  
 p = port number (0 to 1)  
 g = group number (0 to 7)

**<cr>** Continue to the last prompt.  
**\*\*\*\*** To exit the program.

Table 115 on page 931 specifies the Network group assignments for each cCNI slot and port. These are fixed and cannot be changed in software

**Table 115**  
**cCNI Network group designations**

cCNI card slot	cCNI card port	3PE Termination Panel label	Connected to Network group
c9	0	Port 9-0	0
c9	1	Port 9-1	1
c10	0	Port 10-0	2
c10	1	Port 10-1	3
c11	0	Port 11-0	4
c11	1	Port 11-1	5
c12	0	Port 12-0	6
c12	1	Port 12-1	7

**2** In OVL 135 split the Cores:

**LD 135** To load the program.  
**SPLIT** Split the Cores.

**3** Carry out steps 2 to 4 on the inactive side.

- 4 Seat the cCNI card.
- 5 Seat the 3PE cards.
- 6 Faceplate enable the 3PE cards starting with the active side first.
- 7 Software enable the cCNI port:
  - LD 135** To load the program.
  - STAT CNI** Get status of cCNI cards.
  - ENL CNI** Enable the cCNI card.
  - TEST CNI c s** Test each inactive CNI card.
  - \*\*\*\*** To exit the program.
- 8 In OVL 135 switch Cores:
  - LD 135** To load the program.
  - SCPU** .Switch Cores
- 9 Repeat steps 2 to 4 on the other side.
- 10 In OVL 135 join:
  - LD 135** To load the program.
  - JOIN** .Synchronizes the memory and drives

## Cable the fiber rings and networks

- 1 Switch the clock controllers, if necessary.
  - LD 60** To load the program.
  - SSCK n** Get status of clock n where  
n = 0 for clock controller 0  
1 for clock controller 1
  - SWCK** Switch system clock from active to standby.
  - Note:** Make clock controller 1 the active clock.
  - \*\*\*\*** To exit the program.
- 2 Turn Ring Auto Recovery OFF.
  - LD 39** To load the program.
  - ARVC OFF** Reset auto-recovery operation for ring.
  - SWRG 1** Switch call processing to ring 1. This makes ring 1 drive all 960 inter-group timeslots.

- 
- STAT RING 1**      Get status of FIJI cards on side 1.  
**DIS RING 0**      Disables all FIJI cards on side 0.  
**\*\*\*\***              To exit the program.
- 3**      Seat the remaining cards (PS, XCT, FIJI) in both network modules.  
**Note:** Cards must be faceplate disabled before seating.
- 4**      Break Ring 0 and cable the added FIJI cards. See Table 111 on page 919.  
Ring 0 is ascending. Transmit from the lower Group FIJI card to Receive of next higher Group FIJI card. Transmit of the highest Group FIJI card cables to the Receive of Group FIJI card. See Figure 184 on page 918.
- 5**      Faceplate enable all added FIJI cards on Ring 0 only. Wait for the FIJI cards to finish self-test. The LCD will show (GXS0) for Group X Shelf 0.
- 6**      Define the added XCT cards.
- LD 17**              To load the program  
**REQ**                **CHG**  
**TYPE**              **CEQU**  
**XCT III**            Loop number for NT8D17 Conference/TDS card.  
**<cr>**              Continue to the last prompt.  
**\*\*\*\***              To exit the program.
- 7**      Enable Ring 0.
- LD 39**              To load the program.  
**ENL RING 0**      Enables all FIJI cards on side 0.  
**\*\*\*\***              To exit the program.
- 8**      Make clock 0 active.
- LD 60**              To load the program.  
**SWCK**              Switch system clock from active to standby.  
**\*\*\*\***              To exit the program.
- 9**      Put all FIJI cards in Ring1 to Manual Disable.
- LD 39**              To load the program.  
**DIS RING 1**      Disables all FIJI cards on side 1.

- 
- 10** Break Ring 1 and cable the added FIJI cards. See Table 112 on page 921.  
Ring 1 is depending. Transmit from the lower Group FIJI card to Receive of next higher Group FIJI card. Transmit of the highest Group FIJI card cables to the Receive of Group FIJI card. See Figure 185 on page 921.
- 11** Faceplate enable all added FIJI cards on Ring 1 only. Wait for the FIJI cards to finish self-test. The LCD will show (GXS1) for Group X Shelf 1.
- 12** Turn on Ring Auto Recovery ON and enable Ring 1.

**LD 39**

- ARCV ON** Set auto-recovery operation for ring.
- ENL RING 1** Enables all FIJI cards on side 1 and sets Rings to Auto Recover to Half/Half state.
- \*\*\*\* To exit the program.

- 13** Faceplate enable the PS and XCT cards in both modules.

- 14** Enable each Peripheral Signaling card.

- LD 32X** To load the program.
- ENPS x** Enable PS card x and associated loops.
- \*\*\*\* To exit the program.

- 15** Enable each XCT card.

- LD 34** To load the program.
- ENLX x** Enable Conf/TDS/MFS card on loop l and l + 1.
- \*\*\*\* To exit the program.

- 16** Data dump the software changes.

- LD 43** To load the program.
- EDD** Invoke data dump program.
- \*\*\*\* To exit the program.

Enable additional groups. start at "Enable the network group" on page 930.

---

# Network hybrid installation

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## Contents

The following are the topics in this section:

Removing the BTUs . . . . .	936
Upgrade outline . . . . .	935
Installing the Network Hybrids . . . . .	938
Using the Extraction Tool . . . . .	941

## Upgrade outline

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

#### Service Interruption

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:

