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About this document

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the same software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in *Product Documentation Directory*, 297-8991-001.

References in this document

The following documents are referred to in this document:

- 1-Meg Modem Service Network Implementation Manual, 297-8063-200
- Alarm Clearing and Performance Monitoring Procedures
- Customer Data Schema Reference Manual, 297-9051-351
- Digital Recorded Announcement Machine DRAM and EDRAM Guide, 297-1001-527
- Product Documentation Direcotry, 297-8991-001
- Routine Maintenance Procedures
- Translations Guide, 297-9051-350

As of NA0011 (LEC and LET) and EUR010 (EUR) releases, any references to the data schema section of the Translations Guide will be mapped to the Customer Data Schema Reference Manual.

What precautionary messages mean

The types of precautionary messages used in Nortel Networks documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION - Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER - Possibility of personal injury



DANGER Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING - Possibility of equipment damage



WARNING

Damage to the backplane connector pins

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

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CAUTION - Possibility of service interruption or degradation



CAUTION Possible loss of service

Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

FP 3 Busy CTRL 0: Command request has been submitted.

FP 3 Busy CTRL 0: Command passed.

1 SuperNode computing module card replacement procedures

Introduction

This chapter provides card replacement procedures for the SuperNode computing module (CM). The first section in this chapter provides designs that show SuperNode CM shelf designs.

Card replacement procedures for the SuperNode SE CM appear in the chapter "SuperNode SE computing module and system load module card replacement procedures".

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter "Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the CM card(s) covered by the replacement procedure.

Common procedures

This section lists common procedures included in the CM card replacement procedure. A common procedure is a series of steps repeated within maintenance procedures. Common procedures include procedures like the steps for the removal and replacement of a card. Common procedures appear in the common procedures chapter in this NTP.

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card replaced
- the date you replaced the card
- the reason you replaced the card

SuperNode CM shelf layouts

Application

This procedure provides the following design diagrams:

- two-plane combined core cabinet (DPCC)
- SuperNode computing module (CM)

Dual-plane combined core cabinet



SuperNode CM shelf layouts (end)

SuperNode computing module

CM-bus terminator PB CM-bus extender PB Filler faceplate	NT9X30 NT9X30 NT9X14 NT9X14	+5V 86-A power converter card	
CM-bus terminator PB CM-bus extender PB Filler faceplate	NT9X30 NT9X30 NT9X14 NT9X14	+5V 86-A power converter card	
CM-bus terminator PB CM-bus extender PB	NT9X30 NT9X14 NT9X14	-5V 20-A power converter card	
CM-bus terminator PB CM-bus extender PB Filler faceplate	NT9X30 NT9X14 NT9X14	-5V 20-A power converter card	
CM-bus terminator PB CM-bus extender PB Filler faceplate	NT9X14	Memory card	
CM-bus extender PB Filler faceplate	NT9X14	Memory card	
Filler faceplate		Memory card	
	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
CM subsystem clock PB	NT9X14	Memory card	
DS512 PB	NT9X12	CPU port card	
DS512 PB	NT9X12	CPU port card	
RTIF PB	NT9X10/NT9	9X13 CPU card	
RTIF PB	NT9X10/NT9	9X13 CPU card	
DS512 PB	NT9X12	CPU port card	
DS512 PB	NT9X12	CPU port card	
CM subsystem clock PB	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
Filler faceplate	NT9X14	Memory card	
CM-bus extender PB	NT9X14	Memory card	
CM-bus terminator PB	NT9X14	Memory card	
	NT9X30	+5V 86-A power converter card	
	NT9X30	–5V 20-A power converter card	
	Filler faceplate Filler faceplate Filler faceplate Filler faceplate CM subsystem clock PB DS512 PB DS512 PB RTIF PB DS512 PB SS512 PB CM subsystem clock PB Filler faceplate Filler faceplate A CM-bus extender PB CM-bus terminator PB CM-bus terminator PB	Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14CM subsystem clock PBNT9X14DS512 PBNT9X12DS512 PBNT9X12RTIF PBNT9X10/NT9DS512 PBNT9X12DS512 PBNT9X12CM subsystem clock PBNT9X10/NT9DS512 PBNT9X12DS512 PBNT9X12CM subsystem clock PBNT9X14Filler faceplateNT9X14Filler faceplateNT9X14State for the steminator PBNT9X30NT9X30NT9X30	Filler faceplateNT9X14Memory cardFiller faceplateNT9X14Memory cardFiller faceplateNT9X14Memory cardCM subsystem clock PBNT9X14Memory cardDS512 PBNT9X12CPU port cardDS512 PBNT9X12CPU port cardRTIF PBNT9X10/NT9X13CPU cardRTIF PBNT9X12CPU port cardDS512 PBNT9X12CPU port cardDS512 PBNT9X10/NT9X13CPU cardDS512 PBNT9X12CPU port cardDS512 PBNT9X12CPU port cardDS512 PBNT9X14Memory cardFiller faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Filler faceplateNT9X14Memory cardFiller faceplateNT9X14Memory cardFiller faceplateNT9X14Memory cardFiller faceplateNT9X14Memory cardCM-bus extender PBNT9X14NT9X30+5V 86-A power converter cardNT9X30-5V 20-A power converter card
Application

Use this procedure to replace a NT9X20 in a SuperNode computing module (CM), as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT9X20	AA	DS512 paddle board	СМ
NT9X20	BB	DS512 interface CM-MS EN-MS paddle board	СМ

Refer to the Index if you cannot identify the following features for the card you want to replace:

- the product engineering code (PEC)
- the PEC suffix
- the provisioned shelf or frame

The Index provides a list of the cards, shelves, and frames in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- Activity switch with memory match
- Switching the clock source

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing NT9X20 in a SuperNode CM



NT9X20 in a SuperNode CM

At the MAP terminal

5

- 1 Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card you want to replace.
- **2** Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.
- 3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC 0 no cpu 1 . . yes . . mbsy .

4 Determine if the card that you replace associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1

If the card	Do
associates with the inactive CPU	step 5
associates with the active CPU	step 12
Determine if the inactive CPU jammed	J.
<i>Note:</i> The word yes under the Jam jammed. A blank field indicates th	header indicates that the inactive CPU at the CPU is not jammed.
If the inective CDU	Da

If the inactive CPU	Do
is not jammed	step 6
is jammed	step 8

At the CM reset terminal for the inactive CPU

6



DANGER Loss of service

Make sure that you do not jam the active CPU. If you jam the active CPU while the CM is not in sync, a cold restart occurs. The word Active on the top of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type >\JAM and press the Enter key. *RTIF response:*

Please confirm: (YES/NO)

7 To confirm the command, type

>YES and press the Enter key. *RTIF response:*

JAM DONE

At the MAP terminal

8 Determine if the CM is synchronized.

Note: A dot (.) or EccOn under the Sync header indicates that the CM is synchronized. The word NO means that the CM is not synchronized.

If the CM	Do
is synchronized	step 9
is not synchronized	step 13
To drop synchronization, type	

>DPSYNC

9

and press the Enter key.

	If the response	Do
	is About to drop sync with CPU n active.	step 10
	The inactive CPU is JAMMED.	
	Do you want to continue?	
	Please confirm ("YES", "Y", "NO", or "N"):	
	is other than listed here	step 42
	To confirm the command, type	
	>YES	
	and press the Enter key.	
	Example of a MAP response:	
	Maintenance action submitted.	
	Running in simplex mode with active CPU n.	
he	CM reset terminal for the inactive CPU	
	Wait until A1 flashes on the reset terminal for the inactive	CPU.
	<i>Note:</i> Allow 5-min for A1 to begin to flash.	

lf A1	Do	
flashes	step 13	
does not flash	step 42	

12 Perform the procedure Activity switch with memory match in this document. Complete the procedure and return to this point.

At the MAP terminal

13



WARNING Loss of service

Make sure that the CM runs on the clock of the inactive CPU. A cold restart or a system image reload can occur if you power down the inactive side of the CM. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU.

To determine if the CM runs on the clock of the inactive CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

CPU pair is NOT insync, CPU 0 is active. CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM	Do
runs on the clock of the inactive CPU	step 14
runs on the clock of the active CPU	step 15
To rup the CM on the clock of the acti	ve CPLL perform the procedure
Switching the clock source. This proc the procedure and return to this point.	cedure is in this document. Complete
<i>Switching the clock source</i> . This proc the procedure and return to this point. To access the MC level of the MAP di	splay, type
Switching the clock source. This proc the procedure and return to this point To access the MC level of the MAP di >MC	splay, type
Switching the clock source. This proc the procedure and return to this point. To access the MC level of the MAP di >MC and press the Enter key.	splay, type
Switching the clock source. This proc the procedure and return to this point. To access the MC level of the MAP di >MC and press the Enter key. Example of a MAP display:	splay, type

14

15

16 Determine the state of the message controller (MC) on the inactive CPU.

Note: The word mbsy under the MC header means that the MC is manually busy.

If the state of the MC	Do
is mbsy	step 18
is not mbsy	step 17

17



WARNING Loss of service

Make sure that you busy the MC that corresponds to the inactive CPU. A warm restart occurs if you power down the plane with the wrong MC busied.

To manually busy the MC, type

```
>BSY mc_number
and press the Enter key.
where
```

mc_number is the number of the MC on the inactive side (0 or 1)

Example of a MAP response:

```
Maintenance action submitted. MC busied OK.
```

If the MC	Do
busied	step 18
did not busy	step 42

At the CM shelf

18



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist strap grounding point is on a frame supervisory panel (FSP) or modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Power down the inactive CPU as follows:

a Press down and release the power switch on the faceplate of the NT9X30 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 36F through 38F.

b Press down and release the power switch on the faceplate of the NT9X31 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 1F through 3F. For CPU 1, the power converter is in slots 33F through 35F.

19 Locate the card on the shelf.

20



DANGER

Do not hold card by levers only

If you hold a card only by the levers, you can break the levers. When you pull the card half way out of the shelf, carefully grasp the card from below. Provide support while you continue to remove the card from the shelf. Make sure you do not touch any wires or internal parts on the card.

Open the locking levers on the card that you want to replace.



21



DANGER Damage to fiber cables

When you handle fiber cables, make sure you do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

Label each fiber cable. Use Transmit for the top cable and Receive for the bottom cable.

- 22 Disconnect the fiber cables from the faceplate of the card as follows:
 - a Loosen the fiber connections, with the locking levers open.
 - **b** Carefully push in and turn the fiber cable connector counter clockwise one half turn until the connector slides from its receptacle.

Note: Refer to the figure on the next page.



23 While you grasp the locking levers, carefully pull the card toward you until the card protrudes 2 in. (5.1 cm) from the equipment shelf.



24 Hold the card by the face plate with one hand while you support the card from below with the other hand. Carefully pull the card toward you until the card clears the shelf.



- **25** Place the card you removed in an electrostatic discharge (ESD) protective container.
- 26 Make sure that the replacement card has the same PEC, including PEC suffix, as the card you removed.
- 27 Insert the replacement card into the shelf.
 - **a** Open the locking levers on the card.
 - **b** Hold the card by the face plate with one hand while you support the card from below with the other hand. Carefully slide the card into the shelf.



28



DANGER Damage to fiber cables

When you handle fiber cables, do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

Reconnect the fiber cables as follows:

- **a** Tighten the cable connections, with the locking levers open.
- **b** Carefully guide the cable connector into the receptacle notches of the connector.
- **c** Push in and turn the cable connector clockwise half a turn until the connection is tight.
- 29 Seat and lock the card.
 - **a** Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure that the card sits completely in the shelf.
 - **b** Close the locking levers to secure the card.



30 Power up the inactive CPU as follows:

a Lift and release the power switch on the faceplate of the NT9X30 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 36F through 38F.

b Lift and release the power switch on the faceplate of the NT9X31 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 1F through 3F. For CPU 1, the power converter is in slots 33F through 35F.

At the CM reset terminal for the inactive CPU

31



WARNING Firmware tests must be completed If firmware tests are not completed, the CPUs cannot synchronize.

Wait for the switch to complete firmware tests. *Example of an RTIF response:*

ShelfSlot0012NT9X14DB...0013NT9X14DB...Waiting for activity...

Note: When firmware testing is in progress, dots appear on the right side of the PEC. The PEC is in the firmware testing status line of the RTIF response. As you complete each firmware test, another dot appears until firmware testing for the card is complete. When the firmware test sequence stops, the dots do not appear. The display does not show another firmware testing status line or the prompt Waiting for activity when the firmware test sequence stops.

32 Determine if the firmware tests are complete.

Note: If the firmware tests are complete and the CPU powered up, the display shows the message Waiting for activity.

If the inactive CPU	Do
powered up	step 33
did not power up	step 42

At the MAP terminal

33 Your next step depends on the reason for performing this procedure.

lf you	Do
perform this procedure as a result of an MC Tbl alarm	step 37
perform this procedure as a result of a PMCFlt alarm	step 37
perform this procedure as a result of a PMCTbl alarm	step 37
perform this procedure as a result of a NoTOD alarm	step 37
perform this procedure as a result of an SBsyMC alarm	step 37
perform this procedure as a result of an MBsyMC alarm	step 37
perform this procedure as a result of a CBsyMC alarm	step 37
perform this procedure for any reason other than list- ed here	step 34

34	To access the MC level of the MAP display, type		
	and press the Enter key		
35	To return the manual busy MC to servi		
00		66, ypc	
	and pross the Enter key		
	whore		
	me number		
	is the number of the manual-bu	sy MC (0 or 1)	
	Example of a MAP response:		
	Maintenance action submitted		
	MC RTS OK.		
	If the RTS command	Do	
	passed	step 36	
	failed	step 42	
36	The next action depends on the reaso	n for performing this procedure.	
	lf you	Do	
	perform this procedure as a re-	step 37	
	sult of a CM alarm clearing pro- cedure		
	nonforme this proceeding for one	star 29	
	reason other than listed here	step 58	
37	Return to the alarm clearing procedure and continue as directed.	e that directed you to this procedure	
38	To test the inactive CPU, type		
	>CM;TST		
	and press the Enter key.		
	Example of a MAP response:		

39

The test(s) listed below will destroy the software load in inactive CPU: Static RAM test Do you want to do the test(s) anyway? Please confirm: ("YES", "Y", "NO", or "N"): To confirm the command, type >YES and press the Enter key. Example of a MAP response: Maintenance action submitted. Test passed. If the TST command Do passed step 40 is other than listed here step 42

At the CM reset terminal for the inactive CPU

40 To release the jam on the inactive CPU, type

>\RELEASE JAM and press the Enter key. *RTIF response:*

JAM RELEASE DONE

At the MAP terminal

41 To synchronize the CM, type >SYNC and press the Enter key. Example of a MAP response:

NT9X20 in a SuperNode CM (end)

If the response	Do
indicates the SYNC command was successful	step 43
is other than listed here	step 42

43 The procedure is complete.

42

System cards in a SuperNode CM

Application

Use this procedure to replace the following cards in a SuperNode computing module (CM).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the "Index". The "Index" provides a list of the cards, shelves, and frames in this card replacement book.

(Sheet	1	of	2)	
--------	---	----	----	--

DEC	Suffix	Card name	Shelf or frame
	Sum		name
NT9X10	AA	33-MHz 88100 BRISC CPU card	СМ
NT9X10	BA, CA	60-MHz 88110 BRISC CPU card	СМ
NT9X10	DA	66-MHz 88110 BRISC CPU card	СМ
NT9X12	AB, AC, AD	CPU port card	СМ
NT9X13	BB, BC, BD	CPU processor card	СМ
NT9X13	DB, DC	CPU 20-MHz card	СМ
NT9X13	GA	DMS-core 33-MHz 68030 HPM-based CPU card	СМ
NT9X13	HB	CPU (68030) 40-MHz card	СМ
NT9X13	JA	CPU (68020) processor card	СМ
NT9X14	BB	6-Mbyte memory card	СМ
NT9X14	DB	24-Mbyte memory card	СМ
NT9X14	EA, FA	96-Mbyte memory card	СМ
NT9X21	AA	CM bus terminator paddle board	СМ
NT9X21	AB	Bus terminator paddle board	СМ
NT9X22	CA	CM subsystem clock paddle board	СМ
NT9X26	AA, AB	Remote terminal interface paddle board	СМ

(Sheet 2 of 2)

PEC	Suffix	Card name	Shelf or frame name
NT9X26	DA, DB, DC, EA, FA, GA	BRISC RTIF paddle board	СМ
NT9X27	AA, BA	CM bus extender paddle board	СМ
NT9X30	AA, AB	+5V 86-A power converter	СМ
NT9X31	AA, AB	-5V 20-A power converter	СМ

Common procedures

This procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- Activity switch with memory match
- Switching the clock source
- Replacing a card

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing System cards in a SuperNode CM



Replacing System cards in a SuperNode CM



DANGER Possible invalid memory configuration

Do not leave empty slots between memory cards or between the first memory card and a dual-port message controller card. Empty slots can cause an invalid memory configuration.



DANGER

Possible invalid memory configuration Contact your next level of support if you replace an NT9X14DB card with an NT9X14EA card. This replacement can cause an invalid memory configuration.



DANGER

Possible invalid memory configuration The NT9X10DA processor card, the NT9X26GA RTIF card, and the optional NT9X14FA memory card are designed to be used together. The NT9X10DA CPU card functions only with the NT9X26GA RTIF paddle board and the optional NT9X14FA extended memory card. Do not combine an NT9X14FA card with any other memory card. This results in an invalid memory configuration. Do not use the NT9X14FA memory card with any processor other than the NT9X10DA processor card.

At your current location

- 1 Obtain a replacement card. Make sure that the replacement card and the card to remove have the same product engineering code (PEC) and PEC suffix.
- **2** Perform the procedure *Verifying load compatibility of SuperNode cards*. Complete the procedure and return to this point.

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

СМ	Sync	Act	CPU0	CPU1	Jam	Memory	CMMnt	MC	PMC
0	no	cpu 1			yes	•		mbsy	

4 Determine if the card you replace associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the card	Do			
associates with the inactive CPU	step 5			
associates with the active CPU	step 12			
Determine if the inactive CPU has a jam.				
Note: The word was under the lam header means that the inactive CDU				

Note: The word yes under the Jam header means that the inactive CPU has a jam. The area remains blank if the CPU does not have a jam.

If the inactive CPU	Do
is not jammed	step 6
is jammed	step 8

At the CM reset terminal for the inactive CPU

6

5



DANGER Loss of service

Make sure that you do not jam the active CPU. If you jam the active CPU while the CM is not in sync, a cold restart occurs. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM and press the Enter key. *RTIF response:*

Please confirm: (YES/NO)

7 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

JAM DONE

At the MAP terminal

9

10

8 Determine if the CM is synchronized.

Note: A dot (.) or EccOn under the Sync header means that the CM is synchronized. The word no means that the CM is not synchronized.

If the CM	Do	
is synchronized	step 9	
is not synchronized	step 13	
To drop synchronization, type		
>DPSYNC		
and press the Enter key.		
If the response		Do
is About to drop sync with CF The inactive CPU is JAMME	PU n active. D.	step 10
Do you want to continue?		
Please confirm ("YES", "Y",	"NO", or "N"):	
is other than listed here		step 44
To confirm the command, type		
>YES		
and press the Enter key.		
Example of a MAP response:		
Maintenance action submit	ted.	
Running in simplex mode w	ith active CPU n.	•

At the CM reset terminal for the inactive CPU

11 Wait until A1 flashes on the reset terminal for the inactive CPU.

Note: Allow 5 min for A1 to begin to flash.

lf A1	Do
flashes	step 13
does not flash	step 44

12 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

At the MAP terminal

13



WARNING Loss of service

Make sure that the CM runs on the clock of the active CPU. A cold restart or a system image reload can occur if you power down the inactive side of the CM. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU.

To determine if the CM runs on the clock of the inactive CPU, type

>INSYNC and press the Enter key. *Example of a MAP response:*

CPU pair is NOT insync, CPU 0 is active. CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM	Do
runs on the clock of the inactive CPU	step 14
runs on the clock of the active CPU	step 15

- **14** To run the CM on the clock of the active CPU, perform the procedure *Switching the clock source* in this document. Complete the procedure and return to this point.
- 15 To access the MC level of the MAP display, type

>MC

and press the Enter key.

Example of a MAP display:

MC 0 MC 1 mbsy .

16 Determine the state of the message controller (MC) on the inactive CPU.

Note: The word mbsy under the MC header means that the MC is manual busy.

If the state of the MC	Do
is mbsy	step 18
is not mbsy	step 17

17



WARNING Loss of service

Make sure that you busy the MC that corresponds to the inactive CPU. A warm restart occurs if you power down the surface with the wrong MC busy.

To manually busy the MC that associates with the inactive CPU, type

>BSY mc_number

and press the Enter key.

where

mc_number

is the number of the MC on the inactive side (0 or 1)

Example of a MAP response:

Maintenance action submitted. MC busied OK.

If the MC	Do	
busied	step 18	

If the M	//C			Do			
did no	t busy			step 44			
The next	t action of	depends on the	e type o	f card you	ı replac	ce.	
If the c	ard bei	ng replaced		Do			
is an N	JT9X22			step 19			
is othe	r than l	isted here		step 21			
To acces	s the Cl	ock level of the	MAP o	lisplay, typ	be		
Example	e of a MA	AP display:					
Link 0 Link 1 SSC	TOD MCO f	MC1					
To deter	mine the	e location of the	NT9X	22 card, ty	ype		
>LOCAT	E ssc	_number nter key.					
wnere ssc_ is	_ numbe the nun	r hber of the sub	svstem	clock (0 c	or 1)		
Example	e of a MA	AP response:	-,		,		
Flr	RPos	Bay_id Shf	Desci	ription	Slot	EqPEC 9x22Ca	BYCK

At the CM shelf

21



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle cards. The wrist strap protects the cards against static electricity damage.

Power down the inactive CPU as follows:

a Press down and release the power switch on the faceplate of the NT9X30 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 1F through 3F. For CPU 1, the power converter is in slots 33F through 35F.

b Press down and release the power switch on the faceplate of the NT9X31 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 36F through 38F.

- **22** Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **23** Power up the inactive CPU, as follows:
 - **a** Lift and release the power switch on the faceplate of the NT9X30 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 1F through 3F. For CPU 1, the power converter is in slots 33F through 35F.

b Lift and release the power switch on the faceplate of the NT9X31 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 36F through 38F.

At the CM reset terminal for the inactive CPU

24



CAUTION Firmware tests must be completed If you do not complete the firmware tests, you can not synchronize the CPUs.

Wait for the switch to complete firmware tests.

Example of an RTIF response:

Shelf	Slot	
00	12	NT9X14DB
00	13	NT9X14DB
Waiting	for activ	vity

Note: When firmware testing is in progress, dots appear on the right side of the PEC. The PEC is in the firmware testing status line of the RTIF response. As each firmware test is complete, another dot appears, until firmware testing for the card is complete. If the dots do not appear and another firmware testing status line does not appear, firmware tests do not progress. If the dots do not appear and the prompt Waiting for activity does not appear, firmware tests do not progress.

25 Determine if the firmware tests were completed.

Note: If the firmware tests are complete and CPU has powered up, the display shows the Waiting for activity message.

If the inactive CPU	Do
powered up	step 26
did not power up	step 44
The next action depends on the type	e of card you replace.
If the card being replaced	Do
is an NT9X14	step 29
is an NT9X22	step 27
is an NT9X26	step 31
is other than listed here	step 32

26

At the MAP terminal

27

To test the subsystem clock, type >TST SSC ssc_number and press the Enter key. where ssc_number is the number of the subsystem clock (0 or 1) Example of a MAP response:

A complete test will include temporary loss of two links. Please confirm ("YES", "Y", "NO", or "N"):

28 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Maintenance action submitted. SSC 0 test passed. No faults detected by hardware.

If the TST command	Do
passed	step 32
failed	step 44

At the MAP terminal

29 To access the Memory level of the MAP display, type

>MEMORY

and press the Enter key.

Example of a MAP display:

CM 0 Plane 0 | Plane 1 | 0987654321 P|P 1234567890 ----.....

30 To test the replacement card, type

>TST CARD card_number

and press the Enter key.

where

card_number

is the number of the replaced memory card (1 to 10).

Example of a MAP response:

Maintenance action submitted. Memory test OK.

If the TST command	Do
passed	step 32
failed	step 44

At the CM reset terminal for the inactive CPU

31 To determine the result of the last self-test, type

>\SELF TEST

and press the Enter key.

Example of a MAP response:

SELF TEST RESULTS: ROM OK RAM OK 9X26 OK

If the self test	Do	
passed	step 32	
failed	step 44	
	È	

32

Your next step depends on the reason for the performance of this procedure.

lf you	Do
perform this procedure as a result of an MC Tbl alarm	step 46
perform this procedure as a result of a PMCFlt alarm	step 46
perform this procedure as a result of a PMCTbl alarm	step 46
perform this procedure as a result of a NoTOD alarm	step 46
perform this procedure as a result of an SBsyMC alarm	step 46
perform this procedure as a result of an MBsyMC alarm	step 46
perform this procedure as a result of a CBsyMC alarm	step 46

lf you		Do
perform this procedure for any rea those listed here	ason different from	step 33
The next action depends on the series	of your SuperNode C	M hardware.
lf	Do	
below Series 70 SuperNode CM hardware	step 34	
Series 70 or above	step 36	
To record all the card changes in the h	istory database for ea	ich card, type
>SWAPHW shelf_no slot_no	side_no	
and press the Enter key.		
where		
<pre>shelf_no is the number of the shelf (0 or</pre>	1)	
<pre>slot_no is the number of the slot (1 to 3</pre>	8)	
<pre>side_no is the side of the CM (front or b</pre>	ack)	
Example of a MAP response:		
WARNING: You have indicated that the replaced. Please verify that this accubeen changed, and that the displayed equipped in that slot:	e following circuit pack rately reflects which c I PEC code matches v	has been ircuit pack has vhat is currentl
Site Flr RPOs Shf Description Slot HOST 00 A00 DPCC 0 18 CM	EQPEC 0;0;0 19 9X13BC	
Do you wish to continue? Please confirm ("YES", "Y", "NO" "N Card replacement has been recorded	") "Y" or "YES", I.	
If the response		Do
is Card replacement has ed.	been record-	step 36
is Aborted. Card rep NOT been recorded.	lacement has	step 35

	20
is different from those listed here	step 44
<i>Note:</i> The specified card joins the actual updates to the mismatch histomanual SYNC attempt.	list of the cards that you replaced. The ory database do not occur until the new
Enter the SWAPHW command as you a second time, contact the next level of	did in step 34. If the command abort of support.
To access the MC level of the MAP dis	splay, type
>MC	
and press the Enter key.	
To return the manual busy MC to serv	ice, type
>RTS mc_number	
and press the Enter key.	
where	
mc_number is the number of the manual-bu	ısy MC (0 or 1)
Example of a MAP response:	
MC RTS OK. The next action depends on the reaso	on for performing this procedure.
MC RTS OK. The next action depends on the reaso	n for performing this procedure.
MC RTS OK. The next action depends on the reaso If a CM alarm clearing procedure	on for performing this procedure. Do step 42
MC RTS OK. The next action depends on the reasc If a CM alarm clearing procedure anything else	n for performing this procedure. Do step 42 step 39
MC RTS OK. The next action depends on the reasc If a CM alarm clearing procedure anything else Test the inactive CPU by typing	n for performing this procedure. Do step 42 step 39
MC RTS OK. The next action depends on the reasc If a CM alarm clearing procedure anything else Test the inactive CPU by typing >CM;TST	n for performing this procedure. Do step 42 step 39
MC RTS OK. The next action depends on the reasc If a CM alarm clearing procedure anything else Test the inactive CPU by typing >CM;TST and pressing the Enter key.	n for performing this procedure. Do step 42 step 39
MC RTS OK. The next action depends on the reaso If a CM alarm clearing procedure anything else Test the inactive CPU by typing >CM;TST and pressing the Enter key. Example of a MAP response:	n for performing this procedure. Do step 42 step 39
MC RTS OK. The next action depends on the reasonable If a CM alarm clearing procedure anything else Test the inactive CPU by typing >CM;TST and pressing the Enter key. Example of a MAP response: The test(s) listed below will the software load in inactive	n for performing this procedure. Do step 42 step 39 1 destroy re CPU:
MC RTS OK. The next action depends on the reasonable If a CM alarm clearing procedure anything else Test the inactive CPU by typing >CM;TST and pressing the Enter key. Example of a MAP response: The test(s) listed below will the software load in inactive Static RAM test	n for performing this procedure. Do step 42 step 39 l destroy re CPU:

40 Confirm the command by typing
>YES
and pressing the Enter key.

Example of a MAP response:

The PCCAB DRAM test will take up to 10 minutes to run.

Do you wish to run this test anyway? Please confirm: ("YES", "Y", "NO", or "N"):

41 Confirm the command by typing

>YES

and pressing the Enter key.

Example of a MAP response:

Maintenance action submitted. Test passed.

If the TST command	Do
passed	step 42
anything else	step 44

At the CM reset terminal for the inactive CPU

42 Release the jam on the inactive CPU by typing

>\RELEASE JAM and pressing the Enter key. *RTIF response:*

JAM RELEASE DONE

At the MAP terminal

- **43** Synchronize the CM by typing
 - >SYNC

and pressing the Enter key.

Example of a MAP response:

System cards in a SuperNode CM (end)

lf	Do
the SYNC command was suc- cessful	step 45
anything else	step 44
The next action depends on the reaso	n for performance of this proce
The next action depends on the reaso	n for performance of this proce
The next action depends on the reaso If a CM alarm clearing procedure	n for performance of this proce Do step 46
The next action depends on the reaso If a CM alarm clearing procedure anything else	n for performance of this proce Do step 46 step 47
The next action depends on the reaso If a CM alarm clearing procedure anything else Return to the alarm clearing procedure continue as directed.	n for performance of this proce Do step 46 step 47 e that sent you to this procedur

2 SuperNode SE computing module and system load module card replacement procedures

Introduction

This chapter provides card replacement procedures for the SuperNode SE computing module (CM) and system load module (SLM). The first section in the chapter provides diagrams of SuperNode SE CM/SLM shelf designs.

Card replacement procedures for the SuperNode CM are in the chapter "SuperNode computing module card replacement procedures".

Card replacement procedures for the SuperNode SLM are in the chapter "SuperNode system load module card replacement procedures".

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter "Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the CM and SLM card(s) discussed in the replacement procedure.

Common procedures

This section lists common procedures for the replacement of a CM or SLM card. A common procedure is a series of steps that repeats within maintenance procedures. For example, a card removal and replacement procedure is a common procedure. Common procedures are in the common procedures chapter in this NTP.

Do not use common procedures unless the step-action procedure directs you.

Action

This section contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card that you replaced
- the date of the card replacement
- the reason that you replaced the card
SuperNode SE CM/SLM shelf layouts

Application

This procedure provides the following design diagrams:

- single core cabinet (SCC)
- SuperNode SE computing module/system load module (CM/SLM)

Figure Single core cabinet



SuperNode SE CM/SLM shelf layouts (end)

Figure SuperNode SE CM/SLM

				Dower converter cord	
			N19791		36F
			NTDX15	Power converter card	33F
32R	NT9X19	Filler faceplate			
31R	NT9X19	Filler faceplate			
30R	NT9X19	Filler faceplate			
29R	NT9X19	Filler faceplate			
28R	NT9X46	Parallel port I/F PB	NT9X44	System load module assembly	28F
27R	NT9X21	Bus terminator PB	NT9X14	Memory card	27F
26R	NT9X19	Filler faceplate	NT9X14	Memory card	26F
25R	NT9X19	Filler faceplate	NT9X14	Memory card	25F
24R	NT9X19	Filler faceplate	NT9X14	Memory card	24F
23R	NT9X19	Filler faceplate	NT9X14	Memory card	23F
22R	NT9X46	Parallel port I/F PB	NT9X12	CPU port card	22F
21R	NT9X62	Subrate DS512 PB	NT9X86	Dual-port message controller card	21F
20R	NT9X26	RTIF	NT9X13	CPU card	20F
19R	NT9X26	RTIF	NT9X13	CPU card	19F
18R	NT9X62	Dual-link SR512 I/F PB	NT9X86	Dual-port message controller card	18F
17R	NT9X46	Parallel CM port I/F PB	NT9X12	Single-port message card	17F
16R	NT9X19	Filler faceplate	NT9X14	Memory card	16F
15R	NT9X19	Filler faceplate	NT9X14	Memory card	15F
14R	NT9X19	Filler faceplate	NT9X14	Memory card	14F
13R	NT9X19	Filler faceplate	NT9X14	Memory card	13F
12R	NT9X21	Bus terminator PB	NT9X14	Memory card	12F
11R	NT9X19	Filler faceplate			
10R	NT9X19	Filler faceplate			
09R	NT9X19	Filler faceplate			
08R	NT9X19	Filler faceplate			
07R	NT9X46	Parallel port I/F PB	NT9X44	System load module assembly	07F
	Paddle b	oards			
			NTDX15	Power converter card	04F
				Power converter card	
] 01F

NT9X44 in a SuperNode SE CM/SLM

Application

Use this procedure to replace an NT9X44 in a SuperNode SE system load module (SLM).

PEC	Suffix	Card name	Shelf or frame name
NT9X44	AC	System load module IA assembly	CM/SLM
NT9X44	AD	System load module III assembly	CM/SLM

Refer to the "Index", if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Sparing and field returns can cause SLM IIIs to have a combination of the current Connor and the new Tandberg drives. The SLM IIIs are in SuperNode and SuperNode SE switches. You can easily identify the drives with the new Tandberg drive that has a tape door.

Use the recommended tape cartridge as follows:

- DC600 for SLM I tape drive
- DC6250 for SLM IA and II tape drives
- DC6525 for SLM III tape drive

Common procedures

This procedure refers to the following common procedures:

- Activity switch with memory match
- Switching the clock source

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.



Summary of Replacing a NT9X44 in a SuperNode SE CM/SLM

Replacing a NT9X44 in a SuperNode SE CM/SLM

At your current location

1



CAUTION

Loss of data recording services

This procedure removes the SLM from service. Make sure that another device assumes the data recording services of the SLM that you remove from service, before you attempt this procedure. Make sure that the other device has the data storage capacity to assume the recording.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix, as the card that you replace.

2 Make sure that you have a backup SLM tape.

lf you	Do
have a backup SLM tape	step 3
do not have a backup SLM tape	step 84

Note: The backup tape must contain copies of all of the disk files on the SLM that you will replace.

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC 0 no cpu 1 . . yes

4 Determine if the computing module (CM) plane that contains the SLM you want to replace also contains the inactive CPU.

Note: The active CPU is the CPU shown under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the CM plane contains the	Do
inactive CPU	step 5

If the CM plane contains the	Do
active CPU	step 12
Determine if the inactive CPU is jai	mmed.
<i>Note:</i> The word yes under the Jais jammed. A blank field indicate	am header indicates that the inactive CPU es that the CPU is not jammed.
If the inactive CPU is	Do
not jammed	step 6
jammed	step 8

At the CM reset terminal for the inactive CPU

6

5



DANGER Loss of service

Make sure that you do not jam the active CPU. A cold restart occurs when you jam the active CPU while the CM is not in sync. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type >\JAM and press the Enter key. *RTIF response:*

Please confirm: (YES/NO)

7 To confirm the command, type >YES and press the Enter key. *RTIF response:*

JAM DONE

At the MAP terminal

8 Determine if the CM is synchronized.

Note: A dot (.) or EccOn under the Sync header indicates that the CM is synchronized. The word no indicates that the CM is not synchronized.

chronized synchronized op synchronization, type SYNC oress the Enter key. he response is out to drop sync with CP e inactive CPU is JAMM you want to continue? ase confirm ("YES", "Y" er than listed here onfirm the command, type	step 9 step 13 PU n active. IED. ', "NO", or "N"):	Do step 10 step 84		
synchronized op synchronization, type sync oress the Enter key. he response is out to drop sync with CP e inactive CPU is JAMM you want to continue? ase confirm ("YES", "Y" er than listed here onfirm the command, type	step 13 PU n active. IED. ', "NO", or "N"):	Do step 10 step 84		
op synchronization, type SYNC press the Enter key. The response is out to drop sync with CP e inactive CPU is JAMM you want to continue? ase confirm ("YES", "Y" er than listed here ponfirm the command, type s	PU n active. IED. ', "NO", or "N"):	Do step 10 step 84		
bress the Enter key. ne response is out to drop sync with CP inactive CPU is JAMM you want to continue? ase confirm ("YES", "Y" er than listed here onfirm the command, type s	PU n active. IED. ', "NO", or "N"):	Do step 10 step 84		
ne response is out to drop sync with CP e inactive CPU is JAMM you want to continue? ase confirm ("YES", "Y" er than listed here onfirm the command, type	PU n active. IED. ', "NO", or "N"):	Do step 10 step 84		
out to drop sync with CP e inactive CPU is JAMM you want to continue? ase confirm ("YES", "Y" er than listed here onfirm the command, type	PU n active. IED. ', "NO", or "N"):	step 10 step 84		
er than listed here onfirm the command, type		step 84		
onfirm the command, type				
3				
press the Enter key.				
Example of a MAP response:				
Maintenance action submitted. Running in simplex mode with active CPU n.				
eset terminal for the inact	ive CPU			
until A1 flashes on the rese	et terminal for the ina	ctive CPU.		
<i>Note:</i> Allow approximately 5 min for A1 to start to flash.				
1	Do			
shes	step 13			
	step 84			
	>te: Allow approximately 5 1 hes s not flash	Description Do 1 Do hes step 13 es not flash step 84		

At the MAP terminal

13



WARNING Loss of service

Make sure that the CM runs on the clock of the active CPU. A cold restart or a system image reload can occur if you power down the inactive side of the CM. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU.

To determine if the CM runs on the clock of the inactive CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

CPU pair is NOT insync, CPU 0 is active. CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM runs on the clock of the	Do
inactive CPU	step 14
active CPU	step 15

- 14 To run the CM on the clock of the active CPU, perform the procedure *Switching the clock source* in this document. Complete the procedure and return to this point.
- 15 To access the CMMNT level of the MAP display, type

>CMMNT

and press the Enter key.

Example of a MAP display:

СМ Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC no cpu 0 . 0 yes . . Traps: Per minute = 0 Total = 5 AutoLdev: Primary = SLM 0 DISK Secondary = SLM 1 DISK Image Restartable = No image test since last restart Next image restart type = WARM Last CM REXTST executed System memory in kbytes as of 14:39:07 Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784 Determine if the primary autoload device is on the same side of the switch as the active CPU or the inactive CPU. *Note:* The primary autoload device appears on the right of the Primary header. In the example in step 15, the primary autoload device is the disk of SLM 0. If the primary autoload device is Do on the same side of the switch as the active CPU step 23 inactive CPU step 17 To change the primary autoload device to a device on the same side of the switch as the active CPU, type >AUTOLD SLM slm_number device_type and press the Enter key. where slm_number is the number of the active CPU (0 or 1) device_type is the type of SLM device (DISK or TAPE) Example of a MAP response: New autoload route has been set.

16

17

18	To access the DIRP level of the MAP display, type
	>IOD;DIRP
	and press the Enter key.
19	To determine if there are any active files for each subsystem on the SLM to be made busy, type
	>query ssys
	and press the Enter key.
	where
	ssys is the active subsystem (AMA, OM, or JF)
20	To close any active files for each subsystem on the SLM to be made busy, type
	>close ssys [active]
	and press the Enter key.
	where
	ssys is the active subsystem (AMA, OM, or JF)
21	Demount the volume by typing
	>DMNT ssys vol_name [paralel]
	and pressing the Enter key.
	where
	ssys is the subsystem (AMA, OM, or JF)
	<pre>vol_name is the name of the volume to be demounted</pre>
	[paralel] indicates that the volume is a parallel volume
	Example of a MAP response:
	UPDATING VOLUME INFORMATION FOR vol_name: vol_no IN pool_type POOL pool_no, pool_name PLEASE CONFIRM ("YES" OR "NO"):.
22	Confirm the demount by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:

23

```
REGULAR VOLUME vol_name WILL BE
TAKEN OUT OF DIRP AS SOON AS
POSSIBLE..
To access the SLM that corresponds to the inactive CPU, type
>IOD;SLM slm_number
and press the Enter key.
where
   slm number
     is the number of the inactive CPU (0 or 1)
Example of a MAP display:
 IOD
 IOC 0 1 2 3
 STAT . .
            .
               .
 DIRP: .
           XFER: .
                       DVI : .
                                  DPPP: .
                                             DPPU:
                                                     .
 NOP : .
            SLM : .
                       NX25: .
                                  MLP : .
                                             SCAI:
                                                   .
 SLM
       0 1
 Stat . .
 SLM 0
             device
                        TAPE
                                     DISK
             status
                          .
             drive
                        idle
                                     on line
                                     SYSTEM
             user
```

Note: Dots on the right of the SLM Stat header indicate that the associated SLMs are in service.

24 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

SLM 0 busy passed.

Example of a MAP display:

SLM 0 1 Stat M .

Note: The letter M on the right of the SLM Stat header indicates that the associated SLM is manual busy.

25 To offline the SLM, type

>OFFL

and press the Enter key.

Note: Wait for the light on the faceplate of the SLM to turn off before you continue this procedure.

Example of a MAP response:

SLM 0 now offline. Do not remove SLM card until disk drive is spun down! This will be indicated when the SLM card light turns off.

26 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:

PMC 0 . PORT0: . PORT1: .

27 To manually busy the port that corresponds to the inactive CPU, type

>BSY 0 PORT port_number

and press the Enter key.

where

port_number is the number of the inactive CPU (0 or 1)

Example input

>BSY 0 PORT 0

Example of a MAP response:

Maintenance action submitted. Passed.

At the CM/SLM shelf

28



DANGER

Equipment damage and possible loss of service Make sure that you do not switch off the NTDX15 power converter. If you switch off the NTDX15 power converter, the associated CPU plane powers down. The SLM does not power down. The NT9X91 power converter powers the SLM.



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the inactive SLM side. To switch off the NT9X91 power converter, press down and release the power switch. The power switch is on the faceplate of the converter.

Note: For CPU 0, NT9X91 the power converter is in slots 1F to 3F. For CPU 1, the NT9X91 power converter is in slots 36F to 38F.

29

Pull open the locking levers on the SLM until the levers are horizontal.



30 Grasp the locking levers. Pull the SLM toward you. Perform this procedure until the locking latch does not allow the SLM to clear the shelf. The locking latch is at the back of the SLM assembly.



- **31** Close the locking levers.
- **32** Grasp the carrying handle. Use your thumb to press the locking latch while you slide the SLM from the shelf.



- **33** Place the SLM you removed in an electrostatic discharge (ESD) protective container.
- **34** Lift the replacement SLM by the carrying handle.
- 35 Pull open the locking levers until the levers are horizontal.
- **36** Use your free hand to align the SLM with the slots in the shelf. Carefully slide the SLM into the shelf until the locking latch at the back of the SLM locks.

Note: You do not need to use excessive force to slide the SLM into the shelf.

- **37** Slide the SLM completely into the shelf.
- **38** Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure that the SLM sits completely in the shelf.
- **39** Close the locking levers.

40 Turn on the inactive SLM side. To switch on the NT9X91 SLM power converter, lift and release the power switch. The power switch is on the faceplate of the converter.

Note: For CPU 0, the NT9X91 power converter is in slots 1F to 3F. For CPU 1, the NT9X91 power converter is in slots 36F to 38F.

If the SLM has a	Do
Connor tape drive	step 41
Tandberg tape drive	step 43

41 Insert a scratch tape into the SLM. Use the tape cartridge specified in the application section at the beginning of this procedure.

Note: Insert a tape cartridge with the metal plate to the left. The tape access opening faces towards the top.

42 To lock the tape in place, press down on the locking lever.

Go to step 44.

43 To open the drive door, push on the Tandberg drive door button. Insert a scratch tape with the read and write tape facing the bottom of the drive. Close the drive door.

At the MAP terminal

44 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

45 To return the manual busy PMC port to service, type

>RTS 0 PORT port_number

and press the Enter key.

where

port_number is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. Passed.

If the RTS command	Do	
passed	step 46	
failed	step 84	

46 To access the MAP level for the SLM that you replaced, type >IOD;SLM slm_number

	and press the Enter key.				
	where				
	slm_number is the number of the SLM (0 or	1) that you replaced			
47	To manually busy the SLM, type				
	>BSY				
	and press the Enter key.				
	If the BSY command	Do			
	passed	step 48			
	failed	step 84			
48	To spin up the SLM disk, type				
	>SPIN UP				
	and press the Enter key.				
	<i>Note:</i> Wait for the light on the faceplate of the SLM to turn on before you continue this procedure.				
	Example of a MAP response:				
	Disk of SLM 0 is ready.				
49	To test the replacement SLM, type				
	>TST ALL				
	and press the Enter key.				
	MAP response:				
	The tape test will write on the tape media. It is recommended to insert a scratch tape, otherwise data on the current tape may be destroyed. Are you ready to continue? Please confirm ("YES", "Y", "NO", or "N"):				
50	To confirm the command, type				
	>YES				
	and press the Enter key.				
	If the response indicates		Do		
	the TST command passed		step 53		
	the TST command failed, and the card list	system generated a	step 51		

	If the response indicates	Do			
	other than listed here	step 84			
51	Record the location, description, slot number, PEC and the PEC suffix, of the cards on the list.				
52	To replace each card on the list, perfo procedure in this document. Replace this point.	rm the correct card replacement all the cards on the list and return to			
At th	e CM reset terminal for the inactive CF	PU			
53	To release the jam on the inactive CP	U, type			
	>\RELEASE JAM				
	and press the Enter key.				
	RTIF response:				
	JAM RELEASE DONE				
At th	e MAP terminal				
54	To synchronize the CM, type				
	>CM; SYNC				
	and press the Enter key.				
	Example of a MAP response:				
	Maintenance action submitted Synchronization successful.				
	If the response	Do			
	indicates the SYNC command was successful	step 55			
	other than listed here	step 84			
55	To access the disk administration utilit	y, type			
	>DISKADM disk_name				
	and press the Enter key.				
	where				
	disk_name				

is the name of the disk in the SLM that you replaced (S00D for SLM 0, or S01D for SLM 1)

Example of a MAP response:

```
Start up command sequence is in progress.
       This may take a few minutes.
       Administration of device SOOD on CM is now active.
       DISKADM;
                  СМ
56
      To format the disk, type
      >FORMATDISK disk_name
      and press the Enter key.
       where
          disk name
            is the name of the disk in the SLM replaced (S00D for SLM 0, or S01D
            for SLM 1)
      Example of a MAP response:
                        **** WARNING *****
       Formatting of S00D
       will destroy the contents of the disk.
       The formatting will:
          allocate 3 spare or alternate sectors per track,
           allocate 16 spare or alternate tracks per disk,
          use the G defect list,
          assign SOOD as the name for the disk.
          perform quick format,
          exclude force option.
       Do you want to continue?
       Please confirm ("YES", "Y", "NO", or "N"):
57
      To confirm the command, type
      >YES
      and press the Enter key.
       Example of a MAP response:
      Formatting of disk has started. This may take 10 to 30 minutes. Formatting of
      disk has finished.
58
      To obtain a list of all the volumes required on the SLM disk, consult office
      records or operating company personnel.
59
      To create a volume, type
      >CREATEVOL volume_name volume_size STD
      and press the Enter key.
       where
```

volume name is the name of the volume (maximum of eight characters) volume size is the size of the volume in megabytes Example input: >CREATEVOL VOL1 20 STD Example of a MAP response: STD volume VOL1 will be created on SOOD. Volume size: 20 megabytes File Directory size: 128 files Volume Free Space Map size: 64 segments Do you want to continue? Please confirm ("YES", "Y", "NO", or "N"): 60 To confirm the command, type >YES and press the Enter key. MAP response: Creation of the volume is completed. Repeat steps 59 and 60 for each volume on the list that you obtained in step 58. 62 To quit the disk administration utility, type >QUIT and press the Enter key. 63 To access the replacement SLM, type >IOD;SLM slm number and press the Enter key. where slm number is the number of the replacement SLM (0 or 1) 64 To return the SLM to service, type >RTS and press the Enter key. Example of a MAP response:

61

SLM 0 return to service passed.

If the RTS command	Do	
passed	step 65	
failed	step 84	
Obtain the backup tape for the	SLM that you replaced.	
If the SLM has a	Do	
Connor tape drive	step 66	

At the CM/SLM shelf

Tandberg tape drive

65

66 Remove the scratch tape and insert the backup tape into the SLM.

Note: Insert a tape cartridge with the metal plate to the left. The tape access opening faces upwards.

step 68

- 67 To lock the tape in place, press down on the locking lever.
 - Go to step 70.
- **68** To open the drive door, push on the Tandberg drive door button. To release the tape cartridge, continue to push on the button. To withdraw the scratch tape, pull the scratch tape straight out of the drive unit.
- 69 Insert the backup tape with the read and write tape that faces the bottom of the drive. To close the door, push on the drive door to close the door.

Note: A diagram on the inside of the Tandberg drive door indicates the position of the tape.

At the MAP terminal

70 To access the disk utility, type

>DISKUT

and press the Enter key.

MAP response:

Disk utility is now active. DISKUT:

71 To mount the backup tape cartridge, type

>INSERTTAPE tape_device_name and press the Enter key.

. where

tape device name

is the name of the tape device that contains the backupSLM tape (S00T for SLM 0, or S01T for SLM 1)

Example of a MAP response:

The INSERT operation may take up to 5 minutes to tension the tape.

72 To list the files stored on the back-up SLM tape, type

>LISTFL tape_device_name

and press the Enter key.

where

tape_device_name

is the name of the tape device containing the back-upSLM tape (S00T for SLM0 or S01T for SLM1)

73 The next action depends on the name of the disk volume on tape.

74 76
76
type
name
ne volun
ne back
PMLOAD
78.
type
name

disk_volume_name

is the name of the disk (S00D or S01D), and the name of the volume on the disk where you will restore the backup files

tape_device_name

is the name of the tape device (S00T or S01T) that contains the backup SLM tape

tape_file_name

is the name of the tape file that contains the backup files

Example input

>RESTORE STDVOL S00DPMLOADS S00T PMLOADS

- 77 Repeat step 76 for each disk volume that you created.
- **78** To demount the tape cartridge, type

>EJECTTAPE tape_device_name

and press the Enter key.

where

tape_device_name is the name of the tape device (S0

is the name of the tape device (S00T or S01T) thatcontains the backup SLM tape

Example of a MAP response:

The eject operation may take up to 5 minutes to position the tape to the beginning.

79 To quit the disk utility, type

>QUIT

and press the Enter key.

80 Determine if an ITOC alarm is present under the IOD header of the alarm banner.

If an ITOC alarm is	Do
present	step 81
not present	step 82

- 81 Perform the correct ITOC alarm clearing procedure in *Alarm and Performance Monitoring Procedures.* Complete the procedure and return to this point.
- 82 Your next step depends on the reason that you perform this procedure.

If you perform this procedure as a result of	Do
another maintenance procedure	step 83

NT9X44 in a SuperNode SE CM/SLM (end)

	If you perform this procedure as a result of	Do
	other than listed here	step 85
83	Return to the maintenance procedure continue as directed.	that directed you to this procedure and
84	For additional help, contact the next l	evel of support.
85	The procedure is complete.	

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NT9X46 in a SuperNode SE CM/SLM

Application

Use this procedure to replace an NT9X46 in a SuperNode SE (SNSE) computing module (CM) or system load module (SLM), as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT9X46	AA	Parallel port interface paddle board	CM/SLM

Refer to the "Index", if you cannot identify the following features for the card you want to replace:

- the product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Activity switch with memory match
- Replacing a card
- Switching the clock source
- Verifying load compatibility of SuperNode cards

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing anNT9X46 in a SuperNode SE CM/SLM



Replacing anNT9X46 in a SuperNode SE CM/SLM

At your current location

1



WARNING

Possible loss of data recording services

This procedure manually busies the SLM on the same plane as the card that you will replace. Make sure that the SLM on the opposite plane from the card you replace assumes data recording services, before you attempt this procedure.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you will replace.

2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC 0 no cpu 1 . . yes

4 Determine if the SLM assembly that you replaced associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the SLM assembly	Do
associates with the inactive CPU	step 5
associates with the active CPU	step 12

5 Determine if the inactive CPU is jammed.

Note: The word yes under the Jam header indicates that the inactive CPU is jammed. A blank field indicates that the CPU is not jammed.

If the inactive CPU	Do
is not jammed	step 8
is jammed	step 6

At the CM reset terminal for the inactive CPU

6

7



DANGER Loss of service

Make sure that you do not jam the active CPU. A cold restart occurs when you jam the active CPU while the CM is not in sync. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

Please confirm: (YES/NO)

- To confirm the command, type
 - >YES

and press the Enter key.

RTIF response:

JAM DONE

At the MAP terminal

8 Determine if the CM is synchronized.

Note: A dot (.) or EccOn under the Sync header indicates that the CM is synchronized. The word no indicates that the CM is not synchronized.

If the CM	Do
is synchronized	step 9

NT9X46

in a SuperNode SE CM/SLM (continued)

If the CM	Do
is not synchronized	step 13
To drop synchronization	, type
>DPSYNC	
and press the Enter key	
If the response	Do
is About to drop syne	with CPU n active. step
The inactive CPU is	JAMMED.
Do you want to con "Y", "NO", or "N"):	tinue? Please confirm ("YES",
is other than listed he	step step
To confirm the comman	d, type
>YES	
and press the Enter key	
Example of a MAP resp	onse:
Maintenance action	submitted.
Running in simples	mode with active CPU n.
CM reset terminal for th	e inactive CPU
Wait until A1 flashes on	the reset terminal for the inactive CPU.
Note: Allow approxir	nately 5 min for A1 to start to flash.
lf A1	Do
flashes	step 13

At the MAP terminal

13



WARNING Loss of service

Make sure that the CM runs on the active clock of the CPU. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU. A cold restart or system image reload can occur which results in loss of service.

To determine if the CM runs on the inactive clock of the CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

CPU pair is NOT insync, CPU 0 is active. CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM	Do
runs on the inactive clock of the CPU	step 14
runs on the active clock of the CPU	step 15
To run the CM on the active clock of th <i>Switching the clock source</i> in this docu return to this point.	ne CPU, perform the procedure ument. Complete the procedure and
To access the CMMNT level of the MA	NP display, type

>CMMNT

and press the Enter key.

Example of a MAP display:

14

15

СМ Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC 0 no cpu 0 yes . . . Traps: Per minute = 0 Total = 5 AutoLdev: Primary = SLM 0 DISK Secondary = SLM 1 DISK Image Restartable = No image test since last restart Next image restart type = WARM Last CM REXTST executed System memory in kbytes as of 14:39:07 Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784 16 Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU. *Note:* The primary autoload device appears on the right side of the Primary header. In the example in step 15, the primary autoload device is the disk of SLM 0. If the primary autoload device Do is on the side of the switch with the active CPU step 18 is on the side of the switch with the inactive CPU step 17 To change the primary autoload device to a device on the same side of the 17 switch as the active CPU, type >AUTOLD SLM slm_number device_type and press the Enter key. where slm number is the number of the active CPU (0 or 1) device type is the type of SLM device (DISK or TAPE) Example of a MAP response: New autoload route has been set. 18 To access the SLM that corresponds to the inactive CPU, type >IOD;SLM slm_number and press the Enter key.

where

slm_number is the number of the inactive CPU (0 or 1)

Example of a MAP display:

IOD IOC 0 STAT .	1	23							
DIRP:		XFER:		DVT :		י קקק		ΠΡΡΙΙ:	
NOP :	•	SLM :	•	NX25:	•	MLP :	•	SCAI:	•
SLM (Stat .) 1								
SLM O		devid statu drive	ce 1s e	TAPE idle		DIS on	K line		
		user				SIS	T 답N		

Note: Dots on the right side of the SLM Stat header indicate that the associated SLMs are in service.

19 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

SLM 0 busy passed.

Example of a MAP display:

SLM 0 1 Stat M .

Note: The letter M on the right of the SLM Stat header indicates that the associated SLM is manual busy.

20 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:

21

22

23

NT9X46 in a SuperNode SE CM/SLM (continued)

```
PMC 0
             .
PORT0:
PORT1:
To manually busy the port that corresponds to the inactive CPU, type
>BSY 0 PORT port number
and press the Enter key.
where
   port number
      is the number of the inactive CPU (0 or 1)
Example input
>BSY 0 PORT 0
Example of a MAP response:
Maintenance action submitted.
Passed.
To spin down the SLM disk, type
>SPIN DOWN
and press the Enter key.
  Note: The light on the faceplate of the SLM starts to blink. After 1 min, the
  light turns off. Wait for the light to turn off before you continue this
  procedure.
Example of a MAP response:
Disk of SLM 0 is not ready.
To offline the SLM, type
>OFFL
and press the Enter key.
Example of a MAP response:
SLM 0 now offline. Do not remove SLM card
until disk drive is spun down! This will be
indicated when the SLM card light turns off.
```

24 The next action depends on if the card that you replaced is part of the CM subsystem or the SLM subsystem.

If the card	Do
is part of the CM subsystem (card is in slot 17R or 22R)	step 25
is part of the SLM subsystem (card is in slot 7R or 28R)	step 32
To access the MC level of the MAP display, type	
>MC	
and press the Enter key.	
Example of a MAP display:	
MC 0 MC 1 	
<i>Note:</i> In the example, dots under the MC headers indica associated MCs are in service.	te that the
Determine the state of the message controller (MC) on the i	nactive CPU.
<i>Note:</i> The term mbsy under the MC header indicates that manual busy	at the MC is

If the state of the MC	Do	
is mbsy	step 28	
is not mbsy	step 27	

27

26

25



WARNING

Possible loss of service

Make sure that you do not manually busy the MC that corresponds to the active CPU. Do not power down the inactive CPU plane with the MC that associates with the active busied CPU. This action will cause a warm restart.

To manually busy the MC that corresponds to the inactive CPU, type >BSY mc_number and press the Enter key. where

mc_number

is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. MC busied OK.

If the MC	Do
busied	step 28
did not busy	step 61

At the CM/SLM shelf

28



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To power down the inactive CPU plane, press down and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the NTDX15 power converter is in slots 33F to 35F.

- **29** Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **30** To power up the inactive CPU plane, lift and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the power converter is in slots 33F to 35F.

31 Go to step 37.

At the CM/SLM shelf

32



DANGER Equipment damage and possible loss of service

Make sure that you do not switch off the NTDX15 power converter. If you switch off the NTDX15 power converter, the associated CPU plane powers down. The SLM does not power down. The NT9X91 power converter powers the SLM.

Power down the inactive SLM side. To switch off the NT9X91 power converter, press down and release the power switch on the faceplate of the converter.

Note: For CPU 0, NT9X91 the power converter is in slots 1F to 3F. For CPU 1, the NT9X91 power converter is in slots 36F to 38F.

33



WARNING

Equipment damage and possible loss of service

Make sure that you remove the interconnect cable from the NT9X46 card on the inactive side only. Make sure that you disconnect the cable in the correct sequence.

Remove the interconnect cable from the NT9X46 cards on the inactive plane as follows:

- a For plane 0:
 - i Disconnect the cable from the card in slot 17R.
 - ii Disconnect the cable from the card in slot 07R.
- **b** For plane 1:
 - i Disconnect the cable from the card in slot 22R.
 - ii Disconnect the cable from the card in slot 28R.
- **34** Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **35** Connect the interconnect cable to the NT9X46 cards on the inactive plane as follows:
 - a For plane 0:
 - i Connect the cable to the card in slot 07R.
 - ii Connect the cable to the card in slot 17R.
 - **b** For plane 1:
- i Connect the cable to the card in slot 28R.
- ii Connect the cable to the card in slot 22R.
- **36** To power up the inactive SLM side, lift and release the power switch on the faceplate of the NT9X91 power converter.

Note: For plane 0, the power converter is in slots 1F to 3F. For plane 1, the power converter is in slots 36F to 38F.

At the CM reset terminal for the inactive CPU

37



WARNING You must complete the firmware tests If you do not complete the firmware tests, the CPUs cannot synchronize.

Wait for the switch to complete firmware tests.

Example of an RTIF response:

Testing Memory: Shelf Slot PEC Module Status 00 15 NT9X14EA 00 16 NT9X14EA Waiting for activity...

Note: When firmware testing is in progress, dots appear on the right of the PEC in the firmware testing status line of the RTIF response. As each firmware test is complete, another dot appears until firmware testing for the card is complete. If the dots do not continue to appear and another firmware testing status line does not appear, firmware tests stop. If the dots do not continue to appear and the prompt Waiting for activity does not appear, firmware tests stop.

38 Determine if the firmware tests completed.

Note: If the firmware tests completed and the CPU powered up, the Waiting for activity message appears.

If the inactive CPU	Do
powered up	step 39
did not turn on	step 61

At the MAP terminal

39 To make sure that you are at the PMC level of the MAP display, type **>CM; PMC**

and press the Enter key.

40 To return the manual busy PMC port to service, type

>RTS 0 PORT port_number

and press the Enter key.

where

port_number is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. Passed.

If the RTS command	Do
passed	step 41
failed	step 61
To access the SLM that a	associates with the card that you replaced, type
>IOD;SLM slm_numbe	er
and press the Enter key.	
where	
slm_number is the number of th	ne SLM (0 or 1)
To manually busy the SLI	M, type
>BSY	
and press the Enter key.	
If the BSY command	Do
passed	step 43
failed	step 61
To spin up the SLM disk,	type
>SPIN UP	
and press the Enter key.	
Note: Wait for the ligh	nt on the faceplate of the SLM to turn on before v

Note: Wait for the light on the faceplate of the SLM to turn on before you continue this procedure.

41

42

43

	Example of a MAP response:	
	Disk of SLM 0 is ready.	
44	To test the SLM, type	
	>TST	
	and press the Enter key.	
	Example of a MAP response:	
	Minimum SLM 0 tests passed.	
	If the TST command	Do
	passed	step 47
	failed, and the system generated a card list	step 45
	is other than listed here	step 61
5	Record the location, description, slot n cards on the list.	number, PEC and the PEC suffix of the
;	To replace each card on the list, perfo procedure in this document. Complete	rm the correct card replacement the procedure and return to this point.
•	To return the SLM to service, type	
	>RTS	
	and press the Enter key.	
	Example of a MAP response:	
	SLM 0 return to service pass	sed.
	If the RTS command	Do
	passed	step 48
	failed	step 61
B	The next action depends on if the card subsystem or the SLM subsystem.	d that you replaced is part of the CM
	If the card	Do
	is part of the CM subsystem (car 22R)	rd is in slot 17R or step 49

51

If the card	Do
is part of the SLM subsystem (card is in slot 7R or 28R)	step 57
Your next step depends on the reason that you perform thi	s procedure
lf you	Do
perform this procedure as a result of a MC Tbl alarm	step 53
perform this procedure as a result of a PMCFlt alarm	step 53
perform this procedure as a result of a NoTOD alarm	step 53
perform this procedure as a result of a SBsyMC alarm	step 53
perform this procedure as a result of a MBsyMC alarm	step 53
perform this procedure as a result of a CBsyMC alarm	step 53
perform this procedure for any reason other than list- ed here	step 50
IAP terminal	
To access the MC level of the MAP display, type	
>CM;MC	
and press the Enter key.	
To return the manual busy MC to service, type	
>RTS mc_number	
and press the Enter key.	
where .	
<pre>mc_number is the number of the manual busy MC (0 or 1)</pre>	
Example of a MAP response:	
Maintenance action submitted. MC RTS ok.	
If the RTS command Do	

	If the RIS command	00				
	failed	step 61				
52	The next action depends on the reason that you performed this procedure.					
	lf you	Do				
	perform this procedure as a re- sult of a CM alarm clearing pro- cedure	step 53				
	perform this procedure for any reason other than listed here	step 54				
•	Return to the alarm clearing procedur and continue as directed.	re that directed you to this procedure				
ŀ	To access the CM level of the MAP di	splay, type				
	>CM					
	and press the Enter key.					
	To test the inactive CPU, type					
	>TST					
	and press the Enter key.					
	Example of a MAP response:					
	The test(s) listed below with the software load in inactive	ll destroy ve CPU:				
	Static RAM test					
	Do you want to do the test(; Please confirm: ("YES", "Y"	s) anyway? , "NO", or "N"):				
	To confirm the command, type					
	>YES					
	and press the Enter key.					
	Example of a MAP response:					
	Maintenance action submitte Test passed.	ed.				
	If the TST command	Do				
	passed	step 57				
	-	-				

NT9X46 in a SuperNode SE CM/SLM (end)

	If the TST command	Do	
	is other than listed here	step 61	
he	e CM reset terminal for the inactive CPL	J	
	To release the jam on the inactive CPU,	type	
	>\RELEASE JAM		
	and press the Enter key.		
	RTIF response:		
	JAM RELEASE DONE		
he	e MAP terminal		
	To synchronize the CM, type		
	>SYNC		
	and press the Enter key.		
	Example of a MAP response:		
	Maintenance action submitted. Synchronization successful.		
	If the response		Do
	indicates the SYNC command was	successful	step 59
	is other than listed here		step 61
	The next action depends on the reason	that you perform this	s procedure.
	lf you		Do
	perform this procedure as a result on nance procedure	f another mainte-	step 60
	perform this procedure for any reas ed here	on other than list-	step 62
	Return to the maintenance procedure th continue as directed.	at directed you to thi	s procedure a
	For additional help, contact the next leve	el of support.	
	The presedure is complete		

NT9X62 in a SuperNode SE CM/SLM

Application

Use this procedure to replace an NT9X62 in a SuperNode SE (SNSE) computing module (CM) or system load module (SLM).

PEC	Suffix	Card name	Shelf or frame name
NT9X62	AA	Two-port subrate DS512 paddle board	CM/SLM
NT9X62	BA	Four-port subrate DS512 paddle board	CM/SLM

Refer to the "Index", if you cannot identify the following features for the card you want to replace:

- the product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Activity switch with memory match
- Switching the clock source
- Verifying load compatibility of SuperNode cards

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing an NT9X62 in a SuperNode SE CM/SLM



Replacing NT9X62 in a SuperNode SE CM/SLM

At your current location

1

5



WARNING

Possible loss of data recording services

This procedure manually busies the SLM on the same plane as the card that you replace. Make sure that the SLM on the opposite plane assumes data recording services of the SLM that you remove from service, before you attempt this procedure.

Obtain a replacement card. Make sure that the replacement card has the same PEC and the PEC suffix as the card that you will replace.

2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

CMSyncActCPU0CPU1JamMemoryCMMntMCPMC0nocpu1..yes...

4 Determine if the SLM assembly that you replace associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the SLM assembly	Do		
associates with the inactive CPU	step 5		
associates with the active CPU	step 12		
Determine if the inactive CPU is jamm	ned.		
<i>Note:</i> The word yes under the Jam is jammed. A blank field indicates t	header indicates that the inactive CPU that the CPU is not jammed.		
If the inactive CPU	Do		
is not jammed	step 6		

If the inactive CPUDois jammedstep 8

At the CM reset terminal for the inactive CPU

6



DANGER Loss of service

Make sure that you do not jam the active CPU. A cold restart occurs when you jam the active CPU while the CM is not in sync. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type >\JAM and press the Enter key. *RTIF response:*

Please confirm: (YES/NO)

7 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

JAM DONE

At the MAP terminal

8 Determine if the CM is synchronized.

Note: A dot (.) or EccOn under the Sync header indicates that the CM is synchronized. The word no indicates that the CM is not synchronized.

If the CM	Do	
is synchronized	step 9	
is not synchronized	step 13	

9 To drop synchronization, type

>DPSYNC

and press the Enter key.

If the response	Do
is About to drop sync with CPU	step 10
The inactive CPU is JAMMED.	
Do you want to continue?	
Please confirm ("YES", "Y", "NO", or "N")	
is other than listed here	step 62
To confirm the command, type	
>YES	
and press the Enter key.	
Example of a MAP response:	
Maintenance action submitted.	
Running in simplex mode with	active CPU n.
CM reset terminal for the inactive CP	U C
Wait until A1 flashes on the reset term	inal for the inactive CPU.
Note: Allow approximately 5 min fo	r A1 to start to flash.
If A1	Do
flashes	step 13
does not flash	step 62
	is About to drop sync with CPU n active. The inactive CPU is JAMMED. Do you want to continue? Please confirm ("YES", "Y", "NO", or "N") is other than listed here To confirm the command, type >YES and press the Enter key. <i>Example of a MAP response:</i> Maintenance action submitted. Running in simplex mode with CM reset terminal for the inactive CP Wait until A1 flashes on the reset term Note: Allow approximately 5 min fo If A1 flashes does not flash

12 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

At the MAP terminal

13



WARNING Loss of service Make sure that the CM runs on the active clock of the CPU.

Do not power down the the inactive side of the CM while the CM runs on the inactive CPU clock. A cold restart or system image reload can occur which results in loss of service.

To determine if the CM runs on the inactive clock of the CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

CPU pair is NOT insync, CPU 0 is active. CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM	Do
runs on the incative clock of the CPU	step 14
runs on the active clock of the CPU	step 15
To run the CM on the active clock of th	e CPU, perform the procedure
return to this point.	
return to this point. To access the CMMNT level of the MA	P display, type
return to this point. To access the CMMNT level of the MA	P display, type

Example of a MAP display:

0	Sync no	ACT CPU 0		·	Jam yes	Memory	CMMnt	MC ·	PMC ·
Traps	:		Per m	inute	=	0	Total =		5
AutoL DISK	dev:		Prima	ry = S	LM 0	DISK S	econdary	=	SLM 1
Image	Rest	artabl	Le = No	o imag	e tes	t since	last re	star	t
Next	image	resta	art ty	pe =	WARM				
Last	CM RE	XTST e	execut	ed					
Syste Memor 11878	em men Y (kb 4	ory in ytes):	n kbyt : Used	es as = 105	of 1 984 A	4:39:07 vail =	12800 T	otal	. =
Deter the ac	mine if	the prin PU or th	nary aut le inacti	oload de ve CPU.	evice is	on the sa	me side of	the s	witch as
No hea of \$	o te: Th ader. I SLM 0.	e prima n the ex	ry autol ample ir	oad dev n step 15	ice app 5, the p	ears on th rimary au	ne right of t toload devi	the Pr ce is	rimary the disk
If th	e prim	ary aut	oload d	evice	Do				
is or as th	n the s he acti	ame sic ve CPU	le of th J	e switcl	h ste	p 18			
is or the	n the s switch	ide of t as the	he sam	e side o e CPU	f ste	p 17			
To ch switch	ange ti h as the	ne prima e active	ary auto CPU, ty	load dev pe	vice to a	a device o	n the same	e side	e of the
To ch switch > AUT	ange ti n as the OLD	ne prima e active SLM s	ary auto CPU, ty slm_nur	load dev pe nber o	vice to a devic	a device o e_type	n the same	e side	e of the
To cha switch >AUT and p	ange ti h as the OLD press th	ne prima e active stm s ne Enter	ary auto CPU, ty slm_nur key.	load dev pe nber o	vice to a	a device o e_type	n the same	e side	e of the
To ch switch > AUT and p <i>where</i>	ange ti n as the OLD press th e	e prima e active slm s e Enter	key.	load dev pe nber o	vice to a	a device o e_type	n the same	ə side	e of the
To ch switch >AUT and p where sl	ange ti n as the OLD oress th e Im_nu is the	ne prima e active sLM s le Enter mber numbe	ary auto CPU, ty slm_nur key. r of the a	load dev pe nber o	vice to a devico PU (0 d	a device o e_type or 1)	n the same	e side	e of the
To ch switch >AUT and p where sl	ange ti n as the OLD press the Im_nu is the evice is the	ne prima e active sine Enter mber numbe type type of	ary auto CPU, ty slm_nur key. r of the s	load dev pe mber o active C evice (DI	vice to a devic PU (0 o SK or ⁻	a device o e_type or 1) TAPE)	n the same	e side	e of the

New autoload route has been set.

16

17

18 To access the SLM that corresponds to the inactive CPU, type

>IOD;SLM slm_number

and press the Enter key.

where

slm_number

is the number of the inactive CPU (0 or 1)

Example of a MAP display:

IOD IOC STAT	0	1 •	2	3 •						
DIRP NOP	:	•	XFE SLN	ER: M		DVI : NX25:	DPP MLP	P: :	•	DPPU: SCAI:
SLM Stat	0	1								
SLM ()		de st	evice tatus	2	TAPE		DISK ·		
			dr us	rive ser		idle		on l SYSI	ine 'EM	

Note: Dots on the right of the SLM Stat header indicate that the associated SLMs are in service.

19 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

SLM 0 busy passed.

Example of a MAP display:

Note: The letter M on the right of the SLM Stat header indicates that the associated SLM is manual busy.

20 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:

21

22

23

in a SuperNode SE CM/SLM (continued)

```
PMC 0
              .
 PORT0:
 PORT1:
To manually busy the port that corresponds to the inactive CPU, type
>BSY 0 PORT port number
and press the Enter key.
 where
    port number
       is the number of the inactive CPU (0 or 1)
 Example input
>BSY 0 PORT 0
Example of a MAP response:
Maintenance action submitted.
Passed.
To offline the SLM, type
>OFFL
and press the Enter key.
   Note: Wait for the light on the faceplate of the SLM to turn off before you
   continue this procedure.
Example of a MAP response:
SLM 0 now offline. Do not remove SLM card
until disk drive is spun down! This will be
indicated when the SLM card light turns off.
To access the MC level of the MAP display, type
>MC
and press the Enter key.
Example of a MAP display:
MC 0
         MC 1
            .
   Note: In the preceding example, dots under the MC headers indicate that
   the associated MCs are in service.
```

24 Determine the state of the message controller (MC) on the inactive CPU.

Note: The term mbsy under the MC header indicates that the MC is manual busy.

If the state of the MC	Do
is mbsy	step 26
is not mbsy	step 25

25



WARNING Possible loss of service

Make sure that you do not manually busy the MC that corresponds to the active CPU. Do not power down the inactive CPU plane with the MC that associates with the active busied CPU. This action causes a warm restart.

To manually busy the MC that corresponds to the inactive CPU, type

>BSY mc_ number

and press the Enter key.

where

mc_number is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. MC busied OK.

If the MC	Do
busied	step 26
did not busy	step 62

At the CM/SLM shelf

26



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To power down the inactive CPU plane, press down and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the NTDX15 power converter is in slots 33F to 35F.

27 Locate the card on the shelf.

28



DANGER

Do not hold card by levers only If you hold a card only by the levers, you can break the levers. When you pull the card half way out of the shelf, carefully grasp the card below for more support. While you continue to remove the card from the shelf, make sure that

you do not touch any wires or internal parts on the card.

Open the locking levers on the card that you will replace.



DANGER

NT9X62 in a SuperNode SE CM/SLM (continued)

29



Damage to fiber cables When you handle fiber cables, make sure you do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

Label each fiber cable. Use Transmit for the top cable and Receive for the bottom cable.

- **30** Disconnect the fiber cables from the faceplate of the card, as follows:
 - a Loosen the fiber connections with the locking levers open.
 - **b** Carefully push in and turn the fiber cable connector counterclockwise halfway until the connector slides out of the receptacle.

Note: Refer to the following diagram.



31 While you grasp the locking levers, carefully pull the card toward you until the card protrudes approximately 2 in. (5.1 cm) from the equipment shelf.



32 Hold the card by the faceplate with one hand while you support the bottom edge with the other hand. Carefully pull the card toward you until the card is clear of the shelf.



- **33** Place the card that you removed in an electrostatic discharge (ESD) protective container.
- 34 Make sure that the replacement card has the same PEC and PEC suffix as the card that you just removed.
- **35** Insert the replacement card into the shelf, as follows.
 - **a** Open the locking levers on the card.
 - **b** Hold the card by the faceplate with one hand while you support the bottom edge with the other hand. Carefully slide the card into the shelf.



36



DANGER

Damage to fiber cable When you handle fiber cables, make sure that you do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

Connect the fiber cables, as follows:

- a Tighten the cable connections with the locking levers open.
- **b** Carefully guide the cable connector into the receptacle notches.
- **c** Push in and turn the cable connector clockwise halfway until the connection is secure.
- **37** Seat and lock the card.
 - **a** Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure that the card sits completely in the shelf.
 - **b** Close the locking levers to secure the card.



38 To power up the inactive CPU plane, lift and release the power switch located on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the power converter is in slots 33F to 35F.

At the CM reset terminal for the inactive CPU

39



WARNING You must complete the firmware tests If you do not complete the firmware test

If you do not complete the firmware tests, the CPUs cannot synchronize.

Wait for the switch to complete firmware tests.

Example of an RTIF response:

Testing	Memory:	
Shelf	Slot	PEC Module Status
00	15	NT9X14EA
00	16	NT9X14EA
Waiting	for acti	vity

Note: When firmware testing is in progress, dots appear on the right side of the PEC in the firmware testing status line of the RTIF response. As each firmware test is complete, another dot appears until firmware testing for the card is complete. If the dots do not continue to appear and another firmware testing status line does not appear, firmware tests stop. If the

dots do not appear and the prompt Waiting for activity does not appear, firmware tests stop.

40 Determine if the firmware tests completed.

Note: If the firmware tests completed and the CPU powered up, the Waiting for activity message appears.

If the inactive CPU	Do
powered up	step 41
did not power up	step 62

At the MAP terminal

41 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

42 To return the manual busy PMC port to service, type

>RTS 0 PORT port_number

and press the Enter key.

where

port_number is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. Passed.

If the RTS command	Do
passed	step 43
failed	step 62

- 43 To access the SLM that associates with the card that you replaced, type >IOD;SLM slm_number and press the Enter key. where slm_number is the number of the SLM (0 or 1)
- 44 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

SLM 0 busy passed.

