Add a Network Group to Option 81C CP2-4 with FNF

Customer Service Report Number	N/A
NTP Number	553-3001-258
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Description

Update the chapter "Add a Network Group to Option 81C with FNF" to "Add a Network Group to Option 81C CP2-4 with FNF" and include Option 81C CNI group assignments on a system that originated as a non-FNF system prior to X11 Release 25.

Correction

Note: Figure, table, procedure, and page numbers (for example, Table 5, page 10) are subject to change in the next standard release of documentation.

Revision in Upgraded Systems Installation: Upgrade to Options 51C, 61C, 81C, 553-3001-258:

Add a Network Group to Option 81C CP2-4 with FNF

Contents

The following are the topics in this section:

Reference list

The following are the references in this section:

- *System Installation Procedures* (553-3001-210)

Preparing for installation

The procedures in this section are for systems that have already been upgraded to the Fiber Network. Follow the procedures in order.

Verifying 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. 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.

Procedure 1
Removing 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.

End of Procedure

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 1 and Table 2. These assignments can be modified in Overlay 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.

Procedure 2
Installing 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.

End of Procedure

Procedure 3
Adding a CNI group

1 Add CNI group(s).

LD 17	to load the program
CHG	change existing data block
CEQU	type of data block
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	*t*o switch Cores

4 Follow steps 1 and 2 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.

End of Procedure

Pre-routing 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.

Procedure 4
Pre-routing CNI to 3PE cables

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 Tables 1, Table 2 and Table 3. Do NOT attach the cables.

End of Procedure

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Table 1
Option 81 CNI group assignments

Group	CNI connection	3PE faceplate connection	Cable
5	8A (Core backplane)	J3	NTND14
5	8C (Core backplane)	J4	NTND14
0	8D (Core backplane)	J3	NTND14
0	8F (Core backplane)	J4	NTND14
1	9A (Core backplane)	J3	NTND14
1	9C (Core backplane)	J4	NTND14
2	9D (Core backplane)	J3	NTND14
2	9F (Core backplane)	J4	NTND14
3	10A (Core backplane)	J3	NTND14
3	10C (Core backplane)	J4	NTND14
4	10D (Core backplane)	J3	NTND14
4	10F (Core backplane)	J4	NTND14
6	9 J1 (CNI-3 faceplate)	J3	NT9D89
6	9 J2 (CNI-3 faceplate)	J4	NT9D89
7	10 J1 (CNI-3 faceplate)	J3	NT9D89
7	10 J2 (CNI-3 faceplate)	J4	NT9D89
Note: The default assignments in this table can be reconfigured with Overlay 17 (LD 17) if necessary.			

Table 2
Option 81C CNI group default assignments (introduced with X11 25.xx)

Group	CNI slot connections	3PE faceplate connection	Cable
1	12D (Core/Net backplane)	J3	NTND14
1	12F (Core/Net backplane)	J4	NTND14
2	12 J1 (CNI-3 faceplate)	J3	NT9D89
2	12 J2 (CNI-3 faceplate)	J4	NT9D89
3	13A (Core/Net backplane)	J3	NTND14
3	13C (Core/Net backplane)	J4	NTND14
4	13D (Core/Net backplane)	J3	NTND14
4	13F (Core/Net backplane)	J4	NTND14
5	13 J1 (CNI-3 faceplate)	J3	NT9D89
5	13 J2 (CNI-3 faceplate)	J4	NT9D89
6	14A (Core/Net backplane)	J3	NTND14
6	14C (Core/Net backplane)	J4	NTND14
7	14D (Core/Net backplane)	J3	NTND14
7	14F (Core/Net backplane)	J4	NTND14

Note 1: Group 0 is hard-wired through the Core/Net module backplane; no cable is required.

Note 2: The default assignments in this table can be reconfigured with Overlay 17 (LD 17) if necessary.

Note 3: Table shown is using CNI-3 hardware in slots 12 and 13.