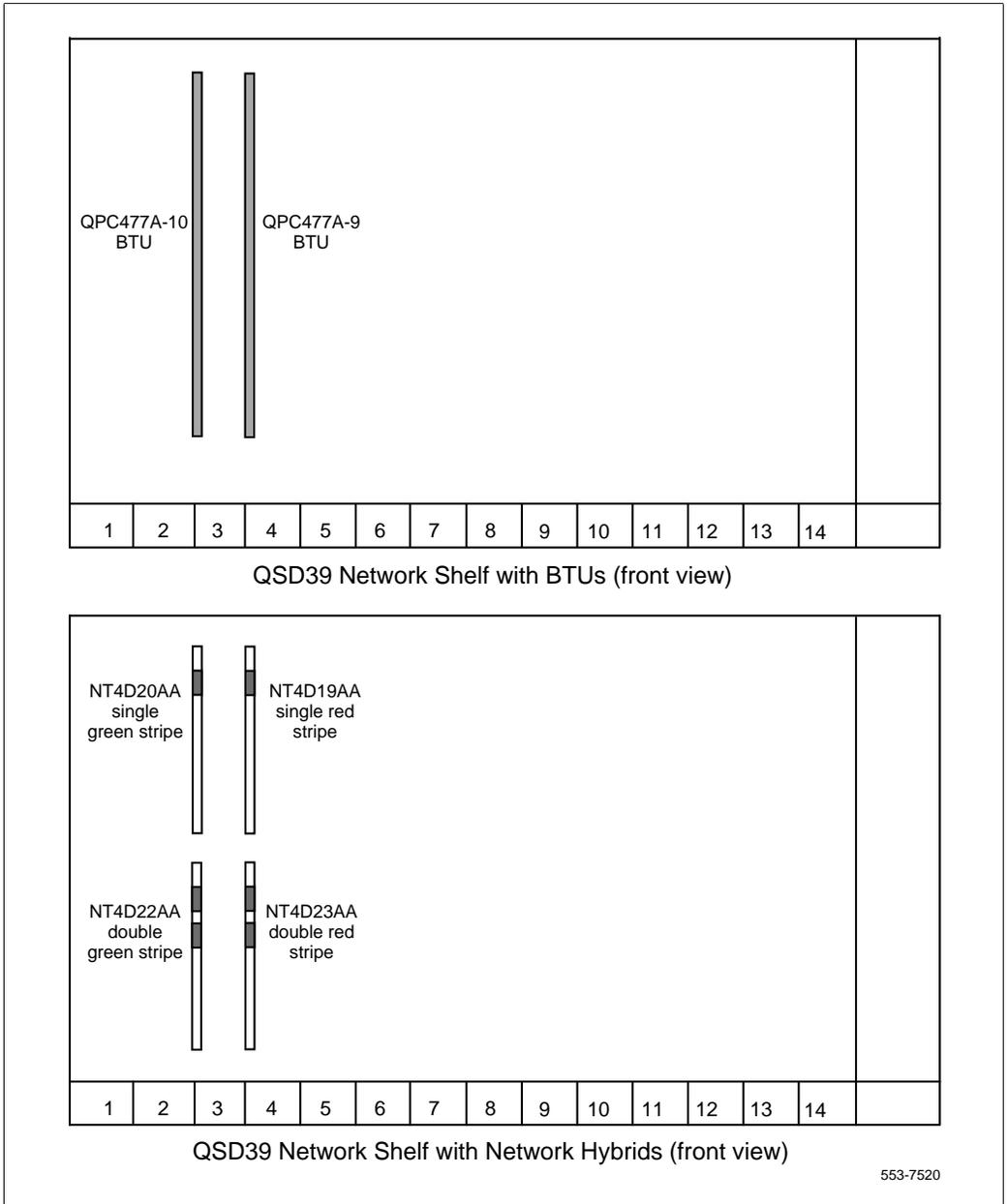
- extraction tool (provided in the installation kit)
- flashlight

## 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 190 on page 937).

**Figure 190**  
**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 190 on page 937 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

#### Damage to Equipment

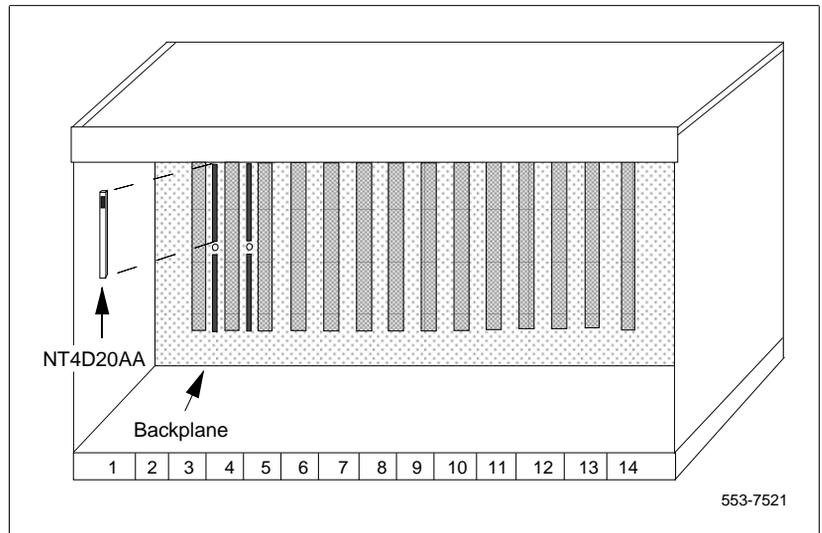
Do not force the network hybrids into the QSD39 Network backplane connectors. Any damage caused to the connector pins will require replacement of the QSD39 Network shelf.

- 4 Carefully insert the network hybrid into the backplane connector (see Figure 191 on page 939).
- 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 941 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 191**  
**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 941 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 941 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 941 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.

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## Using the Extraction Too

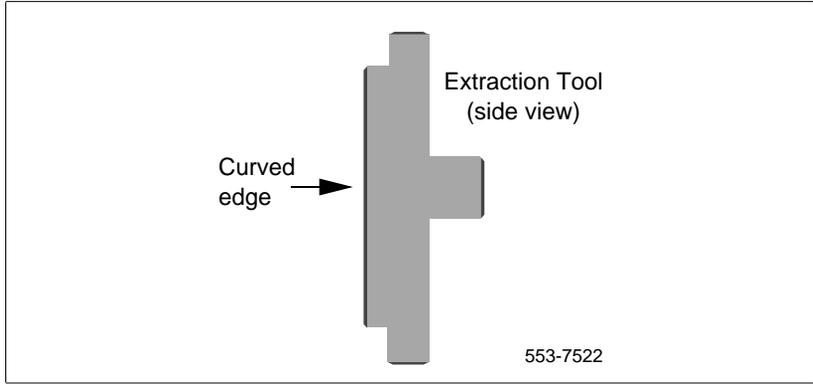
**CAUTION****Damage to Equipment**

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 192 on page 942).
- 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 192**  
**Extraction Tool**



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# Terminal and modem connections

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## Contents

The following are the topics in this section:

Reference list .....	943
Upgrade outline .....	943
Options 51C, 61C, 81, and 81C terminal and modem connections .....	951
Existing modems on upgraded systems ..	958
Available modem for an upgraded system ..	958
Configuring the US Robotics 33.5 Data/Fax modem .....	958
Configuring an A0638930 Motorola 28.8 Data/Fax Modem .....	960
Configuring an A0381391 UDS FastTalk modem .....	962
Connecting a modem to an SDI port ..	964
Connecting a modem to a switch box and CPSI and SDI ports ....	965

## Reference list

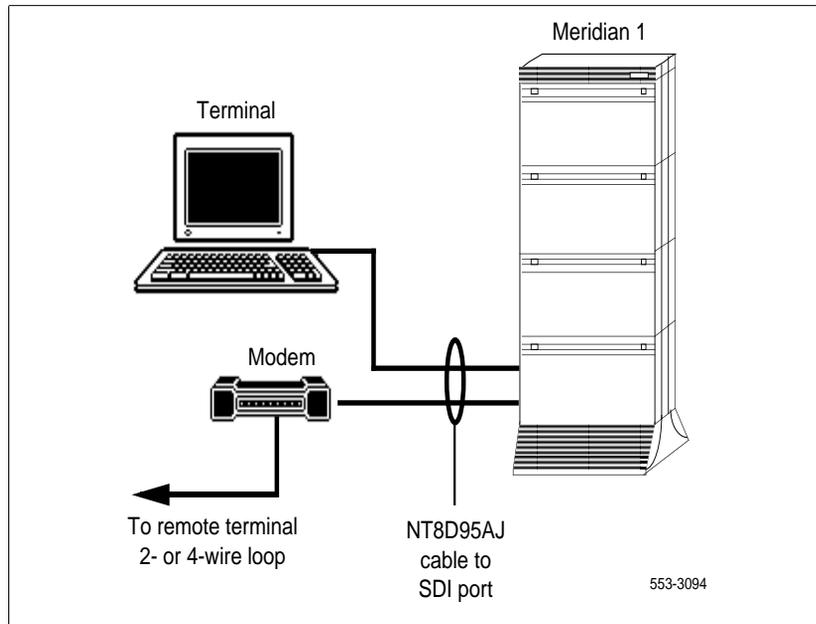
The following are the references in this section:

- *Circuit Card: Installation and Testing* (553-3001-211)

## Upgrade outline

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 193 on page 944).

**Figure 193**  
**Terminal connection diagram**



When upgrading a dual CPU system, you may want to temporarily install additional terminals for split mode monitoring, or programming, or both.

**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. On the Option 81C, COM 1 port on the call processing (CP PII) 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****Service Interruption**

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 951.

- 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 194 on page 947 for switch locations on an NT8D41 SDI Paddle Board. (The paddle board cannot be used in Options 71, 81, and 81C.)

See Figure 195 on page 948 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 196 on page 949 to cable the NT8D41 SDI Paddle Board. (There is no faceplate on the paddle board; Figure 196 on page 949 identifies the ports.)

See Figure 197 on page 950 to cable an NTND02 MSPS Card.

See Figure 198 on page 950 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 194**  
**Ports and switches on the NT8D41 SDI Paddle Board**