If the BSY command	Do
passed	step 45
failed	step 62
To spin up the SLM disk, type	
>SPIN UP	
and press the Enter key.	
<i>Note:</i> Wait for the light on the face continue this procedure.	plate of the SLM to turn on before you
Example of a MAP response:	
Disk of SLM 0 is ready.	
To test the SLM, type	
>TST	
and press the Enter key.	
Example of a MAP response:	
Minimum SLM 0 tests passed.	
If the TST command	Do
passed	step 49
failed, and the system generated a card list	step 47
is other than listed here	step 62
Record the location, description, slot n card on the list.	number, PEC and PEC suffix of the first
To replace each card on the list, perfo procedure in this document. Complete	rm the appropriate card replacement e the procedure and return to this point.
To return the SLM to service, type	
>RTS	
and press the Enter key.	

Example of a MAP response:

SLM 0 return to service passed.

50

51

52

lf t	he RTS command	Do
pa	ssed	step 50
fai	lled	step 62
You	r next step depends on the reason t	that you perform this procedur
lf y	<i>y</i> ou	Do
pe a l	rform this procedure as a result on MC Tbl alarm	of step 54
pe a I	rform this procedure as a result open commentation of the second se	of step 54
pe a l	rform this procedure as a result on NoTOD alarm	of step 54
pe a S	rform this procedure as a result of SBsyMC alarm	of step 54
pe a l	rform this procedure as a result of MBsyMC alarm	of step 54
pe a (rform this procedure as a result of CBsyMC alarm	of step 54
pe so:	rform this procedure for any rea n other than listed here	ea- step 51
MAP	terminal	
To a	access the MC level of the MAP disp	play, type
>CM	;MC	
and	press the Enter key.	
To r	eturn the manual busy MC to servic	ce, type
>RT	'S mc_number	
and	press the Enter key.	
whe	ere	

Example of a MAP response:

mc_number

is the number of the manual busy MC (0 or 1)

If the RTS command	Do
passed	step 53
failed	step 62
The next action depends on the reas	son that you perform this procedu
lf you	Do
perform the procedure as a resul of a CM alarm clearing proce dure	t step 54 -
perform the procedure for any reason other than listed here	v step 55
Return to the alarm clearing proced and continue as directed.	ure that directed you to this proce
To access the CM level of the MAP	display, type
>CM	
and press the Enter key.	
To test the inactive CPU, type	
>TST	
and press the Enter key.	
Example of a MAP response:	
The test(s) listed below wi the software load in inacti	ll destroy ve CPU:
Static RAM test	
Do you want to do the test(Please confirm: ("YES", "Y"	s) anyway? , "NO", or "N"):
To confirm the command, type	
>YES	
and press the Enter key.	
-	

Mainten	ance	action	submitted.
Test pa	ssed.		

If the TST command	Do
passed	step 58
is other than listed here	step 62

At the CM reset terminal for the inactive CPU

58 To release the jam on the inactive CPU, type

>\RELEASE JAM

and press the Enter key.

RTIF response:

JAM RELEASE DONE

At the MAP terminal

59 To synchronize the CM, type >SYNC

and press the Enter key.

Example of a MAP response:

Maintenance action submitted. Synchronization successful.

If the response	Do
indicates the SYNC command was successful	step 60
indicates the command was other than listed here.	step 62
than histor here	
he next action depends on the reason th	nat you perform this procedure
The next action depends on the reason the re	nat you perform this procedure.
The next action depends on the reason the re	nat you perform this procedure. Do step 61

60

NT9X62 in a SuperNode SE CM/SLM (end)

- 61 Return to the maintenance procedure that directed you to this procedure and continue as directed.
- 62 For additional help, contact the next level of support.
- **63** The procedure is complete.

Power converter cards in a SuperNode SE CM/SLM

Application

Use this procedure to replace the following cards in a SuperNode SE (SNSE) computing module (CM) or system load module (SLM).

PEC	Suffix	Card name	Shelf or frame name
NT9X91	AA	Storage device power converter	CM/SLM
NTDX15	AA, AB	Global power converter ±5V	CM/SLM

Refer to the "Index", if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Activity switch with memory match
- Replacing a card
- Switching the clock source
- Verifying load compatibility of SuperNode cards

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing Power converter cards in a SuperNode SE CM/SLM



Replacing Power converter cards in a SuperNode SE CM/SLM

At your current location

1



WARNING

Possible loss of data recording services

This procedure manually busies the SLM on the same plane as the card you will replace. Make sure that the SLM on the opposite plane from the card you replace assumes data recording services, before you attempt this procedure.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you will replace.

2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC 0 no cpu 1 . . yes

4 Determine if the SLM assembly that you will replace associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the SLM assembly	Do
associates with the inactive CPU	step 5
associates with the active CPU	step 12

5 Determine if the inactive CPU is jammed.

Note: The word yes under the Jam header indicates that the inactive CPU is jammed. A blank field indicates that the CPU is not jammed.

If the inactive CPU	Do				
is not jammed	step 8				
is jammed	step 6				

At the CM reset terminal for the inactive CPU

6

7



DANGER Loss of service

Make sure that you do not jam the active CPU. A cold restart occurs when you jam the active CPU while the CM is not in sync. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM and press the Enter key.

RTIF response:

Please confirm: (YES/NO)

To confirm the command, type

>YES

and press the Enter key.

RTIF response:

JAM DONE

At the MAP terminal

8 Determine if the CM is synchronized.

Note: A dot (.) or EccOn under the Sync header indicates that the CM is synchronized. The word no indicates that the CM is not synchronized.

If the CM	Do
is synchronized	step 9

If the CM	Do						
is not synchro	nized step	0 13					
To drop synchror	nization, type						
>DPSYNC							
and press the En	iter key.						
If the response	}	Do					
is About to dro The inactive C	op sync with CPU n activ CPU is JAMMED.	ve. step 10					
Do you want t is Please confi	o continue? rm ("YES", "Y", "NO",	or "N"):					
is other than li	sted here	step 58					
To confirm the co	ommand, type						
>YES							
and press the En	iter key.						
Example of a MA	\P response:						
Maintenance action submitted. Running in simplex mode with active CPU n.							
CM reset termina	al for the inactive CPU						
Wait until A1 flas	hes on the reset terminal for	or the inactive CPU.					
<i>Note:</i> Allow a	pproximately 5 min for A1	to start to flash.					
If A1	Do						
flashes	step	0 13					
does not flash	step	step 58					
Perform the proc		nomary match in this document					

12 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

At the MAP terminal

13



WARNING Loss of service

Make sure that the CM runs on the active clock of the CPU. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU. A cold restart or system image reload can occur which results in loss of service.

To determine if the CM runs on the inactive clock of the CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

CPU pair is NOT insync, CPU 0 is active. CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM	Do						
runs on the inactive clock of the CPU	step 14						
runs on the active clock of the CPU	step 15						
To run the CM on the active clock of th <i>Switching the clock source</i> in this door return to this point.	ne CPU, perform the procedure cument. Complete the procedure and						
To access the CMMNT level of the MAP display, type							

>CMMNT

and press the Enter key.

Example of a MAP display:

14

15

0 no cpu 0	CPU0 CPU1	Jam Memory yes .	Y CMMnt MC PMC
Traps:	Per minute	= 0	Total = 5
AutoLdev: DISK	Primary = S	LM O DISK S	Secondary = SLM 1
Image Restartab	le = No imag	e test since	e last restart
Next image resta	art type =	WARM	
Last CM REXTST 6	executed		
System memory in Memory (kbytes) 118784	n kbytes as : Used = 105	of 14:39:0' 984 Avail =	7 12800 Total =
Determine if the prir the active CPU or th	nary autoload de ne inactive CPU.	evice is on the s	ame side of the switch as
<i>Note:</i> The prima header. In the ex of SLM 0.	ary autoload dev cample in step 15	ice appears on 5, the primary a	the right of the Primary utoload device is the disk
If the primary aut	oload device		Do
is on the same side	de of the switc	h as the active	CPU step 18
is on the same sid	de of the switcl	h as the inactiv	re CPU step 17
		vice to a device	
To change the prima switch as the active	ary autoload dev CPU, type	lice to a device	on the same side of the
To change the prima switch as the active	ary autoload dev CPU, type slm_number	device_type	on the same side of the
To change the prima switch as the active >AUTOLD SLM a and press the Enter	ary autoload dev CPU, type slm_number key.	device_type	on the same side of the
To change the prima switch as the active >AUTOLD SLM a and press the Enter where	ary autoload dev CPU, type slm_number key.	device_type	on the same side of the
To change the prima switch as the active >AUTOLD SLM s and press the Enter where slm_number is the numbe	ary autoload dev CPU, type slm_number key. er of the active C	device_type PU (0 or 1)	on the same side of the
To change the prima switch as the active >AUTOLD SLM a and press the Enter where slm_number is the numbe device_type is the type of	ary autoload dev CPU, type slm_number key. or of the active C	device_type PU (0 or 1) ISK or TAPE)	on the same side of the
To change the prima switch as the active >AUTOLD SLM as and press the Enter where slm_number is the numbe device_type is the type of Example of a MAP	ary autoload dev CPU, type slm_number key. or of the active C SLM device (DI response:	device_type PU (0 or 1) ISK or TAPE)	on the same side of the
To change the prima switch as the active >AUTOLD SLM & and press the Enter where slm_number is the numbe device_type is the type of Example of a MAP New autoload ro	ary autoload dev CPU, type slm_number key. or of the active C SLM device (Di response: bute has bee	nce to a device device_type PU (0 or 1) ISK or TAPE) n set.	on the same side of the
To change the prima switch as the active >AUTOLD SLM & and press the Enter where slm_number is the numbe device_type is the type of Example of a MAP New autoload roo To access the SLM	ary autoload dev CPU, type slm_number key. for of the active C SLM device (Di response: bute has bee: that correspond	device_type PU (0 or 1) ISK or TAPE) n set. s to the inactive	on the same side of the
To change the prima switch as the active >AUTOLD SLM s and press the Enter where slm_number is the numbe device_type is the type of Example of a MAP New autoload ro To access the SLM >IOD;SLM slm_r	ary autoload dev CPU, type slm_number key. of the active C SLM device (Di response: bute has bee: that correspond number	device_type PU (0 or 1) ISK or TAPE) n set. s to the inactive	on the same side of the

where

slm_number is the number of the inactive CPU (0 or 1)

Example of a MAP display:

IOD													
IOC (0	1	2	3									
STAT .	•	•	•	•									
DIRP:	•		XFE	lr:	•	DVI	:	•	DPP	P:	•	DPPU:	•
NOP :	•		SLM	1:	•	NX25	5:	•	MLP	:	•	SCAI:	
STM	0	1											
0	Ŭ	-											
Slal	·	•											
STM 0			de	wice	2	ͲZ	JDE.			DTSK			
			at	+	-					DIGI	-		
			SL	acu	5		•			•			
			dr	ive		ic	lle			on 1	ine		
			us	ser						SYSI	ΈM		

Note: Dots on the right of the SLM Stat header indicate that the associated SLMs are in service.

19 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

SLM 0 busy passed.

Example of a MAP display:

SLM 0 1 Stat M .

Note: The letter M on the right of the SLM Stat header indicates that the associated SLM is manual busy.

20 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:
	PMC 0					
PORT0:	•					
PORT1:	•					
To manu	ally busy t	he port t	that corre	sponds to	o the inactive C	PU, type
>BSY () PORT	port_	_number			
and pres	s the Ente	r key.				
where						
port_ is	_number the numbe	er of the	inactive (CPU (0 o	r 1)	
Example	input					
>BSY () PORT	0				
Example	of a MAP	respon	se:			
Mainter Passed	nance ac	tion s	submitte	d.		
To offline	the SLM,	type				
>OFFL						
and pres	s the Ente	r key.				
<i>Note:</i> contin	Wait for the this pro	he light cedure.	on the fac	eplate of	the SLM to turn	n off befo
Example	of a MAP	respon	se:			
SLM 0 r until c indicat	low offl lisk dri ced when	ine. D ve is the S)o not r spun do SLM carc	emove : wn! Th: light	SLM card is will be turns off.	
The next subsyste	action dep m or the S	oends o SLM sub	n if the ca system.	rd that yo	ou replaced is p	eart of the
If the c	ard			Do		
is part (NT9X	of the (91)	CM si	ubsystem	step 2	24	
	of the S	SLM si	ubsystem	step 3	31	
is part (NTD)	K15)		<i></i>			
is part (NTD) To acces	x15)	sage co	ntroller (N	IC) level	of the MAP disp	olay, type

Example of a MAP display:

MC 0 MC 1

.

Note: In the example, dots under the MC headers indicate that the associated MCs are in service.

25 Determine the state of the MC on the inactive CPU.

Note: The term mbsy under the MC header means that the MC is manual busy.

If the state of the MC	Do
is mbsy	step 27
is not mbsy	step 26

26



WARNING

Possible loss of service

Make sure that you do not manually busy the MC that corresponds to the active CPU. Do not power down the inactive CPU plane with the MC that associates with the active busied CPU. This action will cause a warm restart.

To manually busy the MC that corresponds to the inactive CPU, type

>BSY mc_ number

and press the Enter key.

where

mc_number is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. MC busied OK.

If the MC	Do
busied	step 27
did not busy	step 58

At the CM/SLM shelf

27



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To power down the inactive CPU plane, press down and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the NTDX15 power converter is in slots 33F to 35F.

- **28** Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **29** To power up the inactive CPU plane, lift and release the power switch located on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the power converter is in slots 33F to 35F.

30 Go to step 34.

At the CM/SLM shelf

31



DANGER

Equipment damage and possible loss of service Make sure that you do not switch off the NTDX15 power converter. If you switch off the NTDX15 power converter, the associated CPU plane powers down. The SLM does not power down. The NT9X91 power converter powers the SLM.



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the inactive SLM side. Press down and release the power switch located on the faceplate of the converter to switch off the NT9X91 power converter.

Note: For CPU 0, NT9X91 the power converter is in slots 1F to 3F. For CPU 1, the NT9X91 power converter is in slots 36F to 38F.

- **32** Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **33** Lift and release the power switch on the faceplate of the NT9X91 power converter to power up the inactive SLM side.

Note: For plane 0, the power converter is in slots 1F to 3F. For plane 1, the power converter is in slots 36F to 38F.

At the CM reset terminal for the inactive CPU

34



You must complete the firmware tests If you do not complete the firmware tests, the CPUs cannot synchronize.

Wait for the switch to complete firmware tests. *Example of an RTIF response:*

WARNING

Testing Memory: Shelf Slot PEC Module Status 00 15 NT9X14EA 00 16 NT9X14EA Waiting for activity...

Note: When firmware testing is in progress, dots appear on the right of the PEC in the firmware testing status line of the RTIF response. As each firmware test is complete, another dot appears until firmware testing for the card is complete. If the dots do not continue to appear and another firmware testing status line does not appear, firmware tests stop. If the dots do not appear and the prompt Waiting for activity does not appear, firmware tests stop.

35 Determine if the firmware tests completed.

Note: If the firmware tests completed and the CPU powered up, the Waiting for activity message appears.

If the inactive CPU	Do
powered up	step 36
did not power up	step 58

At the MAP terminal

36 To access the PMC level of the MAP display, type >CM; PMC and press the Enter key. 37 To return the manual busy PMC port to service, type 0 PORT port_number >RTS and press the Enter key. where port number is the number of the inactive CPU (0 or 1) Example of a MAP response: Maintenance action submitted. Passed. If the RTS command Do passed step 38 failed step 58

9	To access the SLM that associates with the card that you replaced, type <pre>>IOD;SLM slm_number and press the Enter key. where slm_number is the number of the SLM (0 or 1) To manually busy the SLM, type >BSY and press the Enter key. Example of a MAP response:</pre>				
	SLM 0 busy passed.				
	If the BSY command	Do			
	passed	step 40			
	failed	step 58			
1	 Io spin up the SLM disk, type >SPIN UP and press the Enter key. <i>Note:</i> Wait for the light on the facontinue this procedure. <i>Example of a MAP response:</i> Disk of SLM 0 is ready. To test the SLM, type >TST and press the Enter key. <i>Example of a MAP response:</i> 	aceplate of the SLM t	to turn on before you		
	Example of a MAP response:	_			
	Minimum SLM 0 tests passed	1.			
	If the TST command		Do		
	passed		step 44		
	failed, and the system generate	ed a card list	step 42		
	is other than listed here		step 58		

- 42 Record the location, description, slot number, PEC and PEC suffix of the first card on the list.
- 43 To replace each card on the list, perform the appropriate card replacement procedure in this document. Complete the procedure and return to this point.
- 44 To return the SLM to service, type

>RTS

46

and press the Enter key.

Example of a MAP response:

SLM 0 return to service passed.

If the RTS command	Do	
passed	step 45	
failed	step 58	

45 The next action depends on if the card that you replaced is part of the CM subsystem or the SLM subsystem.

If the card	Do
is part of the CM subsystem (NT9X91)	step 46
is part of the SLM subsystem (NTDX15)	step 54
our next step depends on the reason that you perform this	procedure.
lf you	Do
perform this procedure as a result of a MC Tbl alarm	step 50
perform this procedure as a result of a PMCFlt alarm	step 50
perform this procedure as a result of a NoTOD alarm	step 50
perform this procedure as a result of a SBsyMC alarm	step 50
perform this procedure as a result of a MBsyMC alarm	step 50
perform this procedure as a result of a CBsyMC alarm	step 50
perform this procedure for any reason other than list- ed here	step 47

At the MAP terminal

	To access the MC level of the MAP dis	splay, type	
	>CM;MC		
į	and press the Enter key.		
•	To return the manual busy MC to serv	ice, type	
	>RTS mc_number		
į	and press the Enter key.		
	where		
	mc_number is the number of the manual bu	sy MC (0 or 1)	
	Example of a MAP response:		
]	Maintenance action submitted MC RTS ok.		
	If the RTS command	Do	
	passed	step 49	
	failed	step 58	
	The next action depends on the reaso	n that you perform this	s procedure.
	lf you		Do
	perform this procedure as a resu clearing procedure	lt of a CM alarm	step 50
	performed this procedure for any listed here	reason other than	step 51
	Return to the alarm clearing procedure continue as directed.	e that directed you this	s procedure and
	To access the CM level of the MAP dis	splay, type	
	>CM		
ļ	and press the Enter key.		
	To test the inactive CPU, type		
	>TST		
	>TST and press the Enter key.		

	The test(s) listed below will destroy the software load in inactive CPU:							
	Static RAM test							
	Do you want to do the test(s) anyway? Please confirm: ("YES", "Y", "NO", or "N"):							
53	To confirm the command, type							
>YES								
	and press the Enter key.							
	Example of a MAP response:							
	Maintenance action submitted Test passed.							
	If the TST command	Do						
	passed	step 54						
	is other than listed here	step 58						
At the	CM reset terminal for the inactive CP	U						
54	To release the jam on the inactive CPL	J, type						
	>\RELEASE JAM							
	and press the Enter key.							
	RTIF response:							
	JAM RELEASE DONE							
At the	MAP terminal							
55	To synchronize the CM, type							
	>SYNC							
	and press the Enter key.							
	Example of a MAP response:							
	Maintenance action submitted							
	Synchronization successful.							
	If the response		Do					
	indicates the SYNC command was	s successful	step 56					

If the response	Do
is other than listed here	step 58
The next action depends on the reason that you perform this	s procedure.
lf you	Do
perform this procedure for another maintenance pro- cedure	step 57
perform this procedure for any reason other than list- ed here	step 59
Return to the maintenance procedure that directed you to this continue as directed.	s procedure and
For additional help, contact the next level of support.	
The procedure is complete	

59 The procedure is complete.

Replace system cards in a SuperNode SE CM/SLM

Application

Use this procedure to replace the following cards in a Supernode SE computing module (CM) or system load module (SLM).

PEC	Suffix	Card Name	Shelf or frame name
NT9X10	AA	33-MHz 88100 BRISC CPU card	CM/SLM
NT9X10	BA, CA	60-MHz 88100 BRISC CPU card	CM/SLM
NT9X12	AA, AB, AC, AD	CPU port card	CM/SLM
NT9X13	MA, MB	Supernode SE core processor card	CM/SLM
NT9X14	DB	24-Mbyte memory card	CM/SLM
NT9X14	EA	96-Mbyte memory card	CM/SLM
NT9X21	AA	CM-bus terminator paddle board	CM/SLM
NT9X21	AB	Bus terminator paddle board	CM/SLM
NT9X26	AB, CA	Remote terminal interface paddle (RTIF) board	CM/SLM
NT9X26	DA, DB, DC, EA, FA	BRISC RTIF paddle board	CM/SLM
NT9X86	AA/AB	Dual-port message controller card	CM/SLM

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix

- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Activity switch with memory match
- *Replacing a card*
- Switching the clock source
- Verifying load compatibility of SuperNode cards

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.



Summary of Replace system cards in a SuperNode SE CM/SLM

Replace system cards in a SuperNode SE CM/SLM

At your current location

1



DANGER

Possible loss of data recording services

This procedure manually busies the SLM on the same plane as the card that you replace. Make sure that the SLM on the opposite plane from the card you replace assumes data recording services, before you attempt this procedure.



DANGER

Possible incorrect memory configuration Replacement of an NT9X14DB with an NT9X14EA can result in a memory configuration that is not supported. If you replace an NT9X14DB with an NT9X14EA, contact the next level of support.



DANGER

Possible incorrect memory configuration

Do not leave empty slots between memory cards or between the first memory card and a two-port message controller card. The empty slots result in a memory configuration that is not supported.



DANGER

Possible incorrect memory configuration

Do not mix NT9X14DB and NT9X14EA cards. Mixed cards result in a memory configuration that is not supported. Keep NT9X14EA cards together. Place the NT9X14EA cards next to the CPU card.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you will replace.

2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

CM	Sync	Act	CPU0	CPU1	Jam	Memory	CMMnt	MC	PMC
0	no	cpu 1			yes				

4 Determine if the SLM assembly that you replace associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the SLM assembly	Do
associates with the inactive CPU	step 5
associates with the active CPU	step 12
Determine if the inactive CPU is jamm	ed.

Note: The word yes under the Jam header indicates that the inactive CPU is jammed. A blank field indicates that the CPU is not jammed.

If the inactive CPU	Do
is not jammed	step 6
is jammed	step 8

At the CM reset terminal (RTIF) for the inactive CPU

6

5



DANGER Loss of service

Make sure that you do not jam the active CPU. A cold restart occurs when you jam the active CPU while the CPU is not in sync. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

Please confirm: (YES/NO)

7 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

JAM DONE

At the MAP terminal

9

8 Determine if the CM is synchronized

> Note: A dot (.) or EccOn under the Sync header indicates that the CM is synchronized. The word no indicates that the CM is not synchronized.

If the CM	Do	
is synchronized	step 9	
is not synchronized	step 13	
To drop synchronization, type		
>DPSYNC		
and press the Enter key.		
If the response	De	D
is About to drop sync with C The inactive CPU is JAMM	CPU 1 active. st ED.	ep 10
Do you want to continue?		
Please confirm ("YES", "Y"	, "NO", or "N"):	
is other than listed here	st	ep 70
To confirm the command, type		
>YES		
and press the Enter key.		
Example of a MAP response:		
Maintenance action subm Running in simplex mode	nitted. e with active CPU 1.	

At the CM reset terminal (RTIF) for the inactive CPU

11 Wait until A1 flashes on the reset terminal for the inactive CPU.

Note: Allow approximately 5 min for A1 to start to flash.

lf A1	Do
flashes	step 13
does not flash	step 70

12 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

At the MAP terminal

13



WARNING Loss of service

Make sure that the CM runs on the active clock of the CPU. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU. A cold restart or system image reload can occur which results in loss of service.

Determine if the CM runs on the inactive clock of the CPU, type

>INSYNC and press the Enter key. Example of a MAP response: CPU pair is NOT insync, CPU 0 is active.

CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.

If the CM	Do
runs on the clock of the inactive CPU	step 14
runs on the clock of the active CPU	step 15

- 14 To run the CM on the clock of the active CPU, perform the procedure *Switch the clock source* in this document. Complete the procedure and return to this point.
- **15** To access the CMMNT level of the MAP display, type

>CMMNT

and press the Enter key.

Example of a MAP display:

CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC 0 no cpu 0 yes
Traps: Per minute = 0 Total = 5
AutoLdev: Primary = SLM 0 DISK Secondary = SLM 1 DISK
Image Restartable = No image test since last restart
Next image restart type = WARM
Last CM REXTST executed
System memory in kbytes as of 14:39:07 Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784
Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU.

Note: The primary autoload device appears on the right of the Primary header. In the example in step 15, the primary autoload device is the disk of SLM 0.

If the primary autoload device	Do
is on the same side of the switch as the active CPU	step 18
is on the same side of the switch as the inactive CPU step 17	
To change the primary autoload device to a device on the s switch as the active CPU, type	ame side of the
>AUTOLD SLM slm_number device_type	
and press the Enter key.	
where	
<pre>slm_number is the number of the active CPU (0 or 1)</pre>	
device_type	

is the type of SLM device (DISK or TAPE)

16

17

18

19

Replace system cards in a SuperNode SE CM/SLM (continued)

Example of a MAP response:		
New autoload route has been a	set.	
To access the SLM that corresponds to	o the inactive CPU, typ	be
>IOD;SLM slm_number		
and press the Enter key.		
where		
<pre>slm_number is the number of the inactive CF</pre>	2U (0 or 1)	
Example of a MAP display:		
IOD IOC 0 1 2 3 STAT		
DIRP: . XFER: . DVI : NOP: . SLM: . NX25:	. DPPP: . . MLP : .	DPPU: . SCAI: .
SLM 0 1 Stat		
SLM 0 primary device	TAPE	DISK
drive user	idle	on line SYSTEM
<i>Note:</i> Dots on the right of the SLM associated SLMs are in service.	Stat header indicate t	hat the
If the SLM Stat header	Do	
has dots	step 19	
is other than listed here	step 70	
To manually busy the SLM, type		
>BSY		
and press the Enter key.		
Example of a MAP response:		
SLM 0 busy passed.		
Example of a MAP display:		
SLM 0 1 Stat M .		

 $\it Note:$ The letter M on the right of the SLM Stat header indicates that the associated SLM is manual busy.

If the SLM	Do
busied	step 22
did not busy	step 70
To access the PMC level o	f the MAP display, type
>CM;PMC	
and press the Enter key.	
Example of a MAP display	:
PMC 0	
PORTO: .	
PORT1: .	
To manually busy the port	that corresponds to the inactive CPU, type
>BSY 0 PORT port_	number
and press the Enter key.	
where	
<pre>port_number is the number of the</pre>	inactive CPU (0 or 1)
Example input	
>BSY 0 PORT 0	
Example of a MAP respon	se:
Maintenance action a Passed.	submitted.
To offline the SLM, type	
>OFFL	
and press the Enter key.	
<i>Note:</i> Wait for the light continue this procedure.	on the faceplate of the SLM to turn off before you
Example of a MAP respon	se:

SLM 0 now offline. Do not remove SLM card until disk drive is spun down! This will be indicated when the SLM card light turns off.

If the SLM	Do	
offlined	step 23	
did not offline	step 70	

23 To access the MC level of the MAP display, type

.

>MC

and press the Enter key.

Example of a MAP display:

CM 0 MC 0 MC 1 .

Note: In the example, dots under the MC headers indicate that the associated MCs are in service.

24 Determine the state of the message controller (MC) on the inactive CPU.

Note: The term mbsy under the MC header indicates that the MC is manual busy.

If the state of the MC	Do
is mbsy	step 26
is not mbsy	step 25

25



WARNING Possible loss of service

Make sure that you do not manually busy the MC that corresponds to the active CPU. Do not power down the inactive CPU plane with the MC that associates with the active busied CPU. This action will cause a warm restart.

To manually busy the MC that corresponds to the inactive CPU, type >BSY mc_ number and press the Enter key. where

mc_number

is the number of the inactive CPU (0 or 1)

Example of a MAP response:

Maintenance action submitted. MC busied OK.

If the MC	Do
busied	step 26
did not busy	step 70

At the CM/SLM shelf

26



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To power down the inactive CPU plane, press down and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the NTDX15 power converter is in slots 33F to 35F.

- 27 Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **28** To power up the inactive CPU, lift and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the NTDX15 power converter is in slots 4F to 6F. For CPU 1, the power converter is in slots 33F to 35F.

At the CM reset terminal (RTIF) for the inactive CPU 29



WARNING You must complete the firmware tests If you do not complete the firmware tests, the CPUs cannot synchronize.

Wait for the switch to complete firmware tests.

Example of an RTIF response:

Testing Memory: Shelf Slot PEC Module Status 00 15 NT9X14EA ... 00 16 NT9X14EA ... Waiting for activity...

Note: When firmware testing is in progress, dots appear on the right of the PEC in the firmware testing status line of the RTIF response. As each firmware test is complete, another dot appears until firmware testing for the card is complete. If the dots do not continue to appear and another firmware testing status line does not appear, firmware tests stop. If the dots do not appear and the prompt Waiting for activity does not appear, firmware tests stop.

30 Determine if the firmware tests completed.

Note: If the firmware tests completed and CPU powered up, the Waiting for activity message appears.

If the inactive CPU	Do
powered up	step 31
did not turn on	step 70

At the MAP terminal

31 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

32 To return the manual busy PMC port to service, type

>RTS 0 PORT port_number

and press the Enter key.

where

33

34

port_number is the number of the inactive CPU (0 or 1) *Example of a MAP response:*

Maintenance action submitted. Passed.

If the RTS command	Do
passed	step 33
failed	step 70
To access the SLM that associates w	vith the card that you replaced, type
>IOD;SLM slm_number	
and press the Enter key.	
where	
slm_number is the number of the SLM (0 o	or 1)
To return the SLM to service, type	
>RTS	
and press the Enter key.	
Example of a MAP response:	
SLM 0 return to service pas	ssed.

If the RTS command	Do
passed	step 35
failed	step 70

35 The next action depends on the type of card that you replaced.

If the card that you replaced	Do		
is an NT9X14	step 36		
is an NT9X26	step 38		
is other than listed here	step 39		
To access the Memory level of the MAP display, type			
>CM; MEMORY			
and press the Enter key.			

Example of a MAP display:

36

	CM 0 Plane 0 Plane 1				
	54321 P P 12345				
37	To test the card that you replaced, typ	e			
	>TST CARD card_number				
	and press the Enter key.				
	where				
	card_number is the number of the memory card that you replaced(0 to 5)				
	Example of a MAP response:				
	Maintenance action submitted Memory test OK.	1.			
	If the TST command	Do			
	passed	step 39			
	failed	step 70			
		±			
At the	CM reset terminal (RTIF) for the inac	ctive CPU			
<i>At the</i> 38	<i>CM reset terminal (RTIF) for the inac</i> To determine the result of the last self	tive CPU			
At the 38	CM reset terminal (RTIF) for the inac To determine the result of the last self >\SELF TEST	tive CPU test, type			
At the 38	CM reset terminal (RTIF) for the inaction of the inaction of the last self >\SELF TEST and press the Enter key.	tive CPU test, type			
At the 38	<i>CM reset terminal (RTIF) for the inac</i> To determine the result of the last self >\SELF TEST and press the Enter key. <i>Example of a MAP response:</i>	tive CPU test, type			
<i>At the</i> 38	CM reset terminal (RTIF) for the inaction of the last self of the last self of the last self of self test and press the Enter key. Example of a MAP response:	tive CPU test, type			
<i>At the</i> 38	CM reset terminal (RTIF) for the inaction To determine the result of the last self >\SELF TEST and press the Enter key. Example of a MAP response: SELF TEST RESULTS: ROM OK F If the self test	tive CPU f test, type RAM OK 9x26 OK			
<i>At the</i> 38	CM reset terminal (RTIF) for the inaction To determine the result of the last self >\SELF TEST and press the Enter key. Example of a MAP response: SELF TEST RESULTS: ROM OK F If the self test passed	ctive CPU f test, type RAM OK 9x26 OK Do step 39			
At the 38	CM reset terminal (RTIF) for the inaction To determine the result of the last self >\SELF TEST and press the Enter key. Example of a MAP response: SELF TEST RESULTS: ROM OK F If the self test passed failed	ctive CPU f test, type RAM OK 9x26 OK Do step 39 step 70			
<i>At the</i> 38 39	CM reset terminal (RTIF) for the inaction To determine the result of the last self >\SELF TEST and press the Enter key. Example of a MAP response: SELF TEST RESULTS: ROM OK F If the self test passed failed Your next step depends on the reason	ctive CPU f test, type RAM OK 9X26 OK Do step 39 step 70 h that you perform this procedure.			
<i>At the</i> 38 39	CM reset terminal (RTIF) for the inac To determine the result of the last self >\SELF TEST and press the Enter key. Example of a MAP response: SELF TEST RESULTS: ROM OK F If the self test passed failed Your next step depends on the reason If you	tive CPU f test, type RAM OK 9x26 OK Do step 39 step 70 h that you perform this procedure. Do			
<i>At the</i> 38 39	CM reset terminal (RTIF) for the inaction To determine the result of the last self >\SELF TEST and press the Enter key. Example of a MAP response: SELF TEST RESULTS: ROM OK F If the self test passed failed Your next step depends on the reason If you perform this procedure as a result	Extive CPU if test, type RAM OK 9X26 OK Do step 39 step 70 n that you perform this procedure. Do a f a MC Tbl alarm			

lf you		Do	
perform this procedure as a result of	of a PMCTbl alarm	step 43	
perform this procedure as a result	of a NoTOD alarm	step 43	
perform this procedure as a res alarm	ult of a SBsyMC	step 43	
perform this procedure as a resu alarm	lt of a MBsyMC	step 43	
perform this procedure as a rest alarm	ult of a CBsyMC	step 43	
perform this procedure for any rea	son other than list-	step 40	
MAP terminal			
To access the MC level of the MAP dis	play, type		
>CM;MC			
and press the Enter key.			
To return the manual busy MC to servi	ce, type		
>RTS mc_ number			
and press the Enter key.			
where	where		
mc_number is the number of the manual busy MC (0 or 1)			
Example of a MAP response:			
Maintenance action submitted. MC RTS ok.			
If the RTS command	Do		
passed	step 42		
failed	step 70		

	Do
is a SuperNode SE Series 20 or 60 with software r lease BASE06	e- step 43
is other than listed here	step 45
To record all the card changes in the history database fo	r each card, t
>SWAPHW shelf_no slot_no side_no	
and press the Enter key.	
where	
<pre>shelf_no is the number of the shelf (0 or1)</pre>	
<pre>slot_no is the number of the slot (1 to 38)</pre>	
<pre>side_no is the side of the CM (front or back)</pre>	
Example of a MAP response:	
ARNING: You have indicated that the follow: ack has been replaced. Please verify that ccurately reflects which circuit pack has B nd that the displayed PEC code matches what quipped in that slot:	ing circui this peen chang t is curre
ite Flr RPOs Shf Description Slot EQ OST 00 A00 DPCC 0 18 CM 0;0;0 19 9	PEC 9X13BC
o you wish to continue?	',
lease confirm (YES", Y", NO" N") Y" or YES	
lease confirm (YES", Y", NO" N") Y" or YES ard replacement has been recorded.	
lease confirm (YES", Y", NO" N") Y" or YES ard replacement has been recorded.	
lease confirm (YES", Y", NO" N") Y" or YES ard replacement has been recorded.	
lease confirm (YES", Y", NO" N") Y" or YES ard replacement has been recorded. If the response	Do

is Aborted. Card replacement has step 44 NOT been recorded.

is other than listed here step 70

Note: The specified card joins the list of the cards that you replaced. The actual updates to the mismatch history database do not occur until the next manual SYNC attempt.

- 44 Enter the SWAPHW command as you did in step 43.
- 45 Determine the reason for the return of the circuit card.

If the fault		Do
is memory fault correctable mismatches		step 46
is mismatches other than m	nemory fault correctable	step 46
is REx test failures: manua	is REx test failures: manual or auto	
is manual test failures	s manual test failures	
is other failures		step 50
To retrieve the mismatch logs t >LOGUTIL and press the Enter key. Collect or print all MM and MF	that associate with the mism C logs.	atches, type
If software	Do	
is BCS33 or earlier	step 50	
is BCS34 or later	step 48	
To retrieve the MMINFO logs th mismatches, type	at associate with the memory	y fault correctable
>MMINFO DECODE ALL		
and press the Enter key.		
Print out all MMINFO logs.		
Obtain associated failure logs.		
Write the PEC and serial number of the returned card on the first page of the log printout.		
Note: If a minimum of two c one set of logs. If the failure required for each card. On attached, indicate the card I accompany.	ards on a card list are returned as are not the same, use sep the return label of cards that PEC code and serial number	ed, you only need parate logs as do not have logs r that the logs
Example: Logs returned with c	ard NT9X13BC, serial numb	er bnt123455mn

in a SuperNode SE CM/SI	_M (continue
If the fault	Do
is mismatches other than memory fault correctable	step 54
is REX failures: manual or auto	step 56
is manual test failures	step 58
is other than listed here	step 60
Complete one return label (form 24-115) for each card tha sure that you include the following information:	t returns. Make
NT PEC	
serial number	
release number	
return authorization number from customer service	
BCS software release used at the time of replacement	t
name of your company	
office identifier code	
your name	
site name	
Enter the following in the failure description section of the	label:

Replace system cards d)

- reason for failure(failure caused by a memory fault correctable (MFC) "nn" faults in "dd" days (example: 5 MFC in 4 days)
- the slot and CPU number(example: slot 23, CPU 1)
- that the logs are retrieved with the cards(example: logs are attached) ٠
- for software release Base 06, include associated MFC logs
- if you removed other cards at the same time as the returned card(example: NT9X13BC, slot 20, CPU 1, #bnt12345mmm NT9x14DB, slot 14, CPU 0, #dgh744ggg)

Go to step 62.

52

53

.

- 54 Complete one return label (form 24-115) for each card returns. Make sure that you include the following information:
 - NT PEC
 - serial number
 - release number
 - return authorization number from customer service
 - BCS software release used at the time of replacement
 - name of your company
 - office identifier code

- your name
- site name
- 55 Enter the following in the failure description section of the label:
 - reason for failure(example: failure occurred during manual/auto Rex)
 - the slot and CPU number(example: slot 23, CPU 1)
 - that the logs are retrieved with the cards(example: logs are attached)
 - if the card is on the recommended card list and in what order(example: first on card list or did not appear on card list
 - if you remove other cards at the same time as the returned card(example: NT9X13BC, slot 20, CPU 1, #bnt12345mmm #2 on card list NT9x14DB, slot 14, CPU 0, #dgh744ggg, not on card list)

Go to step 62.

- 56 Complete one return label (form 24-115) to return for each card. Make sure that you include the following information:
 - NT PEC
 - serial number
 - release number
 - return authorization number from customer service
 - BCS software release used at the time of replacement
 - name of your company
 - office identifier code
 - your name
 - site name
- 57 Enter the following in the failure description section of the label:
 - failure due to memory fault correctable (MFC) ``nn" faults in "dd" days (example: 5 MFC in 4 days)
 - the slot and CPU number(example: slot 23, CPU 1)
 - that the logs are retrieved with the cards(example: logs are attached)
 - if you removed other cards at the same time as the returned card(example: NT9X13BC, slot 20, CPU 1, #bnt12345mmm NT9x14DB, slot 14, CPU 0, #dgh744ggg)

Go to step 62.

- 58 Complete one return label (form 24-115) for each card that will return. Make sure that you include the following information:
 - NT PEC
 - serial number
 - release number
 - return authorization number from customer service

- BCS software release used at the time of replacement
- name of your company
- office identifier code
- your name
- site name
- 59 Enter the following in the failure description section of the label:
 - reason for failure. Provide a short summary of occurrences and conditions.(example: Manual tests failed. Card reported in card list)
 - the slot and CPU number(example: slot 23, CPU 1)
 - that the logs are retrieved with the cards(example: logs are attached)
 - *Note:* Include any available past logs. Past logs can indicate the possible fault.
 - if the card is on the recommended card list and in what order(example: first on card list or did not appear on card list
 - if you removed other cards at the same time as the returned card(example: NT9X13BC, slot 20, CPU 1, #bnt12345mmm, #2 on card list NT9x14DB, slot 14, CPU 0, #dgh744ggg, not on card list)

Go to step 62.

- 60 Complete one return label (form 24-115) for each card that you remove. Make sure that you include the following information:
 - NT PEC
 - serial number
 - release number
 - return authorization number from customer service
 - BCS software release used at the time of replacement
 - name of your company
 - office identifier code
 - your name
 - site name
- 61 Enter the following in the failure description section of the label:
 - reason for failure. Provide a short summary of occurrences and conditions.(example: Cannot sync. manual tests failed. Rotated cards. Able to sync with this card removed)
 - the slot and CPU number(example: slot 23, CPU 1)
 - that the logs are retrieved with the cards(example: attached logs)

Note: Include any available past logs. Past logs can indicate the possible fault).

	 if the card is on the recommended card list and in what order(example: first on card list or did not appear on card list 		
	 if you removed other cards at the card(example: NT9X13BC, slot 2 list NT9x14DB, slot 14, 	e same time as the retu 20, CPU 1, #bnt12345m CPU 0, #dgh744ggg, n	rned mm, #2 on card ot on card list)
62	When you complete this procedure, return the cards and associated documentation. To return the cards and associated documentation, refer the procedure <i>Returning a card or assembly.</i>		sociated entation, refer to
3	Your next step depends on the reason that you perform this procedure.		procedure.
	lf you		Do
	perform this procedure as a resu clearing procedure	ult of the CM alarm	step 64
	perform this procedure for any reed here	eason other than list-	step 65
Return to the alarm clearing procedure that directed you this procedure that directed you this procedure.		s procedure and	
5	To access the CM level of the MAP of	lisplay, type	
	>CM		
	and press the Enter key.		
	To test the inactive CPU, type		
	>TST		
	and press the Enter key.		
	Example of a MAP response:		
	The test(s) listed below wi the software load in inacti	ll destroy ve CPU:	
	Static RAM test		
	Do you want to do the test(Please confirm: ("YES", "Y"	s) anyway? , "NO", or "N"):	
,	To confirm the command, type		
	>YES		
	and press the Enter key.		
	If the TST command	Do	
	passed	step 68	
	is other than listed here	step 70	

At th	e CM reset terminal (RTIF) for the inac	tive CPU	
68	To release the jam on the inactive CP	U, type	
	>\RELEASE JAM		
	and press the Enter key.		
	RTIF response:		
	JAM RELEASE DONE		
At th	e MAP terminal		
69	To synchronize the CM, type		
	>SYNC		
	and press the Enter key.		
	Example of a MAP response:		
	Maintenance action submitted	1.	
	Synchronization successful.		
	If the response	Do	
	indicates the SYNC command was successful	step 71	
	is other than listed here	step 70	
70	70 For additional help, contact the next level of support.		
71	The procedure is complete.		

3 Digital carrier module card replacement procedures

Introduction

This chapter provides card replacement procedures for the digital carrier module (DCM) and the digital echo suppressor (DES). The first section in the chapter provides diagrams of DCM and DES shelf designs.

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter "Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Application

This section identifies the DCM or DES card(s) discussed in the replacement procedure.

Common procedures

This section lists common procedures in the DCM or DES card replacement procedure. A common procedure is a series of steps that you repeat within maintenance procedures. The procedure for the removal and replacement of a card. Common procedures are in the common procedures chapter in this NTP.

Do not go to the common procedures unless the step-action procedure directs you.

Action

This procedure provides a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card that you replaced
- the date that you replaced the card
- the reason that you replaced the card
DCM shelf layouts

Application

This module provides a frame design diagram for the digital carrier equipment (DCE) frame. The module also provides shelf diagrams for the following:

- digital carrier module (DCM), with two power converters
- DCM, with one power converter
- digital echo suppressor (DES)

Note: The frame and shelf designs on the following pages are common. The shelves in your office can have differences.

DCM shelf layouts (continued)





DCM shelf layouts (continued)

		Card	ls
	NT2X06	Power converter card	215
	NT2X07	Power converter card	18F
	NT0X50	Filler faceplate	17F
	NT0X50	Filler faceplate	16F
	NT0X50	Filler faceplate	15F
	NT2X32	DCM processor card	14F
	NT2X33	Control card	13F
	NT2X24	PP message processor card	12F
	NT0X50	Filler faceplate	11F
	NT2X36	Network interface card	10F
	NT2X37	DCM tone card	09F
	NT2X38	DCM signaling card	08F
	NT2X35	DCM interface card	07F
	NT2X35	DCM interface card	06F
	NT2X35	DCM interface card	05F
	NT2X35	DCM interface card	04F
	NT2X35	DCM interface card	03F
	NT0X50	Filler faceplate	01F
Rear		Front	

DCM, with two power converters

DCM shelf layouts (continued)

DCM, with one power converter

			Cards
	NT2X70	Power converter card	20F
	NT0X50	Filler faceplate	18F
	NT0X50	Filler faceplate	17F
	NT0X50	Filler faceplate	16F
	NT0X50	Filler faceplate	15F
	NT2X32	DCM processor card	14F
	NT2X33	Control card	13F
	NT2X24	PP message processor card	12F
	NT0X50	Filler faceplate	11F
	NT2X36	Network interface card	10F
	NT2X37	DCM tone card	09F
	NT2X38	DCM signaling card	08F
	NT2X35	DCM interface card	07F
	NT2X35	DCM interface card	06F
	NT2X35	DCM interface card	05F
	NT2X35	DCM interface card	04F
	NT2X35	DCM interface card	03F
			02F
	NT0X50	Filler faceplate	01F
Rear			Front 🗔 🗸

DCM shelf layouts (end)

Digital echo suppressor (DES)

			Cards
	NT2X70	Power converter card	20F
	NT0X50	Filler faceplate	18F
	NT0X50	Filler faceplate	17F
	NT0X50	Filler faceplate	16F
	NT0X50	Filler faceplate	15F
	NT2X32	DCM processor card	14F
	NT2X33	Control card	13F
	NT2X24	PP message processor card	12F
	NT0X50	Filler faceplate	11F
	NT2X36	Network interface card	10F
	NT2X37	DCM tone card	09F
	NT2X38	DCM signaling card	08F
	NT2X35	DCM interface card	07F
	NT2X35	DCM interface card	06F
	NT2X35	DCM interface card	05F
	NT2X35	DCM interface card	04F
	NT2X35	DCM interface card	03F
			02F
	NT0X50	Filler faceplate	01F
		·	
, Rear			Front 🟳

Control complex cards in a digital carrier module

Application

Use this procedure to replace the following cards in the shelves or frames listed.

PEC	Suffix	Card name	Shelf or frame name
NT2X32	AA	Master processor card	Digital carrier module (DCM), Digital echo supressor (DES)
NT2X33		Control card	DCM, DES
NT2X34		Message supervision card	DCM, DES
NT2X37		Tone card	DCM, DES
NT2X38		Signaling timing card	DCM, DES

Refer to the "Index", if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Replacing a card
- Loading a PM

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Control complex cards in a digital carrier module (continued)

Summary of replacing Control complex cards in a digital carrier module



Control complex cards in a digital carrier module (continued)

Replacing Control complex cards in a digital carrier module

At the MAP terminal

1



CAUTION Loss of service

This procedure includes directions to manually busy a DCM or DES. If you manually busy a DCM or DES, service degradation can occur. Perform this procedure only if you need to restore out-of-service components. In other events, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix, as the card that you remove.

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM and press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	6	1	0	0	23	24

3 To post the PM associated with the card that you replace, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type

is the type of PM (DCM, DES)

pm_no

is the PM number (0 to 511)

Example of a MAP display:

		SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1	б	1	0	0	23	24
DC	CM	1	0	0	0	1	4
DCM	0	InSv					

Control complex cards in a digital carrier module (continued)

4 Determine the state of the PM unit that associates with the card you want to replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy	step 5
is ManB	step 7
is OffL	step 13

- 5 A maintenance flag (Mtce) can appear. The flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status line before you proceed to the next step.
- 6 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP response:

OK. DCM 0 Bsy

If the BSY command	Do
passed	step 7
failed	step 15

At the shelf

7



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

Control complex cards in a digital carrier module (end)

8	The next action depends on your reason that you perform this procedure.					
	If a maintenance procedure	Do				
	directed you to this procedure	step 9				
	did not direct you to this proce- dure	step 10				
9	Return to the maintenance procedure continue as directed.	that directed you to this procedure and				
At the	e MAP terminal					
10	To load the PM, type					
	>LOADPM					
	and press the Enter key.					
	If the LOADPM command	Do				
	failed	step 11				
	passed	step 12				
11	Perform the procedure <i>Loading a PM</i> procedure and return to this point.	in this document. Complete the				
12	To return the PM to service, type					
	>RTS					
	and press the Enter key.					
	If the RTS command	Do				
	passed	step 16				
	passed, but the PM is ISTb as a result of a command protocol violation	step 14				
	failed	step 15				
13	To determine why the component is o personnel. Continue as directed by o	ffline, consult operating company perating company personnel.				
14	A minor problem is present, but the Pl help, contact the next level of support	M can process traffic. For additional				
15	For additional help, contact the next le	evel of support.				
16	The procedure is complete.					

NT2X35 in a digital carrier module

Application

Use this procedure to replace an NT2X35 card in a digital carrier module (DCM), as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT2X35	AA	DCM interface card	DCM

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Replace a card
- Loading a PM

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.



Summary of replacing an NT2X35 in a digital carrier module

Replacing an NT2X35 in a digital carrier module

At the MAP terminal

1



WARNING

Loss of service

This procedure includes directions to manually busy a DCM DS1 trunk, a timing carrier, or a P-side node. Service degradation or service power failure can occur if you manually busy any of these components. Perform this procedure only if you need to restore out-of-service components. In other events, perform this procedure during periods of low traffic.



WARNING

Loss of service If you insert a defective NT2X35 card, the system can take the DCM out of service. Test the replacement card before you insert the card or use a tested spare.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you remove.

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

PM		SysB 6	ManB 1	OffL 0	CBsy O	ISTb 23	InSv 24
3	To post the DCM for the card that you replace, type >POST DCM pm_no and press the Enter key. <i>where</i>						
	pm_no is the <i>Example of a</i>	PM numbe a MAP disp	er (0 to 511 <i>Iay:</i>)			

PI D(M CM			SysB 6 1	ManB 1 0	OffL 0 0	CBsy 0 0	ISTb 23 1	InSv 24 4
DCM		0	ISTb						
4		То с	lisplay a	a list of P-sid	e links, typ	е			
		>TR	NSL I	?					
		and	press t	he Enter key	•				
		Exa	mple #1	1 of a MAP re	esponse:				
		No LIN LIN LIN LIN Exa	P-side IK 0: IK 1: IK 2: IK 3: IK 4: mple #2	e node. Carrier of Carrier of Carrier of Carrier of Carrier of Carrier of	of Class of Class of Class of Class of Class esponse:	- Timing - Trunk - Trunk - Trunk - Trunk	3		
	LIN LIN LIN LIN	IK IK IK IK	0: LM 1: LM 2: LM 3: Car 4: Car	REM1 00 REM1 00 REM1 00 rier of C rier of C	0 0;CAF 0 1;CAF 0 2;CAF 2lass - 1 2lass - 1	>:MS;STAT >:MS;STAT >:S;STAT Trunk Trunk	US:MBsy US:OK US:OK	;MsgCo ;MsgCo	nd:CLS nd:OPN
5		Rec	ord the	following info	ormation fo	or links to P-	side nodes:	:	
		•	link nur	nber for carri	ier links				
		•	carrier class for carrier links						
		•	link nur	nber					
		•	node ty	ре					

- node site name
- frame number
- unit number

Note 1: Links correspond to NT2X35 cards as follows: link 0 = slot 3, link 1 = slot 4, link 2 = slot 5, link 3 = slot 6, and link 4 = slot 7. Links are carriers of a class or links to P-side nodes (line modules or remote line modules).

Note 2: Link number and carrier class identify the carrier links. In example #1 in step 4, link 0 is a carrier of class - timing. Note that example #1 shows that the DCM does not connect to a P-side node. P-side node links are identified by link number, node type, node site name, frame

number, and unit number. In example #2 in step 4, link 0 is a message link to a line module (LM), site name REM1, frame 00, and unit 0.

	If the link			Do						
	is an LM or remote line module step 6 (RLM)									
	is a carrier o	f class - t	timing	step 8						
	is a carrier o	f class - t	runk	step 2	1					
6	To post the LM	that asso	ciates with t	he link, ty	pe					
	>POST pm_type site frame_no unit_no									
	and press the Enter key.									
	where									
	pm_type is the ty	pe of PM	(LM, RLM)							
	site is the LN	∕l site nan	ne (alphanui	meric)						
	frame_no is the nu	umber of t	he frame (0	to 511)						
	unit_no									
	Is the hu	AND display	ne unit (0 to	9)						
		nni uispi	ay.							
PM		SysB 0	ManB 0	OffL 2	CBsy 0	ISTb 4	InSv 71			
LM		0	0	0	0	2	2			
LM REM1 RGen : 0 POST:	00 0 ISTb InSv	1 InS [.]	T V	STFAIL	LINKS					
	If the PM			Do						
	is InSv, IS	Tb, Sys	B, or CBsy	step 7						
	is ManB or (Dffl		step 2	8					
7	To manually bu	isy the PN	I, type							
	>BSY									
	and press the I	Enter key.								
	Example of a N	NAP displa	ay:							

SysB ManB OffL CBsy ISTb InSv ΡМ 2 3 71 0 1 0 LМ 0 1 0 0 1 2 LM REM1 00 0 ManB RGen : 0 Standby 1 InSv bsy OK. Go to step 28. 8 To access the CARRIER level of the MAP display, type >TRKS;CARRIER and press the Enter key. Example of a MAP display: ALARM SYSB MANB UNEQ OFFL CBSY PBSY INSV CLASS ML OS 3 TRUNKS 4 0 4 0 0 0 0 0 186 0 0 0 0 0 0 2 REMOTE 1 1 6 TIMING 0 0 0 0 0 0 0 0 0 2 CARRIER: 9 To post the timing carriers, type >POST TIMING and press the Enter key. Example of a MAP display: CLASS ML OS ALARM SYSB MANB UNEQ OFFL CBSY PBSY INSV 4 TRUNKS 0 4 0 0 0 3 0 0 186 REMOTE 0 0 1 0 1 0 0 0 2 б TIMING 0 0 0 0 0 0 0 2 0 0 NO CLASS SITE ΡМ CKT D ALARM SLIP STATE TLINK MODE 0 0 C 0 TIMING HOST 0 DCM INSV 0 ACTIVE DCM 1 0 C 0 INSV 1 TIMING HOST 1 STANDBY POSTED BY CONDITION : TIMING CARRIER:

POST:

10 Determine if the carrier that associates with the card you are working on is the active or the standby link. Determine the service state of both links.

Note: The PM type in column 4 identifies the link. The PM number in column 5 and the circuit number in column 6 identify the link. In the

example in step 9, link 0 for DCM 0 is the active time link. The service state appears under the STATE header on the MAP display.

	If the carrier		Do							
	supports the active link, and the step 11 standby link is in service (INSV or ISTB)									
	supports the active link, and the step 41 standby link is not in service									
	supports the stand both links are star	lby link (one or ndby)	step 19							
11	To access the CLOC	K level of the MAR	P display, type							
	>MS;CLOCK									
	and press the Enter	key.								
	Example of a MAP of	lisplay:								
M MS 0 MS 1	essage Switch	Clock Shelf Master Slave	0 Inter-MS	Link 0 1 						
Shelf Card Chain MS 0 MS 1	0 1 2 3 4 5 6 7 8 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 2 5 6 						
Card 0 MS 0 MS 1 Links MS: CLOCK:	2 Alm Stat %Adj Syn +11.3 Syn -11.9 Slipping: 6	Src Car Sta Lk0 Lk0 Lck Ms0 Lk1 Smp out of 200	t Sp PM CCT 0 DTC 000 00 0 DTC 001 00							
12	Determine if a CLOC	CK alarm under the	e MS alarm banner is pre	sent.						
	If a CLOCK alarm		Do							
	is present		step 13							
	is not present		step 14							
13	To synchronize the c	office, type								

and press the Enter key.

Example of a MAP response:

Request to TEST INSV MS: 0 shelf: 0 card: 2 submitted. Request to TEST INSV MS: 0 shelf: 0 card: 2 passed. Request to TEST INSV MS: 1 shelf: 0 card: 2 submitted. Request to TEST INSV MS: 1 shelf: 0 card: 2 passed. Request to Synchronize Clock 0: Submitted Request to Synchronize Clock 0: Passed Clock synchronization started ...

14 To switch the timing carrier, type

>SWCARR

and press the Enter key.

Example of a MAP response:

Inactive link is not in SYNC and may cause carrier slips
Do you wish to continue ?
Please confirm ("YES", "Y", "NO", or "N"):

- **15** To make sure that you can safely switch active timing carriers, consult with operating company personnel or with the next level of support. When you have permission, continue this procedure.
- **16** To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Request to Switch Timing Links: Submitted Request to Switch Timing Links: Passed

17 To access the CARRIER level of the MAP display, type

>TRKS;CARRIER

and press the Enter key.

18 To post the timing carriers, type

>POST TIMING

and press the Enter key.

19 To manually busy the carrier that associates with the card you replace, type

>BSY list_no

and press the Enter key.

where

list no

is the list number (0 to 4) for the link

Example of a MAP response:

DCM 1 CCT 0 is a TIMING Do you want to busy this	link. carrier ?
Please confirm ("YES", "Y	<pre>(", "NO", or "N"):</pre>
To confirm the command, type	
>YES	
and press the Enter key.	
<i>Note:</i> For all maintenance com number in the far-left column ur	mands at the CARRIER level, the list nder the N header refers to links.
If the BSY command	Do
passed	step 28
failed	step 43
To access the TTP level of the MA	∖P display, type
>TRKS;TTP	
and press the Enter key.	
To post the link that associates with	th the card you replace, type
>POST D DCM pm_no lin	k_no
and press the Enter key.	
where	
pm_no is the PM number (0 to 999))
link_no is the number of the link (0 replace	to 19) that associates with the card yo
lf	Do
a set of circuits is posted	step 23
the response is NO CKT, SI	ET step 24
To manually busy all circuits on the	e link, type
>BSY ALL	
and press the Enter key.	
Note: Make sure that all circuit	ts are manual busy before you proceed
To access the CARRIER level of the termination of te	he MAP display, type
>CARRIER	
and press the Enter key.	

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Example of a MAP display:

CLASS	ML	OS	ALARM	SYSB	MANB	UNEQ	OFFL	CBSY	PBSY	INSV
TRUNKS	4	2	9	2	28	0	0	15	0	41
REMOTE	0	0	0	0	12	0	0	2	0	3
TIMING	0	1	1	0	1	0	0	0	0	1

CARRIER:

25 To post the carriers for the PM, type

>POST DCM pm_no

and press the Enter key.

where

pm_no is the PM number (0 to 511)

Example of a MAP display:

CI	LASS	ML	05	S ALA	ARM	S	SB 1	MANB	τ	JNEQ	OFFL	CBS	ΥI	PBS	ΥJ	NSV
ΤF	RUNKS	4	C)	4		0	0		0	3		0		0	186
RE	EMOTE	0	C)	0		0	0		0	0		0		0	9
ΤI	IMING	0	C)	0		0	0		0	0	(0		0	2
	DS1															
Ν	CLASS	SIT	ГΕ	DCM	CK	D	ALRI	M SLI	Ρ	FRME	E BER	2	ΕS	S	SES	STATE
0	REMOTE	HOS	SΤ	0	0	С			0	(0 0		0		0	INSV
1	REMOTE	HOS	SΤ	0	1	С			0	(0 0		0		0	INSV
2	REMOTE	HOS	SΤ	0	2	С			0	(0 0		0		0	INSV
3	TRUNKS	HOS	SΤ	0	3	С			0	(0 0		0		0	INSV
4	TRUNKS	HOS	SΤ	0	4	С			0	(0 0		0		0	INSV
SI	IZE OF	POST	ΓEΓ) SET	:		5									
CI	ARRIER:															
PC)ST:															

26 Determine the state of the carrier that associates with the card you replace.

If the link	Do
is INSV, ISTB, or SYSB	step 27
is manb	step 28
is OFFL	step 40

27 To manually busy the link, type

>BSY list_no

and press the Enter key.

where

list no

is the list number (0 to 4) for the link

Note: For all maintenance commands at the CARRIER level, the list number in the far-left column under the N header refers to links.

If the BSY command	Do
passed	step 28
failed	step 43

At the shelf

28



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist

strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

29 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 30
did not direct you to this procedure	step 31

30 Return to the maintenance procedure that directed you to this procedure and continue as directed.

At the MAP terminal

31 The next action depends on the type of link supported by the card that you replaced.

If the link	Do
is to a line module (LM or RLM)	step 32
is a carrier of class - timing	step 35
is a carrier of class - trunk	step 36

32 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

LM REM1 00 0 LoadPM PASSED Load ESA passed

If the LOADPM command	Do	
passed	step 44	
failed	step 33	

- **33** To load the PM unit, use the procedure *Loading a PM* in this document. Complete the procedure and return to this point.
- **34** To return the PM to service, type

>RTS and press the Enter key. *Example of a MAP response:*

rts OK. InSvce Tests Initiated OK.

If RTS command	Do	
passed	step 44	
failed	step 43	
To return the timing carrier to se	ervice, type	
>RTS list_no		
and press the Enter key.		
where		
list_no is the list number (0 to 4)	for the carrier	
Example of a MAP response:		
ОК.		
If the RTS command	Do	
passed	step 44	

35

	If the RTS command	Do						
	failed	step 43						
36	To return the trunking carrier to se	ervice, type						
	>RTS list_no							
	and press the Enter key.							
	where							
	list_no is the list number (0 to 4) fo	or the carrier						
	Example of a MAP response:							
	ОК.							
	If the RTS command	Do						
	passed	step 37						
	failed	step 43						
37	To access the TTP level of the MA	AP display, type						
	>TTP							
	and press the Enter key.							
38	To post the link that associates wi	th the card you replace, type						
	>POST D DCM pm_no lir	lk_no						
	and press the Enter key.							
	where							
	pm_no is the PM number (0 to 999	9)						
	link_no is the number of the link (0 replace	to 19) that associates with the cardyou						
	lf	Do						
	a set of circuits is posted	step 39						
	the response is NO CKT, S IS EMPTY	ET step 44						
39	To return all circuits to service, typ	De						
	>RTS ALL							
	and press the Enter key.							

- 40 To determine why the component is offline, consult operating company personnel. Continue this procedure as directed by office personnel.
- 41 To determine if you can remove the active timing link from service, consult the next level of support. Continue this procedure as directed by your next level of support.
- 42 A minor problem is present, but the DCM can process traffic. For additional help, contact the next level of support.
- **43** For additional help, contact the next level of support.
- 44 The procedure is complete.

NT2X36 in a digital carrier module

Application

Use this procedure to replace the NT2X36 card in a digital carrier module (DCM), as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT2X36	AA	Network interface card	DCM

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames this card replacement book documents.

Common procedures

This common procedure refers to the following common procedures:

- Replacing a card
- Loading a PM

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing an NT2X36 in a digital carrier module



Replacing an NT2X36 in a digital carrier module

At the MAP terminal

1



WARNING Loss of service

This procedure includes directions to manually busy a DCM. Service degradation can occur if you manually busy a DCM. Perform this procedure only if you need to restore out-of-service components. In other events, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you remove.

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM and press the Enter key. Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	6	1	0	0	23	24

3 To post the PM that associates with the card you replace, type

>POST DCM pm_no

and press the Enter key.

where

pm_no is the PM number (0 to 511)

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	6	1	0	0	23	24
DCM	1	0	0	0	1	4

DCM 0 InSv

4 Determine the state of the PM unit that associates with the card you want to replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy	step 5
is ManB	step 7
is OffL	step 31

- 5 A maintenance flag (Mtce) can appear. A Mtce flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status line before you proceed to the next step.
- 6 To manually busy the DCM, type
 - >BSY
 - and press the Enter key.

Example of a MAP response:

OK.DCM 0 Bsy

If the BSY command	Do
passed	step 7
failed	step 33

7 To display a list of C-side links, type

>TRNSL C

and press the Enter key.

Example #1 of a MAP response:

T'LUK	0: NET 0	1	1;CAP:MS;STATUS:OK	.P;MsgCond:OPN
T.TNK	0: NET 1	1	1;CAP:MS;STATUS:OK	P:MsgCond:OPN
T'LUNK	1:NET 0	1	5; CAP: S; STATUS: OK	P
T.TNK	1: NFT 1	1	5:CAD: S:STATUS:OK	, - D
T.T.NK	2. NET 0	1	9:CAD: SISTATUS!OK	, <u>-</u> D
T.T.NK	2. NET 0 2. NET 1	1	9:CAP: SISTATUS:OK	, - D
TIME	$2 \cdot NET T$	1	$12 \cdot CAP \cdot C \cdot CTATUS \cdot CK$	
TIME	3. NEIU 2. NET 1	1		, r D
LINK	3. NEL T	1	13, CAP. S, SIAIUS.UK	, P

Example #2 of a MAP response:

,C ;CAP:MS;STATUS:OK 0: ENET 0 0 18 04 LINK ;MsgCond:OPN ,C LINK 0: ENET 1 0 28 04 ;CAP:MS;STATUS:OK ;MsgCond:OPN ,C LINK 1: ENET 0 0 18 05 ;CAP: S;STATUS:OK ,C LINK 1: ENET 1 0 28 05 ;CAP: S;STATUS:OK 0 18 06 ;CAP: S;STATUS:OK 2: ENET 0 LINK ,C ;CAP: S;STATUS:OK LINK 2:ENET 1 0 28 06 ,C ,C LINK 3: ENET 0 018 07 ;CAP: S;STATUS:OK LINK 3: ENET 1 0 28 07 ;CAP: S;STATUS:OK ,C

If the network

Do

is a junctored network (JNET) step 8

is a enhanced network (ENET) step 13

8 Record the JNET plane, pair, and link for each C-side link.

Note 1: The NT2X36 network interface card supports eight C-side links for each card - four links to each network plane.

Note 2: The network plane, pair, and link are in columns 4, 5, and 6 of the response to a TRNSL command at the PM level. Example #1 in step 7 demonstrates this response. For example, C-side link 3 at the bottom of the display is on network plane 1, pair 1, link 13.

9 To access the NET level of the MAP display, type

>NET

and press the Enter key.

Example of a MAP display:

```
Net 11111 11111 22222 22222 33
Plane 01234 56789 01234 56789 01
0 L..
1 ...
```

10 To access the LINKS level of the MAP display, type

>LINKS pair_no

and press the Enter key.

where

pair_no
 is the number of the pair (0 to 31) that connects to the C-side links
 Example of a MAP display:

Net 11111 11111 22222 22222 33 Plane 01234 56789 01234 56789 01234 56789 01 0 L.. 1 Net 1 Links 11 1111 1111 2222 2222 2233 0123 4567 8901 2345 6789 Plane 0123 4567 8901 0 ..P. .P.. .P.. .P.. .P.. 1 ..P. .P.. .P.. .P.. .P.. Links 3333 3333 4444 4455 5555 5555 4444 6666 2345 6789 0123 4567 8901 2345 6789 Plane 0123 .P.. .P.. .P.. .P.. 0 ..P. ..-. . . – . ..-. 1 .P.. .P.. .P.. .P.. ..P. . . - . . . - . ..-. 11 To manually busy one of the links you recorded in step 8, type >BSY plane_no link_no and press the Enter key. where plane no is the number of the plane for the link (0 or 1) link no is the link number (0 to 63) Example of a MAP response: BSY 0 300K 12 Repeat step 11 for all C-side links. Go to step 19. 13 Record the ENET plane, shelf, card, and link for each C-side link. **Note 1:** The NT2X36 network interface card supports eight C-side links for each card - four links to each network plane. *Note 2:* The network plane, shelf, card, and link are in columns 4, 5, 6, and 7 of the response to a TRNSL command at the PM level. In example #2 in step 7 demonstrates this response. For example, C-side link 3 at the bottom of the display is on network plane 1, shelf 0, card 28, link 07. 14 To access the NET level of the MAP display, type >NET and press the Enter key. Example of a MAP display: System Matrix Shelf 0 1 2 3 ENET Plane 0 CSLink F - - -. Plane 1 CSLink F - - -ENET: .

15 To access the SHELF level of the MAP display, type

>SHELF shelf_no

and press the Enter key.

where

shelf_no

is the number of the shelf (0 to 7) that connects to the C-side links *Example of a MAP display:*

16 To access the CARD level of the MAP display, type

>CARD card_no

and press the Enter key.

where

card_no is the number of the card (1 to 38) that connects to the C-side links

Example of a MAP display:

System Matrix Shelf 0 1 2 3 ENET Plane 0 CSLink . Plane 1 CSLink . F - - -F - - -SHELF 00 Slot 1111111 11122222 22222333 333333 123456 78 90123456 78901234 56789012 345678 Plane O . . IF Plane 1 . . IF CARD 32 Front: Back: DS-512 Links I/F 0 1 2 3 Xpt Plane 0 • • • . . . -Plane 1 . . . -. To manually busy the link that you recorded in step 13, type >BSY plane_no LINK link_no

>BSY plane_no LINK link_n

and press the Enter key.

where

17

plane_no

is the number of the plane (0 or 1) for the link

link_no is the link number (0 to 63) Example of a MAP response:

Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted. Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.

18 Repeat step 17 for each link that you recorded in step 13. Go to step 19.

At the shelf

19



WARNING

Static electricity damage Wear a wrist strap that connects to the wrist-strap grounding

point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

20 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 21
did not direct you to this proce- dure	step 22

21 Return to the maintenance procedure that directed you to this procedure and continue as directed.

At the MAP terminal

22 The next action depends on the type of network in the office.

lf you	Do
are working on a JNET	step 23
are working on an ENET	step 25

23	To return to service one of the network links that associates with the PM unit, type					
	>RTS plane_no link_no					
	and press the Enter key.					
	where					
	plane_no is the number of the plane (0 or 1) for the link link_no is the link number (0 to 63)					
	If the link		Do			
	returned to service and more ma present	nual busy links are	step 24			
	returned to service and more ma not present	nual busy links are	step 27			
	did not return to service		step 33			
24	Repeat step 23 for all C-side links to t	he DCM.				
	Go to step 26.					
25	To return the link to service, type					
	>RTS plane_no LINK link_no					
	and press the Enter key.					
	where					
	plane_no is the number of the plane (0 or 1) for the link					
	link_no is the link number (0 to 63)					
	Example of a MAP response:					
Request Request	to RTS ENET Plane:0 Shelf:00 to RTS ENET Plane:0 Shelf:00) Slot:32 Link:01) Slot:32 Link:01	submitted. passed.			
	If the link	Do				
	returned to service	step 26				
	did not return to service	step 33				
26	Repeat step 25 for all C-side links to the	ne DCM. Complete the	procedure and			

26 Repeat step 25 for all C-side links to the DCM. Complete the procedure and go to step 27.

	To access the PM level of the MAP dis	splay, type	
	>PM		
	and press the Enter key.		
	To load the DCM, type		
	>LOADPM		
	and press the Enter key.		
	If the LOADPM command	Do	
	failed	step 29	
	passed	step 30	
	Perform the procedure <i>Loading a PM</i> procedure and return to this point.	in this document. Cor	nplete the
To return the DCM to service, type			
	>RTS		
	and press the Enter key.		
	If the RTS command		Do
	passed		step 34
	passed, but the DCM is ISTb as	a result of a com-	step 32
	mand protocol violation		1
	failed		step 33
	To determine why the component is of personnel. Continue as directed by op	fline, consult operating	g company sonnel.
	A minor problem is present, but the DCM can process traffic. For additional help, contact the next level of support.		
	For additional help, contact the next le	vel of support.	

NT3X65 in a digital echo suppressor

Application

Use this procedure to replace a NT3X65 card in a digital carrier module (DCM) digital echo suppressor (DES), as the following table shows.

PEC	Suffix	Card name	Shelf or frame name
NT3X65	AA	Digital echo suppressor tone CPU	DCM digital echo suppressor

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames this card replacement book.

Common procedures

This procedure refers to Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT3X65 in a digital echo suppressor (continued)

Summary of replacing an NT3X65 in a digital echo suppressor


Replacing NT3X65 in a digital echo suppressor

At the MAP terminal

1



CAUTION

Potential loss of service

This procedure includes directions to manually busy network links. Service degradation can occur if you manually busy a network link. Perform this procedure only if you need to restore out-of-service components. In other events, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card you remove.

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM and press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	6	1	0	0	23	24

3 To post the PM that associates with the card you replace, type

>POST DCM pm_no

and press the Enter key.

where

pm_no is the PM number (0 to 511)

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
РM	6	1	0	Ō	23	24
D СМ	1	0	0	0	1	4
DCM	0	InSv				

4 To display a list of C-side links,type

>TRNSL C

and press the Enter key.

Example #1 of a MAP response:

LINK	0:	NET	0	1	1;CAP:N	MS;STATUS:OK	,P;MsgCond:OPN
LINK	0:	NET	1	1	1;CAP:N	MS;STATUS:OK	,P;MsgCond:OPN
LINK	1:	NET	0	1	5;CAP:	S;STATUS:OK	,P
LINK	1:	NET	1	1	5;CAP:	S;STATUS:OK	,P
LINK	2:	NET	0	1	9;CAP:	S;STATUS:OK	,P
LINK	2:	NET	1	1	9;CAP:	S;STATUS:OK	,P
LINK	3:	NET	0	1	13;CAP:	S;STATUS:OK	,P
LINK	3:	NET	1	1	13;CAP:	S;STATUS:OK	

Example #2 of a MAP response:

LINK	0:	ENET	0	0	18	04	;CAP:MS;STATUS:OK ,C ;MsgCond:OPN
LINK	0:	ENET	1	0	28	04	;CAP:MS;STATUS:OK ,C ;MsgCond:OPN
LINK	1:	ENET	0	0	18	05	;CAP: S;STATUS:OK ,C
LINK	1:	ENET	1	0	28	05	;CAP: S;STATUS:OK ,C
LINK	2:	ENET	0	0	18	06	;CAP: S;STATUS:OK ,C
LINK	2:	ENET	1	0	28	06	;CAP: S;STATUS:OK ,C
LINK	3:	ENET	0	0	18	07	;CAP: S;STATUS:OK ,C
LINK	3:	ENET	1	0	28	07	;CAP: S;STATUS:OK

5 Identify the links that associate with the card that you replace.

Note: Links correspond to NT3X65 cards as follows: link 0 =slot 3, link 1 = slot 4, link 2 = slot 5, link 3 = slot 6, link 4 = slot 7, and link 5 = slot 8.

6 The next step depends on the type of network in your office.

If the network	Do
is a junctor network (JNET)	step 7
is an enhanced network (ENET)	step 12

7 Record the JNET plane, pair, and link number for both links that associate with the card you replace.

Note: The network plane, pair, and link are in columns 4, 5, and 6 of the response to a TRNSL command at the PM level. Example #1 in step 4 demonstrates this response. For example, C-side link 3 at the bottom of the display is on network plane 1, pair 1, link 13.

8 To access the NET level of the MAP display, type

>NET

and press the Enter key.

Example of a MAP display:

Net 33 11111 11111 22222 22222 Plane 01234 56789 01234 56789 01234 56789 01 0 L.. 1 . . . 9 To access the LINKS level of the MAP display, type >LINKS pair_no and press the Enter key. where pair_no is the number of the pair (0 to 31) that connects to the C-side links Example of a MAP display: 11111 11111 22222 22222 Net 33 PlNet ane 01234 56789 01234 56789 01234 56789 01 0 L.. 1 . . Net 1 Links 11 1111 1111 2222 2222 2233 0123 4567 8901 2345 Plane 6789 0123 4567 8901 0P. .P.. .P.. .P.. .P..P.. 1 ..P. .P.. .P.. .P.. 3333 3333 4444 4444 4455 5555 5555 6666 Links 2345 6789 0123 4567 8901 2345 6789 Plane 0123 0 .P.. .P.. .P.. .P.. ..P. ..-. . . – . . . - . 1 .P.. .P.. .P.. .P.. ..P. . . - . . . - . . . - . 10 To manually busy one of the links that you recorded in step 7, type >BSY plane_no link_no and press the Enter key. where plane_no is the number of the plane for the link (0 or 1) link no is the link number (0 to 63) Example of a MAP response: BSY 0 300K 11 Repeat step 10 for the other C-side links. Complete the procedure and go to step 18.

12 Record the ENET plane, shelf, card, and link number for both links that associate with the card you replace.

Note 1: The NT2X36 network interface card supports eight C-side links for each card - four links to each network plane.

Note 2: The network plane, shelf, card, and link are in columns 4, 5, 6, and 7 of the response to a TRNSL command at the PM level. Example #2 in step 4 demonstrates this response. For example, C-side link 3 at the bottom of the display is on network plane 1, shelf 0, card 28, link 07.

13 To access the NET level of the MAP display, type

>NET

and press the Enter key.

Example of a MAP display:

ENETSystemMatrixShelf0123.Plane0CSLinkF---Plane1CSLink.F--

ENET:

14 To access the SHELF level of the MAP display, type

>SHELF shelf_no

and press the Enter key.

where

shelf_no

is the number of the shelf (0 to 7) that connects to the C-side links *Example of a MAP display:*

15 To access the CARD level of the MAP display, type

>CARD card_no

and press the Enter key.

where

card_no

is the number of the card (1 to 38) that connects to the C-side links *Example of a MAP display:*

System Matrix Shelf 0 1 2 3 ENET Plane 0 CSLink . Plane 1 CSLink . F - - -F - - -SHELF 00 Slot 1111111 11122222 22222333 333333 123456 78 90123456 78901234 56789012 345678 Plane O CARD 32 Front: Back: DS-512 Links Xpt I/F 0 1 2 3 Xpt Plane O • -. . . -Plane 1 .

