Meridian 1

Upgraded Systems Installation
Upgrade to Options 51C, 61C, 81C

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# Revision history

<table>
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<tr>
<th>Month</th>
<th>Version</th>
<th>Description</th>
</tr>
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<tr>
<td>January 2002</td>
<td>Standard 6.00</td>
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<td>This document is up-issued to include Call Processor Pentium (CP PII) and</td>
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<td>Standard, release 4.00</td>
<td>This document is reissued for technical content and to include information on the 68060E NT5D03 Call Processor card.</td>
</tr>
<tr>
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<td>Standard, release 3.00</td>
<td>This document is reissued for technical content.</td>
</tr>
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<td>This document is reissued for technical content and to include information on the 68060 NT5D10 Call Processor and NT5D61 IODU/C cards.</td>
</tr>
<tr>
<td>August 1996</td>
<td>Standard, release 1.00</td>
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About this document

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.
General information

Contents

The following are the topics in this section:

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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

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software CD-ROM</td>
<td>1</td>
<td>Each CD contains all nine generics for a given release and issue of software.</td>
</tr>
<tr>
<td>Install Program diskettes</td>
<td>3</td>
<td>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).</td>
</tr>
<tr>
<td>Database Transfer Utility diskettes</td>
<td>3</td>
<td>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).</td>
</tr>
<tr>
<td>Distributor Keycode Application diskette</td>
<td>1</td>
<td>A Windows 95 utility that supports download of keycodes from a keycode server.</td>
</tr>
<tr>
<td>Database diskettes (blank, 2 MB media)</td>
<td>2</td>
<td>Blank 2 MB diskettes that can be used to archive the customer database.</td>
</tr>
<tr>
<td>Keycode diskette (blank, 2 MB media)</td>
<td>1</td>
<td>A blank 2 MB diskette that can be used to store a back-up copy of the keycode file.</td>
</tr>
</tbody>
</table>

**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**

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

**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**

<table>
<thead>
<tr>
<th>Tool Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Multimeter (DMM)</td>
</tr>
<tr>
<td>Pliers, needlenose</td>
</tr>
<tr>
<td>Pliers, standard</td>
</tr>
<tr>
<td>Screwdriver, 3/16&quot; flat blade</td>
</tr>
<tr>
<td>Screwdriver, #2 Phillips</td>
</tr>
<tr>
<td>Wire cutters</td>
</tr>
<tr>
<td>Electrical insulation tape</td>
</tr>
<tr>
<td>5/16&quot; socket wrench</td>
</tr>
<tr>
<td>Electric drill and drill bits</td>
</tr>
<tr>
<td>Hammer and sheet metal center punch</td>
</tr>
<tr>
<td>1/4&quot; socket wrench</td>
</tr>
<tr>
<td>3/8&quot; socket wrench</td>
</tr>
<tr>
<td>1/4&quot; nut driver</td>
</tr>
<tr>
<td>7/16&quot; socket driver</td>
</tr>
</tbody>
</table>
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.

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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® 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)

![Diagram of CP PII Core/Net backplane (back view)]
Prepare for upgrade to Option 81C and Option 81C CP PII

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- Prepare for upgrade for Option 51/51C to CP PII and FN .......... 22
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- Check minimum FN system requirements ............................. 24
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  - Required hardware ............................................ 25
  - Required cables .............................................. 26
  - Compatible hardware .......................................... 29
- Check 3PE settings .................................................. 33
- Prepare to move the Clock Controllers
  (Option 61C and 81 to 81C with Fiber Network Fabric) ............ 37
  - Identify two unique IP addresses ............................. 37
- Connect a terminal ................................................ 38
  - Check the Core ID switches ................................... 38
- Print site data ..................................................... 40
  - Perform a template audit ..................................... 43
  - Back up the database (data dump and ABKO) .................... 44
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.

**CAUTION**

*Service Interruption*

Failure to perform the tasks in this section will result in increased downtime and possible system failure.
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
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>&quot;Back up the database (data dump and ABKO)&quot; on page 44</td>
<td>44</td>
</tr>
<tr>
<td>7</td>
<td>&quot;Convert the 4 MB database media to 2 MB database media&quot; on page 45</td>
<td>45</td>
</tr>
<tr>
<td>8</td>
<td>&quot;Prepare to move Clock Controllers on Option 51/51C&quot; on page 47</td>
<td>47</td>
</tr>
<tr>
<td>9</td>
<td>&quot;In Core 0, pre-route cables&quot; on page 49</td>
<td>49</td>
</tr>
<tr>
<td>10</td>
<td>&quot;Pre-route the 3PE to cCNI cables&quot; on page 71</td>
<td>71</td>
</tr>
<tr>
<td>11</td>
<td>&quot;Pre-route the shelf 0 FIJI Fiber Ring cables&quot; on page 66</td>
<td>66</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&quot;Identify two unique IP addresses&quot; on page 37</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>&quot;Check the Core ID switches&quot; on page 38</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>&quot;Check minimum FNF system requirements&quot; on page 24</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>&quot;Print site data&quot; on page 40</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>&quot;Perform a template audit&quot; on page 43</td>
<td>43</td>
</tr>
<tr>
<td>6</td>
<td>&quot;Back up the database (data dump and ABKO)&quot; on page 44</td>
<td>44</td>
</tr>
<tr>
<td>7</td>
<td>&quot;Convert the 4 MB database media to 2 MB database media&quot; on page 45</td>
<td>45</td>
</tr>
<tr>
<td>8</td>
<td>&quot;Prepare to move Clock Controllers on Option 61/61C&quot; on page 48</td>
<td>48</td>
</tr>
<tr>
<td>9</td>
<td>&quot;In Core 0, pre-route cables&quot; on page 49</td>
<td>49</td>
</tr>
<tr>
<td>10</td>
<td>&quot;Pre-route the 3PE to cCNI cables&quot; on page 71</td>
<td>71</td>
</tr>
<tr>
<td>11</td>
<td>&quot;Pre-route the shelf 0 FIJI Fiber Ring cables&quot; on page 66</td>
<td>66</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Power Supply</th>
<th>Type</th>
<th>Upgrade to new vintage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT6D40AA, all vintages</td>
<td>PE Power Supply, DC power</td>
<td>vintage AD release 1</td>
</tr>
<tr>
<td>NT6D40AB, vintages 1 to 12</td>
<td>PE Power Supply, DC power</td>
<td>vintage AD release 1</td>
</tr>
<tr>
<td>NT6D41AA, all vintages</td>
<td>CE Power Supply, DC power</td>
<td>vintage AD release 1</td>
</tr>
<tr>
<td>NT6D41AB, vintages 1 to 8</td>
<td>CE Power Supply, DC power</td>
<td>vintage AD release 1</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 per Network module</td>
<td>NTRB33</td>
<td>Fiber Junctor Interface (FIJI) card</td>
</tr>
<tr>
<td>1 per Network module, as needed</td>
<td>NTRE39</td>
<td>Optical Cable Management Card (OCMC)</td>
</tr>
<tr>
<td>6 per Motorola based system (3 per Core), as needed</td>
<td>NTRB34</td>
<td>Core Network Interface 3 (CNI-3) cards</td>
</tr>
<tr>
<td>1 per Network, Core or Core/Net module (DC powered systems only)</td>
<td>NT6D40  NT6D41</td>
<td>DC Power Supplies NT6D40 and NT6D41 must be AD vintage.</td>
</tr>
<tr>
<td>2 per system</td>
<td>NTRB53AA</td>
<td>Clock Controller cards (all countries)</td>
</tr>
<tr>
<td>2 per system</td>
<td>QPC471*</td>
<td>Clock Controller cards (USA) must be vintage H or later.</td>
</tr>
<tr>
<td>2 per system</td>
<td>QPC775*</td>
<td>Clock Controller cards (all countries except USA) must be vintage E or later.</td>
</tr>
<tr>
<td>As required</td>
<td>NT5D12</td>
<td>Dual Density PRI (DDP) cards must be either:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• vintage AD or earlier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• vintage AG or later</td>
</tr>
</tbody>
</table>

* 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)

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

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Description</th>
<th>Quantity</th>
<th>Part number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIJI to FIJI Sync</td>
<td>Connects between the FIJI cards in shelf 0 and shelf 1 of each Network group (except group 0).</td>
<td>1 per network group</td>
<td>NTRC47AA</td>
<td>5 ft.</td>
</tr>
</tbody>
</table>

* 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)

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTRB33AA</td>
<td>Fiber Junctor Interface Card (FIJI)</td>
<td>4</td>
</tr>
<tr>
<td>NT4N50AA</td>
<td>Power Distribution Unit DC ²</td>
<td>2</td>
</tr>
<tr>
<td>NT6D40BA</td>
<td>Peripheral Equipment Power Supply, DC ²</td>
<td>2</td>
</tr>
<tr>
<td>NT6D41AD</td>
<td>Common Equipment Power Supply, DC ²</td>
<td>2</td>
</tr>
<tr>
<td>NT7D00AA</td>
<td>Top Cap, AC ¹</td>
<td>1</td>
</tr>
<tr>
<td>NT7D00BA</td>
<td>Top Cap, DC ²</td>
<td>1</td>
</tr>
<tr>
<td>NT7D06AA</td>
<td>Filler Panel</td>
<td>2</td>
</tr>
<tr>
<td>NT7D09CA</td>
<td>Pedestal, DC ²</td>
<td>1</td>
</tr>
<tr>
<td>NT8D01BC</td>
<td>Controller - Four Card</td>
<td>1</td>
</tr>
<tr>
<td>NT8D04BA</td>
<td>SuperLoop Network Card</td>
<td>1</td>
</tr>
<tr>
<td>NT8D06AB</td>
<td>Peripheral Equipment Power Supply AC ¹</td>
<td>1</td>
</tr>
<tr>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
<td>2</td>
</tr>
</tbody>
</table>
### Table 7
Equipment required for Option 61C upgrade to Option 81C with Fiber Network Fabric
(Part 2 of 3)

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

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

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTRC47AA</td>
<td>FIJI to FIJI Synch Cable</td>
<td>1</td>
</tr>
<tr>
<td>NTRC48AA</td>
<td>FIJI Fiber Ring Cable - 6 ft./2 m.</td>
<td>2</td>
</tr>
<tr>
<td>NTRC48CA</td>
<td>Fiber Ring Cables (12 ft./3.7 m)</td>
<td>2</td>
</tr>
<tr>
<td>NT4R39AA</td>
<td>Optical Cable Management Card (OCMC)</td>
<td>2</td>
</tr>
</tbody>
</table>

1 Required for AC Systems only.

2 Required for DC Systems only.
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

<table>
<thead>
<tr>
<th>System configuration</th>
<th>Flash memory requirements</th>
<th>DRAM memory requirements</th>
<th>Total Memory requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two to five Network groups</td>
<td>32 MB</td>
<td>64 MB</td>
<td>96 MB</td>
</tr>
<tr>
<td>Six to eight Network groups</td>
<td>32 MB</td>
<td>80 MB</td>
<td>112 MB</td>
</tr>
<tr>
<td>New 68060E systems or systems upgraded to 68060E call processor</td>
<td>64 MB</td>
<td>96 MB</td>
<td>160 MB</td>
</tr>
<tr>
<td>CP PII Core processors</td>
<td></td>
<td></td>
<td>128 MB(^2)</td>
</tr>
</tbody>
</table>

Note 1: 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.

Note 2: CP PII systems are only shipped in a 128 MB configuration. This memory cannot be upgraded in the field.
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.

<table>
<thead>
<tr>
<th>Motorola call processor</th>
<th>Current flash memory</th>
<th>Current DRAM memory</th>
<th>Upgrade process</th>
</tr>
</thead>
<tbody>
<tr>
<td>68040, 68060, 68060E</td>
<td>32 MB</td>
<td>32 MB</td>
<td>Upgrade the DRAM memory to 64 MB. Add one 32 MB DRAM SIMM per processor card.</td>
</tr>
<tr>
<td>68040, 68060, 68060E</td>
<td>32 MB</td>
<td>48 MB</td>
<td>Upgrade the DRAM memory to 80 MB. Add one 32 MB DRAM SIMM per processor card.</td>
</tr>
<tr>
<td>68040, 68060, 68060E</td>
<td>64 MB</td>
<td>48 MB</td>
<td>Upgrade the DRAM memory to 80 MB. Add one 32 MB DRAM SIMM per processor card.</td>
</tr>
<tr>
<td>68060E</td>
<td>64 MB</td>
<td>64 MB</td>
<td>No upgrade required.</td>
</tr>
</tbody>
</table>

Note 1: The NTZC75AA DRAM memory upgrade kit contains one 32 MB SIMM for the upgrades described above.

Note 2: The NTZC77AA kit contains the anti-static mat and ESD wrist-strap required to perform a memory upgrade.
Table 10
Memory upgrade guidelines for six to eight Network groups

<table>
<thead>
<tr>
<th>Motorola call processor</th>
<th>Current flash memory</th>
<th>Current DRAM memory</th>
<th>Upgrade process</th>
</tr>
</thead>
<tbody>
<tr>
<td>68060, 68060E</td>
<td>32 MB</td>
<td>32 MB</td>
<td>Upgrade the DRAM memory to 96 MB. Add two 32 MB DRAM SIMMs per processor card.</td>
</tr>
<tr>
<td>68060, 68060E</td>
<td>32 MB</td>
<td>48 MB</td>
<td>Upgrade the DRAM memory to 112 MB. Add one 32 MB DRAM SIMM per processor card.</td>
</tr>
<tr>
<td>68060, 68060E</td>
<td>64 MB</td>
<td>48 MB</td>
<td>Upgrade the DRAM memory to 80 MB. Add one 32 MB DRAM SIMM per processor card.</td>
</tr>
<tr>
<td>68060E</td>
<td>64 MB</td>
<td>64 MB NT5D03FA</td>
<td>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.</td>
</tr>
<tr>
<td>68060E</td>
<td>64 MB</td>
<td>64 MB NT5D03FB</td>
<td>Upgrade the DRAM memory to 96 MB. Add one 32 MB DRAM SIMM per processor card.</td>
</tr>
</tbody>
</table>

Note 1: The NTZC75AA DRAM memory upgrade kit contains one 32 MB SIMM for the upgrades described above.

Note 2: The NTZC77AA kit contains the anti-static mat and ESD wrist-strap required to perform a memory upgrade.

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

Switches are enlarged to show detail

RN 27 Jumper: set to “A”
Table 11
QPC441 3PE Card installed in the NT5D21, NT6D39, NT6D60, and NT9D11 Modules

Jumper Settings: Set Jumper RN27 at E35 to “A”.

<table>
<thead>
<tr>
<th>Module</th>
<th>Switch Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D20 switch position</td>
</tr>
<tr>
<td>NT6D60 (Option 81)</td>
<td>Core 0</td>
</tr>
<tr>
<td></td>
<td>Core 1</td>
</tr>
<tr>
<td>NT5D21 (Option 81C)</td>
<td>Core/Net 0 (Shelf 0)</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
</tr>
<tr>
<td></td>
<td>Group 4</td>
</tr>
<tr>
<td></td>
<td>Group 5</td>
</tr>
<tr>
<td></td>
<td>Group 6</td>
</tr>
<tr>
<td></td>
<td>Group 7</td>
</tr>
<tr>
<td></td>
<td>Group 0</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
</tr>
<tr>
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<td>Group 4</td>
</tr>
<tr>
<td></td>
<td>Group 5</td>
</tr>
<tr>
<td></td>
<td>Group 6</td>
</tr>
<tr>
<td></td>
<td>Group 7</td>
</tr>
</tbody>
</table>
Table 12
QPC441 3PE Card installed in shelf 0 of modules or shelves other than NT5D21, NT6D39, NT6D60, and NT9D11

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>1</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>2</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>3</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>4</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>5</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>6</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>7</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>on</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>1</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
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</tr>
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<td>6</td>
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<td>7</td>
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<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>Core 0</th>
<th>All switches are set to ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core 1</td>
<td>Switch 1 is set to OFF</td>
</tr>
<tr>
<td></td>
<td>Switches 2 through 8 are set to ON</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Site data</th>
<th>Print command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal blocks for all TNs</td>
<td>LD 20</td>
</tr>
<tr>
<td></td>
<td>REQ</td>
</tr>
<tr>
<td></td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>CUST</td>
</tr>
<tr>
<td></td>
<td>PRT</td>
</tr>
<tr>
<td></td>
<td>TNB</td>
</tr>
<tr>
<td></td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>Directory Numbers</td>
<td>LD 20 (LD 22 prior to Release 16)</td>
</tr>
<tr>
<td></td>
<td>REQ</td>
</tr>
<tr>
<td></td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>CUST</td>
</tr>
<tr>
<td></td>
<td>PRT</td>
</tr>
<tr>
<td></td>
<td>DNB</td>
</tr>
<tr>
<td></td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>Attendant Console data block for all customers</td>
<td>LD 20</td>
</tr>
<tr>
<td></td>
<td>REQ</td>
</tr>
<tr>
<td></td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>CUST</td>
</tr>
<tr>
<td></td>
<td>PRT</td>
</tr>
<tr>
<td></td>
<td>ATT, 2250</td>
</tr>
<tr>
<td></td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>*Customer data block for all customers</td>
<td>LD 21</td>
</tr>
<tr>
<td></td>
<td>REQ</td>
</tr>
<tr>
<td></td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>CUST</td>
</tr>
<tr>
<td></td>
<td>PRT</td>
</tr>
<tr>
<td></td>
<td>CDB</td>
</tr>
<tr>
<td></td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>Route data block for all customers</td>
<td>LD 21</td>
</tr>
<tr>
<td></td>
<td>REQ</td>
</tr>
<tr>
<td></td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>CUST</td>
</tr>
<tr>
<td></td>
<td>PRT</td>
</tr>
<tr>
<td></td>
<td>RDB</td>
</tr>
<tr>
<td></td>
<td>Customer number</td>
</tr>
<tr>
<td></td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td></td>
<td>ACOD</td>
</tr>
<tr>
<td></td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>*Configuration Record</td>
<td>LD 22</td>
</tr>
<tr>
<td></td>
<td>REQ</td>
</tr>
<tr>
<td></td>
<td>TYPE</td>
</tr>
<tr>
<td></td>
<td>PRT</td>
</tr>
<tr>
<td></td>
<td>CFN</td>
</tr>
</tbody>
</table>
Table 15
Print site data (Part 2 of 2)

<table>
<thead>
<tr>
<th>Site data</th>
<th>Print command</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Software packages</td>
<td>LD 22</td>
</tr>
<tr>
<td>REQS</td>
<td>PRT</td>
</tr>
<tr>
<td>TYPES</td>
<td>PKG</td>
</tr>
<tr>
<td>*Software issue, ROM and tape ID</td>
<td>LD 22</td>
</tr>
<tr>
<td>REQS</td>
<td>ISS</td>
</tr>
<tr>
<td>REQS</td>
<td>ROM</td>
</tr>
<tr>
<td>REQS</td>
<td>TID</td>
</tr>
<tr>
<td>* Peripheral software versions</td>
<td>LD 22</td>
</tr>
<tr>
<td>REQS</td>
<td>PRT</td>
</tr>
<tr>
<td>TYPES</td>
<td>PSWV</td>
</tr>
<tr>
<td>ACD data block for all customers</td>
<td>LD 23</td>
</tr>
<tr>
<td>REQS</td>
<td>PRT</td>
</tr>
<tr>
<td>TYPES</td>
<td>ACD</td>
</tr>
<tr>
<td>CUSTS</td>
<td>Customer Number</td>
</tr>
<tr>
<td>ACDNs</td>
<td>ACD DN (or &lt;CR&gt;)</td>
</tr>
<tr>
<td>Superloop card IDs and software version (peripheral controller, superloop network and controller cards)</td>
<td>LD 32</td>
</tr>
<tr>
<td>.</td>
<td>IDC loop</td>
</tr>
<tr>
<td>Multi-purpose ISDN Signaling Processor (MISP) card</td>
<td>LD 27</td>
</tr>
<tr>
<td>REQS</td>
<td>PRT</td>
</tr>
<tr>
<td>TYPES</td>
<td>MISP</td>
</tr>
<tr>
<td>LOOPS</td>
<td>loop number (0-158)</td>
</tr>
<tr>
<td>APPLS</td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>PHS</td>
<td>&lt;cr&gt;</td>
</tr>
<tr>
<td>DTI/PRI data block for all customers</td>
<td>LD 73</td>
</tr>
<tr>
<td>REQS</td>
<td>PRT</td>
</tr>
<tr>
<td>TYPES</td>
<td>DDB</td>
</tr>
</tbody>
</table>

*Note:* Items marked with asterisks (*) are required printout for conversion. Other items are recommended for a total system status.
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> To go to the Tools menu.
   - <s> To archive existing database.
   - <cr> <a> To continue with archive (insert blank 2MB diskette from the software kit into the floppy drive in Core 1).