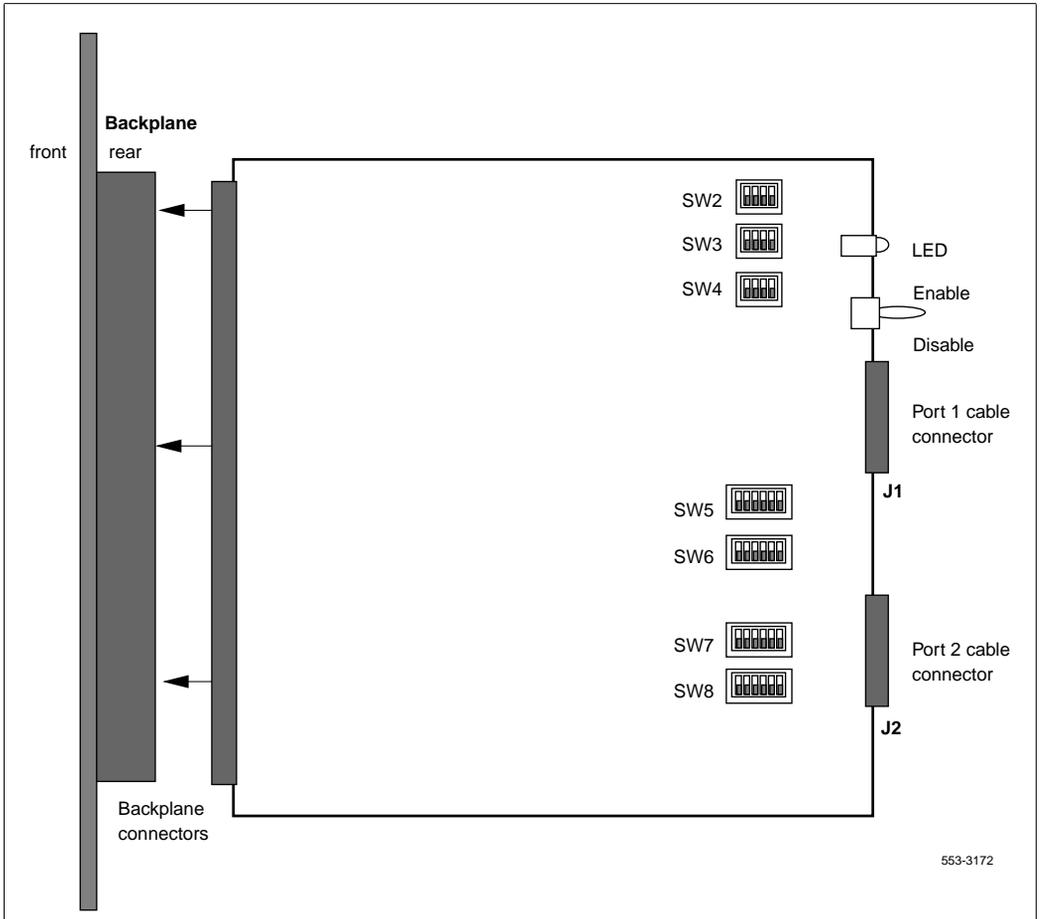
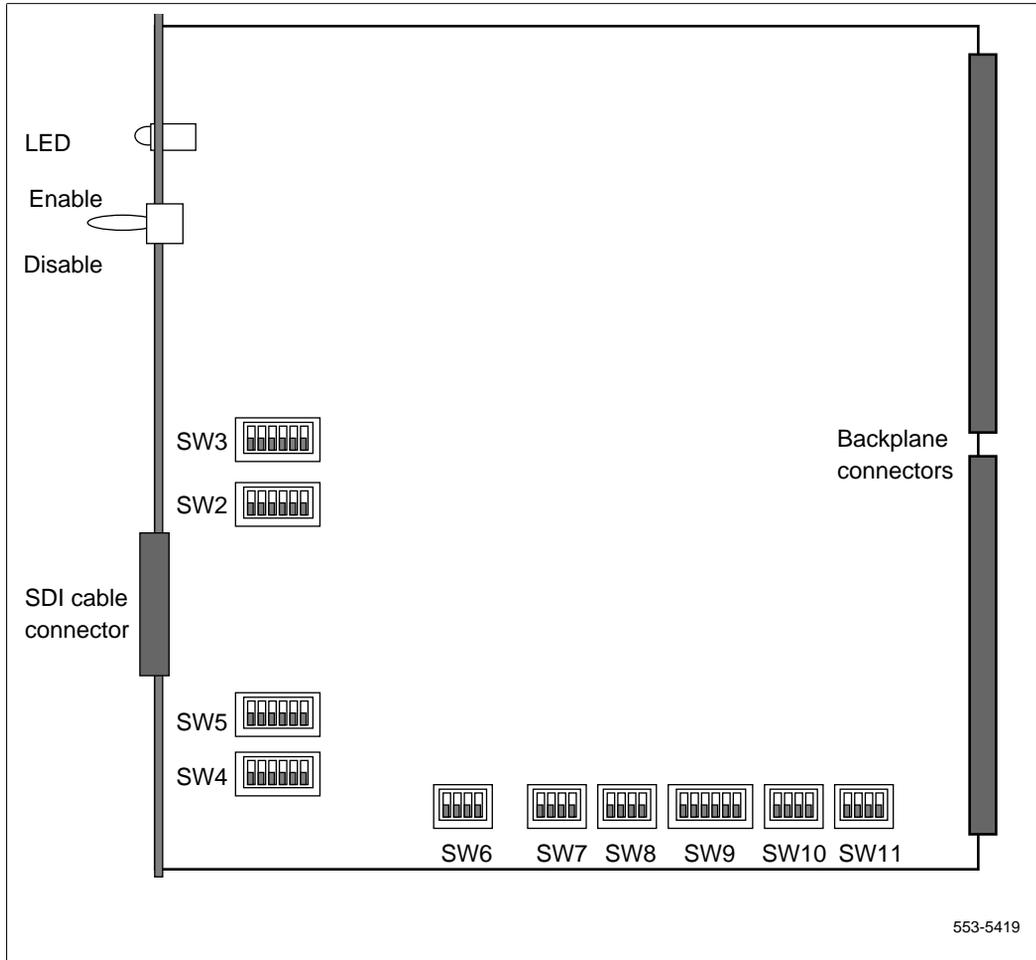
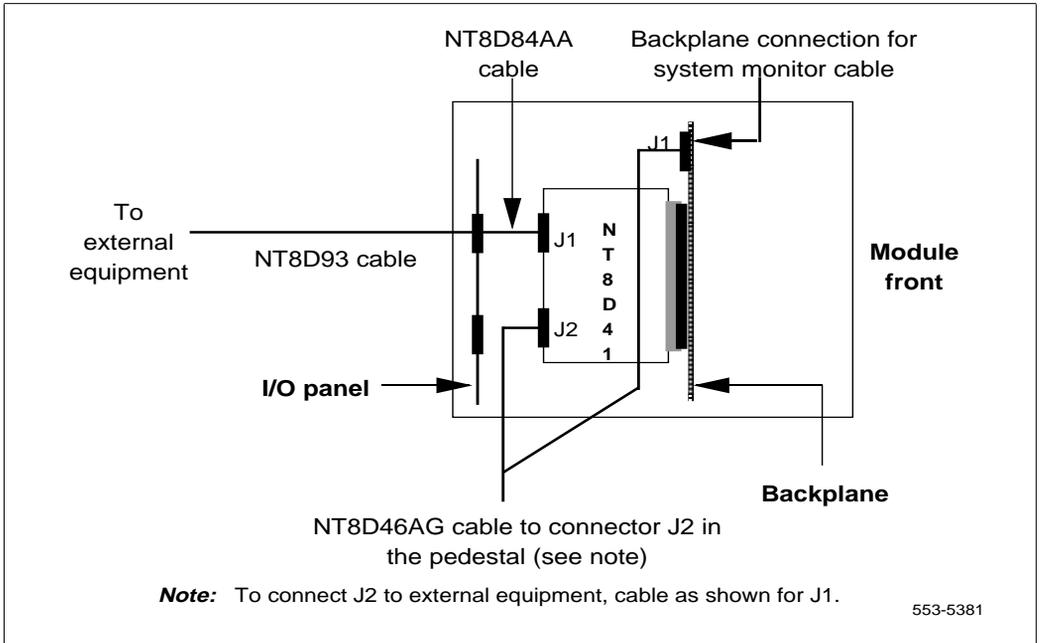