16 To manually busy the link that you recorded in step 12, type

>BSY plane_no LINK link_no

and press the Enter key.

where

plane_no is the number of the plane (0 or 1) for the link

link_no

is the link number (0 to 63)

Example of a MAP response:

Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.

Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.

17 Repeat step 16 for the other link that associates with the card you replace. Go to step 18.

At the shelf

18



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

19 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 20
did not direct you to this proce- dure	step 21

20 Return to the maintenance procedure that directed you to this procedure and continue as directed.

At the MAP terminal

21 The next action depends on the type of network in the office.

lf you	Do
are working on a JNET	step 22
are working on an ENET	step 24

22 To return to service one of the JNET links that associates with the PM unit, type

>RTS plane_no link_no

and press the Enter key.

where

plane_no

is the number of the plane (0 or 1) for the link

	is the link number (0 to 63)						
	If the link	Do					
	returned to service and one more manual-busy link is present	step 23					
	returned to service and more manual busy links are not present	step 29					
	did not return to service	step 28					
23	Repeat step 22 for the other link.						
A	Beturn to service one of the ENET links that associates with	the PM unit tw					
•	Return to service one of the ENE I links that associates with the PM unit, type						
	and press the Enter key						
	where						
	plane_no is the number of the plane (0 or 1) for the link						
	link_no is the link number (0 to 63)						
	Example of a MAP response:						
	Request to RTS ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.						
	Request to RTS ENET Plane:0 Shelf:00 Slot:3 Link:01 passed.	2					
	If the link	Do					
	returned to service and one more manual-busy link is present	step 25					
	returned to service and more manual-busy links are not present	step 29					
did not return to service							
25	Repeat step 24 for the other link. Complete the procedure a	nd go to step 2					
26	To determine why the component is offline, consult operating personnel. Continue as directed by operating company personnel.	g company sonnel.					

- A minor problem is present, but the DCM can process traffic. For additional help, contact the next level of support.
- **28** For additional help, contact the next level of support.
- **29** The procedure is complete.

Power converter cards in a digital carrier module

Application

Use this procedure to replace the following cards in the shelves or frames listed.

PEC	Suffix	Card name	Shelf or frame name
NT2X06	AA	Power converter card	Digital carrier module (DCM), Digital echo suppressor (DES)
NT2X07	AA	Power converter card	DCM, DES
NT2X70	AA, AB, AC, AD	-48V power converter card	DCM, DES

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The Index contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Replacing a card
- Loading a PM

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing Power converter cards in a digital carrier module



Replacing Power converter cards in a digital carrier module

At the MAP terminal

1

3



WARNING

Loss of service

This procedure includes directions to manually busy a DCM or DES. Service power failure can occur if you manually busy a DCM or DES. Perform this procedure only if you need to restore out-of-service components. In other events, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix, as the card that you remove.

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM and press the Enter key. Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	6	1	0	0	23	24

To post the PM that associates with the card you replace, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (DCM, DES)

pm_no

is the PM number (0 to 511)

Example of a MAP display:

		SysB	Ma	nB	OffL	CBsy	ISTŁ	o InSv
	РM	б		1	0	0	23	3 24
	DCM	1		0	0	0	1	. 4
DCM		0	InSv					

4 Determine the state of the PM unit that associates with the card you want to replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy	step 5
is ManB	step 7
is OffL	step 23

- 5 A maintenance flag (Mtce) can appear. A Mtce flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status line before you proceed to the next step.
- 6 To manually busy the PM, type
 - >BSY
 - and press the Enter key.

Example of a MAP response:

OK.DCM 0 Bsy

If the BSY command	Do
passed	step 7
failed	step 25

At the shelf

7



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

For the power converter you replace, pull down and set the handle of the POWER switch to the OFF position.

8 The next action depends on the power configuration of the shelf.

If the shelf	Do	
has a single NT2X70	step 10	

_	If the shelf	Do
_	has an NT2X06 and an NT2X07	step 9
F S	For the mate power converter, pull do witch to the OFF position.	wn and set the handle of the POWER
T d	o replace the card, perform the proce locument. Complete the procedure a	edure <i>Replacing a card</i> in this and return to this point.
	Note 1: Make sure that the handle replacement power converter is in the second secon	e of the POWER switch on the the OFF position.
	<i>Note 2:</i> If the card you replace has on the replacement card have the set	switches, make sure that the switche same settings.
Т	he next action depends on the reaso	on that you perform this procedure.
	If a maintenance procedure	Do
_	directed you to this procedure	step 12
	did not direct to this procedure	step 13
F C	Return to the maintenance procedure continue as directed.	that directed you to this procedure an
T s	he next action depends on the powe upervisory panel.	r converter version and the type of
_	lf you	Do
	replace an NT2X70AE card and t circuit breakers	he FSP or MSP has step 14
	replace an NT2X70AE card and does not have circuit breakers	d the FSP or MSP step 15
	do not replace an NT2X70AE ca MSP has circuit breakers	ard and the FSP or step 16
	do not replace an NT2X70AE ca MSP does not have circuit breake	ard and the FSP or step 17 ers
– F	Power up the converter.	
а	Pull up and set the handle of the and hold the POWER switch.	POWER switch to the RESET positio
b	Set the handle of the converter circ the handle clicks into place.	cuit breaker on the FSP or MSP up un
С	Release the handle of the POWE	R switch.
d	Go to step 20.	

15	Power up the converter, as follows.					
	а	Pull up and set the handle of the F Hold the switch until the CONVE	POWER switch to the F	RESET position.		
	b	Release the handle of the POWE	R switch.			
	С	Go to step 20.				
16	Power up the converter, as follows.					
	а	Pull up and set the handle of the	POWER switch to the	ON position.		
	b	Press and hold the RESET button	n on the power conver	ter.		
	С	Set the handle of the converter cir the handle clicks into place.	cuit breaker on the FSF	P or MSP up until		
	d	Release the RESET button.				
	е	Go to step 20.				
17	Po	wer up the converter.				
	а	Pull up and set the handle of the	POWER switch to the	ON position.		
	b	Press the RESET button on the p FAIL LED goes off.	ower converter until th	e CONVERTER		
	С	Release the RESET button.				
18	Th	e next action depends on the num	per of power converter	s on the shelf.		
	lf	F		Do		
	0	one power converter is present		step 20		
	tv	wo power converters are presen	t and you powered	step 20		
	u	p both power converters	i, und you powered	5 10 p 2 0		
	tv u	wo power converters are presen p only one of the power convert	t, and you powered ters	step 19		
19	Re	epeat steps 13 to 18 for the other po	ower converter on the	shelf.		
At the	• MA	P terminal				
20	То	load the PM, type				
	>L	OADPM				
	an	d press the Enter key.				
	lf	the LOADPM command	Do			
		-:1-d	sten 21			
	fa	aned	5tep 21			
	fa p	aned	step 22			

22	To return the PM to service, type					
	>RTS					
	and press the Enter key.					
	If the RTS command	Do				
	passed	step 26				
	passed, but the PM is ISTD as a result of a command protocol violation	step 24				
	failed	step 25				
23	To determine why the component is offline, consult operating personnel. Continue this procedure as directed by operating personnel.	g company g company				
24	A minor problem is present, but the PM can process traffic. help, contact the next level of support.	For additional				
25	For additional help, contact the next level of support.					
26	The procedure is complete.					

4-1

4 Enhanced link peripheral processor card replacement procedures

Introduction

This chapter contains card replacement procedures for the enhanced link peripheral processor (ELPP). The first section in the chapter provides diagrams that show ELPP shelf designs.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) appear in the chapter "Frame supervisory panel and modular supervisory panel card replacement procedures."

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the ELPP cards that this procedure covers.

Common procedures

This section lists common procedures that you use during the ELPP card replacement procedure. A common procedure is a series of steps that repeat in maintenance procedures. An example of a common procedure is the removal and replacement of a card. Common procedures appear in the common procedures chapter in this NTP.

Do not go to common procedures unless the step-action procedure instructs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

Record the following information in office records when you replace a card.

- the serial number of the card you replaced
- the date you replaced the card
- the reason you replaced the card

ELPP shelf layouts

Application

This section shows frame layouts for the enhanced link peripheral processor (ELPP), as follows:

- triple F-bus configuration in an ELPP cabinet
- a link interface module (LIM) with LMS units 0 and 1
- a link interface shelf (LIS) with common fill cards
- a LIS with a dual link interface unit (DLIU)

A DLIU is a set of high-speed link (HSL) termination hardware. Each set consists of:

- a high-speed link interface unit (HLIU)
- a high-speed link router (HSLR)

Note: The diagrams that follow show standard frame and shelf layouts. Minor differences can occur in different offices.



Figure Enhanced link peripheral processor



Figure Triple F-bus configuration in an ELPP cabinet

Figure Link interface module with LMS 0 and LMS 1 (triple F-bus configuration)

	Paddle boards	Cards	
		NT9X30 Power (+5 V)	36F
		NT9X31 Power (-5 V)	33F
32R	NT9X19 Filler	NT9X49 P-bus terminator	32F
31R	NT9X19 Filler	NT9X19 Filler	31F
30R	NT9X62	NT9X17 4 port interface card	30F
29R	NT9X62	NT9X17 4 port interface card	29F
28R	NT9X79 F-bus extension PB	NT9X73 F-bus rate adapter card	28F
27R	NT9X79 F-bus extension PB	NT9X73 F-bus rate adapter card	27F
26R	NT9X79 F-bus extension PB	NT9X73 F-bus rate adapter card	26F
25R	NT9X19 Filler	NT9X19 Filler	25F
24R	NT9X19 Filler	NT9X15 Mapper card	24F
23R	NT9X19 Filler	NT9X19	23F
22R	NT9X26 RTIF PB	NT9X13 LMS processor card	22F
21R	NT9X19 Filler	NT9X53 Clock card	21F
20R	NT9X19 Filler	NT9X52 T-bus access card	20F
19R	NT9X19 Filler	NT9X52 T-bus access card	
18R	NT9X19 Filler	NT9X53 Clock card	18F
17R	NT9X26 RTIF PB	NT9X13 LMS processor card	17F
16R	NT9X19 Filler	NT9X19 Filler	16F
15R	NT9X19 Filler	NT9X15 Mapper card	15F
14R	NT9X19 Filler	NT9X19 Filler	14F
13R	NT9X79 F-bus extension PB	NT9X73 F-bus rate adapter card	
12R	NT9X79 F-bus extension PB	NT9X73 F-bus rate adapter card	12F
11R	NT9X79 F-bus extension PB	NT9X73 F-bus rate adapter card	11F
10R	NT9X62	NT9X17 4 port interface card	10F
09R	NT9X62	NT9X17 4 port interface card	09F
08R	NT9X19 Filler	NT9X19 Filler	08F
07R	NT9X19 Filler	NT9X49 P-bus terminator	07F
			045
		NT9X31 Power (–5 V)	
l	4		
•	<,⊐ Rear	Front [\Rightarrow

	Paddle boa	ards			Cards
			NT9X30	Power converter card	36F
			NT9X19	Filler faceplate	33F
32R	NT9X79	F-bus extender PB	NT9X74	F-bus repeater card	32F
31R					31F
30R	NTEX20	F-bus terminator PB			30F
29R					29F
28R	NT9X19	Filler faceplate			28F
27R					27F
26K	N19X19	Filler faceplate			26F
20K		Filler facenlato			
24N					24F
22R	NT9X19	Filler faceplate			231 22F
21R					21F
20R	NT9X19	Filler faceplate			20F
19R		•			19F
18R	NT9X19	Filler faceplate			18F
17R					17F
16R	NT9X19	Filler faceplate			16F
15R					15F
14R	NT9X19	Filler faceplate			14F
13R					13F
12R	NT9X19	Filler faceplate			12F
11R					11F
10R	NT9X19	Filler faceplate			10F
09K		E huo torminator DD			
		F-bus lettininator PB		F-bus repeater card	
UIR		I -DUS EXICITUEL ED		i -bus iepealei taiu	
			NT9X30	Power converter card	04F
			NT9X19	Filler faceplate	01F
	C Rear				Front

Figure Link interface shelf with common fill cards



ELPP shelf layouts (end)

Note 2: Instead of NT9X30 card, you can use an NT9X16 power converter card. If you do that, you also must use NT9X16 card instead of NT9X19 card.

Link interface shelf with a DLIU



Note: The DLIU set, which consists of three HLIU cards and one HSLR card, must start in slot number 8, 12, 16, 20, 24, or 28.

Common fill paddle boards in an ELPP LIS

Application

Use this procedure to replace the following cards in a link interface shelf (LIS) in an enhanced link peripheral processor (ELPP).

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the "Index" for a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X74	DA	F-bus repeater	LIS in an ELPP
NT9X79	BA	F-bus termination paddle board	LIS in an ELPP
NTEX20	AA, BA	Intrashelf termination paddle board	LIS in an ELPP

Note 1: A link interface module (LIM) is also referred to as a local message switch (LMS) in some documentation. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM unit is used to designate an LMS.

Note 2: The ELPP is referred to as a LIM when the entire ELPP is meant, paralleling how the LISs in the ELPP are closely associated with the LIM. MAP displays and data schema tables also refer to the ELPP as a LIM.

Common procedures

Replacing a card is referenced in this procedure.

Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Summary of Replacing Common fill paddle boards in an ELPP LIS



Replacing Common fill paddle boards in an ELPP LIS

At your current location

1



CAUTION Loss of service

This procedure provides instructions for removing an F-bus from service, thereby removing redundancy from the ELPP. Perform this procedure only if it is necessary to return the F-buses to service. Otherwise, perform this procedure only during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the MAP terminal

2 Ensure that the replacement card is compatible with the software load by typing

>CHECKREL LIS pec release

and pressing the Enter key.

where

pec

is the PEC and suffix of the new card

release

is the two-character code located on the faceplate of thereplacement card

Example input:

>CHECKREL LIS NT9X74DA 2Z

Example of a MAP response:

PE	EC	BASELIN	ΙE	EXCI	EPT	RELE	EASE	COMPAT	IBLE
NT9X7	74DA	()9	No	one		2Z	YE	S
OK. C	Card	release	is	above	basel	ine.			

If the replacement card is	Do
below baseline	step 3
on or above baseline	step 6

Common fill paddle boards

in an ELPP LIS (continued)

3	From the MAP	display, record t	the baseline	e release co	de (BASEL	.INE) and	
4	Determine which release codes are compatible with the software load in the						
4	switch. A comp	patible release code	code is one	that is	le soltware		
	greater tha	n or equal to the	e baseline r	elease code	e, and		
	not an exce	eption release c	ode				
	Note: The r 0Z, and 10 to	ange of release ວ VZ.	codes in a	scending or	der is 01 to	09, 0A to	
5	Obtain a replac	ement card with	h a compati	ble release	code.		
	If you				Do		
	can obtain a	compatible rej	placement	card	ste	p 2	
	cannot obtain	n a compatible	replaceme	ent card	ste	p 21	
6	Access the PM	level of the MA	P display b	y typing			
	>MAPCI;MTC;	PM					
	and pressing the Enter key.						
	Example of a N	1AP display:					
		Guad Mani	o ∩ffī	CPar	тстъ	There	
	PM	0 0	28	0 0	0	18	
7	Post the LIM as	sociated with th	ne card you	are replaci	ng by typing	g	
	>POST LIM	lim_no					
	and pressing th	ie Enter key.					
	where						
	lim_no is the nu	mber of the LIM	/I (0 to 16)				
	<i>Note:</i> Refer LIM unit ass	<i>Note:</i> Refer to the table located at the end of this document to identify the LIM unit associated with the card you are replacing.					
	Example of a N	IAP display:					
		SysB	ManB	OffL	CBsy	ISTb	
	PM LIM	0 0	0 0	28 1	0 0	0 0	
_	0 InSv		00S	00S Tap	os		
8	Determine the	state of the LIM	•				
	<i>Note:</i> The s MAP display	tate of the LIM i	is shown to	the right of t	he LIM nur	nber on the	
	If the state of	the LIM is	Do)			
	Offl		ste	ep 20			

	If the state of the LIM is	Do			
	any other in-service or out-of-se vice state	er- step 9			
Ð	Determine the state of the mate LIN of this document to identify the LIN replacing.	A unit. Refer to the table located at the A associated with the card you are			
	<i>Note:</i> The state of the LIM unit number on the MAP display.	s is shown to the right of the LIM unit			
	If the state of the mate LIM unitis	t Do			
	InSv	step 10			
	anything else	step 18			
0	Access the LIS level of the MAP di	splay by typing			
	>LIS lis_no				
	and pressing the Enter key.				
	where				
	lis_no is the number of the LIS (1,	2, or 3)			
	Example of a MAP display:				
	SysB ManB PM 0 0 LIM 0 0	OffL CBsy ISTb Ins 28 0 0 1 1 0 0 1			
	OOS	00S_Taps			
	Links Unit0: InSv . Unit1: InSv .	LIS1 LIS2 LIS3 · · · · · · ·			
	LIS2 Tap: FBug0: InSy	0 4 8			

11



CAUTION

Potential loss of service

Ensure that the mate F-bus, and the F-bus taps on the mate are in service before manually busying the F-bus associated with the card to be replaced. Manually busying the F-bus isolates nodes on the LIS if the mate resources are out of service.

Determine the states of the F-bus and the provisioned F-bus taps for the mate LIM unit.

Note: The state of the F-buses is shown to the right of the F-bus numbers on the MAP display. Refer to the table located at the end of this document to identify the LIM and F-bus components associated with the card you are replacing.

If the states are		Do
in-service (state of the F-bus is I taps are either . (dot) or - (dash).	nSv and all F-bus	step 12
any other state (state of the F-bus one or more F-bus taps are not (dash)	s is not InSv and either . (dot) or -	step 19
Manually busy the F-bus associated w	ith the card to be repla	aced by typing
>BSY FBUS fbus_no		
and pressing the Enter key.		
where		
fbus_no is the number of the F-bus (0 or	⁻ 1)	
<i>Note:</i> Refer to the table located at t F-bus components associated with	he end of this docume the card you are repla	nt to identify the cing.
Example of a MAP response:		
LIM 0 LIS 1 FBus 0 Busy req Please confirm ("YES", "Y",	puires confirmati "NO", or "N"):	on
lf	Do	
the command passes	step 14	
you must confirm the command	step 13	

12

13 Confirm the command by typing

>YES

and pressing the Enter key.

Example of a MAP response:

LIM 0 LIS 2 FBus 0 Busy initiated. LIM 0 LIS 2 FBus 0 Busy passed.

At the shelf

14



WARNING

Static electricity damage Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This

protects the cards against damage caused by static electricity.

oplace the card using the procedure *Peolacing* a card in this document

Replace the card using the procedure *Replacing a card* in this document. When you have completed the procedure, return to this point.

Note: If the card to be replaced has switches, ensure that the switches on the replacement card have the same settings.

15 The next action depends on your reason for performing this procedure.

lf yo	u were		Do
sent cedu	to this parts	rocedure from another maintenance pro-	step 16
not s proc	sent to th edure	his procedure from another maintenance	step 17
Return to the maintenance procedure that sent you to this procedure and continue as directed.			
Returr	h the F-b	us to service by typing	
>RTS	FBUS	fbus_no	
and p	ressing th	ne Enter key.	
where	•		
fb	us_no is the nu	Imber of F-bus (0 or 1)	
Exam	ple of a N	/AP response:	

LIM 0 LIS 2 FBus 0 Return to Service initiated. LIM 0 LIS2 FBus 0 Return to Service passed.

If the RTS command	Do
passed	step 22
failed	step 21

18 Continuing with this procedure removes the entire LIM from service, thereby isolating application specific units (ASU) on the LIS. Consult office personnel or your next level of support to determine if you should continue with this procedure, and proceed as directed.

19 Continuing with this procedure isolates one or more application specific units (ASU) on the LIS. Consult office personnel or your next level of support to determine if you should continue with this procedure, and proceed as directed.

- 20 Consult office personnel to determine why the component is offline. Continue as directed by office personnel.
- 21 For further assistance, contact the personnel responsible for the next level of support.
- 22 You have completed this procedure.

Common fill paddle boards and associated LIM components

PEC	Slot	Associated LIM and F-buses	
NT9X74	07F		
NT9X79	07R	LIM unit number: Mate LIM unit number:	0 1
NTEX20	30R	F-bus number: Mate F-bus number:	0 1
NT9X74	32F		
NT9X79	32R	LIM unit number: Mate LIM unit number:	1 0
NTEX20	08R	F-bus number: Mate F-bus number:	1 0

Note: A LIM unit is also referred to as an LMS. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM unit is used to mean an LMS. The term LIM is also used to include the ELPP where the entire ELPP cabinet is meant.

HLIU cards in an ELPP LIS

Application

Use this procedure to replace the following cards in a high-speed link interface unit (HLIU) in an enhanced link peripheral processor (ELPP) link interface shelf (LIS).

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the Index for a list of the cards, shelves, and frames documented in this card replacement NTP.

PEC	Suffix	Card name	Shelf or frame name
NTEX22	CA	Integrated processor and F-bus interface card	HLIU in an ELPP LIS
NTEX76	AA	High-speed signaling terminal card	HLIU in an ELPP LIS
NTEX78	AA	DS-1 interface paddle board	HLIU in an ELPP LIS

Common procedures

The following common procedures are referenced:

- Activating CCS7 links
- Deactivating CCS7 links
- Loading a PM
- *Replacing a card*
- Reseating cards in equipment shelves
- Unseating cards in equipment shelves

Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

HLIU cards in an ELPP LIS (continued)



Summary of Replacing HLIU cards in an ELPP LIS

HLIU cards in an ELPP LIS (continued)

Replacing HLIU cards in an ELPP LIS

At your current location

1



CAUTION Loss of service

This procedure removes an HLIU from service and temporarily interrupts messaging on the associated CCS7 link. Perform this procedure only if necessary to return the HLIU to service. Otherwise, perform this procedure only during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the MAP terminal

2 Ensure that the replacement card is compatible with the software load by typing

>CHECKREL LIM pec release

and pressing the Enter key.

where

pec

is the PEC and suffix of the new card

release

is the two-character code located on the faceplate of thereplacement card

Example input:

>CHECKREL LIM NTEX22CA 2Z

Example of a MAP response:

PEC	BASELINE	EXCEPI	RELEASE	COMPATIBLE
NTEX22CA	01	None	e 2Z	YES
OK. Card	release is	above ba	aseline.	

If the replacement card is	Do
below baseline	step 3
on or above baseline	step 6

3 From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

HLIU cards in an ELPP LIS (continued)

4	Determine which release codes are compatible with the software load in the switch. A compatible release code is one that is				
	 greater than or equal to the baseline release code, and 				
	not an exception release code				
	<i>Note:</i> The range of release codes in ascending orde 0Z, and 10 to VZ.	er is 01 to 0	9, 0A to		
5	Obtain a replacement card with a compatible release c	ode.			
	lf you	Do			
	can obtain a compatible replacement card	step	2		
	cannot obtain a compatible replacement card	step	38		
6	Access the PM level of the MAP display by typing				
	>MAPCI;MTC;PM				
	and pressing the Enter key.				
	Example of a MAP display:				
	SysB ManB OffL CBsy	ISTb	InSv		
	PM 1 0 2 0	3	6		
7	Post the HLIU that contains the card to be replaced by	typing			
	>POST HLIU hliu_no				
	and pressing the Enter key.				
	where				
	hliu_no is the number of the HLIU (0 to 511)				
	Example of a MAP display:				
	SysB ManB OffL CBsy PM 1 0 2 0	ISTb 3	InSv 6		
	HLIU 1 0 0 0 HLIU 208 InSv Rsvd	0	3		
8	Determine the state of the HLIU.				
	If the state of the HLIU is	Do			
	SysB, SysB (NA), ISTb, or InSv	step 9			
	ManB or ManB (NA)	step 12			
	OffL	step	37		
9	Deactivate the CCS7 link (if there is one) associated with procedure <i>Deactivating CCS7 links</i> in this document. We completed the procedure, return to this point.	th the HLIU Vhen you h	using the ave		

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Manual	ly busy the	HLIU by typing		
and pre	essing the E	nter key.		
lf			Do	
you r mand	need to co	onfirm the con	n- step	11
the co	ommand pa	assed	step	12
Confirm	the comm	and by typing		
and pre	ssing the E	nter key.		
Display		about the HLI	J by typing)
>QUERS	(PM			
and pre	ssing the E	nter key.		
Exampl	e oi a MAP	response:		
PM type LIM: 2 Default Running LMS Sta Auditin Msg Cha TAP 8: Reserve LIU is	Shelf: Shelf: Load: H g Load: H ates: ng: annels: ed HLIU f not allo	PM NO 20 2 Slot:1 HCA04BD HCA04BD ISTb Yes Acc forms part o pocated	8 St 0 LI Yes Acc f CCS7 I	Linkset:SSP208_LS SLC:
Record (LIS), a	the numbe nd the taps	r of the link inte that are associ	rface modu ated with t	ule (LIM), link interface shelf he HLIU you are working on.
Note displ follow step line b	e: The LIM ay. In the ex vs the word 12, the LIS below Msg (number follows kample in step 7 shelf on the se number is 2. Th Channels. In the	the word L I2, the LIM cond line c le tap num e example	IM on the second line of the 1 number is 2. The LIS number of the display. In the example ber follows the word TAP on t in step 12, the TAP number is
Post the	e LIM by typ	bing		
>POST	LIM li	.m_no		
and pre	ssing the E	nter key.		
where				
lim	_ no s the numbe	er of the LIM yo	u recordec	d in step 13
Exampl	le of a MAP	display:		

	PM LIM	SysB 1 0	ManB 0 0	OffL 2 0	CBsy 0 0	ISTb 3 1	InSv 6 0
LIM 2] Unit0: Unit1:	ISTb ISTb InSv	OOS Links	00S_Ta LIS1	ps LIS2 LI: · ·	53		
15	Access the	LIS level of	the MAP of	display by ty	/ping		
	>LIS lis	_no					
	and pressir	ng the Enter	key.				
	where						
	lis_no is th	e number of	the LIS yo	ou recorded	in step 1	3	
	Example of	f a MAP disp	lay:				
					_		
	FBus0: In	Sv	LIS2	Tap:	0	4	8
	FBusl: Ma	nB			BBBB	BBBB	BBBB
16	Manually b	usy the HLIL	J tap on F	bus 0 by ty	ping		
	>BSY FB	US 0 tag	p_no				
	and pressir	ng the Enter	key.				
	where						
		•					
	tap_nc is th	e number of	the HLIU	tap recorde	ed in step	13	
	tap_nc is th If	e number of	the HLIU	tap recorde	ed in step	13 Do	,
	tap_nc is th If you need	e number of	the HLIU	tap recorde	ed in step	13 Do ste	р р 17
	tap_nc is th If you need you do n	e number of to confirm ot need to c	the HLIU the comi onfirm th	tap recorde nand ne commar	ed in step	13 Do ste	р 17 р 18
17	tap_nc is th If you need you do n Confirm the	e number of to confirm ot need to c command b	the HLIU the commonfirm the	tap recorde mand le comman	ed in step	13 Do ste ste	ер 17 ер 18
17	tap_nc is th If you need you do n Confirm the >YES	e number of to confirm ot need to c command b	the HLIU the commonfirm the	tap recorde nand le comman	ed in step	13 Do ste ste	р 17 р 18
17	tap_nc is th If you need you do n Confirm the >YES and pressir	e number of to confirm ot need to c command t	the HLIU the comi onfirm th by typing key.	tap recorde nand ne comman	ed in step	13 Do ste ste	р 17 р 18
17	tap_nc is th If you need you do n Confirm the >YES and pressir Example of	e number of to confirm ot need to c command t ng the Enter f a MAP resp	the HLIU the commonfirm the by typing key.	tap recorde nand ne comman	nd	13 Do ste ste	р 17 ср 18
17	tap_nc is th If you need you do n Confirm the >YES and pressir Example of Confi:	e number of to confirm ot need to c e command to ng the Enter f a MAP resp rmedL	the HLIU the common onfirm the by typing key. bonse:	ap recorde mand ne comman 5 2 FBus 5 2 FBus	o Tap 8 0 Tap 8	13 Do ste ste	p 17 p 18 nitiated.
17	tap_nc is th If you need you do n Confirm the >YES and pressir <i>Example of</i> Confir	e number of to confirm ot need to c e command t ng the Enter f a MAP resp rmedL I	the HLIU the common onfirm the by typing key. bonse: LIM 2 LIS LIM 2 LIS	ap recorde mand ne comman 2 FBus 2 FBus bus 1 by ty	o Tap 8 0 Tap 8 0 Tap 8	13 Do ste ste	p 17 p 18 nitiated. assed.
17	tap_nc is th if you need you do n Confirm the >YES and pressir Example of Confi: Manually b >BSY FB	to confirm to confirm ot need to c command to re command to f a MAP resp rmedLi usy the HLIL US 1 taj	the HLIU the common onfirm the by typing key. bonse: LIM 2 LIS LIM2 LIS J tap on F- p_no	ap recorde mand e comman 2 FBus 2 FBus bus 1 by ty	o Tap 8 0 Tap 8 0 Tap 8	13 Do ste ste	p 17 pp 18 nitiated. assed.

where

tap_no

is the number of the HLIU tap recorded in step 13

Example of a MAP response:

LIM 2 FBus 1 Tap 8 Busy requires confirmation because a SEVERE system OUTAGE may occur if the following node isisolated: HLIU 208 Do you wish to proceed with this operation? Please confirm ("YES", "Y", "NO", or "N"):

19 Confirm the command by typing

>YES

and pressing the Enter key.

Example of a MAP response:

Confirmed ...LIM 2 LIS 2 FBus 1 Tap 8 Busy initiated. LIM2 LIS 2 FBus 1 Tap 8 Busy passed.

At the shelf

20



DANGER

Static electricity damage

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Determine your next step based on the card you are replacing.

If you are replacing an	Do
NTEX76	step 21
NTEX22	step 23
NTEX78	step 26

21 To begin changing an NTEX76 card, unseat and reseat cards in the HLIU using the following sub-steps. To unseat a card, use the procedure *Unseating cards in equipment shelves* in this document. To reseat a card, use the procedure *Reseating cards in equipment shelves* in this document. Unseat the NTEX76 high-speed signaling terminal card.b. Unseat the NTEX22 link general processor card.c. Reseat the NTEX22 link general processor card.

	If the RTS command	Do
	LIM 1 LIS 2 FBus 0 T LIM 1 LIS 2 FBus 0 T	ap 8 Return to Service initiated. ap 8 Return to Service passed.
	Example of a MAP response:	
	is the number of the HI	-IU tap you recorded in step 13
	where tan no	
	and pressing the Enter key.	
	>RTS FBUS 0 tap_no	
29	Return the HLIU tap on F-bus	0 to service by typing
Δt th	ο MAP terminal	
28	Return to the maintenance pro	ocedure that sent you to this procedure and
	not directed to this proceed nance procedure	dure from another mainte- step 29
	directed to this procedure procedure	trom another maintenance step 28
	If you were	Do
27	The next action depends on y	our reason for performing this procedure.
26	When you have completed the	e procedure, return to this point.
00	Go to step 27.	
25	Reseat the NTEX76 HLIU hig procedure <i>Reseating cards in</i> you have finished the procedu	h-speed signaling terminal card using the <i>equipment shelves</i> in this document. When ire, return to this point.
	<i>Note:</i> If the card to be replacement card have	aced has switches, ensure that the switches of the same settings.
24	Replace the NTEX22 card usi document. When you have co	ing the procedure <i>Replacing a card</i> in this completed the procedure, return to this point.
23	To begin changing an NTEX2 signaling terminal card using <i>shelves</i> in this document. Wh this point.	2 card, unseat the NTEX76 high-speed the procedure <i>Unseating cards in equipment</i> ten you have finished the procedure, return to
	Go to step 27.	

	If the RTS command	Do
	failed	step 38
30	Return the HLIU tap on F-bus 1 to	o service by typing
	>RTS FBUS 1 tap_no	
	and pressing the Enter key.	
	where	
	tap_no is the number of the HLIU t	ap you recorded in step 13
	Example of a MAP response:	
	LIM 1 LIS 2 FBus 1 Tap LIM 1 LIS 2 FBus 1 Tap	8 Return to Service initiated 8 Return to Service passed.
	If the RTS command	Do
	passed	step 31
	failed	step 38
1	Quit from the F-bus level of the M	AP display by typing
	>QUIT	
	and pressing the Enter key.	
2	Post the HLIU you are working on	by typing
	>POST HLIU hliu_no	
	and pressing the Enter key.	
	where	
	hliu_no is the number of the HLIU ((0 to 511)
3	Load the HLIU by typing	, ,
	>LOADPM	
	and pressing the Enter key.	
	Example of a MAP response:	
	HLIU 208 LOADPM Passed	
	If the LOADPM command	Do
	passed	step 35
	failed	step 34

HLIU cards in an ELPP LIS (end)

- **34** Load the PM using the procedure *Loading a PM* in this document. When you have completed the procedure, return to this point.
- **35** Return the HLIU to service by typing

>RTS

and pressing the Enter key.

Example of a MAP response:

HLIU 100 RTS Passed

If the RTS command	Do
passed	step 36
failed	step 38

36 Activate the CCS7 link (if there is one) associated with the HLIU using the procedure *Activating CCS7 links* in this document. When you have completed the procedure, return to this point.

Go to step 39.

- **37** Consult office personnel to determine why the component is offline. Continue as directed by office personnel.
- **38** For further assistance, contact the personnel responsible for the next level of support.
- **39** You have completed this procedure.

HSLR cards in an ELPP LIS

Application

Use this procedure to replace the following cards in a high-speed link router (HSLR) in an enhanced link peripheral processor (ELPP) link interface shelf (LIS).

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the Index for a list of the cards, shelves, and frames documented in this card replacement NTP.

PEC	Suffix	Card name	Shelf or frame name
NTEX22	CA	Integrated processor and F-bus interface card	HSLR in an ELPP LIS

Common procedures

The following common procedures are referenced:

- Activating CCS7 links
- Deactivating CCS7 links
- Loading a PM
- Replacing a card

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.



Summary of Replacing HSLR cards in an ELPP LIS

Replacing HSLR cards in an ELPP LIS

At your current location

1



CAUTION Loss of service

This procedure removes an HSLR from service and temporarily interrupts messaging on the associated CCS7 link. Perform this procedure only if necessary to return the HSLR to service. Otherwise, perform this procedure only during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the MAP terminal

2 Ensure that the replacement card is compatible with the software load by typing

>CHECKREL LIM pec release

and pressing the Enter key.

where

pec

is the PEC and suffix of the new card

release

is the two-character code located on the faceplate of thereplacement card

Example input:

>CHECKREL LIM NTEX22CA 2Z

Example of a MAP response:

PEC	BASELINE	EXCEPT	RELEASE	COMPATIBLE
NTEX22CA	01	None	2Z	YES
OK. Card	release is	above bas	eline.	

If the replacement card is	Do
below baseline	step 3
on or above baseline	step 6

3 From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

Determine which release codes are compatible with the software load in the switch. A compatible release code is one that is						
• are	eater than or e	gual to the	baseline re	elease code	, and	
• no	t an exception	release co	de		,	
Not 0Z,	e: The range of and 10 to VZ.	of release o	codes in as	cending orc	ler is 01 to	09, 0A to
Obtain	a replacemen	t card with	a compatib	ole release o	code.	
lf you	u				Do	
can o	obtain a comp	atible repl	lacement c	card	step	p 2
cann	ot obtain a co	mpatible 1	replaceme	nt card	ster	p 32
Acces	s the PM level	of the MAP	display by	typing		
>MAPC	l;MTC;PM					
and pr	essing the Ente	er key.				
Examp	ole of a MAP di	isplay:				
РМ	SysB 1	ManB 0	OffL 2	CBsy 0	ISTb 3	InSv 6
Post tr >POSI and pr where hs Examp	IF HSLR that c HSLR hs essing the Ente Ir_no is the number ole of a MAP di	ontains the Lr_no er key. of the HSL <i>isplay:</i>	R (0 to 511)	y typing	
PM HSLR	SysB 1 1	ManB 0 0	OffL 2 0	CBsy 0 0	ISTb 3 0	InSv 6 3
HSLR	208 InSv	Rs	svd			
Detern	nine the state o	of the HSLF	र.			
If the	state of the H	ISLR is	Do			
Sys: InS ⁻	B,SysB (N. v	A), IST	o, or stej	p 9		
Man	BorManB (NA)	ste	p 12		
Off	L		ste	p 31		

9	Deactivate the CCS7 link (if there is one) associated with the HSLR using the procedure <i>Deactivating CCS7 links</i> in this document. When you have completed the procedure, return to this point.			
10	Manually busy the HSLR by typing			
	>BSY FORCE			
	and pressing the Enter key.			
	lf	Do		
	you need to confirm the com- mand	step 11		
	the command passed	step 12		
11	Confirm the command by typing			
	>YES			
	and pressing the Enter key.			
12	Display information about the HSLR b	y typing		
	>QUERYPM			
	and pressing the Enter key.			
	Example of a MAP response:			
	PM type: HSLRPM No.: 208LIM: 2Shelf: 2Slot:10Default Load: HCA04BDRunning Load: HCA04BDLMS States:ISTbAuditing:YesYesYMsg Channels:AccTAP 8:.Reserved HSLR forms part of C	Status: InSv LIU FTA: 4247 1000 SSTb Ces Acc CCS7 Linkset:SSP208_LS SLC:0		
	LIU is not allocated			
13	Record the number of the link interfact (LIS), and the taps that are associated	e module (LIM), link interface shelf d with the HSLR you are working on.		
	<i>Note:</i> The LIM number follows the display. In the example in step 12, the follows the word Shelf on the second step 12, the LIS number is 2. The tabline below Msg Channels. In the example of the second step 12 is the second step 12 in the second step 12 in the second step 12 is the second step 12 in the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 is the second step 12 in the second step 12 in the second step 12 is the second step 12 in the second step 12 in the second step 12 is the second step 12 in the se	word LIM on the second line of the the LIM number is 2. The LIS number and line of the display. In the example in ap number follows the word TAP on the ample in step 12, the TAP number is 8.		
14	Post the LIM by typing			
	>POST LIM lim_no			
	and pressing the Enter key.			
	where			
	lim no			

is the number of the LIM you recorded in step 13

Example of a MAP display: OffL ISTb SysB ManB CBsy InSv 1 0 2 0 3 ΡМ б LIM 0 0 0 0 1 0 LIM 2 ISTb 00S 00S_Taps Links LIS1 LIS2 LIS3 Unit0: ISTb . . Unit1: InSv . 15 Access the LIS level of the MAP display by typing >LIS lis no and pressing the Enter key. where lis no is the number of the LIS you recorded in step 13 Example of a MAP display: Tap: 0 LIS2 4 8 FBus0: InSv FBusl: ManB BBBB BBBB BBBB 16 Manually busy the HSLR tap on F-bus 0 by typing >BSY FBUS 0 tap_no and pressing the Enter key. where tap_no is the number of the HSLR tap recorded in step 13 lf Do you need to confirm the command step 17 you do not need to confirm the command step 18 17 Confirm the command by typing >YES and pressing the Enter key. Example of a MAP response: Confirmed ...LIM 2 LIS 2 FBus 0 Tap 8 Busy initiated. LIM2 LIS 2 FBus 0 Tap 8 Busy passed. 18 Manually busy the HSLR tap on F-bus 1 by typing >BSY FBUS 1 tap_no

and pressing the Enter key.

where

tap_no is the number of the HSLR tap recorded in step 13

Example of a MAP response:

LIM 2 FBus 1 Tap 8 Busy requires confirmation because a SEVERE system OUTAGE may occur if the following node is isolated: HSLR 208 Do you wish to proceed with this operation? Please confirm ("YES", "Y", "NO", or "N"):

19 Confirm the command by typing

>YES

and pressing the Enter key.

Example of a MAP response:

Confirmed ...LIM 2 LIS 2 FBus 1 Tap 8 Busy initiated. LIM2 LIS 2 FBus 1 Tap 8 Busy passed.

At the shelf

20



DANGER

Static electricity damage

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Replace the NTEX22 card using the procedure *Replacing a card* in this document. When you have completed the procedure, return to this point.

Note: If the card to be replaced has switches, ensure that the switches on the replacement card have the same settings.

21 The next action depends on your reason for performing this procedure.

If you were	Do
directed to this procedure from another maintenance procedure	step 22
not directed to this procedure from another mainte- nance procedure	step 23

22 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

23 Return the HSLR tap on F-bus 0 to service by typing

>RTS FBUS 0 tap_no

and pressing the Enter key.

where

tap_no

is the number of the HSLR tap you recorded in step 13

Example of a MAP response:

LIM 1 LIS 2 FBus 0 Tap 8 Return to Service initiated. LIM 1 LIS 2 FBus 0 Tap 8 Return to Service passed.

If the RTS command	Do
passed	step 24
failed	step 32

24 Return the HSLR tap on F-bus 1 to service by typing

>RTS FBUS 1 tap_no

and pressing the Enter key.

where

tap_no is the number of the HSLR tap you recorded in step 13

Example of a MAP response:

LIM 1 LIS 2 FBus 1 Tap 8 Return to Service initiated. LIM 1 LIS 2 FBus 1 Tap 8 Return to Service passed.

If the RTS command	Do	
passed	step 25	
failed	step 32	
Quit from the F-bus level of the	MAP display by typing	
>QUIT		
and pressing the Enter key.		
Post the HSLR you are working	g on by typing	
>POST HSLR hslr_no		
and pressing the Enter key.		

25

26

HSLR cards in an ELPP LIS (end)

	where	
	hsir_no	(0 to E11)
27	Is the number of the HSLR	(0 t0 511)
21		
	and proceing the Enter key	
	Example of a MAP response:	
	HSLR 208 LOADPM Passed	
	If the LOADPM command	Do
	passed	step 29
	failed	step 28
28	Load the PM using the procedure have completed the procedure, re	<i>Loading a PM</i> in this document. When you eturn to this point.
29	Return the HSLR to service by typ	ping
	>RTS	
	and pressing the Enter key.	
	Example of a MAP response:	
	HSLR 100 RTS Passed	
	If the RTS command	Do
	passed	step 30
	failed	step 32
30	Activate the CCS7 link (if there is procedure <i>Activating CCS7 links</i> i completed the procedure, return t	one) associated with the HSLR using the in this document. When you have this point.
	Go to step 33.	
31	Consult office personnel to determ as directed by office personnel.	nine why the component is offline. Continue
32	For further assistance, contact the support.	e personnel responsible for the next level of
32 33	For further assistance, contact the support. You have completed this procedu	e personnel responsible for the next level of re.

MLIU cards in an LPP LIS

Application

Use this procedure to replace the following cards in a multiple link interface unit (MLIU) in a link peripheral processor (LPP) link interface shelf (LIS).

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the "Index". The Index provides a list of the cards, shelves, and frames documented in this card replacement NTP.

PEC	Suffix	Card name	Shelf or frame name
NTEX22	СА	Integrated processor and F-bus interface card	MLIU in an LPP LIS
NTEX26	BA	MLIU channel-bus interface card	MLIU in an LPP LIS

Common procedures

This procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- Deactivating CCS7 links
- Unseating cards in equipment shelves
- Replacing a card
- Reseating cards in equipment shelves
- Loading a PM
- Activating CCS7 links

Do not go to the common procedure unless directed to in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Summary of replacing MLIU cards in an LPP LIS



Replacing MLIU cards in an LPP LIS



CAUTION

This procedure removes an MLIU from service and temporarily interrupts messaging on the associated CCS7 links. Perform this procedure only if necessary to return the MLIU to service. Otherwise, perform this procedure only during periods of low traffic.

At your current location

- 1 Get a replacement card. Make sure that the replacement card has the same PEC, including suffix, as the card being removed.
- 2 Make sure that the replacement card is compatible with the software load by using the procedure Verifying load compatibility of SuperNode cards in this document. Complete the procedure and return to this point.

At the MAP terminal

3 Access the PM level of the maintenance and administration position (MAP) display by typing

>MAPCI;MTC;PM

Press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1	0	2	0	3	б

4 Post the MLIU that contains the card to replace by typing

>POST MLIU liu no

Press the Enter key.

Where

liu no

is the number of the MLIU (0 to 511)

Example of a MAP display:

PM MLIU		SysB 1 1	ManB 0 0	OffL 2 0	CBsy 0 0	ISTb 3 0	InSv 6 3
MLIU	208 II	nSv	Rsvd				

If the state of the MLIU	Do
is SysB, SysB (NA), ISTb, or InSv	step 6
is ManB or ManB (NA)	step 19
is OffL	step 36
Deactivate the CCS7 link (if there is or procedure <i>Deactivating CCS7 links</i> in procedure and return to this point.	e) associated with the MLIU usi this document. Complete the
Manually force bsy the MLIU by typing)
>BSY FORCE	
Press the Enter key.	
lf	Do
you need to confirm the comman	d step 10
the command passed	step 11
MAP response is WARNING: MLIU 208 is current being imaged. Do you wish to abort imaging to proceed with the BSY quest? Please confirm ("YES", "Y", "N or "N"):	step 8 ntly re- O",
Determine if it is safe to continue with	this procedure.
If it is safe	Do
continue with BSY FORCE request	step 9
abort BSY FORCE request	step 38
Force bsy the MLIU by typing	
>YES	
Press the Enter key. Go to step 11.	
Example of a MAD reasonable	

Imaging will be aborted on MLIU 208.

10 Confirm the command by typing

>YES

Press the Enter key.

11 Display information about the MLIU by typing

>QUERYPM

Press the Enter key.

Example of a MAP response:

PM No.: 208 Status: InSv LIU FTA: 4247 1000 PM type: MLIU LIM: 2 Shelf: 2 Slot: 8 Default Load: MCA12AT Running Load: MCA12AT LMS States : ISTb ISTb : Yes Yes Auditing Msg Channels: Acc Acc TAP 8 : Reserved MLIU forms part of CCS7 Linkset: SSP208_LS SLC: 0 LIU is not allocated

12 Record the number of the link interface module (LIM) and the taps that are associated with the MLIU you are working on.

Note: The LIM number follows the word LIM on the second line of the display. In the preceding example, the LIM number is 0. The tap number follows the word TAP on the line below Msg Channels. In the preceding example, the TAP number is 8.

13 Post the LIM by typing

>POST LIM lim_no

Press the Enter key.

Where

lim_no

is the number of the LIM you recorded in step 12

Example of a MAP display:

PM LIM		SysB 1 0	ManB 0 0	OffL 2 0	CBsy 0 0	ISTb 3 1	InSv 6 0
LIM 2	ISTb		Links O	OS Taps	OOS		
UnitO: Unit1:	ISTb InSv		4	•			

Access the F-bus level of the MAP display by typing 14 >FBUS Press the Enter key. Example of a MAP display: Tap: 0 4 8 12 16 20 24 28 32 .-.- ---- ...- -... FBus0: InSv ...- ----. ...- ---- ---. .-.- ---- ...- -... FBus1: InSv 15 Manually busy the MLIU tap on F-bus 0 by typing >BSY FBUS 0 tap no Press the Enter key. Where tap no is the number of the MLIU tap recorded in step 12 If you Do need to confirm the command step 16 do not need to confirm the step 17 command 16 Confirm the command by typing >YES Press the Enter key. Example of a MAP response: Confirmed ... IM 2 FBus 0 Tap 8 Busy initiated. LIM 2 FBus 0 Tap 8 Busy passed. 17 Manually busy the MLIU tap on F-bus 1 by typing >BSY FBUS 1 tap no Press the Enter key. Where tap no is the number of the MLIU tap recorded in step 12 Example of a MAP response: LIM 2 FBus 1 Tap 8 Busy requires confirmation because a SEVERE system OUTAGE may occur if the followingnode is isolated:MLIU 208 Do you wish to proceed with this operation? Please confirm ("YES", "Y", "NO", or "N"):

18 Confirm the command by typing

>YES

Press the Enter key.

Example of a MAP response:

Confirmed ... LIM 2 FBus 1 Tap 8 Busy initiated. LIM 2 FBus 1 Tap 8 Busy passed.

At the shelf

19



DANGER

Static electricity damage Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This

protects the cards against damage caused by static electricity.

Determine your next step based on the card you are replacing.

If you are replacing an	Do
NTEX76	step 20
NTEX22	step 22
any back plane card	step 25

20 To change an NTEX76 card, unseat and reseat cards in the MLIU using the following sub-steps. To unseat a card, use the procedure *Unseating cards in equipment shelves* in this document. To reseat a card, use the procedure *Reseating cards in equipment shelves* in this document.

- a Unseat the NTEX76 ST signaling terminal card.
- **b** Unseat the NTEX22 link general processor card.
- c Reseat the NTEX22 link general processor card.
- **21** Replace the NTEX76 card using the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card to replace has switches, make sure that the switches on the replacement card have the same settings.

Go to step 26.

22 To change an NTEX22 card, unseat the NTEX76 STP signaling terminal card using the procedure *Unseating cards in equipment shelves* in this document. Complete the procedure and return to this point.

23	Replace the NTEX22 card usi document. Complete the proc	ng the procedure <i>Replacing a card</i> in this edure,and return to this point.
	<i>Note:</i> If the card to replace the replacement card have	has switches, make sure that the switches on the same settings.
24	Reseat the NTEX76 ST signa Reseating cards in equipment procedure and return to this p	ling terminal card using the procedure t shelves in this document. Complete the oint.
	Go to step 26.	
25	Replace the card using the pro Complete the procedure and r	ocedure <i>Replacing a card</i> in this document. return to this point.
	<i>Note:</i> If the card to replace the replacement card have	has switches, make sure that the switches on the same settings.
26	The next action depends on year	our reason for performing this procedure.
	If another maintenance pro dure	oce- Do
	directed you to this proceed	lure step 27
	did not direct you to this j dure	proce- step 28
27	Return to the maintenance pro	ocedure that sent you to this procedure.
At the	e MAP terminal	
28	Return the MLIU tap on F-bus	0 to service by typing
	>RTS FBUS 0 tap_no	
	Press the Enter key.	
	Where	
	tap_no is the number of the MI	LIU tap you recorded in step 12
	<i>Example of a MAP response:</i> LIM 1 FBus 0 Tap 8 Return to accessible.	Service passed- local maintenance not
	If the RTS command	Do
	passed	step 29
	failed	step 37
29	Return the MLIU tap on F-bus	1 to service by typing
29	Return the MLIU tap on F-bus	1 to service by typing
29	Return the MLIU tap on F-bus >RTS FBUS 1 tap_no Press the Enter key.	1 to service by typing

Where	
tap_no	en vou ne conde d'in sten 40
	ap you recorded in step 12
Example of a MAP response:	
LIM 1 FBus 1 Tap 8 Retur LIM 1 FBus 1 Tap 8 Retur	en to Service initiated. En to Service passed.
If the RTS command	Do
passed	step 30
failed	step 37
Quit from the F-bus level of the MA	AP display by typing
>QUIT	
Press the Enter key.	
Post the MLIU you are working on	by typing
>POST MLIU liu_no	
Press the Enter key.	
Where	
liu_no is the number of the MLIU (0 to 511)
Load the MLIU by typing	
>LOADPM	
Press the Enter key.	
Example of a MAP response:	
MLIU 208 LOADPM Passed	
If the LOADPM command	Do
passed	step 34
failed	step 33
Load the PM using the procedure <i>I</i> the procedure, and return to this p	<i>Loading a PM</i> in this document. Comple
Return the MLIU to service by typi	ng
>RTS	
Press the Enter key.	
Example of a MAP response:	

MLIU cards in an LPP LIS (end)

MLIU 100 RTS Passed

If the RTS command	Do
passed	step 35
failed	step 37

35 Activate the CCS7 link (if there is one) associated with the MLIU using the procedure *Activating CCS7 links* in this document. Complete the procedure and return to this point.

Go to step 39.

- **36** Contact operating company personnel to determine why the component is offline. Continue as directed.
- **37** For additional help, contact the next level of support.
- **38** Abort the BSY FORCE request by typing

>NO

Press the Enter key. The BSY request is aborted. Node imaging continues.

39 The procedure is complete.

NT9X13 in an ELPP LIM unit

Application

Use this procedure to replace an NT9X13 in a link interface module (LIM) unit of an enhanced link peripheral processor (ELPP).

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the Index for a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffixes	Card name	Shelf/frame name
NT9X13	DE	CPU 20-MHz card	LIM unit of an ELPP

Note 1: A link interface module (LIM) unit is also referred to as a local message switch (LMS) in some documentation. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM unit is used to designate an LMS.

Note 2: The ELPP is referred to as a link interface module (LIM) where the entire ELPP is indicated, paralleling how the LISs in the ELPP are closely associated with the LIM. MAP displays and data schema tables also refer to the ELPP as a LIM.

Common procedures

The following common procedures are referenced:

- Loading a PM
- Replacing a card
- Unseating cards in equipment shelves

Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.



Summary of Replacing an NT9X13 in an ELPP LIM unit

DMS-100 Family MMP Card Replacement Procedures Volume 1 of 7 MMP13 and up

Replacing NT9X13 in an ELPP LIM unit

At your current location

1



CAUTION Loss of service

This procedure provides instructions to remove a LIM unit from service, thereby removing redundancy from the ELPP. Perform this procedure only if necessary to return the LIM unit to service. Otherwise, perform this procedure only during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the MAP terminal

2 Ensure that the replacement card is compatible with the software load by typing

>CHECKREL LIM pec release

and pressing the Enter key.

where

pec

is the PEC and suffix of the new card

release

is the two-character code located on the faceplate of thereplacement card

Example input:

>CHECKREL LIM NT9X13DE 2Z

Example of a MAP response:

PE	EC	BASELIN	JΕ	EXCE	EPT	RELI	EASE	CO	MPATIBLE
NT9X1	L3DE	()1	No	one		2Z		Yes
OK. C	Card	release	is	above	base	line.			

If the replacement card is	Do
below baseline	step 3
on or above baseline	step 6

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).					
4	Determine which release codes are compatible with the software load in the switch. A compatible release code is one that is					
	 greater than or equal to the baseline release code, and 					
	not an exception release code					
	<i>Note:</i> The range of release codes in ascending order is 01 to 09, 0A to 0Z, and 10 to VZ.					
5	Obtain a replacement card with a compatible release code.					
	lf you Do					
	can obtain a compatible replacement card step 2					
	cannot obtain a compatible replacement card step 31					
6	Access the PM level of the MAP display by typing					
	>MAPCI;MTC;PM					
	and pressing the Enter key.					
	Example of a MAP display:					
	SysBManBOffLCBsyISTbInSvPM00280018					
7	Post the LIM that contains the card to be replaced by typing					
	>POST LIM lim_no					
	and pressing the Enter key.					
	where					
	lim_no					
	is the number of the LIM to be posted (0 to 16)					
	Example of a MAP display:					
	SysB ManB OffL CBsy ISTb InSv					
	PM 0 0 28 0 0 18 LIM 0 0 1 0 0 1					
	LIM 0 InSv OOS OOS_Taps					
	UnitO: InSv					

9

8 Determine the state of the LIM.

> Note: The state of the LIM is shown to the right of the LIM number on the MAP display.

If the state of the LIM is	Do
Offl	step 30
any other in-service or out-of-service state	step 9
Determine the state of the LIM units. Refer to the table at th document to identify the LIM unit, the F-bus, and the mates the card you are replacing.	ne end of this associated with
<i>Note:</i> The state of the LIM units is shown to the right of t number on the MAP display.	the LIM unit
If the state of the mate LIM unit is	Do
InSv	step 10
ISTb, and the state of the LIM unit associated with the card you are replacing is InSv or ISTb	step 10
ISTb, and the LIM unit associated with the card you are replacing is out of service	step 10
any out-of-service state, and the state of the LIM unit associated with the card you are replacing is InSv	step 28

any out-of-service state, and the LIM unit associated step 10 with the card you are replacing is out of service

Note: Steps 10 through 13 must be repeated for each LIS on the LIM unit.

10

or ISTb

Access the LIS level of the MAP display by typing >LIS lis_no and pressing the Enter key. where lis_no is the number of the LIS (1, 2, or 3)Example of a MAP display:

PM LIM	SysB 0 0	ManB 0 0	OffL 28 1	CBsy 0 0	ISTb 0 0	InSv 18 1
LIM 0 InSv	OOS	00S_T	aps 1 1.192	1.193		
Unit0: InSv Unit1: InSv		· · ·	· . ·	•		
LIS2 FBus0: InSv FBus1: InSv	Тар	o: 0 	4 	8		

11



CAUTION

Potential loss of service

Ensure that the mate LIM unit, the mate F-bus, and the F-bus taps on the mate are in service before manually busying the LIM unit and F-bus associated with the card to be replaced. Manually busying the F-bus and the LIM unit will isolate nodes on the link interface shelves (LIS) if the mates are out of service.

Determine the states of the F-bus and the F-bus taps for the mate LIM unit.

Note: The state of the F-buses is shown to the right of the F-bus numbers on the MAP display. Refer to the table at the end of this document to identify the LIM unit associated with the card you are replacing.

If the states of the mate resources are	Do
in-service (state of the F-bus is InSv and all F-bus taps are . [dot])	step 10 for the next LIS OR step 12 (if steps 10 and 11 have been repeated for each LIS)
any other state (state of the F-bus is not InSv and one or more F-bus taps are not . [dot])	step 29

12 Manually busy the F-bus associated with the card to be replaced by typing >BSY FBUS fbus_no

and pressing the Enter key.

where

fbus_no

is the number of the F-bus (0 or 1)

Note: Refer to the table at the end of this document to identify the LIM unit associated with the card you are replacing.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	0	0	28	0	0	18
LIM	0	0	1	0	1	0
LIM 0 IST	'b					
Unit0: ISTh		OS OOS Links	_Taps LIS1 LI · 1	.S2 LIS3		
UNILI: INSV		•	• •	•		
LIS2 FBus0: ManE FBus1: InSv	3	Tap: 0 BBB 	4 B BBBB 	8 BBBB 		
lf			Do			
the comman	nd passes		step 1 Ol step 2 peate	2 for the n R 14 (if step d for each	ext LIS 12 has b LIS)	een re-
you must co	onfirm the	e comman	d step 1	3		
Confirm the co	ommand b	y typing				
>YES						
and pressing t	the Enter k	key.				
Example of a	MAP resp	onse:				
LIM O LIS LIM O LIS	2 FBus 2 FBus	0 Busy : 0 Busy p	initiate passed.	d.		
lf			Do			
step 12 ha each LIS	s been re	epeated for	or step 1	4		

13

lf			Do				
step 12 each LI	has not been S	repeated f	or step	12 for the r	next LIS		
Quit the L	IS level of the	MAP displ	ay by typin	ıg			
and press Manually	sing the Enter busy the LIM ι	key. unit corresp	onding to t	he card to b	e replaced	by typing	
>BSY U	NIT unit_	no	-		-		
and press	sing the Enter	key.					
where	where						
unit_ is f	no be number of	the LIM un	it (0 or 1)				
Example	of a MAP disp	olay:					
	SysB	ManB	OffL	CBsy	ISTb	InSv	
PM LIM	0 0	0 0	28 1	0 0	17 1	13 0	
LIM O	ISTb						
005005 <u>-</u>	_Taps						
UnitO: N Unit1: 1	ManB ISTb	Links	s LIS1 2 . 2 .	LIS2 LI 12 .	.S3		
	LIS2	Ta	ip: 0	4 8	1		

At the shelf

16



WARNING

Static electricity damage

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Press down and release the power switch on the faceplate of the NT9X30 power converter (slot 04F) associated with the card to be replaced. Refer to

the table at the end of this document to identify the power converter associated with the LIM unit you are working on.

Note: The CONVERTER OFF LED is lit when the NT9X30 power converter is powered down.

If the CONVERTER OFF LED is	Do
lit	step 19
not lit	step 17

17



CAUTION Possible loss of service

Unseating the NT9X13 card bypasses the safety interlock. Ensure that the card to be removed is in the manual-busy LIM unit.

Unseat the NT9X13 associated with the LIM unit you are working on using the procedure *Unseating cards in equipment shelves* in this document. When you have completed the procedure, return to this point.

- **18** Press down and release the power switch on the faceplate of the NT9X30 power converter (slot 36F) associated with the card to be replaced. Refer to the table at the end of this document to identify the power converter associated with the LIM unit you are working on.
- **19** Replace the card using the procedure *Replacing a card* in this document. When you have completed the procedure, return to this point.
- **20** Release the power switch on the faceplate of the NT9X30 power converter associated with the card you have replaced.

Note: The CONVERTER OFF LED is not lit when the NT9X30 power converter is powered up.

21 The next action depends on your reason for performing this procedure.

If you were	Do
sent to this procedure from another maintenance pro- cedure	step 22
not sent to this procedure from another maintenance procedure	step 23
Return to the maintenance procedure that sent you to this p continue as directed.	rocedure and

22

At the	MAP terminal	
23	Load the LIM unit by typing	
	>LOADPM UNIT unit_no	
	and pressing the Enter key.	
	where	
	unit_no is the number of the LIM unit (0	or 1)
	Example of a MAP response:	
	LIM 0 UNIT 0 Load initiate LIM 0 UNIT 0 Load passed.	d.
	If the LOADPM command	Do
	passed	step 25
	failed	step 24
24	Load the PM using the procedure <i>Load</i> have completed the procedure, return	<i>ling a PM</i> in this document. When you to this point.
25	Return the LIM unit to service by typing	g
	>RTS UNIT unit_no	
	and pressing the Enter key.	
	where	
	unit_no is the number of the LIM unit (0	or 1)
	Example of a MAP response.	
	LIM 0 UNIT 0 Return to Serville LIM 0 UNIT 0Return to Servi	vice initiated. ice passed.
	If the RTS command	Do
	passed	step 26
	failed	step 31
	Note: Steps 26 and 27 must be rep	peated for each LIS on the LIM unit.
26	Access the LIS level of the MAP displa	y by typing
	>LIS lis_no	
	and pressing the Enter key.	
	where	

27

lis_ne is t	o he numbe	er of the LIS	S (0, 1, or 2	2)		
Example	of a MAP	display:	,	,		
PM LIM	SysB 0 0	ManB 0 0	OffL 28 1	CBsy 0 0	ISTb 0 0	InSv 18 1
LIM 0	ISTb					
		00S Lii	00S_T nks LIS1	aps LIS2	LIS3	
UnitO: Unitl:	ISTb InSv	•	•		•	
	LIS2	Тар	:	4 0		
FBus0: FBus1:	ManB InSv		BBBB ····	4 8 BBBB BB	BBB	
<pre>>Return the >RTS F and press</pre>	e F-bus to BUS fb sing the E	o service by pus_no nter key.	typing			
where	9					
fbus_	no					
is t <i>Example</i>	he numbe of a MAP	er of the F-t <i>response:</i>	ous that yo	u busied (() or 1)	
LIM O LIM O	FBus 0 FBus 0	Return to Return to	co Servi Servic	ce initi e passed	ated.	
If the RT comman	۲S nd	Do				
passed		step 26 fe	or the nex	t LIS	OR	
		step 32 (i	f step 26	has been r	repeated for	or each LIS)
failed		step 31				
Continuin thereby is (LIS). Co you shoul	g with this olating ap nsult offic d continu	s procedure oplication sp ce personne e with this p	e will remove becific units el or your n procedure,	ve both LIN s (ASU) on ext level of and proce	1 units from the link inte support to ed as direc	service, rface shelves determine if ted.
Continuin units (ASI your next procedure	g with this J) on the level of s e, and pro	s procedure link interfac upport to de oceed as dir	e may isola ce shelves etermine if ected.	te one or n (LIS). Cor you should	nore applica sult office p d continue v	ation specific personnel or vith this
Consult of as directe	ffice perso d by offic	onnel to dete e personne	ermine why I.	/ the comp	onent is offl	ine. Continue

28

29

30
NT9X13 in an ELPP LIM unit (end)

- **31** For further assistance, contact the personnel responsible for the next level of support.
- **32** You have completed this procedure.

NT9X13 card and associated LIM components

PEC	Slot	Associated LIM hardware and F-b	uses
NT9X13	17F	LIM unit number:	0
		Mate LIM unit number:	1
		F-bus number:	0
		Mate F-bus number:	1
		Location of NT9X30 (+5 V) power converter:	slot 04F
NT9X13	22F	LIM unit number:	1
		Mate LIM unit number:	0
		F-bus number:	1
		Mate F-bus number:	0
		Location of NT9X30 (+5 V) power converter:	slot 36F
Note: A L LMS 0; LIN and displa also used	IM unit is als // unit 1 corre ys, the term to refer to th	o referred to as an LMS. LIM unit 0 co esponds to LMS 1. In MAP commands LIM unit is used to mean an LMS. The e ELPP if the entire ELPP cabinet is m	rresponds to , responses, e term LIM is neant.

System and power cards in an ELPP LIM unit

Application

Use this procedure to replace the following cards in a link interface module (LIM) unit of an enhanced link peripheral processor (ELPP).

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the Index for a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X15	AA	Mapper card	LIM unit of an ELPP
NT9X17	AD	Message switch four-port card	LIM unit of an ELPP
NT9X26	AA, BA, CA	Remote terminal interface paddle board	LIM unit of an ELPP
NT9X30	AA	+5V 86-A power converter card	LIM unit of an ELPP
NT9X30	AB	Global +5V 86-A power converter card	LIM unit of an ELPP
NT9X31	AB	-5V power converter card	LIM unit of an ELPP
NT9X49	CA	Message switch P-bus terminator card	LIM unit of an ELPP
NT9X52	AA	Message switch T-bus access card	LIM unit of an ELPP
NT9X53	AD	Message switch system clock card	LIM unit of an ELPP
NT9X62	BB	Four-port sub-rate DS512 paddleboard	LIM unit of an ELPP
NT9X73	BB	LMS F-bus rate adapter card	LIM unit of an ELPP
NT9X79	BB	F-bus termination paddle board	LIM unit of an ELPP

System and power cards in an ELPP LIM unit

Note 1: A link interface module (LIM) is also referred to as an LMS. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM is used to mean an LMS.

Note 2: The ELPP is referred to as a LIM when the entire ELPP is meant, paralleling how the LISs in the ELPP are closely associated with the LIM. MAP displays and data schema tables also refer to the ELPP as a LIM.

Common procedures

The following common procedures are referenced:

- Loading a PM
- Manually busying LIM-to-MS SR128 links
- Replacing a card
- Reseating cards in equipment shelves
- Returning LIM-to-MS SR128 links to service
- Unseating cards in equipment shelves

Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Summary of Replacing System and power cards in an ELPP LIM unit



Replacing System and power cards in an ELPP LIM unit

At your current location

1



CAUTION Loss of service

This procedure provides instructions for removing a LIM unit from service, thereby removing redundancy from the ELPP. Perform this procedure only if necessary to return the LIM unit to service. Otherwise, perform this procedure only during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the MAP terminal

2 Ensure that the replacement card is compatible with the software load by typing

>CHECKREL LIM pec release

and pressing the Enter key.

where

pec

is the PEC and suffix of the new card

release

is the two-character code located on the faceplate of thereplacement card

Example input:

>CHECKREL LIM NT9X15AA 2Z

Example of a MAP response:

PECBASELINEEXCEPTRELEASECOMPATIBLENT9X15AA40None2Z*NOCard release is below baseline.Do not plug the card into the LIM.*NO

If the replacement card is	Do
below baseline	step 3
on or above baseline	step 6

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3	From the MAF any exception	P display, release c	record the codes (EXC	baseline re CEPT).	elease code	e (BASELIN	NE) and
4	Determine wh switch. A com	ich releas patible re	e codes a lease cod	re compatil e is one tha	ble with the at is	e software lo	bad in the
	greater that	an or equ	al to the ba	aseline rele	ease code,	and	
	not an exc	eption re	lease code	;			
	<i>Note:</i> The 0Z, and 10	range of to VZ.	release co	des in asce	ending orde	er is 01 to 0	9, 0A to
5	Obtain a repla	cement c	ard with a	compatible	e release co	ode.	
	lf you					Do	
	can obtain a	compati	ible repla	cement ca	rd	step	2
	cannot obta	in a com	patible re	placement	t card	step	40
6	Access the PM	/ level of	the MAP d	lisplay by t	yping		
	>MAPCI;MTC	;PM					
	and pressing t	he Enter	key.				
	Example of a	MAP disp	lay:				
		SvaB	ManB	OffI.	CBay	TSTh	TnSv
	PM	0	0	28	0	0	18
7	Post the LIM u	init that co	ontains the	e card to be	e replaced l	by typing	
	>POST LIM	lim_n	D				
	and pressing t	he Enter	key.				
	where						
	lim_no is the n	umber of	the LIM to	be posted	(0 to 16)		
	Example of a	MAP disp	lay:	·	, , , , , , , , , , , , , , , , , , ,		
	PM LIM	SysB O O	ManB 0 0	OffL 28 1	CBsy 0 0	ISTb 0 0	InSv 18 1
	LIM 0 InS [.]	v					
	Links Unit0: In Unit1: In	Sv Sv	•	00S 00 LIS1 1	DS_Taps LIS2 LIS	53 •	

If the state of the LIM is	Do
Offl	step 3
any other in-service or out-of-service state	step 9
Determine the state of the mate LIM unit. Refer to the ta document to identify the LIM unit associated with the ca	ble at the en rd you are re
<i>Note:</i> The state of the LIM units is shown to the right number on the MAP display.	t of the LIM u
If the state of the mate LIM unit is	Do
InSv	step 1
ISTD, and the state of the LIM unit associated w the card you are replacing is InSv or ISTD	ith step 10
ISTb, and the LIM unit associated with the card y are replacing is out of service	ou step 10
any out-of-service state, and the state of the LIM u associated with the card you are replacing is Insor ISTb	nit step 3' Sv
any out-of-service state, and the LIM unit associat with the card you are replacing is out of service	ed step 1
Note: Steps 10 and 11 must be repeated for each LI	S on the LIN
Access the LIS level of the MAP display by typing	
>LIS lis_no	
and pressing the Enter key.	

	Sys	sB I	ManB	OİİL	CBs	У	ISTb
PM	-	0	0	28		0	0
LII	M	0	0	1		0	0
LIM 0 .	InSv						
		(oos o	OS_Tap	ps	~ ~	
			Links	LISI	LIS2	LIS:	5
Unit0:	InSv				•		
Unit1:	InSv		•	•	•	•	
	LIS2		Tap:	0	4	8	
FBus0:	InSv						
FBus1:	InSv						

11



CAUTION

Potential loss of service

Ensure that the mate LIM unit, the mate F-buses, and the F-bus taps on the mate are in service before manually busying the LIM unit and F-buses associated with the card to be replaced. Manually busying the F-buses and the LIM unit isolates nodes on the link interface shelves (LIS) if the mate resources are out of service.

InSv 18 1

Determine the states of the F-bus and the provisioned F-bus taps for the mate LIM unit.

Note: The state of the F-buses is shown to the right of the F-bus numbers on the MAP display. Refer to the table at the end of this document to identify the LIM and F-bus components associated with the card you are replacing.

If the states are	Do
in-service (state of the F-bus is InSv and all F-bus taps are . [dot])	step 10 for the next LIS OR step 12 (if steps 10 and 11 have been repeated for each LIS)
any other state (state of the F-bus is not InSv and one or more F-bus taps are not . [dot])	step 38

Note: Step 12 must be repeated for each LIS on the LIM unit.

12 Manually busy the F-bus on the LIS corresponding to the LIM that is associated with the card to be replaced, by typing

>BSY FBUS fbus_no

and pressing the Enter key.

where

13

14

fbus_no

is the number of the F-bus (0 or 1)

Note: Refer to the table at the end of this document to identify the F-bus components corresponding to the LIM associated with the card you are replacing.

Example of a MAP response:

LIM 0 LIS 2 FBus 0 Busy requires confirmation Please confirm ("YES", "Y", "NO", or "N"):

lf	Do
the command passes	step 12 for the next LIS OR- step 14 (if step 12 has been re- peated for each LIS)
you must confirm the command	step 13
Confirm the command by typing	
>YES	
and pressing the Enter key.	
Example of a MAP response:	
LIM 0 LIS 1 FBus 0 Busy ini LIM 0 LIS 1 FBus 0 Busy pas	tiated. ssed.
lf	Do
step 12 has been repeated for each LIS	step 14
	step 12 for the next LIS
for each LIS	I
for each LIS Quit the LIS level of the MAP display b	by typing
step 12 has NOT been repeated for each LIS Quit the LIS level of the MAP display b	by typing

If you are replacing	Do
an NT9X17 or an NT9X62 (MS port cards)	step 16
any other card	step 17

16



CAUTION Possible service impact

Manually busy only the SR128 links associated with a specific NT9X17 or NT9X62 card in the LIM unit. The remaining SR128 links associated with the LIM unit must remain in service.

Manually busy the SR128 links using the procedure *Manually busying LIM-to-MS SR128 links* in this document. When you have completed the procedure, return to this point.

17 Manually busy the LIM unit corresponding to the card to be replaced, by typing

>BSY UNIT unit_no

and pressing the Enter key.

where

unit_no

is the number of the LIM unit (0 or 1)

Example of a MAP response:

bsy unit 0 LIM 0 UNIT 0 Busy initiated. LIM 0 UNIT 0 Busy passed.

At the shelf

18



DANGER Static electricity damage

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Press down and release the power switch on the faceplate of the NT9X30 and NT9X31 power converter associated with the card to be replaced. Refer to the table at the end of this document to identify the power converter associated with the LIM unit you are working on.

Note: The CONVERTER OFF LED is lit when the NT9X30 and NT9X31 power converter is powered down.

If the CONVERTER OFF LED is	Do
lit	step 21
not lit	step 19

19



CAUTION Possible loss of service

Unseating the NT9X13 card bypasses the safety interlock. Ensure that the card to be removed is in the manual-busy LIM unit.

Unseat the NT9X13 associated with the LIM unit you are working on using the procedure *Unseating cards in equipment shelves* in this document. When you have completed the procedure, return to this point.

Note: Refer to the table at the end of this document to identify the NT9X13 associated with the LIM unit you are working on.

- 20 Press down and release the power switch on the faceplate of the NT9X30 and NT9X31 power converter associated with the card to be replaced. Refer to the table at the end of this document to identify the power converter associated with the LIM unit you are working on.
- 21 Replace the card using the procedure *Replacing a card* in this document. When you have completed the procedure, return to this point.

Note 1: Ensure that the handle of the power switch on the replacement power converter is also in the OFF position.

Note 2: If the card to be replaced has switches, ensure that the switches on the replacement card have the same settings.

22 The next step depends on the condition of the NT9X13 card associated with the card you have replaced.

If the NT9X13 is	Do
seated	step 24
unseated	step 23

- **23** Reseat the NT9X13 associated with the card you are replacing using the procedure *Reseating cards in equipment shelves* in this document. When you have completed the procedure, return to this point.
- 24 Release the power switch on the faceplate of the NT9X30 and NT9X31 power converter associated with the card you have replaced.

Note: The CONVERTER OFF LED is not lit when the NT9X30 and NT9X31 power converter is powered up.

25 The next action depends on your reason for performing this procedure

Do
20
pro- step 26
ance step 27
this procedure and
Do
Do step 28
Do step 28 step 29
Do step 28 step 29 e <i>Returning LIM-to-MS</i> ave completed the
Do step 28 step 29 <i>Returning LIM-to-MS</i> ave completed the
Do step 28 step 29 e <i>Returning LIM-to-MS</i> ave completed the
Do step 28 step 29 e <i>Returning LIM-to-MS</i> ave completed the

unit no

is the number of the LIM unit (0 or 1)

Example of a MAP response:

```
LIM 0 UNIT 0 Load initiated.
LIM 0 UNIT 0 Load passed.
```

If the LOADPM command	Do
passed	step 31
failed	step 30

30 Load the PM using the procedure *Loading a PM* in this document. When you have completed the procedure, return to this point.

31 Perform an out-of-service (OOS) test on the LIM unit by typing

>TST UNIT unit_no

and pressing the Enter key.

where

unit_no is the number of the LIM unit (0 or 1)

Example of a MAP response:

LIM 0 UNIT 0 Test initiated. LIM 0 UNIT 0 Test passed.

If the TST command	Do
passed	step 32
failed	step 40

32 Return the LIM unit to service by typing

>RTS UNIT unit_no

and pressing the Enter key.

where

unit_no

is the number of the LIM unit (0 or 1)

Example of a MAP response:

33

34

LIM 0 UNIT 0 Return to Service initiated. LIM 0 UNIT 0Return to Service passed.			
If the RTS command	Do		
passed	step 33		
failed	step 40		
Perform an in-service (InSv) test on t >TST UNIT unit_no and pressing the Enter key. where unit_no is the number of the LIM unit (Example of a MAP response: LIM 0 UNIT 0 Test initiate LIM 0 UNIT 0 Test passed.	he LIM unit by typing 0 or 1) ≘d .		
If the TST command	Do		
passed	step 34		
failed	step 40		
Note: Steps 34, 35, and 36 must b Access the LIS level of the MAP disp >LIS lis_no and pressing the Enter key.	e repeated for each LIS on the LIM unit. lay by typing		

where

lis_no

 \overline{is} the number of the LIS (0, 1, or 2)

Example of a MAP display:

Enhanced link peripheral processor card replacement procedures 4-71

System and power cards in an ELPP LIM unit (continued)

1

SysB ManB OffL CBsy ISTb InSv 0 0 РМ 0 0 28 18 0 LIM 0 0 1 1 LIM 0 ISTb 00S 00S_Taps Links LIS1 LIS2 LIS3 Unit0: ISTb • 12 • • Unitl: InSv • • • • LIS2 FBus0: ManB FBus1: InSv Tap: 0 4 8 BBBB BBBB BBBB

35 Return the F-bus to service by typing

>RTS FBUS fbus_no

and pressing the Enter key.

where

36

fbus_no

is the number of the F-bus that you busied (0 or 1)

Example of a MAP response:

LIM 0 LIS 2 FBus 0 Return to Service initiated.LIM 0 L 2 FBus 0 Return to Service passed.