   <cr> <a> Diskette is now in floppy drive in Core 1.

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.
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.

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

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.

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)

Group 4, shelf 1
Tx (J1)  Rx (J2)

Group 4, shelf 0
Tx (J1)  Rx (J2)

Group 3, shelf 1
Tx (J1)  Rx (J2)

Group 3, shelf 0
Tx (J1)  Rx (J2)

Group 2, shelf 1
Tx (J1)  Rx (J2)

Group 2, shelf 0
Tx (J1)  Rx (J2)

Group 1, shelf 1
Tx (J1)  Rx (J2)

Group 1, shelf 0
Tx (J1)  Rx (J2)

IGM (not used with Fiber Network)

IPE

IPE

IPE

IPE

NTRC48xx fiber optic cable

553-9553
<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
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<tr>
<td>4/0</td>
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<tr>
<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
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<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
Table 17
FIJI Ring 1 connections

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

FIJI card
Group 0, shelf 0

Dual InterGroup Switch Card

ENB
DIS
FIJI
LOS
ACT
ENBL/DIS
TX
J1
J2
CLK/FIJI 1
CLK/FIJI 2
ETH
J5
MAINT
J4
J6
J3

FIJI card
Group 0, shelf 1

J1 Clock
J1 Clock

C L O C K
1
P2
J2
J1

C L O C K
0
P1
J3

NTRC49 cable

553-9496

NTRC46 cables

J3
J4
P2
P2
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
. .

Upgraded Systems Installation
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 upgradmed 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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
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<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
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<td>P1</td>
<td>Tx - J1</td>
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<tr>
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<td>P2</td>
<td>Rx - J2</td>
</tr>
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<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
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<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
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<td>5/0</td>
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</tr>
<tr>
<td>6/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>

**Note:** 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: SELFTEST 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:
   - the Network group number
   - Shelf 0 or Shelf 1 of the Network group
   - 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:
   - the Network group number
   - Shelf 0 or Shelf 1 of the Network group
   - J3 or J4 (of the 3PE card)
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)

- Route the Termination Panel to 3PE card cables through the Network Module Access Hole.
- Install SDI Paddle Board before connecting 3PE cables.
- cCNI to Termination panel cables (factory installed).
- Termination Panel to 3PE card cables.
Prepare for upgrade to Option 81C and Option 81C CP PII
ST and STE upgrade to Option 61C

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Converting the SL-1 hardware ........................................... 89
Installing external cables ................................................. 90
Transferring the database from 4 MB to IODU/C ............... 91
Installing Release 25 software in Core/Net 1 ................... 96
Copying software and database to Core/Net 0 ................... 99
Returning the system to redundant mode ......................... 101
Moving the network cards .............................................. 103

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)  

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00AA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply , AC</td>
</tr>
<tr>
<td></td>
<td>NT8D00AA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td></td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
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<tr>
<td></td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td></td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td></td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td></td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
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<tr>
<td></td>
<td>NT8D22AC</td>
<td>System Monitor</td>
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<tr>
<td></td>
<td>NT8D27BB</td>
<td>Pedestal, AC</td>
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<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply , AC</td>
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</table>
Table 19
Hardware requirements for an AC-powered Option 61C (Part 2 of 3)

<table>
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<th>Qty</th>
<th>Part number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment module, AC (see note 2)</td>
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<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>3</td>
<td>NT8D44AA</td>
<td>SDI Paddle Board to I/O Cable</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
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<tr>
<td>1</td>
<td>NT8D81</td>
<td>Power Regulation card</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
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<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
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<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
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<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI cable (6 ft.)</td>
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<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover</td>
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<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
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### Table 19
Hardware requirements for an AC-powered Option 61C  (Part 3 of 3)

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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775E</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
</tbody>
</table>

**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 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.

### Table 20
Hardware requirements for a DC-powered Option 61C  (Part 1 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21DA</td>
<td>Core/Network module, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00BA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D09CA</td>
<td>Pedestal, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit, DC</td>
</tr>
</tbody>
</table>
Table 20
Hardware requirements for a DC-powered Option 61C (Part 2 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment module, DC (see note 2)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52DD</td>
<td>Pedestal Blower Unit, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D81</td>
<td>Power Regulation card</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
</tbody>
</table>
Table 20
Hardware requirements for a DC-powered Option 61C (Part 3 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
<tr>
<td>2</td>
<td>QPC471H or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QPC775E</td>
<td></td>
</tr>
</tbody>
</table>

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: 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.
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

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
ST and STE upgrade to Option 61C

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

```plaintext
****
```
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:

```plaintext
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

```plaintext
LD 43
RES
```
to load the program
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