Table 3
Option 81C CNI group assignments on a system that originated as a non-FNF system prior to X11 Release 25

Group	CNI slot connections	3PE faceplate connection	Cable
0	12A (Core/Net backplane)	J3	NTND14
0	12C (Core/Net backplane)	J4	NTND14
1	12D (Core/Net backplane)	J3	NTND14
1	12F (Core/Net backplane)	J4	NTND14
2	13A (Core/Net backplane)	J3	NTND14
2	13C (Core/Net backplane)	J4	NTND14
3	13D (Core/Net backplane)	J3	NTND14
3	13F (Core/Net backplane)	J4	NTND14
4	14A (Core/Net backplane)	J3	NTND14
4	14C (Core/Net backplane)	J4	NTND14
5	14D (Core/Net backplane)	J3	NTND14
5	14F (Core/Net backplane)	J4	NTND14
6	13G (CNI-3 faceplate)	J3	NT9D89
6	13H (CNI-3 faceplate)	J4	NT9D89
7	14G (CNI-3 faceplate)	J3	NT9D89
7	14H (CNI-3 faceplate)	J4	NT9D89

Note 1: The default assignments in this table can be reconfigured with Overlay 17 (LD17) if necessary.

Note 2: This table represents the typical assignments that would follow a system originating from a pre 25.10 system. The CNI cards in slot 13 and 14 have been replaced with CNI-3 cards allowing the expansion to a 8 group system

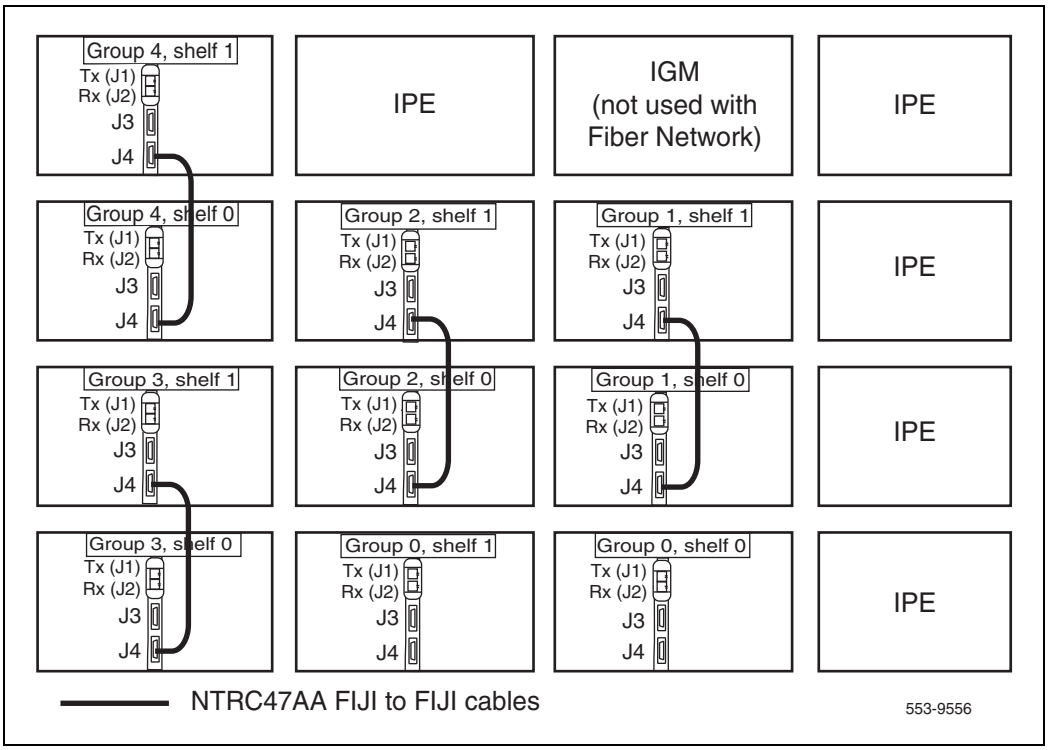
Pre-route the FIJI cables

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 1
Route FIJI to FIJI cables (Option 81C example)



Labelling and routing the shelf 0 fiber optic cables (ascending)

Route the NTRC48 cables between the FIJI cards in each new Network shelf 0 in *ascending* order. See Figure 2 on page 11.

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.