If the RTS command	Do
passed	step 36 for the next LIS OR step 41 (if step 36 has been re- peated for each LIS)
failed	step 40
Perform an InSv test on the F-bus for or >TST FBUS fbus_no and pressing the Enter key. where fbus_no is the number of the E-bus (0 or	each LIS by typing
Example of a MAP response:	1)

37

38

39

40

41

```
LIM 0 UNIT 0 Test initiated.
LIM 0 UNIT 0 Test passed.
```

		1	
If the TST	command	d Do	
passed		step 36 for C	the next LIS
		step 41 (if step peated for eac	ep 36 has been re- h LIS)
failed		step 40	
Continuing application next level of and procee	with this pro specific uni f support to d as directe	ocedure removes the entire LIM f its (ASU) on the LIS. Consult off determine if you should continue ed.	rom service, isolating fice personnel or your e with this procedure,
Continuing (ASU) on th determine i directed.	with this pro le LIS. Cor f you shoul	ocedure isolates one or more app nsult office personnel or your new d continue with this procedure, a	blication specific units and proceed as
Consult offices as directed	ce personn by office p	el to determine why the compone ersonnel.	ent is offline. Continue
For further a support.	assistance,	contact the personnel responsib	le for the next level of
You have co	ompleted th	is procedure.	
cards and	associate	d LIM hardware (Sheet 1 of 3)	
PEC	Slot	Associated LIM hardware a	and F-buses
NT9X15	15F	LIM unit number Mate LIM unit number:	0 1
NT9X26	17R	F-bus number: Mate F-bus number:	0 1
NT9X30	04F	F-bus number:	0

Sys

Note: A LIM unit is also referred to as an LMS. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM unit is used to mean an LMS. The term LIM is also used to mean the ELPP where the entire ELPP cabinet is meant.

Mate F-bus number:

1

NT9X31

01F

PEC	Slot	Associated LIM hardware and F-	buses
NT9X49	07F	Location of NT9X13	slot 17F
NT9X52	19F	Location of NT9X30 power converter	slot 04F
NT9X53	18F	Location of NT9X30 power converter	slot 04F
NT9X73	13F-LIS1 12F-LIS2 11F-LIS3	Location of NT9X31 power converter	slot 01F
NT9X79	13R-LIS 112R-LI S211R-L IS3	Location of NT9X31 power converter	slot 01F
NT9X17	10F 9F		
NT9X62	10R 9R		
NT9X15	24F	LIM unit number: Mate LIM unit number:	1 0
NT9X26	22R	F-bus number: Mate F-bus number:	1 0
NT9X30	36F	F-bus number: Mate F-bus number	1 0
NT9X31	33F		
NT9X49	32F	Location of NT9X13	slot 22F
NT9X52	20F	Location of NT9X30 power converter	slot 36F
NT9X53	21F	Location of NT9X30 power converter	slot 36F

System cards and associated LIM hardware (Sheet 2 of 3)

Note: A LIM unit is also referred to as an LMS. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM unit is used to mean an LMS. The term LIM is also used to mean the ELPP where the entire ELPP cabinet is meant.

PEC	Slot	Associated LIM hardware and F-b	uses
NT9X73	26F-LIS1 27F-LIS2 28F-LIS3	Location of NT9X31 power converter	slot 38F
NT9X79	26R-LIS 127R-LI S228R-L IS3	Location of NT9X31 power converter	slot 38F
NT9X17	29F 30F		
NT9X62	29R 30R		
<i>Note:</i> A LIM unit is also referred to as an LMS. LIM unit 0 corresponds to LMS 0; LIM unit 1 corresponds to LMS 1. In MAP commands, responses, and displays, the term LIM unit is used to mean an LMS. The term LIM is also used to mean the ELPP where the entire ELPP cabinet is meant.			

System cards and associated LIM hardware (Sheet 3 of 3)

5 SuperNode SE enhanced network card replacement procedures

Introduction

This chapter provides card replacement procedures for the SuperNode SE enhanced network (ENET). The first section in the chapter provides diagrams of SuperNode SE ENET shelf designs.

Card replacement procedures for the SuperNode ENET are in the chapter "SuperNode network card replacement procedures".

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter "Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the ENET card(s) covered by the replacement procedure.

Common procedures

This section lists common procedures in the ENET card replacement procedure. A common procedure is a series of steps repeated within maintenance procedures. Steps for the removal replacement of a card are examples of common procedures. Common procedures are in the common procedures chapter in this NTP.

Do not use common procedures unless the step-action procedure directs you.

Action

This section contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card replaced
- the date that you replaced the card
- the reason that you replaced the card

SuperNode SE ENET shelf designs

Application

This procedure provides the following design figures:

- single core cabinet (SCC, SuperNode SE 16k ENET)
- SuperNode SE 32k ENET cabinet
- SuperNode SE enhanced network and interface (ENI) shelf (16k ENET)
- SuperNode SE ENET shelf, 32k ENET

Figure Single core cabinet



SuperNode SE ENET shelf designs (continued)

Figure SuperNode SE 32k ENET cabinet



SuperNode SE ENET shelf designs (continued)

Figure SuperNode SE ENI shelf with 16k ENET

	Paddle boards	Cards	
]
		NT9X30 +5V power converter card	36F
		NT9X31 –5V power converter card	33F
32R	NT9X19 Filler faceplate	NT9X19 Filler faceplate	32F
31R	NT9X19 Filler faceplate	NT9X19 Filler faceplate	31F
30R	NT9X19 Filler faceplate	NT9X19 Filler faceplate	30F
29R	NT9Xnn*	NT9X35 Crosspoint card	29F
28R	NT9Xnn*	NT9X35 Crosspoint card	28F
27R	NT9Xnn*	NT9X35 Crosspoint card	27F
26R	NT9Xnn*	NT9X35 Crosspoint card	26F
25R	NT9Xnn*	NT9X35 Crosspoint card	25F
24R	NT9Xnn*	NT9X35 Crosspoint card	24F
23R	NT9Xnn*	NT9X35 Crosspoint card	23F
22R	NT9X19 Filler faceplate	NT9X35 Crosspoint card	22F
21R	NT9X40	NT9X36 ENET message clock card	21F
20R	NT9X26 RTIF PB	NT9X13 Processor card	20F
19R	NT9Xnn*	NT9X35 Crosspoint card	19F
18R	NT9Xnn*	NT9X35 Crosspoint card	18F
17R	NT9Xnn*	NT9X35 Crosspoint card	17F
16R	NT9Xnn*	NT9X35 Crosspoint card	16F
15R	NT9Xnn*	NT9X35 Crosspoint card	15F
14R	NT9Xnn*	NT9X35 Crosspoint card	14F
13R	NT9Xnn*	NT9X35 Crosspoint card	13F
12R	NT9X19 Filler faceplate	NT9X35 Crosspoint card	12F
11R	NT9X40	NT9X36 ENET message clock card	11F
10R	NT9X26 RTIF PB	NT9X13 DMS SuperNode processor card	10F
09R	NT9X19 Filler faceplate	NT9X19 Filler faceplate	09F
08R	NT9X19 Filler faceplate	NT9X19 Filler faceplate	08F
07R	NT9X19 Filler faceplate	NT9X19 Filler faceplate	07F
	Note: nn* denotes one of		
	NT9X40 fiber interface PB,	NT9X30 +5V power converter card	04F
	NISX41 DOOU PB, OF		
	DS30/DS512 PB	NT9X31 –5V power converter card	01F
	C Rear	Front	>

SuperNode SE ENET shelf designs (end)

Figure Shelf for SuperNode SE 32k ENET

Paddle boards		Cards
	NT9X30	Power converter card
	NT9X31	Power converter card
NT9X40/41/45 PM I/F PB	NT9X35	H-bus terminating crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	H-bus terminating crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X19 Filler faceplate	NT9X19	Filler faceplate
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	16K x 16K crosspoint card
NT9X40/41/45 PM I/F PB	NT9X35	H-bus terminating crosspoint card
NT9X19 Filler faceplate	NT9X35	H-bus terminating crosspoint card
NT9X40 QUAD fibre MS I/F PB	NT9X36	Clock and message card
NT9X26 BTIF PB	NT9X13	CPU card
	NT9X30	Power converter card
	NT9X31	Power converter card
L		

Application

Use this procedure to replace the following cards in a SuperNode SE (SNSE) 16k enhanced network (ENET).

PEC	Suffix	Card name	Shelf or frame name
NT9X35	FA	DMS SuperNode processor card	Enhanced network and interface (ENI)
NT9X40	BA, BB, DA	ENET + quad fiber paddle board	ENI, slots 13 to 19 and 23 to 29
NT9X41	BA	16-port DS30 paddle board	ENI
NT9X45	BA	Three-DS512 link and 16-DS30 port paddle board	ENI

Note: Use the procedure *System cards in a Supernode SE 16k ENET* in this chapter to replace an NT9X40 in ENI shelf slots 11 or 21.

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- Replacing a card
- Cleaning fiber optic components and assemblies

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of terms. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing Crosspoint and interface cards in a SuperNode SE 16k ENET



Replacing Crosspoint and interface cards in a SuperNode SE 16k ENET

At your current location

1 Determine the type and location of the card that you replace.

If the card	Do
is an NT9X40 in slots 11 or 21	step 2
is other than listed here	step 3

2 To replace the card, perform the procedure *System cards in a SuperNode SE* 16k ENET in this chapter.

3



CAUTION

System can drop calls

This procedure can remove an ENET card or MS-ENET link from service, which can cause the system to drop calls that are in progress. Perform this procedure only when you need to return an interface or crosspoint card to service. If you do not need to return the interface or crosspoint card to service, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card you that you remove.

Note: For North American switches, NT9X40BA and NT9X40BB can interchange and can be present with other switches at the same time. International switches can contain only NT9X40BB.

4 To make sure the replacement card is compatible with the software load, perform the procedure *Verifying load compatibility of SuperNode cards*. The procedure *Verifying load compatibility of SuperNode cards* appears in this document. Complete the procedure and return to this point.

At the MAP terminal

5 To access the NET;SYSTEM level of the MAP display, type

>MAPCI;MTC;NET;SYSTEM

and press the Enter key.

Example of a MAP display:

SYSTEM		
Shelf	Plane 0	Plane 1
00	I CSLink 1 closed	

6 Determine the state of the ENET plane that contains the card that you replace. The state appears under the Plane headers on the SYSTEM level MAP display. In the MAP display example in step 5, plane 0 is in-service trouble I and plane 1 is in service.

If the state of the ENET plane	Do
is T (being tested)	step 7
is S (system busy)	step 8
is other than listed here	step 10

- 7 Wait for the system to complete the system-initiated testing. To evaluate the state of the ENET plane, go to step 6.
- 8 You must clear the system busy state of the ENET plane before you attempt to replace the card. Obtain copies of recent ENET log reports. Determine from the log messages if ENET system cards or power converters require replacement.

lf	Do
any system cards or power	step 9
converters require replacement	

system cards or power converters step 65 do not require replacement

- **9** To replace the card (or cards), perform the correct procedure in this chapter. Complete the card replacement and return to step 6.
- 10 To determine if deloaded crosspoint cards are in the other ENET plane, type

>DELOAD plane_no 0 QUERY

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1) for the mate node

Example of a MAP response:

Request to QUERY DELOAD ENET Plane:0 Shelf:00 submitted. Request to QUERY DELOAD ENET Plane:0 Shelf:00 passed. 1111111 111 0123456 789 Plane:0 Shelf:00 .Y.---- ---

Note: The letter Y under the slot number indicates a deloaded crosspoint card.

If the oth	er ENET plan	e		Do			
has deloa	aded cards			step 64			
does not	have deload	ed c	ards	step 11			
To determi	ne if the ENE	r pla	ine has ai	ny deloaded crosspoint cards, type			
>DELOAD	plane_no	0	QUERY				
and press t	the Enter key.						

where

11

plane_no

is the number of the ENET plane (0 or 1) that contains the card that you replace

If the ENET plane	Do
has deloaded cards	step 12
does not have deloaded cards	step 13

- 12 Record the plane number slot number for any deloaded crosspoint cards in the ENET plane. Use this list to make sure that these cards are returned to the deloaded state when you complete this procedure.
- **13** To set all crosspoint cards to a deloaded status for the ENET plane that contains the card you replace, type

>DELOAD plane_no 0 SET

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to SET DELOAD ENET Plane:0 Shelf:00 submitted. Request to SET DELOAD ENET Plane:0 Shelf:00 passed.

14 Wait 30 min to permit network traffic on the ENET plane to clear.

15 The next action depends on the state of the ENET plane	s on the state of the ENET plane.
---	-----------------------------------

If the ENET plane	Do				
is 0 (offline)	step 20				
is M (manual busy)	step 18				
is other than listed here	step 16				
To manually busy the ENET plane, ty	ре				
>BSY plane_no 0					
and press the Enter key.					
where					
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(0 Shelf:00 submitted. 0 Shelf:00 passed.				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(0 Shelf:00 submitted. 0 Shelf:00 passed. Do				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation indicates the BSY command passed	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17 step 18				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation indicates the BSY command passed To confirm the command, type	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17 step 18				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation indicates the BSY command passed To confirm the command, type >YES	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17 step 18				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation indicates the BSY command passed To confirm the command, type >YES and press the Enter key.	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17 step 18				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation indicates the BSY command passed To confirm the command, type >YES and press the Enter key. If the BSY command	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17 step 18 Do				
Example of a MAP response: Request to MAN BUSY ENET Plane:(Request to MAN BUSY ENET Plane:(If the response requests confirmation indicates the BSY command passed To confirm the command, type >YES and press the Enter key. If the BSY command passed	0 Shelf:00 submitted. 0 Shelf:00 passed. Do step 17 step 18 Do Do step 18				

- **18** To offline the ENET plane, type
 - >OFFL plane_no 0

and press the Enter key.

where

16

17

plane_no

is the number of the ENET plane (0 or 1) that contains the card you replace

Example of a MAP response:

WARNING: A power down of ENET plane:1 shelf:00 may affect LIU components. Please confirm ("YES", "Y", "NO", or "N"):

19 To confirm the command, type

>YES

and press the Enter key.

If the OFFL command	Do
passed	step 26
failed	step 66

To locate the message switch (MS) chain head card that associates with the

20

>TRNSL plane_no 0

and press the Enter key.

ENET plane, type

where

plane_no

is the ENET plane number (0 or 1)

Example of a MAP response:

Request to TRNSL ENET Plane:0 Shelf:00 submitted. Request to TRNSL ENET Plane:0 Shelf:00 passed. ENET Plane:0 Shelf:00 : MS 0 and 1 Card:05 Link:00 Port:000

Note: In the example, the number of the chain head card is 5. The link number is 0.

- 21 Record the number of the chain head card and the link number.
- 22 To access the MS SHELF level of the MAP display, type

>MS;SHELF

and press the Enter key.

Example of a MAP display:

Messa	ge Switch	Clock	Shelf	0	Inter-MS Link	0	1
MS 0		Slave				•	•
MS 1	•	M Free				•	
Shelf 0 Card 1 2 3 Chain MS 0 MS 1	4567890 	111 123 	1				

23 To post the chain head card, type

>CHAIN card_no

and press the Enter key.

where

card_no is the card number that you recorded in step 21

 Example of a MAP display:

 Chain 05 Range Link 01

 MS 0
 05-05 DS512

 MS 1
 05-05 DS512

24 To manually busy the link on the chain on MS 0, type

>BSY 0 LINK link_no

and press the Enter key.

where

25

26

link no

is the link number that you recorded in step 21

Example of a MAP response: Request to MAN BUSY MS: 0 shelf: 0 chain:05 link 0 submitted. Request to MAN BUSY MS: 0 shelf: 0 chain:05 link 0 passed.

If the BSY command	Do
passed	step 25
failed	step 66
To manually busy the link on the	chain on MS 1, type
BSY 1 LINK link_no	
and press the Enter key.	
where	
link_no is the link number that you	u recorded in step 21
If the BSY command	Do
passed	step 26
failed	step 66
To access the ENET SHELF leve	el of the MAP display, type
>ENET;SHELF	
and press the Enter key.	
Example of a MAP display:	

ENE	ET S	System	Matri	.x	Shelf 0						
P P	lane U lane 1	•	Fault	-	F						
SHE	ELF 00	Power	LIU	ENE 11	T-Plane 11111111	0 EN 22	ET-Pl 2222	ane 1 22222	LIU 333	Power 33333	3
Slo	ot 1 ·	.23456 •	789 O	1	23456789	01	2345 	6789 .F	012	345678 · ·	
27	To ac	cess the	CARD le	vel fo	or the card	you re	eplace,	type			
	>CAR	D card	l_no								
	and p	ress the	Enter key	<i>.</i>							
	where	;									
	Ci	ard_no	imber of	tha (card you re	معداد					
	Exam	nle of a l	MAP disp	lav [.]		Jiace					
	Exam			iay.							
	CARD	Plane	e Front Xpt	t:	Back: NIL						
	12	0	•		-						
	22	Т	·		_						
28	То со	nfirm the	comman	d, ty	pe						
	>YES										
	and p	ress the	Enter key	<i>'</i> .							
29	To off	line all ca	ards in the	e EN	IET shelf, ty	pe					
	>OFF:	L plan	le_no Al	LL							
	and p	ress the	Enter key	/.							
	wnere	<u>,</u>									
	p	is the nu replace	umber of	the I	ENET plane	e (0 oi	r 1) tha	t contai	ns the	card you	
	Exam	ple of a l	MAP resp	ons	e:						
	Request Request	to OFE to OFE	LINE E	NET NET	Plane:0 Plane:0	Shel Shel	f:00 f:00	Slot: Slot:	12 su 12 pa	lbmitte	d.

At the ENET shelf

30



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

The next action depends on the card you replace.

lf you	Do
replace an NT9X35	step 31
replace an NT9X41	step 32
replace an NT9X40 or NT9X45	step 35

- **31** To replace the card, perform the procedure *Replacing a card* in this NTP. Complete the procedure and go to step 44.
- 32 Locate the NT9X41 card and disconnect the DS30 connectors.

Note: The DS30 connectors appear in the diagram on the next page.

- a Loosen the screws that retain the connector.
- **b** Unplug the connectors.



- 34 Reconnect the DS30 connectors.
 - **a** Plug the connectors into the card.
b Tighten the screws that retain the connector. Go to step 44.

35

ATTENTION

Make sure that you identify connector zone numbers correctly. To identify zone numbers, refer to figure "NT9X40BA/BB connector zone numbers" for the NT9X40 and figure "NT9X45BA connector zone numbers" for the NT9X45. Figure "NT9X40BA/BB connector zone numbers" appears at the end of this procedure. Figures "Fiber connector detail" and "Fiber connector and receptacle detail" are diagrams of fiber connector components for these cards.

Make sure that you are at the correct ENET node and the interface card, before you disconnect the fiber cables. To identify the ENET node, check the plane and shelf identification. To identify the interface card, check the slot.

- 36 Make sure that each cable has a label that contains the following information:
 - ENET shelf number
 - plane number
 - slot numbers
 - link number
 - signal type

The signal type can be transmit or receive. If this information is not present, create a label and attach the label to the cable. This label provides the information that you need to connect the fiber cables to the card correctly.

Example of a label:

ENCO	00	39
10R	04	17T
LTE	000	18
22R	RX	

Label field descriptions

ENCO 00 39 10R 04	ENET plane (0 or 1) cabinet number ENET shelf by the base mounting position number slot number and position (R for rear, or F for front) zone number
39 10R	ENET shelf by the base mounting position number slot number and position (R for rear, or F for front)
04	zone number
17T	link number and the signal type (T for transmit, R for receive)
LTE	PM that the cable terminates on
000	PM frame number
18	PM shelf by the base mounting position number
22R	slot number and position (R for rear, or F for front)
RX	signal type at the PM end (RX for receive or TX for transmit)

37



DANGER Avoid contamination of the fiber tip surface

Make sure that you do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.



DANGER

Fiber cable can become defective

Make sure that you handle fiber cables carefully. Do not crimp fiber cables or bend fiber cables to a radius of less than 3 cm (1.180 in.).

Disconnect the transmit and receive connectors for each fiber cable as follows.

Note: When you disconnect the connectors, place dust caps on the ends of the connectors.

a Grasp the sleeve with two fingers. Carefully push the sleeve toward the frame.



b Turn the connector counterclockwise until the connector pin is in the position shown in the following diagram.



c Carefully pull the connector away from the frame.



Note: Perform the procedure, *Cleaning fiber optic components and assemblies* in this NTP.

38 The next action depends on the card that you replace.

39

40

If you	Do	
replace an NT9X45	step 39	
replace an NT9X40	step 40	
Disconnect the DS30 connectors, as follows:		
a Loosen the screws that retain the connector.		
b Unplug the connectors.		
To replace the card, perform the procedure <i>Replacing a card</i> in this NTP. Complete the procedure and return to this point.		

41 Remove the dust caps on the transmit and receive connectors as you connect the connectors to the new card.

Reconnect the transmit and receive connectors for each fiber cable, as follows.

a Align the connector pin and slot with the receptacle slot and pin, in the sequence given, as shown.



b Carefully slide the connector into the receptacle.



c Turn the connector clockwise to lock the connector in place.



d Release the connector. The following figure illustrates the final connector position.



If the RTS command	Do
passed	step 46
failed	step 66
To return the link on the chain on MS	1 to service, type
>RTS 1 LINK link_no	
and press the Enter key.	
where	
link_no is the link number that you reco	orded in step 21
If the RTS command	Do
passed	step 47
failed	step 66
To access the NET;SYSTEM level of	he MAP display, type
>NET;SYSTEM	
and press the Enter key.	
To manually busy the ENET plane that	t contains the replacement car
>BSY plane_no 0	
and press the Enter key.	
where	
plane_no is the number of the ENET plan	ne (0 or 1) that contains the car
If the respobse	Do
requests confirmation	step 49

If the BSY command	Do
passed	step 50
failed	step 66
To return the ENET plane to serv	vice, type
>RTS plane_no 0	
and press the Enter key.	
where	
plane_no is the number of the ENE	T plane (0 or 1) that contains the care
Example of a MAP response:	
Request to RTS ENET Plan Request to RTS ENET Plan	ne:0 Shelf:01 submitted. ne:0 Shelf:01 passed.
If the RTS command	Do
passed	step 51
failed	step 66
To access the SHELF level of the	e MAP display, type
>SHELF	
and press the Enter key.	
To manually busy all cards on th	e ENET shelf, type
>BSY plane_no ALL	
and press the Enter key.	
where	
plane_no is the number of the ENE	T plane (0 or 1) that contains the care
If the BSY command	Do
passed	step 53
failed	step 66
To return the card to service, typ	e
>RTS plane_no	

where

plane_no

is the number of the ENET plane (0 or 1) that contains the card Example of a MAP response:

Request to RTS ENET Plane:0 Shelf:00 Slot:12 submitted. Request to RTS ENET Plane:0 Shelf:00 Slot:12 passed.

If the RTS command	Do
passed	step 56
failed	step 66
The replacement card is faulty	Obtain another replacement card.
To access the SYSTEM level of	of the MAP display, type
>SYSTEM	
and press the Enter key.	
Go to step 16	
To access the NET;SYSTEM I	evel of the MAP display, type
>SYSTEM	
and press the Enter key.	
To clear the deload condition of	n all crosspoint cards in the ENET plane, type
>DELOAD plane_no 0 0	CLEAR
and press the Enter key.	
where	
plane_no is the ENET plane numl	ber (0 or 1)
Example of a MAP response:	
Request to CLEAR DELOA Request to CLEAR DELOA	D ENET Plane:0 Shelf:00 submitted. D ENET Plane:0 Shelf:00 passed.
The next action depends on if	you recorded a card list in step 12.
lf you	Do
recorded a card list	step 59
did not record a card list	step 62
To access the SHELF level of	the MAP display, type

>SHELF 0

	and press the Enter key.	
60	To set the first card on the list to the de	eloaded status, type
	>DELOAD plane_no slot_no	SET
	and press the Enter key.	
	where	
	plane_no is the ENET plane number (0 o	r 1)
	slot_no is the number of the slot the car or slots 22 to 29 on plane 1)	rd occupies (slots 12 to 19 on plane 0
	If all cards on the list	Do
	are not set to deloaded status	step 61
	are set to deloaded status	step 62
61	Repeat step 60 for the next card on the	e list.
62	The next action depends on the reaso	n that you perform this procedure.
62	The next action depends on the reaso	n that you perform this procedure.
62	The next action depends on the reaso If a maintenance procedure directed you to this procedure	n that you perform this procedure. Do step 63
62	The next action depends on the reaso If a maintenance procedure directed you to this procedure did not direct you to this procedure	n that you perform this procedure. Do step 63 re step 67
62	The next action depends on the reaso If a maintenance procedure directed you to this procedure did not direct you to this procedur Return to the maintenance procedure to continue as directed.	Do step 63 re step 67 hat directed you to this procedure and
62 63 64	The next action depends on the reasoIf a maintenance proceduredirected you to this proceduredid not direct you to this proceduredid not direct you to this procedureReturn to the maintenance procedure to continue as directed.This procedure instructs you to deload under special conditions because the Consult office personnel or the next let	n that you perform this procedure. Do step 63 re step 67 hat directed you to this procedure and a node. Continue this procedure only mate node has deloaded cards. vel of support. Continue as directed.
62 63 64 65	The next action depends on the reaso If a maintenance procedure directed you to this procedure did not direct you to this procedure Return to the maintenance procedure to continue as directed. This procedure instructs you to deload under special conditions because the Consult office personnel or the next let To obtain help on how to identify the car contact the next level of support. Com-	Do step 63 re step 67 hat directed you to this procedure and a node. Continue this procedure only mate node has deloaded cards. vel of support. Continue as directed. ause of the system busy condition, tinue as directed.

67 The procedure is complete.



NT9X40BA/BB connector zone numbers



NT9X45BA connector zone numbers

Fiber connector detail



This figure shows the type of connector used to connect fiber to an NT9X40 or NT9X45 paddle board.

Fiber connector and receptacle detail



This figure shows the different parts of the connector and receptacle.

Application

Use this procedure to replace the following cards in a SuperNode SE 32k enhanced network (ENET) shelf.

To identify the product engineering code (PEC), suffix, the provisioned shelf or frame of the removed card, refer to the Index. The Index contains a list of cards, shelves, and frames in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X35	BA, CA	128K ENET crosspoint card	32k ENET
NT9X40	BA, BB, DA	ENET quad fiber interface paddle board	32k ENET, slots 10 to 16 and 25 to 32
NT9X41	BA	International 16-port DS-30 paddle board	32k ENET
NT9X45	BA	Three DS-512 link and 16 DS-30 port paddle board	32k ENET

Note: To replace an NT9X40 in slot 8, refer to the *System cards in a Supernode SE 32k ENET* procedure in this chapter.

Common procedures

This document contains references to the following:

- Replacing a card
- Verifying load compatibility of SuperNode cards
- Cleaning fiber optic components and assemblies

The instructions in this procedure will indicate when to refer to the common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. To replace the card, follow the instructions in the steps to perform the procedure.



Summary of Replacing Crosspoint and interface cards in a SuperNode SE 32k ENET

Replacing Crosspoint and interface cards in a SuperNode SE 32k ENET

At your current location

1 Determine the type and location of the removed card.

If the card	Do
is an NT9X40 card in slot 8	step 2
is other than listed here	step 3

2 To replace the card, refer to the *System cards in a SuperNode SE 32k ENET* procedure in this chapter.

3



WARNING

Calls may be dropped This procedure removes an ENET card from service, potentially dropping calls currently in progress. Perform this procedure only if necessary to return an interface or crosspoint card to service. Otherwise, perform this procedure only during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the removed card.

Note: For North American switches, NT9X40BA and NT9X40BB are interchangeable and can coexist with the other switches. Only NT9X40BB are available for international switches.

4 Make sure that the replacement card is compatible with the software load. To verify the compatibility, refer to the *Verifying the load compatibility of SuperNode cards* procedure in this NTP. When the procedure is complete, return to this point.

At the MAP terminal

5 To access the NET;SYSTEM level of the MAP display, type

>MAPCI;MTC;NET;SYSTEM

and press the Enter key.

Example of a MAP display:

SYSTEM Shelf Plane 0 Plane 00 I CSLink 1 closed .

6 Determine the state of the plane that contains the card. An indication of the state appears under the Plane headers on the SYSTEM level MAP display.

In the MAP display example shown in step 5, plane 0 is in-service trouble (I) and plane 1 in service.

If the state of the plane	Do	
is T, tested	step 7	
is other than listed here	step 8	
When the system initiated testing is complete, go to step 6 to evaluate the		

- **7** When the system initiated testing is complete, go to step 6 to evaluate the state of the ENET plane again.
- 8 To determine if there are deloaded crosspoint cards in the other plane, type

>DELOAD plane_no 0 QUERY

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1) of the mate node

Example of a MAP response:

Request	to	QUERY	DELOAD	ENET	Plane:0	Shelf:00	submitted.
Request	to	QUERY	DELOAD	ENET	Plane:0	Shelf:00	passed.
		11111	.11 1112	22222	22222333	3	
		901234	156 7890)1234	56789012	2	
Plane:0	She	elf:00	Y				

Note: The letter Y under the slot number indicates a deloaded crosspoint card.

If the plane	Do		
has deloaded cards	step 57		
does not have deloaded cards	step 9		
To determine if there are deloaded crosspoint cards in the current plane, type			

9

To determine if there are deloaded crosspoint cards in the current plane, type >DELOAD plane_no 0 QUERY

and press the Enter key.						
where						
plane_no is the ENET plane number (0 or 1)						
If the plane	Do					
has deloaded cards	step 10					

does not have deloaded cards step 11

- **10** Record the plane number and slot number for any deloaded crosspoint cards in the plane. Use this list to ensure that these cards return to the deloaded state when this procedure is complete.
 - 11 On the plane associated with the removed card, to set all crosspoint cards to a deloaded status, type

>DELOAD plane_no 0 SET

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to SET DELOAD ENET Plane:0 Shelf:00 submitted. Request to SET DELOAD ENET Plane:0 Shelf:00 passed.

- 12 Wait 30 min to allow network traffic on the node to clear.
- **13** The next action depends on the current state of the ENET plane.

If the ENET plane	Do	
is 0,offline	step 25	
is M, manually-busy	step 15	
is other than listed here	step 14	
To manually busy the current plan	ne, type	

>BSY plane_no 0

and press the Enter key.

where

14

15

plane_no is the ENET plane number (0 or 1)

Example of a MAP response: Request to MAN BUSY ENET Plane:0 Shelf:00 submitted. Request to MAN BUSY ENET Plane:0 Shelf:00 passed.

If the BSY command	Do
passes	step 15
fails	step 58
To set the plane offline, type	
>OFFL plane_no 0	
and press the Enter key.	

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to OFFL ENET Plane:0 Shelf:00 submitted. Request to OFFL ENET Plane:0 Shelf:00 passed

If the OFFL command	Do
passes	step 25
fails	step 58

16 To locate the message switch (MS) chain head card associated with the current ENET plane, type

>TRNSL plane_no 0

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to TRNSL ENET Plane:0 Shelf:00 submitted. Request to TRNSL ENET Plane:0 Shelf:00 passed. ENET Plane:0 Shelf:00 : MS 0 and 1 Card:16 Link:00 Port:000

Note: In the example, the number of the chain head card is 16. The link number is 0.

- 17 Record the number of the chain head card and the link number.
- 18 To access the MS;SHELF level of the MAP display, type

>MS;SHELF

and press the Enter key.

Example of a MAP display:

		Me	SS	ag	е	Sw	it	ch		С	10	ck		S	he	lf		0				In	te	r-	MS	L	ink	0	1
MS	0				М					S	la	ve						С										-	-
MS	1				•					Μ	F	re	е					F										-	-
She Car	lf d	0 1	2	3	4	5	6	7	8	9	1 0	1 1	1 2	1 3	1 4	1 5	1 6	1 7	1 8	1 9	2 0	2 1	2 2	2 3	2 4	2 5	2 6		
Cha	in			-		-			-					-		-			-					-		-			
MS	0	•	•	•	•	•	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	F	I		
MS	1	•	•	•	·	•	-	-	-	-	-	-	-	-	-	-	•	•	·	•	·	•	•	•	•	F	Ι		

19 To post the chain head card, type >CHAIN card_no and press the Enter key. where card no is the card number recorded in step 17 Example of a MAP display: Link Chain 16 Range MS 0 . 16-17 0 1 DS512 . . MS 1 16-17 DS512 20 To manually busy the link on the chain on MS 0, type >BSY 0 LINK link_no and press the Enter key. where link no is the link number recorded in step 17 Example of a MAP response: Request to MAN BUSY MS: 0 shelf: 0 chain:16 link 0 submitted. Request to MAN BUSY MS: 0 shelf: 0 chain:16 link 0 passed If the BSY command Do passes step 21 fails step 58 21 To manually busy the link on the chain on MS 1, type >BSY 1 LINK link no and press the Enter key. where link no is the link number recorded in step 17 If the BSY command Do step 22 passes fails step 58

22 To access the ENET SHELF level of the MAP display, type

>NET;SHELF 0

and press the Enter key.

Example of a MAP display:

SHELF 01	Slot	1111111	11122222 22	2222333 33	3333
	123456	78 901234	56 78901234	56789012	345678
Plane 0	0 0	00 CCCCCC	CC	CCCCCCCC	0 0
Plane 1					

23 To manually busy all cards on the ENET shelf, type

>BSY plane_no ALL

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to MAN BUSY ENET Plane:0 Shelf:00 submitted. Warning: Card replacement requires front and back bsy/rts to prevent possible service degradation to peripherals. Request to MAN BUSY ENET Plane:0 Shelf:01 passed.

24 To set all card on the ENET shelf offline, type

>OFFL plane_no ALL

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1)

Example of a MAP response:

Request to OFFLINE ENET Plane:0 Shelf:01 submitted. Request to OFFLINE ENET Plane:0 Shelf:01 passed.

At the ENET shelf

25



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

The next action depends on the removed card.

lf you	Do				
remove an NT9X35	step 26				
remove an NT9X41	step 27				
remove an NT9X40 or an NT9X45	step c				

26 To replace the card, refer to the the *Replacing a card* procedure in this NTP. When the procedure is complete, go to step 38.

Note: Make sure that the switches on the replacement card have the same settings as the removed card.

27 Locate the NT9X41 card and disconnect the DS30 connectors.

Note: The DS30 connectors appear in the figure on the next page.

- **a** Loosen the connector retaining screws.
- **b** Unplug the connectors.



28 To replace the card, refer to the *Replacing a card* procedure in this NTP. When the procedure is complete, return to this point.

- 29 Reconnect the DS30 connectors.
 - **a** Plug the connectors into the card.
 - b Tighten the connector retaining screws. Go to step 38.

30

ATTENTION

Identify connector zone numbers correctly. To identify zone numbers refer to figure "NT9X40BA/BB connector zone numbers", at the end of this procedure, for the NT9X40. Refer to figure "NT9X45BA connector zone numebrs" for the NT9X45 for the zone numbers. Illustrations of fiber connector components for these cards are provided in figures "Fiber connector detail" and "Fiber connector and receptacle detail".

Make sure that the plane and shelf identification of the ENET node and the slot of the interface card are correct. Proceed to disconnect the fiber cables.

Check each cable for a label that contains all of the correct information. If the information is not present, create a label and attach the label to the cable. This label provides the necessary information for correctly reconnecting the fiber cables to the card. A label must include the following information:

- the ENET shelf number
- plane number
- slot number
- link number and signal type
- transmit or receive

Example of a label:

ENCO	00	39
10R	04	17T
LTE	000	18
22R	RX	

Label field descriptions

```
ENC0
```

ENET plane (0 or 1)

```
00
```

cabinet number

```
39
```

ENET shelf from the base mounting position number

10R

slot number and position (R for rear, or F for front)

04

zone number

17T

link number and the signal type (T for transmit, R for receive)

LTE

PM where the cable terminated

000 PM frame number

18

PM shelf from the base mounting position number

22R

slot number and position (R for rear, or F for front)

RX

signal type at the PM end (RX for receive or TX for transmit)

31



DANGER

Do not contaminate the fiber tip surface Do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.



DANGER Damage to the fiber cable

Exercise care in handling fiber cables. Do not crimp fiber cables or bend fiber cables to a radius of less than 3 cm (1.180 in.).

Disconnect the transmit and receive connectors for each fiber cable.

 $\it Note:$ Place dust caps on the ends of the connectors as you disconnect them.

a Grasp the sleeve with two fingers and slowly push the sleeve toward the frame.



b Turn the connector counter clockwise and the connector pin is in the position shown at the right.



c Slowly pull the connector away from the frame.



Note: Perform the procedure, *Cleaning fiber optic components and assemblies* in this NTP.

32 The next action depends on the replaced card.

lf you	Do	
replace an NT9X45	step 33	
replace an NT9X40	step 34	

- **33** Disconnect the DS30 connectors.
 - **a** Loosen the connector retaining screws.
 - **b** Unplug the connectors.
- **34** To replace the card, refer to the *Replacing a card* procedure in this NTP. When the procedure is complete, return to this point.

Note: Make sure that the switches on the replacement card have the same settings as the removed card.

35 Remove the dust caps on the transmit and receive connectors as you reconnect them to the new card.

Reconnect the transmit and receive connectors for each fiber cable.

a Align the connector pin and slot with the receptacle slot and pin.



b Slowly slide the connector into the receptacle.



c Turn the connector clockwise to lock the connector in place.



d Release the connector. The following figure shows the final connector position.



36

The next action depends on the removed card..

lf you	Do	
remove an NT9X45 card	step 37	
remove an NT9X40 card	step 38	

37 Reconnect the DS30 connectors.

- **a** Plug the connectors into the card.
- **b** Tighten the connector retaining screws.

At the MAP terminal

38 To access the Chain level of the MAP display, type

>MS;SHELF;CHAIN card_no

and press the Enter key.

where

card_no

is the card number recorded in step 17

39 To return the link on the chain on MS 0 to service, type

>RTS 0 LINK link_no

and press the Enter key.

where

link_no

is the link number recorded in step 17

Example of a MAP response:

	Request to RTS MS: 0 shelf Request to RTS MS: 0 shelf	: 0 chain:16 submitted. : 0 chain:16 passed.
	If the RTS command	Do
	passes	step 40
	fails	step 58
40	To return the link on the chain on MS	1 to service, type
	>RTS 1 LINK link_no	
	and press the Enter key.	
	where	
	link_no is the link number recorded in	step 17
	If the RTS command	Do
	passes	step 41
	fails	step 58
41	To access the NET;SYSTEM level of	the MAP display, type
	>NET;SYSTEM	
	and press the Enter key.	
42	To manually busy the current plane, t	уре
	>BSY plane_no 0	
	and press the Enter key.	
	where	
	plane_no is the ENET plane number (0 o	or 1)
	If the BSY command	Do
	passes	step 43
	fails	step 58
43	To return the plane to service, type	
	>RTS plane_no 0	
	and press the Enter key.	
	where	
	plane_no is the ENET plane number (0 o	or 1)

Example of a MAP response:

44

45

46

47 48 Request to RTS ENET Plane:0 Shelf:00 submitted. Request to RTS ENET Plane:0 Shelf:00 passed. There are no suspect cards

If the RTS command	Do
passes	step 44
fails	step 58
Fo access the ENET SHELF level	vel of the MAP display, type
>SHELF 0	
and press the Enter key.	
To manually busy all cards in th	e ENET plane, type
>BSY plane_no ALL	
and press the Enter key.	
where	
plane_no is the ENET plane numb	per (0 or 1)
To return all cards in the ENET	plane to service, type
<pre>>RTS plane_no ALL</pre>	
and press the Enter key.	
where	
plane_no is the ENET plane numb	per (0 or 1)
Example of a MAP response:	
Request to RTS ENET Pla Request to RTs ENET Pla	ane:0 Shelf:01 submitted. ane:0 Shelf:01 passed.
If the RTS command	Do
passes	step 49
fails	step 47
	s. Obtain another replacement card.
Fo access the ENET system lev	vel of the MAP display, type
>SYSTEM	1 - 27 - 21 -

Go to step 14.				
To access the ENET system level of the MAP display, type				
>SYSTEM				
and press the Enter key.				
To clear the deload condition on a	clear the deload condition on all crosspoint cards in the plane, type			
>DELOAD plane_no 0 CLH	EAR			
and press the Enter key.				
where				
plane_no is the ENET plane number	(0 or 1)			
Example of a MAP response:	iple of a MAP response:			
Request to CLEAR DELOAD E Request to CLEAR DELOAD E	ENET Plane:0 Shelf:00 submitted. ENET Plane:0 Shelf:00 passed.			
The next action depends on if the 10.	deloaded cards appear in the list from step			
lf	Do			
cards are listed	step 52			
cards are not listed	step 55			
To access the SHELF level of the	MAP display, type			
>SHELF 0				
and press the Enter key.				
To set the first card on the list to deloaded state, type				
>DELOAD plane_no slot_r	no SET			
and press the Enter key.				
where				
plane_no is the ENET plane number	r (0 or 1)			
slot_no is the slot number (9 to 32))			
If all the cards on the list	Do			
are not set to the deloaded sta	te step 54			
are set to the deloaded state	step 55			
Repeat step 53 for the next card on the list.				

55	The next action depends on the reason for this procedure.		
	lf	Do	
	a maintenance procedure directed you to this procedure	step 56	
	you were not directed to this procedure from a maintenance procedure	step 59	
56	Return to the maintenance procedure and continue as directed.		
57	This procedure contains the instructions to deload a node. When the mate node has deloaded cards, do not continue this procedure, except under special conditions. Consult office personnel or your next level of support and continue as directed.		
58	For additional help, contact the personnel respondent support.	ponsible for the next level of	
59	This procedure is complete.		

NT9X40BA/BB connector zone numbers





NT9X45BA connector zone numbers

Fiber connector detail



This figure shows the type of connector used for fiber connections to an NT9X40 or NT9X45 paddle board.

Fiber connector and receptacle detail



This figure shows the different parts of the connector and receptacle.

Power converter cards in a SuperNode SE 16k ENET

Application

Use this procedure to replace the following cards in a SuperNode SE (SNSE) 16k enhanced network (ENET).

PEC	Suffix	Card name	Shelf or frame name
NT9X30	AA, AB	+ 5V 86-A power converter card	Enhanced network and interface (ENI)
NT9X31	AA, AB	- 5V 20-A power converter card	ENI

Note: You can not replace NT9X30AA with NT9X30AB, nor can you replace NT9X31AA with NT9X31AB.

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

Common procedures

This procedure refers to the following common procedures:

- Activating CCS7 links
- Deactivating CCS7 links
- Loading a PM
- Replacing a card
- Verifying load compatibility of SuperNode cards

Do not go to the common procedure unless the step-action procedure directs you.

Power converter cards in a SuperNode SE 16k ENET (continued)

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.
Summary of replacing Power converter cards in a SuperNode SE 16k ENET



Replacing Power converter cards in a SuperNode SE 16k ENET

At the MAP terminal

1



WARNING

System can drop calls

This procedure removes an ENET shelf from service, which can cause the system to drop calls now in progress. Perform this procedure if you need to return system cards to service. If you do not need to return system cards to service, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

- 2 To make sure that the replacement card is compatible with the software load, perform the procedure *Verifying load compatibility of SuperNode cards*. The procedure *Verifying load compatibility of SuperNode cards* appears in this NTP. Complete the procedure and return to this point.
- 3 To access the NET;SYSTEM level of the MAP display, type

>MAPCI;MTC;NET;SYSTEM

and press the Enter key.

Example of a MAP display:

SYSTEM Shelf Plane 0 Plane 1 00 I CSLink 1 closed .

4 Check the state of the ENET plane that contains the card you replace. The state appears under the Plane headers on the SYSTEM level MAP display. In the MAP display example in step 3, plane 0 is in-service trouble (I). The other plane is in service.

If the state of the ENET plane	Do
is T (being tested)	step 5
is other than listed here	step 6

5 Wait for the system to complete system-initiated testing. Go to step 4 to evaluate the state of the ENET plane.

6 To determine if deloaded crosspoint cards are in the other plane of the ENET, type

>DELOAD plane_no 0 QUERY

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1) for the mate node

Example of a MAP response:

Request to QUERY DELOAD ENET Plane:0 Shelf:00 submitted. Request to QUERY DELOAD ENET Plane:0 Shelf:0passed.

1111111 111 0123456 789 Plane:0 Shelf:00 .Y.---- ---

Note: The letter Y under the slot number indicates a deloaded crosspoint card.

If the other ENET plane	Do
has deloaded cards	step 87
does not have deloaded cards	step 7

7 To determine if deloaded crosspoint cards are in the ENET plane, type

```
>DELOAD plane_no 0 QUERY
```

and press the Enter key.

where

plane_no

is the number of the ENET plane (0 or 1) that contains the card

If the ENET plane	Do
has deloaded cards	step 8
does not have deloaded cards	step 9

- 8 Record the plane number and slot number for any deloaded crosspoint cards in the node. Use the list to make sure that these cards are returned to the deloaded state when you complete this procedure.
- **9** To set all crosspoint cards for the ENET plane that contains the card that you replace to a deloaded state, type

>DELOAD plane_no 0 SET and press the Enter key. where

plane_no

is the ENET plane number (0 or 1)

Example of a MAP response:

Request to SET DELOAD ENET Plane:0 Shelf:00 submitted. Request to SET DELOAD ENET Plane:0 Shelf:00 passed.

- 10 Wait 30 min to allow network traffic on the ENET plane to clear.
- 11 The next step depends on the state of the ENET plane that contains the card you replace.

If the ENET plane	Do
is O (offline)	step 16
is M (manual busy)	step 14
is other than listed here	step 12

12 To manually busy the ENET plane, type

>BSY plane_no 0

and press the Enter key.

where

plane_no

is the number of the ENET plane (0 or 1) that contains the card

Example of a MAP response:

Request to MAN BUSY ENET Plane:0 Shelf:00 submitted. Request to MAN BUSY ENET Plane:0 Shelf:00 passed.

If the response	Do		
requests confirmation	step 13		
indicates the BSY command passed	step 14		
To confirm the command, type			
>YES			
> YES and press the Enter key.			
>YES and press the Enter key. If the BSY command	Do		
>YES and press the Enter key. If the BSY command passed	Do step 14		

13

14 To offline the ENET plane, type

>OFFL plane_no 0

and press the Enter key.

where

15

plane_no

is the number of the ENET plane (0 or 1) that contains the card

Example of a MAP response:

WARNING: A power down of ENET plane:1 shelf:00 may affect LIU components. Please confirm ("YES", "Y", "NO", or "N"):

If the response	Do
requests confirmation	step 15
indicates the OFFL the com- mand passed	step 16
To confirm the command, type	
>YES	

and press the Enter key.

Example of a MAP response:

Request to OFFLINE ENET Plane:1 Shelf:00 submitted. Request to OFFLINE ENET Plane:1 Shelf:00 passed.

If the OFFL command	Do
passed	step 16
failed	step 90

16 To locate the message switch (MS) chain head card that associates with the ENET plane, type

>TRNSL plane_no 0

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1)

Example of a MAP response:

Request to TRNSL ENET Plane:0 Shelf:00 submitted. Requestto TRNSL ENET Plane:0 Shelf:00 passed. ENET Plane:0 Shelf:00 : MS 0 and 1 Card:05 Link:00 Port:000

Note: In the example, the number of the chain head card is 5. The link number is 0.

- 17 Record the number of the chain head card and the link number.
- 18 To access the MS;SHELF level of the MAP display, type

>MS;SHELF

and press the Enter key.

Example of a MAP display:

	Message	Switch	Clock	Shelf	0	Inter-MS	Link	0	1
MS	0	•	Slave						
MS	1		M Free						

 Shelf 0
 1 1 1 1

 Card 1 2 3 4 5 6 7 8 9 0 1 2 3

 Chain
 |

 MS 0
 .
 .
 .
 .
 .

 MS 1
 .
 .
 .
 .
 .
 .

19 To post the chain head card, type

>CHAIN card_no

and press the Enter key.

where

card no

is the card number you recorded in step 17

Example of a MAP display:

Chain 05 Range Link 0 1 MS 0 . 05-05 DS512 . . MS 1 . 05-05 DS512 . .

20

To manually busy the link on the chain on MS 0, type

```
>BSY 0 LINK link_no
```

and press the Enter key.

where

link_no

is the link number that you recorded in step 17

Example of a MAP response:

Request to MAN BUSY MS: 0 shelf: 0 chain:16 link 0 submitted. Request to MAN BUSY MS: 0 shelf: 0 chain:16 link 0 passed.

	If the BSY command	Do
	passed	step 21
	failed	step 90
21	To manually busy the link on the chai	n on MS 1, type
	>BSY 1 LINK link_no	
	and press the Enter key.	
	where	
	<pre>link_no is the link number that you rec</pre>	orded in step 17
	If the BSY command	Do
	passed	step 22
	failed	step 90
22	To access the ENET SHELF level of	the MAP display, type
	>NET;SHELF	
	and press the Enter key.	
	Example of a MAP display:	
ENET Plan Plan	System Matrix Shelf 0 e O CSLink Fault F e 1 CSLink . F	, ,
SHELF 0	0 Power LIU ENET-Plane 0	ENET-Plane 1 LIU Power
Slot	123456789 01 23456789 F SSSSS	1 22 333 33333 0 01 23456789 012 345678 SSS .F . .
23	To manually busy all crosspoint cards	s on the shelf side, type
	>BSY plane_no ALL	
	and press the Enter key.	
	Example of a MAP response:	

24

25

26

27

WARNING: This action will be performed on ALL XPT slots in ENET Plane:1 that are MBSY, INSV, OFFL, SBSY, or CBSY. Please confirm ("YES", "Y", "NO", or "N"): To confirm the command, type >YES and press the Enter key. Example of a MAP response: Request to MAN BSY ALL ENET Plane:1 Shelf:00 submitted. Request to MAN BSY ALL ENET Plane:1 Shelf:00 completed. To offline all crosspoint cards on the shelf side, type >OFFL plane no ALL and press the Enter key. where plane no is the ENET plane number (0 or 1) Example of a MAP response: Request to MAN BSY ALL ENET Plane:1 Shelf:00 submitted. Request to MAN BSY ALL ENET Plane:1 Shelf:00 completed. The next action depends if the ENET shelf has CCS7 link interface units (LIU7). If the ENET shelf Do has LIU7 step 27 does not have LIU7 step 33 To access the PM level of the MAP display, type >MAPCI;MTC;PM and press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
РM	11	0	11	4	16	38

28



Loss of service The following procedure removes an LIU7 from service. Removal of an LIU7 can temporarily interrupt messaging on the associated CCS7 link.

To post one of the LIU7s on the shelf side, type

WARNING

>POST LIU7 liu_no

and press the Enter key.

where

liu_no is the number of the LIU7 (0 to 511)

Example of a MAP display:

PM LIU7		SysB 1 1	Man	B 0 0	OffL 2 0	CBsy (9 0 0	ISTb 3 0	InSv 6 3
LIU7	208	InSv		Rsvd					

- **29** To deactivate the CCS7 link associated with the LIU7, perform the procedure *Deactivating CCS7 links* in this document. Complete the procedure and return to this point.
- **30** Determine the state of the LIU7.

Note: The LIU7 state appears on the right of the LIU7 number, as shown in the example MAP display in step 28.

If the state of the LIU7	Do
is SysB, SysB (NA), ISTb, or InSv	step 31
is ManB or ManB (NA)	step 33
is OffL	step 88
Rsvd	step 90

31 To manually busy the LIU7, type

>BSY FORCE

lf			Do	
the M. confir	AP display prompt m the command	s you to	step 32	
the co	mmand passed		step 33	
To confi	rm the command, ty	pe		
>YES				
and pres	ss the Enter key.			
To acce	ss the MS level of th	e MAP di	splay, type	
>MAPCI	;MTC;MS			
and pres	ss the Enter key.			
Me	ssage Switch C	lock	Shelf 0 Inter-MS Lin	nk O
MS 0	. M	Free		
4S 1	. S	lave	•	•
Determi Note	ne the state of the M F-bus 0 is the mate bls F-bus 0. F-bus 1	IS that co e F-bus fo is the mat	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F	30R. 7R, c
Determi Note contro MS 1 If the I F-bus	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. //S that controls ma	IS that co e F-bus fo is the mat ate	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do	30R. 7R, 0
Determi Note contro MS 1 If the I F-bus is in se	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. AS that controls ma ervice or in-service	IS that co e F-bus fo is the mat ate trouble	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36	30R. , 7R, c
Determi Note contro MS 1 If the I F-bus is in se is othe	ne the state of the M F-bus 0 is the mater ols F-bus 0. F-bus 1 controls F-bus 1. MS that controls ma ervice or in-service er than listed here	IS that co e F-bus fo is the mat ate trouble	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35	30R. 7R, 0
Determi Note contro MS 1 If the I F-bus is in se is othe To return in Alarm and retu	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. AS that controls ma ervice or in-service or than listed here the MS to service, p and Performance M rn to this point.	IS that co e F-bus fo is the mat ate trouble berform th <i>fonitoring</i>	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 ne correct MS alarm clearing <i>Procedures</i> . Complete the	g proc
Determi Note contro MS 1 If the I F-bus is in se is othe To return in Alarm and retu	ne the state of the M F-bus 0 is the mater ols F-bus 0. F-bus 1 controls F-bus 1. MS that controls ma ervice or in-service or than listed here the MS to service, p and Performance M rn to this point. ss the SHELF level of	IS that co e F-bus fo is the mat ate trouble perform the <i>fonitoring</i>	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 ne correct MS alarm clearing <i>Procedures</i> . Complete the	g proc
Determi Note contro MS 1 If the I F-bus is in se is othe is othe To return and retu To acces >SHELF	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. MS that controls ma ervice or in-service er than listed here the MS to service, p and Performance M rn to this point. ss the SHELF level of	IS that co e F-bus fo is the mat ate trouble perform th fonitoring	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 he correct MS alarm clearing <i>Procedures</i> . Complete the P display, type	g proc
Determi Note contro MS 1 If the I F-bus is in so is othe is othe To return in Alarm and retu To acces >SHELF and pres	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. AS that controls ma ervice or in-service or than listed here the MS to service, p <i>and Performance M</i> rn to this point. ss the SHELF level of ss the Enter key.	IS that co e F-bus fo is the mat ate trouble perform th <i>fonitoring</i>	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 ne correct MS alarm clearing <i>Procedures</i> . Complete the P display, type	g proc
Determi Note contro MS 1 If the I F-bus is in se is othe is othe To return and return To acces SHELF and pres	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. MS that controls ma ervice or in-service or than listed here the MS to service, p and Performance M rn to this point. ss the SHELF level of ss the Enter key. ss the F-bus level of	IS that co e F-bus fo is the mat ate trouble perform th <i>fonitoring</i> of the MA	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 he correct MS alarm clearing <i>Procedures</i> . Complete the P display, type	g proc
Determi Note contro MS 1 If the I F-bus is in so is othe is othe To return and retu To acces >SHELF and pres To acces >CARD	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. MS that controls ma ervice or in-service or than listed here the MS to service, p and Performance M rn to this point. ss the SHELF level of ss the Enter key. ss the F-bus level of 12	IS that co e F-bus fo is the mat ate trouble berform th <i>lonitoring</i> of the MA the MAP	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 ne correct MS alarm clearing <i>Procedures</i> . Complete the P display, type display, type	g proc
Determi Note contro MS 1 If the I F-bus is in so is othe is othe To return in Alarm and return To acces SHELF and pres CARD and pres	ne the state of the M F-bus 0 is the mate ols F-bus 0. F-bus 1 controls F-bus 1. MS that controls ma ervice or in-service or than listed here the MS to service, p and Performance M rn to this point. es the SHELF level of sthe Enter key. es the F-bus level of 12 es the Enter key.	IS that co e F-bus fo is the mat ate trouble perform th <i>lonitoring</i> of the MA the MAP	ontrols the mate F-bus. or a card in slot 32F, 32R, or te F-bus for a card in slot 7F Do step 36 step 35 ne correct MS alarm clearing <i>Procedures</i> . Complete the P display, type display, type	g proc

Shelf	0									1	1	1	1				
Card	1	2	3	4	5	б	7	8	9	0	1	2	3				
Chain																	
MS O						-	-										
MS 1		•	•			-	-			•		•					
Card	12					E	Bι	ıs	Τa	ap	: ()		11	12	16	20
MS O																	
MS 1																	

CARD:

Note 1: A dot (.) under the F-bus header indicates the F-bus is in service. An S indicates the F-bus is system busy. An M indicates the F-bus is manual busy. An I indicates the F-bus is in-service trouble. An O indicates the F-bus is offline.

Note 2: Under the F-bus tap numbers, different characters indicate different states. The letter C indicates that the F-bus is manual busy or the MS or MS port that controls the F-bus tap is system or manual busy. An S indicates the F-bus tap is system busy. A dot indicates the F-bus tap is in service. An M indicates the F-bus tap is manual busy. An I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline.

38 Determine the state of the mate F-bus and the mate F-bus taps.

Note: F-bus 0 is the mate F-bus associated with a card in slot 30R, 32R, or 32F. MS-0 controls F-bus 0. F-bus 1 is the mate associated with a card in slot 7R, 8R, or 7F. MS 1 controls F-bus 1.

lf	Do
the state of the F-bus is $InSv$ and all F-bus taps are . (dot)	step 39
the states are other than listed here	step 89

39



WARNING

Potential loss of service

Make sure that the mate F-bus and F-bus taps are in service before you manually busy the F-bus that associates with the card you replace. If you manually busy the F-bus while the mates are out of service, you isolate the node on the other side of the shelf.

To manually busy the F-bus that associates with the card you replace, type >BSY ms_no FBUS

and press the Enter key.

where

ms no

is the number of the MS (0 or 1) that controls the F-bus

Note: F-bus 0 associates with a card in slot 1 or 4. MS 0 controls F-bus 0. F-bus 1 associates with a card in slot 33 or 36. MS 1 controls F-bus 1.

Example of a MAP response:

Request MAN BSY MS: 0 shelf 0 card:12 port 0 FBus requires confirmation because the following NIUs may be active on this bus... NIU 001 unit 0 NIU 001 unit 1 Please confirm("YES", "Y", "NO", or "N")

	If the response	Do
	indicates the BSY command passed	step 41
	requests confirmation	step 40
40	To confirm the command, type	
	>YES	
	and press the Enter key.	
	Example of a MAP response:	
	Request MAN BSY MS: 0 shelf 0 c Request MAN BSY MS: 0 shelf 0 c	card:12 port OFBus submitted card:12 port OFBus passed
41	To manually busy the mate F-bus tap replace, type	that associates with the card you
	>BSY ms_no TAP tap_no	
	and press the Enter key.	
	where	

ms_no is the number of the MS (0 or 1) that controls the mate F-bus

tap no

is 0 if you replace a card in slots 1 or 4is 11 if you replace a card in slots 33 or 36

Note: F-bus 0 is the mate F-bus for a card in slot 33 or 36. MS 0 controls F-bus 0. F-bus 1 is the mate F-bus for a card in slot 1 or 4. MS 1 controls F-bus 1.

Example of a MAP display:

Warning, P-side nodes may be isolated. Please confirm ("YES", "Y", "NO", or "N"):

42 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Request to MAN BSY MS: 0 shelf: 0 card:12 tap: 0 submitted. Request to MAN BSY MS: 0 shelf: 0 card:12 tap: 0 passed.

At the ENET shelf

43



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the NT9X31 card that associates with the ENET shelf side. To power down the card, press down and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns on when the converter powers down.

If the CONVERTER OFF LED	Do
is lit	step 44
is not lit	step 90

44

Power down the NT9X30 card that associates with the ENET shelf side you are working on. To power down the card, press down and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns on when the converter powers down.

If the CONVERTER OFF LED	Do
is lit	step 45
is not lit	step 90

45



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this NTP. Complete the procedure and return to this point.

Note 1: Make sure that the handle of the PWR switch on the replacement power converter is in the OFF position.

Note 2: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

46 To power up the NT9X30 card, press up and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns off when the converter powers up.

If the CONVERTER OFF LED	Do
is not lit	step 47
is lit	step 90

47 To power up the NT9X31 card, press up and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns off when the converter powers up.

If the CONVERTER OFF LED	Do
is not lit	step 48
is lit	step 90

At the MAP terminal

48 To make sure that you are at the MS;SHELF level of the MAP display, type >MS;SHELF

and press the Enter key.

49 To post the chain head card that you posted in step 19, type >CHAIN card_no

and press the Enter key.

	where	
	card_no is the card number that you rec	corded in step 17
50	To return the link on the chain on MS	0 to service, type
	>RTS 0 LINK link_no	
	and press the Enter key.	
	where	
	link_no is the link number that you reco	orded in step 17
	Example of a MAP response:	
	Request to RTS MS: 0 shelf: Request to RTS MS: 0 shelf:	0 chain:16 link 0 submitted. 0 chain:16 link 0 passed.
	If the RTS command	Do
	passed	step 51
	failed	step 90
51	To return the link on the chain on MS	1 to service, type
	>RTS 1 LINK link_no	
	and press the Enter key.	
	where	
	link_no is the link number that you reco	orded in step 17
	If the RTS command	Do
	passed	step 52
	failed	step 90
52	To access the F-bus level of the MAP	display, type
	>CARD 12	
	and press the Enter key.	
53	To return the manual busy F-bus to se	ervice, type
	>RTS ms_no FBUS	
	and press the Enter key.	
	where	
	<pre>ms_no is 0 if you replaced a card in slo slots 33 or 36</pre>	ots 1 or 4is 1 if you replaced a card in

54 To return the tap on the mate F-bus to service, type >RTS ms_no TAP tap_no and press the Enter key. where ms_no is 0 if you replaced a card in slots 1 or 4is 1 if you replaced a card in slots 33 or 36 tap no is 0 if you replaced a card in slots 1 or 4 is 11 if you replaced a card in slots 33 or 36 Example of a MAP response: Request to RTS MS: 0 shelf: 0 card:12 tap: 0 submitted. Request to RTS MS: 0 shelf: 0 card:12 tap: 0 passed. 55 To access the NET;SYSTEM level of the MAP display, type >NET;SYSTEM and press the Enter key. 56 To manually busy the ENET node, type >BSY plane no 0 and press the Enter key. where plane no is the ENET plane number (0 or 1) Example of a MAP response: Request to MAN BUSY ENET Plane:1 Shelf:00 submitted. Request to MAN BUSY ENET Plane:1 Shelf:00 passed. Do If the response requests confirmation step 57 indicates that the BSY command step 58 passed 57 To confirm the command, type >YES and press the Enter key. If the BSY command Do passed step 58

If the BSY comma	and Do	
failed	step 90	
The next action dep	ends on the location of the load file.	
If the load file		Do
is as specified in	tables PMLOADS and ENINV	step 59
is different from LOADS and ENI	n the file specified in tables PM-INV	step 60
To load the ENET no	ode, type	
>LOADEN plane_	_no 0	
and press the Enter	key.	
where		
plane_no is the ENET p	plane number (0 or 1)	
Example of a MAP	response:	
WARNING Any software lc Please confirm	ad in the ENET will be destro ("YES" or "NO"):	yed.
Go to step 66.		
To access the CI lev	el of the MAP display, type	
>QUIT ALL		
and press the Enter	key.	
To access the disk u	utility, type	
>DISKUT		
and press the Enter	key.	
Example of a MAP	response:	
Disk utility i	s now active.DISKUT:	
To list the contents f	or the volume that contains the loadfile,	type
>LISTFILE vol_	name	
and press the Enter	key.	
where		
vol_name is the name c	of the volume that contains the ENET loa	ad file
Example of a MAP	response:	

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File information for volume S00DVOL1: {NOTE: 1 BLOCK = 512 BYTES } _____ LAST FILE O R I O FILE NUM OF MAX FILE NAME MODIFY CODE R E T P SIZE RECORDS REC DATE G C O E IN IN LEN C N BLOCKS FILE _____ 760128 0 F 277 3219 44 EDRMAC07 941101 0 I F Y 9494 4747 1020 RAPC03AW_1101_MS 760104 0 V 651 162 2048 MPC402BX 760104 0 F 63 424 76 TDCMPA01 760104 0 F 37 249 76 TTMNA01 941101 0 I F Y 202934 101467 1020 RAPC03AW_1101_CM 941025 0 I F 9494 4747 1020 RBCS35CV_1025_MS 941025 0 I F 242454 121227 1020 RBCS35CV_1025_CM 940426 0 F 784 392 1024 MPCX33AB 930427 0 F 314 2006 80 MTULI01 63 To quit the disk utility, type >QUIT and press the Enter key. 64 To access the NET; SYSTEM level of the MAP display, type >MAPCI;MTC;NET;SYSTEM and press the Enter key. 65 To load the ENET node, type >LOADEN plane_no 0 filename and press the Enter key. where plane no is the ENET plane number (0 or 1) filename is the name of the load file Example of a MAP response: WARNING Any software load in the ENET will be destroyed. Please confirm ("YES" or "NO"): 66 To confirm the command, type >YES and press the Enter key. Example of a MAP response:

Request to LOADEN ENET Plane:0 Shelf:00 submitted. Request to LOADEN ENET Plane:0 Shelf:00 passed.

67 To return the ENET node to service, type

>RTS plane_no 0

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to RTS ENET Plane:0 Shelf:00 submitted. Request toRTS ENET Plane:0 Shelf:00 passed. There are no suspect cards.

If the RTS command	Do
passed	step 68
failed	step 90
To access the ENET SHELF	level of the MAP display, type
>SHELF	
and press the Enter key.	
To manually busy all crosspo	int cards on the shelf side, type
>BSY plane_no ALL	
and press the Enter key.	
where	
plane_no is the ENET plane nur	nber (0 or 1)
To confirm the command, typ	e
>YES	
and press the Enter key.	
To return all crosspoint cards	on the shelf side, type
>RTS plane_no ALL	
and press the Enter key.	
where	
plane_no is the ENET plane nur	nber (0 or 1)
Example of a MAP response	:

Request to RTS ENET Plane:1 Shelf:00 submitted. Request to RTS ENET Plane:1 Shelf:00 passed. 72 To access the ENET SYSTEM level of the MAP, type >SYSTEM and press the Enter key. 73 To clear the deload condition on all crosspoint cards in the node, type >DELOAD plane no 0 CLEAR and press the Enter key. where plane no is the ENET plane number (0 or 1) Example of a MAP response: Request to CLEAR DELOAD ENET Plane:0 Shelf:00 submitted. Request to CLEAR DELOAD ENET Plane:0 Shelf:00 passed. 74 The next action depends if you recorded a list of deloaded cards in step 8. If you Do recorded a card list step 75 did not record a card list step 78 75 To access the ENET SHELF level of the MAP display, type >SHELF 0 and press the Enter key. 76 To set the first card on the list to the deloaded state, type >DELOAD plane_no slot_no SET and press the Enter key. where plane_no is the number of the ENET plane (0 or 1) slot no is the number of the slot the card occupies (slots 12 to 19 on plane 0, slots 22 to 29 on plane 1) lf Do more cards on the list are not destep 77 loaded

lf	Do						
all cards on the list are deloa	aded step 78						
Repeat step 76 for the next card	d on the list.						
The next action depends if the E	ENET shelf has LIU7s.						
If the ENET shelf	Do						
has LIU7s	step 79						
does not have LIU7s	step 91						
To access the PM level of the M	AP display, type						
>MAPCI;MTC;PM							
and press the Enter key.							
To post the LIU7 on the shelf sid	de, type						
>POST LIU7 liu_no							
and press the Enter key.							
where							
liu_no is the number of the LIU7	7 (0 to 511)						
To load the LIU7, type							
>LOADPM							
and press the Enter key.							
Example of a MAP response:							
LIU7 208 LOADPM Passed	l						
If the LOADPM command	Do						
passed	step 83						
failed	step 82						
To load the LIU7, perform the pro the procedure and return to this	ocedure <i>Loading a PM</i> in this NTP. Complete point.						
To return the LIU7 to service, type							
>RTS							
and press the Enter key.							
Example of a MAP response:							

LIU7 100 RTS Passed

If the RTS command	Do
passed	step 84
failed	step 90

84 To activate the CCS7 link associated with the LIU7, perform the procedure *Activating CCS7 links* in this NTP. Complete the procedure and return to this point.

⁸⁵ The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 86
did not direct you to this proce- dure	step 91

- 86 Return to the maintenance procedure that directed you to this procedure and continue as directed.
- 87 This procedure instructs you to deload and manually busy an ENET node. Continue this procedure only under special conditions because the mate ENET node has deloaded cards. Consult office personnel or the next level of support. Continue as directed.
- **88** To determine why the component is offline, consult operating company personnel. Continue as directed by operating company personnel.
- 89 If you continue this procedure, you can isolate the LIU7 on the other side of the shelf. To determine if you must continue this procedure, contact office company personnel or the next level of support. Continue as directed.
- **90** For additional help, contact the next level of support.
- **91** The procedure is complete.

System cards in a SuperNode SE 16k ENET

Application

Use this procedure to replace the following cards in a SuperNode SE (SNSE) 16k enhanced network (ENET).

PEC	Suffix	Card name	Shelf or frame name
NT9X13	FA, KA	DMS SuperNode processor card	Enhanced network and interface (ENI)
NT9X26	AA, AB	Remote terminal interface paddle board	ENI
NT9X36	BA	ENET message clock card	ENI
NT9X40	BA, BB, DA	ENET + quad fiber paddle board	ENI slots 11 or 21

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Replacing a card
- *Reseating cards in equipment shelves*
- Unseating cards in equipment shelves
- Verifying load compatibility of SuperNode cards
- Cleaning fiber optic components and assemblies

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing System cards in a SuperNode SE 16k ENET



Replacing System cards in a SuperNode SE 16k ENET

At the MAP terminal

1



WARNING

System can drop calls

This procedure removes an ENET shelf from service, which can cause the system to drop calls now in progress. Perform this procedure only if you need to return system cards to service. If you do not need to return system cards to service, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

- 2 To make sure that the replacement card is compatible with the software load, perform the procedure *Verifying load compatibility of SuperNode cards*. The procedure *Verifying load compatibility of SuperNode cards* appears in this NTP. Complete the procedure and return to this point.
- 3 To access the NET;SYSTEM level of the MAP display, type

>MAPCI;MTC;NET;SYSTEM

and press the Enter key.

Example of a MAP display:

SYSTEM			
Shelf	Plane O	Plane	1
00	I CSLink 1 closed	•	

4 Determine the state of the plane that contains the card that you replace. The state appears under the Plane headers on the SYSTEM level MAP display. In the MAP display example in step 3, plane 0 is in-service trouble (I) and plane 1 is in service.

If the status of the node	Do
is T (being tested)	step 5
is other than listed here	step 6

- 5 Wait for the system to complete system-initiated testing. To evaluate the state of the node again, go to step 4.
- 6 To determine if deloaded crosspoint cards are in the other ENET plane, type

>DELOAD plane_no 0 QUERY

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1) for the mate node

Example of a MAP response:

Request to QUERY DELOAD ENET Plane:0 Shelf:00 submitted. Request to QUERY DELOAD ENET Plane:0 Shelf:00 passed. 1111111 111 0123456 789 Plane:0 Shelf:00 .Y.---- ---

Note: The letter Y under the slot number indicates a deloaded crosspoint card.

If the other ENET plane	Do			
has deloaded cards	step 65			
does not have deloaded cards	step 7			
To determine if deloaded crosspoint cards are in the plane, type				

>DELOAD plane_no 0 QUERY

and press the Enter key.

where

7

8

plane_no

is the number of the ENET plane (0 or 1) that contains the card that you replace

If the ENET plane	Do
has deloaded cards	step 8
does not have deloaded cards	step 9

- Record the plane number and slot number for any deloaded crosspoint cards in the plane. Use this list to make sure that these cards are returned to the deloaded state when you complete this procedure.
- **9** To set all crosspoint cards for the ENET plane that contains the card that you will replace to a deloaded state, type

>DELOAD plane_no 0 SET

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1)

Example of a MAP response:

Request to SET DELOAD ENET Plane:0 Shelf:00 submitted. Request to SET DELOAD ENET Plane:0 Shelf:00 passed.

- 10 Wait 30 min to permit network traffic on the node to clear.
- 11 The next step depends on the state of the ENET plane that contains the card that you replace.

	If the ENET plane	Do	
	is O (offline)	step 17	
	is M (manual busy)	step 15	
	is other than listed here	step 12	
12	To manually busy the ENET plane, typ	0e	
	>BSY plane_no 0		
	and press the Enter key.		
	where		
	plane_no is the number of the ENET plar replace	ne (0 or 1) that cor	ntains the card you
	If the response is		Do
	WARNING: This action will dump.Please confirm ("YES", "Y Note: The above Warning messa when a BSY request and ENET place at the same time. As card re procedures are usually performed scheduled maintenance periods the never occur.	abort ENET ","NO, or "N"): ge is generated T imaging take placement during his conflict may	step 13
	Request to MAN BUSY ENET P Slot:25 submitted. Request to MAN BUSY ENET P Slot:25 passed.	lane:0 Shelf:00 lane:0 Shelf:00	step 15
13	Continue procedure by		
	If Responding to the message	Do	
	with YES, abort dump and con- tinue with busy	step 14	
	with NO, abort busy, continue with dump	step 67	
	with dump		

14 To abort ENET dump and continue with BSY, type

>YES

and press the Enter key.

15 To offline the ENET plane, type

>OFFL plane_no 0

and press the Enter key.

where

plane_no

is the number of the ENET plane (0 or 1) that contains the card you replace

Example of a MAP response:

WARNING: A power down of ENET plane:1 shelf:00 may affect LIU components. Please confirm ("YES", "Y", "NO", or "N"):

16 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Request to OFFLINE ENET Plane:1 Shelf:00 submitted. Request to OFFLINE ENET Plane:1 Shelf:00 passed.

If the OFFL command	Do
passed	step 17
failed	step 66

17 To locate the message switch (MS) chain head card that associates with the ENET plane, type

>TRNSL plane_no 0

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to TRNSL ENET Plane:0 Shelf:00 submitted. Request to TRNSL ENET Plane:0 Shelf:00 passed. ENET Plane:0 Shelf:00 : MS 0 and 1 Card:05 Link:00 Port:000

Note: In the example, the number of the chain head card is 5. The link number is 0.

- **18** Record the number of the chain head card and the link number.
- **19** To access the MS;SHELF level of the MAP display, type

>MS;SHELF

and press the Enter key.

Example of a MAP display:

	Mes	SSa	age	9 2	3w:	ito	ch		C	Loc	ck		Sł	nel:	£	0	Inter-MS Link 0 1	1
MS	0			•					S	Lav	ve					•		•
MS	1			•					М	F٦	ree	9				•		•
She	elf	0									1	1	1	1				
Cai	:d	1	2	3	4	5	6	7	8	9	0	1	2	3				
Cha	ain																	
MS	0		•	•	•	•	-	-	•	•								
MS	1	•	•	•	•	•	-	-	•	•	•	•	•	•				

20 To post the chain head card, type

>CHAIN card_no

and press the Enter key.

where

card no

is the card number that you recorded in step 18

Example of a MAP display:

Chai	in	05	Range	Link	0	1
MS ()		05-05	DS512		
MS 1	1		05-05	DS512		

21 To manually busy the link on the chain on MS 0, type

>BSY 0 LINK link_no

and press the Enter key.

where

link_no

is the link number that you recorded in step 18

Example of a MAP response:

Request to MAN BUSY MS: 0 shelf: 0 chain:05 link 0 submitted Request to MAN BUSY MS: 0 shelf: 0 chain:05 link 0 passed.

If the BSY command	Do
passed	step 22

	If the BSY command	Do	
	failed	step 66	
22	To manually busy the link on the chair	n on MS 1, type	
	>BSY 1 LINK link_no		
	and press the Enter key.		
	where		
	link_no is the link number that you recorded in step 18		
	If the BSY command	Do	
	passed	step 23	
	failed	step 66	
23	To access the ENET SHELF level of t	he MAP display, type	
	>NET;SHELF		
	and press the Enter key.		
	where		
	plane_no is the ENET plane number (0 c	or 1)	
	Example of a MAP display:		
ENET Plar Plar	System Matrix Shelf O ne O CSLink Fault F ne 1 CSLink . F	, ,	
SHELF	7 00 Power LIU ENET-Plane	0 ENET-Plane 1 LIU Power	
Slot	11 111111 123456 789 01 234567 F SSSSSS	II 22 22222222 333 3333333 3333333 3333333	
24	To manually busy all crosspoint cards	on the shelf side, type	
	>BSY plane_no ALL		
	and press the Enter key.		
	where		
	or 1)		
	Example of a MAP response:		

25 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Request to MAN BSY ALL ENET Plane:1 Shelf:00 submitted. Request to MAN BSY ALL ENET Plane:1 Shelf:00 completed.

26 To ofline all crosspoint cards in the ENET shelf, type

>OFFL plane_no ALL

and press the Enter key.

where

plane_no

is the number of the ENET plane (0 or 1) containing the card you are replacing

Example of a MAP response:

Request to OFFLINE ENET Plane:0 Shelf:00 submitted. Request to OFFLINE ENET Plane:0 Shelf:00 passed.