```plaintext
****
```
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.

---

**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.

---

Upgraded Systems Installation
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
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.

<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.
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:
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:

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 135</td>
<td>to load the program</td>
</tr>
<tr>
<td>STAT CPU</td>
<td>to display the CPU status</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 43</td>
<td>to load the program</td>
</tr>
</tbody>
</table>

11 When “EDD000” appears on the terminal, enter:

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDD</td>
<td>to begin the data dump</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>****</td>
<td>to exit the program</td>
</tr>
</tbody>
</table>
12 Set date and time:

LD 2   to load the overlay
STAD   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/Net0. 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
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 HW1533 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.
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 cs 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.

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

SCP 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.

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

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.

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.
RT upgrade to Option 61C

Contents

The following are the topics in this section:

Reference list ......................................................... 107
Upgrade outline ....................................................... 108
   Equipment required ............................................. 109
   Upgrade preparation ............................................. 114
   Converting the RT hardware ................................. 117
   Installing external cables ..................................... 118
   Transferring the database from 4 MB to IODU/C ........ 120
   Installing Release 25 software in Core/Net 1 .......... 125
   Copying the software and database to Core/Net 0 .... 128
   Returning the system to redundant mode ............... 130
   Moving network cards ......................................... 132
   Completing the upgrade ....................................... 134

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

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

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.
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)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network module, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00AA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
</tbody>
</table>
Table 21
Hardware requirements for an AC-powered Option 61C  (Part 2 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D27BB</td>
<td>Pedestal, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment module, AC</td>
</tr>
<tr>
<td>(see note 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>3</td>
<td>NT8D44AA</td>
<td>SDI Paddle Board to I/O Cable</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable</td>
</tr>
<tr>
<td>(34 in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
</tbody>
</table>
Table 21
Hardware requirements for an AC-powered Option 61C (Part 3 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NTRB53 or</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
<tr>
<td>2</td>
<td>QPC471H or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QPC775E</td>
<td></td>
</tr>
</tbody>
</table>

*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 22
Hardware requirements for a DC-powered Option 61C (Part 1 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21DA</td>
<td>Core/Network module, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D10 or</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT5D03</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>NT7D00BA</td>
<td>Top Cap, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D09CA</td>
<td>Pedestal, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit, DC</td>
</tr>
</tbody>
</table>
### Table 22
Hardware requirements for a DC-powered Option 61C (Part 2 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment module, DC (see note 2)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52DD</td>
<td>Pedestal Blower Unit, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
</tbody>
</table>

*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.
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
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:
      
      \[
      \text{LD 37} \quad \text{to load the program}
      \]
      \[
      \text{DIS MSI 0} \quad \text{to disable the card}
      \]
   
   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 13 on page 122). 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 13
Cabling the MDU to the IODU/C card

4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.

5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.

6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.

7 Verify that the CP card is set to MAINT and seat the card.

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

10 Apply power to the module.

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

11 When the NT logo appears, press <CR> to continue.

12 Log into the system and enter the time and date, when prompted.

13 Initiate the database installation by selecting the following command from the menu:
   
   <u> to Install menu

14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
   
   <a> to continue with keycode validation
   <y> to confirm that the keycode matches the CD-ROM release

15 When the Install Menu appears, select the following Options in sequence:
   
   <d> to install customer database only
   <f> to transfer the customer database from the MDU
   <a> to continue the database transfer
   <a> to transfer the database from the floppy to the hard disk
   (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
   <cr> to continue
   the Installation Status Summary menu appears to confirm database transfer
   <y> to start installation
   <a> yes, transfer the database

   Database transfer begins. After the customer database is successfully transferred, the system displays “Success! Database Transferring complete”.

   Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
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.

<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.

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.
21 Reinstall the MDU/SMDU into CPU 0:
   a. Connect the cable(s) to the faceplate of the MDU.
   b. Install the floppy diskette in the MDU
   c. Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
   d. Software enable the MSI, EMSI, or FDI card:
      
      LD 37 to load the program
      ENB MSI 0 to enable the card

22 Install the remaining Core/Net circuit cards and faceplate enable them.
   Leave the CNI cards disabled to ensure call processing is not disrupted
   on the active CPU.

23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1
   modules are cabled (J3 to J3 and J4 to J4).

24 Verify that the CP card faceplate switch is set to MAINT.

25 Apply power to the module.

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

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

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
• the module must be powered on
• a terminal must be connected to the J25 CPSI port on Core/Net 1

1 Install the CD-ROM into the CD drive:
   a. press the button on the CD-ROM drive to open the CD-ROM disk holder
   b. place the CD-ROM disk into the holder with the disk label showing
   c. use the four tabs to secure the CD-ROM in the disk holder
   d. press the button again to close the CD-ROM disk holder (don’t push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:
   <u>  to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
   <a>  to continue with keycode validation
   <y>  to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:
   <a>  to install software, CP-BOOTROM, and IOP-ROM
   <a>  to verify that the CD-ROM is now in drive
   The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:
   <y>  to start installation
   <a>  to continue with upgrade
   The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:
   <a>  to continue with ROM upgrade
   When all files were copied from the CD-ROM to the hard disk, press:
   <CR>  to continue
You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

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

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

<y> to start installation

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

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

<CR> to continue

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

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

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

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

7 Confirm that the 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
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 form 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
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 HW1533 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 cs 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:

<table>
<thead>
<tr>
<th>LD 43</th>
<th>EDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>to load the program</td>
<td>to begin the data dump</td>
</tr>
</tbody>
</table>

**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 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.
NT upgrade to Option 61C

Contents

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Installing external cables ..................................... 147
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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)
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 a 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)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network module, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
</tbody>
</table>
Table 23  
Hardware requirements for an AC-powered Option 61C (Part 2 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NT9D19 or</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td></td>
<td>NT5D10 or</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT5D03</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>NT7D00AA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D27BB</td>
<td>Pedestal, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment module, AC (see note 2)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>3</td>
<td>NT8D44AA</td>
<td>SDI Paddle Board to I/O Cable</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
</tbody>
</table>
Table 23
Hardware requirements for an AC-powered Option 61C (Part 3 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775E</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21DA</td>
<td>Core/Network module, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00BA</td>
<td>Top Cap, DC</td>
</tr>
</tbody>
</table>
### Table 24
Hardware requirements for a DC-powered Option 61C (Part 2 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D09CA</td>
<td>Pedestal, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment module, DC (see note 1)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52DD</td>
<td>Pedestal Blower Unit, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
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<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
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<tr>
<td>6</td>
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<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D80</td>
<td>CPU/MDU Interface Cable (Note 2)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
<tr>
<td></td>
<td>QPC471H or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QPC775E</td>
<td></td>
</tr>
</tbody>
</table>

**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.
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

Upgraded Systems Installation
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

   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

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.
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 IODUC 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).
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)
Enter the date and time when prompted.

When the Main Menu appears, select the following options in sequence:

- `<u>` to Install menu

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

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:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 2</td>
<td>to load the overlay</td>
</tr>
<tr>
<td>STAD</td>
<td>DD MM YY HR MN SC</td>
</tr>
</tbody>
</table>

**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
When the Install Menu appears, select the following options in sequence to copy the software form 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
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 to 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
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.

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

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<td>Connect a terminal and modem to the I/O panel</td>
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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.
Replace the current Core card cage with a CP PII Core/Net card cage

Replace the current Core card cage with a CP PII Core/Net card cage
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.
Option 71, 81, 81C upgrade to an Option 81C CP PII

Upgraded Systems Installation

- 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

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT4N64AA</td>
<td>CP PII Call Processor Card (256MB Memory)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N65AB</td>
<td>cPCI Core Network Interface Card (2 ports)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N66AB</td>
<td>cPCI Core Network Interface Transition Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N67AA</td>
<td>cPCI System Utility Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N68AA</td>
<td>cPCI System Utility Transition Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N88AA</td>
<td>CP PII to I/O Panel DTE Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N88BA</td>
<td>CP PII to I/O Panel DCE Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N90AA</td>
<td>CP PII to I/O Panel Ethernet Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N43AA</td>
<td>cPCI Multi-Media Disk Unit</td>
<td>2</td>
</tr>
</tbody>
</table>
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 25
Minimum requirements for Option 71, 81 and 81C systems

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

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

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT6D41CA</td>
<td>Core/Network Power Supply DC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N97BA</td>
<td>cPCI Upgrade Kit DC (Misc. Card Cage Components)</td>
<td>2</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT8D29BA</td>
<td>Core/Network Power Supply AC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N97AA</td>
<td>cPCI Upgrade Kit AC (Misc. Card Cage Components)</td>
<td>2</td>
</tr>
</tbody>
</table>
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 age 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

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.

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

**Total cable length between the J3 faceplate connectors:**

<table>
<thead>
<tr>
<th>Length</th>
<th>Setting1</th>
<th>Setting2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–4.3 m (0–14 ft)</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4.6–6.1 m (15–20 ft)</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>6.4–10.1 m (21–33 ft)</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>10.4–15.2 m (34–50 ft)</td>
<td>on</td>
<td>on</td>
</tr>
</tbody>
</table>

* 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.
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

<table>
<thead>
<tr>
<th>Network Group 0</th>
<th>Shelf 1</th>
<th>IGS/DIGS 1 &amp; 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Group 1</td>
<td>Shelf 1</td>
<td>IGS/DIGS 5 &amp; 7</td>
</tr>
<tr>
<td>Network Group 2</td>
<td>Shelf 1</td>
<td>IGS/DIGS 9 &amp; 11</td>
</tr>
<tr>
<td>Network Group 3</td>
<td>Shelf 1</td>
<td>IGS/DIGS 13 &amp; 15</td>
</tr>
<tr>
<td>Network Group 4</td>
<td>Shelf 1</td>
<td>IGS/DIGS 17 &amp; 19</td>
</tr>
</tbody>
</table>

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

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

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

**Note:** With AC-power, the module power connectors plug into J1 and J2 on the MPDU. (With DC-power, they connect to each other and hang loose.)
Figure 18
AC power connectors on the Core module backplane

**Note:** AC-powered system shown. With DC-power, module power connectors connect to each other.

553-9583
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.

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.

**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.
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.
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

2. 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.

3. Insert the Security Device into the Security Device holder with the "Nortel" side facing up. Do not bend the clip more than necessary.

4. Insert the assembly (Security Device and holder) between the clips on the top of the System Utility Transition card (Figure 23 on page 196).

5. 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.
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

Network backplane

Core backplane

To other Core/Net

E

D

NT8D99AD cable

NT8D99AD cable

System Monitor (XSM) connections

J1 J2 J3

553-9473

553-3001-258  Standard 6.00  January 2002
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.
Connect COM 1 to J25 with a NT4N88BA 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.
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
### Table 31
Termination Panel to 3PE card connectors

<table>
<thead>
<tr>
<th>Group number</th>
<th>Termination Panel connector</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>9-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
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<td>J3</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>6</td>
<td>12-0, J3</td>
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</tr>
<tr>
<td>6</td>
<td>12-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J4</td>
<td>J4</td>
</tr>
</tbody>
</table>

**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)

Notch for Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
Figure 30
Connectors for cCNI Transition Cables to the Termination Panel (eight group version)
Option 71, 81, 81C upgrade to an Option 81C CP PII

Figure 31
3PE Termination Panel in the Core/Net module (top view - group 0 in the Core/Net module)
Option 71, 81, 81C upgrade to an Option 81C CP PII

Figure 32
3PE Termination Panel in the Core/Net module (top view - group 0 in a Network module)

Termi nation Panel

Port 9-0: direct connection to cCNI Transition Card (factory installed)

cCNI Transition Cables (factory installed)

NT8D76 cables: to 3PE cards in Network shelves (customer installed)

PS
Conference TDS
Network card
Superloop Network card
NET
Superloop Network card
NET
Superloop Network card
NET
Peripheral Signaling card
3-Port Extender card

553-9488A

553-3001-258  Standard 6.00  January 2002
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 competed!

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

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

- Enter carriage return to continue.
- Continue with CP BOOTROM installation
- Install the CP BOOTROM from hard disk
- Start installation
- Continue with ROM upgrade

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

- Continue
- Quit (remove any diskettes and the CD-ROM from the MMDU drives)
- Confirm quit
- 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:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 117</td>
<td>To load the program.</td>
</tr>
<tr>
<td>new host name 1 IP address</td>
<td>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.</td>
</tr>
<tr>
<td>chg elnk active name 1</td>
<td>To assign the “name 1” address to the active Core.</td>
</tr>
<tr>
<td>new host ‘name 2 ’ IP address’</td>
<td>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.</td>
</tr>
<tr>
<td>chg elnk inactive name 2</td>
<td>To assign the “name 2” address to the inactive Core.</td>
</tr>
<tr>
<td>chg mask 255.255.240.0</td>
<td>To set the sub-net per local site. This number allows external sub-nets to connect to the system.</td>
</tr>
<tr>
<td>new route 0.0.0.0 ip address</td>
<td>Sub-net router address, if required.</td>
</tr>
<tr>
<td>prt route</td>
<td>To print the route data. This returns a value assigned to the route used in the next step.</td>
</tr>
<tr>
<td>enl route #</td>
<td>To enable the route table entry: the value is from the step above.</td>
</tr>
</tbody>
</table>

2  Enable the new Ethernet interface:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 137</td>
<td>To load the program.</td>
</tr>
<tr>
<td>dis elnk</td>
<td>To disable the old IP interface values.</td>
</tr>
<tr>
<td>enl elnk</td>
<td>To enable the new IP interface values.</td>
</tr>
</tbody>
</table>
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:

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

2  Use LD 17 to remove the extra CNI cards.

LD 17  To load the program.  
CHG  
CFN  
CEQU YES  
EXTO 3PE  Core/Net 0 extended to 3PE.  
CNI s p xg  Out the CNI card, where:  
   s = card slot (9-12)  
   p = port (0 or 1)  
   xg = out network group (x0-x4)  
EXTI 3PE  Core/Net 1 extended to 3PE  
CNI s p xg  Out the CNI card, where:  
   s = card slot (9-12)  
   p = port (0 or 1)  
   xg = out network group (x0 - x4)  
****  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
   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
   CHG
   CFN
   
   PARM YES
   500B 1000
   Use 1000 as a minimum value.
   NCR 20000
   Use 20000 as a minimum value.
   ****

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

   LD 22
   REQ PRT
   TYPE CFN
   ****
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 elnk**
   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.
Option 71, 81, 81C upgrade to an Option 81C CP PII

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**
   **DIS CNI 0 8 0**

   To load the program.
   Disable the CNI card in Core module 0, slot 8, port 0.
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.

**Table 32**
Clock Controller 0 switch settings

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>on off off off</td>
<td>off off off off</td>
<td>** on * * *</td>
</tr>
</tbody>
</table>

*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.
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.
Option 71, 81, 81C upgrade to an Option 81C CP PII

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

<table>
<thead>
<tr>
<th>Network Group 0</th>
<th>Shelf 1</th>
<th>IGS/DIGS 1 &amp; 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Group 1</td>
<td>Shelf 1</td>
<td>IGS/DIGS 5 &amp; 7</td>
</tr>
<tr>
<td>Network Group 2</td>
<td>Shelf 1</td>
<td>IGS/DIGS 9 &amp; 11</td>
</tr>
<tr>
<td>Network Group 3</td>
<td>Shelf 1</td>
<td>IGS/DIGS 13 &amp; 15</td>
</tr>
<tr>
<td>Network Group 4</td>
<td>Shelf 1</td>
<td>IGS/DIGS 17 &amp; 19</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>Peripheral Signaling Card</th>
<th>Loops disabled/enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 / 0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0 / 1</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>1 / 0</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>1 / 1</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>2 / 0</td>
<td>4</td>
<td>64</td>
</tr>
<tr>
<td>2 / 1</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td>3 / 0</td>
<td>6</td>
<td>96</td>
</tr>
<tr>
<td>3 / 1</td>
<td>7</td>
<td>112</td>
</tr>
<tr>
<td>4 / 0</td>
<td>8</td>
<td>128</td>
</tr>
<tr>
<td>4 / 1</td>
<td>9</td>
<td>144</td>
</tr>
<tr>
<td>5 / 0</td>
<td>10</td>
<td>160</td>
</tr>
<tr>
<td>5 / 1</td>
<td>11</td>
<td>176</td>
</tr>
<tr>
<td>6 / 0</td>
<td>12</td>
<td>192</td>
</tr>
<tr>
<td>6 / 1</td>
<td>13</td>
<td>208</td>
</tr>
<tr>
<td>7 / 0</td>
<td>14</td>
<td>224</td>
</tr>
<tr>
<td>7 / 1</td>
<td>15</td>
<td>240</td>
</tr>
</tbody>
</table>

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

**Note:** With AC-power, the module power connectors plug into J1 and J2 on the MPDU. (With DC-power, they connect to each other and hang loose.)
Figure 34
AC power connectors on the Core module backplane

Note: AC-powered system shown. With DC-power, module power connectors connect to each other.
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**

**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)

Slot status LEDs (communication with CPU)
Card status LEDs (internal check)
System Utility disable switch

Core

LCD Display
Display Panel status

Slot status LEDs
Card status LEDs
System Utility disable switch

MMDU

c9 c10 c11 c12 c13 c14 c15 CP

553-9124
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

Display panel POWER
(NT4N94AA cable)

Floppy, CD ROM
and Hard Drive POWER
(NT4N95AA cable)

Floppy DATA
(NT4N93AA cable)

CD ROM and
Hard Drive DATA
(NT4N92AA cable)

Shelf power
(NT4N4405 cable)

Metal divider

System Utility
Transition card

Four cCNI
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 bolt at the rear of the card cage. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (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.
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.
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.

Replace the front cover plates on both sides of the card cage.

Install the installing screws at the back of the card cage, the same way you removed them.

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

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.
Systems with a LAN hub:
1. Connect LAN 1 to J31
2. Connect J31 to LAN hub

Customer supplied Ethernet cables

Systems without a LAN:
Connect LAN 1 faceplate to LAN 1 faceplate

Nortel supplied NTRC17AA crossover Ethernet cable
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**

<table>
<thead>
<tr>
<th>Group Number</th>
<th>Termination Panel connector</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>9-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J4</td>
<td>J4</td>
</tr>
</tbody>
</table>

*Note*: Group 0 cables connect from the CNI 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)

Notch for Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
Figure 46
Connectors for cCNI Transition Cables to the Termination Panel (eight group version)

Notch for Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
Figure 47
3PE Termination Panel in the Core/Net module (top view - group 0 in the Core/Net module)

NT8D76 cables: to 3PE cards in Network shelves (customer installed)

Port 9-0: direct connection to cCNI Transition Card (factory installed)

553-9488
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 competed!

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
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.

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

Enter carriage return to continue.
Continue with CP BOOTROM installation
Install the CP BOOTROM from hard disk
Start installation
Continue with ROM upgrade

The Installation Status Summary screen appears. Verify that CD to
disk, disk to ROM, Database, and CP-BOOTROM were installed.
Continue
Quit (remove any diskettes and the CD-ROM from the
MMDU drives)
Confirm quit
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
REQ PRT.
TYPE PSWV.
ISSP Print System and Patch Information.
SLT Print System Limits.
TID Print the Tape ID.
**** 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:
      LD 60 To load the program.
      SSCK 0 Get the status of Clock Controller 0.
      SSCK 1 Get the status of Clock Controller 1.
      SWCK Swap active clocks.
      SSCK 0 Confirm that Clock Controller 0 is 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 the MMDU card.
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 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.

**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
Option 81 upgrade to Fiber Network Fabric

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:
Option 81 upgrade to Fiber Network Fabric

Upgraded Systems Installation

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**

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

- Continue with ROM Upgrade
- Yes, start Installation
- 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...

- Continue with ROM upgrade
- Yes, start installation
- Continue with ROM upgrade

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

- Are you sure you want to continue with IOP ROM to disk?
- Yes, start installation
- 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.

- press return to continue
- to quit (remove any diskettes from the floppy drive)
- Yes, to confirm quit
- 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
   \texttt{<a> \text{to reboot the system}}

13 In Side 1, perform the following steps:
   \begin{enumerate}
   \item enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB
   \item press and release the MAN RST button on the CP card
   \item When SYS700 messages appear on the CP 1 LCD display
   \item set CP 1 MAINT/NORM switch to NORM.
   \end{enumerate}
   Within 60 seconds, the LCD will display the following messages, confirming the process.
   \begin{center}
   \textbf{RUNNING ROM OS}
   \textbf{ENTERING CP VOTE}
   \end{center}
   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.
   \begin{verbatim}
   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.
   \end{verbatim}

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.
   \begin{verbatim}
   LD 137
   STAT CMDU    Get the status of both CMDUs.
   SYNC         Synchronize disks.
   TEST CMDU    Performs hard and floppy disk test.
   \end{verbatim}
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

Groups 0 - X are cabled in descending order

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
### Table 37

**FIJI Ring 0 connections (Part 2 of 2)**

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th></th>
<th>SW1</th>
<th></th>
<th>SW2</th>
<th></th>
<th>SW4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td></td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>**</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

*Cable length between the J3 faceplate connectors:

<table>
<thead>
<tr>
<th>Cable Length</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4.3 m (0 – 14 ft.)</td>
<td>off off</td>
</tr>
<tr>
<td>4.6 – 6.1 m (15 – 20 ft.)</td>
<td>off on</td>
</tr>
<tr>
<td>6.4 – 10.1 m (21 – 33 ft.)</td>
<td>on off</td>
</tr>
<tr>
<td>10.4 – 15.2 m (34 – 50 ft.)</td>
<td>on on</td>
</tr>
</tbody>
</table>

* 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.

**Note:** 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

- FIJI card Group 0, shelf 0
  - J1 Clock
  - J2
  - J3
  - J4
  - J5
  - J6
  - ENB
  - DIS
  - FIJI
  - LOS
  - ACT
  - ENBL/DIS
  - TX
  - CLK/FIJI 1
  - CLK/FIJI 2
  - ETH

- FIJI card Group 0, shelf 1
  - J1 Clock
  - J2
  - J3
  - J4
  - J5
  - J6
  - ENB
  - DIS
  - FIJI
  - LOS
  - ACT
  - ENBL/DIS
  - TX
  - CLK/FIJI 1
  - CLK/FIJI 2
  - ETH

- K1
- K2
- NTRC49 cable
- P1
- P2
- NTRC46 cables

553-9496
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:
   \(<\text{cr}>\) \(<\text{u}>\) to Install menu
9. Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
   \(<\text{a}>\) 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:
   \(<\text{o}>\) to copy system software from the other Core
12. When the software is installed successfully, press \(<\text{CR}>\) 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:
   \(<\text{f}>\) to install IOP-ROM only
   \(<\text{cr}>\) \(<\text{a}>\) to install the IOP-ROM from hard disk
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
   - 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 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
   STAT CNI  Get status of CNI cards
   STAT CPU  Get status of CPU and memory
   TEST CPU  Test the inactive Core
   TEST CNI cs 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.

2. Switch Cores and test the other side (Core 0)

   SCPU  Switch Cores
   TEST CPU  Test the inactive Core
   TEST CNI cs Test each inactive CNI card

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

3. Clear the display and minor alarms on both Cores.

   CDSP  Clear the displays on the Cores
   CMAJ  Clear major alarms
   CMIN ALL  Clear minor alarms

4. Get the status of the Cores, CNIs, and memory.

   STAT CPU  Get the status of both Cores
   STAT CNI  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 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

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.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of Data</td>
</tr>
<tr>
<td>If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Interruption</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

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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  Upgrade the Core/Net 1 software ...................................... 306
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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.

**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
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**

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**

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
### Table 40
**FIJI Ring 0 connections**

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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
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
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)

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.

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
Option 81C upgrade to Fiber Network Fabric

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 form 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:

<rt>to reboot the system</rt>

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
   - STAT CNI Get status of CNI cards
   - STAT CPU Get status of CPU and memory
   - TEST CPU Test the inactive Core/Net/Net
   - TEST CNI c s 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.

2. Switch Core/Nets and test the other side (Core/Net 0)
   - SCPU Switch Core/Nets
   - TEST CPU Test the inactive Core/Net/Net
   - TEST CNI c s Test each inactive CNI card

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

3. Clear the display and minor alarms on both Core/Nets.
   - CDSP Clear the displays on the Core/Nets
   - CMAJ Clear major alarms
   - CMIN ALL Clear minor alarms