Procedure 5
Labelling and routing the shelf 0 fiber optic cables (ascending)

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 4.
3. Route a NTRC48 FIJI Fiber Ring cable of the appropriate length from the FIJI card in shelf 0 of the current highest Network Group, to the FIJI card in shelf 0 of the new Network Group.
4. If more than one Network Group is to be added, route a second NTRC48 cable of the appropriate length to shelf 0 of the second new group.
5. Continue to route NTRC48 cable of the appropriate length in ascending order between shelf 0 of each new Network Group.
6. To complete the Ring, route a final cable from the highest number group back to Group 0, shelf 0.

Figure 2
Shelf 0 *ascending* fiber optic Ring (example)

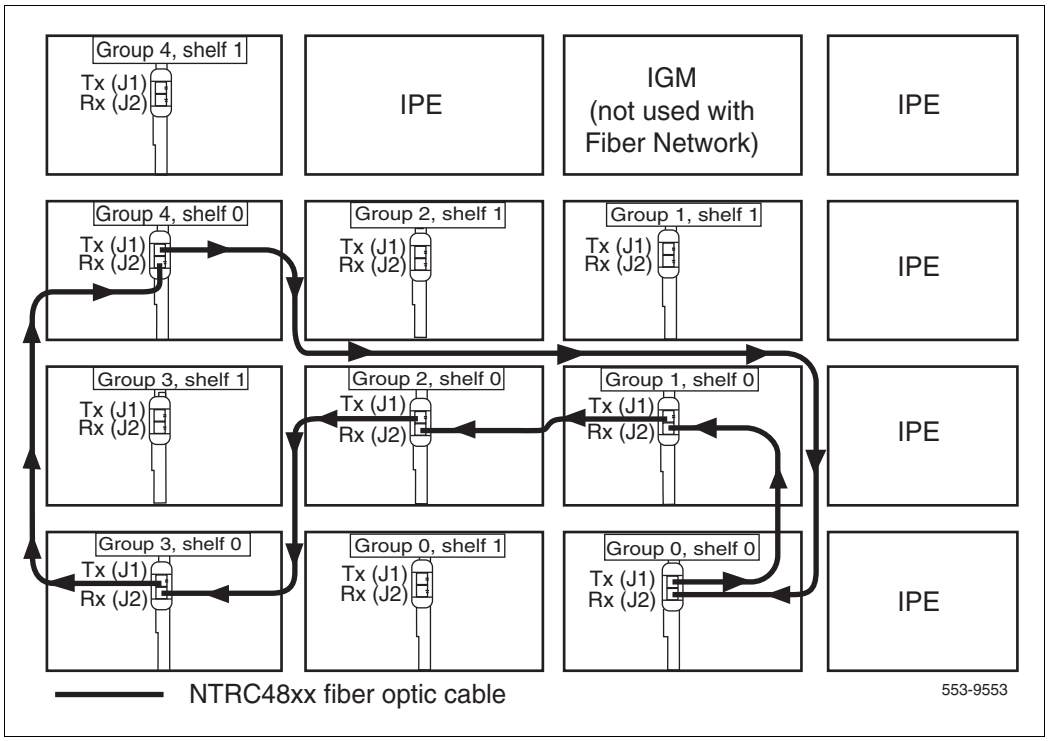