At the ENET shelf

27



WARNING

Static electricity damage

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

The next action depends on the type of card that you replace.

If the card	Do
is an NT9X13	step 28
is an NT9X40	step 30

	If the card	Do		
	is an NT9X26 or NT9X36	step 33		
28	To unseat the NT9X36 (messaging clock) card on the shelf side, perform the procedure <i>Unseating cards in equipment shelves</i> . The procedure <i>Unseating cards in equipment shelves</i> appears in this NTP. Complete the procedure. Wait 20 s and return to this point.			
29	To reseat the NT9X36 card, perform the procedure <i>Reseating cards in equipment shelves</i> in this NTP. Complete the procedure. Wait 20 s and return to this point.			
	Go to step 33.			
30				
numbers, refer to figure "NT9X40BA/BB connector zone numbers" for the NT9X40. Figures "Fiber connector detail" and "Fiber connector and receptable detail" are diagrams of fiber connector components for these cards. The figures are at the end of this procedure.				
	Make sure that you are at the correct ENET node and interface card before you disconnect the fiber cables. To identify the ENET node, check the plane and shelf identification. To identify the interface card, check the slot.			
31	31 Make sure that each cable has a label that contains the following in			
	ENET shelf number			
	plane number			
	slot number			
	link number			
	signal type			
	The signal type can be transmit or create a label and attach the label information on how to connect the	receive. If this information is not present, to the cable. This label provides fiber cables to the card.		

Example of a label:

00	39
04	17T
000	18
RX	
	00 04 000 RX

Label field descriptions

- ENCO ENET plane (0 or 1)
- 00 cabinet number
- 39 ENET shelf by the base mounting position number
- 10R slot number and position (R for rear, or F for front)
- 04 zone number
- 17T link number and the signal type (T for transmit, R for receive)
- LTE PM that the cable terminates on
- 000 PM frame number
- 18 PM shelf by the base mounting position number
- 22R slot number and position (R for rear, or F for front)
- RX signal type at the PM end (RX for receive or TX for transmit)

32



DANGER

Avoid contamination of the fiber tip surface Make sure that you do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.



DANGER

Fiber cable can become defective

Make sure that you handle fiber cables carefully. Do not crimp fiber cables or bend fiber cables to a radius of less than 3 cm (1.180 in.).

Disconnect the transmit and receive connectors for each fiber cable.

Note: When you disconnect the connectors, place dust caps on the ends of the connectors.

a Grasp the sleeve with two fingers. Carefully push the sleeve toward the frame.



b Turn the connector counterclockwise until the connector pin is in the position shown in the following diagram.



c Carefully pull the connector away from the frame.



Note: Perform the procedure, *Cleaning fiber optic components and assemblies* in this NTP.

33 To replace the card, perform the procedure *Replacing a card* in this NTP. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

34 The next action depends on the type of card that you replace.

If the card	Do
is an NT9X13	step c
is an NT9X40	step 35
is an NT9X26 or NT9X36	step b

35 When you connect the connectors to the new card, remove the dust caps on the transmit and receive connectors.

Connect the transmit and receive connectors for each fiber cable.

a Align the connector pin and slot with the receptacle slot and pin, in the sequence given, as shown in the following diagram.



b Carefully slide the connector into the receptacle.



c Turn the connector clockwise to lock the connector in place.


d Release the connector. The following figure displays the final connector position.



- **36** To unseat the NT9X13 (processor) card on the shelf side, perform the procedure *Unseating cards from equipment shelves*. The procedure *Unseating cards in equipment shelves* appears in this NTP. Complete the procedure. Wait 20 s and return to this point.
- **37** To reseat the NT9X13 card on the shelf side, perform the procedure *Reseating cards in equipment shelves.* The procedure *Reseating cards in equipment shelves* appears in this NTP. Complete the procedure and return to this point.

Note: Wait a minimum of 30 s before you continue this procedure.

At the MAP terminal

38 To access the MS Chain card level of the MAP display, type

>MS;SHELF;CHAIN card_no

and press the Enter key.

where

card_no

is the card number that you recorded in step 18

39 To return the link on the chain on MS 0 to service, type

>RTS 0 LINK link_no

and press the Enter key.

where

link_no

is the link number that you recorded in step 18

Example of a MAP response:

Request to RTS MS: 0 shelf: 0 chain:05 link 0 submitted. Request to RTS MS: 0 shelf: 0 chain:05 link 0 passed.

If the RTS command	Do	
passed	step 40	
failed	step 66	
To return the link on the chain of	on MS 1 to service, type	
>RTS 1 LINK link_no		
and press the Enter key.		
where		
link no		
is the link number that ye	bu recorded in step 18	
is the link number that your first the RTS command	Do	
is the link number that ye If the RTS command passed	Do step 41	
is the link number that ye If the RTS command passed failed	Do step 41 step 66	
is the link number that ye If the RTS command passed failed To access the NET;SYSTEM le	Do step 41 step 66 evel of the MAP display, type	
is the link number that ye If the RTS command passed failed To access the NET;SYSTEM le >NET;SYSTEM	Do step 41 step 66 evel of the MAP display, type	
is the link number that ye If the RTS command passed failed To access the NET;SYSTEM le >NET;SYSTEM and press the Enter key.	Do step 41 step 66	
is the link number that ye If the RTS command passed failed To access the NET;SYSTEM le >NET;SYSTEM and press the Enter key. To manually busy the ENET pla	Do step 41 step 66 evel of the MAP display, type	
If the RTS command passed failed To access the NET;SYSTEM le >NET;SYSTEM and press the Enter key. To manually busy the ENET pla >BSY plane_no 0	Do step 41 step 66 evel of the MAP display, type	
is the link number that ye If the RTS command passed failed To access the NET;SYSTEM le >NET;SYSTEM and press the Enter key. To manually busy the ENET pla >BSY plane_no 0 and press the Enter key.	Do step 41 step 66 evel of the MAP display, type ane, type	

40

41

42

	plane_no is the ENET plane number (0 or 1)		
	If the response	Do	
	requests confirmation	step 43	
	indicates the BSY command passed	step 44	
43	To confirm the command, type		
	>YES		
	and press the Enter key.		
	If the BSY command	Do	
	passed	step 44	
	failed	step 66	
44	The next action depends on the location	on of the load file.	
	If the load file	Do	
	is as specified in tables PMLOAI and ENINV	DS step 45	
	is different from the file specified tables PMLOADS and ENINV	in step 46	
45	To load the ENET node, type		
	>LOADEN plane_no 0		
	and press the Enter key.		
	where		
	is the ENET plane number (0 o	r 1)	
	Example of a MAP response:		
	WARNING Any software load in Please confirm ("YES" or "NO"	the ENET will be destroyed.):	
	Go to step 52.		
46	To access the CI level of the MAP disp	blay, type	
	>QUIT ALL		
	and press the Enter key.		

47 To access the disk utility, type

>DISKUT

and press the Enter key.

Example of a MAP response:

Disk utility is now active. DISKUT:

48 To list the contents for the volume that contains the load file, type

>LISTFL vol_name

and press the Enter key.

where

vol_name
is the name of the volume that contains the ENET load file

Example of a MAP response:

File information for volume S00DVOL1: {NOTE: 1 BLOCK = 512 BYTES } LASTFILEORIOFILENUM OFMAXMODIFYCODERETPSIZERECORDSRECDATEGCOEININLENCNBLOCKSFILE FILE NAME _____ _____

 0
 0
 F
 277
 3219
 44
 EDRMAC07

 0
 I
 F
 Y
 9494
 4747
 1020
 RAPC03AW_1101_MS

 0
 0
 V
 651
 162
 2048
 MPC402BX

 0
 0
 F
 63
 424
 76
 TDCMPA01

 0
 0
 F
 37
 249
 76
 TTMNA01

 0
 I
 F
 9494
 4747
 1020
 RAPC03AW_1101_CM

 0
 I
 F
 9494
 4747
 1020
 RBCS35CV_1025_MS

 0
 I
 F
 242454
 121227
 1020
 RBCS35CV_1025_CM

 0
 O
 F
 784
 392
 1024
 MPCX33AB

 0
 O
 F
 314
 2006
 80
 MTULI01

 760128
 0
 0
 F

 941101
 0
 I
 F
 Y

 760104
 0
 O
 V

 760104
 0
 O
 F

 760104 760104 941101 941025 941025 940426 930427 49 To quit the disk utility, type >QUIT and press the Enter key. 50 To access the NET;SYSTEM level of the MAP display, type >MAPCI;MTC;NET;SYSTEM and press the Enter key. 51 To load the ENET node, type >LOADEN plane_no 0 filename and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

filename

is the name of the load file

Example of a MAP response:

WARNING Any software load in the ENET will be destroyed. Please confirm ("YES" or "NO"):

52 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Request to LOADEN ENET Plane:0 Shelf:00 submitted. Request to LOADEN ENET Plane:0 Shelf:00 passed.

53 To return the ENET plane to service, type

>RTS plane_no 0

and press the Enter key.

where

54

55

plane_no
 is the ENET plane number (0 or 1)

Example of a MAP response:

Request to RTS ENET Plane:0 Shelf:00 submitted. Request to RTS ENET Plane:0 Shelf:00 passed.

There are no suspect cards.

If the RTS command	Do
passed	step 54
failed	step 66
To access the ENET SHELF level of th	ne MAP, type
>SHELF 0	
and press the Enter key.	
To manually busy all crosspoint cards	in the ENET shelf, type
>BSY plane_no ALL	
and press the Enter key.	
where	

plane no is the number of the ENET plane (0 or 1) containing the card you are working on If the BSY command Do passed step 56 failed step 66 56 To return all crosspoint cards on the shelf to service, type >RTS plane_no ALL and press the Enter key. plane no is the ENET plane number (0 or 1) Example of a MAP response: Request to RTS ENET Plane:1 Shelf:00 submitted. Request to RTS ENET Plane:1 Shelf:00 passed. 57 To access the ENET SYSTEM level of the MAP display, type >SYSTEM and press the Enter key. 58 To clear the deload condition on all crosspoint cards in the plane, type >DELOAD plane_no 0 CLEAR and press the Enter key. where plane no is the ENET plane number (0 or 1) Example of a MAP response: Request to CLEAR DELOAD ENET Plane:0 Shelf:00 submitted. Request to CLEAR DELOAD ENET Plane:0 Shelf:00 passed. 59 The next action depends if you recorded a list of deloaded cards in step 8. If you Do recorded a card list step 60 did not record a card list step 63 60 To access the SHELF level of the MAP display, type >SHELF 0

and press the Enter key.

61 Set the first card on the list to the deloaded state, type >DELOAD plane_no slot_no SET and press the Enter key. where plane_no is the ENET plane number (0 or 1) slot no is the number of the slot the card occupies (slots 12 to 19 on plane 0 or slots 22 to 29 on plane 1 If all cards on the list Do are not set to a deloaded state step 62 are set to a deloaded state step 63 62 Repeat step 61 for the next card on the list. 63 The next action depends on the reason that you perform this procedure. If a maintenance procedure Do directed you to this procedure step 64 did not direct you to this procedure step 68 64 Return to the maintenance procedure that directed you to this procedure and continue as directed. 65 This procedure instructs you to deload a node. Continue this procedure only under special conditions because the mate node has deloaded cards. Consult office personnel or the next level of support. Continue as directed. 66 For additional help, contact the next level of support. 67 To abort BSY command and continue with dump, type >NO and press the Enter key BSY has been aborted, ENET dump is continuing. 68 The procedure is complete.



NT9X40BA/BB connector zone numbers



Fiber connector detail

This figure shows the type of connector used to connect fibers to an NT9X40 or NT9X45 paddle board.

Fiber connector and receptacle detail



This figure shows the different parts of the connector and receptacle.

System cards in a SuperNode SE 32k ENET

Application

Use this procedure to replace the following cards in a SuperNode SE 32k enhanced network shelf (ENET).

PEC	Suffix	Card name	Shelf or frame name
NT9X13	FA, KA	DMS SuperNode processor card	32k ENET
NT9X26	AA, AB	Reset terminal interface (RTIF) paddle board	32k ENET
NT9X30	AA, AB	+5V 86-A power converter card	32k ENET
NT9X31	AA, AB	-5V 20-A power converter for DMS-100E card	32k ENET
NT9X36	BA	ENET messaging clock card	32k ENET
NT9X40	BA, BB, DA	ENET + quad fiber paddle board	32k ENET, slot 8

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Replacing a card
- Verifying load compatibility of SuperNode cards
- Cleaning fiber optic components and assemblies

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing System cards in a SuperNode SE 32k ENET



Replacing System cards in a SuperNode SE 32k ENET

At your current location

1



CAUTION

System can drop calls

This procedure removes an ENET shelf from service, which can cause the system to drop calls now in progress. Perform this procedure only if you need to return system and power converter cards to service. If you do not need to return the cards to service, perform this procedure during periods of low traffic.



WARNING

System can drop calls

This procedure removes an ENET shelf from service, which can cause the system to drop calls now in progress. Perform this procedure only if you need to return system and power converter cards to service. If you do not need to return the cards to service, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

2 To make sure that the replacement card is compatible with the software load, perform the procedure *Verifying load compatibility of SuperNode cards*. The procedure *Verifying load compatibility of SuperNode cards* appears in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the NET;SYSTEM level of the MAP display, type

>MAPCI;MTC;NET;SYSTEM

and press the Enter key.

Example of a MAP display:

SYSTEM Shelf Plane 0 Plane 1 00 I CSLink 1 closed .

4 Check the state of the ENET plane that contains the card you replace. The state appears under the Plane headers on the SYSTEM level MAP display.

In the example shown in step 3, plane 0 is in-service trouble (I) and plane 1 is in service.

If the state of the plane	Do
is T (being tested)	step 5
is other than listed here	step 6

- **5** Wait until the system completes system-initiated testing. To evaluate the state of the plane again, go to step 4.
- 6 To determine if deloaded crosspoint cards are in the other plane, type

>DELOAD plane_no 0 QUERY

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1) for the mate node

Example of a MAP response:

Request	to	QUERY	DELOAD	ENET	Plane	: 0	Shelf:00	submitted.
Request	to	QUERY	DELOAD	ENET	Plane	: 0	Shelf:00	passed.
			111111	.1 111	22222	22	222333	
			9012345	56 789	901234	56	5789012	
Plane:0	She	elf:00	Y					

Note: The letter Y under the slot number indicates a deloaded crosspoint card.

If the plane	Do
has deloaded cards	step 66
does not have deloaded cards	step 7

7 To determine if deloaded crosspoint cards are in the plane, type

```
      >DELOAD plane_no 0 QUERY

      and press the Enter key.

      where

      plane_no

      is the ENET plane number (0 or 1)

      If the plane
      Do

      has deloaded cards
      step 8
```

does not have deloaded cards step 9

8 Record the slot number for any deloaded crosspoint cards in the plane. Use this list to make sure that these cards are returned to the deloaded state when you complete this procedure. 9 To set all crosspoint cards for the plane that associates with the card that you will replace to a deloaded state, type >DELOAD plane_no 0 SET and press the Enter key. where plane no is the ENET plane number (0 or 1) Example of a MAP response: Request to SET DELOAD ENET Plane:0 Shelf:00 submitted. Request to SET DELOAD ENET Plane:0 Shelf:00 passed. 10 Wait 30 min to allow network traffic on the plane to clear. 11 The next step depends on the state of the ENET plane that contains the card you replace. If the ENET plane Do is O (offline) step 14 is M (manual busy) step 13 is other than listed here step 12 12 To manually busy the ENET plane that contains the card you replace, type >BSY plane_no 0 and press the Enter key. where plane_no is the ENET plane number (0 or 1) Example of a MAP response: Request to MAN BUSY ENET Plane:0 Shelf:00 submitted. Request to MAN BUSY ENET Plane:0 Shelf:00 passed.

If the BSY command	Do	
passed	step 13	
failed	step 57	

13 To offline the ENET plane, type

>OFFL plane_no 0

and press the Enter key.

where

plane_no

is the ENET plane number (0 or 1)

Example of a MAP response:

Request to OFFL ENET Plane:0 Shelf:00 submitted. Request to OFFL ENET Plane:0 Shelf:00 passed.

If the OFFL command	Do		
passed	step 14		
failed	step 57		

14 To locate the message switch (MS) chain head card that associates with the ENET plane, type

>TRNSL plane_no 0

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to TRNSL ENET Plane:0 Shelf:00 submitted. Request to TRNSL ENET Plane:0 Shelf:00 passed. ENET Plane:0 Shelf:00 : MS 0 and 1 Card:16 Link:00 Port:000

Note: In the example, the number of the chain head card on the MS is 16. The link number is 0.

15 Record the number of the chain head card and the link number.

16 To access the MS;SHELF level of the MAP display, type

>MS;SHELF

and press the Enter key.

Example of a MAP display:

MS 0 MS 1	essage Switch M	Clock Shel: Slave M Free	f 0 Inter-MS Link 0 1 C F
Shelf (Card 2 Chain) L 2 3 4 5 6 7 8	1 1 1 1 1 1 9 0 1 2 3 4 5	1 1 1 1 1 2 2 2 2 2 2 2 2 5 6 7 8 9 0 1 2 3 4 5 6
MS 0 MS 1			F I F I
17	To access the Cha	n level of the MAF	^o display, type
	>CHAIN card_n	o	
	and press the Ente	r key.	
	where		
	card_no is the card n	umber that you re	corded in step 15
	Example of a MAP	display:	
	Chain 05 Ran MS 0 . 16- MS 1 . 16-	ge Link 0 1 17 DS512 . 17 DS512 .	1
18	To manually busy t	he link on the chai	in on MS 0, type
	>BSY 0 LINK	link_no	
	and press the Ente	r key.	
	where		
	link_no is the link nu	Imber that you rec	corded in step 15
	Example of a MAP	response:	
R	equest to MAN B	USY MS: 0 she	lf: 0 chain:16 link 0
s R	ubmitted. equest to MAN B	USY MS: 0 she	lf: 0 chain:16 link 0 passed.
	If the BSY comm	and	Do
	passed		step 19
	failed		sten 67
			step 07
19	To manually busy t	he link on the chai	in on MS 1, type
	>BSY 1 LINK	link_no	
	and press the Ente	т кеу.	

	link_no is the link number that	you recorded in step 15
20	To confirm the command, typ	e
	>YES	
	and press the Enter key.	
	Example of a MAP response.	
	Request to MAN BUSY MS:	1 shelf: 0 chain:16 link 0
	Request to MAN BUSY MS:	1 shelf: 0 chain:16 link 1 passed.
	If the BSY command	Do
	passed	step 21
	failed	step 67
21	To access the ENET SHELF	evel of the MAP display, type
	>NET;SHELF 0	
	and press the Enter key.	
	where	
	plane_no is the ENET plane nur	nber (0 or 1)
	Example of a MAP display:	
	SHELF 01 Slot 123456 78 Plane 0 0 0 00 Plane 1	1111111 11122222 22222333 333333 90123456 78901234 56789012 345678 CCCCCCCC CCCCCCCC O O
22	To busy all crosspoint cards o	n the shelf, type
	>BSY plane_no ALL	
	and press the Enter key.	
	where	
	plane_no is the ENET plane nur	nber (0 or 1)
	Example of a MAP response.	
	WARNING: This action in ENET Plan SBSY, or CBS Please confirm ("YES"	will be performed on ALL XPT slots e:1 that are MBSY, INSV, OFFL, Y. , "Y", "NO", or "N"):

23 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Request to MAN BSY ALL ENET Plane:1 Shelf:00 submitted. Request to MAN BSY ALL ENET Plane:1 Shelf:00 completed.

If the BSY command	Do
passed	step 21
failed	step 67

24 To offline all crosspoint cards on the shelf, type

>OFFL plane_no ALL

and press the Enter key.

Example of a MAP response:

Request to OFFLINE ALL ENET Plane:1 Shelf:00 submitted. Request to OFFLINE ALL ENET Plane:1 Shelf:00 completed.

At the ENET shelf

25



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

The next action depends on the ENET card that you replace.

lf you	Do
replace an NT9X30 or NT9X31	step 28
replace an NT9X13	step 26
replace an NT9X40	step 30
replace an NT9X26 or NT9X36	step b

- 26 To unseat the NT9X36 (messaging clock) card on the shelf, perform the procedure *Unseating cards in equipment shelves*. The procedure *Unseating cards in equipment shelves* appears in this NTP. Complete the procedure. Wait 20 s and return to this point.
- 27 To reseat the NT9X36 card, perform the procedure *Reseating cards in equipment shelves* in this NTP. Complete the procedure. Wait 20 s and return to this point.

Go to step 33.

28 Power down the NT9X31 card that associates with the ENET shelf. To power down the card, press down and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns on when the converter powers down.

If the CONVERTER OFF LED	Do
is lit	step 29
is not lit	step 67

29 Power down the NT9X30 card that associates with the ENET shelf. To power down the card, press down and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns on when the converter powers down.

If the CONVERTER OFF LED	Do
is lit	step 33
is not lit	step 67

30

ATTENTION

Make sure that you identify connector zone numbers correctly. To identify zone numbers, refer to figure "NT9X40BA/BB connector zone nu,ber" for the NT9X40. Figures "Fiber connector detail" and "Fiber connector receptacle detail" are diagrams of fiber connector components for these cards. These figures are at the end of this chapter.

Make sure that you are at the correct ENET node and interface card, before you disconnect the fiber cables. To identify the ENET node, check the plane and shelf identification. To identify the interface card, check the slot.

- 31 Make sure that each cable has a label that contains the following information:
 - ENET shelf number
 - plane number
 - slot number
 - link number
 - signal type

The signal type can be transmit or receive. If this information is not present, create a label and attach the label to the cable. This label provides information on how to connect the fiber cables to the card.

Example of a label:

ENCO	00	39
10R	04	17T
LTE	000	18
22R	RX	

Label field descriptions

ENCO	ENET plane (0 or 1)
00	cabinet number
39	ENET shelf by the base mounting position number
10R :	slot number and position (R for rear, or F for front)
)4 ;	zone number
17T	link number and the signal type (T for transmit, R for receive)
TE	PM that the cable terminates on
000	PM frame number
18	PM shelf by the base mounting position number
22R 9	slot number and position (R for rear, or F for front)
۶X ع	signal type at the PM end (RX for receive or TX for transmit)
10R = 1 04 = 1 17T = 1 17T = 1 17T = 1 000 = 1 18 = 1 22R = 1 22R = 1	slot number and position (R for rear, or F for front) zone number link number and the signal type (T for transmit, R for receiv PM that the cable terminates on PM frame number PM shelf by the base mounting position number slot number and position (R for rear, or F for front) signal type at the PM end (RX for receive or TX for transm

32



Avoid contamination of the fiber tip surface

DANGER

Make sure that you do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.



DANGER

Fiber cable can become damaged Make sure that you handle fiber cables carefully. Do not crimp fiber cables or bend fiber cables to a radius of less than 3 cm (1.180 in.).

Disconnect the transmit and receive connectors for each fiber cable.

Note: When you disconnect the connectors, place dust caps on the ends of the connectors.

a Grasp the sleeve with two fingers. Carefully push the sleeve toward the frame.



b Turn the connector counterclockwise until the connector pin is in the position shown in the following diagram.



c Carefully pull the connector away from the frame.



Note: Perform the procedure, *Cleaning fiber optic components and assemblies* in this NTP.

33 To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note 1: If you replace the power converter card, make sure that the PWR switch on the replacement power converter is in the OFF position.

Note 2: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

34 The next action depends on the card that you replace.

lf you	Do
replace a NT9X30 or NT9X31	step 35
replace a NT9X26 or NT9X36	step 38
replace a NT9X40	step 37
replace a NT9X13	step 40

35 To power up the NT9X30 card, press up and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns off when the converter powers up.

If the CONVERTER OFF LED	Do
is not lit	step 36
is lit	step 67

36 To power up the NT9X31 card, press up and release the power switch on the faceplate of the card.

Note: The CONVERTER OFF LED turns off when the converter powers up.

If the CONVERTER OFF LED	Do
is not lit	step 40
is lit	step 67

37 When you connect the connectors to the new card, remove the dust caps on the transmit and receive connectors.

Connect the transmit and receive connectors for each fiber cable.

a Align the connector pin and slot with the receptacle slot and pin, in the sequence given, as shown in the following diagram.



b Carefully slide the connector into the receptacle.



c Turn the connector clockwise to lock the connector in place.



d Release the connector. The following figure displays the final connector position.



- **38** To unseat the NT9X13 (processor) card on the shelf side, perform the procedure *Unseating cards in equipment shelves*. The procedure *Unseating cards in equipment shelves* appears in this NTP. Complete the procedure and return to this point.
- **39** To reseat the NT9X13 card on the shelf side, perform the procedure *Reseating cards in equipment shelves*. The procedure *Reseating cards in equipment shelves* appears in this NTP. Complete the procedure and return to this point.

At the MAP terminal

40 To access the Chain level of the MAP display, type

>MS;SHELF;CHAIN card_no

and press the Enter key.

where

card_no

is the card number that you recorded in step 15

41 To return the link on the chain on MS 0 to service, type

>RTS 0 LINK link_no

42

43

44

and press the Enter key.

where

link_no

is the link number that you recorded in step 15

Example of a MAP response:

Request to RTS MS: 0 shelf: 0 chain:16 link 0 submitted. Request to RTS MS: 0 shelf: 0 chain:16 link 0 passed.

If the RTS command	Do
passed	step 42
failed	step 67
To return the link on the chain on	MS 1 to service, type
>RTS 1 LINK link_no	
and press the Enter key.	
where	
link_no is the link number that you	recorded in step 15
If the RTS command	Do
passed	step 43
failed	step 67
To access the NET;SYSTEM level	l of the MAP display, type
>NET;SYSTEM	
and press the Enter key.	
To manually busy the ENET plane	e, type
>BSY plane_no	
and press the Enter key.	
where	
plane_no is the ENET plane number	(0 or 1)
If the BSY command	Do
passed	step 45
failed	step 67

45 The next action depends on the location of the load file. If the load file Do is the same as specified in tables step 46 PMLOADS and ENINV is different from the file step 47 specified in tables PMLOADS and ENINV 46 To load the plane, type >LOADEN plane_no 0 and press the Enter key. where plane_no is the ENET plane number (0 or 1) Example of a MAP response: WARNING Any software load in the ENET will be destroyed. Please confirm ("YES" or "NO"): Go to step 53. 47 To access the CI level of the MAP display, type >QUIT ALL and press the Enter key. 48 To access the disk utility, type >DISKUT and press the Enter key. Example of a MAP response: Disk utility is now active. DISKUT: 49 To list the contents for the volume that contains the loadfile, type >LISTFILE vol name and press the Enter key. where vol name is the name of the volume that contains the loadfile Example of a MAP response:

File information for volume S00DVOL1: {NOTE: 1 BLOCK = 512 BYTES } _____ _____ LASTFILEORIOFILENUM OFMAXFILENAMEMODIFYCODERETPSIZERECORDSRECDATEGCOEININLENCNBLOCKSFILEFILE _____

 0
 0
 F
 277
 3219
 44
 EDRMAC07

 0
 I
 F
 Y
 9494
 4747
 1020
 RAPC03AW_1101_MS

 0
 0
 V
 651
 162
 2048
 MPC402BX

 0
 0
 F
 63
 424
 76
 TDCMPA01

 0
 0
 F
 37
 249
 76
 TTMNA01

 0
 I
 F
 Y
 202934
 101467
 1020
 RAPC03AW_1101_CM

 0
 I
 F
 9494
 4747
 1020
 RBCS35CV_1025_MS

 0
 I
 F
 242454
 121227
 1020
 RBCS35CV_1025_CM

 0
 O
 F
 784
 392
 1024
 MPCX33AB

 0
 O
 F
 314
 2006
 80
 MTULI01

 760128 941101 760104 760104 760104 0 O F 941101 941025 941025 940426 930427 50 To quit the disk utility, type >QUIT and press the Enter key. 51 To return to the NET;SYSTEM level of the MAP display, type >MAPCI;MTC;NET;SYSTEM and press the Enter key. 52 To load the plane, type >LOADEN plane_no 0 filename and press the Enter key. where plane_no is the ENET plane number (0 or 1) filename is the name of the load file Example of a MAP response: WARNING Any software load in the ENET will be destroyed. Please confirm ("YES" or "NO"): 53 To confirm the command, type >YES and press the Enter key. Example of a MAP response: Request to LOADEN ENET Plane:0 Shelf:00 submitted. Request to LOADEN ENET Plane:0 Shelf:00 passed.

54	To return the ENET plane to service, t	ype
	>RTS plane_no	
	and press the Enter key.	
	where	
	plane_no is the ENET plane number (0 o	r 1)
	Example of a MAP response:	
	Request to RTS ENET Plane:0 Request to RTS ENET Plane:0	Shelf:00 submitted. Shelf:00 passed.
	There are no suspect cards.	
	If the RTS command	Do
	passed	step 55
	failed	step 67
55	To access the ENET SHELF level of the term of term	he MAP, type
	>SHELF 0	
	and press the Enter key.	
56	To busy all crosspoint cards on the sh	elf, type
	>BSY plane_no ALL	
	and press the Enter key.	
	plane_no is the ENET plane number (0 o	r 1)
57	To return all crosspoint cards on the s	helf to service, type
	>RTS plane_no ALL	
	and press the Enter key.	
	plane_no is the ENET plane number (0 o	r 1)
	Example of a MAP response:	
	Request to RTS ALL ENET Pla	ne:1 Shelf:00 submitted.
	Request to RTS ALL ENET Pla	ne:1 Shelf:00 completed.
58	To access the ENET SYSTEM level or	f the MAP display, type
	>SYSTEM	
	and press the Enter key.	
59	To clear the deload condition on all cro	osspoint cards in the plane, type
	>DELOAD plane_no 0 CLEAR	

and press the Enter key.

where

plane_no is the ENET plane number (0 or 1)

Example of a MAP response:

Request to CLEAR DELOAD ENET Plane:0 Shelf:00 submitted. Request to CLEAR DELOAD ENET Plane:0 Shelf:00 passed.

60 The next action depends if you recorded a list of deloaded cards in step 8.

lf you	Do
recorded a card list	step 61
did not record a card list	step 64
To access the SHELF level of the M	AP display, type
>SHELF 0	
and press the Enter key.	
To set the first card on the list to the	e deloaded state, type
>DELOAD plane_no slot_no	SET
and press the Enter key.	
where	
plane_no is the ENET plane number (0) or 1)
slot_no is the slot number (8 to 32)	
If all the cards on the list	Do
are deloaded	step 63
are not deloaded	step 64
Repeat step 62 for the next card on	the list.
The next action depends on the rea	son that you perform this procedure.
If a maintenance procedure	Do
directed you to this procedure	step 65
did not direct you to this	step 68

- 66 This procedure instructs you to deload and manually busy a node. Continue this procedure only under special conditions because the mate node has deloaded cards. Consult office personnel or the next level of support. Continue as directed.
 - 67 For additional help, contact the next level of support.
 - **68** The procedure is complete.



NT9X40BA/BB connector zone numbers



Fiber connector detail

The preceding figure displays the type of connector used to connect fibers to an NT9X40 or NT9X45 paddle board.

Fiber connector and receptacle detail



This figure shows the different parts of the connector and receptacle.

6 File processor card replacement procedures

Introduction

This chapter provides card replacement procedures for the file processor (FP). The first section in the chapter provides illustrations of FP shelf designs.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter "Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the FP card(s) the replacement procedure covers.

Common procedures

This section lists common procedures in the FP card replacement procedure. A common procedure is a series of steps that you repeat within maintenance procedures. The procedure for the removal and replacement of a card is an example of a common procedure. Common procedures are in the common procedures chapter in this NTP.

Do not go to the common procedures unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card you replaced
- the date you replaced the card
- the reason you replaced the card
SuperNode Multicomputing Base shelf layouts

Application

This procedure contains the following design diagrams:

- application processor cabinet (APC)
- file processor (FP) shelf
- FP storage device shelf

Figure 1Application processor cabinet with FP



SuperNode Multicomputing Base shelf layouts (continued)

Figure 2File processor shelf

		NTDX15AA Power converter	36F
32R 31R 30R 29R 28R 27R 26R 25R 24R	NT9X19BAFiller faceplateNT9X21ABBus terminatorNT9X19BAFiller faceplateNT9X19BAFiller faceplateNT9X19BAFiller faceplateNT9X19BAFiller faceplateNT9X62AA2-port subrate DS512NT9X26AARemote terminal I/FNT9X26AARemote terminal I/FNT9X26AA2-port subrate DS512	NTDX15AA Power converter NT9X19AA Filler faceplate NT9X14DB 24-Mbyte memory NT9X13LA AP/FP 68030 HPM-based CPU NT9X13LA AP/FP 68030 HPM-based CPU NT9X86AA Dual-port message controller NT9X86AA Dual-port message controller	36F 33F 32F 30F 29F 28F 27F 26F 26F 25F 24F
23R 22R 21R 20R 19R	NT9X19BA Filler faceplate NT9X19BA Filler faceplate NT9X19BA Filler faceplate NT9X19BA Filler faceplate NT9X21AB Bus terminator NT9X21AB Bus terminator	NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory	23F 22F 21F 20F
18R 17R 16R 15R	NT9X19BA Filler faceplate NT9X88AA SCSI I/F processor NT9X88AA SCSI I/F processor NT9X62AA 2-port subrate	NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X87AA Dual-access buffer memory NT9X86AA Dual-port message controller] 18F] 17F] 16F] 15F
14R 13R 12R 11R	NT9X26AA Remote terminal I/F NT9X26AA Remote terminal I/F NT9X62AA 2-port subrate DS512 NT9X88AA SCSI I/F processor	NT9X13LA AP/FP 68030 HPM-based CPU NT9X13LA AP/FP 68030 HPM-based CPU NT9X86AA Dual-port message controller NT9X87AA Dual-access buffer memory] 14F] 13F] 12F] 11F
10R 09R 08R 07R	NT9X88AA SCSI I/F processor NT9X19BA Filler faceplate NT9X21AB Bus terminator NT9X19BA Filler faceplate NT9X19BA Filler faceplate	NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X14DB 24-Mbyte memory NT9X19AA Filler faceplate] 10F 09F 08F 07F
	Paddle boards	NTDX15AA Power converter	_ 04F
		NTDX15AA Power converter	01F

SuperNode Multicomputing Base shelf layouts (end)

Figure 3File processor storage device shelf

r	Paddle b	poards			Cards
			NTDX91	Power converter card	36F
			NTDX91	Power converter card	33F
32R	NT9X19	Filler faceplate	NT9X19	Filler faceplate	32F
31R	NT9X19	Filler faceplate		· · · · · · · · · · · · · · · · · · ·	31F
30R	NT9X19	Filler faceplate			30F
29R	NT9X19	Filler faceplate			29F
28R	NT9X19	Filler faceplate			28F
27R	NT9X89	SDIP			27F
26R	NT9X89	SDIP	NT9X90	Storage device assembly	26F
25R	NT9X19	Filler faceplate			25F
24R	NT9X19	Filler faceplate			24F
23R	NT9X19	Filler faceplate			23F
22R	NT9X19	Filler faceplate			22F
21R	NT9X89	SCSI device I/F PB			21F
20R	NT9X89	SCSI device I/F PB	NT9X90	Storage device assembly	20F
19R	NT9X19	Filler faceplate			19F
18R	NT9X19	Filler faceplate			18F
17R	NT9X19	Filler faceplate			17F
16R	NT9X19	Filler faceplate			16F
15R	NT9X89	SCSI device I/F PB			15F
14R	NT9X89	SCSI device I/F PB	NT9X90	Storage device assembly	14F
13R	NT9X19	Filler faceplate			13F
12R	NT9X19	Filler faceplate			12F
11R	NT9X19	Filler faceplate			11F
10R	NT9X19	Filler faceplate			10F
09R	NT9X89	SCSI device I/F PB			09F
08R	NT9X89	SCSI device I/F PB	NT9X90	Storage device assembly	08F
07R	NT9X19	Filler faceplate	NT9X19AA	Filler faceplate	07F
				_	
			NIDX91	Power converter card	04F
			NTDX91	Power converter card	01F
L <					
	v /.cui				

NT9X89 in a storage device shelf in a file processor

Application

Use this procedure to replace a NT9X89 in a storage device shelf for a SuperNode Multicomputing Base (SMB) file processor (FP). The following table lists the SMB FP.

PEC	Suffix	Card name	Shelf or frame name
NT9X89	AA, BA	SCSI device interface paddle board	FP storage device

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- *Replacing a card*

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.





Replacing a NT9X89 in a storage device shelf in a file processor

At your Current Location

- 1 Obtain a replacement card. Make sure the replacement card and the card you remove have the same PEC and PEC suffix.
- 2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. You must perform this procedure to make sure that the replacement card is compatible with the software load. Complete the procedure and return to this point.

At the MAP terminal

3 To post the FP that contains the card you replace, type

>MAPCI;MTC;PM;POST FP fp_no

and press the Enter key.

where

fp no

is the number of the FP (0 to 99) that contains the card you will replace

Example of a MAP display:

PM FP	SysB O O	ManB 0 0	OffL 14 2	CBsy 0 0	ISTb 5 5	InSv 11 4
FP 20: ISTb	FP20	_QPI0	Plane NoSync	Devices 1SysB		

4 To access the Devices level of the MAP display, type

>DEVICES

and press the Enter key.

Example of a MAP display:

FP 3: ISTb		FP3_SR256	Plane NoSync .	Devices
		CTRL0	CTRL1	DEVICE
DABM		•	•	0 1 2 3 4 5
SCSI	0	.(EN)	.(DIS)	
SCSI	1	.(EN)	.(DIS)	

in a storage device shelf in a file processor (continued)

5 Determine if the NT9X89 card you replace connects to an enabled (EN) or disabled (DIS) SCSI bus.

If the SCSI bus	Do
is enabled	step 6
is disabled	step 7

Note: The EN indicates the SCSI bus is enabled. The DIS indicates the SCSI bus is disabled. CTRL0 (controller 0) corresponds to plane 0 and CTRL1 corresponds to plane 1. The MAP display in step 4 indicates that both SCSI buses on plane 0 are enabled. The MAP display also indicates that both SCSI buses on plane 1 are disabled.

6 To switch enable the SCSI bus that associates with the NT9X89 card you replace, type

>SWEN scsi_no

and press the Enter key.

where

scsi_no

is the number of the enabled SCSI bus (0 or 1)

Example of a MAP response:

FP 1 SwEn SCSI 0: Command request has been submitted.

FP 1 SwEn SCSI 0: Command passed.

If the SWEN command	Do
passed	step 7
failed	step 33

7 To manually busy the disabled SCSI bus, type

>BSY SCSI scsi_no

and press the Enter key.

where

scsi_no

is the number of the disabled SCSI bus (0 or 1)

Example of a MAP response:

FP 1 Busy SCSI 0: Command request has been submitted. FP 1 Busy SCSI 0: Command passed.

33

8 To query the SCSI components of the FP, type

>QUERYFP SCSI scsi_no

and press the Enter key.

where

scsi_no is the number of the disabled SCSI bus (0 or 1)

Example of a MAP response:

Card	Firmware	Ctrl	SCSI	Dev	Quad	Shelf	Slot	Status
SIP	SXFW35CV	0	0	-	0	0	11	InSv
SDIP	910822	0	0	0	0	3	8	SysB
SIP	SXFW35CV	1	0	-	1	0	16	InSv
SDIP	910822	1	0	0	0	3	9	InSv

- **9** Record the following information for the NT9X89 card (SDIP) you replace:
 - SCSI number
 - device number
 - quadrant location
 - shelf number
 - slot number

Note: The SCSI number appears under the SCSI header in the MAP response example in step 8. The device number appears under the Dev header. The quadrant number appears under the Quad header. The shelf number appears under the Shelf header. The slot number appears under the Slot header.

10 To query the device that associates with the NT9X89 card that you replace, type

>QUERYFP DEV scsi_no dev_no

and press the Enter key.

where

scsi_no

is the SCSI number (0 or 1) you recorded in step 9

in a storage device shelf in a file processor (continued)

dev_no

is the device number you recorded in step 9

Example of a MAP response:

Dev	Name	SCSI	Dev	Туре	Quad	Shelf	Slot	Status	
									-
DK00)	0	0	dk	0	3	8	InSv	

- 11 Record the following information for the storage device that associates with the NT9X89 card (SDIP) you replace:
 - device name
 - device type

Note: The device name appears under the Dev Name header of the MAP response that the system generated in step 10. The device type appears under the Type header.

If the device type	Do
is dk	step 12
is ct	step 17

12 Determine if the disk drive is a member of a shadow set.

Note: Shadow sets are datafilled in table SHADOW.

If the disk drive	Do
is a member of a shadow set	step 13
is not a member of a shadow set	step 17

13 Determine the name of the shadow set.

14 To access the shadow utility for the FP on which the disk drive resides, type

>SHADOWUT FP fp_no

and press the Enter key

where

fp_no

is the number of the FP (0 to 99) that contains the disk drive

Example of a MAP response:

```
FP22 is now node of reference
Disk shadowing utility is now active
SHADOWUT; FP22
```

```
15
      To stop the shadow set member, type
      >STM ss_name device_name
      and press the Enter key.
      where
         ss_name
           is the name of the shadow set (SS00 or SS01)
         device name
           is the device name you recorded in step 11
      Example input:
      >STM SS00 DK02
      Example of a MAP response:
    * *
    *** WARNING:
                                                           * * *
    *** If this is the last in-service member then File ***
    * * *
                                                           * * *
         Processing will no longer be available on the
    * * *
         shadow set: SS00
                                                           * * *
    * *
    Do you wish to proceed?
    Please confirm ("Yes", "Y", "No", or "N"):
16
      To confirm the command, type
      >YES
      and press the Enter key.
      Example of a MAP response:
     Ok, Shadow Set Member stopped.
    Approximately 1 minute to complete.
      Go to step 18.
17
      To manually busy the storage device, type
      >BSY DEV scsi_no dev_no
      and press the Enter key.
      where
         scsi no
           is the SCSI number you recorded in step 9
         dev_no
           is the device number you recorded in step 9
      Example input:
      >BSY DEV 0 1
```

Example of a MAP response:

FP 1 Busy DEV 0 1: Command request has been submitted. FP 1 Busy DEV 0 1: Command passed.

If the BSY command	Do
passed	step 18
failed	step 33
To offline the device, type	
>OFFL DEV scsi_no dev	_no
and press the Enter key.	
where	
scsi_no is the SCSI number you re	ecorded in step 9
dev_no is the device number you	recorded in step 9
Example input:	
>OFFL DEV 0 1	
Example of a MAP response:	
FP 1 Offline DEV 0 1: Con submitted. FP 1 Offline DEV 0 1: Con	mmand request has been mmand passed.
If the OFFL command	Do
passed	step 19
failed	step 33

At the storage device shelf

18

- **19** Locate the NT9X89 card that you must replace.
- 20 Determine the state of the LEDs on the card.

lf	Do
no LEDs are lit	step 21
one or both LEDs are lit	step 33

- 21 Loosen the two screws that secure the connector to the back of the card.
- **22** To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **23** Tighten the screws that secure the connector at the back of the card.

At the MAP terminal

24 To test the SCSI bus you busied in step 7, type

>TST SCSI scsi_no

and press the Enter key.

where

scsi_no is the number of the disabled SCSI bus (0 or 1)

Example of a MAP response:

FP 1 Test DEV 0 1: Command request has been submitted. FP 1 Test DEV 0 1: Command passed.

If the TST command	Do
passed	step 25
failed	step 33
To return the SCSI bus to >RTS SCSI scsi_no and press the Enter key. where	o service, type
scsi_no is the number of th Example of a MAP respo	ne disabled SCSI bus (0 or 1) <i>nse:</i>
FP 1 RTS DEV 0 1: FP 1 RTS DEV 0 1:	Command request has been submitted. Command passed.
If the RTS command	Do
passed	step 26
	aton 22

>BSY DEV scsi_no dev_no

26

25

in a storage device shelf in a file processor (continued)

and press the Enter key.

where

scsi_no

is the SCSI number you recorded in step 9

dev_no is the device number you recorded in step 9

Example input:

>BSY DEV 0 1

Example of a MAP response:

FP 1 Busy DEV 0 1: Command request has been submitted. FP 1 Busy DEV 0 1: Command passed.

If the BSY command	Do	
passed	step 27	
failed	step 33	

27 Determine the type of storage device you busied in step 17.

If the device type	Do
is dk	step 28
is ct	step 32

28 Determine if the disk drive is a member of a shadow set.

If the disk drive	Do
is a member of a shadow set	step 29
is not a member of a shadow set	step 32

29 To start the shadow set member, type

>SM ss_name device_name FORCE

and press the Enter key.

where

ss_name

is the name of the shadow set (SS00 or SS01)

device_name

is the name of the shadow set member you stopped in step 15

Example input:

>SM SS00 DK02 FORCE Example of a MAP response:

The member will be started with the following parameter settings:

Node name : FP2 Shadow set name: SS00 Device name : DK02 Transfer length: Optimal Interval : 0 Synchronization: Default Force : NO

Do you want to continue? Please confirm ("YES", "Y", "NO", or "N"):

30 To confirm the command, type >YES and press the Enter key. *Example of a MAP response:*

OK, Shadow Set Member start initiated.

If the SM command	Do
passed	step 31
failed	step 33
To quit the shadow utility,	уре
>QUIT	
and press the Enter key.	
Go to step 34.	
To return the device to ser	vice, type
>RTS DEV scsi_no	dev_no
and press the Enter key.	
where	
scsi_no is the SCSI numbe	you recorded in step 9
dev_no is the device numb	er you recorded in step 9

31

32

Example of a MAP response:

FP 1 RTS DEV 0 1: Command request has been submitted. FP 1 RTS DEV 0 1: Command passed.

If the RTS command	Do
passed	step 34
failed	step 33

33 For additional help, contact the next level of support.

34 The procedure is complete.

NT9X90 in a storage device shelf in a file processor

Application

Use this procedure to replace an NT9X90 in a storage device shelf for a SuperNode Multicomputing Base (SMB) file processor (FP). The following table lists the SMB FP.

PEC	Suffix	Card name	Shelf or frame name
NT9X90	AA	Storage device assembly (600-Mbyte disk)	FP storage device
NT9X90	AB	Storage device assembly (2.1-Gbyte disk)	FP storage device
NT9X90	BA	Storage device assembly (1.2-Gbyte DAT)	FP storage device

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedure:

• Verifying load compatibility of SuperNode cards

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.



Summary of Replacing a NT9X90 in a storage device shelf in a file processor

Replacing a NT9X90 in a storage device shelf in a file processor

At your current location

- 1 Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.
- 2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. You must perform this procedure to make sure that the replacement card is compatible with the software load. Complete the procedure and return to this point.

At the MAP terminal

3 To post the FP that contains the card you will replace, type

>MAPCI;MTC;PM;POST FP fp_no

and press the Enter key.

where

```
fp no
```

is the number of the FP (0 to 99) that contains the card you will replace

Example of a MAP display:

PM FP	SysB 0 0	ManB 0 0	OffL 14 2	CBsy 0 0	ISTb 5 5	InSv 11 4
FP 20: NoSync	FP20 1Sys	_QPI0 B	Plane	Device	sISTb	

To access the Devices level of the MAP display, type

>DEVICES

and press the Enter key.

Example of a MAP display:

FP 3: ISTb		FP3_SR256	Plane NoSync	Devices
		CTRL0	CTRL1	DEVICE
DABM		•		0 1 2 3 4 5
SCSI	0	.(EN)	.(DIS)	
SCSI	1	.(EN)	.(DIS)	

5 To query the device components for the FP, type

>QUERYFP DEV ALL ALL

and press the Enter key.

4

Example of a MAP response:

Dev Name	SCSI	Dev	Туре	Quad	Shelf	Slot	Status
dk00	0	0	dk	0	2	8	InSv
CT01	0	1	ct	2	2	20	InSv
DK02	0	2	dk	0	3	8	InSv
DK03	0	3	dk	2	3	20	InSv
DK10	1	0	dk	1	2	14	SysB
CT11	1	1	ct	3	2	26	InSv
DK12	1	2	dk	1	3	14	InSv
DK13	1	3	dk	3	3	26	InSv

6 In the MAP display the system generated in step 5, identify the device you will replace. Record the following information for the device:

- SCSI number
- device number
- device type
- quadrant location
- shelf number
- slot number

Note: The SCSI number appears under the SCSI header on the MAP display. The device number appears under the Dev header. The device type appears under the Type header. The quadrant location appears under the Quad header. The shelf number appears under the Shelf header. The slot number appears under the Slot header.

If the device	Do	
is dk	step 7	
is ct	step 16	
The next action depends on why you perform this procedure.		

7

lf	Do
the procedure <i>Recovering disks</i> <i>in a shadow set after loss of both</i> <i>disks</i> directed you to this proce- dure	step 18
other than listed here	step 8

8 Determine if the disk drive is a member of a shadow set.

Note: Datafill shadow sets in table SHADOW.

If the disk drive	Do			
is a member of a shadow	set step 9			
is not a member of a shace	low set step 1	6		
Determine the name of the s	hadow set.			
Note: When you display recovery procedure direct procedure is <i>Recovering</i> of the second se	and record the sh s you to this proce <i>disks in a shadow</i>	adow set na edure. The set after los	ame, the SCP SCP recover	у
To access the shadow utility	for the FP that co	ntains the d	lisk drive, type	9
>SHADOWUT FP fp_no				
and press the Enter key.				
where				
fp_no is the number of the F	P (0 to 99) that c	ontains the	disk drive	
To display information on the	shadow set, type	9		
>DIS ss_name				
and press the Enter key.				
where				
ss_name is the name of the sha	adow set (SS00 o	r SS01)		
Example of a MAP response); ;			
Information about sh	adow set #0:			
Node name: Shadow set name Set definition state Set operational stat Synchronization stat Multi-Writes: Capacity (blocks) Transfer length Interval:	FP2 SS00 RUNN e: IN S us: SYNC Serial 1244 Opti 0	ING ERVICE HRONIZED 655 mal		
Information about me	mber disks:	======	====	
Name State DK02 INSV Perm DK13 INSV	SyncState Yes Yes	Reads 0	Writes O	

in a storage device shelf in a file processor (continued)

12	Record the shadow set member that has faults
12	<i>Note:</i> In the MAP display example in step 11, the shadow set member that
	has faults is DK02.
13	To stop the shadow set member, type
	>STM ss_name device_name
	and press the Enter key.
	where
	<pre>ss_name is the name of the shadow set (SS00 or SS01)</pre>
	<pre>device_name is DK (disk drive) followed by two digits</pre>
	Example input:
	>STM SS00 DK02
	Example of a MAP response:
	<pre>************************************</pre>
14	To confirm the command, type
	>YES
	and press the Enter key.
	Example of a MAP response:
	Ok, Shadow Set Member stopped. Approximately 1 minute to complete.
15	To quit the shadow utility, type
	>QUIT
	and press the Enter key.
	Go to step 17.
16	To manually busy the device that has faults, type
	>BSY DEV scsi_no dev_no
	and press the Enter key.
	where

17

NT9X90 in a storage device shelf in a file processor (continued)

scsi_no
 is the SCSI number you recorded in step 6
dev_no
 is the device number you recorded in step 6

Example of a MAP response:

FP 1 Busy DEV 0 1: Command request has been submitted. FP 1 Busy DEV 0 1: Command passed.

If the BSY command	Do
passed	step 17
failed	step 48
To offline the affected device, type	
>OFFL DEV scsi_no dev_no	
and press the Enter key.	
where	
<pre>scsi_no is the SCSI number you recorded</pre>	ed in step 6
<pre>dev_no is the device number you record</pre>	ded in step 6
Example input:	
>OFFL DEV 0 1	
Example of a MAP response:	

FP 1 Offline DEV 0 1: Command request has been submitted. FP 1 Offline $\,$ DEV 0 1: Command passed.

If the OFFL command	Do
passed	step 18
failed	step 48

At the storage device shelf

18 Determine the state of both LEDs on the storage device.

lf	Do	
no LEDs are lit	step 19	

in a storage device shelf in a file processor (continued)



20 Carefully pull the device toward you. Continue to pull until the locking latch at the back of the storage device stops the device from clearing the shelf.



- 21 Close the locking levers.
- **22** Grasp the carrying handle for the storage device , and use your thumb to press the locking latch at the same time. Slide the storage device straight out from the shelf.



in a storage device shelf in a file processor ((continued)
---	-------------

Deter	Determine the type of device you replaced.				
lf th	e device type		Do		
is c	lk		step 31		
is o	ct		step 46		
Dete	mine if the disk o	drive is a membe	er of a shadow set.		
lf th	e disk drive		Do		
is a	member of a sh	nadow set	step 32		
is n	ot a member of	a shadow set	step 36		
>SHA and p wher	Cess the shadow DOWUT FP f press the Enter ke e p_no is the number c	p_no py. of the FP (0 to 99) that contains the disk drive, type		
To sta	art the shadow se	et member you s	topped in step 13, type		
>SM	ss_name de	vice_name F	ORCE		
and p	oress the Enter Ke	ey.			
S	s_name is the name of t	the shadow set (SS00 or SS01)		
d	evice_name is DK (disk driv	e) followed by tw	o digits		
Exan	nple input:	-, , -			
>SM	SS00 DK02	FORCE			
Exan	nple of a MAP res	sponse:			

34

35

36

NT9X90 in a storage device shelf in a file processor (continued)

The member will be started with the following parameter settings: Node name : FP2 Shadow set name: SS00 Device name : DK02 Transfer length: Optimal : 0 Interval Synchronization: Default Force : NO Do you want to continue? Please confirm ("Yes", "Y", "No", or "N"): To confirm the command, type >YES and press the Enter key. Example of a MAP response: OK, Shadow Set Member start initiated. If the SM command Do step 35 passed failed step 48 To quit the shadow utility, type >QUIT and press the Enter key. Go to step 49. To test the storage device, type >TST DEV scsi_no dev_no and press the Enter key. where scsi_no is the SCSI number you recorded in step 6 dev no is the device number you recorded in step 6 Example of a MAP response:

FΡ	1	Test	DEV	0	1: Command request has been submitted	d.
FΡ	1	Test	DEV	0	1: Command passed.	

37

38

If the TST command	Do
passed	step 37
failed	step 48
To access the disk administration	n utility, type
>DISKADM disk_name nod	le_name
and press the Enter key.	
where	
disk_name is the name of the disk	
node_name is the FP name	
Example input:	
>DISKADM DK13 FP3	
Example of a MAP response:	
Start up command sequend This may take a few minu Administration of device DISKADM; FP3	ce is in progress. utes. e DK13 on FP3 is now active.
To format the disk, type	
>FORMATDISK disk_name	
and press the Enter key.	
where	
disk_name is the name of the disk	
Example of a MAP response:	

```
* * * * *
                        WARNING *****
        Formatting of DK13 will
        destroy the contents of the disk.
        The formatting will:
             allocate 3 spare or alternate sectors per track,
            allocate 16 spare or alternate tracks per disk,
            use the G defect list,
            assign DK13 as the name for the disk.
            perform quick format,
            exclude force option.
        Do you want to continue?
        Please confirm ("Yes", "Y", "No", or "N"):
39
      To confirm the command, type
      >YES
      and press the Enter key.
40
      From your office records, determine the number, size, and type of volumes
      the replacement disk requires.
41
      To create a disk volume, type
      >CREATEVOL vol name vol size vol type
      and press the Enter key.
      where
         vol name
            is the name of the disk volume
         vol size
            is the size of the volume in Mbytes
         vol type
            is the type of volume (STD or FTFS)
      Example input:
      >CREATEVOL MLSUP 60 FTFS
      Example of a MAP response:
       FTFS volume MLSUP will be created on DK13.
       Volume size:
                                         60 megabytes
       First FID table extent size: 32754 entries
       Volume Free Space Map size:
                                       7936 segments
       Do you want to continue?
       Please confirm ("Yes", "Y", "No", or "N"):
```

in a storage device shelf in a file processor (continued)

- 42 To confirm the command, type >YES and press the Enter key. 43 Repeat steps 41 and 42 for each disk volume required. 44 Restore the backup files in the disk drive that has faults to the replacement disk drive volumes. 45 To quit the disk administration utility, type >QUIT and press the Enter key. Go to step 47. 46 To test the device, type >TST DEV scsi_no dev_no and press the Enter key. where scsi_no is the SCSI number you recorded in step 6 dev_no is the device number you recorded in step 6 Example of a MAP response: FP 1 Test DEV 0 1: Command request has been submitted. FP 1 Test DEV 0 1: Command passed. If the TST command Do passed step 47 failed step 48 47 To return the device to service, type
 - To return the device to service, type >RTS DEV scsi_no dev_no and press the Enter key. where scsi_no is the SCSI number you recorded in step 6 dev_no is the device number you recorded in step 6 Example of a MAP response:

FP 1 RTS DEV 0 1: Command request has been submitted. FP 1 RTS DEV 0 1: Command passed.

If the RTS command	Do	
passed	step 49	
failed	step 48	

48 For additional help, contact the next level of support.

49 The procedure is complete.

NT9X91 in a storage device shelf in a file processor

Application

Use this procedure to replace an NT9X91 in a storage device shelf for a SuperNode Multicomputing Base (SMB) file processor (FP). The following table lists the SMB FP.

PEC	Suffix	Card name	Shelf or frame name
NT9X91	AA	Storage device power converter	FP storage device
NT9X91	AB	Power converter +5 V +12 V	FP storage device

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- Replacing a card

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing a NT9X91 in a storage device shelf in a file processor



Replacing a NT9X91 in a storage device shelf in a file processor

At your current location

- 1 Obtain a replacement card. Make sure the replacement card and the card you replace have the same PEC and PEC suffix.
- 2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. You must perform this procedure to make sure that the replacement card is compatible with the software load. Complete the procedure and return to this point.

At the MAP terminal

3 To post the FP that contains the card you will replace, type

>MAPCI;MTC;PM;POST FP fp_no

and press the Enter key.

where

```
fp no
```

is the number of the FP (0 to 99) that contains the card you will replace

Example of a MAP display:

PM FP	SysB O O	ManB 0 0	OffL 14 2	CBsy 0 0	ISTD 5 5	InSv 11 4
FP 20:	FP20 OPI	0 F	lane D	DevicesIS	Tb	

FP 20: FP20_QPI0 NoSync 1SysB

To access the Devices level of the MAP display, type

>DEVICES

4

and press the Enter key.

Example of a MAP display:

FP 3: ISTb	FP3_SR256	Plane NoSync .	Devices
	CTRL0	CTRL1	DEVICE
DABM			0 1 2 3 4 5
SCSI 0	.(EN)	.(DIS)	
SCSI 1	.(EN)	.(DIS)	

At the MAP terminal

5 To post the device that the NT9X91 card powers, type

>POSTDEV scsi_bus_no device_no

and press the Enter key.

where

scsi_bus_no is the number of the SCSI bus (0 or 1)

device_no

is the number of the device (0 to 5)

Example of a MAP display:

DK12		Туре	DISK	SCSI bus	1 Device	2
Shelf	2	Status	InSv	Shadow set	Use SHADOWUT	
Quad	1	Drive	On Line	User	SYSTEM	

6 To query the device, type

>QRYDEV

and press the Enter key.

Example of a MAP response:

Dev Name	SCSI	Dev	Туре	Quad	Shelf	Slot	Status
dk00	0	0	dk	0	3	8	InSv

- 7 From the MAP display the system generated in step 6, record the following information for the device:
 - SCSI number
 - device number
 - device type
 - quadrant location
 - shelf number
 - slot number

Note: The SCSI number appears under the SCSI header on the MAP display. The device number appears under the Dev header. The device type appears under the Type header. The quadrant location appears under the Quad header. The shelf number appears under the Shelf header. The slot number appears under the Slot header.

If the device	Do
is dk	step 8
is ct	step14

in a storage device shelf in a file processor (continued)

8 Determine if the associated disk drive is a member of a shadow set.

Note: Datafill shadow sets in table SHADOW.

9

If the disk drive	Do		
is a member of a shadow set	step 9		
is not a member of a shadow set	step 14		
To access the shadow utility for the FI	on which the dis	sk drive re	sides, typ
>SHADOWUT FP fp_no			
and press the Enter key.			
where			
<pre>fp_no is the number of the FP on whi</pre>	ch the disk drive	resides	
To display information on the shadow	set, type		
>DIS ss_name			
and press the Enter key.			
where			
<pre>ss_name is the name of the shadow set</pre>	(SS00 or SS01)		
Example of a MAP response:			
Information about shadow set Node name: FI Shadow set name: Set definition state: Synchronization status: Multi-Writes: Se Capacity (blocks) Transfer length: Interval: 0	#0: 22 SS00 RUNNING IN SERVICE SYNCHRONIZ 21244655 Optimal	ED	
Information about member dis	sks:		
Name State DK02 INSV	SyncState Yes	Reads	Writes
Perm DK13 INSV Information about member dis	Yes sks:	0	0
lf		Do	
another shadow set member is in	service	ste	p 11
no other shadow set member is ir	service	ste	p 26

11



DANGER Possible loss of service The removal of this device from service causes a loss of service for applications that use this file processor (FP) node.

To stop the shadow set member that the NT9X91 card powers, type

```
>STM ss_name device_name
```

and press the Enter key.

where

ss_name is the name of the shadow set (SS00 or SS01)

device_name is DK (disk drive) followed by two digits

Example input:

>STM SS00 DK02

Example of a MAP response:

12 To confirm the response, type

>YES

and press the Enter key. Example of a MAP response:

Ok, Shadow Set Member stopped.

Approximately 1 minute to complete.

13 To quit the shadow utility, type
QUIT
and press the Enter key.
Go to step 15.
NT9X91

in a storage device shelf in a file processor (continued)

```
14 To manually busy the affected storage device, type
>BSY DEV scsi_no dev_no
and press the Enter key.
where
scsi_no
is the SCSI number you recorded in step 7
dev_no
is the device number you recorded in step 7
Example of a MAP response:
```

FP 1 Busy DEV 0 1: Command request has been submitted. FP 1 Busy DEV 0 1: Command passed.

At the storage device shelf

15

16

17



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle cards. The wrist strap protects the cards against static electricity damage.

To power down the NT9X91, press down and release the switch on the faceplate of the NT9X91.

If the alarm light on the power converter	Do		
lights	step 16		
does not light	step 26		
To replace the card, perform the pro document.	cedure <i>Replacing a card</i> in this		
To power up the power converter, lift aceplate.	and release the power switch on the		
If the alarm light on the power converter	Do		
If the alarm light on the power converter turns off	Do step 18		

NT9X91 in a storage device shelf in a file processor (continued)

Dete	ermine the type of device you note	d in step 7.
lf t	he device	Do
is	dk	step 19
is	ct	step 24
Dete	ermine if the disk drive is a membe	er of a shadow set.
lf t	he disk drive	Do
is	a member of a shadow set	step 20
is	not a member of a shadow set	step 24
MAP	terminal	
To a	ccess the shadow utility of the FP	that contains the disk drive, type
>SH	ADOWUT FP fp_no	
and	press the Enter key.	
whe	pre	
	fp_no is the number of the FP (0 to 99) that contains the disk drive
To s	tart the shadow set member, type	
>SM	ss_name device_name	
and	press the Enter key.	
whe	pre	
ss_r	name is the name of the shadow s	et (SS00 or SS01)
	device_name is DK (disk drive) followed by tw	vo digits
Exa	mple input:	
>SM	SS00 DK02	
Exa	mple of a MAP response:	

NT9X91 in a storage device shelf in a file processor (continued)

```
The member will be started with the following
        parametersettings:
        Node name
                        : FP2
        Shadow set name: SS00
        Device name : DK02
        Transfer length: Optimal
        Interval : 0
        Synchronization: Default
        Force
                         : NO
        Do you want to continue?
        Please confirm ("Yes", "Y", "No", or "N"):
22
      To confirm the command, type
      >YES
      and press the Enter key.
       Example of a MAP response:
       OK, Shadow Set Member start initiated.
       If the device
                                       Do
       returned to service
                                       step 23
       did not return to service
                                       step 26
23
      To quit the shadow utility, type
      >QUIT
      and press the Enter key.
      Go to step 27.
24
      To test the storage device, type
      >TST DEV scsi_no dev_no
      and press the Enter key.
       where
          scsi no
            is the SCSI number you recorded in step 7
          dev no
            is the device number you recorded in step 7
       Example of a MAP response:
```

25

NT9X91 in a storage device shelf in a file processor (end)

FP 1 Test DEV 0 1: Command request has been submitted. FP 1 Test DEV 0 1: Command passed.

If the TST command	Do
passed	step 25
failed	step 26
To return the storage dev >RTS scsi_no dev_ and press the Enter key. where scsi_no is the SCSI number dev_no is the device numb	ice to service, type _no er you recorded in step 7 per you recorded in step 7
Example of a MAP respo	nse:
FP 1 RTS DEV 0 1: FP 1 RTS DEV 0 1:	Command request has been submitted. Command passed.
If the RTS command	Do
passed	step 27

step 26

failed

26 For additional help, contact the next level of support.

27 The procedure is complete.

System cards in a file processor

Application

Use this procedure to replace the following cards in a SuperNode Multicomputing Base (SMB) file processor (FP).

PEC	Suffix	Card name	Shelf or frame name
NT9X13	LA	AP/FP 68030 HPM-based CPU card	FP
NT9X14	DB	24-Mbyte memory card	FP
NT9X21	AB	Bus terminator paddle board	FP
NT9X26	AA, AB	Remote terminal interface paddle board	FP
NT9X62	AA	Two-port subrate DS512 paddle board	FP
NT9X86	AA, AB	Two-port message controller card	FP
NT9X87	AA	Two-access buffer memory card	FP
NT9X88	AA	SCSI interface processor paddle board	FP
NTDX15	AA	Power converter ±5 V	FP
NTDX15	AB	Global power converter $\pm 5 \text{ V}$	FP

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the Index. The index contains a list of the cards, shelves, and frames documented in this card replacement book.

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

The procedure refers to the following common procedures:

- Verifying load compatibility of SuperNode cards
- Replacing a card

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.



Summary of Replacing System cards in a file processor

Replacing System cards in a file processor

At your current location

- 1 Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.
- 2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. You must perform this procedure to make sure the replacement card is compatible with the software load. Complete the procedure and return to this point.

At the MAP terminal

3 To post the FP that contains the card you will replace, type

>MAPCI;MTC;PM;POST FP fp_no

and press the Enter key.

where

fp no

is the number of the FP (0 to 99) that contains the card you will replace

Example of a MAP display:

FP 20: FP20_QPI0 Plane Devices InSv . .

4 To access the Plane level of the MAP display, type

>PLANE

and press the Enter key.

Example of a MAP display:

Sync		CP	U	Jam	DRAM	Port	Ms	gCh	ΡL	ink
No	state	act			0123	Card	0	1	0	1
Plane O	•	A								
Plane 1	•	I	No			F	L	L	Ρ	Ρ

5 Determine if the card you will replace is on the active or the inactive plane.

Note: The letter A under the Act header indicates the plane is active. The letter I indicates the plane is inactive.

If the card	Do	
is on the active plane	step 6	

If the card	Do
is on the inactive plane	step 13
Determine if the inactive CPU is	s jammed.
<i>Note:</i> The word YES under jammed. The word NO indic	the Jam header indicates that the CPU is cates that the CPU is not jammed.
If the inactive CPU	Do
is jammed	step 7
is not jammed	step 8
Determine why the inactive CP have permission, release the ja type	U is jammed before you proceed. When yo monotic the inactive CPU. To release the jam,
>MATEJAM RELEASE	
and press the Enter key.	
Example of a MAP response:	
FP 3 Jam Mate: Request FP 3 Jam Mate: Command The inactive CPU is not	has been submitted. d Completed. t jammed.
Determine if the FP is synchror	nized.
<i>Note:</i> The word YES under synchronized. The word NC	the Sync header indicates that the FP indicates that the FP did not synchronize.
If the FP	Do
If the FP is synchronized	Do step 10
If the FP is synchronized is not synchronized	Do step 10 step 9
If the FP is synchronized is not synchronized To synchronize the FP, type	Do step 10 step 9
If the FP is synchronized is not synchronized To synchronize the FP, type >SYNC	Do step 10 step 9
If the FP is synchronized is not synchronized To synchronize the FP, type >SYNC and press the Enter key.	Do step 10 step 9

FP 3 Synchronization:	Request	has been submitted.
FP 3 Synchronization:	Command	completed.
The PM is now running	in sync	

If the SYNC command	Do
passed	step 10
failed	step 62

10 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

FP 3 Activity Switch: Request has been submitted. FP 3 Activity Switch: Command completed. CPU 1 is now running active.

If the SWACT command	Do	
passed	step 11	
failed	step 62	
		_

11 To match the memories of the CPUs, type

>MATCH

and press the Enter key.

Example of a MAP response:

FP 3 Memory Match: Request has been submitted. FP 3 Memory Match: Command Completed. Memory match was executed whilethe node was running in SYNC. Memory contents have been matched across the two planes

- **12** Determine if the system completed the following conditions as a result of the memory match:
 - The memory match was successful.
 - The system did not generate any mismatch logs (AP317, AP318, FP354).
 - The FP remained synchronized, indicated by YES or NoOvr under the Sync header on the MAP display.

If the system	Do
completed the conditions	step 13
did not complete the conditions	step 62

13 To jam the inactive CPU, type

>MATEJAM SET

and press the Enter key.

Example of a MAP response:

FP 3 Jam Mate: Request has been submitted. FP 3 Jam Mate Command completed. The inactive CPU is jammed

14 To drop synchronization, type

>DPSYNC

and press the Enter key.

Example of a MAP response:

If you intend to jam the inactive CPU, Please do so before dropping synchronization. Please confirm ("YES" or "NO"):

15 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

FP 3 Drop synchronization: Request has been submitted. FP 3 Drop synchronization: Command completed.

Now running in simplex mode with CPU 1 active.

If the DPSYNC command	Do
passed	step 16

	If the DPSYNC command	Do	
	failed	step 62	
6	To access the Devices level of the	e MAP display, type	
	>DEVICES		
	and press the Enter key.		
	Example of a MAP display:		
	FP 3:FP3_SR256PlaneDevic ISTbNoSync .	es	
	CTRL0CTRL1 DEVICE DABM0 1 2 3 4 5 SCSI 0 .(EN) . (DIS) SCSI 1 .(EN) . (DIS)-		
7	Determine if the system disabled	both SCSI buses on the inactive plane.	
	<i>Note:</i> The CTRL0 (controller corresponds to plane 1. The E DIS indicates the SCSI bus is step 16, both SCSI buses on pl plane 1 are disabled.	0) corresponds to plane 0 and CTRL1 EN indicates the SCSI bus is enabled. The disabled. In the MAP display example in lane 0 are enabled and both SCSI buses o	
	If both SCSI buses on the inac tive plane	c- Do	
	are disabled	step 19	
	are enabled	step 18	
8	To switch enable the SCSI bus or	n the inactive plane, type	
	>SWEN scsi_no		
	and press the Enter key.		
	where		
	<pre>scsi_no is the number of the enabled SCSI bus (0 or 1) on the inactive plane</pre>		
	Example of a MAP response:		
	FP 1 SwEn SCSI 0: Comma FP 1 SwEn SCSI 0: Comma	and request has been submitted. and passed.	
	If the SWEN command	Do	
	passed	step 19	
	failed	step 62	

19 To manually busy the controller on the inactive plane, type

>BSY CTRL ctrl_no

and press the Enter key.

where

ctrl_no

is the number of the controller (0 or 1) on the inactive plane

Example of a MAP response:

FP 1 Busy CTRL 0: Command request has been submitted. FP 1 Busy CTRL 0: Command passed.

If the BSY command	Do
passed	step 20
failed	step 62

20

To access the Plane level of the MAP display, type

>PLANE

and press the Enter key.

Example of a MAP display:

Sync	CI	Ω	Jam	DRAM	Port	Ms	gCh	PL	ink
No	state	e act		0123	Card	0	1	0	1
Plane O		A							
Plane 1	•	I	Yes		•	•	•	•	•

21 Determine if the inactive FP plane is 0 or 1.

Note: The letter A under the Act header indicates that the plane is active. The letter I indicates the plane is inactive.

If the inactive plane	Do
is 0	step 22
is 1	step 24

22 To manually busy the P-links between plane 0 and P-link 0, type

>BSY PORT 0 PLINK 0

and press the Enter key.

Example of a MAP response:

FP 3, Port 0 PLink 0, Busy PLink: Request has been
submitted.
FP 3, Port 0 Plink 0, Busy PLink: Command completed.
completed.

The PLink is manually busy.

If the BSY command	Do
passed	step 23
failed	step 62
To reconcilly by a the D links bet	waa alaa oo ah Diini oo taa

23

To manually busy the P-links between plane 0 and P-link 1, type

>BSY PORT 0 PLINK 1 and press the Enter key.

Example of a MAP response:

FP 3, Port 0 PLink 1, Busy PLink: Request has been submitted. FP 3, Port 0 Plink 1, Busy PLink: Command completed. The PLink is manually busy.

If the BSY command	Do
passed	step 26
failed	step 62

 24
 To manually busy the P-links between plane 1 and P-link 0, type

 >BSY PORT 1 PLINK 0

 and press the Enter key.

Example of a MAP response:

FP 3, Port 1 PLink 0, Busy PLink: Request has been submitted. FP 3, Port 1 Plink 0, Busy PLink: Command completed. The PLink is manually busy.

If the BSY command	Do
passed	step 25
failed	step 62

25 To manually busy the P-links between plane 1 and P-link 1, type

>BSY PORT 1 PLINK 1

and press the Enter key.

Example of a MAP response:

FP 3, Port 1 PLink 1, Busy PLink: Request has been submitted. FP 3, Port 1 Plink 1, Busy PLink: Command completed.

The PLink is manually busy.

If the BSY command	Do
passed	step 26
failed	step 62

At the FP shelf

26



WARNING Static electricity damage

electricity damage.

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static

Press down and release the power switch on the faceplate of the NTDX15 power converter. This procedure powers down the quadrant that corresponds to the card you replace.

If the alarm light on the power converter	Do	
turns on	step 27	
does not turn on	step 62	
The work action demonder on the time	of a surface surface s	

27

The next action depends on the type of card you replace.

If the card	Do
is an NT9X62	step 28
is other than listed here	step 34

28



DANGER

Possible equipment damage

Make sure you do not contaminate the fiber tip surface. Do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.



DANGER

Damage to fiber cable

Make sure you handle fiber cables carefully. Do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

Locate the card you will remove.

29 Label each fiber link pair transmit for the top fiber of each port and receive for the bottom fiber of each port.

Note: The fiber cable connections appear on the next page.

- **30** Disconnect the fiber links from the card as follows:
 - **a** Loosen the fiber connections with the latch handles up.
 - **b** Carefully push in and turn the fiber cable connector counter clockwise halfway until the connector slides out of the receptacle.
 - **c** When you disconnect the connectors, place dust caps on the ends of the connectors.



31 To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

32



DANGER Damage to fiber cable Make sure you handle fiber cables carefully. Do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

Reconnect the fiber links as follows:

- **a** Tighten the fiber connections with the latch handles up.
- **b** Carefully guide the fiber connector into the receptacle notches.
- **c** Push in and turn the fiber connector clockwise halfway until the connection is finger tight. Put a maximum of 0.169 N m (1.5 lbf in) of pressure on the fiber connector.
- **33** Go to step 35.
- **34** To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.
- **35** To power up the NTDX15 power converter you powered down in step 26, lift and release the power switch on the faceplate.

If the alarm light on the power converter	Do
turns off	step 36
remains on	step 62

At the MAP terminal

36 Determine if the inactive FP plane is 0 or 1.

If the inactive plane	Do
is 0	step 37
is 1	step 39

37 To return the P-links between plane 0 and P-link 0 to service, type

>RTS PORT 0 PLINK 0

and press the Enter key.

Example of a MAP response:

FP 3, Port 0 PLink 0, RTS PLink: Request has been submitted. FP 3, Port 0 PLink 0, RTS PLink: Command completed.

The PLink is in-serviceTest Passed

If the RTS command	Do
passed	step 38
failed	step 62
To return the P-links between p	plane 0 and P-link 1 to service, type

>RTS PORT 0 PLINK 1

and press the Enter key.

Example of a MAP response:

FP 3, Port 0 PLink 1, RTS PLink: Request has been submitted. FP 3, Port 0 PLink 1, RTS PLink: Command completed.

The PLink is in-service Test Passed

If the RTS command	Do
passed	step 41
failed	step 62

39

38

To return the P-links between plane 1 and P-link 0 to service, type

>RTS PORT 1 PLINK 0

and press the Enter key.