4. Get the status of the Core/Nets, CNIs, and memory.
   - STAT CPU Get the status of both Core/Nets
   - STAT CNI Get the status of all configured CNIs and memory

   **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.

   **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

Contents

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Equipment required ...................................................... 334
Upgrade planning ......................................................... 338
Upgrade preparation .................................................... 342
Installing intermodule cables and connector housings ......... 349
Preparing the new column(s) ........................................... 364
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Installing Release 25 software in Core/Net 1 ....................... 382
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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)
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

![Diagram of Core/Net module upgrade]

**Note 1:** All existing network groups and junctor must remain in cabinets. The network shelf portion of Core/Net modules is not used to support a network group but may be used for DTI/PRI.

**Note 2:** Other modules (not shown) may be included to support additional IPE, applications, or network modules configured for DTI/PRI.

**Note 3:** Requires installation of NT5D40 Network Hybrids into QSD39 Network Shelves where clock controller cards are installed.

**Note 4:** No network to PE connections are recabled.
Figure 58
Core/Net module upgrade, single-column installation

Note 1: All existing network groups and junctor must remain in cabinets. The network shelf portion of Core/Net modules is not used to support a network group but may be used for DTI/PRI.

Note 2: Other modules (not shown) may be included to support additional IPE, applications, or network modules configured for DTI/PRI.

Note 3: Requires installation of NT5D40 Network Hybrids into QSD39 Network Shelves where clock controller cards are installed.

Note 4: No network to PE connections are recabled.
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)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>IODU/C Card</td>
</tr>
<tr>
<td>2</td>
<td>NT4D41</td>
<td>cPCI Core/Network Module AC</td>
</tr>
<tr>
<td>1</td>
<td>NT5D40AA</td>
<td>Hybrids Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT7D00AA</td>
<td>Top Cap AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller—Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>SuperLoop Network Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AB</td>
<td>Peripheral Equipment Power Supply AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>2</td>
<td>NT8D27BB</td>
<td>Pedestal AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment Module AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AD</td>
<td>System Monitor to SDI Cable (60 In.)</td>
</tr>
</tbody>
</table>
Table 41  
Hardware requirements for an AC-powered Option 81C (Part 2 of 3)

<table>
<thead>
<tr>
<th>Qty</th>
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<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>NT8D46AL</td>
<td>System Monitor Serial Link Cable (7 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AS</td>
<td>System Monitor Inter-CPU Cable (30 In.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D49AA</td>
<td>Column Spacer Kit (2.75 In.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D92AB</td>
<td>Controller to I/O Cable (20 In.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D95BJ</td>
<td>SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)</td>
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<tr>
<td>1</td>
<td>NT8D98AS</td>
<td>Inter-Cabinet Network Cable (30 ft.)</td>
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<tr>
<td>4</td>
<td>NT9D18AA</td>
<td>Module Side Cover</td>
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<td>NT9J97AE</td>
<td>Intra-Cabinet Network Cable (85 In.)</td>
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<td>2</td>
<td>NTND11BA</td>
<td>CP to CP Cable (6 ft.)</td>
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<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
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<tr>
<td>1</td>
<td>NTND33DA</td>
<td>Option 81C Core Cabinet Upgrade Cable Kit, Group 0</td>
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<tr>
<td>1</td>
<td>NTND33CC</td>
<td>Core Cabinet Upgrade Cable Kit, Groups 1–4</td>
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<td>Alarm Terminating Plug</td>
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<tr>
<td>2</td>
<td>P0699851</td>
<td>Top Cap Cable Egress Panel</td>
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<tr>
<td>1</td>
<td>P0712003</td>
<td>Instruction Package</td>
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<tr>
<td>1</td>
<td>P0738686</td>
<td>Meridian 1 Pallet Ramp Set</td>
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**Table 41**

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

<table>
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<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775 E</td>
<td>Clock Controller</td>
</tr>
<tr>
<td>1</td>
<td>QPC841C</td>
<td>Four-port SDI</td>
</tr>
</tbody>
</table>

*Note:* 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 42**

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>IODU/C Card</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21DA</td>
<td>Core/Network Module DC</td>
</tr>
<tr>
<td>1</td>
<td>NT5D40AA</td>
<td>Hybrids Kit</td>
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<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply DC</td>
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<td>NT6D41AB</td>
<td>Common Equipment Power Supply DC</td>
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<tr>
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<td>NT6D65AA</td>
<td>Core-to-Network Interface Card (CNI)</td>
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<tr>
<td>2</td>
<td>NT7D00BA</td>
<td>Top Cap DC</td>
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<tr>
<td>2</td>
<td>NT7D09CA</td>
<td>Pedestal DC</td>
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<tr>
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<td>NT7D10CA</td>
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<td>NT7D67CB</td>
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### Table 42
Hardware requirements for a DC-powered Option 81C  (Part 2 of 3)

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

**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.

---

*Figure 59*

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

**From** CPU0-CNI-12A  
**To** 3PE-GRP0/0-J3

553-6394
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):

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

- **a.** If CPU 1 is active, switch to CPU 0:
  - LD 35 to load the program
  - TEST CPU to test the CPUs
  - SCPU to switch to CPU 0 (if necessary)
  - **** to exit the program

- **b.** If clock controller 1 is active, switch to clock controller 0:
  - LD 60 to load the program
  - SSCK 1 to get the status of clock controller 1
  - SWCK to switch to clock controller 0

- **c.** Make sure clock controller 0 is active, and if it is, disable clock controller 1:
  - SSCK 0 to get the status of clock controller 0
  - DIS CC 1 to disable clock controller 1

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

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

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

- **g.** Set the ENB/DIS switch to DIS on the replacement clock controller card. Set the switches on the replacement card. Add together the lengths of the two clock controller to junctor cables. Set SW4 on the replacement card according to this total length (see Table 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>
<thead>
<tr>
<th>Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)</th>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>position</td>
<td>position</td>
<td>position</td>
</tr>
<tr>
<td>0−4.3 m (0−14 ft)</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4.6−6.1 m (15−20 ft)</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>6.4−10.1 m (21−33 ft)</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>10.4−15.2 m (34−50 ft)</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

**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:
   - **LD 35** to load the program
   - **TEST CPU** to test the CPUs
   - **SCPU** to switch to CPU 1 (if necessary)
   - **** to exit the program

b. Make clock controller 1 active:
   - **LD 60** to load the program
   - **SSCK 0** to get the status of clock controller 0

c. If clock controller 0 is active, switch clocks:
   - **SWCK** to switch to clock controller 1

d. Make sure clock controller 1 is active:
   - **SSCK 1** to get the status of clock controller 1

e. Disable clock controller 0:
   - **DIS CC 0** to disable clock controller 0

f. Set the ENB/DIS switch on clock controller 0 to DIS.

g. Disconnect the NT1R04AA clock controller to junctor cable from connector J11 on the junctor panel.

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

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

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

<table>
<thead>
<tr>
<th>Group</th>
<th>Switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>off</td>
</tr>
<tr>
<td>1</td>
<td>off</td>
</tr>
<tr>
<td>2</td>
<td>off</td>
</tr>
<tr>
<td>3</td>
<td>off</td>
</tr>
<tr>
<td>4</td>
<td>off</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Group</th>
<th>Switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>off</td>
</tr>
<tr>
<td>1</td>
<td>off</td>
</tr>
<tr>
<td>2</td>
<td>off</td>
</tr>
<tr>
<td>3</td>
<td>off</td>
</tr>
<tr>
<td>4</td>
<td>off</td>
</tr>
</tbody>
</table>

Note: Jumper RN27 at location E35: set to A

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.

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)

<table>
<thead>
<tr>
<th>Core/Net 0 cable:</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-12A to 3PE-GRP0/0-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-12C to 3PE-GRP0/0-J4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Core/Net 1 cable:</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-12A to 3PE-GRP0/1-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-12C to 3PE-GRP0/1-J4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intercabinet cable:</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BB</td>
<td>CPU0-CNI-12A to 3PE-GRP0/0-J3</td>
</tr>
<tr>
<td>NTND28BB</td>
<td>CPU0-CNI-12C to 3PE-GRP0/0-J4</td>
</tr>
<tr>
<td>NTND28BB</td>
<td>CPU1-CNI-12A to 3PE-GRP0/1-J3</td>
</tr>
<tr>
<td>NTND28BB</td>
<td>CPU1-CNI-12C to 3PE-GRP0/1-J4</td>
</tr>
</tbody>
</table>
Table 46  
**NTND33CD Group 0 cable labels (Part 2 of 2)**

<table>
<thead>
<tr>
<th>QCA55 cabinet cable:</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-12A to 3PE-GRP0/0-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-12C to 3PE-GRP0/0-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-12A to 3PE-GRP0/1-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-12C to 3PE-GRP0/1-J4</td>
</tr>
</tbody>
</table>

**Figure 60**  
**NTND33CD Group 0 cable paths**
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)**

<table>
<thead>
<tr>
<th>Core/Net 0 cable</th>
<th>Label both end:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-12D to 3PE-GRP1/0-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-12F to 3PE-GRP1/0-J4</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-13A to 3PE-GRP2/0-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-13C to 3PE-GRP2/0-J4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Core/Net 1 cable</th>
<th>Label both end:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-12D to 3PE-GRP1/1-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-12F to 3PE-GRP1/1-J4</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-13A to 3PE-GRP2/1-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-13C to 3PE-GRP2/1-J4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intercabinet cable</th>
<th>Label both end:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-12D to 3PE-GRP1/0-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-12F to 3PE-GRP1/0-J4</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13A to 3PE-GRP2/0-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13C to 3PE-GRP2/0-J4</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-12D to 3PE-GRP1/1-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-12F to 3PE-GRP1/1-J4</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13A to 3PE-GRP2/1-J3</td>
</tr>
</tbody>
</table>
Table 47
NTND33CC Groups 1 and 2 cable labels (Part 2 of 2)

<table>
<thead>
<tr>
<th>QCA55 cabinet cable</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13C to 3PE-GRP2/1-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-12D to 3PE-GRP1/0-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-12F to 3PE-GRP1/0-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-13A to 3PE-GRP2/0-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-13C to 3PE-GRP2/0-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-12D to 3PE-GRP1/1-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-12F to 3PE-GRP1/1-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-13A to 3PE-GRP2/1-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-13C to 3PE-GRP2/1-J4</td>
</tr>
</tbody>
</table>
Figure 61
NTND33CC Group 1 and Group 2 cable paths
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)**

<table>
<thead>
<tr>
<th>Core/Net 0 cable</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-13D to 3PE-GRP3/0-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-13F to 3PE-GRP3/0-J4</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-14A to 3PE-GRP4/0-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU0-CNI-14C to 3PE-GRP4/0-J4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Core/Net 1 cable</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-13D to 3PE-GRP3/1-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-13F to 3PE-GRP3/1-J4</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-14A to 3PE-GRP4/1-J3</td>
</tr>
<tr>
<td>NTND94DA</td>
<td>CPU1-CNI-14C to 3PE-GRP4/1-J4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intercabinet cable</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13D to 3PE-GRP3/0-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13F to 3PE-GRP3/0-J4</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-14A to 3PE-GRP4/0-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-14C to 3PE-GRP4/0-J4</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13D to 3PE-GRP3/1-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13F to 3PE-GRP3/1-J4</td>
</tr>
</tbody>
</table>
Table 48
NTND33CC Groups 3 and 4 cable labels (Part 2 of 2)

<table>
<thead>
<tr>
<th>QCA108 cabinet cable</th>
<th>Label both ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-14A to 3PE-GRP4/1-J3</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-14C to 3PE-GRP4/1-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-13D to 3PE-GRP3/0-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-13F to 3PE-GRP3/0-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-14A to 3PE-GRP4/0-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-14C to 3PE-GRP4/0-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-13D to 3PE-GRP3/1-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-13F to 3PE-GRP3/1-J4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-14A to 3PE-GRP4/1-J3</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-14C to 3PE-GRP4/1-J4</td>
</tr>
</tbody>
</table>
Figure 62
NTND33CC Groups 3 and 4 cable paths

[Diagram showing cable paths from various locations to different shelves and connectors]
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

Top of QCA cabinet

Side of QCA cabinet

553-5911
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.

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

<table>
<thead>
<tr>
<th>Cable</th>
<th>Cable label</th>
<th>Connector housing position</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-12A to 3PE-GRP0/0-J3</td>
<td>H4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-12C to 3PE-GRP0/0-J4</td>
<td>H6</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-12A to 3PE-GRP0/1-J3</td>
<td>H12</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-12C to 3PE-GRP0/1-J4</td>
<td>H14</td>
</tr>
</tbody>
</table>

Figure 64
Connector positions on the connector bracket
Table 50
Group 1 and Group 2 internal cabinet cables

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

Table 51
Group 3 and Group 4 internal cabinet cables

<table>
<thead>
<tr>
<th>Cable</th>
<th>Cable label</th>
<th>Connector housing position</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-13D to 3PE-GRP3/0-J3</td>
<td>H2</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-13F to 3PE-GRP3/0-J4</td>
<td>H4</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-14A to 3PE-GRP4/0-J3</td>
<td>H6</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU0-CNI-14C to 3PE-GRP4/0-J4</td>
<td>H8</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-13D to 3PE-GRP3/1-J3</td>
<td>H10</td>
</tr>
</tbody>
</table>
### Table 51
Group 3 and Group 4 internal cabinet cables

<table>
<thead>
<tr>
<th>Cable</th>
<th>Cable label</th>
<th>Connector housing position</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-13F to 3PE-GRP3/1-J4</td>
<td>H12</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-14A to 3PE-GRP4/1-J3</td>
<td>H14</td>
</tr>
<tr>
<td>NTND95AA</td>
<td>CPU1-CNI-14C to 3PE-GRP4/1-J4</td>
<td>H16</td>
</tr>
</tbody>
</table>
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.

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

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

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
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**

<table>
<thead>
<tr>
<th>Cable</th>
<th>Cable label</th>
<th>Connector housing location</th>
<th>I/O panel location</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BB</td>
<td>CPU0-CNI-12A to 3PE-GRP0/0-J3</td>
<td>H4</td>
<td>Core/Net 0—J26</td>
</tr>
<tr>
<td>NTND28BB</td>
<td>CPU0-CNI-12C to 3PE-GRP0/0-J4</td>
<td>H6</td>
<td>Core/Net 0—J27</td>
</tr>
<tr>
<td>NTND28BB</td>
<td>CPU1-CNI-12A to 3PE-GRP0/1-J3</td>
<td>H12</td>
<td>Core/Net 1—J26</td>
</tr>
<tr>
<td>NTND28BB</td>
<td>CPU1-CNI-12C to 3PE-GRP0/1-J4</td>
<td>H14</td>
<td>Core/Net 1—J27</td>
</tr>
</tbody>
</table>
Figure 66
Group 0 cables connecting to the connector bracket

Note: For clarity, the connector housing is not shown in the illustration.
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-downs.

<table>
<thead>
<tr>
<th>Cable</th>
<th>Cable label</th>
<th>Connector housing location</th>
<th>I/O panel location</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-12D to 3PE-GRP1/0-J3</td>
<td>H2</td>
<td>Core/Net 0—J22</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-12F to 3PE-GRP1/0-J4</td>
<td>H4</td>
<td>Core/Net 0—J23</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13A to 3PE-GRP2/0-J3</td>
<td>H6</td>
<td>Core/Net 0—J2</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13C to 3PE-GRP2/0-J4</td>
<td>H8</td>
<td>Core/Net 0—J1</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-12D to 3PE-GRP1/1-J3</td>
<td>H10</td>
<td>Core/Net 1—J22</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-12F to 3PE-GRP1/1-J4</td>
<td>H12</td>
<td>Core/Net 1—J23</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13A to 3PE-GRP2/1-J3</td>
<td>H14</td>
<td>Core/Net 1—J2</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13C to 3PE-GRP2/1-J4</td>
<td>H16</td>
<td>Core/Net 1—J1</td>
</tr>
</tbody>
</table>
Figure 67
Group 1 and 2 cables connecting to the connector bracket

Note: For clarity, the connector housing is not shown in the illustration.
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

<table>
<thead>
<tr>
<th>Cable</th>
<th>Cable label</th>
<th>Connector housing position</th>
<th>I/O panel connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13D to 3PE-GRP3/0-J3</td>
<td>H2</td>
<td>Core/Net 0—J6</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-13F to 3PE-GRP3/0-J4</td>
<td>H4</td>
<td>Core/Net 0—J5</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-14A to 3PE-GRP4/0-J3</td>
<td>H6</td>
<td>Core/Net 0—J10</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU0-CNI-14C to 3PE-GRP4/0-J4</td>
<td>H8</td>
<td>Core/Net 0—J9</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13D to 3PE-GRP3/1-J3</td>
<td>H10</td>
<td>Core/Net 1—J6</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-13F to 3PE-GRP3/1-J4</td>
<td>H12</td>
<td>Core/Net 1—J5</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-14A to 3PE-GRP4/1-J3</td>
<td>H14</td>
<td>Core/Net 1—J10</td>
</tr>
<tr>
<td>NTND28BC</td>
<td>CPU1-CNI-14C to 3PE-GRP4/1-J4</td>
<td>H16</td>
<td>Core/Net 1—J9</td>
</tr>
</tbody>
</table>
Figure 68
Groups 3 and 4 cables connecting to the connector bracket

Note: For clarity, the connector housing is not shown in the illustration.
All connections are to the right I/O panel.

H2 to J6 (Core/Net 0)
H4 to J5 (Core/Net 0)
H6 to J10 (Core/Net 0)
H8 to J9 (Core/Net 0)
H10 to J6 (Core/Net 1)
H12 to J5 (Core/Net 1)
H14 to J10 (Core/Net 1)
H16 to J9 (Core/Net 1)
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).
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.
- `<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
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.
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).

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Response</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQ</td>
<td>CHG</td>
<td></td>
</tr>
<tr>
<td>TYPE</td>
<td>CFN</td>
<td></td>
</tr>
<tr>
<td>CSEOU</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>EXT0</td>
<td>3PE</td>
<td>Core/Net 0 extended to 3PE</td>
</tr>
</tbody>
</table>
| _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.
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

### Table 56
**Typical CNI configurations**

<table>
<thead>
<tr>
<th>CNI card slot</th>
<th>Port</th>
<th>Network group</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0</td>
<td>Group 0</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>Group 1</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>Group 2</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>Group 3</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>Group 4</td>
</tr>
</tbody>
</table>

**Note:** The History File requires a dedicated I/O port.
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.

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

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

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.
As listed in Table 58 on page 390, connect NTND95AA cables to the 3PE faceplates in network Shelf 1 of all equipped network groups.

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**

<table>
<thead>
<tr>
<th>Network group</th>
<th>Cable label</th>
<th>Connector housing</th>
<th>Connector position</th>
<th>3PE connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>CPU1-CNI-12A to 3PE-GRP0/1-J3</td>
<td>Group 0</td>
<td>H12</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>CPU1-CNI-12C to 3PE-GRP0/1-J4</td>
<td>Group 0</td>
<td>H14</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>CPU1-CNI-12D to 3PE-GRP1/1-J3</td>
<td>Groups 1 &amp; 2</td>
<td>H10</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>CPU1-CNI-12F to 3PE-GRP1/1-J4</td>
<td>Groups 1 &amp; 2</td>
<td>H12</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>CPU1-CNI-13A to 3PE-GRP2/1-J3</td>
<td>Groups 1 &amp; 2</td>
<td>H14</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>CPU1-CNI-13C to 3PE-GRP2/1-J4</td>
<td>Groups 1 &amp; 2</td>
<td>H16</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>CPU1-CNI-13D to 3PE-GRP3/1-J3</td>
<td>Groups 3 &amp; 4</td>
<td>H10</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>CPU1-CNI-13F to 3PE-GRP3/1-J4</td>
<td>Groups 3 &amp; 4</td>
<td>H12</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>CPU1-CNI-14A to 3PE-GRP4/1-J3</td>
<td>Groups 3 &amp; 4</td>
<td>H14</td>
<td>J3</td>
</tr>
<tr>
<td>4</td>
<td>CPU1-CNI-14C to 3PE-GRP4/1-J4</td>
<td>Groups 3 &amp; 4</td>
<td>H16</td>
<td>J4</td>
</tr>
</tbody>
</table>
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

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:

   `<o>` to copy system software from the other Core

7. When the software is installed successfully, press `<CR>` to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

- `<f>` to install IOP-ROM only
- `<cr> <a>` to install the IOP-ROM from hard disk
- `<y>` Yes, start installation
- `<cr> <a>` to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0:

- `<d>` to go to the Database menu
- `<d>` to copy the database from Core 1 to Core 0
- `<y>` to confirm the installation status summary
- `<a>` to confirm database copy

10 From the Main Menu, select the following options to quit and reload the system:

- `<q>` to quit
- `<y>` to confirm quit

11 Reboot the Core/Net 0 CPU:

- `<a>` to reboot the system

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

12 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.

**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 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>
<thead>
<tr>
<th>Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)</th>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>position</td>
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<td></td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>0–4.3 m (0–14 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4.6–6.1 m (15–20 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>6.4–10.1 m (21–33 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>10.4–15.2 m (34–50 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Network group</th>
<th>Cable label</th>
<th>Connector housing</th>
<th>Connector location</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>CPU0-CNI-12A to 3PE-GRP0/0-J3</td>
<td>Group 0</td>
<td>H4</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>CPU0-CNI-12C to 3PE-GRP0/0-J4</td>
<td>Group 0</td>
<td>H6</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>CPU0-CNI-12D to 3PE-GRP1/0-J3</td>
<td>Groups 1 &amp; 2</td>
<td>H2</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>CPU0-CNI-12F to 3PE-GRP1/0-J4</td>
<td>Groups 1 &amp; 2</td>
<td>H4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>CPU0-CNI-13A to 3PE-GRP2/0-J3</td>
<td>Groups 1 &amp; 2</td>
<td>H6</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>CPU0-CNI-13C to 3PE-GRP2/0-J4</td>
<td>Groups 1 &amp; 2</td>
<td>H8</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>CPU0-CNI-13D to 3PE-GRP3/0-J3</td>
<td>Groups 3 &amp; 4</td>
<td>H2</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>CPU0-CNI-13F to 3PE-GRP3/0-J4</td>
<td>Groups 3 &amp; 4</td>
<td>H4</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>CPU0-CNI-14A to 3PE-GRP4/0-J3</td>
<td>Groups 3 &amp; 4</td>
<td>H6</td>
<td>J3</td>
</tr>
<tr>
<td>4</td>
<td>CPU0-CNI-14C to 3PE-GRP4/0-J4</td>
<td>Groups 3 &amp; 4</td>
<td>H8</td>
<td>J4</td>
</tr>
</tbody>
</table>

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).
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

View from rear of column

Master system monitor

J3 to MDF

I/O panel

J11

NT8D46BH

NT8D46AA

NT8D46AD

P0369107
Filter Adapter on inside of slot J11

Core 1

Core 0

J2

J1

J2

J1

J2

J1

NT8D46AA

IPE

553-5931
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

![Diagram showing system monitor and SDI connections between XT/71 and Core/Net modules in single-column installations.](image)
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.

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.
XT Core/Net and Network module upgrade to Option 81C

Contents

The following are the topics in this section:

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Equipment required ........................................ 413
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Upgrade preparation ...................................... 419
Core/Net and Network module installation .............. 421
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Installing Release 25 software in Core/Net 1 .......... 429
Configuring the system ..................................... 431
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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)
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

Note 1: Use of existing QCA55 cabinet and network shelves in QCA108 cabinet is discontinued.

Note 2: All existing network groups in cabinets must move to modules (two groups are show).

Note 3: Other modules (not shown) may be included to support additional IPE, applications, or network modules configured for DTI/PRI.

Note 4: Columns do not have to be adjacent to the PE cabinets.

Note 5: PE connections must be recabled.
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)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>IODU/C Card</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network Module AC</td>
</tr>
<tr>
<td>1</td>
<td>NT5D40AA</td>
<td>Hybrids Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core-to-Network Interface Card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT7D00AA</td>
<td>Top Cap AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller—Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>SuperLoop Network Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AB</td>
<td>Peripheral Equipment Power Supply AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>2</td>
<td>NT8D27BB</td>
<td>Pedestal AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment Module AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AL</td>
<td>System Monitor Serial Link Cable (7 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AS</td>
<td>System Monitor Inter-CPU Cable (30 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D49AA</td>
<td>Column Spacer Kit (2.75 in.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D92AB</td>
<td>Controller to I/O Cable (20 In.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D95BJ</td>
<td>SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)</td>
</tr>
</tbody>
</table>
Table 61  
Hardware requirements for an AC-powered Option 81C (Part 2 of 2)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D98AS</td>
<td>Inter-Cabinet Network Cable (30 ft.)</td>
</tr>
<tr>
<td>4</td>
<td>NT9D18AA</td>
<td>Module Side Cover</td>
</tr>
<tr>
<td>1</td>
<td>NT9J97AE</td>
<td>Intra-Cabinet Network Cable (85 in.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP to CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND33DA</td>
<td>Option 81C Core Cabinet Upgrade Cable Kit, Group 0</td>
</tr>
<tr>
<td>1</td>
<td>NTND33CC</td>
<td>Core Cabinet Upgrade Cable Kit, Groups 1–4</td>
</tr>
<tr>
<td>2</td>
<td>P0623569</td>
<td>Alarm Terminating Plug</td>
</tr>
<tr>
<td>2</td>
<td>P0699851</td>
<td>Top Cap Cable Egress Panel</td>
</tr>
<tr>
<td>1</td>
<td>P0712003</td>
<td>Instruction Package</td>
</tr>
<tr>
<td>1</td>
<td>P0738686</td>
<td>Meridian 1 Pallet Ramp Set</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC775 or QPC471H</td>
<td>Clock Controller</td>
</tr>
<tr>
<td>1</td>
<td>QPC841C</td>
<td>Four-port SDI</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>IODU/C Card</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21DA</td>
<td>Core/Network Module DC</td>
</tr>
<tr>
<td>1</td>
<td>NT5D40AA</td>
<td>Hybrids Kit</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core-to-Network Interface Card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT7D00BA</td>
<td>Top Cap DC</td>
</tr>
<tr>
<td>2</td>
<td>NT7D09CA</td>
<td>Pedestal DC</td>
</tr>
<tr>
<td>2</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>2</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller - Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>SuperLoop Network Card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment Module DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AD</td>
<td>System Monitor to SDI Cable (60 In.)</td>
</tr>
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<td>1</td>
<td>NT8D46AL</td>
<td>System Monitor Serial Link Cable (7 ft.)</td>
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<td>NT8D46AS</td>
<td>System Monitor Inter-CPU Cable (30 In.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D49AA</td>
<td>Column Spacer Kit (2.75 In.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D52DD</td>
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</tr>
<tr>
<td>2</td>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
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### Table 62
Hardware requirements for an DC-powered Option 81C (Part 2 of 2)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D92AB</td>
<td>Controller to I/O Cable (20 In.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D95BJ</td>
<td>SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D98AS</td>
<td>Inter-Cabinet Network Cable (30 ft.)</td>
</tr>
<tr>
<td>4</td>
<td>NT9D18AA</td>
<td>Module Side Cover</td>
</tr>
<tr>
<td>1</td>
<td>NT9J97AE</td>
<td>Intra-Cabinet Network Cable (85 In.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP to CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND33DA</td>
<td>Option 81C Core-Cabinet Upgrade Kit, Group 0</td>
</tr>
<tr>
<td>1</td>
<td>NTND33CC</td>
<td>Core-Cabinet Upgrade Cable Kit 1–4</td>
</tr>
<tr>
<td>2</td>
<td>P0623569</td>
<td>Alarm Terminating Plug</td>
</tr>
<tr>
<td>2</td>
<td>P0699851</td>
<td>Top Cap Cable Egress Panel</td>
</tr>
<tr>
<td>1</td>
<td>P0712003</td>
<td>Instruction Package</td>
</tr>
<tr>
<td>1</td>
<td>P0738686</td>
<td>Meridian 1 Pallet Ramp Set</td>
</tr>
<tr>
<td>2</td>
<td>NTRB 35 or QPC471H or QPC775E</td>
<td>Clock Controller</td>
</tr>
<tr>
<td>1</td>
<td>QPC841</td>
<td>Four-port SDI</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>D20 switch position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 0</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 4</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 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.

---

**Table 64**

QPC441F 3PE card switch settings for Core/Net 0

<table>
<thead>
<tr>
<th>D20 switch position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>off</td>
<td></td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 0</td>
<td></td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td></td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td></td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td></td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 4</td>
<td></td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: RN27 jumper at E35: set to “A” for all 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.
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

<table>
<thead>
<tr>
<th>CNI card slot</th>
<th>Port</th>
<th>Network group</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>CNI card slot</th>
<th>Port</th>
<th>Network group (enter your Option 81C configuration in this column)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* CNI card slot 12, port 0 is the network group with the Core/Net module.

1 To reconfigure the Option 81C network groups, first disable all CNI cards in Core/Net 0 and Core/Net 1 using LD 135:

```
LD 135 to load the program
STAT CNI to get the status of all CNI cards
DIS CNI c s p c = core (0 or 1)
         s = card slot (12-14)
         p = port (0 or 1)
STAT CNI to confirm that CNI cards are disabled
**** to exit the program
```
2. When the CNI cards are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Response</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 17</td>
<td></td>
<td>to load the program</td>
</tr>
<tr>
<td>REQ</td>
<td>CHG</td>
<td></td>
</tr>
<tr>
<td>TYPE</td>
<td>CFN</td>
<td></td>
</tr>
<tr>
<td>CEQU</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

**EXT0 3PE**

- **_CNI s p xg**  
  - **s** = card slot (12-14)  
  - **p** = port (0 or 1)  
  - **xg** = out network group (x0–x4)

  to "out" the CNI card

- **_CNI s p g**  
  - **s** = card slot (12-14)  
  - **p** = port (0 or 1)  
  - **g** = network group (0-4)

  to "add" the CNI card

**EXT1 3PE**

- **_CNI s p xg**  
  - **s** = card slot (12-14)  
  - **p** = port (0 or 1)  
  - **xg** = out network group (x0–x4)

  to "out" the CNI card

- **_CNI s p g**  
  - **s** = card slot (12-14)  
  - **p** = port (0 or 1)  
  - **g** = network group (0-4)

  to "add the CNI card"

**REQ ******  

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.

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Response</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 17</td>
<td>CHG</td>
<td>to load the program</td>
</tr>
<tr>
<td>TYPE</td>
<td>CFN</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADAN</td>
<td>CHG aaa x</td>
<td>aaa = terminal type (tty, aml, etc.)</td>
</tr>
<tr>
<td>...</td>
<td>x = terminal number (0-15)</td>
<td></td>
</tr>
<tr>
<td>GRP</td>
<td>g</td>
<td>g = network group (0-4)</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Response</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 17</td>
<td>CHG</td>
<td>to load the program</td>
</tr>
<tr>
<td>TYPE</td>
<td>CFN</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARM</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500 B</td>
<td>1000</td>
<td>use 1000 as a minimum value</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCR</td>
<td>2000</td>
<td>use 2000 as a minimum value</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>****</td>
<td>to exit the program</td>
</tr>
</tbody>
</table>

5. Print the Configuration Record to verify the above changes:

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Response</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 22</td>
<td></td>
<td>to load the program</td>
</tr>
<tr>
<td>REQ PRT</td>
<td></td>
<td>to set the print option</td>
</tr>
<tr>
<td>TYPE CFN</td>
<td></td>
<td>to print the configuration</td>
</tr>
<tr>
<td>****</td>
<td></td>
<td>to exit the program</td>
</tr>
</tbody>
</table>
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 Core 1 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
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 todisable 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 “HW1534” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 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. 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:
   \begin{itemize}
   \item \textbf{SCPU} \hspace{1cm} to switch to Core 0
   \item \textbf{TEST CPU} \hspace{1cm} to test the inactive CP card and CP-to-CP cable
   \end{itemize}

3 Get the status of the CP cards and memories and of the CNIs:
   \begin{itemize}
   \item \textbf{STAT CPU} \hspace{1cm} to get the status of both Cores
   \item \textbf{STAT CNI} \hspace{1cm} to get the status of all configured CNIs
   \item \textbf{****} \hspace{1cm} to exit LD 135
   \end{itemize}

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:
   \begin{itemize}
   \item \textbf{LD 137} \hspace{1cm} to load the program
   \item \textbf{STAT} \hspace{1cm} to get the status of IODU/Cs, and redundancy. Verify that IODU/C 1 is active
   \item \textbf{SYNC} \hspace{1cm} to synchronize the hard disks
   \item \textbf{TEST CMDU} \hspace{1cm} Performs hard and floppy disk test.
   \end{itemize}

   \textbf{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:
   \begin{itemize}
   \item \textbf{STAT} \hspace{1cm} to get the status of IODU/Cs, and redundancy
   \item \textbf{SWAP} \hspace{1cm} to switch IODU/Cs (if necessary)
   \item \textbf{****} \hspace{1cm} to exit LD 137
   \end{itemize}

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.
   \begin{itemize}
   \item Load the Equipment Data Dump Program (LD 43). At the prompt, enter
   \item \textbf{LD 43} \hspace{1cm} to load the program
   \end{itemize}

8 When “EDD000” appears on the terminal, enter
   \begin{itemize}
   \item \textbf{EDD} \hspace{1cm} to begin the data dump
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.

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.
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. **P0702380 Connector Housing**
   a. mounts on the top of the cabinet
   b. provides six connectors
   c. covers a rectangular opening (up to two housings per opening) and round opening (one housing per opening)

3. **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

4. **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

PE cabinet

- P0704511 package
- P0703905/P0703906
- P0702380
- P0696547
- P0696547
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*

Note: Connector housings can also be mounted at the top of the side panel.
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

Note: Connector housings can also be mounted at the top of the side panel.
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).

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

- P0703906 Connector Housing
- P0703905 Adapter Panel
- Square cable access opening in cabinet I/O panel
- Secure adapter panel and housing to cabinet with existing nuts (eight locations)
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

Secure existing housing with screws provided

Existing housing

Secure new housing to cabinet with existing nuts

Cable access opening in cabinet I/O panel

P0703846 Connector Housing

P0703847 Adapter Panel
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

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

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

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

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

<table>
<thead>
<tr>
<th>Card</th>
<th>Card location</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPC441 3PE card</td>
<td>Slot 11</td>
</tr>
<tr>
<td>QPC412 IGS cards</td>
<td>8–9</td>
</tr>
<tr>
<td>QPC43 PS card</td>
<td>10</td>
</tr>
<tr>
<td>QPC414 Network card</td>
<td>0–7</td>
</tr>
<tr>
<td>NT8D17 Conference/TDS card</td>
<td>0–7</td>
</tr>
<tr>
<td>SDI-type cards</td>
<td>0–7</td>
</tr>
<tr>
<td>MSDL card</td>
<td>0–7</td>
</tr>
<tr>
<td>MISP card</td>
<td>0–7</td>
</tr>
<tr>
<td>PRI/DTI cards</td>
<td>0–6</td>
</tr>
<tr>
<td>PRI/DTI cards</td>
<td>see note</td>
</tr>
<tr>
<td>SDI-type cards</td>
<td>see note</td>
</tr>
</tbody>
</table>

**Note:** 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.

---

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

<table>
<thead>
<tr>
<th>Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)</th>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>position</td>
<td>position</td>
<td>position</td>
</tr>
<tr>
<td>0–4.3 m (0–14 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4.6–6.1 m (15–20 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>6.4–10.1 m (21–33 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>10.4–15.2 m (34–50 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)</th>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>position</td>
<td>position</td>
<td>position</td>
</tr>
<tr>
<td>0–4.3 m (0–14 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4.6–6.1 m (15–20 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>6.4–10.1 m (21–33 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>10.4–15.2 m (34–50 ft)</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.
6. Install new NT1R04 cables between Junctor module connector J11 and the faceplate of clock controller card 0.

7. In the Network module that will house the transferred cards, verify that network common cards (IGS, 3PE, and PS cards) are properly installed and cabled (see Table 72 on page 463).

Table 72
Card placement in Option 81C

<table>
<thead>
<tr>
<th>Card</th>
<th>Card location</th>
<th>Card location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group 0</td>
<td>All other groups</td>
</tr>
<tr>
<td>QPC441 3PE card</td>
<td>Slot 11</td>
<td>Slot 1</td>
</tr>
<tr>
<td>QPC412 IGS cards</td>
<td>8–9</td>
<td>2–3</td>
</tr>
<tr>
<td>QPC43 PS card</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>QPC414 Network card</td>
<td>0–7</td>
<td>5–12</td>
</tr>
<tr>
<td>NT8D17 Conference/TDS card</td>
<td>0–7</td>
<td>5–12</td>
</tr>
<tr>
<td>SDI-type cards</td>
<td>0–7</td>
<td>5–12</td>
</tr>
<tr>
<td>MSDL card</td>
<td>0–7</td>
<td>5–12</td>
</tr>
<tr>
<td>MISP card</td>
<td>0–7</td>
<td>5–12</td>
</tr>
<tr>
<td>PRI/DTI cards</td>
<td>0–6</td>
<td>5–11</td>
</tr>
<tr>
<td>PRI/DTI cards</td>
<td>see note</td>
<td>13–14</td>
</tr>
<tr>
<td>SDI-type cards</td>
<td>see note</td>
<td>slot 13</td>
</tr>
</tbody>
</table>

Note: 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
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.

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.

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.

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.

On the Option 81C, enable the network card:

1. Test for dial tone on both loops.

2. 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.
Option 21E upgrade to Option 61C

Contents

The following are the topics in this section:

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   Converting the SL-1 hardware ..................................... 483
   Installing external cables ......................................... 483
   Transferring the database from 4 MB to IODU/C ........... 484
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   Copying the software and database to Core/Net 0 .......... 493
   Returning the system to redundant mode ..................... 495
   Moving network cards ............................................. 497
   Completing the upgrade ............................................. 498

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)**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network Module, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface Card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00AA</td>
<td>Top Cap AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D27BB</td>
<td>Pedestal AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment Module, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>3</td>
<td>NT8D44AA</td>
<td>SDI Paddle Board to I/O Cable</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
</tbody>
</table>
### Table 73

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network Module, AC</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover (see note 3)</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling Card (PS)</td>
</tr>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender Card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775E</td>
<td>Clock Controller cards (see note 3)</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21DA</td>
<td>Core/Network Module, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface Card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D10 or</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td></td>
<td>NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00BA</td>
<td>Top Cap DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D09CA</td>
<td>Pedestal, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network Card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment Module, DC (see note 2)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
</tbody>
</table>
### Table 74

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52DD</td>
<td>Pedestal Blower Unit, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP/CMDU to IOP/CMDU SCSI cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover (see note 3)</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling Card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D80</td>
<td>CPU/MDU Interface Cable</td>
</tr>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender Card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775E</td>
<td>Clock Controller cards (see note 4)</td>
</tr>
</tbody>
</table>

**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

Upgraded Systems Installation
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.
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
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.

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.
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 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.
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 21E CE/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 21 CE/Network shelf. For installation procedures, refer to Circuit Card: Installation and Testing (553-3001-211).

6 Verify that PRI/DTI cards in the Option 21 CE/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 MB to IODU/C

In this procedure you will transfer the Option 21E 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).
**Note:** The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

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.
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:
When the sysload is complete, log into the system.

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 form 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
   - <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
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 HW1533 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:
   
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT</td>
<td>to get the status of IODU/Cs and redundancy</td>
</tr>
<tr>
<td>SWAP</td>
<td>to switch IODU/Cs (if necessary)</td>
</tr>
<tr>
<td>****</td>
<td>to exit the program</td>
</tr>
</tbody>
</table>

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
   
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 43</td>
<td>to load the program</td>
</tr>
</tbody>
</table>

13 When “EDD000” appears on the terminal, enter
   
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDD</td>
<td>to begin the data dump</td>
</tr>
</tbody>
</table>

**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
   
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>****</td>
<td>to exit the program</td>
</tr>
</tbody>
</table>

**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).
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.

On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.

Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.

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.

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.

In the Option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).

Completing the upgrade

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.
      
      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 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.
Option 51 upgrade to Option 61C

Contents

The following are the topics in this section:

Reference list ............................................................. 501
Upgrade outline ............................................................ 502
  Equipment required ................................................... 502
  Upgrade preparation ............................................... 503
  Converting the hardware .......................................... 510
  Installing external cables ........................................ 511
  Transferring the database from 4.0 MB to IODU/C .......... 512
  Installing Release 25 software in Core/Net 1 .............. 518
  Copying the software and database to Core/Net 0 .......... 520
  Returning the system to redundant mode .................... 522
  Moving the network cards ........................................ 524
  Completing the upgrade .......................................... 526

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)**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT6D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network module, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00AA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D27BB</td>
<td>Pedestal, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment module, AC</td>
</tr>
<tr>
<td>(see note 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>3</td>
<td>NT8D44AA</td>
<td>SDI Paddle Board to I/O Cable</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable</td>
</tr>
<tr>
<td>(34 in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>Qty</td>
<td>Part number</td>
<td>Description</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D75BD</td>
<td>Clock Controller to Clock Controller Cable</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover (see note 3)</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or</td>
<td>Clock Controller cards (see note 4)</td>
</tr>
<tr>
<td></td>
<td>QPC471H or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QPC775</td>
<td></td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT6D61AA</td>
<td>Input-Output Disk Unit with CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D21AA</td>
<td>Core/Network module, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D10 or</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT5D03</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>NT7D00BA</td>
<td>Top Cap, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D09CA</td>
<td>Pedestal, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network card</td>
</tr>
<tr>
<td>2</td>
<td>NT8D17FA</td>
<td>Conference/TDS card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment module, AC (see note 2)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>1</td>
<td>NT8D46AG</td>
<td>System Monitor to SDI Paddle Board Cable (34 in.)</td>
</tr>
</tbody>
</table>
### Table 76

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D46BH</td>
<td>System Monitor to MDF Cable (32 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52DD</td>
<td>Pedestal Blower Unit, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D75BD</td>
<td>Clock Controller to Clock Controller Cable</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP-to-CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI Cable (6 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>NTND21AA</td>
<td>Module Side Cover (see note 3)</td>
</tr>
<tr>
<td>2</td>
<td>QPC43R</td>
<td>Peripheral Signaling card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
<tr>
<td>2</td>
<td>QPC441F</td>
<td>Three-Port Extender card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775E</td>
<td>Clock Controller cards (see note 4)</td>
</tr>
</tbody>
</table>

**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

Intelligent line and trunk cards

Upgraded Systems Installation
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

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

Converting the hardware

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.

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

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:

   `<0>` to copy system software from the other Core
   `<a>` to continue
   `<a>` to continue

   When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.
   
   `<CR>` press <CR> when you are ready to continue
   `<y>` to start installation
   `<a>` to continue with ROM upgrade
   `<y>` to start installing CP-BOOT ROM
   `<a>` to continue with ROM upgrade.
When the installation is complete, the Installation Status Summary screen appears.

- `<CR>` to return to the Install Menu
- When the Install Menu appears, install IOP-ROM:
  - `<f>` to install IOP-ROM only
- When the Installation Status Summary screen appears:
  - `<y>` to start installation
  - `<y>` to continue installing IOP-ROM
  - `<a>` to continue with ROM upgrade

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

- `<CR>` to return to the Install Menu
- When the Install Menu appears, install the database:
  - `<d>` to install database only
- When the Installation Status Summary screen appears:
  - `<y>` to start installation
  - `<a>` to continue transferring the database from the redundant disk

When the installation is complete, 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 HW1533 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:
   STAT to get the status of IODU/Cs and redundancy
   SWAP to switch IODU/Cs (if necessary)
   **** to exit the program

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

12 Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump.

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

13 When “EDD000” appears on the terminal, enter
   EDD to begin the data dump

   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 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.
Option 51C upgrade to Option 61C

Contents

The following are the topics in this section:

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   Converting the database to Release 25 .................. 536
   Installing intermodule cables ............................. 539
   Upgrading the software in Core/Net 0 ................... 540
   Completing the upgrade ....................................... 543

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)**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
<td>Modem Kit</td>
</tr>
<tr>
<td>2</td>
<td>NT5D61</td>
<td>Input-Output Disk Unit w/ CDROM (IODU/C)</td>
</tr>
<tr>
<td>1</td>
<td>NT5D21AA</td>
<td>Core/Network module, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D65AA</td>
<td>Core to Network Interface Card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00AA</td>
<td>Top Cap AC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D06AA</td>
<td>Peripheral Equipment Power Supply, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D27BB</td>
<td>Pedestal AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D29AB</td>
<td>Common Equipment Power Supply, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37BA</td>
<td>Intelligent Peripheral Equipment module, AC (see note 3)</td>
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<tr>
<td>1</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
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<td>1</td>
<td>NT8D52AB</td>
<td>Pedestal Blower Unit, AC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D53BB</td>
<td>Power Distribution Unit, AC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
</tbody>
</table>
Table 77
Hardware requirements for an AC-powered Option 61C (Part 2 of 2)

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AD</td>
<td>CPU to Network Cable (6 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11BA</td>
<td>CP to CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI cable (6 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND21AA</td>
<td>Module Side Cover (see note 4)</td>
</tr>
<tr>
<td>1</td>
<td>QPC43R</td>
<td>Peripheral Signaling Card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
<tr>
<td>1</td>
<td>QPC441F</td>
<td>Three-Port Extender Card (3PE)</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or QPC471H or QPC775E</td>
<td>Clock Controller cards (see note 5)</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NT1R91AA</td>
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</tr>
<tr>
<td>2</td>
<td>NT5D61</td>
<td>Input-Output Disk Unit w/ CDROM (IODU/C)</td>
</tr>
<tr>
<td>1</td>
<td>NT5D21DA</td>
<td>Core/Network module, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D40AB</td>
<td>Peripheral Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D41AB</td>
<td>Common Equipment Power Supply, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT6D65AA</td>
<td>Core to Network Interface Card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or NT5D10 or NT5D03</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>1</td>
<td>NT7D00BA</td>
<td>Top Cap DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D06AA</td>
<td>Filler Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D09CA</td>
<td>Pedestal, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT7D10CA</td>
<td>System Monitor Panel</td>
</tr>
<tr>
<td>1</td>
<td>NT7D67CB</td>
<td>Power Distribution Unit, DC</td>
</tr>
<tr>
<td>1</td>
<td>NT8D01BC</td>
<td>Controller-Four Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D04BA</td>
<td>Superloop Network Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
</tr>
<tr>
<td>1</td>
<td>NT8D22AC</td>
<td>System Monitor</td>
</tr>
<tr>
<td>1</td>
<td>NT8D37EC</td>
<td>Intelligent Peripheral Equipment module, DC (see note 3)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D41AA</td>
<td>Dual-Port SDI Paddle Board</td>
</tr>
<tr>
<td>1</td>
<td>NT8D52DD</td>
<td>Pedestal Blower Unit, DC</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>CPU Interface Cable (5 ft.)</td>
</tr>
</tbody>
</table>
### Table 78

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

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NT8D84AA</td>
<td>SDI Paddle Board to I/O Cable (18 in.)</td>
</tr>
<tr>
<td>1</td>
<td>NT8D91AE</td>
<td>Network to Controller Cable (8 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AD</td>
<td>CPU to Network Cable (6 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND111BA</td>
<td>CP to CP Cable (6 ft.)</td>
</tr>
<tr>
<td>1</td>
<td>NTND13BC</td>
<td>IOP to IOP SCSI cable (6 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>NTND21AA</td>
<td>Module Side Cover (see note 4)</td>
</tr>
<tr>
<td>1</td>
<td>QPC43R</td>
<td>Peripheral Signaling Card (PS)</td>
</tr>
<tr>
<td>1</td>
<td>QPC84S</td>
<td>Power Monitor</td>
</tr>
<tr>
<td>2</td>
<td>NTRB53 or</td>
<td>Clock Controller cards (see note 5)</td>
</tr>
<tr>
<td></td>
<td>QPC471H</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QPC775E</td>
<td></td>
</tr>
</tbody>
</table>

**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), NT5D03DA (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
11 When the database installation screen appears, insert the 2MB database diskette and select the following:

- **<y>** Yes, start the installation
- **<a>** continue with upgrade

- **<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.)
3 Initiate the installation by selecting the following prompt from the menu:
   \(<\text{cr}>\) <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 form Core/Net 1 to Core/Net 0 and exit the Main Menu:
   \(<o>\) to copy system software from the other Core
7 When the software is installed successfully, press <CR> to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.

8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

- `<f>` to install IOP-ROM only
- `<cr> <a>` to install the IOP-ROM from hard disk
- `<y>` Yes, start installation
- `<cr> <a>` to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0:

- `<d>` to go to the Database menu
- `<d>` to copy the database from Core 1 to Core 0
- `<y>` to confirm the installation status summary
- `<a>` to confirm database copy

10 From the Main Menu, select the following options to quit and reload the system:

- `<q>` to quit
- `<y>` to confirm quit

11 Reboot the Core/Net 0 CPU:

- `<a>` to reboot the system

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

12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.

13 In Core/Net 0, press and release the MAN RST button.

14 When SYS700 messages appear on the CP 0 LCD, set the MAINT/NORM switch to NORM.
15 In 60 seconds, the LCD will display and confirm the process:

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

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

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

**Completing the upgrade**

1 Perform a redundancy sanity test:

- **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. Testing the CP can take up to 20 minutes.

2 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

3 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
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:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 137</td>
<td>to load the program</td>
</tr>
<tr>
<td>STAT</td>
<td>to get the status of IOP/CMDUs or IODU/C and redundancy</td>
</tr>
<tr>
<td>SWAP</td>
<td>to switch IOP/CMDUs or IODU/C (if necessary)</td>
</tr>
<tr>
<td>SYNC</td>
<td>to synchronize the hard disks</td>
</tr>
<tr>
<td>TEST CMDU</td>
<td>Performs hard and floppy disk test.</td>
</tr>
</tbody>
</table>

*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:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT</td>
<td>to get the status of IOP/CMDUs or IODU/Cs and redundancy</td>
</tr>
<tr>
<td>SWAP</td>
<td>to switch IOP/CMDUs or IODU/Cs (if necessary)</td>
</tr>
<tr>
<td>****</td>
<td>to exit LD 137</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 43</td>
<td>to load the program</td>
</tr>
</tbody>
</table>

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDD</td>
<td>to begin the data dump</td>
</tr>
</tbody>
</table>

**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.
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

- IPE
- UEM
- Network
- UEM
- Network
- UEM
- CP PII Core/Net

(original Core/Net (replace with a CP PII card cage))

☐ New module   ☐ Existing module

553-9571
Figure 92
CP PI Core/Net Module

- PS
- Net
- NT8D17 Conference/TDS Card
- QPC414 Network Card
- NT8D04 Superloop Network Card
- NET
- NT8D04 Superloop Network Card
- NET
- NT8D04 Superloop Network Card
- NET
- NTRB33 FUI card
- QPC43R Peripheral Signaling Card
- QPC441 3-Port Extender Card
- OPC441 3-Port Extender Card
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>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT4N64AA</td>
<td>CP PII Call Processor Card (256MB Memory)</td>
<td>2</td>
</tr>
<tr>
<td>NT1R91AA</td>
<td>Modem Kit</td>
<td>1</td>
</tr>
<tr>
<td>NT4N43AA</td>
<td>cPCI Multi-Media Disk Unit</td>
<td>2</td>
</tr>
<tr>
<td>NT4N46AA</td>
<td>cPCI Core/Network Card Cage AC/DC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N65AB</td>
<td>cPCI Core Network Interface Card (2 ports)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N66AB</td>
<td>cPCI Core Network Interface Transition Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N67AA</td>
<td>cPCI System Utility Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N68AA</td>
<td>cPCI System Utility Transition Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N6809</td>
<td>Security Device Holder</td>
<td>2</td>
</tr>
<tr>
<td>NT4N88AA</td>
<td>CP PII to I/O Panel DTE Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N88BA</td>
<td>CP PII to I/O Panel DCE Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N89AA</td>
<td>System Utility to System Monitor Cable</td>
<td>2</td>
</tr>
<tr>
<td>NT4N90AA</td>
<td>CP PII to I/O Panel Ethernet Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D01BC</td>
<td>Controller - Four Card</td>
<td>1</td>
</tr>
<tr>
<td>NT8D04BA</td>
<td>Superloop Network Card</td>
<td></td>
</tr>
<tr>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
<td></td>
</tr>
<tr>
<td>NT8D22AC</td>
<td>System Monitor</td>
<td></td>
</tr>
</tbody>
</table>
Table 79
Minimum requirements for Option 51 and 51C systems (Part 2 of 3)

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT8D35BA/NT8D35EA</td>
<td>Network Module AC/Network Module DC</td>
<td>2</td>
</tr>
<tr>
<td>NT8D37BA/NT8D37EC</td>
<td>Intelligent Peripheral Equipment Module AC/Intelligent Peripheral Equipment Module DC</td>
<td>1</td>
</tr>
<tr>
<td>NT8D41BA</td>
<td>Quad SDI Paddle Board</td>
<td>1</td>
</tr>
<tr>
<td>NT8D46AD</td>
<td>System Monitor to SDI Cable (60 in.)</td>
<td>1</td>
</tr>
<tr>
<td>NT8D46AL</td>
<td>System Monitor Serial Link Cable (7 ft.)</td>
<td>1</td>
</tr>
<tr>
<td>NT8D46AS</td>
<td>System Monitor InterCPU Cable (30 in.)</td>
<td>1</td>
</tr>
<tr>
<td>NT8D49AA</td>
<td>Column Spacer Kit (2.75 in.)</td>
<td></td>
</tr>
<tr>
<td>NT8D76BE</td>
<td>IGS to IGM or cCNI to 3PE Cable (6 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D76BF</td>
<td>IGS to IGM or cCNI to 3PE Cable (10 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
<td></td>
</tr>
<tr>
<td>NT8D84AA</td>
<td>SDI Paddleboard to I/O Cable (18 in.)</td>
<td></td>
</tr>
<tr>
<td>NT8D90AF</td>
<td>SDI Multi-Port Extension Cable (10 ft)</td>
<td></td>
</tr>
<tr>
<td>NT8D91AD</td>
<td>Network to Controller Cable (6 ft)</td>
<td></td>
</tr>
<tr>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D99AD</td>
<td>CPU to Network Cable (6 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT9D18AA</td>
<td>Module Side Cover</td>
<td></td>
</tr>
<tr>
<td>NTRB33AA</td>
<td>Fiber Junctor Interface (FIJI) Card</td>
<td></td>
</tr>
</tbody>
</table>
### Table 79
**Minimum requirements for Option 51 and 51C systems (Part 3 of 3)**

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTRC17AA</td>
<td>CP PII Ethernet to Ethernet Cable (8.5 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NTRC46BB</td>
<td>Clock - FIJI Cable (1.7M - 2.4M (5.5 ft - 8 ft))</td>
<td></td>
</tr>
<tr>
<td>NTRC47AA</td>
<td>FIJI - FIJI Synch Cable</td>
<td></td>
</tr>
<tr>
<td>NTRC48AA</td>
<td>FIJI Fiber Ring Cable (2M (6 ft))</td>
<td></td>
</tr>
<tr>
<td>NTRC49AA</td>
<td>Clock - Clock Synch Cable</td>
<td></td>
</tr>
<tr>
<td>NTRD25AA</td>
<td>AC Pedestal Assembly</td>
<td></td>
</tr>
<tr>
<td>NTRE39AA</td>
<td>Optical Cable Management Card (OCMC)</td>
<td></td>
</tr>
<tr>
<td>NTRE40AA</td>
<td>Dual Ethernet Adapter (RJ45) for I/O Panel</td>
<td>2</td>
</tr>
<tr>
<td>P0745716</td>
<td>Rear I/O Panel</td>
<td>2</td>
</tr>
<tr>
<td>P0906308</td>
<td>cPCI Card Slot Filler Panel</td>
<td>16</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT6D41CA</td>
<td>Core/Network Power Supply DC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N97BA</td>
<td>cPCI Upgrade Kit DC (Misc. Card Cage Components)</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 81**
AC power requirements for Option 51/51C upgrades

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT8D29BA</td>
<td>Core/Network Power Supply AC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N97AA</td>
<td>cPCI Upgrade Kit AC (Misc. Card Cage Components)</td>
<td>2</td>
</tr>
</tbody>
</table>
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 - c12 which do not contain cCNI.

- 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

Display panel POWER (NT4N94AA cable)

Floppy, CD ROM and Hard Drive POWER (NT4N95AA cable)

Floppy DATA (NT4N93AA cable)

CD ROM and Hard Drive DATA (NT4N92AA cable)

Shelf power (NT4N4405 cable)

Metal divider

System Utility Transition card

Four cCNI 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

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

*Total cable length between the J3 faceplate connectors:

<table>
<thead>
<tr>
<th>Cable Length (m)</th>
<th>SW1 Settings</th>
<th>SW2 Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–4.3 m (0–14 ft)</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4.6–6.1 m (15–20 ft)</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>6.4–10.1 m (21–33 ft)</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>10.4–15.2 m (34–50 ft)</td>
<td>on</td>
<td>on</td>
</tr>
</tbody>
</table>

* 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.
Check that the Network cards are installed

Check the system layout that comes with system equipment:

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 98 on page 569.

Note: The new cards to support Fiber Network Fabric are the NTRB33 Fiber Junctor Interface (FIJI) card and the NTRE39 Optical Cable Management Card (OCMC):

- The FIJI 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 FIJIs yet.
- The OCMC is a single width card installed between the power supply and slot 1 of a Network module.

Figure 98
Card layout in the CP PII Core/Net Module
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>
<thead>
<tr>
<th>Group Number</th>
<th>Termination Panel connector</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>9-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J4</td>
<td>J4</td>
</tr>
</tbody>
</table>

**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

Notch for
Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
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)

NTRC48 fiber optic cable
### Table 84
FIJI Ring 1 connections

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>

*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
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, 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.

- Enter carriage return to continue.
- Continue with CP BOOTROM installation
- Install the CP BOOTROM from hard disk
- Start installation
- Continue with ROM upgrade

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

- Continue
- Quit (remove any diskettes and the CD-ROM from the MMDU drives)
- Confirm quit
- 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 addresses 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:

   - **LD 117**
     - To load the program.

   - **new host name 1 IP address**
     - 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.

   - **chg elnk active name 1**
     - To assign the “name 1” address to the active Core.

   - **new host ‘name 2’ ‘IP address’**
     - 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.

   - **chg elnk inactive name 2**
     - To assign the “name 2” address to the inactive Core.

   - **chg mask 255.255.240.0**
     - To set the sub-net per local site. This number allows external sub-nets to connect to the system.

   - **new route 0.0.0.0 ip address**
     - Sub-net router address, if required.

   - **prt route**
     - To print the route data. This returns a value assigned to the route used in the next step.

   - **enl route #**
     - To enable the route table entry: the value is from the step above.

2. Enable the new Ethernet interface:

   - **LD 137**
     - To load the program.

   - **dis elnk**
     - To disable the old IP interface values.

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

2 Use LD 17 to remove the extra CNI cards.
   
   LD 17 To load the program.
   
   CHG
   
   CFN
   
   CEQU YES
   
   EXTO 3PE Core/Net 0 extended to 3PE.
   
   CNI s p xg Out the CNI card, where:
   s = card slot (9-12)
   p = port (0 or 1)
   xg = out network group (x0-x4)
   
   EXTI 3PE Core/Net 1 extended to 3PE
   
   CNI s p xg Out the CNI card, where:
   s = card slot (9-12)
   p = port (0 or 1)
   xg = out network group (x0 - x4)
   **** 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
   CHG
   CFN
   CHG aaa x
   g
   CHG aaa x: 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
   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
   REQ PRT
   TYPE CFN
   **** 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
   DIS CNI 0 8 0
   ```