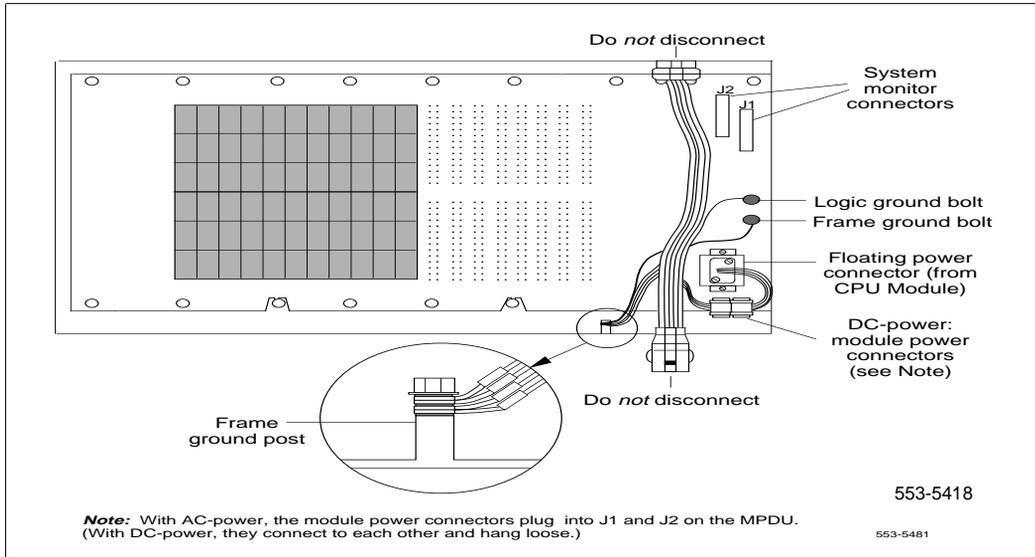
Figure 195  
Switch locations on the NTND02 MSPS Card



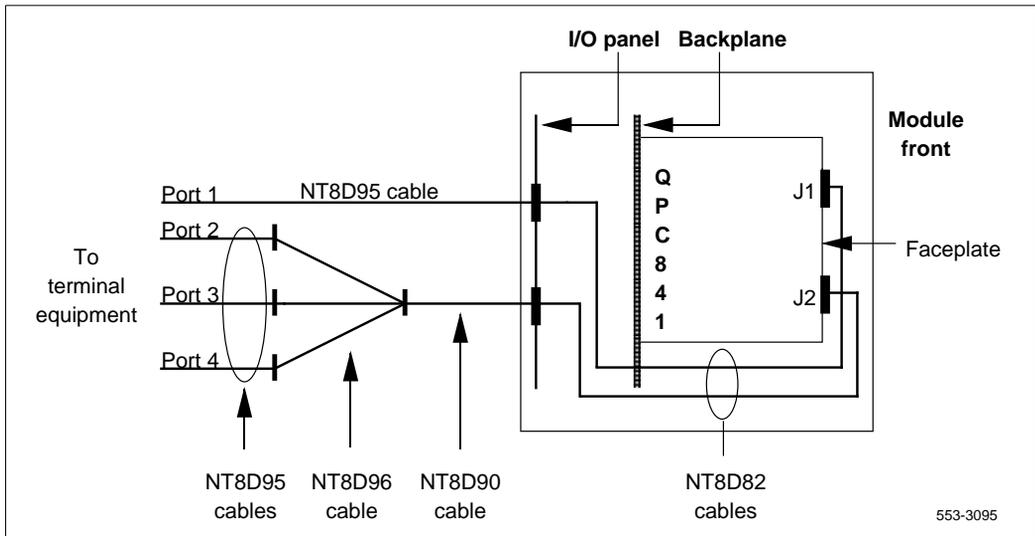
**Figure 196**  
**Cabling diagram for the NT8D41 SDI Paddle Board**



**Figure 197**  
**Cabling diagram for the NTND02 MSPS Card**



**Figure 198**  
**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 data terminal equipment (DTE) port, COM 1 and a data communication equipment (DCE) port, COM 2 on each NT4N64 CP PII can be used for direct access to the Core or Core/Network Module that houses the card.

The CP card ports (CPSI/COM1 COM2 ports) are active only when the CPU associated with the CP card is active. Therefore, the CPSI/COM1 COM2 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/COM1 COM2 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/COM1 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/COM1 ports can be installed as follows:

- 1** one terminal connects to a CPSI/COM1 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 199 on page 953)
- 2** one terminal connects to a switch box that connects to a CPSI/COM1 port in each CPU: one terminal and a switch box are required in addition to the terminal for the SDI port connection (see Figure 200 on page 954)
- 3** one terminal connects to a switch box that connects to an SDI port and to a CPSI/COM1 port in each CPU: one terminal and a switch box are required (see Figure 201 on page 956)

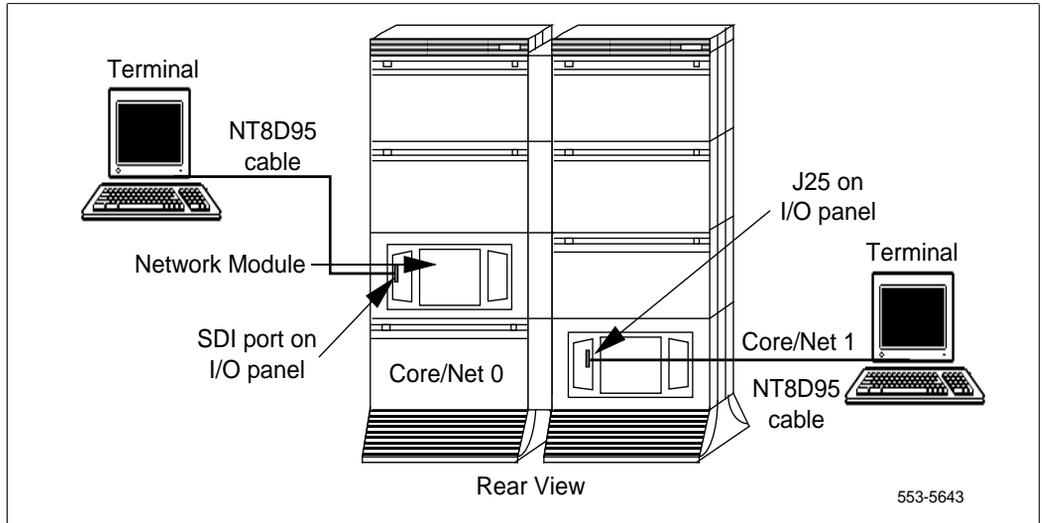
The Option 51C has only one CPU module and requires only one CPSI terminal connection and one SDI port connection. A single terminal with a switch box can be used.

### **Connecting a terminal to a CPSI port**

Use the following procedure to connect a CPSI/COM1 port directly (no switch box) to a terminal (see Figure 199 on page 953):

- 1** Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- 2** Connect an NT8D95 cable to a matching connector on the terminal.
- 3** Connect the NT8D95 cable to J25 on the I/O panel in the rear of the Core or Core/Network Module.
- 4** If you are using only one terminal for both CPSI/COM1 ports, switch the cable as needed. The terminal connected to the SDI port will always communicate with whichever CPU is active.