Example of a MAP response:

FP 3, Port 1 PLink 1, RTS PLink: Request has been submitted. FP 3, Port 1 PLink 1, RTS PLink: Command completed. The PLink is in-service Test Passed

If the RTS command	Do
passed	step 40
failed	step 62

To return the P-links between >RTS PORT 1 PLINK and press the Enter key. <i>Example of a MAP response:</i> FP 3, Port 1 PLink 0, submitted. FP 3, Port 1 PLink 0, The PLink is in-servi	plane 1 and P-link 0 to service, type 1 RTS PLink: Request has been RTS PLink: Command completed.
If the RTS command	Do
passed	step 41
failed	step 62
and press the Enter key. The next action depends on the first second sec	ne type of card you replace.
is an NTQX86	sten 43
is other than listed here	step 47
To test the controller on the in >TST CTRL ctrl_no and press the Enter key. where ctrl_no is the number of the co Example of a MAP response: FP 3 Test CTRL 1: Co FP 3 Test CTRL 1: Co	active plane, type ontroller (0 or 1) on the inactive plane ommand request has been submitted.
If the TST command	Do
passed	step 44
failed	step 62

To return the controller on the I	nactive plane to service, type
>RTS CTRL ctrl_no	
and press the Enter key.	
where	
ctrl_no is the number of the con	troller (0 or 1) on the inactive plane
Example of a MAP response:	
FP 3 Busy CTRL 1: Comma FP 3 Busy CTRL 1: Comma	and request has been submitte and passed.
If the RTS command	Do
passed	step 45
failed	step 62
To access the Plane level of the	e MAP display, type
>PLANE	
and press the Enter key.	
To test the ports that correspor	nd to the card that you replaced, type
>TST PORT plane_no	
and press the Enter key.	
where	
plane_no is the number of the plar	ne (0 or 1)
Example of a MAP response:	
FP 3 Port Test: Reques FP 3, Port 1, Port Test Passed. Port card 1 is OK.	t has been submitted. Test: Command completed.
If the TST command	Do
passed	step 60
failed	step 62
To return the controller on the i	nactive plane to service, type
>RTS CTRL ctrl_no	
and press the Enter key.	

If the RTS command	Do
passed	step 48
failed	step 62
The next action depends on the typ	e of card you replace.
If the card	Do
is a NT9X13, NT9X14 NT9X21, or NT9X26	, step 49
is other than listed here	step 55
To access the Plane level of the MA	P display, type
>PLANE	
and press the Enter key.	
The next action depends on the typ	e of card you replaced.
If the card	Do
is a NT9X13	step 51
is a NT9X26	step 53
is a NT9X14 or NT9X21	step 54
To test the card, type	
>TST CPU HW	
and press the Enter key.	
Example of a MAP response:	
	l corrupt the load in the
CPU test of Static RAM will inactive CPU.	-
CPU test of Static RAM wil inactive CPU. Please confirm ("YES", "Y"	' "NO", or "N")
CPU test of Static RAM wil inactive CPU. Please confirm ("YES", "Y" To confirm the command, type	' "NO", or "N")
CPU test of Static RAM wil inactive CPU. Please confirm ("YES", "Y" To confirm the command, type >YES	' "NO", or "N")
CPU test of Static RAM wil inactive CPU. Please confirm ("YES", "Y" To confirm the command, type >YES and press the Enter key.	' "NO", or "N")

FP 3 CPU Hardware Test: Request has been submitted. FP 3 CPU Hardware Test: Command completed. Inactive CPU hardware has passed all tests issued.

If the TST command	Do
passed	step 60
failed	step 62

53 To test the card, type

54

>TST CPU HW RTIF

and press the Enter key.

Example of a MAP response:

FP 1 CPU hardware test: Request has been submitted. FP 1 CPU hardware test: Command completed. Inactive CPU hardware has passed all tests issued

If the TST command	Do
passed	step 60
failed	step 62
To test the memory, type	
>TST MEM	
and press the Enter key.	
Example of a MAP respo	onse:
FP 1 Memory Test:	Request has been submitted.
FP 1 Memory Test: FP 1 Memory Test Inactive memory t	Request has been submitted. : Command completed. est passed.
FP 1 Memory Test: FP 1 Memory Test Inactive memory t DRAM upgrade resu	Request has been submitted. : Command completed. est passed. lts:
FP 1 Memory Test: FP 1 Memory Test Inactive memory t DRAM upgrade resu	Request has been submitted. : Command completed. est passed. lts:
FP 1 Memory Test: FP 1 Memory Test Inactive memory t DRAM upgrade resu DRAM Card 0: No D DRAM Card 1: No D	Request has been submitted. : Command completed. est passed. lts: RAM upgrade was performed. RAM upgrade was performed.
FP 1 Memory Test: FP 1 Memory Test Inactive memory t DRAM upgrade resu DRAM Card 0: No D DRAM Card 1: No D DRAM Card 2: No D	Request has been submitted. : Command completed. est passed. lts: RAM upgrade was performed. RAM upgrade was performed. RAM upgrade was performed.
FP 1 Memory Test: FP 1 Memory Test Inactive memory t DRAM upgrade resu DRAM Card 0: No D DRAM Card 1: No D DRAM Card 2: No D DRAM Card 3: No D	Request has been submitted. : Command completed. est passed. lts: RAM upgrade was performed. RAM upgrade was performed. RAM upgrade was performed. RAM upgrade was performed.
FP 1 Memory Test: FP 1 Memory Test Inactive memory t DRAM upgrade resu DRAM Card 0: No D DRAM Card 1: No D DRAM Card 2: No D DRAM Card 3: No D	Request has been submitted. : Command completed. est passed. lts: RAM upgrade was performed. RAM upgrade was performed. RAM upgrade was performed. RAM upgrade was performed. BAM upgrade was performed.

failed	step 62
The next action depends or	n the type of card you replace.
If the card	Do
is a NT9X87 or NT9X8	8 step 56
is other than listed here	step 59
The next action depends or	n the type of card you replaced.
If the card	Do
is a NT9X87	step 57
is a NT9X88	step 58
>TST DABM plane_no	
where plane_no is the number of the replaced Example of a MAP respons FP 3 Test DABM 0: FP 3 Test DABM 0:	plane (0 or 1) associated with the card yo se: Command request has been submit Command passed.
where plane_no is the number of the replaced Example of a MAP respons FP 3 Test DABM 0: FP 3 Test DABM 0: If the TST command	plane (0 or 1) associated with the card yo se: Command request has been submit Command passed. Do
<pre>where plane_no is the number of the replaced Example of a MAP respons FP 3 Test DABM 0: FP 3 Test DABM 0: If the TST command passed</pre>	plane (0 or 1) associated with the card yo se: Command request has been submit Command passed. Do step 59
where plane_no is the number of the replaced Example of a MAP respons FP 3 Test DABM 0: FP 3 Test DABM 0: If the TST command passed failed	plane (0 or 1) associated with the card yo se: Command request has been submit Command passed. Do step 59 step 62

System cards in a file processor (end)

ctrl no

59

60

61

62

is the number of the controller (0 or 1) on the inactive plane *Example of a MAP response:*

FP 0 Test SCSI 0: Command request has been submitted. FP 0 Test SCSI 0: Command passed.

If the TST command	Do
passed	step 59
failed	step 62
To access the Plane level of	f the MAP display, type
>PLANE	
and press the Enter key.	
To release the jam on the in	active plane, type
>MATEJAM RELEASE	
and press the Enter key.	
Example of a MAP respons	<i>e:</i>
The inactive CPU is	s not jammed.
>SYNC	
and press the Enter key.	
Example of a MAP respons	e:
FP 3 Synchronization FP 3 Synchronizatio The PM is now runnin	: Request has been submitted. n: Command completed. g in SYNC.
If the SYNC command	Do
passed	step 63
1	

63 The procedure is complete.

7 Frame supervisory panel and modular supervisory panel card replacement procedures

Introduction

This chapter contains card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP).

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the FSP or MSP card(s) included in the replacement procedure.

Common procedures

This section lists common procedures for the FSP or MSP card replacement procedure. A common procedure is a series of steps that repeat within maintenance procedures. The removal and replacement of a card is an example of a common procedure. Common procedures are in the common procedures chapter in this NTP.

Do not use common procedures unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in the office records:

- the serial number of the card that you replaced
- the date that you replace the card
- the reason that you replaced the card

FSP cards in a 42-in. (106.7-cm) SuperNode cabinet

Application

Use this procedure to replace the following cards in the shelves or frames listed.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA	FSP drive and alarm card	application processor (AP) cabinet, computing module (CM) cabinet, dual plane combined core (DPCC) cabinet, enhanced multipurpose cabinet (EMC), SuperNode SE (SNSE) cabinet, 128k enhanced network (ENET) cabinet, 64k ENET cabinet, link peripheral processor (LPP) cabinet, message switch (MS) cabinet, SuperNode compact (SNC) cabinet
NT6X36	AA, AF	ARLB FSP alarm card	AP cabinet, CM cabinet, DPCC cabinet, EMC, SNSE cabinet, 128k ENET cabinet, 64k ENET cabinet, LPP cabinet, MS cabinet, SNC cabinet

Note: Automatic recovery from low battery (ARLB)

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

There are no common procedures.

FSP cards in a 42-in. (106.7-cm) SuperNode cabinet (continued)

Action

This procedure contains a summary of the flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

FSP cards in a 42-in. (106.7-cm) SuperNode cabinet (continued)

Summary of replacing FSP cards in a 42-in. (106.7-cm) SuperNode cabinet



FSP cards in a 42-in. (106.7-cm) SuperNode cabinet (continued)

Replacing FSP cards in a 42-in. (106.7-cm) SuperNode cabinet

At the frame

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc.Make sure that you remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.

Obtain a replacement card. Make sure that the replacement card and the card that you replace have the same PEC and PEC suffix.

2



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Unscrew the slotted nut on the left of the FSP.

- 3 Open the FSP.
- 4 Remove the card.
- 5 Insert the replacement alarm and control card.
- 6 Close the FSP.
- 7 Tighten the slotted nut on the FSP.
- 8 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do	
directed you to this procedure	step 9	
did not direct you to this proce- dure	step 10	

9 Return to the maintenance procedure that directed you to this procedure and continue as directed.

FSP cards in a 42-in. (106.7-cm) SuperNode cabinet (end)

10	Check the CONVERTER FAIL LEDs on each power converter for each shelf.		
	If the LED for any power con- verter	Do	
	is lit	step 11	
	is not lit	step 12	
11	To clear alarms, go to <i>Alarm and Performance Monitoring Procedures</i> . Do not return to this procedure.		

12 The procedure is complete.

NT0X36 in a cabinetized input/output equipment frame

Application

Use this procedure to replace a NT0X36 in a cabinetized input/output equipment (CIOE) frame, as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT0X36	AB	Power control and alarm card	CIOE

Note: To perform this procedure, shelf positions 05, 19, and 33 must have one of the following:

- input/output controller (IOC)
- disk drive unit (DDU)
- magnetic tape drive unit (MTD)

If the shelf positions in the CIOE frame in your office have other subsystems or applications, contact the next level of support.

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT0X36 in a cabinetized input/output equipment frame (continued)

Summary of replacing NT0X36 in a cabinetized input/output equipment frame



NT0X36 in a cabinetized input/output equipment frame (continued)

Replacing NT0X36 in a cabinetized input/output equipment frame

At your current location

1

ATTENTION

This procedure includes directions to manually busy all terminal controller cards for the IOC. Perform this procedure from a MAP terminal that does not connect to the IOC.



CAUTION

Potential loss of service

This procedure includes directions to manually busy an IOC and the IOC device controllers or a DDU. Perform this procedure only if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic.



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure that you remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the cabinet

- 2 Unscrew the slotted nut on the left of the FSP.
- 3 Open the FSP.
4



CAUTION

Potential loss of service

If the power distribution configuration in the following table does not match your office configuration, contact the next level of support. Contact the next level of support before you proceed.



WARNING

Potential loss of service

If the power distribution configuration in the following table does not match your office configuration, contact the next level of support. Contact the next level of support before you proceed.

Use the following table to identify the shelf positions, subsystems, subsystem numbers, shelf side, and FSP fuse numbers that associate with the card you replace.

Power and alarm card slot	Shelf position	Sub-sy stem	Wiring option	Shelf side	FSP fuse number
PWR ALM 1	33	DPP		А	01
	33	MTD	А		
	19	IOC	А		02
PWR ALM 2	05	DDU 0		А	03
	05	ROS		А	
	19	IOC	В		04
PWR ALM 3	33	DPP		В	05
	33	MTD	В		
	05	DDU 1		В	06
	05	ROS		В	



- 5 Record the shelf positions, shelf side (if needed), and fuse numbers that associate with the card that you replace.
- 6 Record the subsystem names and subsystem numbers (if needed) that associate with the power and alarm card that you replace.

Note: Each power and alarm card associate with two shelves (a maximum of two subsystems).

At the MAP terminal

7 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

8 To post the affected input/output controller (IOC), type

>IOC ioc_no

and press the Enter key.

where

ioc no

is the number of the IOC (0 to 19)

9		Select a shelf position from the list that you recorded at step 5.								
		If the	shelf			[Do			
		contai	ns DDI	Js		S	step 10			
		contai	ns an I	C		S	step 16			
		contai	ns othe	r than li	isted he	re s	step 92			
		does r	not cont	ain a ur	nit	5	step 46			
10		To post	the DDL	J contro	ller for th	e affect	ed DDU,	type		
		>CARD	card_	no						
		and pre	ss the E	nter key	-					
		where								
		car	d_no s the car	d numb	er (0 to 8	3)				
		Exampl	e of a M	AP disp	lay:	,				
IOD IOC 0 1 STAT	_ 2	2 3								
DIRP: AMA MLP : .	A E	3 XFER DPPP	: .	SLM DPP	: SLM U: .	bsy NC SC	P: AI:	. N	IX25:	
IOC CAR 0 POR	RD RT	0 0123	1 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123	8 0123
STA	ΥA				·					
TYP Card O	РЕ МТТ	MTD	DDU	CONS	MPC	CONS		CONS	MPC	
	Tar Sta Use	peName atus er	Idl	e						
11		Determi	ine the s	tate of t	he DDU	controll	er card.			
		If the card Do								
		is MB down	SY and	the as	sociated	l disk c	lrive is	not spi	un step	14
		is MBS	SY and	the asso	ociated of	lisk dri	ve is spi	un dow	n step	15
		is OF	FL						step	84

in a cabinetized input/output equipment frame (continued)

	If the ca	rd	Do								
	is other	is other than listed here step 12									
12	To determ	To determine if files on the DDU are open, type									
	and press	and press the Enter key.									
	Example	of a MAP respo	onse:								
VOLID	VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O	FILES_OPEN				
0	IMAGE	2800	45000	D000	0	NO	0				
1 2	XPMLOADS RTMLOADS	2801 2802	$35000 \\ 20000$	D000 D000	0 0	NO NO	0				
-		2002	20000	2000	Ū		, and the second s				
· 7	SMDR	2807	5000	D000	0	NO	0				
8	AMA1	2808	5000	D000	0	NO	0				
10	AMA2	2809 280A	500	D000	0	NO	0				
	lf			Do							
	any file	s are open		step	step 85						
	all files	are closed		step	13						
13	To manua	lly busy the DD	U controlle	er, type							
	>BSY										
	and press	the Enter key.									
14	Spin dowr	n the disk drive,	, type								
	>STOP										
	and press	the Enter key.									
15	Wait until status coo display.	the DDU spins le spun_down	down befo appears ur	re you p nder the	roceed t Drive_S	o the n tate he	ext step. The eader on the MAP				
16	Determine	e the state of th	e IOC.								
	If the sta	ate of the IOC		Do							
	is M			step	46						
	is other	than listed he	re	step	17						

	17	The nex	kt action	depend	s if term	inal cont	roller ca	ards are o	on the sh	nelf.
		If terminal controller cards Do								
		are on the shelf				s	step 18			
		are not on the shelf				S	step 24			
18 To post the terminal controller card, type										
		>CARD								
		and press the Enter key.								
		where		-						
		car	d_no s the car	d numb	er (0 to 8	3)				
		Exampl	le of a M	IAP disp	lay:	,				
IOD IOC STAT	01	23								
DIRP: MLP :	AMA •	B XFER DPPP	· · ·	SLM DPP	U: SLM	ibsy NO SC	P : AI:	. N	x25:	•
IOC 0	CARD PORT	0 0123	1 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123	8 0123
	STAT		·		·					
Card	TYPE 6	MTD Ckt	DDU 0	CONS	MPC 1	CONS 2		CONS 3	MPC	
Statu Cons ConTy	s Id pe		RD040 VT100	RD VI	041 100	- TEAM VT10	4 0	- TEAM6 VT100		
	19	Note the CONS ID and status for each port.								
	lf								Do	
		all ports are ManBsy							stej	p 23
		one o	r more j	ports ar	eOffl				stej	p 84
		one of	r more p	ports ar	e.(dot	.)			stej	p 20
		all po	rts are i	n any o	ther out	of-serv	vice sta	te	step 21	

in a cabinetized input/output equipment frame (continued)

20 Inform operating company personnel that you will remove from service the CONS IDs that associate with the card you replace.

21 To manually busy a port on the card, type

>BSY port_no

and press the Enter key.

where

port_no
 is the port number (0 to 3)

If the BSY command	Do	
passed	step 22	
failed	step 92	

- 22 Repeat step 21 until all ports on the card are manual busy. Go to step 23.
- **23** Repeat steps 18 to 22 for each terminal controller card on the shelf. Go to step 24.
- 24 The next action depends if multiprotocol controller (MPC) cards are on the shelf.

If MPC cards	Do	
are on the shelf	step 25	
are not on the shelf	step 32	
To post the MPC card, type		

>CARD card_no

and press the Enter key.

where

25

card_no is the card number (0 to 8)

Example of a MAP display:

IOD										
IOC	0 1	2 3								
STAT	• •									
DIRP: MLP :	AMA	B XFER DPPP	: . : .	SLN DPI	A : SLM) PU: .	osy NOI SCA	<u>-</u> :	N	X25:	•
IOC	CARD	0	1	2	3	4	5	6	7	8
0	PORT	0123	0123	0123	0123	0123	0123	0123	0123	0123
	STAT	·	·		·					
Card	TYPE	MTD	DDU	CONS	MPC	CONS		CONS	MPC	
Caru	5 U U	ser	SYST	EM	BOARD	LINK0	LINK1	LIN	к2	LINK3
	S	tatus	Re	ady	COMACT	UNEQ	N/A	UNE	Q	ENABLD

26 Determine the state of the card.

If the card state	Do
is manb	step 31
is OFFL	step 84
is other than listed here	step 27

Note: The card state listed appears under the BOARD header on the MAP display.

27 To display status information on current MPC conversations, type

>QCONV

and press the Enter key.

Example of a MAP response:

MPC	L	LCN	STATUS	CCC	SEC	PARDEV	INP	OPEN OWNER	
	-								
0	3	1	INACTIVE	none	none	none	FIL	0 none	
0	3	2 3	INACTIVE	none	none	none	FIL	0 none	
lf	:					Do			
lf 0	ne c	or mor	e sessions a	are acti	ve	Do step 28			

- 28 Notify all users that an interruption of MPC service will occur. Wait until all sessions are inactive before you proceed.
- 29 To manually busy the card and the card links, type >BSY ALL FORCE and press the Enter key. Example of a MAP response:

TYPE YES TO VERIFY FORCE, NO TO CANCEL COMMAND Please confirm ("YES", "Y", "NO", or "N"):

30 To confirm the command, type

>YES

and press the Enter key.

If the BSY command	Do
passed	step 31
failed	step 92

31 Repeat steps 25 to 30 for each MPC card on the shelf. Go to step 32.

32 The next action depends if disk drive controller cards are on the shelf.

If disk drive controller cards	Do	
are on the shelf	step 33	
are not on the shelf	step 38	
To post the disk drive controller car	l, type	
>CARD card_no		
and press the Enter key.		
where		
card_no		

is the card identification number (0 to 8) Example of a MAP display:

33

in a cabinetized input/output equipment frame (continued)

IOD IOC 0 1 STAT	23.								
DIRP: AMA MLP: .	B XFER: DPPP:	. SLM . DPE	N : SLMbs PU: .	SY NOP SCAI	: .	N	x25:		
IOC CAR 0 POR	D 0 T 0123	1 2 0123 0123	3 0123 (4)123 (5 123	6 0123	7 0123	8 0123	
STA	т								
TYP Card 0	E MTD MTD TapeName Status User	DDU CONS 0 Idle	MPC (CONS		CONS	MPC		
34	Determine	the state of the	card.						
	If the care	b		Do					
	is MBSY			step 3	37				
	is offl		step 84						
	is other the	han listed here	e	step 3	35				
35	To determin >ALLOC and press t	ne if open files he Enter key.	are on the	DDU, typ	De				
	Example of	f a MAP respor	ise:						
VOLID	VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O	FILES	_OPEN	
0 1 2	IMAGE XPMLOADS RTMLOADS	2800 2801 2802	45000 35000 20000	D000 D000 D000	0 0 0	NO NO NO))	
7 8 9 10	SMDR AMA1 TST AMA2	2807 2808 2809 280A	5000 5000 50 500	D000 D000 D000 D000	0 0 0 0	NO NO NO NO)))	
	lf			Do					
	any files	are open		step 8	35				

	lf				Do					
	all fi	les are	e close	ed		step	36			
	To manually busy the card, type									
	>BSY									
	and pro	ess th	e Entei	r key.						
	<i>Examp</i> bsyOK	ole of a	a MAP	respons	Se:					
	Repeat steps 33 to 36 for each disk step 38.			drive co	ontroller	card on	the shelf	f. Go to		
	The ne shelf.	The next action depends if magnetic tape drive controller cards are on the shelf.								
	If ma cards	gnetic S	c tape	drive co	ontrolle	r Do				
	are o	n the	shelf			step	39			
	are n	ot on	the sh	elf		step	44			
	To pos	t the c	ard, ty	ре						
	>CARD	ca	rd_no							
	and pro	ess th	e Entei	r key.						
	where									
	ca	rd_no is the	card n	umber (0 to 8)					
	Examp	ole of a	a MAP	display:						
10 10 5T	D C 0 AT .	1 2 • •	3							
DI: ML	RP: AM P :	А В •	XFER DPPP	: .	SLM DPP	: SLM U:	bsy NO SC	P: AI:	. N	X25:
IO 0 01	C CA PO	RD RT (0 0123	1 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123
U T	ST	AT	·	•		·				·
Ca	TY rd 0	PE MTD Tape Stat	MTD eName tus	DDU Idl	CONS 0 e	MPC	CONS		CONS	MPC

Determine the state of the card.				
If the card	Do			
is ManBsy	step 43			
is Offl	step 84			
is Idle	step 42			
is other than listed here	step 41			
Notify all users that an interruption in until all users finish with the device be	service for the device will occur. Wait fore you proceed to the next step.			
To manually busy the card, type				
>BSY				
and press the Enter key.				
Example of a MAP response:				
bsy OK				
Repeat steps 39 and 42 for each mag shelf. Go to step 44.	netic tape drive controller card on the			
To return to the IOC level of the MAP	display, type			
>QUIT				
and press the Enter key.				
To manually busy the affected IOC, ty	ре			
>BSY IOC				
and press the Enter key.				
The next action depends on if the oth power and alarm card you replace is	er subsystem that associates with the put of service.			
If the other subsystem	Do			
is out of service	step 48			
is not out of service	step 47			
that associates with the card you	step 48			

47 To remove the other subsystem that associates with the card you replace, go to step 9 and follow the procedure.

At the CIOE frame

48



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

For each power converter on the shelf, set the handle of the power converter POWER switch down to the OFF position.

49 Remove the FSP fuses that associate with the alarm and control card you replace.

Note: You recorded the fuse numbers in step 5.

50



WARNING Loss of service

Make sure that the alarm and control card you remove is the alarm that controls the subsystems that you removed from service. Removal of the wrong card causes a loss of service.

Remove the card from the slot that you recorded in step 5.

- 51 Insert the replacement card.
- 52 Close the FSP.
- 53 Tighten the slotted nut on the FSP.
- 54 Insert the fuses that you removed in step 49.
- 55 The next action depends on the power converter on the shelf.

If the power converter	Do
is a NT2X70AA/AB/AC/AD	step 56
is a NT2X70AE	step 58
is a NT1X78	step 60

56 Power up the converter, as follows.

- **a** Pull up and set the handle of the POWER switch to the RESET position. Hold the switch until the CONVERTER FAIL LED turns off.
- **b** Release the handle.

in a cabinetized input/output equipment frame (continued)

- **57** Go to step 61.
- 58 Power up the converter, as follows.
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the power converter until the CONVERTER FAIL LED turns off.
 - c Release the RESET button.
- **59** Go to step 61.
- 60 Reset the power converter:
 - **a** Set the POWER switch on the converter to the ON position.
 - **b** Press and hold the RESET button on the power converter.
 - c When the CONVERTER FAIL lamp turns off, release the RESET button.
- 61 Verify that the power fail lamp is not lit. If the power lamps is not lit, the power converter is ON.

If the power fail lamp	Do
is not lit	step 63
is lit	step 92

At the MAP terminal

62 To return the IOC to service, type

>RTS IOC

and press the Enter key.

63 Select a shelf position from the list that you recorded in step 5.

	If the shelf	Do
	has DDUs	step 64
	has an IOC	step 66
64	To post the DDU controller that you >CARD card_no and press the Enter key.	posted at step 10, type
	card_no is the card number (0 to 8)	
65	To return the DDU controller to serverts	vice, type

and press the Enter key.

 $\it Note:$ The return to service process can require a maximum of 3 min. The RTS command spins up the disk drive.

If the RTS command		Do			
passed (status is Ready and driv	step 62				
failed (status or drive state is oth	step 92				
The next action depends if the control	next action depends if the controller cards are on the she				
If disk drive or magnetic tape drive controller cards	Do				
are on the shelf	step 67				
are not on the shelf	step 70				
To post the card, type					
>CARD card_no					
and press the Enter key.					
where					
card_no is the card number (0 to 8)					
To return the card to service, type					
>RTS					
and press the Enter key.					
Repeat steps 67 and 68 for each disl card on the shelf. Go to step 70.	k drive or magnetic tape	e drive controller			
The next action depends on if MPC of	cards are on the shelf.				
If MPC cards	Do				
are on the shelf	step 71				
are not on the shelf	step 77				
To post the card, type					
>CARD card_no					
and press the Enter key.					
where					
card_no is the card number (0 to 8)					

in a cabinetized input/output equipment frame (continued)

72 To load the MPC, type >DOWNLD and press the Enter key. Example of a MAP response:

DOWNLOAD OF TABLE MPC FILE "MPC403AB" SUCCEEDED

If the DOWNLD command	Do
passed	step 73
failed	step 92

73 To return the MPC to service, type >RTS ALL and press the Enter key. Example of a MAP response:

REQUEST PASSED FOR CARD.REQUEST PASSED FOR LINKS.

74 Wait 1 min and check the status of MPC components.

	If the system status Do					
	is Ready, the board status is COMACT, and the link step 75 status is ENABLD for each provisioned link					
	is other than listed here	step 92				
' 5	Repeat steps 71 to 74 for each car	d on the shelf. Go to step 76.				
′ 6	Notify users that MPC service is av	vailable.				
7	The next action depends if termina	inal controller cards are on the shelf.				
	If terminal controller cards	Do				
	are on the shelf	step 78				
	are not on the shelf	step 80				
'8	To post the card, type					
	>CARD card_no					
	and press the Enter key.					
	where					

To return a port on the card to service, type					
2	nd press the Enter key				
и	vhere				
	port_no is the port number (0 to 3)				
_	If the RTS command	Do			
	passed	step 80			
	failed	step 92			
The next action depends if the other subsystem that associates with the card you replaced was returned to service.					
	If the other subsystem	Do			
_					
	was returned to service	step 82			
	was returned to service was not returned to service	step 82 step 81			
	was returned to service was not returned to service does not associate with the card	step 82 step 81 step 82			
	was returned to service was not returned to service does not associate with the card you replaced	step 82 step 81 step 82			
 	was returned to service was not returned to service does not associate with the card you replaced Go to step 63 and follow the procedure ubsystem that associates with the the	step 82 step 81 step 82 e to return to service the other e card you replaced.			
– C S T	was returned to service was not returned to service does not associate with the card you replaced Go to step 63 and follow the procedure ubsystem that associates with the the The next action depends on the reaso	step 82 step 81 step 82 e to return to service the other e card you replaced. n that you perform this procedure.			
 s T	was returned to service was not returned to service does not associate with the card you replaced Go to step 63 and follow the procedure ubsystem that associates with the the he next action depends on the reaso If a maintenance procedure	step 82 step 81 step 82 e to return to service the other e card you replaced. In that you perform this procedure. Do			
	was returned to service was not returned to service does not associate with the card you replaced So to step 63 and follow the procedure ubsystem that associates with the the The next action depends on the reaso If a maintenance procedure directed you to this procedure	step 82 step 81 step 82 e to return to service the other e card you replaced. In that you perform this procedure. Do step 83			

84 To determine why the component is offline, consult operating company personnel. Continue as directed by operating company personnel.

85



WARNING

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- billing data is lost
- open Logutil files are lost or corrupted

Before starting card replacement procedures, close the DIRP volumes. Close files from DIRP and demount active volumes from the DDU. Use the procedure, "Deallocating Recording Volumes in the DIRP Utility" in Routine Maintenance Procedures.

86 Stop files recording to and from the Logutil. Type the following command at the Logutil command level:

>LOGUTIL;LISTDEVS

and press the Enter key.

87 Close files on volumes on the DDU of the IOC.

>STOPDEV <dev name>

and press the Enter key.

where

dev name

is the name of the device

>QUIT

and press the Enter key.

88

>ALLOC

and pressing the Enter key.

If the files	Do
are open	step 89
are closed	step 90

Repeat the ALLOC command to determine if files are closed, by typing

89 Confirm that you have done steps 85 to 88. If the files are still open, contact your next level of support.

90 Manually busy the DDU, by typing

>BSY

and pressing the Enter key.

If the DDU	Do
is MBSY	step 91
is not MBSY	step 92

- **91** When cards are replaced and the DDU is in service, open the files. Use the procedure "Allocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.
- 92 For additional help, contact the next level of support.

93 The procedure is complete.

NT0X36 in a cabinetized trunk module equipment frame

Application

Use this procedure to replace an NT0X36 in a cabinetized trunk module equipment (CTME) frame, as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT0X36	AB	Power control and alarm card	CTME equipped with maintenance trunk module (MTM), office alarm unit (OAU), or trunk module (TM). Meridian or packaged switch cabinet equipped with service trunk module (STM).

Refer to the "Index", if you cannot identify the following features for the card that you want to replace;

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to Loading a PM.

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.





Replacing NT0X36 in a cabinetized trunk module equipment frame

At your current location

1



CAUTION Loss of service

This procedure includes directions to remove an MTM, STM, or TM from service, which can cause service degradation. Perform this procedure only if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic. Do not perform this procedure if essential services use PM resources.



DANGER Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure that you remove all jewelry before you replace a card in the FSP. Do not touch any terminal in the FSP.

Obtain a replacement card. Make sure that the replacement card and the card that you removed have the same PEC and PEC suffix.

At the cabinet

- 2 Unscrew the slotted nut on the left of the FSP.
- 3 Open the FSP.
- 4 To identify the shelf positions and FSP fuses that associate with the power and alarm card you will replace, use the following table and diagram.

(Sheet 1 of 2)

Power and a	larm card slot	FSP fuse number	Shelf position
PWR ALM 1		01	05
		02	33

(Sheet	2 of 2)		
	Power and alarm card slot	FSP fuse number	Shelf position
	PWR ALM 2	04	19
	PWR ALM 3	05	47



5



CAUTION

Potential loss of service

If the power distribution in the following procedure does not match your office configuration, contact the next level of support before you proceed.

Record the fuse numbers and shelf positions that associate with the card you replace.

in a cabinetized trunk module equipment frame (continued)

6 Select a shelf that associates with the FSP card you replace.

At the MAP terminal

9

10

- 7 To access the PM level of the MAP display, type >MAPCI;MTC;PM
 - and press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1		6			102

8 The next step depends on the type of PM that is in the shelf.

If the P	PM			Do			
is an C	DAU			step	9		
is MTI	M, ST	M, or T	ГМ	step	13		
To post t	the OA	U, type					
>POST	OAU	pm_nc	b				
and pres	ss the	Enter ke	y.				
where							
where pm_ is	_ no the nu	umber o	f the PM (() to 9999)			
where pm_ is Example	_ no the nu e of a l	umber o MAP dis _i	f the PM ((<i>play:</i>) to 9999)			
where pm_ is Example PM OAU	_ no the nu e of a l	umber o MAP dis, SysB 1 1	f the PM ((<i>play:</i> ^{ManB} 0 0	0 to 9999) OffL 6 0	CBsy 0 0	ISTb 0 0	InSv 102 0

example display in step 9, the OAU is system busy (SysB).

If the OAU	Do
is Offl	step 129
is ManB	step 40
is other than listed here	step 11

- **11** A maintenance flag (Mtce) can appear. A Mtce flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status line before you proceed to the next step.
- 12 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP display:

PM DAU	SysB 58 0	ManB 1 1	OffL 6 0	CBsy 14 0	ISTb 12 0	InSv 17 0
DAU 0 osy DAU 0 Bsy DK.	ManB					

Go to step 40.

13 From office records or operating company personnel, verify that essential services do not use the PM resources affected by this procedure.

Note: When you verify resources that are in use, include all PMs that associate with the shelf. For all STMs and TMs, include NT1X80 cards and NT1X81 cards (single-card PMs) on the shelf. Remove these single-card PMs from service to complete this procedure. If the shelf has an STM, check essential services on the STM that is on the other half of the shelf. To complete the procedure, remove both STMs from service.

If essential services	Do
use PM resources, and a minimum of one PM is in service	step 128
use PM resources and all PMs are out of service	step 14
do not use PM resources	step 14
To post the PM, type	
>POST pm_type pm_no	
and press the Enter key.	
where	
<pre>pm_type is the type of PM (MTM, STM, TM)</pre>	
pm_no is the number of the PM (0 to 9999)	
Example of a MAP display:	

14

Frame supervisory panel and modular supervisory panel card replacement procedures 7-35

NT0X36

in a cabinetized trunk module equipment frame (continued)

PM MTM	SysB 1 1	ManB 0 0	OffL 6 0	CBsy 0 0	ISTb 0 0	InSv 102 9
MTM	0	SysB				

15 Determine the state of the PM.

> Note: The PM state appears on the right of the PM number. In the example display in step 14, the PM state is system busy (SysB).

	If the PM		Do		
	is Offl		step 129		
	is other than listed	here	step 16		
16	To access the TTP lev	el of the MAP di	splay, type		
	>MAPCI;MTC;TRKS;	ITP			
	and press the Enter ke	2//			
		<i>.</i>			
	Example of a MAP dis	play:			
POST TTP 6-01	DELQ 3	BUSYQ	DIG		
CKT TYPE	PM NO.	COM LANG	STA S R	DOT TE	RESULT
17	To post the circuits for	the PM, type			
	>POST P pm_type	e pm_no			

and press the Enter key.

where

pm_type is the type of PM (MTM, STM, TM)

pm_no

is the number of the PM (0 to 9999)

Example of a MAP display:

POST 17 DELQ BUSYQ DIG TTP 6-013 CKT TYPE PM NO. STA S R DOT TE RESULT COM LANG CONF6 MTM 0 0 CF6P 0 IDL post p MTM 0 LAST CKT = 17SHORT CLLI IS: CF6P OK, CKT POSTED

18 Determine if the state of any of the circuits is installation busy (INB). The INB on the right of the trunk name on the MAP display indicates installation busy.

Note: Repeat the command NEXT until you determine the state of each circuit.

	lf		Do
	a minimum of on	e circuit is in the INB state	step 19
	circuits are not in	the INB state	step 24
19	Record the name an	d number of each circuit that i	s in the INB state.
20	To manually busy all	posted circuits, type	
	>BSY ALL		
	and press the Enter	key.	
	Example of a MAP of	lisplay:	
POST 18 TTP 6-027	DELQ	BUSYQ A 6 DIG	
CKT TYPE	PM NO.	COM LANG STA S R	DOT TE RESULT
	T 12		
BSYQ ALL ID	LE		

bsy all OK,POST SET IS SET IN BSYQ

21 Wait until you manually busy all circuits before you proceed. When you manually busy circuits, you remove the circuits from the busy queue.

Note: The digit on the right of the BUSYQ header indicates the number of circuits that remain in use. As a circuit becomes available, you manually busy the circuit and the number in the queue decreases by one. A blank field indicates that all circuits are manual busy.

in a cabinetized trunk module equipment frame (continued)

22 The next action depends if the affected shelf has the NT1X80 enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

If the shelf	Do
contains the NT1X80 or the NT1X81	step 23
does not contain the NT1X80 or the NT1X	K81 step 27
To post the circuits for the single-card PM, type	
>POST P pm_type pm_no	
and press the Enter key.	
where	
<pre>pm_type is the type of single-card PM (CTM, DTM</pre>	1)
<pre>pm_no is the number of the PM (0 to 9999)</pre>	
<i>Note:</i> The NT1X80 EDRAM card is a DTM on NT1X81 conference card is a CTM. Both card is a CTM.	on the MAP display. The rds are single-card PMs.
To manually busy all posted circuits, type	
>BSY ALL	
and press the Enter key.	
Wait until you manually busy all circuits before y When you manually busy circuits, you remove the queue.	ou proceed to the next step. he circuits from the busy
Repeat steps 23 to 25 for all NT1X80 and NT1>	K81 cards on the shelf.
To access the PM level of the MAP display, type	9
>PM	
and press the Enter key.	
To post the PM, type	
>POST pm_type pm_no	
and press the Enter key.	
where	
pm_type is the type of PM (MTM, STM, TM)	
<pre>pm_no is the number of the PM (0 to 9999)</pre>	

If the	PM		Do)		
is Ma	anB		ste	ep 31		
is oth	er than listed	d here	ste	ep 30		
To mar	nually busy the	e PM, type	!			
>BSY and nr	ess the Enter	kov				
Examp	ole of a MAP d	lisnlav:				
Елатр		liopiay.				
PM	SysB 58	ManB 1	OffL 6	CBsy 14	ISTb 12	InSv 17
MTM	0	1	0	0	0	ç
MIM bsy MTM 0 OK.	0 Mar Bsy	ПВ				
The ne NT1X8 If the	xt action depe 1 conference shelf	ends if the s card.	shelf is eithe	er the NT1)	(80 EDRAN	M card o
The ne NT1X8 If the conta	xt action depe 1 conference shelf iins the NT12	ends if the s card. X80 or th	shelf is eithe	er the NT1)	(80 EDRAM	M card o o
The ne NT1X8 If the conta	xt action depe 1 conference shelf tins the NT12	ands if the scard. X80 or the	shelf is eithe e NT1X81 80 or the 1	er the NT1>	(80 EDRAM	M card o o ep 32 en 36
The ne NT1X8 If the conta does	xt action depe 1 conference shelf tins the NT12 not contain t	X80 or the NT1X	shelf is eithe e NT1X81 80 or the P	er the NT1>	(80 EDRAM Do sto sto	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post	xt action depe 1 conference shelf tins the NT12 not contain t t the single-ca	X80 or the NT1X	shelf is eithe e NT1X81 80 or the 1 pe	or the NT1>	(80 EDRAM De ste ste	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter	xnds if the s card. X80 or the he NT1X rd PM, typ pm_no key.	shelf is eithe e NT1X81 80 or the 1 be	or the NT1>	(80 EDRAM Do sto sto	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre where	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter	X80 or the NT1X rd PM, typ pm_no key.	shelf is eithe e NT1X81 80 or the N	or the NT1>	K80 EDRAM	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre where pr	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter n_type is the type of s	x80 or the X80 or the NT1X rd PM, typ pm_no key.	e NT1X81 80 or the 1 be	or the NT1>	(80 EDRAM	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre where prr	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter h_type is the type of s h_no is the number	x80 or the X80 or the NT1X rd PM, typ pm_no key.	e NT1X81 80 or the 1 be d PM (CTM (0 to 9999)	or the NT1>	(80 EDRAM	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre where prr prr	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter n_type is the type of since the state not	x80 or the X80 or the NT1X rd PM, typ pm_no key.	e NT1X81 80 or the 1 9e d PM (CTM (0 to 9999)	or the NT1> NT1X81 , DTM)	(80 EDRAM	M card o o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre where prr prr Determ If the	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter h_type is the type of s h_no is the number hine the state PM	x80 or the X80 or the NT1X rd PM, typ pm_no key.	shelf is eithe e NT1X81 80 or the 1 be d PM (CTM (0 to 9999) le-card PM	or the NT1> NT1X81 , DTM)	K80 EDRAM	M card or o ep 32 ep 36
The ne NT1X8 If the conta does To post >POST and pre prr prr Determ If the is Ma	xt action depe 1 conference shelf ins the NT12 not contain t t the single-ca pm_type ess the Enter h_type is the type of s h_no is the number hine the state PM anB	x80 or the X80 or the NT1X rd PM, typ pm_no key.	shelf is eithe e NT1X81 80 or the 1 be d PM (CTM (0 to 9999) le-card PM Dc ste	or the NT1> NT1X81 , DTM) , pp 35	K80 EDRAM	M card o o ep 32 ep 36

34 To manually busy the single-card PM, type **>BSY**

and press the Enter key.

- 35 Repeat steps 32 to 34 for all NT1X80 and NT1X81 cards on the shelf.
- **36** The next action depends if the shelf contains an STM.

If the shelf	Do
contains an STM, and you manually busied only one STM	step 37
contains an STM, and you manually busied both STMs	step 38

37



WARNING Loss of service

If you turn off an STM, the mate power converter in the other STM on the shelf trips. Make sure that you manually busy and turn off STMs on a shelf.

Repeat steps 14 to 36 for the STM in the other half of the shelf.

38

39

The next action depends on how many shelves with PMs associate with the FSP that you replace.

lf		Do
01	ne shelf equipped with PMs associates with the card	step 40
tv ca sh	wo shelves equipped with PMs associate with the ard, and you turned down functionality for only one helf	step 39
tv ca sh	wo shelves equipped with PMs associate with the ard, and you turned down functionality for both nelves	step 40
Re car	peat steps 6 to 38 for PMs in the other shelf that associated that you replace. Go to step 40.	es with the FSP

At the shelf

40



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Select a shelf to power down.

- 41 Pull down and set the handle of the POWER switch on the power converter to the OFF position.
- 42 The next action depends on the type of PM that is in the shelf.

If the shelf	Do
contains an STM (with or without DRAM)	step 43
contains an MTM (with or without DRAM)	step 44
contains a TM	step 45

43 For the mate power converter in the STM, pull down and set the handle of the POWER switch to the OFF position.

Go to step 45.

- 44 For the other power converter on the shelf, pull down and set the handle of the POWER switch to the OFF position.
- 45 The next action depends on how many shelves with PMs associate with the FSP card you replace.

lf	Do
one shelf equipped with PMs associates with the card	step 47
two shelves equipped with PMs associate with the card, and you powered down only one shelf	step 46
two shelves equipped with PMs associate with the card, and you powered down both shelves	step 47

46 Repeat steps 41 to 45 for PMs in the other shelf that associates with the FSP card you replace. Go to step 47.

in a cabinetized trunk module equipment frame (continued)

At the FSP

- 47 Remove the alarm and control card.
- 48 Insert the replacement alarm and control card.
- 49 Close the FSP.
- **50** Tighten the slotted nut on the FSP.
- 51 Select a shelf to power up.

At the shelf

- 52 Power up the converter.
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the power converter until the CONVERTER FAIL LED turns off.
 - c Release the RESET button.
- **53** The next action depends on the type of PM that is in the shelf, and if you powered up both power converters.

If the shelf	Do
contains an STM or an MTM (with or without DRAM) and you powered up both power converters	step 58
contains an STM (with or without DRAM)	step 54
contains an MTM (with or without DRAM)	step 55
contains a TM	step 58
For the mate power converter in the STM on the other half of the shelf, repeat steps 52 and 53. Go to step 56.	
For the other power converter on the shelf, repeat steps 52 a step 56.	and 53. Go to
The next action depends on how many shelves associate wi you replace.	th the FSP car
lf	Do
one shelf equipped with PMs associates with the card	step 58
two shelves equipped with PMs associate with the card, and you powered up only one shelf	step 57

57 Repeat steps 52 to 56 for PMs in the other shelf that associates with the FSP card you replace. Go to step 58.

At the MAP terminal

58 To access the PM level of the MAP display, type >PM and press the Enter key. 59 The next step depends on the type of PM in the shelf. If the PM Do is an OAU step 60 is an STM, TM, or MTM step 64 60 To post the OAU, type >POST OAU pm_no and press the Enter key. where pm no is the number of the PM (0 to 9999) 61 To load the OAU, type >LOADPM and press the Enter key. Example of a MAP response: OAU 0 LoadPM Passed If the LOADPM command Do passed step 63 failed step 62 62 To load the PM, perform the procedure Loading a PM in this document. Complete the procedure and return to this point. 63 To return the PM to service, type >RTS and press the Enter key.

Example of a MAP response:

OAU 0 Rts Passed

If the RTS command	Do
passed	step 124
failed	step 130
To post the PM, type	
>POST pm_type pm_no	
and press the Enter key.	
where	
pm_type is the type of PM (IMTM, ST	M, TM)
pm_no is the number of the PM (0 t	o 9999)
To load the PM, type	
>LOADPM	
and press the Enter key.	
Example of a MAP response: MTM 0 LoadPM Passed	
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command	Do
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed	Do step 67
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed	Do step 67 step 66
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proceed Complete the procedure and return	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point.
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proceed Complete the procedure and return To return the PM to service, type	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point.
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proceed Complete the procedure and return To return the PM to service, type >RTS	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point.
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proceed Complete the procedure and return To return the PM to service, type >RTS and press the Enter key.	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point.
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proced Complete the procedure and return To return the PM to service, type >RTS and press the Enter key. Example of a MAP response:	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point.
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proced Complete the procedure and return To return the PM to service, type >RTS and press the Enter key. Example of a MAP response: MTM 0 Rts Passed	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point.
Example of a MAP response: MTM 0 LoadPM Passed If the LOADPM command passed failed To load the PM, perform the proceed Complete the procedure and return To return the PM to service, type >RTS and press the Enter key. Example of a MAP response: MTM 0 Rts Passed If the RTS command	Do step 67 step 66 dure <i>Loading a PM</i> in this document in to this point. Do

If the RTS command		Do
passed, and the PM is ISTb with card list	h a system-generated	step 68
failed		step 13
Record the messages on the MAP of	lisplay for future referen	ce.
The next action depends on if the af (EDRAM) card or the NT1X81 confe	fected shelf contains the rence card.	e NT1X80
If the shelf		Do
contains the NT1X80 or the NT	1X81	step 70
does not contain the NT1X80 or	r the NT1X81	step 76
To post the single-card PM, type		
>POST pm_type pm_no		
and press the Enter key.		
where		
pm_type is the type of PM (CTM or DT	M)	
pm_no is the number of the PM (0 to	9999)	
To load the single-card PM, type		
>LOADPM		
and press the Enter key.		
Example of a MAP response:		
DTM 0 LoadPM Passed		
If the LOADPM command	Do	
passed	step 73	
failed	step 72	
To load the single-card PM, perform document. Complete the procedure	the procedure <i>Loading</i> and return to this point	<i>a PM</i> in th
To return the PM to service, type		
>RTS		
and press the Enter key.		
Example of a MAP response:		

MTM 0 Rts Passed

If the RTS command		Do	
passed, and the PM is InSv		step 75	
passed, and the PM is ISTb with card list	a system-generated	step 74	
failed		step 130	
Record the messages on the MAP d	isplay for future referen	ce.	
Repeat steps 70 to 74 for the other N Go to step 76.	T1X80 and NT1X81 ca	rds on the shelf.	
To access the TTP level of the MAP	display, type		
>TRKS;TTP			
and press the Enter key.			
The next action depends if the shelf associated with the FSP card you replace contains a metallic test unit (MTU) or digital test unit (DTU).			
<i>Note:</i> The DTUs and MTUs are in pairs.			
If the shelf	Do		
has MTUs	step 78		
has DTUs	step 93		
does not have MTUs or DTUs	step 108		
To post the first circuit in the MTU, type			
>POST G MTU circuit_no			
and press the Enter key.			
where			
circuit_no is the number of the first MTU	circuit		
To busy the circuit, type			
>BSY			
and press the Enter key.			
To seize the circuit, type			
>SEIZE			
and press the Enter key.			

81	To put the circuit on hold, type
	and press the Enter key.
82	To post the second circuit in the MTU, type
	>NEXT
	and press the Enter key.
83	To busy the circuit, type
	>BSY
	and press the Enter key.
84	To seize the circuit, type
	>SEIZE
	and press the Enter key.
85	To put the circuit on hold, type
	>HOLD
	and press the Enter key.
86	To access the disk utility, type
	>DISKUT
	and press the Enter key.
87	To list the files in the volume that contains the MTU load, type
	>LISTFL vol_name
	and press the Enter key.
	where
	<pre>vol_name is the name of the volume that contains the MTU load</pre>
88	Record the name of the MTU load file.
89	To quit the disk utility, type
	>QUIT
	and press the Enter key.
90	To load the MTU, type
	>LOADFW CC load_name
	and press the Enter key.
	where
NT0X36

in a cabinetized trunk module equipment frame (continued)

load name

is the load file name that you recorded in step 88

lf t	the LOADFW command	Do
pa	issed	step 91
fa	iled	step 130
To r	elease the first MTU circuit, type	
>RI	S MTU circuit_no	
and	press the Enter key.	
whe	ere	
	circuit_no is the number of the first MTU on hold	circuit that you busied, seized,and put
To r	elease the second MTU circuit, ty	/pe
>RI	S MTU circuit_no	
and	press the Enter key.	
whe	ere	
	circuit_no is the number of the second M put on hold	1TU circuit that you busied,seized, and
Go	to step 108.	
То р	post the first circuit in the DTU, ty	pe
>PC)ST G DTU circuit_no	
and	press the Enter key.	
whe	ere	
	circuit_no is the number of the first DTU	circuit
To b	busy the circuit, type	
>BS	SY.	
and	press the Enter key.	
To s	seize the circuit, type	
>SE	IZE	
and	press the Enter key.	
To p	out the circuit on hold, type	
>HC)LD	
and	press the Enter key.	

NT0X36 in a cabinetized trunk module equipment frame (continued)

97	To post the second circuit in the DTU,	type
	>NEXT	
	and press the Enter key.	
98	To busy the circuit, type	
	>BSY	
	and press the Enter key.	
99	To seize the circuit, type	
	>SEIZE	
	and press the Enter key.	
100	To put the circuit on hold, type	
	>HOLD	
	and press the Enter key.	
101	To access the disk utility, type	
	>DISKUT	
	and press the Enter key.	
102	To list the files in the volume that conta	ains the DTU load, type
	>LISTFL vol_name	
	and press the Enter key.	
	where	
	vol_name is the name of the volume that o	contains the MTU load
103	Record the name of the DTU load file.	
104	To quit the disk utility, type	
	>QUIT	
	and press the Enter key.	
105	To load the DTU, type	
	>LOADFW CC load_name	
	and press the Enter key.	
	where	
	load_name is the load file name that you re	corded in step 103
	If the LOADFW command	Do
	passed	step 106
	failed	step 130

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in a cabinetized trunk module equipment frame (continued)

106	To release the first DTU circuit, type	9
	>RLS RLS	
107	To release the second DTU circuit,	type
	>RLS RLS	
108	To post the circuits for the PM, type	
	>POST TM pm_type pm_no	
	and press the Enter key.	
	where	
	pm_type is the type of PM (MTM, STM	И, ТМ)
	pm_no is the number of the PM (0 to	o 9999)
109	To return all the circuits to service,	type
	>RTS ALL	
	and press the Enter key.	
	Example of a MAP response:	
	RTS OK	
110	The next action depends if you reco	orded INB circuits in step 19.
	lf you	Do
	recorded INB circuits	step 111
	did not record INB circuits	step 114
111	To post the first circuit on the list, ty	ре
	>POST T circuit_name ci	rcuit_no
	and press the Enter key.	
	where	
	circuit_name is the circuit name that you r	ecorded in step 19
	circuit_no is the circuit number that you	recorded in step 19
112	To return the circuit to the INB state	e, type
	>BSY INB	
	and press the Enter key.	
112		

NT0X36 in a cabinetized trunk module equipment frame (continued)

114 The next action depends on the results of the PM that you returned to service in step 67.

If the RTS command	Do
passed	step 121
passed, but in-service tests failed, and the system generated a card list	step 115
To manually busy all posted circuits, type	
>BSY ALL	
and press the Enter key.	
To return all circuits to service, type	
>RTS ALL	
and press the Enter key.	
To access the PM level of the MAP display, type	
>PM	
and press the Enter key.	
To post the PM, type	
>POST pm_type pm_no	
and press the Enter key.	
where	
<pre>pm_type is the type of PM (CTM, DTM, MTM, STM, TM)</pre>	
<pre>pm_no is the number of the PM (0 to 9999)</pre>	
To perform an in-service test on the PM, type	
>TST	
and press the Enter key.	
Example of a MAP response:	

NT0X36 in a cabinetized trunk module equipment frame (continued)

MTM	C 0	ISTb	Т	STFAIL			
InSv MTM Sit HOS Foll Test	vce Tests 1 0 Tst Fail 2e Flr RPos 3T 00 D06 5T 00 D06 10wing ISTR 2 Failed	Initiated led 5 Bay_id 5 TME 00 5 TME 00 5 Exist :	Shf 04 04	Descr: MTM : MTM :	iption 000 000	Slot 04 02	EqPEC 2X59 0X70
	If the TST of	command					Do
	passed, an of service	d single-card	l PMs	or an ST	TM remain	n out	step 121
	passed, and all PMs ha	d you worke we been retu	d on al rned to	l PMs o service	n the shel	f and	step 124
	passed, and you worked on all PMs on the shelf but one or more PMs have not been successfully returned to service					step 130	
	failed, and that you di	l single-card id not work c	PMs on to re	or an ST turn to s	M are pr ervice	esent	step 120
	failed, and	you worked	on all	PMs or	the shelf	•	step 130
120 121	Record the n To access the >PM and press the	nessages on t e PM level of f e Enter key.	he MAF the MA	P display P display	for future r , type	eferenc	e.
122	To post the F	PM, type					
	>POST pm_	_type pm_r	no				
	and press the	e Enter key.					
	where						
	is the	# type of PM (N	ITM, ST	ſM, TM)			
	pm_no is the	number of the	e PM (0	to 9999)			
123	Repeat steps	s 64 to 119 for	other I	PMs on th	nis shelf. C	Go to ste	ep 124.

NT0X36 in a cabinetized trunk module equipment frame (end)

124 The next action depends on how many shelves associate with the FSP card you replace.

If	Do
one shelf equipped with PMs associates with the card	e step 126
two shelves equipped with PMs associate with the card, and you returned to service the PM on only one shelf	e step 125
two shelves equipped with PMs associate with the card, and you returned to service the PM on both shelves	e step 126
Repeat steps 59 to 124 for PMs in the other shelf that assoc	istas with the E
card you replace. Go to step 126. The next action depends on the reason that you perform th	nis procedure.
The next action depends on the reason that you perform the line of the sector of the s	his procedure.
The next action depends on the reason that you perform the directed you to this procedure	nis procedure. Do step 127
If a maintenance procedure directed you to this procedure did not direct you to this procedure	his procedure. Do step 127 step 131
If a maintenance procedure directed you to this procedure did not direct you to this procedure Return to the maintenance procedure that directed you to the directed you to this procedure	his procedure. Do step 127 step 131 his procedure a
If a maintenance procedure directed you to this procedure did not direct you to this procedure Return to the maintenance procedure that directed you to th continue as directed. To determine how to handle essential services, consult the support. Continue as directed by operating company pers	his procedure. Do step 127 step 131 his procedure a e next level of connel.
If a maintenance procedure directed you to this procedure did not direct you to this procedure Return to the maintenance procedure that directed you to the continue as directed. To determine how to handle essential services, consult the support. Continue as directed by operating company pers To determine why the component is offline, consult operating personnel. Continue as directed by operating company pers	his procedure. Do step 127 step 131 his procedure at e next level of connel. ing company ersonnel.
If a maintenance procedure directed you to this procedure did not direct you to this procedure Return to the maintenance procedure that directed you to th continue as directed. To determine how to handle essential services, consult the support. Continue as directed by operating company pers To determine why the component is offline, consult operating personnel. Continue as directed by operating company pers For additional help, contact the next level of support.	his procedure. Do step 127 step 131 his procedure a e next level of connel. ing company ersonnel.

131 The procedure is complete.

NT0X36 in an input/output equipment frame

Application

Use this procedure to replace an NT0X36 in an input/output equipment (IOE) frame, as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT0X36	AB	Power control and alarm card	IOE frame

Note: Shelf positions 04, 18, and 32 must contain an input/output controller (IOC) or a disk drive unit (DDU). Shelf positions 55 and 61 must contain a magnetic tape drive unit. A maximum of two of the three shelf positions can be unequipped and covered with filler faceplates. If the shelf positions in the IOE frame in your office have other subsystems or applications, contact the next level of support.

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" provides a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing a NT0X36 in an input/output equipment frame



Replacing NT0X36 in an input/output equipment frame

At your current location

1

ATTENTION

This includes directions to manually busy all terminal controller cards for the IOC. Perform this procedure from a MAP terminal. Make sure that the MAP terminal does not connect to the IOC in use.



CAUTION

Potential loss of service

This procedure includes directions to manually busy an IOC and IOC device controllers or a DDU. Perform this procedure only if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic.



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure that you remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the frame

2 Use the following table to identify the PWR&ALM slot, shelf positions, and fuses that associate with the card you replace.

Note: The alarm, control cards, and fuses are behind the FSP.

Alarm and control card	Slot	Shelf position	Fuse
NT0X36AB	slot 1	04	03
NT0X36AB	slot 1	32	01
NT0X36AB	slot 2	18	02



3

Record the PWR&ALM slot, shelf positions, and fuses that associate with the card you replace.

NT0X36

in an input/output equipment frame (continued)

4 Examine the shelf positions that associate with the card you replace. Record the type of equipment shelves provided.

Note: If you replace the card in slot PWR & ALM 1, you can be required to manually busy functionality in a maximum of two shelves.

At the MAP terminal

5 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

6 To post the input/output controller (IOC), type

>IOC ioc_no

and press the Enter key.

where

8

ioc_no is the number of the IOC (0 to 19)

7 Select a shelf position from the list that you recorded at step 3.

If the shelf	Do
contains one or two DDUs	step 8
contains an IOC	step 16
is empty	step 46
contains an item other than listed here	step 95
To post the DDU controller, type	
>CARD card_no	
and press the Enter key. <i>where</i>	

card_no is the card identification number (0 to 8) Example of a MAP display:

	IOD IOC 0 1 STAT	2 3						
	DIRP: AMA MLP: .	B XFER: . DPPP: .	SLM DPPU	: SLMŁ J: .	osy NOI SCA	AI:	. N	X25:
	IOC CARD 0 PORT 0123	0 1 0123 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123
	STAT		• ••••	·			••	·
	TYPE Card 0 MI Ta St Us	MTD DDU TD apeName atus Id ser	CONS 0 lle	MPC	CONS		CONS	MPC
9	Determine	e the state of th	e DDU cor	ntroller ca	ard.			
	If the ca	rd		Do				
	is MBS	Y		step	13			
	is off:	L		step	87			
	is other	than listed her	re	step	10			
10	To determ	ine if files are c	open on the	e DDU, ty	ype			
	>ALLOC							
	and press	the Enter key.						
	Example	of a MAP respo	onse:					
VOLID	VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O	FILES_	_OPEN
0	IMAGE	2800	45000	D000	0	NO	0	
⊥ 2	XPMLOADS RTMLOADS	2801	35000 20000	D000 D000	0	NO NO	0	
	•							
7	SMDR	2807	5000	D000	0	NO	0	
8	AMA1	2808	5000	D000	0	NO	0	
9 10	AMA2	2809 280A	50 500	D000 D000	0	NO NO	0	

NT0X36

If files	Do	
are open	step 88	
are closed	step 11	
To manually busy the controller,	type	
>BSY		
and press the Enter key.		
To spin down the drive, type		
>STOP		
and press the Enter key.		
Wait until the DDU spins down b status code spun_down appear display.	pefore you proceed to the ne is under the Drive_State hea	xt step. The der on the MA
The next action depends on the of for your office.	disk drive configuration in the	IOC subsyste
<i>Note:</i> If you do not know the contact the next level of supp	file system configuration for ort.	your office,
lf		Do
other DDUs on the shelf are	not present	step 46
other DDUs on the shelf are another DDU is on the shell down	not present	step 46 step 46
other DDUs on the shelf are another DDU is on the shelf down another DDU is on the shelf DDU that you spun down	not present If, and both DDUs spun that is not the mate to the	step 46 step 46 step 15
other DDUs on the shelf are another DDU is on the shelf down another DDU is on the shelf DDU that you spun down another DDU is on the shelf DDU that you spun down	not present If, and both DDUs spun that is not the mate to the If that is the mate to the	step 46 step 46 step 15 step 95
other DDUs on the shelf are another DDU is on the shelf down another DDU is on the shelf DDU that you spun down another DDU is on the shelf DDU that you spun down Repeat steps 8 to 14 for each di Determine the state of the IOC.	not present If, and both DDUs spun that is not the mate to the If that is the mate to the isk drive on the shelf. Go to	step 46 step 46 step 15 step 95 step 46.
other DDUs on the shelf are another DDU is on the shelf down another DDU is on the shelf DDU that you spun down another DDU is on the shelf DDU that you spun down Repeat steps 8 to 14 for each di Determine the state of the IOC.	not present If, and both DDUs spun that is not the mate to the If that is the mate to the isk drive on the shelf. Go to Do	step 46 step 46 step 15 step 95 step 46.
other DDUs on the shelf are another DDU is on the shelf down another DDU is on the shelf DDU that you spun down another DDU is on the shelf DDU that you spun down Repeat steps 8 to 14 for each di Determine the state of the IOC. If the state of the IOC is M	not present If, and both DDUs spun that is not the mate to the If that is the mate to the isk drive on the shelf. Go to Do step 46	step 46 step 46 step 15 step 95 step 46.
other DDUs on the shelf are another DDU is on the shelf down another DDU is on the shelf DDU that you spun down another DDU is on the shelf DDU that you spun down Repeat steps 8 to 14 for each di Determine the state of the IOC. If the state of the IOC is M is other than listed here	not present If, and both DDUs spun that is not the mate to the If that is the mate to the isk drive on the shelf. Go to Do step 46 step 17	step 46 step 46 step 15 step 95 step 46.

in an input/output equipment frame (continued)

17	The next action depends if terminal controller cards are on the shelf.									
	If term	inal cont	roller c	ards	D	Do				
	are on	the shel	f		st	ep 18				
	are not	t on the s	shelf		st	ep 24				
18	To post t	he card,	type							
	>CARD	card_n	0							
	and pres	s the En	ter key.							
	where									
card_no is the card identification number (0 to 8)						to 8)				
	Example	e of a MA	P displa	у:						
IOD IOC 0 1 STAT	23.									
DIRP: AMA MLP: .	B XFER DPPF	2: . >: .	SLM DPP	: SLM U: .	bsy NO SC	P: AI:	. N.	X25:	•	
IOC CARD 0 PORT	0 0123	1 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123	8 0123	
STAT										
TYPE Card 6 Status Cons Id ConType	MTD Ckt	DDU 0 RD040 VT100	CONS RD VT	MPC 1 041 100	CONS 2 - TEAM VT10	14	CONS 3 - TEAM6 VT100	MPC		

19 Note the CONS ID and status for each port.

lf	Do
all ports are ManBsy	step 23
a minimum of one port is Offl	step 87
a minimum of one port is . (dot)	step 20
all ports are in any other out-of-service state	step 21

20 Inform operating company personnel that you will remove from service the CONS IDs for the card you replace.

21 To manually busy a port on the card, type

>BSY port_no

and press the Enter key.

where

port_no
 is the port identification number (0 to 3)

If the BSY command	Do	
passed	step 22	
failed	step 95	

- 22 Repeat step 21 until you manually busy all ports on the card. Go to step 23.
- **23** Repeat steps 18 to 22 for each terminal controller card on the shelf. Go to step 24.
- 24 The next action depends on if multiprotocol controller (MPC) cards are on the shelf.

If MPC cards	Do
are on the shelf	step 25
are not on the shelf	step 32

25 To post the card, type

>CARD card_no

and press the Enter key.

where

card_no

is the card identification number (0 to 8)

Example of a MAP display:

IOD IOC (STAT	01.	23								
DIRP: MLP :	AMA •	B XI DE	FER: PPP:	• SLM • DPP	: SLM U: .	bsy N(S(OP: . CAI:	. N2	x25:	
IOC 0	CARE PORT STAT) (012) 3 012	L 2 23 0123	3 0123	4 012	5 3 0123	6 0123	7 8 012	8 3 0123
	TYPE	MTD	DDU	CONS	MPC	CONS	5	CONS	MPC	
Card	3 t U S	Unit Iser Status	S	0 YSTEM Ready	BOARD COMAC	LIN T UNE	KO LINH Q N/A	K1 LII UNI	NK2 EQ	LINK3 ENABLD
2	26	Deter	mine the	e state of th	ne card.					
		If the card state					Do			
		is manb			step 31					
		is OFFL			step 87					
		is of	ther that	n listed he	ere		step 27			
		No dis	te: The	card state	appear	s under	the BOA	RD head	der on t	he MAP
2	27	To dis	To display status information on current MPC conversations, type							
		>QCO	>QCONV							
		and p	ress the	Enter key.						
		Exam	pie of a	MAP resp	onse:					
	MP	C L	LCN	STATUS	CCC	SEC	PARDEV	INP	OPEN	OWNER
		0303	1 I 2 I	NACTIVE NACTIVE	none none	none none	none none	FIL FIL	0 0	none none
		lf					Do			
		a m tive	inimum	of one se	ession is	s ac-	step 28			

NT0X36

in a	an	input/outp	out equipment	frame	(continued)
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	16					
						
	all sessions are inactive	step 29				
8	Notify all users that an interruption all sessions are inactive before you	of the MPC service will occur. Wait unti proceed.				
9	To manually busy the card and the card links, type					
	>BSY ALL FORCE					
	and press the Enter key.					
	Example of a MAP response:					
	TYPE YES TO VERIFY FORCE, Please confirm ("YES", "Y"	NO TO CANCEL COMMAND , "NO", or "N"):				
)	To confirm the command, type					
	>YES					
	and press the Enter key.					
	If the BSY command	Do				
	passed	step 31				
	failed	step 95				
	Repeat steps 25 to 30 for each MP	C card on the shelf. Go to step 32.				
2	The next action depends if disk drive controller cards are on the shelf.					
	If disk drive controller cards	Do				
	are on the shelf	step 33				
	are not on the shelf	step 17				
3	To post the card, type					
	>CARD card_no					
	and press the Enter key.					
	where					
	card_no is the card identification num	nber (0 to 8)				
	Example of a MAP display:					

IOD IOC 0 STAT .	1 2 3							
DIRP: AMA B XFER: . SLM : SLMbsy NOP : . NX25: . MLP : . DPPP: . DPPU: . SCAI: .								
IOC CA 0 PO 0123 ST	RD 0 RT 0123 01	1 2 123 0123	3 0123 012	4 5 23 012	3 012	5 7 23 0123	8	
TY Card 0	PE MTD DI MTD TapeName Status User	DU CONS D O Idle	MPC COI	NS	COI	IS MPC		
34	Determine the	state of the car	d.					
	If the card		D	0				
	is MBSY		st	ep 37				
	is offl		st	ep 87				
	is other than	listed here	st	ep 35				
35	To determine if >ALLOC and press the E Example of a N	files are open Enter key. <i>IAP response:</i>	on the DDL	J, type				
VOLII	O VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O		
F1LES 0 1 2	IMAGE XPMLOADS RTMLOADS	2800 2801 2802	45000 35000 20000	D000 D000 D000	0 0 0	NO NO NO	0 0 0	
7 8 9 10	SMDR AMA1 TST AMA2	2807 2808 2809 280A	5000 5000 50 500	D000 D000 D000 D000	0 0 0 0	NO NO NO NO	0 0 0 0	

NT0X36

If files	Do
are open	step 88
are closed	step 36
To manually busy the card, type	
>BSY	
and press the Enter key.	
Example of a MAP response: bsyOK	
Repeat steps 33 to 36 for each disk di step 38.	rive controller card on the shelf. Go to
The next action depends on if magneti shelf.	c tape drive controller cards are on the
If magnetic tape drive controller cards	Do
are on the shelf	step 39
are not on the shelf	step 44
To post the card, type	
>CARD card_no	
and press the Enter key.	
where	
card_no is the card identification numbe	er (0 to 8)
Example of a MAP display:	

in an input/output equipment frame (continued)

IOD IOC STA	0 1 2 3 T	
DIR MLP	P: AMA B XFER: . SLM : . DPPP: . DPF	1 : SLMbsy NOP : . NX25: DU: . SCAI: .
IOC 0 012	CARD 0 1 2 PORT 0123 0123 0123	3 4 5 6 7 0123 0123 0123 0123 0123
	STAT	
Care	TYPE MTD DDU CONS d 0 MTD 0 TapeName Status Idle User	MPC CONS CONS MPC
40	Determine the state of the card.	
	If the card	Do
	is ManBsy	step 43
	is Offl	step 87
	is Idle	step 42
	is other than listed here	step 41
41	Notify all users that interruption of	service for the device will occur. Wait until
12	all users finish with the device bei	fore you proceed to the next step.
72	>BSY	
	and press the Enter key.	
	Example of a MAP response:	
	bsy OK	
43	Repeat steps 39 and 42 for each shelf. Go to step 31.	magnetic tape drive controller card on the
44	To return to the IOC level of the N	1AP display, type
	>QUIT	
	and press the Enter key.	
45	To manually busy the IOC, type	
	>BSY IOC	

and press the Enter key.

46 The next action depends on the FSP card you replace.

lf you	Do
replace the card in slot PWR&ALM 1	step 47
replace the card in slot PWR&ALM 2	step 48

47 Repeat step 7 for the second shelf position that you recorded at step 3. Go to step 48.

At the frame

48



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

For each power converter on the shelf, pull down and set the handle of the power converter POWER switch to the OFF position.

- 49 Remove the fuses that associate with the alarm and control card, as recorded in step 3.
- 50 Unscrew the slotted nut on the left of the FSP.

Note: Friction clips fasten some FSP front panels. Hold the panel at each end. To remove the panel, pull the panel toward you.

- 51 Open the FSP.
- 52



WARNING Loss of service

Make sure that the alarm and control card that you remove controls the shelf that you turned down. Removal of the wrong card causes a loss of service.

Remove the card from the slot that you recorded in step 3.

53 Insert the replacement card.

54	Cl	Close the FSP.						
		<i>Note:</i> For FSP front panels fastened with friction clips, align the pins on the back of the panel with the holes on the FSP. Press the panel in tightly.						
55	Tię	ghten the slotted nut on the FSP.						
56	Ins	sert the fuses that you removed in st	tep 49.					
57	Th	e next action depends on the power	converter on the she	lf.				
	lí	f the power converter	Do					
	is c	s an NT2X70AA/AB/AC/AD ard	step 58					
	i	s an NT2X70AE card	step 59					
	i	s an NT1X78 card	step 60					
58	Po	ower up the converter.						
	а	Pull up and set the handle of the P Hold the handle until the CONVER	OWER switch to the R RTER FAIL LED turns	ESET position. off.				
	b	Release the handle.						
	С	Go to step 61.						
59	Po	ower up the converter, as follows.						
	а	Pull up and set the handle of the F	POWER switch to the	ON position.				
	b	Press and hold the RESET button CONVERTER FAIL LED turns off.	on the power convert	er until the				
	С	Release the RESET button.						
	d	Go to step 61.						
60	Re	eset the power converter:						
	а	Pull up and set the POWER switch	n on the converter to t	he ON position.				
	b	Press and hold the RESET button	on the power convert	er.				
	С	When the CONVERTER FAIL lam	p turns off, release the	RESET button.				
61	Ve co	Verify that the power LED is lit. A lit power LED indicates that the power converter is ON.						
	lí	f the power LED		Do				
	i: (is lit, and is the only power converter on the shelf step 63 (IOC shelf or a single-DDU shelf)						
	is (†	s lit, and another power conver two-DDU shelf)	ter is on the shelf	step 62				
	i	is not lit step 95						

62 Repeat step 57 for the other power converter on the shelf.

At the MAP terminal

63 Select a shelf position from the list that you recorded at step 3.

If the shelf	Do	
has one or two DDUs	step 64	
has an IOC	step 68	
To post the DDU controller, type		
>CARD card_no		
and press the Enter key.		
where		
card_no is the card identification r	number (0 to 8)	
To return the DDU controller to s	service, type	
>RTS		
and press the Enter key.		
<i>Note:</i> The return to service p RTS command also spins up	rocess can require a maximu the disk drive.	um of 3 min. The
If the RTS command		Do
passed (status is Ready and	drive state is on-line)	step 66
failed (status or drive state is	s other than listed here)	step 95
The next action depends on the c for your office.	lisk drive configuration in the	IOC subsystem
lf		Do
other DDUs are not on the s	helf	step 84
another DDU is on the shelf	and both are in service	step 84
another DDU is on the shelf service	that you did not return to	step 67
Repeat steps 64 to 66 for each o	disk drive on the shelf. Go t	o step 83.
To return the IOC to service, typ	e	
>RTS IOC		
and press the Enter key.		

The next act	ext action depends if the controller cards are on the shelf.	
If disk driv drive or m controller	e or magnetic tape agnetic tape drive cards	Do
are on the	shelf	step 70
are not on	the shelf	step 73
To post the c	ard, type	
>CARD ca	rd_no	
and press th	e Enter key.	
where		
card_nc is the	card identification numb	per (0 to 8)
To return the	card to service, type	
>RTS		
and press th	e Enter key.	
Repeat step: card on the s	s 70 and 71 for each dis shelf. Go to step 73.	k drive or magnetic tape drive contro
The next act	ion depends if MPC car	ds are on the shelf.
If MPC car	ds	Do
are on the	shelf	step 74
are not on	the shelf	step 80
To post the c	ard, type	
>CARD ca	rd_no	
and press th	e Enter key.	
where		
card_nc is the	card identification numb	per (0 to 8)
To load the N	/IPC, type	
>DOWNLD		
and press th	e Enter key.	
Example of a	a MAP response:	

DOWNLOAD	OF	TABLE	MPC	FILE	"MPC403AB"	SUCCEEDED.
----------	----	-------	-----	------	------------	------------

If the DOWNLD command	Do	
passed	step 76	
failed	step 95	
To return the MPC to service, type		
RTS ALL		
and press the Enter key.		
Example of a MAP response:		
REQUEST PASSED FOR CARD.R	EQUEST PASSED FOR I	LINKS.
Nait 1 min to determine the status	of MPC components.	
If the system status		Do
is Ready, the board status is	COMACT, and the link	step 78
status is ENABLD for each link		
is other than listed here	•	step 95
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car	d on the shelf. Go to ster	step 95
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av	d on the shelf. Go to step vailable.	step 95 o 79.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina	d on the shelf. Go to ster vailable. I controller cards are on t	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards	rd on the shelf. Go to step vailable. Il controller cards are on t Do	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type CARD card_no	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type CARD card_no and press the Enter key.	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type CARD card_no and press the Enter key. where	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type CARD card_no and press the Enter key. where card_no is the card identification num	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type CARD card_no and press the Enter key. where card_no is the card identification num To return a port on the card to serv	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.
status is ENABLD for each link is other than listed here Repeat steps 74 to 77 for each car Notify users that MPC service is av The next action depends if termina If terminal controller cards are on the shelf are not on the shelf To post the card, type CARD card_no and press the Enter key. where card_no is the card identification num To return a port on the card to server	rd on the shelf. Go to step vailable. Il controller cards are on t Do step 81 step 83	step 95 o 79. he shelf.

passedstep 83failedstep 95The next action depends on the FSP card that you replace.If youDoreplace the card in slot PWR&ALM 1replace the card in slot PWR&ALM 2Repeat step 63 for the second shelf position that you recorded in to step 85.The next action depends on the reason that you perform this proIf a maintenance procedureDodirected you to this procedurestep 86did not direct you to this proce-step 96dureReturn to the maintenance procedure that directed you to this proReturn to the maintenance procedure that directed you to this pro	If the RTS command	Do	
failedstep 95The next action depends on the FSP card that you replace.If youDoreplace the card in slot PWR&ALM 1replace the card in slot PWR&ALM 2steRepeat step 63 for the second shelf position that you recorded in to step 85.The next action depends on the reason that you perform this proIf a maintenance procedureDodirected you to this procedurestep 86did not direct you to this proce- durestep 96Return to the maintenance procedure that directed you to this pro continue as directed.	passed	step 83	
The next action depends on the FSP card that you replace. If you Do replace the card in slot PWR&ALM 1 ste replace the card in slot PWR&ALM 2 ste Repeat step 63 for the second shelf position that you recorded in to step 85. The next action depends on the reason that you perform this pro If a maintenance procedure Do directed you to this procedure step 86 did not direct you to this proce- step 96 dure Return to the maintenance procedure that directed you to this procontinue as directed.	failed	step 95	
If youDoreplace the card in slot PWR&ALM 1stereplace the card in slot PWR&ALM 2steRepeat step 63 for the second shelf position that you recorded in to step 85.steThe next action depends on the reason that you perform this proIf a maintenance procedureDodirected you to this procedurestep 86did not direct you to this proce-step 96dureReturn to the maintenance procedure that directed you to this proReturn to the maintenance procedure that directed you to this pro	The next action depends on the FSP of	card that you replace.	
replace the card in slot PWR&ALM 1 ster replace the card in slot PWR&ALM 2 ster Repeat step 63 for the second shelf position that you recorded in to step 85. The next action depends on the reason that you perform this pro If a maintenance procedure Do directed you to this procedure step 86 did not direct you to this proce- step 96 dure Return to the maintenance procedure that directed you to this pro continue as directed.	lf you		Do
replace the card in slot PWR&ALM 2stepRepeat step 63 for the second shelf position that you recorded in to step 85.The next action depends on the reason that you perform this proIf a maintenance procedureDodirected you to this procedurestep 86did not direct you to this proce-step 96dureReturn to the maintenance procedure that directed you to this procedure	replace the card in slot PWR&AL	M 1	step 84
Repeat step 63 for the second shelf position that you recorded in to step 85. The next action depends on the reason that you perform this pro If a maintenance procedure Do directed you to this procedure step 86 did not direct you to this proce- step 96 dure Return to the maintenance procedure that directed you to this procedure	replace the card in slot PWR&AL	.M 2	step 85
If a maintenance procedure Do If a maintenance procedure Do directed you to this procedure step 86 did not direct you to this proce- step 96 dure Return to the maintenance procedure that directed you to this procedure as directed.	Repeat step 63 for the second shelf po o step 85.	osition that you record	ed in step
If a maintenance procedureDodirected you to this procedurestep 86did not direct you to this proce- durestep 96Return to the maintenance procedure that directed you to this pro continue as directed.	The next action depends on the reaso	n that you perform thi	s procedu
directed you to this procedure step 86 did not direct you to this proce-step 96 dure Return to the maintenance procedure that directed you to this pro continue as directed.	If a maintenance procedure	Do	
did not direct you to this proce- step 96 dure Return to the maintenance procedure that directed you to this pro continue as directed.	directed you to this procedure	step 86	
Return to the maintenance procedure that directed you to this pro continue as directed.	did not direct you to this proce- dure	step 96	
To determine why the component is offline, consult operating corpersonnel. Continue as directed by operating company personn	Return to the maintenance procedure continue as directed.	hat directed you to thi	s procedu

88



WARNING Loss of data

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- billing data is lost
- open Logutil files are lost or corrupted

	Before starting card replacement proc Close files from DIRP and demount ac procedure, "Deallocating Recording V Maintenance Procedures.	edures, close the DIRP volumes. ctive volumes from the DDU. Use the olumes in the DIRP Utility" in <i>Routine</i>
89	Stop files recording to and from the Lo the Logutil command level:	ogutil. Type the following command at
	>LOGUTIL;LISDEVS	
	and press the Enter key.	
90	Close files on volumes on the DDU of	the IOC.
	>STOPDEV dev_name	
	and press the Enter key.	
	where	
	dev_name is the name of the device	
	>QUIT	
	and press the Enter key.	
91	Repeat the ALLOC command to deter	mine if files are closed, by typing
	>ALLOC	
	and pressing the Enter key.	
	If the files	Do
	are open	Do step 92
	are open are closed	Do step 92 step 93
92	If the files are open are closed Confirm that you have done steps 88 t your next level of support.	Do step 92 step 93 to 91. If the files are still open, contact
92 93	If the files are open are closed Confirm that you have done steps 88 t your next level of support. Manually busy the DDU, by typing	Do step 92 step 93 to 91. If the files are still open, contact
92 93	If the files are open are closed Confirm that you have done steps 88 to your next level of support. Manually busy the DDU, by typing >BSY	Do step 92 step 93 to 91. If the files are still open, contact
92 93	If the files are open are closed Confirm that you have done steps 88 to your next level of support. Manually busy the DDU, by typing >BSY and pressing the Enter key.	Do step 92 step 93 co 91. If the files are still open, contact
92 93	If the files are open are closed Confirm that you have done steps 88 t your next level of support. Manually busy the DDU, by typing >BSY and pressing the Enter key. If the DDU	Do step 92 step 93 to 91. If the files are still open, contact Do
92 93	If the files are open are closed Confirm that you have done steps 88 t your next level of support. Manually busy the DDU, by typing >BSY and pressing the Enter key. If the DDU is MBSY	Do step 92 step 93 to 91. If the files are still open, contact Do step 94
92 93	If the files are open are closed Confirm that you have done steps 88 t your next level of support. Manually busy the DDU, by typing >BSY and pressing the Enter key. If the DDU is MBSY is not MBSY	Do step 92 step 93 to 91. If the files are still open, contact Do step 94 step 95
92 93 94	If the files are open are closed Confirm that you have done steps 88 t your next level of support. Manually busy the DDU, by typing >BSY and pressing the Enter key. If the DDU is MBSY is not MBSY When cards are replaced and the DDU procedure "Allocating Recording Volum Maintenance Procedures.	Do step 92 step 93 co 91. If the files are still open, contact Do step 94 step 95 J is in service, open the files. Use the mes in the DIRP Utility" in <i>Routine</i>
92 93 94 95	If the files are open are closed Confirm that you have done steps 88 t your next level of support. Manually busy the DDU, by typing >BSY and pressing the Enter key. If the DDU is MBSY is not MBSY When cards are replaced and the DDD procedure "Allocating Recording Volum Maintenance Procedures. For additional help, contact the next let	Do step 92 step 93 to 91. If the files are still open, contact Do step 94 step 95 J is in service, open the files. Use the mes in the DIRP Utility" in <i>Routine</i> evel of support.