   To load the program.

   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.

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 on</td>
<td>2 off</td>
<td>3 off</td>
</tr>
<tr>
<td>5 on</td>
<td>6 off</td>
<td>7 off</td>
</tr>
</tbody>
</table>

**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. 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

*Note:* With AC-power, the module power connectors plug into J1 and J2 on the MPDU. (With DC-power, they connect to each other and hang loose.)
Figure 104
AC power connectors on the Core module backplane

Note: AC-powered system shown. With DC-power, module power connectors connect to each other.
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.

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
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.

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 - c12 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

- Display panel POWER (NT4N94AA cable)
- Floppy, CD ROM and Hard Drive POWER (NT4N95AA cable)
- Floppy DATA (NT4N93AA cable)
- CD ROM and Hard Drive DATA (NT4N92AA cable)
- Shelf power (NT4N4405 cable)
- Metal divider
- System Utility Transition card
- Four cCNI 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.
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 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.
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

**Jumper Settings:** Set Jumper RN27 at E35 to "A".

<table>
<thead>
<tr>
<th>Module</th>
<th>Switch Settings</th>
<th>D20 switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP PII Core/Net modules only</td>
<td></td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>Core/Net 0 (Shelf 0)</td>
<td>Group 0 off on on off on on on on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 1 off on on off on on off on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2 off on on off on off on on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3 off on on off on off off on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 4 off on on off off on on on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 5 off on on off off on off on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 6 off on on off off off on on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 7 off on on off off off off on</td>
<td></td>
</tr>
<tr>
<td>Core/Net 1 (Shelf 1)</td>
<td>Group 0 off on on off on on on off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 1 off on on off on off on off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2 off on on off off on off on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3 off on on off off off on off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 4 off on on off off on off off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 5 off on on off off on off off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 6 off on on off off off on off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 7 off on on off off off off off</td>
<td></td>
</tr>
</tbody>
</table>
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

- **Systems with a LAN hub:**
  1. Connect LAN 1 to J31
  2. Connect J31 to LAN hub

- **Systems without a LAN:**
  Connect LAN 1 faceplate to LAN 1 faceplate

---

Customer supplied Ethernet cables

Nortel supplied NTRC17AA crossover Ethernet cable
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
### Table 87
Termination Panel to 3PE card connectors

<table>
<thead>
<tr>
<th>Group Number</th>
<th>Termination Panel connector</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>9-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J4</td>
<td>J4</td>
</tr>
</tbody>
</table>

**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

Notch for Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
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.
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>

*Note:* Groups 2 through 7 are shown for reference only.
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.

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

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

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 competed!

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,
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
<br> Quit (remove any diskettes and the CD-ROM from the
MMDU drives)
<br> Confirm quit
<br> 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**

**REQ** PRT
**TYPE** PSWV.
**ISSP** Print System and Patch Information.
**SLT** Print System Limits.
**TID** Print the Tape ID.
******** 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
   CPU
   STAT CPU
   TEST CPU
   TEST LEDs
   TEST LCDs
   DSPL ALL
   STAT SUTL
   TEST SUTL c s
   STAT CNI c s
   TEST CNI c s

5  Test system redundancy:
   LD 137
   TEST RDUN
   DATA RDUN
   TEST CMDU

6  Install the two system monitors. Test that the system monitors are working:
   LD 37
   STAT XSM
   ****

7  Clear the display and minor alarms on both Cores:
   LD 135
   CDSP
   CMAJ
   CMIN ALL
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 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 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.
Option 61 upgrade to Option 61C

Contents

The following are the topics in this section:

Reference list ....................................................... 779
Equipment required ............................................. 781
Upgrade preparation ............................................ 782
Installing the card cage ........................................ 784
Transferring the database from 4 MB to IODU/C .......... 795
Installing Release 25 software in Core/Net 1 ............... 799
Installing intermodule cables ................................. 802
Copying the software and database to Core/Net 0 ........ 805
Returning the system to redundant mode .................... 807
Completing the upgrade ....................................... 809

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

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NT5D61AA</td>
<td>Input-Output Disk Unit w/ CDROM (IODU/C)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D2103</td>
<td>Core/Network Card cages</td>
</tr>
<tr>
<td>2</td>
<td>NT9D19 or</td>
<td>Call Processor cards (CP) (see note 1)</td>
</tr>
<tr>
<td>2</td>
<td>NT5D10 or</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT5D03</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>NT6D65AA</td>
<td>Core to Network Interface card (CNI)</td>
</tr>
<tr>
<td>2</td>
<td>NTND11</td>
<td>CP-to-CP Cable</td>
</tr>
<tr>
<td>1</td>
<td>NTND13</td>
<td>SCSI Cable</td>
</tr>
<tr>
<td>2</td>
<td>NT7D89</td>
<td>RS-232 Cable</td>
</tr>
<tr>
<td>2</td>
<td>NT7D90</td>
<td>IOP-to-I/O Panel Ethernet Cable</td>
</tr>
<tr>
<td>2</td>
<td>NT8D80AZ</td>
<td>3PE to 3PE Cable</td>
</tr>
<tr>
<td>1</td>
<td>NT8D75AD</td>
<td>Clock to Clock Cable</td>
</tr>
<tr>
<td>2</td>
<td>NT8D99AB</td>
<td>D and E port cable</td>
</tr>
<tr>
<td>2</td>
<td>NT1R90AB</td>
<td>Trim Panel Kit</td>
</tr>
</tbody>
</table>

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.)
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.

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.
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.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Interruption</td>
</tr>
<tr>
<td>If the Core/Net module jumpers are set incorrectly, the system will not load and operate correctly.</td>
</tr>
</tbody>
</table>

**Table 90**
**Backplane jumper settings for NT5D21 Core/Network module**

<table>
<thead>
<tr>
<th>Module</th>
<th>Jumper configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core/Net 0</td>
<td>Jumper plug installed</td>
</tr>
<tr>
<td>Core/Net 1</td>
<td>Jumper plug not installed</td>
</tr>
</tbody>
</table>

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.
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

Hazardous voltage caution label
Extraction tool caution label

Caution label flat on bottom of module
Clamp and extraction tool behind caution label

Extraction tool
Clamp
Caution label

Looking down into module behind I/O safety panel
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**

<table>
<thead>
<tr>
<th>D20 switch:</th>
<th>Core/Net 1</th>
<th>Core/Net 0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>off on on off on on off off on on on on on off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN27 jumper at E35:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NT5D21 Core/Network module</td>
<td>set to A</td>
<td></td>
</tr>
<tr>
<td>All other modules</td>
<td>set to B</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>NT6D39 CPU/Net Slot Number</th>
<th>NT5D21 Core/Net Slot Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>
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).

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).
Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).

Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

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.

When the NT logo appears, CP Install Program diskette press <CR> to continue.

Enter the date and time, when prompted.

When the Main Menu appears, select the following command from the menu:

<u> to Install menu
13. Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
   - <a> to continue with keycode validation
   - <y> to confirm that the keycode matches the CD-ROM release and return to the Install Menu

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

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

Remove any diskettes from the floppy drive.
   - <q> When the Install Menu appears, select <q> to quit.
   - <y> to confirm quit
   - <a> to reboot the system
     The system will automatically perform a sysload during which several messages will appear on the system terminal.

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

17. Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.

19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.

20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.

21 Install the remaining Core/Net circuit cards and faceplate enable them. Leave the CNI cards disabled to ensure call processing is not disrupted on the active CPU.

22 Apply power to the module.

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

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

Before you begin:

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

1 Install the CD-ROM into the CD drive:
   a. press the button on the CD-ROM drive to open the CD-ROM disk holder
   b. place the CD-ROM disk into the holder with the disk label showing
   c. use the four tabs to secure the CD-ROM in the disk holder
   d. press the button again to close the CD-ROM disk holder (don’t push the holder in by hand)

2 Enter the date and time when prompted.
3 When the Main Menu appears, select the following options in sequence:
   <u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
   <a> to continue with keycode validation
   <y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:
   <a> to install software, CP-BOOTROM, and IOP-ROM
   <a> to verify that the CD-ROM is now in drive
   The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:
   <y> to start installation
   <a> to continue with upgrade
   The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:
   <a> to continue with ROM upgrade
   When all files were copied from the CD-ROM to the hard disk, press:
   <CR> to continue
   You are prompted to replace old CP-BOOTROM with the ROM image files. Select:
   <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)
   The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:
   <y> to start installation
   <a> to continue with ROM upgrade (IOP-ROM is installed)
   The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:
   <CR> to continue
   When the Install Menu appears, select the following options in sequence to quit and reboot the system.
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

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Upgraded Systems Installation
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:
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.

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.

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.

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.

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.

Verify that the CNIs in Core/Net 0 are disabled.

Verify that all CNIs in Core/Net 1 are enabled.
15 Verify that both CP cards are in MAINT.

16 Verify that the remaining cards in Core/Net 1 and 0 are enabled, but leave the CNIs in Core/Net 0 disabled.

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

You will now copy system software from Core/Net 1 to Core/Net 0, install CP-software on CP 0, install ROMs on CP 0, and transfer the database from Core/Net 1 to Core/Net 0.

1 Verify that the MAINT/NORM switch on the CP card in Core/Net 0 is set to MAINT.

2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Program Install diskette corresponds to the CP card type installed in the system.

3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)

4 When the NT logo appears, press <CR> to continue.

5 When the Main Menu appears, select the following options in sequence:
   - <u> to Install menu

6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
   - <a> to continue with keycode validation
   - <y> to confirm that the keycode matches the CD-ROM release

7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:
   - <o> to copy system software from the other core
   - <a> to copy /p partition from Core1 to Core 0
   - <a> to continue with upgrade
When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

- Press <CR> when you are ready to continue
- To start installation
- To continue with ROM upgrade
- To start installation
- To continue with ROM upgrade.

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

- Press <CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

- To install IOP-ROM only

When the Installation Status Summary screen appears:

- To start installation
- To continue installing IOP-ROM
- To continue with ROM upgrade

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

- Press <CR> to return to the Install Menu

When the Install Menu appears, install the database:

- To install the database only
- To copy database from the redundant disk

When the Installation Status Summary screen appears:

- To start installation
- To continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

- Press <CR> to return to the Install Menu

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

- To quit
- To confirm quit
- 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.
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” appear 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

---

**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

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
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:

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).
Option 61/61C upgrade to
Option 81C CP PII with FNF

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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.
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 Fiber. 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
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.