**Figure 199**  
**One terminal for the CPSI ports**



### Connecting a switch box and terminal to CPSI ports

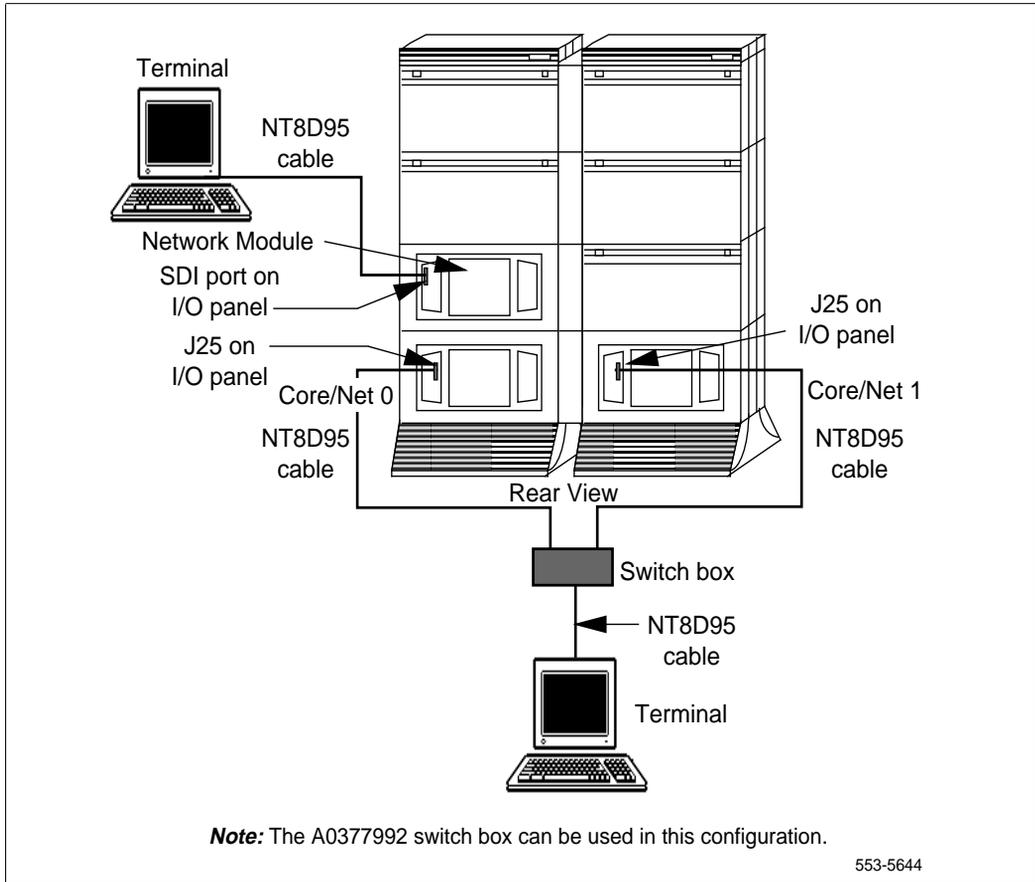
Use the following procedure to connect CPSI/COM 1 ports to a switch box and a terminal (see Figure 200 on page 954):

- 1 Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- 2 Connect an NT8D95 cable to the terminal and to the switch box.
- 3 Connect NT8D95 cables to a matching connector on the switch box.

If you are using an A0377992 ABCDE box, connect cables as follows:

- a. Connect CPU 0 to connector A.
  - b. Connect CPU 1 to connector B.
- 4 Connect the NT8D95 cables from the switch box to J25 on the I/O panel in the rear of the Core/Network Modules.
  - 5 To communicate directly with a CPSI/COM 1 port, switch the cable as needed. The terminal connected to the SDI port will always communicate with whichever CPU is active.

**Figure 200**  
**One terminal and a switch box to two CPSI ports**



**Connecting a switch box and terminal to the SDI and CPSI ports**

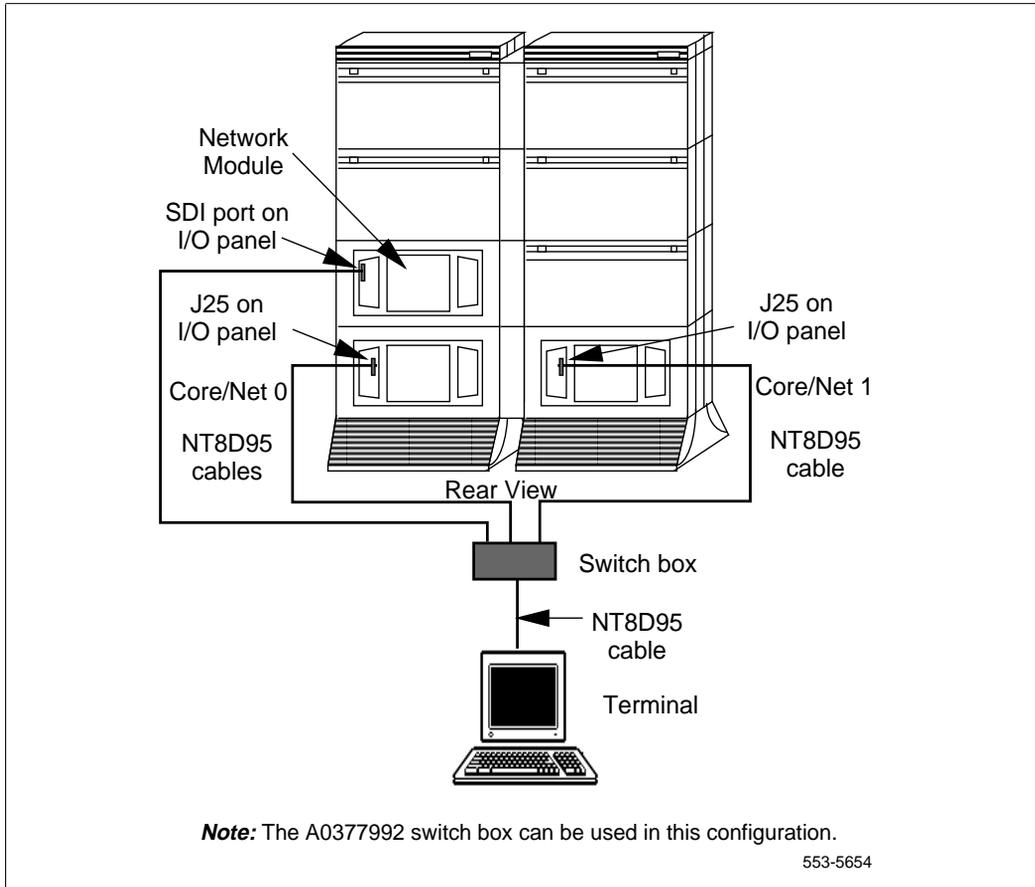
Use the following procedure to connect CPSI/COM 1 ports to a switch box and a terminal (see Figure 200 on page 954 and Figure 201 on page 956):

- 1** Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- 2** Connect an NT8D95 cable to the terminal and to the switch box.
- 3** Connect NT8D95 cables to a matching connector on the switch box.