NT0X36 in an international cabinet auxiliary module

Application

Use this procedure to replace an NT0X36 in an international cabinet auxiliary module (ICAM), as listed in the following table.

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the "Index" for a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT0X36	AB	Power control and alarm card	CAM equipped with office alarm unit (OAU), international packaged trunk module (IPTM) or international maintenance trunk module (IMTM).

Common procedures

Loading a PM is referenced in this procedure.

Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Summary of Replacing an NT0X36 in an international cabinet auxiliary module



Replacing an NT0X36 in an international cabinet auxiliary module

At your current location

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal in the FSP.



CAUTION

Loss of service

This procedure includes directions to remove an IMTM, or an IPTM from service, which can cause service degradation. Perform this procedure only if necessary to restore out-of-service components. Otherwise, carry out this procedure during periods of low traffic. Do not perform this procedure if essential services are using PM resources.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the cabinet

- 2 Unscrew the slotted nut on the left-hand side of the FSP.
- 3 Open the FSP.
- 4 Use the following table and illustration to identify the shelf positions and FSP fuses associated with the power and alarm card you are replacing.

(Sheet 1 of 2)

Power and alarm card slot	FSP fuse number	Shelf position
PWR ALM 1	01	05
	02	33

(Sheet	2 of 2)		
	Power and alarm card slot	FSP fuse number	Shelf position
	PWR ALM 2	04	19
	PWR ALM 3	05	47



5



CAUTION

Potential loss of service

If the power distribution in the procedure below does not match the configuration in your office, contact the next level of support before proceeding.

Record the fuse numbers and shelf positions associated with the card you are replacing.

6 Select a shelf associated with the FSP card you are replacing.

At the MAP terminal

Access the PM level of the MAP display by typing
 >MAPCI;MTC;PM
 and pressing the Enter key.
 Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1		6			102

8 The next step depends on the type of PM that is provisioned in the shelf.

If the PM is an	Do
OAU	step 9
IMTM, or IPTM	step 13

9 Post the OAU by typing

>POST OAU pm_no

and pressing the Enter key.

where

pm_no

is the number of the PM (0 to 9999)

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1	0	б	0	0	102
OAU	1	0	0	0	0	0

OAU 0 SysB

10 Determine the state of the OAU.

Note: The state of the OAU is shown to the right of the PM number. In the example display in step 9, the OAU is system busy (SysB).

If the OAU is	Do	
Offl	step 129	

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	If the OAU is		Do			
	ManB		step 4	0		
	anything else		step 1	1		
11	A maintenance flag (Mtco maintenance tasks are in status line before procee	e) may appo n progress. ding to the	ear, indica Wait until next step.	ting that sy the flag dis	stem-initiat appears fr	ed om the
12	Manually busy the PM by	/ typing				
	>BSY					
	and pressing the Enter ke	ey.				
	Example of a MAP displa	ay:				
	SysB PM 58 OAU 0	ManB 1 1	OffL 6 0	CBsy 14 0	ISTb 12 0	InSv 17 0
	OAU 0 ManB bsy OAU 0 Bsy OK.					
	Go to step 40.					
13	From office records or off using the PM resources t	fice personr that will be a	nel, verify affected b	that essenti y this proce	ial services dure.	are not
	<i>Note:</i> When verifying with the shelf you are include NT1X80 cards on the shelf; these sin complete this procedu for essential services of both STMs must be re	resources t working on. and NT1X gle-card PM re. If the sh on the STM emoved fron	used, inclu For all so 81 cards (As must bo nelf is equi provisione n service t	de all PMs ervice and t single-card e removed t pped with a ed on the oth o complete	that are ass trunk modu PMs) prov from servic in STM, als her half of th this proce	sociated iles, risioned re to so check ne shelf; dure.
	If essential services				Do	
	are using PM resourc	es and one	e or more	PMs are i	n step 1	28
	ore using PM resource	D lle bre a	Ms are o	it of servic	e stan 1	1
		ls and an F			c step 1	4
	are not using PM reso	ources			step 1	4

in an international cabinet auxiliary module (continued)

14 Post the PM by typing >POST pm_type pm_no and pressing the Enter key.

where

pm_type
is the type of PM (IMTM, IPTM)

pm_no

is the number of the PM (0 to 9999)

Example of a MAP display:

PM IMTM		SysB 1 1	ManB 0 0	OffL 6 0	CBsy 0 0	ISTb 0 0	InSv 102 9
IMTM	0	SysB					

15 Determine the state of the PM.

Note: The PM state is shown to the right of the PM number. In the example display in step 14, the PM state is system busy (SysB).

If the PM is	D	Do				
Offl	SI	tep 129				
anything else	S	tep 16				
Access the TTP level	of the MAP display	by typing				
>MAPCI;MTC;TRKS;TTP						
and pressing the Enter key						
Example of a MAP d	isplay:					
DELQ	BUSYQ	DIG				
13						
PM NO.	COM LANG	STA S R	DOT TE	RESULT		
Post the circuits for the PM by typing						
>POST P pm_typ	pe pm_no					
and pressing the Enter key.						
where						
pm_type is the type of F	PM (IMTM, IPTM)					
pm_no is the number	of the PM (0 to 999	9)				
Example of a MAP d	isplay:					
	If the PM is Of fl anything else Access the TTP level >MAPCI;MTC;TRKS; and pressing the Ent Example of a MAP di DELQ 13 PM NO. Post the circuits for th >POST P pm_type and pressing the Ent where pm_type is the type of F pm_no is the number Example of a MAP di	If the PM is D Of fl s anything else s Access the TTP level of the MAP display >MAPCI;MTC;TRKS;TTP and pressing the Enter key. Example of a MAP display: DELQ BUSYQ 13 PM NO. COM LANG Post the circuits for the PM by typing >POST P and pressing the Enter key. where pm_type is the type of PM (IMTM, IPTM) pm_no is the number of the PM (0 to 999) Example of a MAP display:	If the PM isDoOfflstep 129anything elsestep 16Access the TTP level of the MAP display by typing>MAPCI ; MTC ; TRKS ; TTPand pressing the Enter key.Example of a MAP display:DELQBUSYQDIG13PM NO.POST P pm_type pm_noand pressing the Enter key.wherepm_typeis the type of PM (IMTM, IPTM)pm_nois the number of the PM (0 to 9999)Example of a MAP display:	If the PM is Do Off1 step 129 anything else step 16 Access the TTP level of the MAP display by typing >MAPCI;MTC;TRKS;TTP and pressing the Enter key. Example of a MAP display: DELQ BUSYQ DELQ BUSYQ DELQ BUSYQ DIG 13 PM NO. POST P POST P pm_type is the type of PM (IMTM, IPTM) pm_no is the number of the PM (0 to 9999) Example of a MAP display:		

		DUCYO	DIC				
TTP 6-013	3 В Папа	BUSIQ	DIG				
CKT TYPE	PM NO.	COM LANG	STA S R DOT TE RESULT				
CONF6 IN	NTM 0 0 CF6P	C) IDL				
post p IMT LAST CKT = SHORT CLLI OK,CKT POS	TM 0 = 17 L IS: CF6P STED						
18	Determine if the state or by INB to the right of the	f any of the circuit ne trunk name on	ts is installation busy (INB), indicated the MAP display.				
	<i>Note:</i> The state of each circuit can be determined by repeating the command NEXT until the state of each circuit has been determined.						
	lf	[Do				
	one or more circuit INB state no circuits are in the	its is in the second state state state second state stat	step 19 step 24				
19	Record the name and r	number of each o	f the circuits in the INB state.				
20	Manually busy all posted circuits by typing						
	>BSY ALL		-				
	and pressing the Enter key.						
	Example of a MAP display:						
POST 18 TTP 6-027	DELQ I	BUSYQ A 6	DIG				
CKT TYPE	PM NO.	COM LANG	STA S R DOT TE RESULT				
BSYQ ALL II	DLE						
bsy all OK,POST SEI	IS SET IN BSYQ						
21	Wait until all circuits hat queue) before proceed	ve been manually ing to the next ste	y busied (removed from the busy ep.				

Note: The digit to the right of the BUSYQ header indicates the number of circuits still in use. As a circuit becomes available, it is manually busied and the number in the queue is decremented by one. When the field is blank, this indicates that all circuits have been manually busied.

22 The next action depends on whether the affected shelf is provisioned with either the NT1X80 enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

provisioned with either the NT1X80 or the NT1X81 step 23 not provisioned with either the NT1X80 or the step 27 NT1X81 Post the circuits for the single-card PM by typing					
not provisioned with either the NT1X80 or the step 27 NT1X81 Post the circuits for the single-card PM by typing					
Post the circuits for the single-card PM by typing					
r set the should for the single safe r in by typing					
>POST P pm_type pm_no					
and pressing the Enter key.					
where					
<pre>pm_type is the type of single-card PM (CTM, DTM)</pre>					
pm_no is the number of the PM (0 to 9999)					
Note: The NT1X80 EDRAM card is referred to as a DTM on the M display, and the NT1X81 conference card is referred to as a CTM. cards are known as single-card PMs.	AP Both				
Manually busy all posted circuits by typing					
>BSY ALL					
and pressing the Enter key.					
Wait until all circuits have been manually busied (removed from the bu queue) before proceeding to the next step.	isy				
Repeat steps 23 to 25 for all NT1X80 and NT1X81 cards provisioned of shelf.	on the				
Access the PM level of the MAP display by typing					
>PM					
and pressing the Enter key.					
Post the PM by typing					
>POST pm_type pm_no					
and pressing the Enter key.					
where					
<pre>pm_type is the type of PM (IMTM, IPTM)</pre>					
pm_no is the number of the PM (0 to 9999)					
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If the	PM is		Do			
ManB			step 3	81		
anythi	ing else		step 3	80		
Manuall	ly busy the PM	by typing				
>BSY						
and pre	ssing the Ente	r key.				
Exampl	e of a MAP dis	play:				
PM IMTM	SysB 58 0	ManB 1 1	OffL 6 0	CBsy 14 0	ISTb 12 0	In
IMTM bsy IMTM (OK.	0 Man D Bsy	В				
The nex NT1X80 or the N	t action depen enhanced dig	ds on wheth lital recorded ence card.	ner the shel d announce	f is provisio ment mach	oned with e nine (EDRA	ither t AM) ca
The nex NT1X80 or the N If the s	t action depen) enhanced dig IT1X81 confere shelf is	ds on wheth ital recorded ence card.	ner the shel d announce	f is provisic ment mach	oned with e hine (EDRA	ither t AM) ca
The nex NT1X80 or the N If the s	t action depen) enhanced dig IT1X81 confere shelf is sioned with ei	ds on wheth ital recorder ence card.	the shel d announce Γ1X80 or t	f is provisic ement mack	ned with e hine (EDRA Do 81 step 3	ither t AM) ca
The nex NT1X80 or the N If the s provise not p NT1X	t action depen 0 enhanced dig IT1X81 confere shelf is sioned with ei rovisioned w	ds on wheth ital recorder ence card. ther the NT vith either	her the shel d announce Γ1X80 or t the NT1	f is provisic ement mach he NT1X8 X80 or t	Doned with e hine (EDRA Do 81 step 3 he step 3	ither t AM) ca 32 36
The nex NT1X80 or the N If the s provis not p NT1X Post the	t action depen) enhanced dig IT1X81 confere shelf is sioned with ei rovisioned w [81 e single-card P	ds on wheth ital recorder ence card. ther the NT vith either M by typing	her the shel d announce Γ1X80 or t the NT1	f is provisic ement mack he NT1X8 X80 or t	Domed with e hine (EDRA Do 81 step 3 he step 3	ither tl AM) ca 32 36
The nex NT1X80 or the N If the s provis not p NT1X Post the >POST	t action depend enhanced dig IT1X81 conference shelf is sioned with eit provisioned with arovisioned with single-card P pm_type	ds on wheth ital recorder ence card. ther the NT /ith either M by typing pm_no	TIX80 or t the NTI	f is provisic ment mack he NT1X8 X80 or t	Do Do B1 step 3 he step 3	ither tl AM) ca 32 36
The nex NT1X80 or the N If the s provise not p NT1X Post the >POST and pre	tt action depen) enhanced dig IT1X81 confere shelf is sioned with ei rovisioned w X81 e single-card P pm_type p ssing the Ente	ds on wheth ital recorder ence card. ther the NT vith either M by typing om_no r key.	for the shel d announce Γ1X80 or t the NT1	f is provisic ment mach he NT1X8 X80 or t	oned with e hine (EDRA Do 81 step 3 he step 3	ither the the second se
The nex NT1X80 or the N If the s provise not p NT1X Post the >POST and pre where	t action depen) enhanced dig IT1X81 confere shelf is sioned with ei rovisioned w [81 e single-card P pm_type 1 ssing the Ente	ds on wheth ital recorder ence card. ther the NT vith either M by typing om_no r key.	for the shel d announce Γ1X80 or t the NT1	f is provisic ment mack he NT1X8 X80 or t	ned with e hine (EDRA Do 81 step 3 he step 3	ither ti AM) ca 32 36
The nex NT1X80 or the N If the s provise not p NT1X Post the >POST and pre where pm	tt action depen) enhanced dig IT1X81 confere shelf is sioned with ei provisioned w (81 e single-card P pm_type f ssing the Ente _type s the type of sin	ds on wheth ital recorder ence card. ther the NT vith either M by typing om_no r key.	her the shel d announce Γ1X80 or t the NT1 the NT1	f is provisic ment mach he NT1X8 X80 or t	oned with e hine (EDRA Do 81 step 3 he step 3	ither ti AM) ca 32 36
The nex NT1X80 or the N If the s provis not p NT1X Post the >POST and pre where pm is	t action depen) enhanced dig IT1X81 conference shelf is sioned with einer rovisioned with arovisioned with (81 e single-card P pm_type from the Enter sthe type of single- s the number of single-card	ds on wheth ital recorder ence card. ther the NT with either M by typing om_no r key. ngle-card Pl f the PM (0	M (CTM, DT to 9999)	f is provisic ment mack he NT1X8 X80 or t	ned with e hine (EDRA Do 81 step 3 he step 3	ither tl AM) ca 32 36
The nex NT1X80 or the N If the s provise not p NT1X Post the >POST and pre where pm is pm	tt action depen) enhanced dig IT1X81 confere shelf is sioned with ei provisioned w X81 e single-card P pm_type 1 ssing the Ente _type s the type of sin _no s the number of ine the state of	ds on wheth ital recorder ence card. ther the NT /ith either M by typing om_no r key. ngle-card PI f the PM (0	M (CTM, DT to 9999) card PM.	f is provisic ment mack he NT1X8 X80 or t	ned with e hine (EDRA Do 81 step 3 he step 3	ither the the the the the the the the the the
The nex NT1X80 or the N If the s provis not p NT1X Post the >POST and pre where pm is Determi	tt action depen) enhanced dig IT1X81 confere shelf is sioned with ei provisioned w X81 e single-card P pm_type	ds on wheth ital recorder ence card. ther the NT vith either M by typing om_no r key. ngle-card Pf f the PM (0 the single-c	M (CTM, DT to 9999) card PM.	f is provisic ment mach he NT1X8 X80 or t	oned with e hine (EDRA Do 81 step 3 he step 3	ither the the second se

in an international cabinet auxiliary module (continued)

If the PM is	Do
anything else	step 34
Manually busy the single-ca	ard PM by typing
>BSY	
and pressing the Enter key.	
Repeat steps 32 to 34 for a shelf.	II NT1X80 and NT1X81 cards provisioned on th
The next action depends or	n whether the shelf is provisioned as an IPTM.
If the shelf is provisione	d as Do
an IPTM, and you hav IPTM	e manually busied only one step 37

37



CAUTION Loss of service

Powering down an IPTM will trip the mate power converter in the other IPTM provisioned on the shelf. Therefore, it is best to manually busy and power down both IPTMs on a shelf.

Repeat steps 14 to 36 for the IPTM in the other half of the shelf.

38 The next action depends on how many shelves equipped with PMs are associated with the FSP card you are replacing.

lf	Do
one shelf equipped with PMs is associated with the card	step 40
two shelves equipped with PMs are associated with the card, and you have turned down functionality for only one shelf	step 39
two shelves equipped with PMs are associated with the card, and you have turned down functionality for both shelves	step 40

39 Repeat steps 6 to 38 for PMs in the other shelf associated with the FSP card you are replacing, then go to step 40.

At the shelf

40

46



DANGER

Static electricity damage Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Select a shelf to power down.

- 41 Pull and set the handle of the POWER switch on the power converter downward to the OFF position.
- 42 The next action depends on the type of PM that is provisioned in the shelf.

If the shelf is provisioned as	Do
an IPTM	step 43
an IMTM	step 44
For the mate power converter in the	PIPTM on the other half of the shelf, null

43 For the mate power converter in the IPTM on the other half of the shelf, pull and set the handle of the POWER switch downward to the OFF position.

Go to step 45.

- 44 For the other power converter on the shelf, pull and set the handle of the POWER switch downward to the OFF position.
- 45 The next action depends on how many shelves equipped with PMs are associated with the FSP card you are replacing.

If	Do
one shelf equipped with PMs is associated with the card	step 47
two shelves equipped with PMs are associated with the card, and you have powered down only one shelf	step 46
two shelves equipped with PMs are associated with the card, and you have powered down both shelves	step 47
Repeat steps 41 to 45 for PMs in the other shelf associated w ou are replacing, then go to step 47.	ith the FSP card

At the FSP

- 47 Remove the alarm and control card.
- 48 Insert the replacement alarm and control card.
- 49 Close the FSP.
- **50** Tighten the slotted nut on the FSP.
- 51 Select a shelf to power up.

At the shelf

- 52 Power up the converter.
 - a Pull and set the handle of the POWER switch upward to the ON position.
 - **b** Press and hold the RESET button on the power converter until the CONVERTER FAIL LED goes off.
 - c Release the RESET button.
- **53** The next action depends on the type of PM that is provisioned in the shelf, and whether you have powered up both power converters.

If the shelf	Do
is provisioned as an IPTM or an IMTM and you have already powered up both power converters	step 58
is provisioned as an IPTM	step 54
is provisioned as an IMTM	step 55
For the mate power converter in the IPTM on the other half of steps 52 and 53, then go to step 56.	the shelf, repe
For the other power converter on the shelf, repeat steps 52 to step 56.	and 53, then g
The next action depends on how many shelves are associat card you are replacing.	ted with the FS
The next action depends on how many shelves are associated as a social card you are replacing.	ted with the FS
The next action depends on how many shelves are associated you are replacing. If one shelf equipped with PMs is associated with the card	ted with the FS Do step 58
The next action depends on how many shelves are associated you are replacing. If one shelf equipped with PMs is associated with the card two shelves equipped with PMs are associated with the card, and you have powered up only one shelf	bed with the FS Do step 58 step 57

57 Repeat steps 52 to 56 for PMs in the other shelf associated with the FSP card you are replacing, then go to step 58.

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in an international cabinet auxiliary module (continued)

58	Access the PM level of the MAP display by typing				
	>PM				
	and pressing the Enter key.				
59	The next step depends on the typ	e of PM that is provisioned in the shelf.			
	If the PM is	Do			
	an OAU	step 60			
	an IPTM, or IMTM	step 64			
50	Post the OAU by typing				
	>POST OAU pm_no				
	and pressing the Enter key.				
	where				
	pm_no is the number of the PM (0	to 9999)			
61	Load the OAU by typing				
	>LOADPM				
	and pressing the Enter key.				
	Example of a MAP response:				
	OAU 0 LoadPM Passed				
	If the LOADPM command	Do			
	passed	step 63			
	failed	step 62			
62	Load the PM using the procedure have completed the procedure, re	<i>Loading a PM</i> in this document. When you sturn to this point.			
63	Return the PM to service by typing				
	>RTS				
	and pressing the Enter key.				
	Example of a MAP response:				
	OAU 0 Rts Passed				
	If the RTS command	Do			

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If the RTS command	Do	
failed	step 130	
Post the PM by typing		
>POST pm_type pm_no		
and pressing the Enter key.		
where		
pm_type is the type of PM (IMTM, IP	Ϋ́́Μ)	
pm_no is the number of the PM (0	to 9999)	
Load the PM by typing		
>LOADPM		
and pressing the Enter key.		
Example of a MAP response:		
MTM 0 LoadPM Passed		
If the LOADPM command	Do	
passed	step 67	
failed	step 66	
Load the PM using the procedure <i>I</i> have completed the procedure, re-	<i>Loading a PM</i> in this docur turn to this point.	ment. When you
Return the PM to service by typing	g	
>RTS		
and pressing the Enter key.		
Example of a MAP response:		
MTM 0 Rts Passed		
If the BTS command		Do
passed, and the PM is InSv		step 76
passed, and the PM is InSv passed, and the PM is ISTb v ed	vith a card list generat-	step 76 step 68

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in an internationa	l cabinet auxiliary	module	(continued)
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provisioned with either the NT1X80 or the NT1X81 not provisioned with either the NT1X80 or the NT1X81 Post the single-card PM by typing >POST pm_type pm_no and pressing the Enter key. where pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	provisioned with either the NT12 not provisioned with either th NT1X81	X80 or the NT1X81	sten 7
not provisioned with either the NT1X80 or the NT1X81 Post the single-card PM by typing >POST pm_type pm_no and pressing the Enter key. where pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	not provisioned with either th NT1X81	e NT1X80 or the	step /
Post the single-card PM by typing >POST pm_type pm_no and pressing the Enter key. where pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72		ic WTIX60 of the	step 7
>POST pm_type pm_no and pressing the Enter key. where pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	Post the single-card PM by typing		
and pressing the Enter key. where pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	>POST pm_type pm_no		
where pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	and pressing the Enter key.		
pm_type is the type of PM (CTM or DTM) pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	where		
pm_no is the number of the PM (0 to 9999) Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	pm_type is the type of PM (CTM or DT	M)	
Load the single-card PM by typing >LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	pm_no is the number of the PM (0 to	9999)	
>LOADPM and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	Load the single-card PM by typing		
and pressing the Enter key. Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	>LOADPM		
Example of a MAP response: DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	and pressing the Enter key.		
DTM 0 LoadPM Passed If the LOADPM command Do passed step 73 failed step 72	Example of a MAP response:		
If the LOADPM commandDopassedstep 73failedstep 72	DTM 0 LoadPM Passed		
passed step 73 failed step 72	If the LOADPM command	Do	
failed step 72	passed	step 73	
Lood the single cord DM using the presedure Looding - DM is t	failed	step 72	
When you have completed the procedure, return to this point.	Load the single-card PM using the pro When you have completed the proce	ocedure <i>Loading a PM</i> ir dure, return to this poin	n this doo nt.
Return the PM to service by typing	Return the PM to service by typing		

MTM 0 Rts Passed

If the RTS command		Do
passed, and the PM is InSv		step 75
passed, and the PM is ISTb with ed	a card list generat-	step 74
failed		step 130
Record the messages on the MAP dis	play for future referen	ce.
Repeat steps 70 to 74 for the other NT on the shelf, then go to step 76.	1X80 and NT1X81 ca	ards provisioned
Access the TTP level of the MAP disp	lay by typing	
>TRKS;TTP		
and pressing the Enter key.		
The next action depends on whether t you replaced is provisioned with metal (DTU).	he shelf associated wi lic test units (MTU) or	th the FSP card digital test units
<i>Note:</i> DTU and MTU are usually p	rovisioned in pairs.	
If the shelf is	Do	
equipped with MTU	step 78	
equipped with DTU	step 93	
not equipped with MTU or DTU	step 108	
Post the first circuit in the MTU by typi	ng	
>POST G MTU circuit_no		
and pressing the Enter key.		
where		
circuit_no is the number of the first MTU o	circuit	
Busy the circuit by typing		
>BSY		
and pressing the Enter key.		
Seize the circuit by typing		
>SEIZE		
and pressing the Enter key.		

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81	Put the circuit on hold by typing
	>HOLD
	and pressing the Enter key.
82	Post the second circuit in the MTU by typing
	>NEXT
	and pressing the Enter key.
83	Busy the circuit by typing
	>BSY
	and pressing the Enter key.
84	Seize the circuit by typing
	>SEIZE
	and pressing the Enter key.
85	Put the circuit on hold by typing
	>HOLD
	and pressing the Enter key.
86	Access the disk utility by typing
	>DISKUT
	and pressing the Enter key.
87	List the files in the volume containing the MTU load by typing
	>LISTFL vol_name
	and pressing the Enter key.
	where
	<pre>vol_name is the name of the volume containing the MTU load</pre>
88	Record the name of the MTU load file.
89	Quit the disk utility by typing
	>QUIT
	and pressing the Enter key.
90	Load the MTU by typing
	>LOADFW CC load_name
	and pressing the Enter key.
	where

load name is the load file name recorded in step 88 If the LOADFW command Do passed step 91 failed step 130 91 Release the first MTU circuit by typing >RLS MTU circuit_no and pressing the Enter key. where circuit no is the number of the first MTU circuit you busied, seized, and put on hold 92 Release the second MTU circuit to by typing >RLS MTU circuit_no and pressing the Enter key. where circuit no is the number of the second MTU circuit you busied, seized, and put on hold Go to step 108. 93 Post the first circuit in the DTU by typing >POST G DTU circuit_no and pressing the Enter key. where circuit_no is the number of the first DTU circuit 94 Busy the circuit by typing >BSY and pressing the Enter key. 95 Seize the circuit by typing >SEIZE

and pressing the Enter key.

96 Put the circuit on hold by typing >HOLD

and pressing the Enter key.

NT0X36

in an international cabinet auxiliary module (continued)

97	Post the second circuit in the DTU by	typing
	>NEXT	
	and pressing the Enter key.	
98	Busy the circuit by typing	
	>BSY	
	and pressing the Enter key.	
99	Seize the circuit by typing	
	>SEIZE	
	and pressing the Enter key.	
100	Put the circuit on hold by typing	
	>HOLD	
	and pressing the Enter key.	
101	Access the disk utility by typing	
	>DISKUT	
	and pressing the Enter key.	
102	List the files in the volume containing	the DTU load by typing
	>LISTFL vol_name	
	and pressing the Enter key.	
	where	
	<pre>vol_name is the name of the volume con</pre>	taining the MTU load
103	Record the name of the DTU load file).
104	Quit the disk utility by typing	
	>QUIT	
	and pressing the Enter key.	
105	Load the DTU by typing	
	>LOADFW CC load_name	
	and pressing the Enter key.	
	where	
	load_name is the load file name recorded	in step 103
	If the LOADFW command	Do
	passed	step 106
	failed	step 130

106	Release the first DTU circuit by typing
	>RLS RLS
107	Release the second DTU circuit to by typing
	>RLS RLS
108	Post the circuits for the PM by typing
	>POST TM pm_type pm_no
	and pressing the Enter key.
	where
	<pre>pm_type is the type of PM (IMTM, IPTM)</pre>
	<pre>pm_no is the number of the PM (0 to 9999)</pre>
109	Return all the circuits to service by typing
	>RTS ALL
	and pressing the Enter key.
	Example of a MAP response:
	RTS OK
110	The next action depends on whether INB circuits were recorded in step 19
	If Do
	If Do INB circuits were recorded step 111
	If Do INB circuits were recorded step 111 no INB circuits wre recorded step 114
111	If Do INB circuits were recorded step 111 no INB circuits wre recorded step 114 Post the first circuit on the list by typing
111	If Do INB circuits were recorded step 111 no INB circuits wre recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no
111	If Do INB circuits were recorded step 111 no INB circuits wre recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no and pressing the Enter key.
111	If Do INB circuits were recorded step 111 no INB circuits wre recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no and pressing the Enter key. where
111	Internext double depends on whether into choose where recorded in step 10. If Do INB circuits were recorded step 111 no INB circuits were recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no and pressing the Enter key. where circuit_name is the circuit name recorded in step 19
111	If Do INB circuits were recorded step 111 no INB circuits wre recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no and pressing the Enter key. where circuit_name is the circuit name recorded in step 19 circuit_no is the circuit number recorded in step 19
111	Internext definition depends on whether into choose whether isobred in step 10. If Do INB circuits were recorded step 111 no INB circuits were recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no and pressing the Enter key. where circuit_name is the circuit name recorded in step 19 circuit_no is the circuit number recorded in step 19 Return the circuit to the INB state by typing
111	Internext dation depends on whether into choose into the isofe definition of the step into the internet into the isofe definition of the step into the isofe definition of the step into the isofe definition of the step into the isofe definition of the step into the isofe definition of the step into the isofe definition of the step isofe definition of the state by typing Image: Internet isofe definition of the step into the state into the step into the
111 112	Internet deliver depende on whether interview interview recorded in step 10. If Do INB circuits were recorded step 111 no INB circuits were recorded step 114 Post the first circuit on the list by typing >POST T circuit_name circuit_no and pressing the Enter key. where circuit_name is the circuit name recorded in step 19 circuit_no is the circuit to the INB state by typing >BSY INB and pressing the Enter key.

NT0X36

in an international cabine	auxiliary	module	(continued)
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	If the RTS command	Do
	passed unconditionally	step 121
	passed, but in-service tests failed and a card list was generated	step 115
5	Manually busy all posted circuits by typing	
	>BSY ALL	
	and pressing the Enter key.	
6	Return all circuits to service by typing	
	>RTS ALL	
	and pressing the Enter key.	
17	Access the PM level of the MAP display by typing	
	>PM	
	and pressing the Enter key.	
8	Post the PM by typing	
	>POST pm_type pm_no	
	and pressing the Enter key.	
	where	
	<pre>pm_type is the type of PM (CTM, DTM, IMTM, IPTM)</pre>	
	<pre>pm_no is the number of the PM (0 to 9999)</pre>	
19	Perform an in-service test on the PM by typing	
	>TST	
	and pressing the Enter key.	
	Example of a MAP response:	

MTN	1 0 ISTb	TSTFAIL	
Ins IMT Si HO Fol Tes	Svce Tests Initiated TM 0 Tst Failed te Flr RPos Bay_id S OST 00 D06 TME 00 OST 00 D06 TME 00 Llowing ISTb Exist : St Failed	Shf Description 04 MTM : 000 04 MTM : 000	Slot EqPEC 04 2X59 02 0X70
	If the TST command		Do
	passed, and there are sin still out of service	gle-card PMs or an	IPTM step 121
	passed, and you have wor on the shelf and all PMs vice	ked on all PMs provis have been returned t	sioned step 124 to ser-
	passed, and you have wor on the shelf but one or mo cessfully returned to serve	ked on all PMs provis ore PMs have not bee ice	sioned step 130 n suc-
	failed, and there are single you have not worked on t	e-card PMs or an IPT o return to service	M that step 120
	failed, and you have work on the shelf	ked on all PMs provis	sioned step 130
120	Record the messages on the	MAP display for future	reference.
121	Access the PM level of the M	AP display by typing	
	>PM		
	and pressing the Enter key.		
122	Post the PM by typing		
	>POST pm_type pm_no		
	and pressing the Enter key.		
	where		
	pm_type is the type of PM (IMT	M, IPTM)	
	pm_no is the number of the P	M (0 to 9999)	
123	Repeat steps 64 to 119 for ot step 124.	her PMs provisioned o	n this shelf, then go to

124 The next action depends on how many shelves are associated with the FSP card you are replacing.

11	Do
one shelf equipped with PMs is associated with the card	step 126
two shelves equipped with PMs are associated with the card, and you have returned to service the PM on only one shelf	step 125
two shelves equipped with PMs are associated with the card, and you have returned to service the PM on both shelves	step 126
Repeat steps 59 to 124 for PMs in the other shelf associated are you are replacing, then go to step 126.	d with the FSF
The next action depends on your reason for performing this	procedure.
If you were	Do
directed to this procedure from a maintenance proce-	step 127
dure	
dure not directed to this procedure from a maintenance procedure	step 131
dure not directed to this procedure from a maintenance procedure Return to the maintenance procedure that sent you to this p continue as directed.	step 131 rocedure and
dure not directed to this procedure from a maintenance procedure Return to the maintenance procedure that sent you to this p continue as directed. Consult the personnel responsible for the next level of suppo low essential services can be handled. Continue as directed personnel.	step 131 rocedure and ort to determined by office
dure not directed to this procedure from a maintenance procedure Return to the maintenance procedure that sent you to this p continue as directed. Consult the personnel responsible for the next level of suppo now essential services can be handled. Continue as directed personnel. Consult office personnel to determine why the component is Continue as directed by office personnel.	step 131 rocedure and ort to determined by office

131 You have completed this procedure.

NT0X91 in a CPCE frame

Application

Use this procedure to replace the NT0X91 in the common-peripheral controller equipment (CPCE) frame, as listed in the following table.

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA	FSP drive and alarm circuit pack	CPCE equipped with digital trunk controller (DTC), international DTC (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), ISDN DTC (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), line group controller (LGC), line trunk controller (LTC), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC), SMS
NT0X91	AE	FSP drive and protection circuit pack	CPCE equipped with DTC, DTCI IDTC, ILGC, ILTC, LGC, LGCI , LTC, LTCI, PDTC, PLGC, PLTC, SMS

Common procedures

This procedure refers to the following common procedures:

- Loading a PM
- Manually busying Series II PM and CPM C-side links

- Reseating cards in equipment shelves
- Unseating cards in equipment shelves

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NT0X91 in a CPCE frame



Replacing a NT0X91 in a CPCE frame

At your current location

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.



WARNING

Loss of service

This procedure manually busies one or more peripheral module (PM) units, which can cause service degradation. Perform this procedure only if you need to restore out-of-service components. If this procedure is not needed for a return to service, perform this procedure only during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC, including suffix, as the card being removed.

At the frame

2 Record the frame supervisory panel (FSP) slot, frame circuit breakers (CB), shelves, PM location and units, and power converter slots associated with the NT0X91 card you are replacing. Use the following table to obtain this information.

Card	FSP Slot	СВ	Shelf and PM information	PC slot
NT0X91AA	CD1	CB5	shelf 18 (lower PM, unit 0)	25
NT0X91AA	CD1	CB4	shelf 51 (upper PM, unit 0)	25
NT0X91AE	CD2	CB2	shelf 32 (lower PM, unit 1)	25
NT0X91AE	CD2	CB1	shelf 65 (upper PM, unit 1)	25



3 Record the type of PMs associated with the NT0X91 that you will replace.

At the MAP terminal

4 To access the PM level of the MAP display, type >MAPCI;MTC;PM and press the Enter key. *Example of a MAP display:*

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	0	0	0	0	3	39

5	To post one of the PMs associated v	with the NT0X91 you replace, type			
	>POST pm_type pm_no				
	and press the Enter key.				
	where				
	<pre>pm_type is the PM type recorded in step 3</pre>				
	<pre>pm_no is the PM number recorded in step 2</pre>				
	Example of a MAP display:				
PM DTC	SysB ManB 0 0 0 0	OffL CBsy ISTb 1 0 0 3 0 0 0	InSv 39 4		
DTC Unit0: Unit1:	0 InSv Links_OOS: CSide 0 Act InSv Inact InSv	, PSide O			
6	Determine the state of the PM unit a	associated with the card you replace	e.		
	If the state of the PM unit	Do			
	is ISTb, InSv, SysB, or CBsy, and active	step 7			
	is ISTb, InSv, SysB, or CBsy, and inactive	step 10			
	is ManB	step 12			
	is OffL	step 51			
7	Determine the state of the mate PM	unit.			
	If the state of the mate PM unit	Do			
	is ISTb or InSv	step 8			
	is other than listed here	step 52			
8	To owitch optivity type				
•	To switch activity, type				
•	SWACT				
-	SWACT and press the Enter key.				

9

lf		Do
you mu	st confirm the command	step 9
the syst	em rejects the SWACT	step 52
To confirn	n the command, type	
>YES		
and press	the Enter key.	
Example	of a MAP response:	
UnitO: Unit1:	Inact SysB Mtce Act ISTb	
DTC 0	SwAct Passed	
lf the M	AB rosponso	Do
In the wi	Ar response	50
is SWAC	CT passed	step 10
is SWAC	T passed than listed here	step 10 step 52
is SWAC is other A mainter system-in disappear next step.	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks and rs from the status lines for bo	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you procee
is SWAC is other A mainter system-in disappear next step. To manua	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks an 's from the status lines for bo	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you procee
is SWAC is other A mainter system-in disappear next step. To manua	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks an 's from the status lines for bo ally busy the unit, type NIT unit_no	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you proceed
is SWAC is other A mainter system-in disappear next step. To manua >BSY U and press	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks a rs from the status lines for bo nlly busy the unit, type NIT unit_no the Enter key.	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you proceed
is SWAC is other A mainter system-in disappear next step. To manua >BSY U and press where	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks an 's from the status lines for bo nlly busy the unit, type NIT unit_no the Enter key.	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you proceed
is SWAC is other A mainter system-in disappear next step. To manua >BSY U and press where unit_ is t	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks an rs from the status lines for bo nlly busy the unit, type NIT unit_no the Enter key.	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you proceed
is SWAC is other A mainter system-in disappear next step. To manua >BSY U and press where unit_ is t	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks an 's from the status lines for bo nlly busy the unit, type NIT unit_no the Enter key. no the PM unit number (0 or 1) SY command	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you proceed recorded in step 2 Do
is SWAC is other A mainter system-in disappear next step. To manua >BSY U and press where unit_ is t If the BS	T passed than listed here nance flag (Mtce) can appea itiated maintenance tasks an 's from the status lines for bo ally busy the unit, type NIT unit_no the Enter key. no he PM unit number (0 or 1) SY command	step 10 step 52 rr. This flag indicates that re in progress. Wait until the fla oth PM units before you proceed recorded in step 2 Do step 12

where

unit_no

is the PM unit number (0 or 1)

Example of a MAP response:

DTC 0 Unit 0 PMReset Passed

- **13** To manually busy all C-side links associated with the PM unit in use, use the procedure *Manually busying Series II PM and CPMC-side links* in this document. Complete the procedure and return to this point.
- 14 Repeat steps 5 to 13 for the other PM unit associated with the NT0X91 you are replacing.

At the shelf

15

16



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

If there are NT6X48 DS30A interface cards in slots 6 and 7, unseat them.

	lf you	Do
	are working on any XPM with the NTMX77 unified processor (XPM plus)	step 18
	are working on any 2-processor XPM (NT6X45-based)	step 16
	are working on an international 3-processor XPM (NT6X45-based)	step 17
L u	Inseat control complex cards (2-proce se the procedure <i>Unseating cards in</i>	ssor XPMs). For each sub-step below, equipment shelves in this document.
2	According to the configuration of y	our unit uncost sither the NT6V42

- **a** According to the configuration of your unit, unseat either the NT6X43 message interface card or the NT6X69 message protocol card in slot 18.
- **b** Unseat the NT6X45 signaling processor card in slot 12.
- c Unseat the NT6X45 master processor card in slot 8.

- d Go to step 18.
- **17** Unseat control complex cards (international 3-processor XPMs). For each sub-step below, use the procedure *Unseating cards in equipment shelves* in this document.
 - **a** According to the configuration of your unit, unseat either the NT6X43 message interface card or the NT6X69 message protocol card in slot 10.
 - **b** Unseat the NT6X45 signaling processor card in slot 12.
 - c Unseat the NT6X45 PCM30 signaling processor card in slot 18.
 - **d** Unseat the NT6X45 master processor card in slot 14.
- **18** Pull and set the power converter POWER switch handle downward to the OFF position.
- **19** Repeat steps 15 to 18 for the second PM unit associated with NT0X91 you are replacing.
- 20 Verify that the CBs for the power converters associated with the NT0X91 you are replacing are in the OFF position.
- 21 Unscrew the slotted nut on the left-hand side of the FSP.
- 22 Open the FSP.
- 23



WARNING

Loss of service

Make sure that the alarm and control card you remove controls the PM units that you manual busied. Removal of the wrong card causes a loss of service.

Remove the NT0X91 card from the CD slot in the FSP.

- 24 Place the removed card in an electrostatic discharge (ESD) protective container.
- 25 Make sure that the replacement card has the same PEC, including suffix, as the removed card.
- 26 Insert the replacement card.
- 27 Close the FSP.
- **28** Tighten the slotted nut on the FSP.
- **29** The next action depends on the power converter version and the type of supervisory panel.

If the power converterDois an NT2X70AE card and the
FSP or MSP has circuit breakersstep 30

	lf	the power converter	Do			
	is an NT2X70AE card and t FSP or MSP does not have circuit breakers		step 31			
	is tl b	s not an NT2X70AE card and ne FSP or MSP has circuit reakers	step 32			
	is tl c	s not an NT2X70AE card and ne FSP or MSP does not have ircuit breakers	step 33			
30	Po	wer up the converter.				
	а	Pull and set the POWER switch ha hold.	ndle up to the RESET position and			
	b	Set the handle of the converter circle it clicks into place.	uit breaker on the FSP or MSP up ur			
	С	Release the POWER switch handle	e.			
		Go to step 34.				
31	Po	Power up the converter.				
	а	Pull and set the POWER switch han hold until the CONVERTER FAIL L	ndle up to the RESET position and .ED goes off.			
	b	Release the handle.				
		Go to step 34.				
32	Po	wer up the converter.				
	а	Pull and set the POWER switch ha	ndle up to the ON position.			
	b	Press and hold the RESET button	on the power converter.			
	С	Set the handle of the converter circle it clicks into place.	uit breaker on the FSP or MSP up ur			
	d	Release the RESET button.				
		Go to step 34.				
33	Po	wer up the converter.				
	а	Pull and set the POWER switch handle up to the ON position.				
	b	Press and hold the RESET button CONVERTER FAIL LED goes off.	on the power converter until the			

34 The next action depends on the processor configuration of the PM you are working on.

	lf	you	Do		
	an th (2	re working on any XPM with ne NTMX77 unified processor XPM plus)	step 37		
	a X	re working on any 2-processor PM (NT6X45-based)	step 35		
	a 3 (1	re working on an international -processor XPM NT6X45-based)	step 36		
5	Re use	seat control complex cards (2-proce the procedure <i>Reseating cards in</i>	ssor XPMs). For each sub-step below, equipment shelves in this document.		
	а	Reseat the NT6X45 master proces	ssor card in slot 8.		
	b	Reseat the NT6X45 signaling proc	cessor card in slot 12.		
	C	According to the configuration of y message interface card or the NTC	our unit, reseat either the NT6X43 X69 message protocol card in slot 18.		
		Go to step 37.			
6	Re sul this	Reseat control complex cards (3-processor international XPMs). For each sub-step below, use the procedure <i>Reseating cards in equipment shelves</i> in this document.			
	а	Reseat the NT6X45 master proces	ssor card in slot 14.		
	b	b Reseat the NT6X45 PCM30 signaling processor card in slot 18.			
	С	Reseat the NT6X45 signaling proc	essor card in slot 12.		
	d	According to the configuration, res interface card or the NT6X69 mes	eat either the NT6X43 message sage protocol card in slot 10.		
7	lf tl	nere are NT6X48 DS30A interface of	cards in slots 6 and 7, reseat them.		
8	Re NT for	Repeat steps 29 to 37 for the other PM unit associated with the replaced NT0X91. Power up the power converter and reseat the control complex cards for both shelves and continue this procedure.			
t the	MA	P terminal			
9	Th	e next action depends on the type o	f network in the office.		
	lf	you	Do		
	a	re working on JNET	step 40		

step 42

are working on ENET

40	To return to service one of the network links associated with the PM unit in use, type					
	>RTS plane_no link_no					
	and press the Enter key.					
	where					
	plane_no is the number of the plane (0 or	1) for the link				
	link_no is the link number (0 to 63)					
	If the link	Do				
	returned to service and more manual-busy links are present	step 41				
	returned to service and no more manual-busy links are present	step 43				
	did not return to service	step 53				
41	Repeat step 40 for all C-side links to the	ne shelf in use.				
42	To return the network link to service, type					
	>RTS plane_no LINK link_no					
	and press the Enter key.					
	where					
	plane_no is the number of the plane (0 or 1) for the link					
	link_no is the link number (0 to 3)					
	Example of a MAP response:					
Request Request	t to RTS ENET Plane:0 Shelf:0 t to RTS ENET Plane:0 Shelf:0	0 Slot:32 Link:01 submitted. 0 Slot:32 Link:01 passed.				
	If the link	Do				
	returned to service	step 43				
	did not return to service	step 53				
43	Repeat steps 39 to 42 for the other PM are replacing. Return all network links continue this procedure.	unit associated with the NT0X91 you to service for both PM units and				
44	To post one of the PMs in use, type					
	>PM;POST pm_type pm_no					

and press the Enter key.					
where					
pm_type is the PM type (for example DT	C, ILGC, LTCI, PDTC, etc.)				
pm_no is the PM number (0 to 255)					
To load the inactive unit, type	To load the inactive unit, type				
>LOADPM UNIT unit_no					
and press the Enter key.					
where					
unit_no is the PM unit number (0 or 1)					
If the LOADPM command	Do				
passed	step 47				
failed	step 46				
To load the PM unit, use the procedure <i>Loading a PM</i> in this document. Complete the procedure and return to this point					
To return the inactive unit to service, type					
>RTS UNIT unit_no					
and press the Enter key.					
where					
unit_no is the PM unit number (0 or 1)					
If the RTS command	Do				
passed	step 48				
failed	step 53				
Repeat steps 44 to 47 for the PM unit NT0X91 you are replacing. Return bo	in the other shelf associated with the oth PM units to service. Go to step 49.				
The next action depends on your reas	on for performing this procedure.				
lf	Do				
a maintenance procedure directed you to this procedure	step 50				
a maintananaa praaadura did nat	-to 5 4				

NT0X91 in a CPCE frame (end)

50	Return to the maintenance procedure that sent you to this procedure and continue as directed.
51	Consult office personnel to determine why the component is offline. Continue as directed by office personnel.
52	For additional help with switch of activity, contact the next level of support.
	Note: If the system recommends using the SWACT command with the FORCE option, consult office personnel. Consult office personnel to determine if you have permission to use the FORCE option.
53	For additional help, contact the next level of support.
54	The procedure is complete.

NT0X91 in a digital carrier equipment frame

Application

Use this procedure to replace a NT0X91 in a digital carrier equipment (DCE) frame.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA, AB	Drive and alarm card	DCE equipped with digital carrier module (DCM), digital echo supressor (DES)
NT0X91	AD	Drive and protection card	DCE equipped with DCM, DES

Basic>Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to Loading a PM.

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NT0X91 in a digital carrier equipment frame



Replacing a NT0X91 in a digital carrier equipment frame

At the frame

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure that you remove all jewelry before you replace a card in the FSP. Do not touch any terminal in the FSP.



CAUTION

Loss of service

This procedure includes directions to manually busy a DCM or DES. If you manually busy a DCM or DES, a service power failure can occur. Perform this procedure only if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic. .

Obtain a replacement card. Make sure that the replacement card and the card that you replace have the same PEC and PEC suffix.

2 Use the table following the figure to identify the slot that contains the alarm and control card that you replace:

Card holder NT0X91AA card in slot CD1 NT0X91AB card in slot CD2 NT0X91AD card in slot CD3 MAN FSP 、 000 000 00000

NT0X91 in a digital carrier equipment frame (continued)

IfAlarm and control card	DoSlot
is NT0X91AA	CD1
is NT0X91AB	CD2
is NT0X91AD	CD3

3 Record information on FSP fuses, FSP circuit breakers (CB), and network shelf positions that associate with the card you replace. Use the following table to obtain this information.

FSP card	FSP card position	FSP circuit breakers	Shelf position	
NT0X91AA	CD1	CB5	04	
NT0X91AB	CD2	CB3	32	
		CB1	65	
NT0X91AD	CD3	CB4	18	
		CB2	51	
<i>Note:</i> A minimum of one shelf can be unequipped.				

4 Select a shelf that associates with the FSP card that you replace.

At the MAP terminal

5 To access the PM level of the MAP display, type

>MAPCI;MTC;PM ndInstance>

and press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	6	1	0	0	23	24

6 To post the PM that associates with the card you replace, type

>POST pm_type pm_no
and press the Enter key.
where
 pm_type
 is the type of PM (DCM, DES)
 pm_no
 ption>
 is the PM number (0 to 511)
Example of a MAP display:

PM DCM	SysB 6 1	ManB 1 0	OffL 0 0	CBsy 0 0	ISTb 23 1	InSv 24 4
DCM	0	InSv				

7 Determine the state of the PM.

Note: The PM state appears on the right of the PM number. In the example display in step 6, the PM state is in service (InSv).

If the state of the PM unit				Do
is CB	ISTb, sy	InSv,	SysB, or	step 8
is 1	ManB			step 12
is (OffL			step 41

- 8 A maintenance flag (Mtce) can appear. A Mtce indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status line before you proceed to the next step.
- 9 To manually busy the PM, type

>BSY e>

and press the Enter key.

Example of a MAP response: OK.DCM 0 Bsy

If the BSY command	Do
passed	step 10
failed	step 43

10

The next action depends on how many shelves equipped with PMs associate with the FSP card that you replace.

If	DoDo
one shelf equipped with PMs associate with the card	step 12
two shelves equipped with PMs associate with the card, and you turned down functionality for only one shelf	step 11

If	DoDo
two shelves equipped with PMs associate with the card, and you turned down functionality for both shelves	step 12

11 Repeat steps 6 to10 for PMs in the other shelf that associates with the FSP card you replace. Go to step .12

At the frame

12



WARNING

Static electricity damage Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist

strap protects the cards against static electricity damage.

Select a shelf to power down.

13 Pull down and set the handle of the POWER switch on the power converter to the OFF position.

14 The next action depends on the power configuration of the shelf.

If the shelf	Do
contains a single NT2X70	step 16
contains a NT2X06 and a NT2X07	step 15
For the mate power converter, pull down and set the handle switch to the OFF position.	of the POWER
Fhe next action depends on how many shelves equipped with with the FSP card that you replace.	PMs associate
lf	Do
one shelf equipped with PMs associate with the card	step 18
one shen equipped with this associate with the eard	step 10
two shelves equipped with PMs associate with the card, and you powered down only one shelf	step 17

15

16
NT0X91

in	a digital	carrier	equipment	frame	(continued)
----	-----------	---------	-----------	-------	-------------

- 17 Repeat steps 13 to 16 for the PM in the other shelf that associates with the FSP card you replace. Go to step .18
- **18** Unscrew the slotted nut on the left of the FSP.
- **19** Open the FSP.
- 20 Remove the card.
- 21 Insert the replacement alarm and control card.
- 22 Close the FSP.

25

26

27

- 23 Tighten the slotted nut on the FSP.
- 24 The next action depends on the power converter version and the type of supervisory panel.

lf	you	Do
re c	eplace an NT2X70AE card and the FSP or MSP has ircuit breakers	step 25
re d	eplace an NT2X70AE card and the FSP or MSP oes not have circuit breakers	step 26
d N	o not replace an NT2X70AE card and the FSP or ISP has circuit breakers	step 27
d N	o not replace an NT2X70AE card and the FSP or ISP does not have circuit breakers	step 28
Po	wer up the converter, as follows:	
а	Pull up and set the handle of the POWER switch to the F and hold.	RESET position
b	Set the handle of the converter circuit breaker on the FS until the handle clicks into place.	SP or MSP up
С	Release the handle of the POWER switch.	
d	Go to step 29	
Po	wer up the converter, as follows:	
a	Pull up and set the handle of the POWER switch to the F and hold until the CONVERTER FAIL LED turns off.	RESET position
b	Release the handle of the POWER switch.	
С	Go to step 29.	
Po	wer up the converter, as follows:	
а	Pull up and set the handle of the POWER switch to the	ON position.
b	Press and hold the RESET button on the power conver	ter.
С	Set the handle of the converter circuit breaker on the FS until the handle clicks into place.	SP or MSP up

NT0X91 in a digital carrier equipment frame (continued)

29

- d Release the RESET button.
- e Go to step 29.
- **28** Power up the converter, as follows:
 - a Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the power converter until the CONVERTER FAIL LED turns off.
 - c Release the RESET button.
 - The next action depends on the number of power converters on the shelf.

lf		Do
one p	ower converter is on the shelf	step 31
two po ered u	ower converters are on the shelf, and you pow- up both of the converters	step 31
two po ered u	ower converters are on the shelf, and you pow- up only one of the converters	step 30
Repeat	steps 24 to 29 for the other power converter on the	shelf.
The nex that you	t action depends on how many shelves associate wit replace.	th the FSP card
lf		Do
1		
one sr	nelf equipped with PMs associates with the card	step 33
two si card, a	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf	step 33 step 32
two si card, a two si card, a	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves	step 33 step 32 step 33
two si card, a two si card, a Repeat card you	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33.	step 33 step 32 step 33 tes with the FSF
two si card, a two si card, a Repeat card you At the M	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33.	step 33 step 32 step 33 tes with the FSF
two si card, a two si card, a Repeat card you At the M	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33. MAP terminalTo post the PM, type pm_type pm_no	step 33 step 32 step 33 tes with the FSF
two si card, a two si card, a Repeat card you At the M >POST and pre	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33. MAP terminalTo post the PM, type pm_type pm_no ss the Enter key.	step 33 step 32 step 33 tes with the FSF
two si card, a two si card, a Repeat card you At the M >POST and pre where	helves equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33. MAP terminalTo post the PM, type pm_type pm_no ss the Enter key.	step 33 step 32 step 33 tes with the FSF
two si card, a two si card, a Repeat card you At the N >POST and pre where pm	helf equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33. MAP terminalTo post the PM, type pm_type pm_no ss the Enter key. _type s the type of PM (DCM, DES)	step 33 step 32 step 33 tes with the FSF
two si card, a two si card, a Repeat card you At the M >POST and pre where pm is	helf equipped with PMs associates with the card helves equipped with PMs associate with the and you powered up only one shelf helves equipped with PMs associate with the and you powered up both shelves steps 24 to 31 for PMs in the other shelf that associa u replace. Go to step 33. MAP terminalTo post the PM, type pm_type pm_no ss the Enter key. _type s the type of PM (DCM, DES) _no s the PM number (0 to 511)	step 33 step 32 step 33 tes with the FSF

Complete the
Do
step 37
d step 42
step 43
with the FSP card
Do
ie step 39
ie step 38
ie step 39
ciates with the FSP
this procedure.
this procedure.

NT0X91 in a digital carrier equipment frame (continued)

NT0X91 in a digital carrier equipment frame (end)

	If a maintenance procedure	Do
	did not direct you to this mainte- nance procedure	step 24
40	Return to the maintenance procedure Continue as directed by the maintena	that directed you to this procedure. nce procedure.
41	To determine why the component is o personnel. Continue as directed by o	ffline, consult operating company perating company personnel.
42	A minor problem is present. The PM c contact the next level of support.	an process traffic. For additional help,
43	For additional help, contact the next le	evel of support.
44	The procedure is complete.	

NT0X91 in a line module equipment frame

Application

Use this procedure to replace a NT0X91 in a line module equipment (LME) frame, as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA	FSP drive and alarm card	FSP (NT0X29) in a LME
NT0X91	AD	FSP drive and protector card	FSP (NT0X29) in a LME

Refer to the "Index", if you cannot identify the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to Loading a PM.

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

7-124 Frame supervisory panel and modular supervisory panel card replacement procedures

NT0X91 in a line module equipment frame (continued)

Summary of replacing a NT0X91 in a line module equipment frame



Replacing a NT0X91 in a line module equipment frame

At your current location

1



CAUTION

Potential loss of service

This procedure includes directions to manually busy a line module controller (LMC). If you manually busy an LMC, service degradation can occur. Perform this procedure only if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic.



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure that you remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.

Obtain a replacement card. Make sure that the replacement card and the card that you replace have the same PEC and PEC suffix.

At the frame

2 Use the following table to identify the slot that contains the alarm and control card that you replace.

Card	Slot	Card position
NT0X91AA	slot CD1	rear
NT0X91AD	slot CD2	front



3 Use the following table to identify the converters and circuit breakers that associate with the alarm and control card you replace.

Card	Power converter	FSP circuit breaker
NT0X91AD	NT2X05 (RG 0) in slot 1	CB1
NT0X91AA	NT2X05 (RG 1) in slot 5	CB2
NT0X91AD	NT2X70 in slot 22	CB3



NT0X91

in a line module equipment frame (continued)

At the MAP terminal

4 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

5 To post the line module (LM) that contains the alarm and control card you want to replace, type

>POST LM bay_no pair_no

and press the Enter key.

where

8

bay_no is the number of the LM bay (0 to 511)

- pair no
- is the number of the LM in the bay (0 or 1)
- 6 The next action depends on the card that you replace.

lf you	Do	
replace the NT0X91AA	step 7	
replace the NT0X91AD	step 11	

7 Determine the state of the ringing generators (RG).

lf	Do
either RG is Standby	step 34
RG 1 (slot 05) is InSv or ISTb and RG 0 (slot 01) is InSv or ISTb	step 8
RG 1 (slot 05) is InSv or ISTb and RG 0 (slot 01) is ManB or SysB	step 34
RG 1 (slot 05) is ManB	step 10
RG 1 (slot 05) is SysB	step 8
To manually busy the ringing generator interface (RGI) for R	G 1, type
>BSY RGI 1	
and press the Enter key.	
Example of a MAP response:	

WARNING:CALLS IN RINGING STATE USING THIS RGI WILL BE LOSTDO YOU WANT TO CONTINUE ?Please confirm ("YES", "Y", "NO", or "N"):

9 To confirm the command, type

>YES

and press the Enter key. *Example of a MAP response:* OK

At the frame

10



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Pull down and set the handle of the POWER switch on RG 1 (slot 5) to the OFF position.

Go to step 18.

11 Determine the state of the LM.

If the state of the LM	Do
is InSv or ISTb	step 12
is SysB or CBsy	step 15
is ManB	step 16
is Offl	step 35

12 To post the mate LM, type

>POST LM site frame_no unit_no
and press the Enter key.
where
 site
 is the PM location (alphanumeric)
 frame_no
 is the frame number (0 to 511)
 unit_no
 is the PM unit number (0 or 1)

lf					Do)
the s RGs	tate of the m are InSv	ate LM is	InSv or	ISTb and	l both ste	ep 14
the s ed h	tates of the m ere	nate LM an	nd RGs are	e other tha	n list- ste	ep 36
To pos	st the LM on w	hich you wa	ant to repla	ice a card,	type	
>POS	LM site	frame_	no unit	_no		
and p	ess the Enter	key.				
where						
si	te is the PM loca	ation (alpha	numeric)			
fra	ame_no is the frame n	umber (0 to	o 511)			
u	nit_no is the PM unit	t number (0	or 1)			
To ma	nually busy the	e LM, type				
>BSY						
and p	ess the Enter	key.				
Exam	ole of a MAP o	display:				
PM LM	SysB 3 0	ManB 1 1	OffL 0 0	CBsy 0 0	ISTb 0 0	InSv 7
LM HOST	0 01 0 ManB Standby	1 1 InSv	Ō	Õ	õ	,

At the frame

16



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Pull down and set the handle of the power converter POWER switch to the OFF position.

- 17 Pull down and set the handle of the POWER switch on RG 0 (slot 1) to the OFF position.
- 18 Unscrew the slotted nut on the left of the FSP.
- 19 Open the FSP.
- 20



WARNING Loss of service

Make sure that the alarm and control card that you remove controls the power converter. The alarm and control card also can control the RG that you powered down. Removal of the wrong card causes a loss of service.

Remove the NT0X91 card from the slot that you identified in step 2.

- 21 Insert the replacement card.
- 22 Close the FSP.
- 23 Tighten the slotted nut on the FSP.
- 24 The next action depends on the card that you replace.

lf you	Do	
replace the NT0X91AA	step 25	
replace the NT0X91AD	step 27	

- 25 Power up RG 1.
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the RG.

NT0X91

in a line module equipment frame (continued)

- c Pull up and set the handle of the converter circuit breaker on the FSP or MSP until the handle clicks into place.
- d Release the RESET button.

At the MAP terminal

26 To return the RGI to service, type

>RTS RGI rgi_no

and press the Enter key.

where

rgi no

is the number (0 or 1) of the RGI

Example of a MAP response:

OK.

Go to step 32.

- 27 Power up the converter, as follows.
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the power converter.
 - **c** Pull up and set the handle of the converter circuit breaker on the FSP or MSP until the handle clicks into place.
 - **d** Release the RESET button.
- 28 Power up RG 0.
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the RG.
 - **c** Pull up and set the handle of the converter circuit breaker on the FSP or MSP until the handle clicks into place.
 - **d** Release the RESET button.
 - To load the LM, type

>LOADPM

29

and press the Enter key.

Example of a MAP response:

LM HOST 01 0 LoadPM PASSED

- **30** To load the PM unit, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.
- **31** To return the LM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

rts OK. InSvce Tests Initiated OK.

32 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do	
directed you to this maintenance procedure	step 33	
did not direct you to this proce- dure	step 38	
Return to the maintenance procedure Continue as directed by the maintenant	that directed you to this procedure.	
If you manually busy the RG, you disat how to proceed, consult the next level of next level of support.	le all RGs in the LM bay. To determine of support. Continue as directed by the	
To determine why the component is of personnel. Continue as directed by o	fline, consult operating company perating company personnel.	
If you manually busy the LMC, you los to proceed, consult the next level of sup level of support.	e calls in progress. To determine how poort. Continue as directed by the next	
For additional help, contact the next le	vel of support.	

38 The procedure is complete.

NT0X91 in an MS6E

Application

Use this procedure to replace an NT0X91 in a CCS6 message switch equipment (MS6E) frame, as listed in the following table.

If you cannot identify the product engineering code (PEC), suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA	FSP drive and alarm circuit pack	MS6E
NT0X91	AE	FSP drive and protection circuit pack	MS6E

Common procedures

This procedure refers to the following:

- Manually busying Series II PM C-side links
- Loading a PM

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NT0X91 in an MS6E



NT0X91 in an MS6E

At your current location

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.



DANGER

Loss of service

This procedure manually busies one or more peripheral module (PM) units, which can cause service degradation. Perform this procedure only if you need to restore out-of-service components. If this procedure is not needed for a return to service, perform this procedure during periods of low traffic only.



DANGER

Loss of service

This procedure manually busies one or more signaling terminals (ST), which can cause service degradation. Perform this procedure only if you need to restore out-of-service components. If this procedure is not required for a return to service, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card has the same PEC, including suffix, as the card being removed.

2 Record the FSP slot, frame circuit breakers (CB), shelves, signaling terminal controllers (STC), MSB6 unit number, and power converter slot associated

with the NT0X91 card you will replace. Use the following table and diagram to obtain this information.

Card	FSP Slot	СВ	Shelf and PM information	PC slot
NT0X91AA	CD1	CB5	shelf 51, MSB6 unit 0 (right side)	25
NT0X91AA	CD1	CB4	shelf 51, STCM 0 (left side)	01
NT0X91AE	CD2	CB2	shelf 65, MSB6 unit 1 (right side)	25
NT0X91AE	CD2	CB1	shelf 65, STCM 1 (left side)	01



At the 3	MAP term To acces >MAPCI and pres Example	ninal ss the PM ;MTC;PM ss the Ente e of a MAF	level of er key. ? <i>displa</i>	f the MAN	^D display,	type			
PM		Sys 1	B .2	ManB 0	OffL 2	CI	Bsy O	IST 1	b InSv 3 24
4	To post t >POST and pres where pm_ is Example	he MSB, t MSB6 <u>F</u> is the Ente no the PM nu e of a MAF	ype om_no er key. umber ? displa	(0 to 999 1 <i>y:</i>)				
5	PM MSB6 Unit0: Unit1: Determir are repla	0 InSv Inact Act ne the stat icing.	Linł InSv InSv e and a	SysB 12 0 cs_OOS:	ManB 0 CSide f the PM	⊖: 0 , unit as	ffL 2 0 PSid	CBs; de 0	y ISTb 0 13 0 0 the card you
	If the s	tate of the	e PM u	ınit	Do				
	is IST CBsy,	b, InSv and activ	, SysI /e	3, or	ster	o 6			
	is IST CBsy,	b, InSv and inac	, SysI tive	∃, or	ster	<u>9</u> 9			
	is Ma	nB			ster	o 11			
	is Off	L			step	p 55			
6	Determir	ne the stat	e of th	e mate P	M unit.				
	If the s	tate of the	e mate	PM unit	Do				
	is IST	b or InS	v		step	step 7			
	is othe	r than list	ted her	re	ster	p 57			

To switch activity, type	
>SWACT	
and press the Enter key.	
Example of a MAP response:	
MSB6 0 A Warm SwAct will data sync of acti Please confirm ("YES", "Y",	be performed after ve terminals. "NO", or "N"):
lf	Do
you must confirm the command	step 8
the system rejects the SWACT	step 56
To confirm the command, type	
>YES	
and press the Enter key.	
Example of a MAP response:	
UnitO: Inact SysB Mtce Unitl: Act ISTb	
MSB6 0 SwAct Passed	
If the MAP response	Do
is SWACT passed	step 9
is other than listed here	step 56
A maintenance flag (Mtce) can appear system-initiated maintenance tasks ar disappears from the status lines for bo next step.	r. This flag indicates that e in progress. Wait until the flag th PM units before you proceed to the
-	
To manually busy the inactive unit, typ	e
To manually busy the inactive unit, typ >BSY UNIT unit_no	e
To manually busy the inactive unit, typ >BSY UNIT unit_no and press the Enter key.	e
To manually busy the inactive unit, typ >BSY UNIT unit_no and press the Enter key. where	e
To manually busy the inactive unit, typ >BSY UNIT unit_no and press the Enter key. where unit_no is the PM unit number (0 or 1)	e

	Do
passed	step 11
failed	step 57
To reset the PM unit, type	
>PMRESET UNIT unit	_no NORUN
and press the Enter key.	
where	
unit_no is the PM unit numbe	er (0 or 1)
Example of a MAP respons	se:
MSB6 0 Unit 0 PMR	eset Passed
To access the STC level of	the MAP display, type
>STC	
and press the Enter key.	
To post the STC that you re	corded in step 2, type
>POST STCM stcm_no	
and press the Enter key.	
where	
stcm_no is the STCM number	r (0 to 9)
	ling terminals (ST) type
To manually busy the signa	
To manually busy the signa >BSY ALL	
To manually busy the signa >BSY ALL and press the Enter key.	

15 To confirm the command, type

>YES

and press the Enter key.

16 To return to the PM level of the MAP display, type

>QUIT

and press the Enter key.

17 To manually busy C-side links associated with the shelf in use, use the procedure *Manually busying Series II PM C-side links*. The procedure *Manually busying Series II PM C-side links* appears in this document. Complete the procedure and return to this point.

At the frame

18



WARNING

Static electricity damage

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Unseat cards in the control complex.

- **a** Unseat the NT6X43 message interface card in slot 20.
- **b** Unseat the NT6X45 signaling processor card in slot 19.
- c Unseat the NT6X45 master processor card form slot 15.
- **19** To power down the power converter in slot 01, pull and set the POWER switch handle down to the OFF position.
- 20 To power down the power converter in slot 25, pull and set the POWER switch handle down to the OFF position.
- 21 Turn off the CBs for the shelf associated with the NT0X91 card you are replacing
- 22 Unscrew the slotted nut on the left-hand side of the FSP.
- 23 Open the FSP.

24



WARNING

Loss of service Make sure that the alarm and control card you remove controls the shelves with the STs that you set to manually busy. Removal of the wrong card causes loss of service.

Remove the NT0X91 card from the CD slot in the FSP.

- **25** Place the removed card in an electrostatic discharge (ESD) protective container.
- 26 Make sure that the replacement card has the same PEC, including suffix, as the removed card.
- 27 Insert the replacement card.
- 28 Close the FSP.
- **29** Tighten the slotted nut on the FSP.
- **30** The next action depends on the power converter version and the type of supervisory panel.

lf	the power converter	Do		
is F	an NT2X70AE card and the SP has circuit breakers	step 31		
is F e	s an NT2X70AE card and the SP does not have circuit break-	step 32		
is tł	is not an NT2X70AE card and step 33 the FSP has circuit breakers			
is tł b	s not an NT2X70AE card and ne FSP does not have circuit reakers	step 34		
Po	wer up the converter.			
а	Pull the set the POWER switch han hold.	ndle up to the RESET position and		
b	Set the converter circuit breaker h place.	andle on the FSP up until it clicks into		
С	Release the POWER switch hand	le.		
	Go to step 35.			

32 Power up the converter.

31

- Pull and set the POWER switch handle up to the RESET position and hold until the CONVERTER FAIL LED goes off. а
- Release the handle. b
 - Go to step 35.
- 33 Power up the converter.
 - Pull and set the POWER switch handle up to the ON position. а
 - Press and hold the RESET button on the power converter. b
 - Set the converter circuit breaker handle on the FSP up until it clicks into С place.
 - Release the RESET button. d

Go to step 35.

- 34 Power up the converter.
 - Pull and set the POWER switch handle up to the ON position. а
 - Press and hold the RESET button on the power converter until the h CONVERTER FAIL LED goes off.
 - Release the RESET button. С
- 35 Repeat steps 30 to 34 for the other power converter. Turn on both power converters and go to step 36.
- 36 Reseat cards in the control complex.
 - Reseat the NT6X45 master processor card in slot 15. а
 - Reseat the NT6X45 signaling processor card in slot 19. b
 - Reseat the NT6X43 message interface card in slot 20. С

At the MAP terminal

37 The next action depends on the type of network in the office.

lf you	Do	
are working on JNET	step 38	
are working on ENET	step 40	

38

To return to service one of the network links associated with the PM unit in use, type

>RTS plane_no link_no

and press the Enter key.

where

plane no is the number of the plane (0 or 1) for the link

	link_no is the link number (0 to 63)	
	If the link	Do
	returned to service and more manual-busy links are present	step 39
	returned to service and no more manual-busy links are present	step 41
	did not return to service	step 57
39	Repeat step 38 for all C-side links for return all C-side links to service, go	the PM unit in use. When you correctly o step 41.
40	To return the link to service, type	
	>RTS plane_no LINK link_	no
	and press the Enter key.	
	where	
	plane_no is the number of the plane (0	or 1) for the link
	link_no is the link number (0 to 63)	
	Example of a MAP response:	
Request Request	to RTS ENET Plane:0 Shelf to RTS ENET Plane:0 Shelf	00 Slot:32 Link:01 sybmitted. 00 Slot:32 Link:01 passed.
	If the link	Do
	returned to service	step 41
	did not return to service	step 57
41	To return to the STC level of the MA	P display, type
	>PM;STC	
	and press the Enter key.	
42	To post the STCM, type	
	>POST STCM stcm_no	
	and press the Enter key.	
	where	
	stcm_no is the STCM number (0 to 9)	

43	To load the STs, type >LOADPM ALL and press the Enter key. <i>Example #1 of a MAP response:</i>				
	STC 301load Passed : <load< th="">STC 302load Passed : <load< td="">STC 303load Passed : <load< td="">STC 304load Passed : <load< td=""></load<></load<></load<></load<>	name> name> name> name>			
	Example #2 of a MAP response:				
	STC load ' <loadname>' not in</loadname>	MSB6 0			
	If the LOADPM command	Do			
	passed	step 49			
	failed, with the message STC Load <loadname> not in <msb_unit></msb_unit></loadname>	step 44			
	failed, with messages other than listed here	step 46			
4	Note: As shown above in Example the name of the ST load; msb_uni To return to the PM level of the MAP of >QUIT and press the Enter key.	e of a MAP response #2, loadname is t is the MSB6 and the unit number. display, type			
.0	>STCLOAD UNIT unit_no ADD and press the Enter key.	loadname			
	where				
	unit_no is the PM unit number (0 or 1)				
	loadname is the STC load name				
	loadname is the STC load name If the STCLOAD command	Do			
	loadname is the STC load name If the STCLOAD command failed	Do step 46			

46	To load the PM unit, use the procedure <i>How to load a PM</i> in this document. Complete the procedure and return to this point.						
47	To return to the STC level of the MAP	display, type					
	>STC						
	and press the Enter key.						
48	To post the STCM, type						
	>POST stcm_no						
	and press the Enter key.						
	where						
	stcm_no is the STCM number (0 to 9)						
	Go to step 43.						
49	To return the STs to service, type						
	>RTS ALL						
	and press the Enter key.						
	Example of a MAP response:						
	STC 301 Out-of-service tes STC 301 Tst Passed STC 301 Rts Passed STC 302 Out-of-service tes STC 302 Tst Passed STC 302 Rts Passed STC 303 Out-of-service tes STC 303 Tst Passed STC 303 Rts Passed STC 304 Out-of-service tes	st initiated st initiated st initiated st initiated					
	STC 304 T Passed						
	If the RTS command	Do					
	passed for all STs	step 50					
	failed for any ST	step 57					
50	on for performing this procedure.						
	lf	Do					
	a maintenance procedure directed you to this procedure	step 51					
	a maintenance procedure did not direct you to this procedure	step 52					

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NT0X91 in an MS6E (end)

51	Return to the maintenance procedure that sent you to this procedure and continue as directed.				
52	To load the inactive unit, type				
	>LOADPM UNIT unit_no				
	and press the Enter key.				
	where				
	unit_no is the PM unit number (0 o	r 1)			
	If the LOADPM command	Do			
	failed	step 53			
	passed	step 54			
53	To load the PM unit, use the proc Complete the procedure and retu	edure <i>Loading a PM</i> in this document. rn to this point.			
54	To return the inactive unit to servi	ce, type			
	>RTS UNIT unit_no				
	and press the Enter key.				
	where				
	unit_no is the PM unit number (0 o	r 1)			
	If the RTS command	Do			
	passed	step 57			
	failed	step 58			
55	Consult office personnel to determ as directed by office personnel.	nine why the component is offline. Continue			
56	For additional help with switch of	activity, contact the next level of support.			
	Note: If the system recommends use of the SWACT command v FORCE option, consult office personnel. Consult office personned determine if you have permission to use the option.				
57	For additional help, contact the ne	ext level of support.			
58	The procedure is complete.				