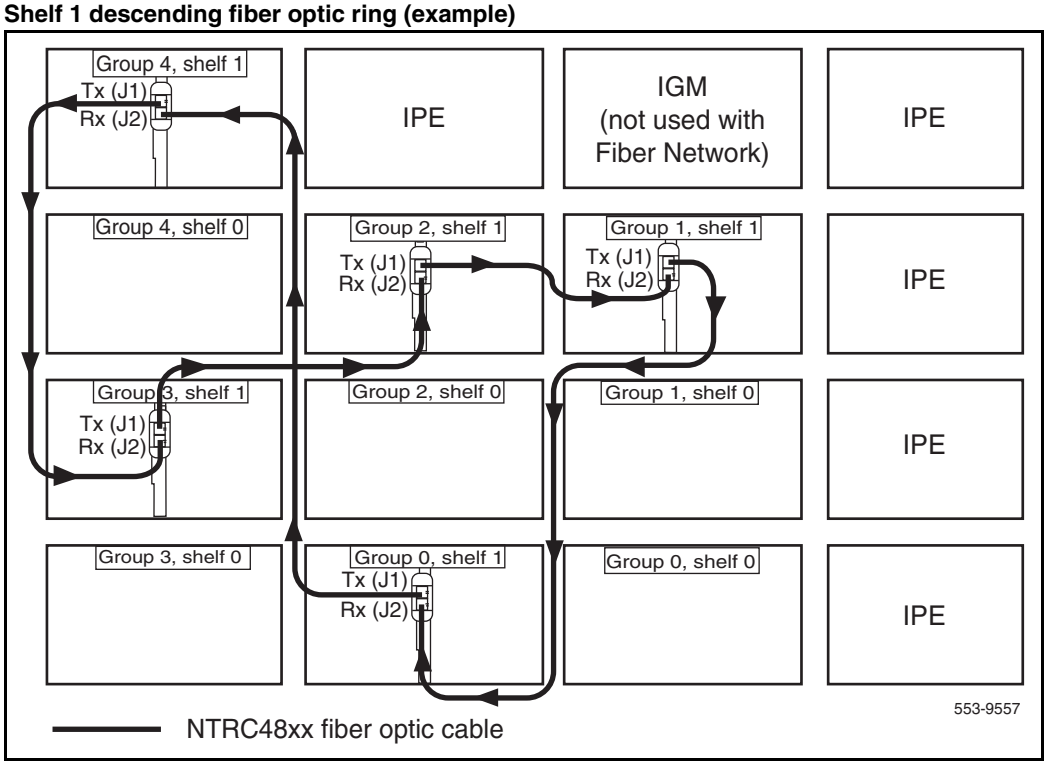
Table 4
FIJI Ring 0 connections

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

Label and route the shelf 1 fiber optic cables (descending)

Route the NTRC48 cables between the FIJI cards in each Network shelf 1 in *descending* order. See Figure 3.

Figure 3
Shelf 1 descending fiber optic ring (example)



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.

Procedure 6
Labelling and routing the shelf 1 fiber optic cables (descending)

1 Start with Group 0, shelf 1.

2 Label each cable on both sides with the appropriate connection information from Table 5.

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.

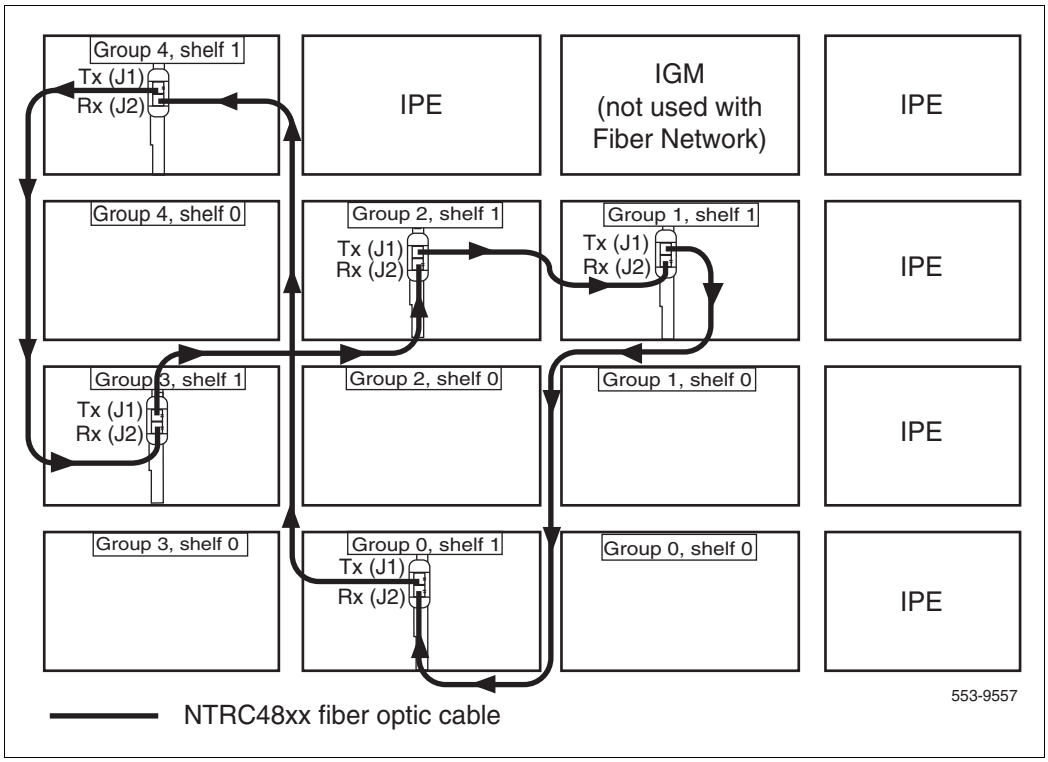
6 Route a final cable to the current highest Network Group, shelf 1.