- 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

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT4N64AA</td>
<td>CP PII Call Processor Card (256MB Memory)</td>
<td>2</td>
</tr>
<tr>
<td>NT1R91AA</td>
<td>Modem Kit</td>
<td>1</td>
</tr>
<tr>
<td>NT4N43AA</td>
<td>cPCI Multi-Media Disk Unit</td>
<td>2</td>
</tr>
<tr>
<td>NT4N46AA</td>
<td>cPCI Core/Network Card Cage AC/DC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N65AB</td>
<td>cPCI Core Network Interface Card (2 ports)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N66AB</td>
<td>cPCI Core Network Interface Transition Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N67AA</td>
<td>cPCI System Utility Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N68AA</td>
<td>cPCI System Utility Transition Card</td>
<td>2</td>
</tr>
<tr>
<td>NT4N6809</td>
<td>Security Device Holder</td>
<td>2</td>
</tr>
<tr>
<td>NT4N88AA</td>
<td>CP PII to I/O Panel DTE Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N88BA</td>
<td>CP PII to I/O Panel DCE Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT4N89AA</td>
<td>System Utility to System Monitor Cable</td>
<td>2</td>
</tr>
<tr>
<td>NT4N90AA</td>
<td>CP PII to I/O Panel Ethernet Cable (48 in.)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D01BC</td>
<td>Controller - Four Card</td>
<td>1</td>
</tr>
<tr>
<td>NT8D04BA</td>
<td>Superloop Network Card</td>
<td></td>
</tr>
<tr>
<td>NT8D17FA</td>
<td>Conference/TDS Card</td>
<td></td>
</tr>
<tr>
<td>NT8D22AC</td>
<td>System Monitor</td>
<td></td>
</tr>
</tbody>
</table>
### Table 93
Minimum requirements for Option 61 and 61C systems

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT8D35BA/NT8D35EA</td>
<td>Network Module AC/Network Module DC</td>
<td>2</td>
</tr>
<tr>
<td>NT8D37BA/NT8D37EC</td>
<td>Intelligent Peripheral Equipment Module AC/Intelligent Peripheral Equipment Module DC</td>
<td>1</td>
</tr>
<tr>
<td>NT8D41BA</td>
<td>Quad SDI Paddle Board</td>
<td>1</td>
</tr>
<tr>
<td>NT8D46AD</td>
<td>System Monitor to SDI Cable (60 in.)</td>
<td>1</td>
</tr>
<tr>
<td>NT8D46AL</td>
<td>System Monitor Serial Link Cable (7 ft.)</td>
<td>1</td>
</tr>
<tr>
<td>NT8D46AS</td>
<td>System Monitor InterCPU Cable (30 in.)</td>
<td>1</td>
</tr>
<tr>
<td>NT8D49AA</td>
<td>Column Spacer Kit (2.75 in.)</td>
<td></td>
</tr>
<tr>
<td>NT8D76BE</td>
<td>IGS to IGM or cCNI to 3PE Cable (6 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D76BF</td>
<td>IGS to IGM or cCNI to 3PE Cable (10 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D80BZ</td>
<td>CPU Interface Cable (5 ft.)</td>
<td></td>
</tr>
<tr>
<td>NT8D84AA</td>
<td>SDI Paddleboard to I/O Cable (18 in.)</td>
<td></td>
</tr>
<tr>
<td>NT8D90AF</td>
<td>SDI Multi-Port Extension Cable (10 ft)</td>
<td></td>
</tr>
<tr>
<td>NT8D91AD</td>
<td>Network to Controller Cable (6 ft)</td>
<td></td>
</tr>
<tr>
<td>NT8D99AB</td>
<td>CPU to Network Cable (2 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT8D99AD</td>
<td>CPU to Network Cable (6 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NT9D18AA</td>
<td>Module Side Cover</td>
<td></td>
</tr>
<tr>
<td>NTRB33AA</td>
<td>Fiber Junctor Interface (FIJI) Card</td>
<td></td>
</tr>
</tbody>
</table>
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 93
Minimum requirements for Option 61 and 61C systems

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTRC17AA</td>
<td>CP PII Ethernet to Ethernet Cable (8.5 ft)</td>
<td>2</td>
</tr>
<tr>
<td>NTRC46BB</td>
<td>Clock - FIJI Cable (1.7M - 2.4M (5.5 ft - 8 ft))</td>
<td></td>
</tr>
<tr>
<td>NTRC47AA</td>
<td>FIJI - FIJI Synch Cable</td>
<td></td>
</tr>
<tr>
<td>NTRC48AA</td>
<td>FIJI Fiber Ring Cable (2M (6 ft))</td>
<td></td>
</tr>
<tr>
<td>NTRC49AA</td>
<td>Clock - Clock Synch Cable</td>
<td></td>
</tr>
<tr>
<td>NTRD25AA</td>
<td>AC Pedestal Assembly</td>
<td></td>
</tr>
<tr>
<td>NTRE39AA</td>
<td>Optical Cable Management Card (OCMC)</td>
<td></td>
</tr>
<tr>
<td>NTRE40AA</td>
<td>Dual Ethernet Adapter (RJ45) for I/O Panel</td>
<td>2</td>
</tr>
<tr>
<td>P0745716</td>
<td>Rear I/O Panel</td>
<td>2</td>
</tr>
<tr>
<td>P0906308</td>
<td>cPCI Card Slot Filler Panel</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 94
DC power requirements for Option 61/61C upgrades

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT6D41CA</td>
<td>Core/Network Power Supply DC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N97BA</td>
<td>cPCI Upgrade Kit DC (Misc. Card Cage Components)</td>
<td>2</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Quantity per system</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT8D29BA</td>
<td>Core/Network Power Supply AC</td>
<td>2</td>
</tr>
<tr>
<td>NT4N97AA</td>
<td>cPCI Upgrade Kit AC (Misc. Card Cage Components)</td>
<td>2</td>
</tr>
</tbody>
</table>
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)
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.
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)
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

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

*Total cable length between the J3 faceplate connectors:

- 0–4.3 m (0–14 ft)
- 4.6–6.1 m (15–20 ft)
- 6.4–10.1 m (21–33 ft)
- 10.4–15.2 m (34–50 ft)

* 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. Set the switches on both cards to the same settings.

** Set to ON for Clock Controller 0. Set to OFF for Clock Controller 1.
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 (FIJI) 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 FIJIs 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** Set or reset auto-recovery operation for ring
   - **ON/OFF**

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.
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.
   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.

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

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.
Figure 135
3PE Termination Panel connections

Network Group 1, shelf 0

Termination Panel Core/Net 0

NT8D76xx cable

NT8D76xx cable
### Table 98
Termination Panel to 3PE card connectors

<table>
<thead>
<tr>
<th>Group Number</th>
<th>Termination Panel connector</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>9-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>4</td>
<td>11-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>5</td>
<td>11-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>6</td>
<td>12-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>7</td>
<td>12-1, J4</td>
<td>J4</td>
</tr>
</tbody>
</table>

**Note:** Group 0 cables connect from the cCI/NI 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.
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>

*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.
   
   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.
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.

Press the manual RESET button on the CP PII card faceplate.

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 competed!

At the terminal, press <cr> to start the software installation.

When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.

- Continue with keycode validation
- Confirm that the keycode matches the CD-ROM release

When the screen displays the Install Menu, select the following options in sequence when prompted to do so:

- Install software, database, and CP-BOOT ROM
- Verify that the CD-ROM is now in drive
The Installation Status Summary screen appears that lists the options to be installed.

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,
10 Continue with upgrade when prompted. Select a database to install.

- Enter carriage return to continue.
- Continue with CP BOOTROM installation
- Install the CP BOOTROM from hard disk
- Start installation
- Continue with ROM upgrade

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

- Continue
- Quit (remove any diskettes and the CD-ROM from the MMDU drives)
- Confirm quit
- 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 addresses 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:

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

3. Enable the new Ethernet interface:

   **LD 137**  To load the program.
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
   REQ PRT
   TYPE PSWV.
   ISSP Print System and Patch Information.
   SLT Print System Limits.
   TID Print the Tape ID.
   **** Exit program.

**dis elnk**
To *disable* the old IP interface values.

**enl elnk**
To *enable* the new IP interface values.
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:
   - LD 135 To load the program.
   - STAT CNI Get the status of all CNI cards.
   - DIS CNI x s p Disable CNI cards where:
     - x = extender number (0 or 1)
     - s = card slot (9-12)
     - p = port (0 or 1)
   - STAT CNI Confirm that CNI cards are disabled.
   - **** Exit the program.

2. Use LD 17 to remove the extra CNI cards.
   - LD 17 To load the program.
   - CHG CFN CEQU YES Core/Net 0 extended to 3PE.
   - CNI s p xg Out the CNI card, where:
     - s = card slot (9-12)
     - p = port (0 or 1)
     - xg = out network group (x0-x4)
   - EXTI 3PE Core/Net 1 extended to 3PE
   - CNI s p xg Out the CNI card, where:
     - s = card slot (9-12)
     - p = port (0 or 1)
     - xg = out network group (x0 - x4)
   - **** 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:
Option 61/61C upgrade to Option 81C CP PII with FNF

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.
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.

In Core 0, disable any ISDN PRI cards.

In Core 0, disable the CNI card (phantom group 5):

```
LD 135
DIS CNI 0 8 0
```

To load the program.

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

Table 100
Clock Controller 0 switch settings

<table>
<thead>
<tr>
<th>SW1</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

*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.
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

Note: With AC-power, the module power connectors plug into J1 and J2 on the MPDU. (With DC-power, they connect to each other and hang loose.)
**Figure 140**
AC power connectors on the Core module backplane

*Note:* AC-powered system shown. With DC-power, module power connectors connect to each other.
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.

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).

Upgrade Core 0 hardware

TCheck 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):

• NT4N65A 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

Display panel POWER
(NT4N94AA cable)

Floppy, CD ROM
and Hard Drive POWER
(NT4N95AA cable)

Floppy DATA
(NT4N93AA cable)

CD ROM and
Hard Drive DATA
(NT4N92AA cable)

Shelf power
(NT4N4405 cable)

Metal divider

System Utility
Transition card

Four cCNI
Transition cards
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 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.
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.
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)

   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.

---

**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”.

---

Upgraded Systems Installation
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.
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

<table>
<thead>
<tr>
<th>Switch Settings</th>
<th>D20 switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
<td>1</td>
</tr>
<tr>
<td>CP PII Core/Net modules only</td>
<td></td>
</tr>
<tr>
<td>Core/Net 0 (Shelf 0)</td>
<td>Group 0</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
</tr>
<tr>
<td></td>
<td>Group 4</td>
</tr>
<tr>
<td></td>
<td>Group 5</td>
</tr>
<tr>
<td></td>
<td>Group 6</td>
</tr>
<tr>
<td></td>
<td>Group 7</td>
</tr>
<tr>
<td>Core/Net 1 (Shelf 1)</td>
<td>Group 0</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
</tr>
<tr>
<td></td>
<td>Group 4</td>
</tr>
<tr>
<td></td>
<td>Group 5</td>
</tr>
<tr>
<td></td>
<td>Group 6</td>
</tr>
<tr>
<td></td>
<td>Group 7</td>
</tr>
</tbody>
</table>
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

Systems with a LAN hub:
1. Connect LAN 1 to J31
2. Connect J31 to LAN hub

Systems without a LAN:
Connect LAN 1 faceplate to LAN 1 faceplate

Customer supplied Ethernet cables

Nortel supplied NTRC17AA crossover Ethernet cable
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
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

Notch for
Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
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<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
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<tr>
<td>5/0</td>
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<tr>
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<td>P2</td>
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<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>

*Note:* Groups 2 through 7 are shown for reference only.
Connect inter-module cables
Connect D and E cables

Connect D and E cables as shown in Figure 153 on page 736.
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 competed!

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.

Continue with Upgrade

Pre-Release 3 language groups

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**

- **REQ** PRT
- **TYPE** PSWV.
- **ISSP** Print System and Patch Information.
- **SLT** Print System Limits.
- **TID** Print the Tape ID.
- ******** 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.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Loss of Data</strong></td>
</tr>
<tr>
<td>If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.</td>
</tr>
</tbody>
</table>

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 cs Get status of eCNI cards (core, slot).
   TEST CNI cs Test eCNI (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.
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 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 to 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 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.

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.
Database transfer for Option 21E, 51, 61, 71, STE, NT, and XT

Contents

The following are the topics in this section:

- Using the Database Transfer Utility ........................................... 749
- Using the direct cabling method .................................................. 751

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.

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.

---

**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.
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.
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

![2-pin jumper location on MDU card](553-7801)

Figure 156
Cabling the MDU to the IODU/C card

![Cabling the MDU to the IODU/C card](553-7802)
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

Contents

The following are the topics in this section:

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  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.

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.

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.
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
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.
Upgrade to an NT5D10 or NT5D03 CP card

Contents

The following are the topics in this section:

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   Performing a data dump .................................. 767
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Upgrading an Option 51C with IODU/C to a CP card .......... 795
   Performing a data dump .................................. 795
   Installing the new CP card and Release 25 software ....... 796
   Completing the upgrade ................................... 799
Reference list

The following are the references in this section:

- *Capacity Engineering* (553-3001-149)

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.

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.
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.
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.

Set the MAINT/NORM switch on the CP card in Core 1 to NORM.

Synchronize the disk drives:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 137</td>
<td>to load the overlay</td>
</tr>
<tr>
<td>STAT</td>
<td>to get the status of both CMDUs, IOPs and redundancy</td>
</tr>
<tr>
<td>SYNC</td>
<td>to synchronize the disk drives</td>
</tr>
<tr>
<td>****</td>
<td>to exit the program</td>
</tr>
</tbody>
</table>
Completing the upgrade

To complete the upgrade, synchronize the disk drives and verify CPU and CNI status.

1. Verify CPU redundancy and CNI function:
   - **LD 135** to load the overlay
   - **STAT CPU** to check the status of the CPU
   - **STAT CNI** to verify function of the CNIs
   - **TEST CPU** to test the CPU
   - **SCPU** switch CPUs
   - **STAT CPU** to check the status of the CPU
   - **STAT CNI** to verify function of the CNIs
   - **TEST CPU** to test the CPU
   - **SCPU** switch to CPUs
   - **** to exit the program

2. Insert the Release 25 software B1 diskette into both CMDUs or IOP/CMDUs.

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

4. When “EDD000” appears on the terminal, enter
   - **EDD** to begin the data dump

   **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.

**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, reseat 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
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)
- `<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

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)

Remove the disk from the IOP/CMDU.

From the main menu, select the following options to quit and reload the system:

- `<q>` to quit
- `<y>` to confirm quit

Remove any diskettes from the floppy drive, and type

- `<a>` to reboot the system

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.

<table>
<thead>
<tr>
<th>LD 135</th>
<th>Test the CP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST CPU</td>
<td></td>
</tr>
<tr>
<td>SCPU</td>
<td>Switch the CPs.</td>
</tr>
<tr>
<td>CDSP</td>
<td>Clear display.</td>
</tr>
<tr>
<td>TEST CPU</td>
<td>Test the CP.</td>
</tr>
<tr>
<td>SCPU</td>
<td>Switch the CPs.</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>LD 137</th>
<th>Get the status of both CMDUs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT CMDU</td>
<td></td>
</tr>
<tr>
<td>SYNC</td>
<td>Synchronize disks.</td>
</tr>
</tbody>
</table>

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

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
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

**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.
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)

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

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

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:

<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.

<table>
<thead>
<tr>
<th>Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)</th>
</tr>
</thead>
</table>

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  

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 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:
   - **LD 137** to load the overlay
   - **STAT** to get the status of both CMDUs, IOPs and redundancy
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 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.

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
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)

MA 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.
<tt> - To Tools menu.
<q> - Quit.

Enter choice > u
```
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.
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
```

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

Backup the customer database to 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.
System monitor upgrade installation

Contents

The following are the topics in this section:

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System monitoring in NT/XT systems and QCA60-type cabinets ......................................................... 804
System monitoring in ST and RT systems ..................................................... 810
  Configuration 1—ST system with QCA136 and PE Module .......................................................... 816
  Configuration 2—ST system with QCA136 and CE/PE Module ..................................................... 820
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  Configuration 5—ST system with QCA136, QCA137, and CE/PE Module ............................................. 836
  Configuration 6—RT system with QCA147 and PE Module .............................................................. 844
  Configuration 7—RT system with QCA147 and CE/PE Module ....................................................... 849
  Configuration 8—RT system with QCA147, QCA137, and PE Module ................................................... 854
  Configuration 9—RT system with QCA147, QCA137, and CE/PE Module ............................................. 859
  Configuration 10—RT system with two QCA137s and CE/PE Module .................................................. 866
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  Configuration 12—RT system with QCA147, two QCA137s, and CE/PE Module .................................... 877
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)

<table>
<thead>
<tr>
<th>SW1</th>
<th>Setting</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ON</td>
<td>Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor.</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>Is not co-located with an existing system.</td>
</tr>
<tr>
<td>2</td>
<td>ON</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>Set to OFF on all slave system monitors.</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>Switch 1 is set to ON and modules contain only peripheral equipment (PE).</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).</td>
</tr>
<tr>
<td>3</td>
<td>ON</td>
<td>The entire system is DC powered.</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>The modules are AC powered.</td>
</tr>
<tr>
<td>4</td>
<td>ON</td>
<td>The Power Fail Transfer Unit (PFTU) activates when overheating occurs.</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>The PFTU will not be activated if overheating occurs.</td>
</tr>
<tr>
<td>SW1</td>
<td>Setting</td>
<td>Function</td>
</tr>
<tr>
<td>-----</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>5</td>
<td>ON</td>
<td>Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system).</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system).</td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td>Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).</td>
</tr>
<tr>
<td>6</td>
<td>ON</td>
<td>Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system).</td>
</tr>
</tbody>
</table>
Table 104
SW1 system monitor switch settings for system upgrades (Part 3 of 3)

<table>
<thead>
<tr>
<th>SW1</th>
<th>Setting</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system).</td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td>Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).</td>
<td></td>
</tr>
<tr>
<td>7 ON</td>
<td>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).</td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td>Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor, and the CPU is in a module.</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system), and the modules contain only PE.</td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td>The PE and CE are located in modules only. There are no existing cabinets associated with this system.</td>
<td></td>
</tr>
<tr>
<td>8 OFF</td>
<td>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).</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor, and the CPU is in a module.</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system), and the modules contain only PE.</td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td>The PE and CE are located in modules only. There are no existing cabinets associated with this system.</td>
<td></td>
</tr>
</tbody>
</table>

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

- Existing cabinets
- P10 cables from connector J10
- MDF
- NT8D46BH cable from connector J3
- Columns
- QPC84 Power Monitor in CE cabinet
- SDI port
- CE-ALARM V/BL
- SYSTIN OR/W
- NT8D46AL [2.1 m (7 ft)] or NT8D46AP [7.6 m (25 ft)] cable to J5 in additional columns
- Master system monitor in PE column
- I/O panel connector on NT8D46AD cable from connector P1 in pedestal
- J5
- Slave system monitor in PE column
- NT8D46AL [2.1 m (7 ft)] or NT8D46AP [7.6 m (25 ft)] cable to J5 in additional columns
- J6
- To P10 cables from additional cabinets

553-3207
Figure 159
Common equipment in existing cabinet equipped with a QPC173 Power Monitor
Figure 160
NT8D46AD cable connections

Rear view of module containing master system monitor

NT8D46AD cable

NT8D46AA cable

to SDI connector on I/O panel

to J1

connector P1 in pedestal
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)

<table>
<thead>
<tr>
<th>Cabinet type</th>
<th>CPU location</th>
<th>Hardware required (one of each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QCA136 and Meridian 1 Module(s)</td>
<td>QCA136</td>
<td>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)</td>
</tr>
<tr>
<td></td>
<td>Meridian 1 Module</td>
<td>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)</td>
</tr>
<tr>
<td>QCA137 and Meridian 1 Module(s)</td>
<td>Meridian 1 Module</td>
<td>NT8D46AX System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)</td>
</tr>
</tbody>
</table>
Table 105
Hardware requirements (Part 2 of 4)

<table>
<thead>
<tr>
<th>Cabinet type</th>
<th>CPU location</th>
<th>Hardware required (one of each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QCA136, QCA137, and Meridian 1 Module(s)</td>
<td>QCA136</td>
<td>NT8D46BC System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BE System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BM System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QCAD310 Ground Cable (Note 5)</td>
</tr>
<tr>
<td>Meridian 1 Module</td>
<td></td>
<td>NT8D46BB System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BC System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BD System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BE System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QCAD310 Ground Cable (Note 5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT6D81AA Power Regulator (Note 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D22AC System Monitor (Note 4)</td>
</tr>
<tr>
<td>QCA147 and Meridian 1 Module(s)</td>
<td>QCA147</td>
<td>NT8D46AY System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td>Meridian 1 Module</td>
<td></td>
<td>NT8D46AX System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BG System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D22AC System Monitor (Note 4)</td>
</tr>
</tbody>
</table>
### Table 105
**Hardware requirements (Part 3 of 4)**

<table>
<thead>
<tr>
<th>Cabinet type</th>
<th>CPU location</th>
<th>Hardware required (one of each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QCA147, QCA137, and Meridian 1 Module(s)</td>
<td>QCA147</td>
<td>NT8D46CH System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td>Meridian 1</td>
<td>QCAD310 Ground Cable (Note 5)</td>
</tr>
<tr>
<td></td>
<td>Module</td>
<td></td>
</tr>
<tr>
<td>Two QCA137s and Meridian 1 Module(s)</td>
<td>Meridian 1</td>
<td>NT8D46BC System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td>Module</td>
<td>NT8D46BD System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BE System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BJ System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QCAD310 Ground Cable (Note 5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D22AC System Monitor (Note 4)</td>
</tr>
<tr>
<td>QCA147, two QCA137s, and Meridian 1 Module(s)</td>
<td>QCA147</td>
<td>NT8D46BC System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BE System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BL System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QCAD310 Ground Cable (Note 5)</td>
</tr>
<tr>
<td></td>
<td>Meridian 1</td>
<td>NT8D46BJ System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td>Module</td>
<td>NT8D46BC System Monitor Cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NT8D46BD System Monitor Cable</td>
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<td></td>
<td>NT8D46BE System Monitor Cable</td>
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<td></td>
<td>NT8D46BF System Monitor Cable (Note 1)</td>
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<td></td>
<td>NT8D46BH System Monitor Cable (Note 1)</td>
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<td>QCAD310 Ground Cable (Note 5)</td>
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<td>NT8D22AC System Monitor (Note 4)</td>
</tr>
</tbody>
</table>
Table 105
Hardware requirements (Part 4 of 4)

<table>
<thead>
<tr>
<th>Cabinet type</th>
<th>CPU location</th>
<th>Hardware required (one of each)</th>
</tr>
</thead>
</table>

**Note 1:** The NT8D46BF and NT8D46BH cables are only required when extending the alarm connections to the main distribution frame (MDF).