If you are using an A0377992 ABCDE box, connect cables as follows:

- a.** Connect CPU 0 to connector A.
  - b.** Connect CPU 1 to connector B.
  - c.** Connect the SDI port to connector D (connector C is common).
- 4** Connect NT8D95 cables from the switch box to J25 on the I/O panel in the rear of each Core or Core/Network Module.
  - 5** Connect an NT8D95 cable from the switch box to the I/O panel slot for the SDI card.
  - 6** To communicate with the system in general, set the switch box to the SDI port. To communicate directly with a CPSI/COM 1 port, switch the cable as needed.

**Figure 201**  
**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/COM2 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:

- 1** one modem connects to the SDI port and the cable is switched to each CPSI/COM2 port as needed (see Figure 202 on page 966)
- 2** one modem connects to a switch box that connects to the SDI and CPSI/COM2 ports (see Figure 203 on page 968)

*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.

## Existing modems on upgraded systems

Any modem that meets the required specifications should be compatible with Options 51C, 61C, 81, and 81C.

The following modems listed below, are no longer available. However, if your system uses these modems now, they will work with the upgraded system:

- Hayes V-series ULTRA Smartmodem 9600
- UDS FastTalk V.32/42b
- US Robotics Courier HST Dual Standard V.32bis
- Motorola 28.8 Data/Fax

## Available modem for an upgraded system

The US Robotics, Sportster External 33.5 Data/Fax modem model is tested and verified as compatible. The US Robotics, Sportster External 33.5 Data/Fax modem is available through Nortel Networks as part number A0663901.

### Configuring the US Robotics 33.5 Data/Fax modem

Use the following procedure to configure a US Robotics, Sportster External 33.5 Data/Fax modem for operation with Options 51C, 61C, 81, and 81C. This procedure must be done before you connect the modem to the Meridian 1 system. You need a terminal such as a PC computer, to configure the modem.

- 1 Turn the modem off.
- 2 Set the modem DIP switches as follows:
  - DIP switches 1, 3, 7, and 8 to ON (down).
  - DIP switches 2, 4, 5, and 6 to OFF (up).
- 3 Connect an RS-232 cable to the modem and to a terminal.

- 4 Set the terminal with the following values:
  - 9600 baud
  - 8 bits
  - 1 stop bit
  - no parity
  
- 5 Turn the modem on and enter each command listed below with a carriage return (press Enter or Return key):
  - AT&F            Load active profile
  - AT&H0         Flow control disabled
  - AT&D3         Resets on receipt of DTR
  - AT&S1         Modem controls DSR
  - ATS0=1        Answer after 1 ring
  - ATS2=128     Escape character = ASCII 128
  - ATS7=60       Pause 1s for carrier detection
  - ATQ1           Quiet mode
  - AT&W           Store active profile

The modem responds **OK** to every command (except for the last two commands ATQ1 and AT&W).

- 6 Disconnect the power cord and serial from the modem.
  
- 7 Set DIP switches 1 and 4 to ON (down) and the remaining switches OFF (up).

## 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 or CP PII COM2 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

AT~~S~~7=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 202 on page 966):

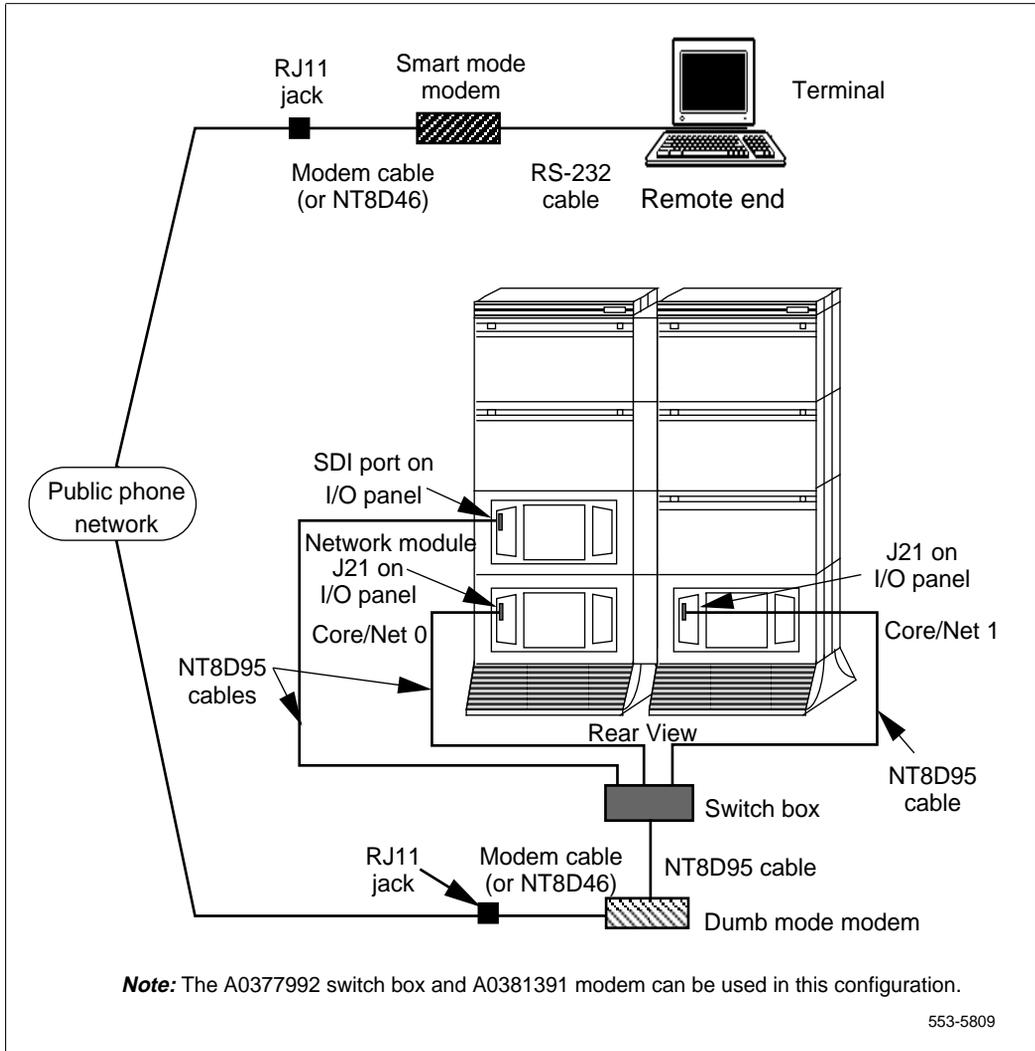
- 1 At the remote end, connect an RS-232 cable to the terminal and to the modem.
- 2 At the remote end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- 3 At the local end, configure the modem:
  - a. If 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 960.)