End of Procedure

Table 5
FIJI Ring 1 connections

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

Figure 4
Shelf 1 descending fiber optic Ring (example)



Installing 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.

Procedure 7
Installing cards in network modules

1 Complete “Installing and enable the 3PE cards” on page 17.

2 Complete “Installing and enabling the Peripheral Signaling (Per Sig) cards” on page 19.

3 Complete “Disabling and inserting the FIJI cards” on page 19.

4 Complete “Disabling and inserting the Conf/TDS cards, if necessary” on page 19.

End of Procedure

Installing and enable the 3PE cards

Three steps are required to install the 3PE cards:

Procedure 8
Installing and enabling 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 6 on page 18 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.

End of Procedure

Table 6
3PE card settings

Jumper Settings									
Set Jumper RN27 at E35 to “A”.									
Switch Settings									
	D20 switch position:	**1**	**2**	**3**	**4**				
81, 81C (Note)		off	on	on	on				
Shelf	**Group**	D20 switch position:				**5**	**6**	**7**	**8**
0 (3PE cards connected to the a CNI in Core or Core/Net 0)	0					on	on	on	on
	1					on	on	off	on
	2					on	off	on	on
	3					on	off	off	on
	4					off	on	on	on
	5					off	on	off	on
	6					off	off	on	on
	7					off	off	off	on
1 (3PE cards connected to the a CNI in Core or Core/Net 1)	0					on	on	on	off
	1					on	on	off	off
	2					on	off	on	off
	3					on	off	off	off
	4					off	on	on	off
	5					off	on	off	off
	6					off	off	on	off
	7					off	off	off	off
Note: For option 81C systems, QPC441 vintage F or later must be used in all modules.									

Installing and enabling the Peripheral Signaling (Per Sig) cards

Procedure 9
Installing and enabling Peripheral Signaling 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.

End of Procedure

Disabling and inserting the FIJI cards

Procedure 10
Disabling and inserting 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.

End of Procedure

Disabling and inserting the Conf/TDS cards, if necessary

If Conf/TDS cards are used in the system, follow the procedures below.

Procedure 11
Disabling and inserting Conf/TDS cards

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.

End of Procedure

Enabling the CNI cards

If new CNI-3 cards are required, they must be installed before the cards are enabled. See "Add CNI cards if necessary" on page 3 to install the cards.

Note 1: 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.

Note 2: CNI cards can be enabled and connected on the *inactive* Core only.

Follow Procedure 12 to connect and activate the new CNI ports.

Procedure 12
Connecting and activating CNI ports

1 Verify that the cables are correctly routed, labeled, and connected to the 3PE cards. See "Pre-routing CNI to 3PE cables" on page 5.

2 Attach the cables to the *inactive* CNI cards.

See Table 1, "Option 81 CNI group assignments," on page 6, Table 2, "Option 81C CNI group default assignments (introduced with X11 25.xx)," on page 7 and Table 3, "Option 81C CNI group assignments on a system that originated as a non-FNF system prior to X11 Release 25," on page 8 for connection information.