**Note 2:** ST systems consisting of a single QCA136 cabinet require the installation of a QCAD309 Alarm Adapter cable and one P0678258 Filter Connector.

**Note 3:** 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.

**Note 4:** The NT8D22AC System Monitor is required when a QCA136, QCA137, or QCA147 cabinet is retained as part of the upgraded system.

**Note 5:** The QCAD310 Ground Cable must be installed in ST or RT systems using one or more QCA137 cabinets.
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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.

![Diagram](image)

Figure 163
Connecting system monitor—Configuration 2

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.
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

QBL15 distribution box

- Secure DCON connectors
- Label DCON leads
- Insert contact in connector
- Install A0290890 connector contact
- Not used
- Brown wire
- Orange wire
- To DCON on rectifiers
- A0290886 connector (female) (part of NT8D46AT cable)
- A0290885 connector (male)
- NT8D46AT cable to J4 on system monitor
- GND POS (+) positive bus
- W1
- DCON1
- DCON2
- Pin 1
- Pin 2
- Pin 3
- Pin 4
- TRIP 6 ALARM 5
- TB1
- TB2
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.

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.

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.

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.

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

Reinstall the EMI back panel.

Reinstall the QCA136 rear panels.

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
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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.

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.
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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.
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.

Unplug connector P6 of the existing harness from connector J6 of the QCAD309 Alarm Cable.

Unplug connector P6 of the QCAD309 Alarm Cable from connector J6 of the QUAA3 Power Unit.

Unplug connector P4 of the existing harness from connector J4 of the QCAD309 Alarm Cable.

Unplug connector P4 of the QCAD309 Alarm Cable from connector J4 of the QUAA3 Power Unit.
Figure 168
NT8D46AT cable field wiring connections

QBL15 distribution box

Secure DCON connectors

Label DCON leads

To DCON on rectifiers

Install A0290890 connector contact

Insert contact in connector

A0290886 connector (female)
(part of NT8D46AT cable)

A0290885 connector (male)

NT8D46AT cable to J4 on system monitor

Not used

Brown wire

Orange wire

DCON1

DCON2

DCON3

DCON4

Pin 1

Pin 2

Pin 3

Pin 4

+SENSE

-SENSE

+SENSE

-SENSE

+SENSE

-SENSE

GND POS (+) positive bus

W1

1 2 3 4 5 6

1 2 3 4 5 6 7 8 9 10 11

TB1

TB2

TRIP 6

ALARM 5

1 2 3 4
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.
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.

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 104 on page 802.

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

Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.

Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.

Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.

Terminate the other end of the NT8D46BH cable.

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.

Remove the QCA147 rear panels.

Remove the QCA147 EMI back panel.

Unplug connector P2 of the existing harness from connector J2 of the QUAA5 Power Unit.

Install connector J2 of the NT8D46BG cable into connector P2 of the existing harness.

Install connector P2 of the NT8D46BG cable into connector J2 of the QUAA5 Power Unit.

Unplug connector P3 of the existing harness from connector J3 of the QUAA5 Power Unit.

Install connector J3 of the NT8D46BG cable into connector P3 of the existing harness.

Install connector P3 of the NT8D46BG cable into connector J3 of the QUAA5 Power Unit.

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.
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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.
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

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.
**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.

*NT8D46BF and NT8D46BH are used only if connections to the MDF are required.*
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:
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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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
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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.
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

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

* NT8D46BF and NT8D46BH are used only if connections to the MDF are required.
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.
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

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.
Ground package installation

Contents

The following are the topics in this section:

Installing Ground Package P0677580 ............................................. 885
Installing Ground Package P0677587 ............................................. 888
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.
Ground Package P0677580

Figure 176
Ground Package P0677580

P0677580 Ground Package - Top view

4.7µf Capacitor

C1

E1

E2

TB1

3 Position Terminal Block

Frame Mounting Rails

Ground Package P0677580 installed on frame mounting rails inside cabinet.

Bottom holes in vertical shelf mounting rails

Two (2) 10AWG wires from positive lugs (+) of TBC
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

- Positive 48 V wire
- Conduit Fitting
- Hex Nut, Conduit
- Ferrite Ring Assembly
- Mini Ground Bus Assembly
- Frame Mounting Rail (reference)
- Screw self tap
- C1
- 4.7µf Capacitor
- I/O Panel
- 553-5881
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 µF 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.
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

Contents

The following are the topics in this section:

Reference list .......................................................... 893
Prepare for installation .................................................. 894
  Verify removal of 3PE cards from Option 81 Core shelves ........ 894
  Add the new Network modules ..................................... 895
  Add CNI cards if necessary ......................................... 895
  Pre-route CNI to 3PE cables ....................................... 896
  Pre-route the FIJI cables ........................................... 899
Install cards in the Network modules ................................. 906
  Install and enable the 3PE cards ................................. 906
  Install and enable the Peripheral Signaling (Per Sig) cards ...... 908
  Disable and insert the FIJI cards ................................. 908
  Disable and insert the Conf/TDS cards, if necessary ............. 908
Enable the CNI cards ................................................ 908
Enable the FIJI cards ................................................ 909
Connect the new groups to the Fiber Network ................. 911

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

<table>
<thead>
<tr>
<th>Group</th>
<th>CNI connection</th>
<th>3PE faceplate connection</th>
<th>Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>8A (Core backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>5</td>
<td>8C (Core backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>0</td>
<td>8D (Core backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>0</td>
<td>8F (Core backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>1</td>
<td>9A (Core backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>1</td>
<td>9C (Core backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>2</td>
<td>9D (Core backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>2</td>
<td>9F (Core backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>3</td>
<td>10A (Core backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>3</td>
<td>10C (Core backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>4</td>
<td>10D (Core backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>4</td>
<td>10F (Core backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>6</td>
<td>9 J1 (CNI-3 faceplate)</td>
<td>J3</td>
<td>NT9D89</td>
</tr>
<tr>
<td>6</td>
<td>9 J2 (CNI-3 faceplate)</td>
<td>J4</td>
<td>NT9D89</td>
</tr>
<tr>
<td>7</td>
<td>10 J1 (CNI-3 faceplate)</td>
<td>J3</td>
<td>NT9D89</td>
</tr>
<tr>
<td>7</td>
<td>10 J2 (CNI-3 faceplate)</td>
<td>J4</td>
<td>NT9D89</td>
</tr>
</tbody>
</table>

Note: The default assignments in this table can be reconfigured with Overlay 17 (LD 17) if necessary.
<table>
<thead>
<tr>
<th>Group</th>
<th>CNI slot connections</th>
<th>3PE faceplate connection</th>
<th>Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12D (Core/Net backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>1</td>
<td>12F (Core/Net backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>2</td>
<td>12 J1 (CNI-3 faceplate)</td>
<td>J3</td>
<td>NT9D89</td>
</tr>
<tr>
<td>2</td>
<td>12 J2 (CNI-3 faceplate)</td>
<td>J4</td>
<td>NT9D89</td>
</tr>
<tr>
<td>3</td>
<td>13A (Core/Net backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>3</td>
<td>13C (Core/Net backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>4</td>
<td>13D (Core/Net backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>4</td>
<td>13F (Core/Net backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>5</td>
<td>13 J1 (CNI-3 faceplate)</td>
<td>J3</td>
<td>NT9D89</td>
</tr>
<tr>
<td>5</td>
<td>13 J2 (CNI-3 faceplate)</td>
<td>J4</td>
<td>NT9D89</td>
</tr>
<tr>
<td>6</td>
<td>14A (Core/Net backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>6</td>
<td>14C (Core/Net backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
<tr>
<td>7</td>
<td>14D (Core/Net backplane)</td>
<td>J3</td>
<td>NTND14</td>
</tr>
<tr>
<td>7</td>
<td>14F (Core/Net backplane)</td>
<td>J4</td>
<td>NTND14</td>
</tr>
</tbody>
</table>

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)

---

Upgraded Systems Installation
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):

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.

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.
Figure 180
Shelf 0 ascending fiber optic Ring (example)

NTRC48xx fiber optic cable

553-9553
### Table 108
FIJI Ring 0 connections

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
### Table 109
FIJI Ring 1 connections

Groups 0 - X are cabled in descending order

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Jumper Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Jumper RN27 at E35 to &quot;A&quot;.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switch Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>D20 switch position:</td>
</tr>
<tr>
<td>81, 81C (Note)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shelf</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>D20 switch position:</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 110
3PE card settings

<table>
<thead>
<tr>
<th>Jumper Settings</th>
<th>0 (3PE cards connected to the a CNI in Core or Core/Net 0)</th>
<th>1 (3PE cards connected to the a CNI in Core or Core/Net 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Jumper RN27 at E35 to “A”.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switch Settings</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>D20 switch position:</td>
<td>0</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

*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 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.

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.
Add a Network Group to Option 81C CP PII with FNF

Contents

The following are the topics in this section:

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Pre-route the FIJI cables ................................................. 916
   Route FIJI to FIJI cables ........................................... 916
Interconnect the network modules .................................. 922
Connect the network modules to the Core/Net module ...... 924
   Add cCNI cards if necessary ....................................... 924
   Connect the 3PE to cCNI cables .................................. 925
Install cards in the network modules ............................. 928
   Install and enable the 3PE cards ............................... 928
   Install and enable the Peripheral Signaling (Per Sig) 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.

![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):

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.

**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.
Add a Network Group to Option 81C CP PII with FNF

Figure 184
Shelf 0 *ascending* fiber optic Ring (example)

![Diagram of fiber optic Ring example]

- Group 0, shelf 0
- Group 0, shelf 1
- Group 1, shelf 0
- Group 1, shelf 1
- Group 2, shelf 0
- Group 2, shelf 1
- Group 3, shelf 0
- Group 3, shelf 1
- Group 4, shelf 0
- Group 4, shelf 1

IGM (not used with Fiber Network)

IPE

NTRC48xx fiber optic cable

553-9553
Table 111
FIJI Ring 0 connections

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>6/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/0</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/0</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>7/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>7/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
</tbody>
</table>

IGM (not used with Fiber Network)
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.

<table>
<thead>
<tr>
<th>Group/shelf</th>
<th>NTRC48 fiber cable connector</th>
<th>FIJI card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>6/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>5/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>5/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>4/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>4/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>3/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>3/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>2/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>2/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>1/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
<tr>
<td>1/1</td>
<td>P1</td>
<td>Tx - J1</td>
</tr>
<tr>
<td>0/1</td>
<td>P2</td>
<td>Rx - J2</td>
</tr>
</tbody>
</table>

Table 112
FIJI Ring 1 connections

Groups 0 - X are cabled in descending order
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 network modules to the Core/Net module

Add cCNI cards if necessary

If additional cCNI cards are required, see Figure 187 on page 924, add to each Core Module as required.

Figure 187
Core/Net card cage
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

<table>
<thead>
<tr>
<th>Group Number</th>
<th>Termination Panel connector</th>
<th>3PE card connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>0</td>
<td>9-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>1</td>
<td>9-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>2</td>
<td>10-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>3</td>
<td>10-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>4</td>
<td>10-1, J3 connects from</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>11-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>5</td>
<td>11-0, J4</td>
<td>J4</td>
</tr>
<tr>
<td>6</td>
<td>11-1, J3</td>
<td>J3</td>
</tr>
<tr>
<td>6</td>
<td>11-1, J4</td>
<td>J4</td>
</tr>
<tr>
<td>7</td>
<td>12-0, J3</td>
<td>J3</td>
</tr>
<tr>
<td>7</td>
<td>12-0, J4</td>
<td>J4</td>
</tr>
</tbody>
</table>

**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
Notch for Slot 9-0, J3 and J4: direct connections to the Core/Net backplane (factory installed)
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

#### Jumper Settings

Set Jumper RN27 at E35 to “A”.

#### Switch Settings

<table>
<thead>
<tr>
<th>Shelf</th>
<th>Group</th>
<th>D20 switch position:</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td></td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td></td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>on</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td></td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td></td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td></td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>LD 17</th>
<th>To load the program.</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQ</td>
<td>CHG</td>
</tr>
<tr>
<td>TYPE</td>
<td>CEQU</td>
</tr>
<tr>
<td>EXT0</td>
<td>3PE</td>
</tr>
</tbody>
</table>
Add a Network Group to Option 81C CP PII with FNF

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**

<table>
<thead>
<tr>
<th>cCNI card slot</th>
<th>cCNI card port</th>
<th>3PE Termination Panel label</th>
<th>Connected to Network group</th>
</tr>
</thead>
<tbody>
<tr>
<td>c9</td>
<td>0</td>
<td>Port 9-0</td>
<td>0</td>
</tr>
<tr>
<td>c9</td>
<td>1</td>
<td>Port 9-1</td>
<td>1</td>
</tr>
<tr>
<td>c10</td>
<td>0</td>
<td>Port 10-0</td>
<td>2</td>
</tr>
<tr>
<td>c10</td>
<td>1</td>
<td>Port 10-1</td>
<td>3</td>
</tr>
<tr>
<td>c11</td>
<td>0</td>
<td>Port 11-0</td>
<td>4</td>
</tr>
<tr>
<td>c11</td>
<td>1</td>
<td>Port 11-1</td>
<td>5</td>
</tr>
<tr>
<td>c12</td>
<td>0</td>
<td>Port 12-0</td>
<td>6</td>
</tr>
<tr>
<td>c12</td>
<td>1</td>
<td>Port 12-1</td>
<td>7</td>
</tr>
</tbody>
</table>

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.
   CPU .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.
   **** To exit the program.

   Note: Make clock controller 1 the active clock.

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.
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.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 17</td>
<td>To load the program</td>
</tr>
<tr>
<td>REQ</td>
<td>CHG</td>
</tr>
<tr>
<td>TYPE</td>
<td>CEQU</td>
</tr>
<tr>
<td>XCT III</td>
<td>Loop number for NT8D17 Conference/TDS card.</td>
</tr>
<tr>
<td>&lt;cr&gt;</td>
<td>Continue to the last prompt.</td>
</tr>
<tr>
<td>****</td>
<td>To exit the program.</td>
</tr>
</tbody>
</table>

7 Enable Ring 0.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 39</td>
<td>To load the program</td>
</tr>
<tr>
<td>ENL RING 0</td>
<td>Enables all FIJI cards on side 0.</td>
</tr>
<tr>
<td>****</td>
<td>To exit the program.</td>
</tr>
</tbody>
</table>

8 Make clock 0 active.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 60</td>
<td>To load the program</td>
</tr>
<tr>
<td>SWCK</td>
<td>Switch system clock from active to standby.</td>
</tr>
<tr>
<td>****</td>
<td>To exit the program.</td>
</tr>
</tbody>
</table>

9 Put all FIJI cards in Ring1 to Manual Disable.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 39</td>
<td>To load the program</td>
</tr>
<tr>
<td>DIS RING 1</td>
<td>Disables all FIJI cards on side 1.</td>
</tr>
</tbody>
</table>
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

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

QSD39 Network Shelf with BTUs (front view)

QSD39 Network Shelf with Network Hybrids (front view)

553-7520
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.
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.

**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.
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 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 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.
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.
Terminal and modem connections

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).
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  
      Call Detail Recording (CDR) ports  
      Automatic Call Distribution (ACD) ports

   
   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

LED
Enable
Disable

SDI cable connector

SW3
SW2
SW5
SW4

Backplane connectors

SW6 SW7 SW8 SW9 SW10 SW11
Figure 196
Cabling diagram for the NT8D41 SDI Paddle Board

Note: To connect J2 to external equipment, cable as shown for J1.
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.
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

Note: The A0377992 switch box can be used in this configuration.
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

Note: The A0377992 switch box can be used in this configuration.
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&T\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.
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
Terminal and modem connections

**ATS7=60**  
**pause 1 second for carrier detection**
**ATQ1**

After you enter this last command (ATQ1), the modem no longer responds with “OK”. Enter the next command:
**AT&W**  
**store active profile**

The modem should respond to every command (except the last two commands) with “OK”. If you do not get this response, turn the modem off and on and try again.

7  Disconnect the power cord and serial cable.

8  Set the modem to dumb mode:
   a. Locate the option jumper. The jumper is located just to the left of the speaker (when viewed from the front of the modem).
   b. Place the jumper on the two pins closest to the speaker.

9  Replace the cover on the modem:
   a. Align the tabs, locks, and rear guide grooves.
   b. Press the cover into place until the locks and the tabs snap together.

10 Reconnect the power cord and any other cables that will be used.

**Connecting a modem to an SDI port**

Use the following procedure to connect an SDI port directly (no switch box) to a modem (see Figure 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.)
b. If you are using an UDS FastTalk modem, follow the instructions in this document. (See “Configuring an A0381391 UDS FastTalk modem” on page 962.)

c. If you are using a different type of modem, follow the manufacturer’s instructions to set the modem for 9600 baud, auto answer, dumb mode, command recognition OFF, command echo OFF.

4 At the local end, connect an NT8D95 cable to the SDI port on the I/O panel in the rear of the module and to the modem.

5 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.)

6 To communicate with a CPSI/COM2 port, switch the cable from the modem to the port as needed:
   a. For debugging or monitoring, connect the cable to the active CPU at J21 on the I/O panel in the rear of the Core/Network Module.
   b. For patch downloading, connect the cable to the inactive CPU at J21 on the I/O panel in the rear of the Core or Core/Network Module.

Connecting a modem to a switch box and CPSI and SDI ports

Use the following procedure to connect SDI and CPSI ports to a switch box and a modem (see Figure 203 on page 968 and Figure 204 on page 969):

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.)
   b. If you are using an UDS FastTalk modem, follow the instructions in this document. (See “Configuring an A0381391 UDS FastTalk modem” on page 962.)
c. If you are using a different modem, follow the manufacturer’s instructions to set the modem for 9600 baud, autoanswer, dumb mode, command recognition OFF, command echo OFF.

4 At the local end, connect NT8D95 cables to
   a. J21 on the I/O panel in the rear of the Core or Core/Network Modules
   b. the SDI port on the I/O panel in the rear of the Network module

5 At the local end, connect NT8D84 cables to
   a. the SDI Paddle Board at the Core/Network backplane to the I/O panel in the rear of the Core/Network Module.
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)

Note: The A0377992 switch box and A0381391 modem can be used in this configuration.
Figure 204
Modem to a switch box and SDI and CPSI ports (single-column systems)

- RJ11 jack
- Smart mode modem
- Modem cable (or NT8D46)
- RS-232 cable
- Remote terminal
- Public phone network
- SDI port I/O panel
- I/O panel J21
- NT8D95 cables
- Core/Net 1
- Core/Net 0
- Switch box
- NT8D95 cable
- Dumb mode modem
- Modem cable (or NT8D46)
Troubleshooting

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Reference list

The following are the references in this section:

• General Maintenance Information (553-3001-500)
• Fault Clearing (553-3001-510)
• 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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