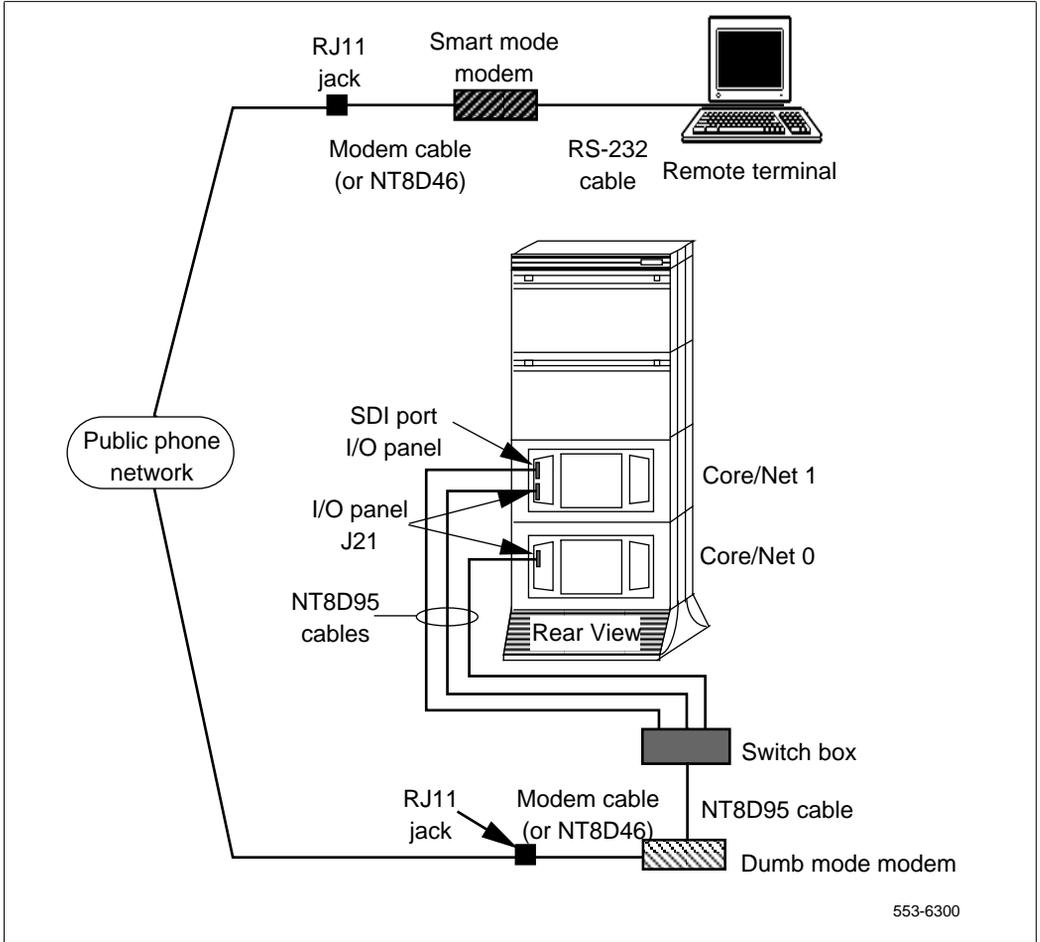


- 6** At the local end, connect NT8D95 cables from the I/O panels to a matching connector on the switch box.  
If you are using an A0377992 ABCDE box, connect cables as follows:
  - a.** Connect CPU 0 to connector A.
  - b.** Connect CPU 1 to connector B.
  - c.** Connect the SDI port to connector D (connector C is common).
- 7** At the local end, connect an NT8D95 cable from the switch box to the modem.
- 8** 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.)
- 9** At the local end, set the switch box as needed to communicate with the CPSI ports:
  - a.** During normal operation, set the switch to the SDI port.
  - b.** For debugging, set the switch to the *active* CPU.
  - c.** For patch downloading, set the switch to the *inactive* CPU.

Figure 203  
Modem to a switch box and SDI and CPSI ports (dual-column systems)



**Figure 204**  
**Modem to a switch box and SDI and CPSI ports (single-column systems)**





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# Troubleshooting

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The following are the topics in this section:

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<a href="#">Upgrade outline</a> .....	971
<a href="#">Troubleshooting procedures</a> .....	972

## Reference list

The following are the references in this section:

- *General Maintenance Information* (553-3001-500)
- *Fault Clearing* (553-3001-510)
- *Administration* (553-3001-311)

## Upgrade outline

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 *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, NT5D61 IODU/C, or NT4N43 MMDU card fails the self-test, do the following:

- a.** Replace the card with a spare IOP/CMDU, IODU/C, or MMDU card.
- b.** Look for bent pins on the backplane connectors.
- c.** Replace the card cage.

**2** If the CP/CP PII Card or card fails the self-test, do the following:

- a.** Replace the card with a spare CP/CP PII 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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Meridian 1

# Upgraded Systems Installation

## Upgrade to Options 51C, 61C, 81C

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