CAUTION
Damage to Equipment
The backplane connector pins are easily bent. Install backplane cables with extreme caution to ensure that these pins are not damaged. Carefully line up the cable and press it into place. Never force a cable into the slot. If the cable gets stuck, remove it and try again. Damage to the backplane connector pins can make installation of CNI cables impossible.

3 Software enable the *new* CNI ports on the *inactive* Core.

LD 135 to load the program
ENL CNI *c s p* *(core slot port)* to enable the card and ports

4 Switch active Cores:

SCPU to switch Cores

5 Repeat steps 1 through 5 to attach the CNI to 3PE cables on the second Core side. Make sure that the second Core is now *inactive*.

End of Procedure

Enabling the FIJI cards

The FIJI cards are placed but not inserted and connected in slots 2 and 3 of each new Network shelf. Follow Procedure 13 to enable the card.

Procedure 13
Enabling the FIJI card

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 “Installing and enable the 3PE cards” on page 17.

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.

End of Procedure

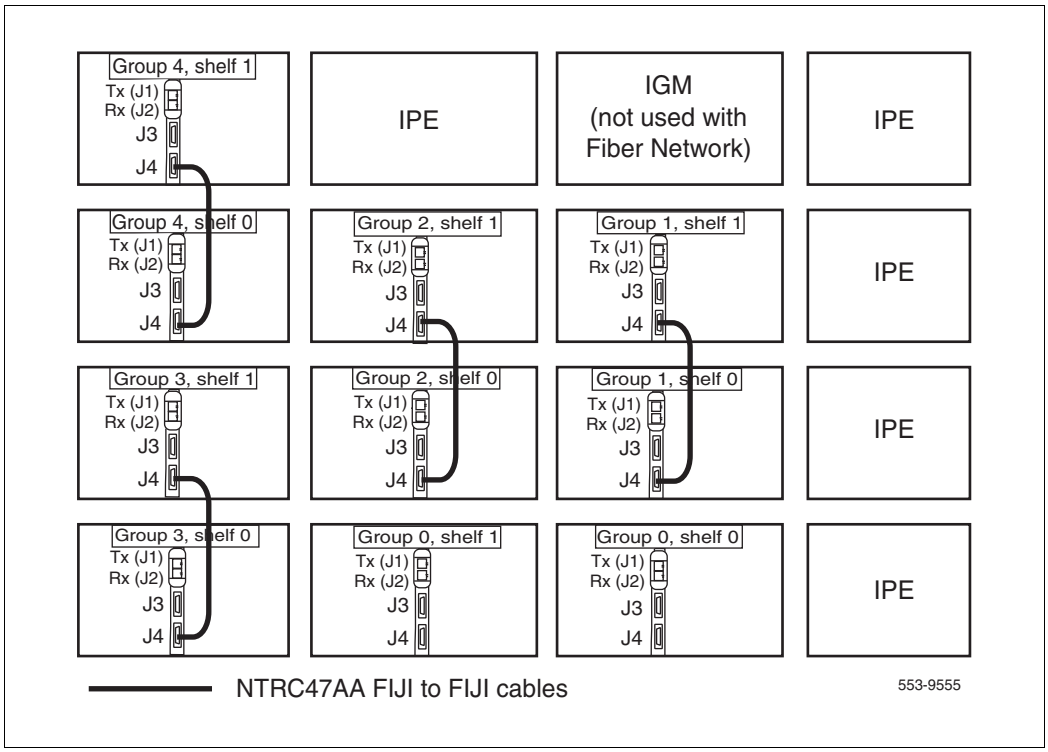
Connect the new groups to the Fiber Network

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.

Procedure 14
Connect new groups to the Fiber Network

1 In each new Network Group, connect a NTRC47AA cable from J4 to J4 of the FIJI cards. See Figure 5.

Figure 5
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 1is *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 9 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 1, “Option 81 CNI group assignments,” on page 6, Table 2, “Option 81C CNI group default assignments (introduced with X11 25.xx),” on page 7 or Table 3, “Option 81C CNI group assignments on a system that originated as a non-FNF system prior to X11 Release 25,” on page 8 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.

End of Procedure

Projected Inclusion in NTP

This correction will be included in the next standard release of Meridian 1 documentation.