NT0X91 in an MS7E, ST7E, or ST6E

Application

Use this procedure to replace a NT0X91 in the shelves or frames listed in the following table.

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA	FSP drive and alarm circuit card	signaling terminal 6 equipment (ST6E) frame, signaling terminal 7 equipment (ST7E) frame
NT0X91	AE	FSP drive and protection circuit card	CCS7 message buffer equipment (MS7E) frame, ST6E, ST7E

Note: This procedure is not used to change the NT0X91AA FSP drive and alarm circuit card in the MS7E frame. If card replacement is necessary for this card in the MS7E, contact your next level of support.

Common procedures

This procedure refers to Loading a PM.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NT0X91 in an MS7E, ST7E or ST6E



Replacing a NT0X91 in an MS7E, ST7E, or ST6E

At your current location

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.



WARNING Loss of service

This procedure manually busies one or more signaling terminals (ST), which can cause service degradation. Perform this procedure during low traffic periods only.

The next action depends on the version of the NT0X91 you are replacing.

If the card you are replacing	Do
is a NT0X91AA in an MS7E	step 41
is a NT0X91AE in an MS7E	step 2
is a NT0X91AA or NT0X91AE in a ST7E or ST6E	step 5

- 2 Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
- **3** For the MS7E, record the FSP slot, frame circuit breakers (CB), shelves, CCS7 signaling terminal groups (ST7G), and power converter slots associated with the NT0X91 card you are replacing. Use the following table to obtain this information.

Note: The signaling terminal controller (STC) is called a signaling terminal controller module (STCM) for a CCS6 message switch and buffer (MSB6). The signaling terminal controller (STC) is called a CCS7 signaling terminal group (ST7G) for a CCS7 message switch and buffer

(MSB7). In this procedure, the name STC refers to both ST7Gs and signaling-terminal controller modules (STCM).

Card	FSP Slot	СВ	Shelf and PM information	PC slot
NT0X91AE	CD2	CB4	shelf 51, ST7G 3 (right side)	01
NT0X91AE	CD2	CB3	shelf 18, ST7G 0 (right side)	01
NT0X91AE	CD3	CB5	shelf 32, ST7G 1 (left side)	01
NT0X91AE	CD3	CB1	shelf 51, ST7G 2 (left side)	25



4 Go to step 7.

- **5** Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
- 6 For the ST6E and ST7E, record the FSP slot, frame circuit breakers (CB), shelves, signaling terminal controllers (STC), and power converter slots associated with the NT0X91 card you are replacing. Use the following table to obtain this information (see also the figure in step 3).

Note: The signaling terminal controller (STC) is called a signaling terminal controller module (STCM) for a CCS6 message switch and buffer (MSB6). The signaling terminal controller (STC) is called a CCS7 signaling terminal group (ST7G) for a CCS7 message switch and buffer (MSB7). In this procedure, the name STC refers to both ST7Gs and signaling terminal controller modules (STCM).

	FSP			PC
Card	Slot	СВ	Shelf and PM information	slot
NT0X91AA	CD1	CB3	shelf 18, STC 5 (right side)	01
NT0X91AA	CD1	CB6	shelf 18, STC 4 (left side)	25
NT0X91AE	CD2	CB2	shelf 32, STC 7 (right side)	01
NT0X91AE	CD2	CB1	shelf 51, STC 9 (right side)	01
NT0X91AE	CD3	CB5	shelf 32, STC 6 (left side)	25
NT0X91AE	CD3	CB4	shelf 51, STC 8 (left side)	25

At the MAP terminal

7 To access the PM level of the MAP display, type >MAPCI;MTC;PM and press the Enter key. Example of a MAP display: OffL SysB ManB CBsy ISTb InSv ΡМ 0 5 0 6 2 8 To post the MSB, type >POST pm_type pm_no and press the Enter key. where pm type

is the PM type (MSB6, MSB7)

pm no is the PM number (0 to 999) Example of a MAP display: OffL SysB ManB CBsy ISTb InSv ΡМ 0 2 41 0 5 6 MSB7 0 0 1 0 0 1 MSB7 0 InSv Links_OOS: CSide 0, PSide 0 Unit0: Inact InSv Unit1: Act InSv 9 To access the STC level of the MAP display, type >STC and press the Enter key. Example of a MAP display: ManB OffL CBsy ISTb InSv SysB ΡМ 0 5 6 0 2 41 MSB7 0 0 1 0 0 1 MSB7 0 InSv Links_OOS: CSide 0 , PSide 0 Unit0: Inact InSv Unit1: Act TnSv 0 STC 0 0 0 0 STC Ctrl STCM 10 To post one of the STCs that you recorded in previous steps, type >POST stc_type stcm_no and press the Enter key. where stc_type is the STC type (STCM, ST7G) stcm_no is the STC number (0 to 9) Example of a MAP display:

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NT0X91 in an MS7E, ST7E, or ST6E (continued)

PM MSB7		SysB 0 0	ManB 5 0	OffL 6 1	CBsy 0 0	ISTb 2 0	InSv 41 1
MSB7 Unit0: Unit1:	0 InSv Lin Inact InSv Act InSv	nks_00S: v v	CSide	0 , PS:	ide O		
STC		0	0	0	0	0	
STC 10	0 STCM 0	Ctr	1 0	Bd	InSv		
11	To manually b	ousy the sig	gnaling te	erminals (S	T), type		
12	<pre>>BSY ALL and press the Example of a STC 301 STC 302 STC 303 STC 304 This will Please co: To confirm th >YES and press the</pre>	e Enter key. <i>MAP resp</i> busy th nfirm (" e command e Enter key.	onse: e above YES", " d, type	e STC(S) Y", "NO	", or "N'	'):	
	lf you			Do			
	set STs in l	both STCI	Ms to bu	sy step	o 14		
	set STs in busy	only one	e STCM	to step	0 13		
13	Repeat steps	10 to 12 fo	or the oth	er STC.			

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At the frame

14



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To power down the power converter for the first STC, pull and set the POWER switch handle down to the OFF position.

- **15** Repeat step 14 for the power converter for the second STC associated with the card you are replacing.
- **16** Turn off the CBs for the power converters associated with the card you are replacing.
- 17 Unscrew the slotted nut on the left-hand side of the FSP.
- 18 Open the FSP.
- 19



WARNING Loss of service

Make sure that the alarm and control card you remove controls the shelves with the STs that you set to manually busy. Removal of the wrong card causes a loss of service.

Remove the NT0X91 card from the CD slot in the FSP.

- **20** Place the removed card in an electrostatic discharge (ESD) protective container.
- 21 Make sure that the replacement card has the same PEC, including suffix, as the removed card.
- 22 Insert the replacement card.
- 23 Close the FSP.
- 24 Tighten the slotted nut on the FSP.
- **25** The next action depends on the power converter version and the type of supervisory panel.

If the power converter	Do		
is an NT2X70AE card and the	step 26		
FSP has circuit breakers			
NT0X91 in an MS7E, ST7E, or ST6E (continued)

li 	f the power converter Do
i: F b	s an NT2X70AE card and the step 27 FSP does not have circuit preakers
i: tl	s not an NT2X70AE card and step 28 he FSP has circuit breakers
is tl b	s not an NT2X70AE card and step 29 he FSP does not have circuit preakers
Po	wer up the converter.
а	Pull and set the POWER switch handle up to the RESET position and hold.
b	Pull and set the converter circuit breaker handle on the FSP up until it clicks into place.
С	Release the POWER switch handle.
	Go to step 30.
Po	ower up the converter.
а	Pull and set the POWER switch handle up to the RESET position and hold until the CONVERTER FAIL LED goes off.
b	Release the handle.
	Go to step 30.
Po	ower up the converter.
а	Pull and set the POWER switch handle up to the ON position.
b	Press and hold the RESET button on the power converter.
C	Pull and set the converter circuit breaker handle on the FSP up until it clicks into place.
d	Release the RESET button.
	Go to step 30.
Po	ower up the converter.
а	Pull and set the POWER switch handle up to the ON position.
b	Press and hold the RESET button on the power converter until the CONVERTER FAIL LED goes off.

NT0X91 in an MS7E, ST7E, or ST6E (continued)

At the MAP terminal

30 To load the STs, type

>LOADPM ALL

and press the Enter key.

where

unit_no

is the PM unit number (0 or 1)

Example #1 of a MAP response:

STC	301	load	Passed	:	M7CQA01
STC	302	load	Passed	:	M7CQA01
STC	303	load	Passed	:	M7CQA01
STC	304	load	Passed	:	M7CQA01

Example #2 of a MAP response:

STC load 'M7QA01' not in MSB7 0

If the LOADPM command	Do				
passed	step 36				
failed, with the message STC Load loadname not in msb_unit	step 31				
failed, with a message other than step 33 listed here					
Note: As shown above in <i>Example #2 of a MAP response:</i> , loadname is the name of the ST load; msb_unit is the MSB (MSB6, MSB7) and the unit number.					
To return to the PM level of the MAP d	isplay, type				
>QUIT					
and press the Enter key.					
To add the load to the MSB, type					
>STCLOAD PM ADD loadname					
and press the Enter key.					
where					

31

32

NT0X91 in an MS7E, ST7E, or ST6E (continued)

	loadname is the STC load name	
	If the STCLOAD command	Do
	failed	step 33
	passed	step 34
33	To load the PM unit, use the proce Complete the procedure and return	dure <i>Loading a PM</i> in this document. n to this point.
34	To access the STC level of the MA >stc and press the Enter key.	P display, type
35	To post the STC, type >POST stcm_no and press the Enter key. where stcm_no is the STCM number (0 to 9 Go to step 30)
30	>RTS ALL and press the Enter key. Example of a MAP response: STC 301 Out-of-service test initia STC 301 Tst Passed STC 301 Rts Passed STC 302 Out-of-service test initia STC 302 Tst Passed STC 303 Cut-of-service test initia STC 303 Tst Passed STC 303 Tst Passed STC 303 Tst Passed STC 303 Rts Passed STC 304 Out-of-service test initia STC 304 STC 304 TsT Passed	ted ted ted
	STC 304 Rts Passed	Do
	passed for all STs, and you hav not worked on the other STC	ve step 37

NT0X91 in an MS7E, ST7E, or ST6E (end)

If the RTS command	Do
passed for all STs, and you have worked on the other STC	step 39
failed for any ST	step 42
To post the other STC, type	
POST stcm_no	
and press the Enter key.	
where	
stcm_no is the STC number (0 to 9)	
Repeat steps 30 to 36 for the other ST o service all STs, go to step 39.	C. When you have loaded and returned
The next action depends on your reas	son for performing this procedure.
lf	Do
a maintenance procedure directed you to this procedure	step 40
a maintenance procedure directed you to this procedure a maintenance procedure did not direct you to this procedure	step 40 step 43
a maintenance procedure directed you to this procedure a maintenance procedure did not direct you to this procedure Return to the maintenance procedure continue as directed.	step 40 step 43 • that sent you to this procedure and
a maintenance procedure directed you to this procedure a maintenance procedure did not direct you to this procedure Return to the maintenance procedure continue as directed.	step 40 step 43 that sent you to this procedure and NT0X91AA in the MS7E, contact the
a maintenance procedure directed you to this procedure a maintenance procedure did not direct you to this procedure Return to the maintenance procedure continue as directed. For additional help with changing the next level of support. Note: To change the NT0X91AA, power on the in-service PM unit. U advanced maintenance and qualifi installation.	step 40 step 43 that sent you to this procedure and NT0X91AA in the MS7E, contact the you must install a test strap to maintain Jse of a test strap in this event is ed personnel must perform the
a maintenance procedure directed you to this procedure a maintenance procedure did not direct you to this procedure Return to the maintenance procedure continue as directed. For additional help with changing the next level of support. Note: To change the NT0X91AA, power on the in-service PM unit. U advanced maintenance and qualifi installation.	step 40 step 43 that sent you to this procedure and NT0X91AA in the MS7E, contact the you must install a test strap to maintain Use of a test strap in this event is ed personnel must perform the evel of support.

43 The procedure is complete.

NT0X91 in a network equipment frame

Application

Use this procedure to replace an NT0X91 in the shelves or frames listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA	Drive and alarm card	NT0X48 single-bay network (NET), NT5X13 combined single-bay network (NETC), NT8X11 dual shelf network (DSN)
NT0X91	AE	Drive and protection card	NET, NETC, DSN

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames in this card replacement book.

Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

7-160 Frame supervisory panel and modular supervisory panel card replacement procedures

NT0X91 in a network equipment frame (continued)

Summary of replacing a NT0X91 in a network equipment frame



Replacing a NT0X91 in a network equipment frame

At the frame

1

2



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before you replace a card in the FSP.Make sure you do not touch any terminal inside the FSP.



WARNING

Loss of service

Before you perform this procedure, notify all far-end offices with common channel signaling of a possible temporary alarm. The out-of-service test used in this procedure can cause a temporary alarm in far-end offices.



WARNING

Loss of service

This procedure includes directions to manually busy one plane of a network pair, resulting in loss of network redundancy. Perform this procedure to restore out-of-service components as required. Unless it is urgent, carry out this procedure during periods of low traffic.

Obtain a replacement card. Make sure the replacement card and the card you replace have the same PEC and PEC suffix.

Use the following table to identify the slot that contains the alarm and control card that you replace:



3 Record information on FSP fuses, FSP circuit breakers (CB), and network shelf positions associated with the card you replace. Use the following table to obtain this information.

			FSP		
Network frame	FSP card	FSP card position	fuses or CBs	Shelf position	Shelf function
NET (fuses)	NT0X91AA	CD1	F04	18	I/F
			F02	51	I/F
	NT0X91AE	CD2	F03	32	XPT
			F01	65	XPT
NET (CBs)	NT0X91AA	CD1	CB4	18	I/F
			CB2	51	I/F
	NT0X91AE	CD2	CB3	32	ХРТ
			CB1	65	ХРТ
NETC	NT0X91AA	CD1	CB2	51	ХРТ
			CB1	65	I/F
	NT0X91AE	CD2	CB5	18	I/F
			CB4	32	ХРТ
DSN	NT0X91AA	CD1	CB1	65	NM
			CB2	51	NM

(Sheet 1 of 2)

Note 1: NET = NT0X48; NETC = NT5X13; DSN = NT8X11

Note 2: Some NT0X48 frames can have FSPs with fuses only.

Note 3: All NET shelves associate with a specific pair for a specified plane. NETC shelves 51 and 65 comprise the pair for plane 0, and shelves 18 and 32 comprise the pair for plane 1. DSN shelves 51 and 65 are each a pair associated with plane 0, and shelves 18 and 32 are each a pair that associate with plane 1.

Note 4: I/F = interface, XPT = crosspoint; NM = network module (combined I/F and XPT)

Network frame	FSP card	FSP card position	FSP fuses or CBs	Shelf position	Shelf function
	NT0X91AE	CD2	CB5	32	NM
			CB4	18	NM

(Sheet	2	of	2)
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Note 1: NET = NT0X48; NETC = NT5X13; DSN = NT8X11

Note 2: Some NT0X48 frames can have FSPs with fuses only.

Note 3: All NET shelves associate with a specific pair for a specified plane. NETC shelves 51 and 65 comprise the pair for plane 0, and shelves 18 and 32 comprise the pair for plane 1. DSN shelves 51 and 65 are each a pair associated with plane 0, and shelves 18 and 32 are each a pair that associate with plane 1.

Note 4: I/F = interface, XPT = crosspoint; NM = network module (combined I/F and XPT)

At the MAP terminal

4 To access the NET level of the MAP display, type

>MAPCI;MTC;NET

and press the Enter key.

Example of a MAP display:

```
Net 11111 11111 22222 22222 33
Plane 01234 56789 01234 56789 01234 56789 01
0 S...
1 ....
JNET:
```

5 The next action depends on your knowledge about the network plane and pair associated with the card you replace.

lf you	Do			
know the network plane and pair associated with the card to replace	step 10			
do not know the network plane and pair associated with the card to replace	step 6			
Select a network plane and pair.				
To display the frame and shelf location, type				
>LOC plane_no pair_no				

6 7

and press the Enter key.

where

9

10

plane_no
 is the network plane number (0 to 1)
pair_no
 is the network plane pair number (0 to 31)

Example of a MAP response:

Site	Flr	RPos	Bay_id	Shf	Description	Slot	EqPEC
HOST	01	в09	NETO 00		NM 0-00		5X13

Note: The frame location appears under the FIr and RPos headers on the MAP display. For the NT8X11 DSN, the shelf location appears under the Shf header. The network plane and pair appear under the Bay_id header.

8 Correlate the location displayed with the known frame location of FSP card you will replace.

If the network module	Do
corresponds to the FSP card you replace	step 10
does not correspond to the FSP card you replace	step 9
Repeat step 6 for another network pla and pair associated with the card you	ne and pair. Identify a network plane replace. Go to step 10.
To manually busy the plane and netwo and control card to replace, type	ork module associated with the alarm
>BSY plane_no pair_no	
and press the Enter key.	
where	
plane_no is the network plane number (0	to 1)
<pre>pair_no is the network plane pair numb</pre>	er (0 to 31)
Example of a MAP response:	
bsy 0 0 OK	
If the BSY command	Do
passed	step 11

	If the BSY command Do	
	needs confirmation step 39	
	failed step 40	
11	Wait 30 min to make sure that calls in progress finish.	
	Note: If you replace a card that failed, you do not need the waiting period Calls do not process on that network plane and pair.	od.
12	To obtain information on the link to the message switch (MS), type	
	>TRNSL plane_no pair_no	
	and press the Enter key.	
	where	
	<pre>plane_no is the number of the network plane (0 to 1)</pre>	
	<pre>pair_no is the number of the network plane pair (0 to 31)</pre>	
	Example of a MAP response:	
	NM 0-0 = MS 0 and 1, Card 22 Port 1	
13	Record the slot position and the port number of the MS port card that connects to the network plane and pair. In the example MAP response in s 12, the slot position is 22 and the port number is 1.	step
14	To access the MS;SHELF level of the MAP display, type	
	>MS;SHELF	
	and press the Enter key.	
	Example of a MAP display:	
MS 0 MS 1	Message Switch Clock Shelf 0 Inter-MS Link 0 . M Free F - S Slave C -	1 - -
Shelf Card	0 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
MS 0 MS 1	I	
15	To post the card in the slot that you recorded in step 13, type	
	>CARD slot_no	
	and press the Enter key.	
	where	

slot_no

is the number of the card slot that you recorded in step 13 *Example of a MAP display:*

Message Switch Clock Shelf 0 Inter-MS Link 0 1 M Free -S Slave C 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 MS O MS 1 - -Shelf 0 Card 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 Chain Card 22 Protocol Port 0___ ___3 MS 0 . DS30 4 . P. . . MS 1 . DS30 4 . P. . 16 To manually busy the port on MS 0 that connects to the network plane and pair, type >BSY 0 PORT port_no and press the Enter key. where port no is the port number that you recorded in step 13 Example of a MAP response: Request to MAN BUSY MS: 0 shelf: 0 card:22 port: 1 submitted. Request to MAN BUSY MS: 0 shelf: 0 card:22 port: 1 passed. 17 To manually busy the port on MS1 that connects to the network plane and pair, type >BSY 1 PORT port_no and press the Enter key. where port_no is the port number that you recorded in step 13

At the frame

18



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the shelves associated with the FSP card you replace.

- a Choose a shelf.
- **b** Pull down and set the handle of the POWER switch on the power converter to the OFF position.
- c Repeat steps 18a.a and 18b.b for each power converter on the shelf.
- **d** Repeat steps 18a.a to 18c.c for each shelf associated with the FSP card that you replace.
- 19 Unscrew the slotted nut on the left of the FSP.
- 20 Open the FSP.
- 21



WARNING

Loss of service

Make sure that the alarm and control card that you remove controls the network modules that you manually busied. Removal of the wrong card causes a loss of service.

Remove the NT0X91 card from the correct slot.

- 22 Insert the replacement card.
- 23 Close the FSP.
- 24 Tighten the slotted nut on the FSP.
- **25** The next action depends on the type of power converter in the affected shelves and the type of supervisory panel.

If the shelf	Do
has an NT2X70AE card and the FSP	step 26
has circuit breakers	

lf	the shelf	Do				
h d	as an NT2X70AE card and the FSP oes not have circuit breakers	step 27				
d a	oes not have an NT2X70AE card nd the FSP has circuit breakers	step 28				
d a b	oes not have an NT2X70AE card nd the FSP does not have circuit reakers	step 29				
Po	wer up the converter as follows:					
а	Pull up and set the handle of the POWE and hold.	ER switch to the RESET position				
b	Pull up and set the handle of the convert the handle clicks into place.	er circuit breaker on the FSP until				
С	Release the handle of the POWER swit	ch.				
	Go to step 30.					
Po	ower up the converter as follows:					
а	Pull up and set the handle of the POWE until the CONVERTER FAIL LED turns	ER switch to the RESET position off.				
b	Release the handle.					
	Go to step 30.					
Po	ower up the converter as follows:					
а	Pull up and set the handle of the POWE	R switch to the ON position.				
b	Press and hold the RESET button on the	e power converter.				
С	Pull up and set the handle of the convert the handle clicks into place.	er circuit breaker on the FSP until				
d	Release the RESET button.					
	Go to step 30.					
Po	wer up the converter as follows:					
а	Pull up and set the handle of the POWER switch to the ON position.					
b	Press and hold the RESET button on the CONVERTER FAIL LED turns off.	e power converter until the				
С	Release the RESET button.					
Th	e next action depends on the power conv	verter configuration for the shelf.				

has one power converter

step 32

	If the shelf Do
	has two power converters, and step 32 you powered up both converters
	has two power converters, you step 31 powered up only one converter, and the mate converter is an NT2X06 or an NT2X07
31	Repeat step 25 for the second power converter on the shelf. Go to step 32
32	Repeat steps 25 to 31 for the other shelf associated with the FSP card you replace. Go to step 33.
At th	e MAP terminal
33	To return to service the port on MS0 that connects to the network plane and pair, type
	>RTS 0 PORT port_no
	and press the Enter key.
	where
	<pre>port_no is the port number that you recorded in step 13</pre>
	Example of a MAP response:
	Request to RTS MS: 0 shelf: 0 card:22 port: 1 submitted Request to RTS MS: 0 shelf: 0 card:22 port: 1 passed.
34	To return to service the port on MS1 that connects to the network plane and pair in use, type
	>RTS 1 PORT port_no
	and press the Enter key.
	where
	<pre>port_no is the port number that you recorded in step 13</pre>
35	To access the NET level of the MAP display, type
	>NET
	and press the Enter key.
36	To return the network module to service, type
	>RTS plane_no pair_no
	and press the Enter key.
	where

In a network equipment frame (end)

plane no is the number of the network plane (0 to 1) pair no is the number of the network plane pair (0 to 31) Example of a MAP response: rts 0 0 Request submitted. Reply expected within 3 mins. Test Passed OK If the RTS command Do passed step 37 failed step 40 37 The next action depends on the reason that you perform this procedure. If a maintenance procedure Do directed you to this procedure step 38 did not direct you to this procedure step 41 38 Return to the maintenance procedure that directed you to this procedure and continue as directed. 39 To determine if you can manually busy the network plane and pair, contact operating company personnel or the next level of support. Continue as directed. 40 For additional help, contact the next level of support.

41 The procedure is complete.

NT0X91 in a trunk module equipment frame

Application

Use this procedure to replace an NT0X91 in a trunk module equipment (TME) frame, as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT0X91	AA, AB	Drive and alarm card	TME equipped with integrated service module (ISM), maintenance trunk module (MTM), office alarm unit (OAU), service trunk module (STM), or trunk module (TM)
NT0X91	AD	Drive and protection card	TME equipped with ISM, MTM, OAU, STM, or TM

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of cards, shelves, and frames in this card replacement book.

Note: This procedure does not cover card replacement for DCE frames equipped with digital carrier modules (DCM). A separate procedure covers FSP card replacement for digital carrier equipment (DCE) frames.

Common procedures

This procedure refers to Loading a PM.

Do not go to the common procedure unless the step-action procedure directs you.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NT0X91 in a trunk module equipment frame



Replacing a NT0X91 in a trunk module equipment frame

At the frame

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure you remove all jewelry before you replace a card in the FSP. Do not touch any terminal in the FSP.



WARNING

Loss of service

This procedure removes an ISM, MTM, STM, or TM from service, which can cause service degradation. Perform this procedure only if you must restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic. Do not perform this procedure if essential services use PM resources.

Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.

2 Use the following table to identify the slot that contains the alarm and control card to replace:



If Alarm and control card	Do Slot
NT0X91AA	CD1
NT0X91AB	CD2
NT0X91AD	CD3

3 Record information on FSP fuses, FSP circuit breakers (CB), and network shelf positions associated with the card you replace. Use the following table to obtain this information.

FSP card	FSP card position	FSP circuit breakers	Shelf position
NT0X91AA	CD1	CB5	04
NT0X91AB	CD2	CB3	32
		CB1	65
NT0X91AD	CD3	CB4	18
		CB2	51

Note 1: A minimum of one shelf can be unequipped.

Note 2: If the TME is equipped with the OAU, shelf positions 51 and 65 are used for the magnetic tape drive. Only shelf positions 04, 18, and 32 can be equipped with PMs. In this event, only one shelf associates with each FSP card.

4 Select a shelf associated with the FSP card you replace.

At the MAP terminal

- 5 To access the PM level of the MAP display, type
 - >MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1		6			102

6 The next step depends on the type of PM that is in the shelf.

If the PM	Do
is an OAU	step 7
is an ISM, MTM, STM, or TM	step 11
To post the OAU, type > POST OAU pm_no and press the Enter key. <i>where</i>	

7

pm_no

is the number of the PM (0 to 9999)

Example of a MAP display:

	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	1	0	6	0	0	102
OAU	1	0	0	0	0	

00AU 0 SysB

8

Determine the state of the PM.

Note: The PM state appears on the right of the PM number. In the example display in step 7, the PM state is system busy (SysB).

If the PM	Do
is Offl	step 89
is ManB	step 36
is other than listed here	step 9

9 A maintenance flag (Mtce) can appear. This flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status line before you proceed to the next step.

10 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP display:

PM OAU			SysB 58 0	ManB 1 1	OffL 6 0	CBsy 14 0	ISTb 12 0
00AU bsy OAU 0 Bs OK.	0 0	ManB					

Go to step 36.

11 Verify from office records or operating company personnel that necessary services do not use the PM resources that this procedure affects.

Note: When you verify resources, include all PMs associated with the shelf. For all service and trunk modules, include NT1X80 cards and NT1X81 cards (single-card PMs) on the shelf. You must remove these single-card PMs from service to complete this procedure. If the shelf has an STM, check for necessary services on the STM on the other half of the

shelf. You must remove both STMs from service to complete this procedure.

	If necessary servic	es	Do			
	use PM resources mum of one PM is	and a mini- in service	step 88			
	use PM resources are out of service	and all PMs	step 12			
	do not use PM reso	ources	step 12			
12	To post the PM, type					
	>POST pm_type	pm_no				
	and press the Enter k	ey.				
	where					
	pm_type is the type of F	M (ISM, MTM, S	STM, TM)			
	pm_no is the number o	of the PM (0 to 9	999)			
	Example of a MAP di	splay:				
	SvaB	Man R O	ffi. CBev	TOTH	TnGv	
PM MTM	1 1	0 0	6 0 0 0	0 0	102 9	
MTM () SysB					
13	Determine the state of	f the PM.				
	<i>Note:</i> The PM sta example display in	te appears on th step 12, the PM	e right of the PI state is system	M number. Ir busy (SysB)	n the).	
	If the PM		Do			
	is Offl		step 89			
	is other than listed	step 14				
14	To access the TTP level of the MAP display, type					
	>MAPCI;MTC;TRKS;TTP					
	and press the Enter k	ey.				
	Example of a MAP di					
POST TTP 6-01	DELQ 3	BUSYQ	DIG			
CKT TYPE	PM NO.	COM LANG	STA S F	R DOT TE	RESULT	

NT0X91

in a trunk module equipment frame (continued)

15 To post the circuits for the PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no is the number of the PM (0 to 9999)

Example of a MAP display:

POST17DELQBUSYQDIGTTP6-013CKTTYPEPM NO.COM LANGSTA S RDOT TECONF6MTM00CF6P0IDL

post p MTM 0 LAST CKT = 17 SHORT CLLI IS: CF6P OK,CKT POSTED

16 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

Example of a MAP display:

POST	' 18	DELQ	BUSYQ A	6	DIG		
TTP	6-027						
CKT	TYPE	PM NO.	COM LAN	G	STA S R	DOT TE	RESULT

BSYQ ALL IDLE

bsy all OK,POST SET IS SET IN BSYQ

17 Wait until all circuits are manually busy (removed from the busy queue) before you proceed to the next step.

Note: The digit on the right of the BUSYQ header indicates the number of circuits in use. As a circuit becomes available, the circuit is manually busy and the number in the queue decreases by one. A blank field indicates that all circuits are manually busy.

18 Determine if the shelf has the NT1X80 enhanced-digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

If the shelf	Do
has the NT1X80 or the NT1X81	step 19

If the shelf	Do	
does not have the NT1X80 the NT1X81	or step 23	
To post the circuits for the single-	card PM, type	
>POST P pm_type pm_no		
and press the Enter key.		
where		
pm_type is the type of single card F	PM (CTM, DTM)	
pm_no is the number of the PM (0) to 9999)	
<i>Note:</i> The MAP display refers The MAP display refers to the cards are single-card PMs.	to the NT1X80 EDRAM card as a DTM NT1X81 conference card as a CTM. Bo	
To manually busy all posted circu	iits, type	
>BSY ALL		
and press the Enter key.		
Wait until all circuits are manually you proceed to the next step.	busy (removed from the busy queue) bef	
Repeat steps 19 to 21 for all NT1	peat steps 19 to 21 for all NT1X80 and NT1X81 cards on the shelf.	
To access the PM level of the MA	AP display, type	
>PM		
and press the Enter key.		
To post the PM, type		
>POST pm_type pm_no		
and press the Enter key.		
where		
<pre>pm_type is the type of PM (ISM, MTM, STM, TM)</pre>		
pm_no is the number of the PM (0) to 9999)	
Determine the state of the PM.		
If the PM	Do	
is ManB	step 27	
is other than listed here	step 26	

	in a train	modul	o oquip			nanaca)
26	To manually busy the F	PM, type				
	and press the Enter ke	ev.				
	Example of a MAP dis	, plav:				
DM	SysB	ManB	OffL	CBsy	ISTb	InSv
РМ MTM	58 0	1	6 0	14 0	12	17 9
MTM 0 bsy MTM 0 Bsy	ManB					
OK.						
27	Determine if the shelf announcement machin	has the NT ne (EDRAN	1X80 enhai I) card or th	nced-digita e NT1X81	l recorded conference	e card.
	If the shelf		Do			
	has the NT1X80 or	the NT1X	[81 step]	28		
	1 . 1 .1		r			
	the NT1X81	NTIX80	or step	32		
28	To post the single-card	I PM, type				
	>POST pm_type p	pm_no				
	and press the Enter ke	ey.				
	where					
	pm_type is the type of sir	ngle card P	M (CTM, D	TM)		
	pm_no is the number o	f the PM (0	to 9999)			
29	Determine the state of	the PM.				
	If the PM		Do			
	is ManB		step	35		
	is other than listed l	here	step	30		
30	To manually busy the F	PM, type				
	>BSY					
	and press the Enter ke	ey.				
31	Repeat steps 28 to 30	for all NT1	X80 and N	T1X81 carc	ls on the sh	nelf.

32 Determine if the shelf has a STM.

If the shelf	Do
has a STM, and only one STM is manually busy	step 33
has a STM, and both STMs are manually busy	step 34
has a STM	step 34

33



WARNING Loss of service

When you power down a STM, the mate power converter in the other STM on the shelf trips. It is recommended to manually busy and turn off both STMs on a shelf.

Repeat steps 12 to 32 for the STM in the other half of the shelf.

The next action depends on how many shelves equipped with PMs associate with the FSP card you replace.

lf	Do
one shelf equipped with PMs as- sociates with the card	step 36
two shelves equipped with PMs associate with the card, and you turned down functionality for only one shelf	step 35
two shelves equipped with PMs associate with the card, and you turned down functionality for both shelves	step 36

you replace. Go to step 36.

34

35

At the shelf

36

	WARNING Static electricity damage Wear a wrist strap that point to handle circuit is on a modular super supervisory panel (FS against static electricit	ge t connects to the wrist-strap grounding cards. The wrist-strap grounding point visory panel (MSP) or a frame P). The wrist-strap protects the cards ty damage.
Select a shelf to t	urn off.	
Pull and set the F OFF position.	POWER switch hand	e on the power converter down to the
The next action d	epends on the type	of PM in the shelf.
If the shelf		Do
has an STM DRAM)	(with or without	step 39
has an MTM DRAM)	(with or without	step 40
has an ISM DRAM)	(with or without	step 41
is equipped as	a TM	step 41
For the mate pow POWER switch to	er converter in the S the OFF position.	۲M on the other half of the shelf, set th
Go to step 41.		
For the other pow handle to the OF	er converter on the s position.	shelf, pull and set the POWER switch
The next action do with the FSP card	epends on how many I you replace.	v shelves equipped with PMs associat
lf		Do
one shelf equip sociates with the	pped with PMs as- he card	step 43

lf	Do
two shelves equipped with PMs associate with the card, and you powered down only one shelf	step 46
two shelves equipped with PMs associate with the card, and you powered down both shelves	step 43
Repeat steps 37 to 41 for PMs in the o you replace. Go to step 43.	ther shelf associated with the FS
Unscrew the slotted nut on the left-ha	nd side of the FSP.
Open the FSP.	
Remove the card.	
Insert the replacement alarm and cor	trol card.
Close the FSP.	
Tighten the slotted nut on the FSP.	
Tighten the slotted nut on the FSP. Select a shelf to power up.	
Tighten the slotted nut on the FSP. Select a shelf to power up. The next action depends on the type supervisory panel.	of power converter and the type
Tighten the slotted nut on the FSP. Select a shelf to power up. The next action depends on the type supervisory panel. If you	of power converter and the type Do
Tighten the slotted nut on the FSP. Select a shelf to power up. The next action depends on the type supervisory panel. If you replace an NT2X70AE card and the FSP or MSP has circuit breakers	of power converter and the type Do step 51
Tighten the slotted nut on the FSP. Select a shelf to power up. The next action depends on the type supervisory panel. If you replace an NT2X70AE card and the FSP or MSP has circuit breakers replace an NT2X70AE card and the FSP or MSP does not have circuit breakers	of power converter and the type Do step 51 step 52
Tighten the slotted nut on the FSP. Select a shelf to power up. The next action depends on the type supervisory panel. If you replace an NT2X70AE card and the FSP or MSP has circuit breakers replace an NT2X70AE card and the FSP or MSP does not have circuit breakers are not replacing an NT2X70AE card and the FSP or MSP has circuit breakers	Do step 51 step 52 step 53

NT0X91

in a trunk module equipment frame (continued)

- **b** Pull and set the converter circuit breaker handle on the FSP or MSP up until the handle clicks into place.
- c Release the POWER switch handle.

Go to step 55.

- **52** Power up the converter.
 - **a** Pull and set the POWER switch handle up to the RESET position and hold until the CONVERTER FAIL LED goes off.
 - **b** Release the handle.

Go to step 55.

- 53 Power up the converter.
 - **a** Pull and set the POWER switch handle up to the ON position.
 - **b** Press and hold the RESET button on the power converter.
 - c Pull the handle of the converter circuit breaker on the FSP or MSP up until the handle clicks into place.
 - d Release the RESET button.

Go to step 55.

- 54 Power up the converter.
 - **a** Pull and set the POWER switch handle up to the ON position.
 - **b** Press and hold the RESET button on the power converter until the CONVERTER FAIL LED goes off.
 - **c** Release the RESET button.
- **55** Determine the type of PM in the shelf, and if you powered up both power converters.

If the shelf	Do
has an STM or an MTM (with or without DRAM) and you already powered up both power converters	step 60
has an STM (with or without DRAM)	step 56
has an MTM (with or without DRAM)	step 57
has an ISM (with or without DRAM)	step 60
is equipped as a TM	step 60

56	For the mate power converter in the STM on the other half of the shelf, repeat steps 50 to 55. Go to step 58.			
57	For the other power converter on the shelf, repeat steps 50 to 55. Go to step 58.			
58	The next action depends on how many shelves associate with the FSP card you replace.			
	lf	Do		
	one shelf equipped with PMs associates with the card	step 60		
	two shelves equipped with PMs associate with the card, and you powered up only one shelf	step 59		
	two shelves equipped with PMs associate with the card, and you powered up both shelves	step 60		
59	Repeat steps 50 to 58 for PMs in the o you replace. Go to step 60.	ther shelf associated with the FSP card		
At the	e MAP terminal			
60	To access the PM level of the MAP di	splay, type		
	>PM			
	and press the Enter key.			
61	and press the Enter key. The next step depends on the type of	PM that is in the shelf.		
61	and press the Enter key. The next step depends on the type of If the PM	PM that is in the shelf.		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU	PM that is in the shelf. Do step 62		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM	PM that is in the shelf. Do step 62 step 66		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type	PM that is in the shelf. Do step 62 step 66		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type >POST OAU pm_no	PM that is in the shelf. Do step 62 step 66		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type >POST OAU pm_no and press the Enter key.	PM that is in the shelf. Do step 62 step 66		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type >POST OAU pm_no and press the Enter key. where	PM that is in the shelf. Do step 62 step 66		
61	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type >POST OAU pm_no and press the Enter key. where pm_no is the number of the PM (0 to S	PM that is in the shelf. Do step 62 step 66		
61 62 63	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type >POST OAU pm_no and press the Enter key. where pm_no is the number of the PM (0 to S To load the OAU, type	PM that is in the shelf. Do step 62 step 66 9999)		
61 62 63	and press the Enter key. The next step depends on the type of If the PM is an OAU is an ISM, MTM, STM, or TM To post the OAU, type >POST OAU pm_no and press the Enter key. where pm_no is the number of the PM (0 to S To load the OAU, type >LOADPM	PM that is in the shelf. Do step 62 step 66 9999)		

	Example of a MAP response:	
	OAU 0 LoadPM Passed	
	If the LOADPM command	Do
	passed	step 65
	failed	step 64
ļ	To load the PM, perform the proce Complete the procedure and return	edure <i>Loading a PM</i> in this document. rn to this point.
	To return the PM to service, type	
	>RTS	
	and press the Enter key.	
	Example of a MAP response:	
	OAU 0 Rts Passed	
	If the RTS command	Do
	passed	step 84
	failed	step 91
	To post the PM, type	
	>POST pm_type pm_no	
	and press the Enter key.	
	where	
	pm_type is the type of PM (ISM, MT	M, STM, TM)
	pm_no is the number of the PM (0	to 9999)
	To load the PM, type	
	>LOADPM	
	and press the Enter key.	
	Example of a MAP response:	
	MTM 0 LoadPM Passed	
	If the LOADPM command	Do
	passed	step 69

If the LOADPM command	Do
failed	step 68
To load the PM, perform the procedure Complete the procedure and return to	e <i>Loading a PM</i> in this documen this point.
To return the PM to service, type	
>RTS	
and press the Enter key.	
Example of a MAP response:	
MTM 0 Rts Passed	
If the RTS command	Do
passed, and the PM is InSv	step 71
passed, and the PM is ISTb with a card list generated	step 70
failed	step 91
To access the TTP level of the MAP di >TRKS;TTP and press the Enter key. To post the circuits for the PM, type >POST TM pm_type pm_no and press the Enter key. where pm_type is the type of PM (ISM, MTM, S	splay, type
pm_no is the number of the PM (0 to 9	999)
To return all circuits to service, type	
>RTS ALL	
and press the Enter key.	
Example of a MAP response:	
RTS OK	

74	The next action depends on the results of the PM RTS in step 69.		
	If the RTS command	Do	
	passed without problems	step 81	
	passed, but in-service tests failed and the system generated a card list	step 75	
75	To manually busy all posted circuits, type		
	>BSY ALL		
	and press the Enter key.		
76	To return all circuits to service, type		
	>RTS ALL		
	and press the Enter key.		
77	To access the PM level of the MAP display, type		
	>PM		
70	and press the Enter key.		
78	To post the PM, type		
	>POST pm_type pm_no		
	and press the Enter Key.		
	pm type		
	is the type of PM (CTM, DTM, ISM, MTM, STM, TM)		
	pm_no is the number of the PM (0 to 9	999)	
79	To perform an in-service test on the PM, type		
	>TST		
	and press the Enter key.		
	Example of a MAP response:		

	MTM 0 ISTb	TSTFAIL			
	InSvce Tests Initiated MTM 0 Tst Failed Site Flr RPos Bay_id Shf HOST 00 D06 TME 00 04 HOST 00 D06 TME 00 04 Following ISTb Exist : Test Failed	Description MTM : 000 MTM : 000	Slot 04 02	EqPEC 2x59 0x70	
	If the TST command	Do			
	passed, and single-card PM STM are out of service	Is or an step 81			
	passed, and you worked on all PMs step 84 on the shelf and you returned all PMs to service passed, and you worked on all PMs step 91 on the shelf, not all PMs returned to service				
	failed, and single-card PM STM that you did not work you must return to service	s or an step 80 on that			
	failed, and you worked on all the shelf	PMs on step 91			
80	Record the messages on the MA	P display for future i	reference.		
81	To access the PM level of the MAP display, type				
	>PM				
	and press the Enter key.				
82	To post the PM, type				
	>POST pm_type pm_no				
	and press the Enter key.				
	where				
	<pre>pm_type is the type of PM (ISM, MTM, STM, TM)</pre>				
	pm_no is the number of the PM (6) to 9999)			
83	Repeat steps 66 to 79 for all PM	s on this shelf. Go to	o step 84.		
NT0X91 in a trunk module equipment frame (end)

It	Do
one shelf equipped with PMs as- sociates with the card	step 86
two shelves equipped with PMs associate with the card, and you returned to service the PM on only one shelf	step 85
two shelves equipped with PMs associate with the card, and you returned to service the PM on both shelves	step 86
Repeat steps 61 to 84 for PMs in the otl you replace. Go to step 86.	her shelf associated with the FSP card
Determine if the maintenance procedu	re directed you to this procedure.
If a maintenance procedure	Do
directed you to this procedure	step 87
J	
did not direct you to this proce- dure	step 92
did not direct you to this proce- dure Return to the maintenance procedure continue as directed.	step 92 that sent you to this procedure and
did not direct you to this proce- dure Return to the maintenance procedure continue as directed. Contact the next level of support to de services. Continue as directed.	step 92 that sent you to this procedure and termine how to handle necessary
did not direct you to this proce- dure Return to the maintenance procedure continue as directed. Contact the next level of support to de services. Continue as directed. Contact operating company personnel offline. Continue as directed.	step 92 that sent you to this procedure and termine how to handle necessary to determine why the component is
did not direct you to this proce- dure Return to the maintenance procedure continue as directed. Contact the next level of support to de services. Continue as directed. Contact operating company personnel offline. Continue as directed. Report the results of the maintenance	step 92 that sent you to this procedure and termine how to handle necessary to determine why the component is activity to the next level of support.
did not direct you to this proce- dure Return to the maintenance procedure continue as directed. Contact the next level of support to de services. Continue as directed. Contact operating company personnel offline. Continue as directed. Report the results of the maintenance For additional help, contact the next le	step 92 that sent you to this procedure and termine how to handle necessary to determine why the component is activity to the next level of support. vel of support.

NT6X36 in LCE-type frames and CLCE

Application

Use this procedure to replace the following cards in the shelves or frames listed.

PEC	Suffix	Card name	Shelf or frame name	
NT6X36	AA, AB	FSP alarm card	line concentrating equipment (LCE) frame	
NT6X36	AA, EA	FSP alarm card	enhanced line concentrating equipment (LCEI) frame	
NT6x36	AA, AB	FSP alarm card	cabinetized line concentrating equipment (CLCE), PEC NTRX30AA	

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT6X36 in LCE-type frames and CLCE (continued)

Summary of replacing a NT6X36 in LCE-type frames and CLCE



NT6X36 in LCE-type frames and CLCE (continued)

Replacing a NT6X36 in LCE-type frames and CLCE

At your current location

1



DANGER

Risk of electrocution

Some of the terminals inside the frame supervisory panel (FSP) have an electrical potential of -48 V dc. Make sure you remove all jewelry before you replace a card in the FSP. Do not touch any terminal inside the FSP.

Obtain a replacement card. Make sure the replacement card and the card you replace have the same PEC and PEC suffix.

At the frame

2



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

Unscrew the slotted nut on the left of the FSP.

Frame supervisory panel



4 Remove the card.

NT6X36 in LCE-type frames and CLCE (continued)



Frame supervisory panel alarm and control cards

NT6X36 in LCE-type frames and CLCE (end)

11

10 Check the CONVERTER FAIL LEDs on each power converter for each shelf.

tep 11
tep 12
-

12 The procedure is complete.

NTRX41 in MSP in streamline B cabinets

Application

Use this procedure to replace the following cards in a modular supervisory panel (MSP). The following table lists the cards.

PEC	Suffix	Card name	Shelf or frame name	
NTRX41	AA	Alarm module	Cabinetized two-shelf network (CDSN)	
NTRX41	AA	Alarm module	Cabinetized input-output equipment (CIOE)	
NTRX41	AA	Alarm module	Cabinetized international peripheral equipment (CIPE)	
NTRX41	AA	Alarm module	Cabinetized miscellaneous equipment (CMIS)	
NTRX41	AA	Alarm module	Cabinetized trunk module equipment (CTME)	
NTRX41	AA	Alarm module	Cabinetized digital trunk controller offshore (CDTO)	
NTRX41	AA	Alarm module	Cabinetized line group controller offshore (CLGO)	
NTRX41	AA	Alarm module	Cabinetized message switch 7 (CMS7)	

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement NTP.

NTRX41 in MSP in streamline B cabinets (continued)

Common procedures

There are no common procedures.

INTRX41 in MSP in streamline B cabinets (continued)

Summary of replacing a NTRX41 in MSP in streamline B cabinets



NTRX41 in MSP in streamline B cabinets (continued)

Replacing a NTRX41 in MSP in streamline B cabinets

At your current location

1 Obtain a replacement module. Make sure that the replacement module and the module you remove have the same PEC and PEC suffix.

At the front of the MSP

2 To open the front cover of the MSP, pull out at the finger holes provided. Swing the cover down to the open position.



3



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle modules. The wrist strap protects the modules against static electricity damage.



DANGER

Risk of injury from high energy levels, equipment damage When you remove or insert a module, do not apply direct pressure to module components. Make sure you do not force a module into a slot.

Put on a wrist strap.

NTRX41 in MSP in streamline B cabinets (continued)

At the front of the MSP

- 4 Remove the NTRX41 (alarm module) as follows:
 - **a** Locate the module.

Note: The NTRX41 is in slots 5 and 6.



- **b** Disengage (loosen) the captive screw at the top of the module.
- c Pull down (open) the locking lever on the lower left corner of the module.
- **d** Carefully pull the module toward you until the module clears the shelf.
- 5 Make sure the replacement module and the module you removed have the same PEC and PEC suffix.
- 6 Insert the replacement module as follows:
 - a Open the locking lever on the replacement module.
 - **b** Align the module with the slots in the shelf and carefully slide the module into the shelf.
 - **c** Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the module sits completely in the shelf.
 - **d** Close the locking lever.

NTRX41 in MSP in streamline B cabinets (end)

7

If the MSP alarm LED	Do	
remains off	step 8	
turns on	step 7	

8 The procedure is complete.

8 Input/output device card replacement procedures

Introduction

This chapter contains card replacement procedures for the input/output device (IOD). The first section in the chapter provides illustrations that show shelf layouts.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter "Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the IOD card(s) that the replacement procedure covers.

Common procedures

This section lists common procedures for the IOD card replacement procedure. A common procedure is a series of steps you repeat within maintenance procedures. The procedure for the removal and replacement of a card is a common procedure. Common procedures are in the common procedures chapter in this NTP.

Do not go to the common procedures unless the step-action procedure directs you to go.

Action

This procedure contains a summary flow chart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card you replaced
- the date you replaced the card
- the reason you replaced the card

IOD shelf layouts

Application

This module contains a frame layout diagram for the input/output equipment (IOE) frame. The module contains a cabinetized layout diagram for the integrated services cabinet (CISM). The module contains shelf layouts for the following:

- input/output controller (IOC) shelf
- single disk drive unit (DDU) shelf
- two DDU shelf
- input/output module (IOM) housed in a integrated services module (ISM) shelf

Note: The frame and shelf layouts on the following pages are standard. Differences in the shelves in your office can be present.



Figure Input/output equipment frame

NT2X70	Power coverter card
NT0X50	Filler faceplate
NT0X67	Bus terminator card
NT0X50	Filler faceplate
NT1X67	Terminal controller card
NT0X50	Filler faceplate
NT1X67	Terminal controller card
NT0X50	Filler faceplate
NT1X67	Terminal controller card
NT0X50	Filler faceplate
NT1X67	Terminal controller card
NT0X50	Filler faceplate
NT1X67	Terminal controller card
NT0X50	Filler faceplate
NT1X89	Multiprotocol controller card
NT0X50	Filler faceplate
NT1X67	Terminal controller card
NT0X50	Filler faceplate
NT1X68	Magnetic tape drive controller card
NT0X50	Filler faceplate
NT1X55	Disk drive unit controller card
NT1X62	IOC message processor card
NT0X50	Filler faceplate

Figure Input/output controller shelf

Note: The NT1X67 terminal controller card can function as a Datalink controller card, DATAPAC controller card, or SMDI controller card.

Figure Single disk drive unit shelf

		Cards	
	NT1X78 Disk drive power converter		25F
	Disk drive unit		01F
•	C Rear	Front	

Note: A faceplate covers the DDU. The drive is an 8 in. (20.3 cm) model 8211D-19 drive, a 5.25 in. (13.3 cm) model Seagate ST4883E or model Maxtor XT4380E drive.



Figure Two disk drive unit shelf

Note: A faceplate covers the DDUs. The drives are 8 in. (20.3 cm) model 8211D-19 drive, 5.25 in. (13.3 cm) model Seagate ST4883E or model Maxtor XT4380E drive.



Figure Integrated services cabinet (CISM)

IOD shelf layouts (end)

NTFX42AA	21
NT0X50AC filler faceplate or service card	20
NT0X50AC filler faceplate or service card	19
NT0X50AC filler faceplate or service card	18
NT0X50AC filler faceplate or service card	17
NT0X50AC filler faceplate or service card	16
NT0X50AC filler faceplate or service card	15
NT0X50AC filler faceplate or service card	14
NT0X50AC filler faceplate or service card	13
NT0X50AC filler faceplate or service card	12
NT0X50AC filler faceplate or service card	11
NT0X50AC filler faceplate or service card	10
NT0X50AC filler faceplate or service card	09
NT0X50AC filler faceplate or service card	08
NT0X50AC filler faceplate or service card	07
NT0X50AC filler faceplate or service card	06
	05
NTFX32 Media storage card	04
NTFX30 Controller	03
	02
NTFX43AA or NT0X50AG	01

Figure Integrated services module shelf

Disk drive and magnetic tape controller cards in an IOC

Application

Use this procedure to replace the following cards in an input/output controller (IOC).

PEC	Suffix	Card name	Shelf or frame name
NT1X55	AA, AB, BA, CA, DA	Disk drive controller card	IOC
NT1X55	FA	SCSI disk drive unit	IOC
NT1X68	AA, AB, AC, BB, BC, BD	Magnetic tape interface card	IOC

Refer to the "Index" if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The "Index" contains a list of the cards, shelves, and frames documented in this card replacement book.

Note: If the IOC shelf contains a minimum of one NT1X55FA disk drive unit (DDU), the shelf must not contain the following power converter cards:

- NT2X70AA
- NT2X70AB
- NT2X70AC

If the IOC contains these cards, a loss of service on the DDUs can occur and a loss of data results. Contact the operating company personnel responsible for the next level of support.

Common procedures

Refer to *Replacing a card* in this document.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing Disk drive and magnetic tape controller cards in an IOC



Replacing Disk drive and magnetic tape controller cards in an IOC

At the MAP terminal

1



WARNING

Loss of billing data

This procedure instructs you to remove disk and tape drive device controllers from service. The active automatic message accounting (AMA) file can be on the IOC that contains the card you will replace. Make sure you close all files before you manually busy the controller.

Get a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.

2 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

- 3 To post the IOC that associates with the card you are replacing, type
 - >IOC ioc_no

and press the Enter key.

where

ioc_no is the IOC identification number (0 to 19)

Example of a MAP response:

```
IOD
          2
              3
IOC 0
        1
STAT .
DIRP: AMA B XFER:
                             SLM : SLMbsy NOP :
                                                        NX25:
                      •
                                                   .
MLP :
             DPPP:
                             DPPU:
                                           SCAI:
        .
                                     .
IOC
      CARD
              0
                          2
                                 3
                                     4
                                           5
                                                 б
                                                        7
                                                              8
                    1
      PORT 0123 0123 0123 01230123 0123 0123 0123
 0
                                                           0123
                 .---
                                               ..--
                                                     . - - -
     STAT
                        ....
           . - - -
                                        ____
                                   . . . .
                        CONS MPC CONS
     TYPE MTD
                 DDU
                                                CONS MPC
   4
         To post the card, type
         >CARD card_no
         and press the Enter key.
         where
```

card no is the card identification number (0 to 8) Example of a MAP response: IOD IOC 0 1 2 3 STAT . . . DIRP: AMA B XFER: SLM : SLMbsy NOP : . NX25: • MLP : DPPP: DPPU: . . SCAI: 0 3 4 5 6 7 8 IOC CARD 1 2 PORT 0123 0123 0123 0120123 0123 0123 0123 0123 0 .---..--STAT . - - -. - - -. - - -____ _ _ _ _ TYPE MTD DDU CONS MPC CONS CONS MPC Card 0 MTD 0 TapeName Idle Status User 5 The next action depends on the card you replace. If the card you replace Do is NT1X55 step 6 is NT1X68 step 10 6 Determine the state of the NT1X55 controller card. If the card Do step 9 is ManB is Offl step 39 is other than listed here step 7 7 To determine if files are open on the DDU, type >ALLOC and press the Enter key. Example of a MAP response:

VOLID	VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O	FILES_OPEN
0	IMAGE	2800	45000	D000	0	NO	0
1	XPMLOADS	2801	35000	D000	0	NO	0
2	RTMLOADS	2802	20000	D000	0	NO	0
7 8 9 10	SMDR AMA1 TST AMA2	2807 2808 2809 280A	5000 5000 50 50	D000 D000 D000 D000	0 0 0 0	NO NO NO NO	0 0 0 0

Note: If you replace an NT1X55FA, record the name and number of each disk volume.

If files	Do
are open	step 31
are not open	step 8
To manually busy the controller,	type
>BSY	
and press the Enter key.	
To offline the NT1X55 card, type	e
>OFFL	
and press the Enter key.	
Go to step 13.	
Determine the state of the NT1>	68 controller card.
If the card	Do
is ManB	step 13
	sten 39
	step 57

12 To manually busy the controller, type

>BSY

and press the Enter key.

At the shelf

13



DANGER Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note 1: Make sure the handle of the PWR switch on the replacement power converter is in the OFF position.

Note 2: Determine if the card you will replace has switches. Make sure the switches for the replacement card and the card you will replace have the same settings.

14 The next action depends on the type of card you replace.

If the card you replace	Do
is NT1X55FA	step 15
is other than listed here	step 26

At the MAP terminal

15 To start the disk drive motor, type

>START

and press the Enter key.

MAP response:

Disk Start Successful

16	To test the disk drive, type			
	and press the Enter key.			
	Example of a MAP display:			
	Card 8 Unit 0 User SYSTEM Drive_State Status BSY spinning			
	If the TST command Do			
	passed step 17			
	failed step 40			
17	To perform the volume allocation tests, perform the procedure Allocating test volumes on 8-in., 5.25-in., or 2.5-in. DDUs in Routine Maintenance Procedures. Complete the procedure and return to this point.			
18	To perform interference and file transfer tests, perform the procedure <i>Performing DDU interference and file transfer tests.</i> This document is in <i>Routine Maintenance Procedures.</i> Complete the procedure and return to this point.			
19	To access the CI level of the MAP display, type			
	>QUIT ALL			
	and press the Enter key.			
20	To access the allocation utility, type			
	>ALLOC ddu_no			
	and press the Enter key.			
	where			
	ddu_no is the DDU number (0 to 9)			
21	To confirm the command, type			
	>YES			
	and press the Enter key.			
22	To add a volume to the disk, type			
	>ADD vol_name vol_size			
	and press the Enter key.			
	<i>Note:</i> You recorded the names and sizes of the required disk volumes in step 7.			
	where			
	vol_name is the volume name you recorded in step 7			

vol_size is the volume size you	ecorded in step 7		
Repeat step 22 for each of the disk volumes that remain.			
To enforce the allocation of the volumes, type			
>UPDATE			
and press the Enter key.			
Example of a MAP response:			
WARNING: A break HX severe corr require it Writing label of Volu Successful	of this process may cause uption on the disk that may to be reformatted. me IMAGE		
Starting Initializati A break HX of this pr on this volume that m non initialized volum Number of Bad Blocks Successful Update Done	on of Volume IMAGE ocess may cause severe corruption ay require reinitialization of all es. = 0		
To quit the allocation utility, type			
>QUIT			
and press the Enter key.			
To manually busy the card, typ	е		
>BSY			
and press the Enter key.			
To test the card, type			
>TST			
and press the Enter key.			
To return the card to service, t	ype		
>RTS			
and press the Enter key.			
Note: If an N11X55 is in us complete.	se, the RTS command requires 75 s to		
If the RTS command	Do		
passed	step 29		
failed	step 40		
	<pre>vol_size is the volume size you r Repeat step 22 for each of the To enforce the allocation of the >UPDATE and press the Enter key. Example of a MAP response: WARNING: A break HX of severe corru- require it t Writing label of Volum Successful Starting Initialization A break HX of this pro- on this volume that main non initialized volume Number of Bad Blocks = Successful Update Done To quit the allocation utility, typ >QUIT and press the Enter key. To manually busy the card, typ >BSY and press the Enter key. To test the card, type >TST and press the Enter key. To return the card to service, ty >RTS and press the Enter key. It return the card to service, ty >RTS and press the Enter key. It return the card to service, ty >RTS and press the Enter key. It fan NT1X55 is in us complete. If the RTS command passed failed</pre>		

29 The next action depends on why you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 30
did not direct you to this proce- dure	step 41

30 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

31



WARNING Loss of data

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- billing data is lost
- open Logutil files are lost or corrupted

Before starting card replacement procedures, close the DIRP volumes. Close files from DIRP and demount active volumes from the DDU. Use the procedure, "Deallocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.

32 Stop files recording to and from the Logutil. Type the following command at the Logutil command level:

>LOGUTIL;LISTDEVS

and press the Enter key.

33 Close files on volumes on the DDU of the IOC by typing

>STOPDEV dev_name

and pressing the Enter key.

where

dev_name

is the name of the device

34 To quit the allocation utility, type

>QUIT

and press the Enter key.

55	Repeat the ALLOC command to determine if the files are closed by t			
	>ALLOC			
	and pressing the Enter key.			
	If the files	Do		
	are open	step 36		
	are closed	step 37		
36	Confirm that you have done steps 31 to 35. If the files are still open, contac your next level of support.			
37	Manually busy the DDU, by typing			
	>BSY			
	and pressing the Enter key.			
		_		
	If the DDU	Do		
	If the DDU is ManB	Do step 9		
	If the DDU is ManB is not ManB	Do step 9 step 40		
38	If the DDU is ManB is not ManB When cards are replaced and the DD procedure "Allocating Recording Volu Maintenance Procedures.	Do step 9 step 40 DU is in service, open the files. Use the umes in the DIRP Utility" in <i>Routine</i>		
38 39	If the DDU is ManB is not ManB When cards are replaced and the DD procedure "Allocating Recording Volu Maintenance Procedures. To determine why the component is of personnel. Continue as directed by of	Do step 9 step 40 DU is in service, open the files. Use the umes in the DIRP Utility" in <i>Routine</i> offline, consult operating company personnel.		
38 39 40	If the DDU is ManB is not ManB When cards are replaced and the DD procedure "Allocating Recording Volu <i>Maintenance Procedures</i> . To determine why the component is of personnel. Continue as directed by of For additional help, contact the next I	Do step 9 step 40 DU is in service, open the files. Use the umes in the DIRP Utility" in <i>Routine</i> offline, consult operating company personnel. evel of support.		

NT1X67 in an IOC

Application

Use this procedure to replace an NT1X67 in an input/output controller (IOC).

PEC	Suffix	Card name	Shelf or frame name
NT1X67	AA, AB, BC, BD, CB	Terminal controller card	IOC
NT1X67	BA, DA	Datalink controller card	IOC
NT1X67	BB, DB	DATAPAC controller card	IOC
NT1X67	FA	SMDI controller card	IOC

Refer to the Index if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The Index contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT1X67 in an IOC (continued)

Summary of replacing a NT1X67 in an IOC



NT1X67 in an IOC (continued)

Replacing a NT1X67 in an IOC

At the shelf

1



WARNING

Loss of billing and other data

Do not proceed if NT2X70AA, NT2X70AB, or NT2X70AC power converter cards power the IOC shelf. The following cards may not function reliably in an IOC powered by NT2X70AA, NT2X70AB, or NT2X70AC cards: NT1X55FA, NT1X89, or NT1X67BC/BD that run applications at 9600 baud (on one port or all four ports combined). Contact the personnel responsible for the next level of support.



WARNING Loss of service

If you remove IOC P-side ports from service, you can affect MAP access for other operating company personnel. Perform this procedure during periods of low maintenance activity.

Obtain a replacement card. Make sure the replacement card and the card you remove have the same PEC and PEC suffix.

2 Determine which power converter card is on the shelf that contains the card you want to replace.

	If the power converter card is	Do	
	an NT2X70AA, NT2X70AB, or NT2X70AC	step 19	
	an NT2X70AD or NT2X70AE	step 3	
At the	e MAP terminal		
3	To access the IOD level of the MAP display, type		
	>MAPCI;MTC;IOD		

and press the Enter key.

Example of a MAP display:

NT1X67 in an IOC (continued)

IOD IOC 0 1 2 3 STAT 4 To post the IOC that associates with the card you will replace, type >IOC ioc_no and press the Enter key. where ioc no is the IOC identification number (0 to 19) Example of a MAP display: IOD IOC 0 1 2 3 STAT . . . DIRP: AMAB XFER:SLM : SLMbsy NOP :.MLP :DPPP:DPPU:SCAI:. NX25: . 5 IOC CARD 0 1 2 3 4 б 7 8 0 ..--STAT . - - - -. - - - -. - - -. - - -____ TYPE MTD DDU CONS MPC CONS CONS MPC 5 To post the card, type >CARD card no and press the Enter key. where card no is the card identification number (0 to 8)

Example of a MAP display:
IOD										
IOC	0 1	2 3								
STAT	• •	• •								
DIRP: MLP :	AMA •	B XFEI DPPI	R: . P: .	SLM DPF	I:SLM VU:.	Ibsy NO SC	P: AI:	. N	IX25:	
IOC	CARD	0	1	2	3	4	5	6	7	8
0	PORT	0123	0123	0123	0123	0123	0123	0123	0123	0123
	STAT TYPE	 MTD	 DDU	CONS	 MPC	CONS		CONS	 MPC	
Card	б	Ckt	0		1	2		3		
Statu	S		•			-		-		
Cons	Id		RD040	RD	041	TEAM	4	ТЕАМб		
ConTy	pe		VT100	VT	100	VT10	0	VT100		

6 Note the CONS ID and status for each port.

Note: If you use a minimum of one of these IDs to access the MAP maintenance levels, logout. Use an ID on a different card or a different IOC.

lf	Do
all ports are ManBsy	step 12
a minimum of one port is Offl	step 20
a minimum of one port is . (dot)	step 7
all ports are in any other out-of-service state	step 8

7 Notify all operating company personnel that you will remove from service the CONS IDs that associate with the card you replace.

8 To manually busy a port on the card, type

>BSY port_no

and press the Enter key.

where

port_no
 is the port identification number (0 to 3)

If the BSY command	Do
passed	step 9
failed	step 21

9 Repeat step 8 until you manually busy all ports on the card. Go to step 10.

10

To offline a port on the card, type	
>OFFL port_no	
and press the Enter key.	
where	
port_no is the port identification number	- (0 to 3)
If the OFFL command	Do
1	

	20
passed	step 11
failed	step 21

11 Repeat step 10 until you offline all ports on the card. Go to step 12.

At the shelf

12



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist trap protects the cards against static electricity damage.

To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: Determine if the card you replace has switches. Make sure the switches on the replacement card and the card you replace have the same settings.

At the MAP terminal

13 To manually busy a port on the card, type

```
>BSY port_no
```

and press the Enter key.

where

port_no

is the port identification number (0 to 3)

If the BSY command	Do
passed	step 14

NT1X67 in an IOC (end)

	If the BSY command	Do				
	failed	step 21				
	Repeat step 13 until you manually be	usy all ports on the card. Go to step 15				
	To return a port to service, type					
	>RTS port_no					
	and press the Enter key.					
	where					
	<pre>port_no is the port identification numb</pre>	er (0 to 3)				
	If the RTS command	Do				
	passed	step 16				
	failed	step 21				
	Repeat step 15 until you return all po	orts to service. Go to step 17.				
The next action depends on why you perform this procedure.						
	If a maintenance procedure	Do				
	directed you to this procedure	step 18				
	did not direct you to this proce- dure	step 22				
Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.						
Do not proceed if NT2X70AA, NT2X70AB, or NT2X70AC power converter cards power the IOC shelf. The following cards may not function reliably in an IOC powered by NT2X70AA, NT2X70AB, or NT2X70AC power converter cards:						
	• NT1X55FA					
	 NT1X67BC or NT1X67BD the run applications at 9600 baud (on one port or all four ports combined) 					
• NT1X89						
	Go to step 21.					
To determine why the port is offline, consult operating company personnel. Continue as directed by operating company personnel.						
For additional help, contact the operating company personnel responsible for the next level of support.						

22 The procedure is complete.

NT1X78 in an IOE DDU shelf

Application

Use this procedure to replace an NT1X78 in the shelves or frames listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT1X78	AA	Power converter card (+5V, -5V, -12V, +24V)	single-disk drive unit (DDU) shelf in an input/output equipment (IOE) frame; two-DDU shelf in an IOE frame
NT1X78	KA	-60V power converter card (+5V, -5V, -12V, +24V)	single-DDU shelf in an IOE frame; two-DDU shelf in an IOE frame

Refer to the Index if you cannot identify the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped shelf
- equipped frame

The Index contains a list of the cars, shelves, and frames documented in this card replacement book.

Refer to figure Figure, "DDU shelf" on page -36 on page 8-26 for a diagram of the NT1X78 in a single-DDU shelf.

Common procedures

This procedure refers to *Replacing a card*.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

The following flowchart is a summary of the procedure. To replace the card, use the instructions that follow the flowchart.

Summary of Replacing a NT1X78 in an IOE DDU shelf



Replacing a NT1X78 in an IOE DDU shelf

At the MAP terminal

1



WARNING

Loss of billing data

This procedure instructs you to power down a disk drive unit. The active automatic message accounting (AMA) file can be on the IOC that contains the card you replace. Make sure that you close all files before you power down the disk drive unit.

Obtain a replacement card. Make sure the replacement card and the card you remove have the same PEC and PEC suffix.

2 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

- 3 To post the IOC that associates with the card you will replace, type
 - >IOC ioc_no

and press the Enter key.

where

ioc no

is the IOC identification number (0 to 19)

Example of a MAP response:

IOD IOC 0 1 2 3 STAT . SLM : SLMbsy NOP DIRP: AMA B XFER: : . NX25: . MLP : DPPP: DPPU: SCAI: . . . IOC CARD 0 1 2 3 4 5 6 7 8 0 PORT 0123 0123 0123 0123 0123 0123 0123 0123 0123 STAT .---. - - - -.---. ____ ..--. - - -____ TYPE MTD DDU CONS MPC CONS CONS MPC 4 To post the DDU controller card, type >CARD card no and press the Enter key.

where

card_no is the card identification number (0 to 8) Example of a MAP response:

IOD IOC 0123 STAT DIRP: AMA B XFER: . SLM : SLMbsy NOP : . NX25: MLP: . DPPP: . DPPU: . SCAI: . IOC CARD 0 1 2 3 4 7 5 6 8 PORT 0123 0123 0123 0123 0123 0123 0123 0123 0123 0 STAT .--- .---- --- TYPE MTD DDU CONS MPC CONS CONS MPC Card 0 MTD 0 TapeName Status Idle User

5 Determine the state of the DDU controller card.

If the card	Do
is MBSY	step 9
is OFFL	step 24
is other than listed here	step 6

6 To determine if files are open on the DDU, type

>ALLOC

and press the Enter key.

Example of a MAP response:

VOLID	VOL_NAME SEF	RIAL_NO BLOCKS	ADDR TYPE R/0	D FILES_C
0	IMAGE	2800 45000	D000 0 N	O 0
1	XPMLOADS	280 1 3500	0 D000 0	NO 0
2	RTMLOADS	2802 2000	0 D000 0	NO 0
		· · ·		
7	SMDR	2807 5000	D000	0 NO 0
8	AMA1	2808 5000	D000 0	NO 0
9	TST	2809 50	D000 0	NO 0
10	AMA2	280A 500	D000 0	NO 0

display.

NT1X78 in an IOE DDU shelf (continued)

If files	Do
are open	step 17
are not open	step 7
To manually busy the con	troller, type
>BSY	
and press the Enter key.	
Example of a MAP respon	nse:
bsyOK	
To spin down the DDU, ty	ре
>STOP	
and press the Enter key.	
Example of a MAP displa	<i>y:</i>
Disk stop successful	
Wait until the DDU spins of status code spun down a	down before you proceed to the next step. The appears under the Drive State header on the M/

At the shelf

10



DANGER

Risk of personal injury If you touch the parts that rotate on the underside of the DDU, you can be injured.



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Set the POWER switch on the power converter to the OFF position.

11 To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: Determine if the card you will replace has switches. Make sure the switches on the replacement card and the card you will replace have the same settings.

- **12** Reset the power converter as follows:
 - **a** Set the POWER switch on the converter to the ON position.
 - **b** Press and hold the RESET button on the power converter.
 - c When the CONVERTER FAIL lamp turns off, release the RESET button.
- **13** Make sure the power LED is lit. The power LED indicates that the power converter is on.

If the power LED	Do
is lit	step 14
is not lit	step 25

At the MAP terminal

14 To return the DDU controller to service, type

>RTS

and press the Enter key.

Note: The RTS command can take 3 min to complete. The RTS command also spins up the disk drive.

If the RTS command	Do				
passed	step 15				
failed	step 25				
The next action depends on why you perform this procedure.					
If a maintenance procedure	Do				
directed you to this procedure	step 16				
did not direct you to this proce-	step 26				

dure

16 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

17

15



CAUTION Loss of data

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- billing data is lost
- open Logutil files are lost or corrupted

Before starting card replacement procedures, close the DIRP volumes. Close files from DIRP and demount active volumes from the DDU. Use the procedure, "Deallocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.

18 Stop files recording to and from the Logutil. Type the following command at the Logutil command level:

>LOGUTIL;LISTDEVS

and press the Enter key.

19 Close files on volumes on the DDU of the IOC.

>STOPDEV dev_name

and press the Enter key.

where

dev_name is the name of the device

>QUIT

and press the Enter key.

20 Repeat the ALLOC command to determine if files are closed, by typing

>ALLOC

and pressing the Enter key.

If the files	Do
are open	step 21
are closed	step 22

- 21 Confirm that you have done steps 17 to 20. If the files are still open, contact your next level of support.
- 22 Manually busy the DDU, by typing

>BSY

and pressing the Enter key.

If the DDU	Do
is MBSY	step 23
is not MBSY	step 25

23 When cards are replaced and the DDU is in service, open the files. Use the procedure "Allocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures.*

24 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

25 For additional help, contact the next level of support.

26 The procedure is complete.

NT1X78 in an IOE DDU shelf (end)



DDU shelf

NT1X89 in an IOC shelf

Application

Use this procedure to replace an NT1X89 in an input/output controller (IOC), as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT1X89	AA, AB	Multiprotocol controller card	IOC
NT1X89	BB	Enhanced multiprotocol controller card	IOC

Refer to the Index if you cannot identify one of the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped shelf
- equipped frame

The Index contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT1X89 in an IOC shelf (continued)

Summary of replacing a NT1X89 in an IOC shelf



NT1X89 in an IOC shelf (continued)

Replacing a NT1X89 in an IOC shelf

At the MAP terminal

1

3



WARNING

Loss of billing and other data

Do not proceed if NT2X70AA, NT2X70AB, or NT2X70AC power converter cards power the IOC shelf. The following cards may not function reliably in an IOC powered by NT2X70AA, NT2X70AB, or NT2X70AC cards: NT1X55FA, NT1X89, or NT1X67BC/BD that run applications at 9600 baud (on one port or all four ports combined). Contact the personnel responsible for the next level of support.



WARNING

Loss of service

Perform this procedure during periods of low traffic. If you remove a multiprotocol controller (MPC) card from service you can affect Data Packet Network (DPN) service and the service of any other MPC cards on the same IOC shelf.

Obtain a replacement card. Make sure the replacement card and the you remove have the same PEC and PEC suffix.

2 Determine which power converter card is on the shelf that contains the card you want to replace.

If the power converter card	Do		
is an NT2X70AA, NT2X70AB, or NT2X70AC	step 18		
is an NT2X70AD or NT2X70AE	step 3		
To access the IOD level of the MAP dis	splay, type		
>MAPCI;MTC;IOD			
and press the Enter key.			
Example of a MAP display:			

NT1X89 in an IOC shelf (continued)

```
IOD
IOC 0 1 2 3
STAT . . . .
```

4 To post the IOC associated with the card you will replace, type

>IOC ioc_no

and press the Enter key.

where

ioc_no is the IOC identification number (0 to 19)

Example of a MAP display:

IOD IOC 0 1 2 3 STAT . . DIRP: AMA B XFER: SLM : SLMbsy NOP : NX25: . . . MLP : DPPP: DPPU: SCAI: . . . 0 2 3 4 5 7 IOC CARD 1 б 8 0 .---STAT . - - -. - - -. . . . ____ . . - -___ ____ TYPE MTD DDU CONS MPC CONS CONS MPC

5 To post the card, type

>CARD card_no

and press the Enter key.

where

card_no

is the card identification number (0 to 8)

Example of a MAP display:

IOD IOC 0 1 2 3 STAT . . . DIRP: AMA B XFER: SLM : SLMbsy NOP : . NX25: • . MLP : DPPP: SCAI: . . DPPU: . IOC CARD 0 1 2 3 4 5 б 7 8 0 .--- .--- STAT . - - -____ ..--. - - -_ _ _ _ CONS MPC TYPE MTD DDU CONS MPC CONS Unit Card 3 0 User SYSTEM BOARD LINKO LINK1 Status Ready COMACT UNEQ N/A BOARD LINKO LINK1 LINK2 LINK3 UNEQ ENABLD

NT1X89 in an IOC shelf (continued)

lf th	ne ca	ard sta	ate is		Do					
MA	NB				ste	p 11				
OF	'FL				ste	p 19				
oth	er th	ıan lis	sted here		ste	p 7				
N e dis	ote: splay	The c	ard state app	pears ur	nder the	e BOARD	header	on the	MAP	
To di	splay	y statu	is informatior	n on cur	rent MI	PC conver	sations,	type		
>QCC	ONV									
and p	ores	s the E	Enter key.							
Exar	nple	of a N	AP response	e:						
MPC	L	LCN	STATUS	CCC	SEC	PARDEV	INP	OPEN	OWN	
0 0	- 3 3	 1 2	INACTIVE INACTIVE	none none	none none	none none	FIL FIL	0 0	non non	
lf										
a m acti	inin ive	num (of one sessio	on is	ste	p 8				
all	sess	ions a	re inactive		ste	p 9				
Notif will o that a Wait	y all u ccur an in until	users o Also terrup	of the MPC ca notify all use tion of servic ssions are in	ard you rs of the e may o active b	will repl e other l occur. pefore y	lace that an MPC cards	n interru s on the d. If yo	iption o same l u need	f ser\ OC s to ve	
MPC	acti	vity, re	epeat step 6.							
lo m	anua	ally bu	sy the card a	nd the I	links of	the card, I	ype			
>BSJ	: A		FORCE							
and	oress	s the E	nter key.							
Exar	TYPE YES TO VERIEV FORCE. NO TO CANCEL COMMAND									
TYF			firm ("YES	5", "Y	", "NG)", or "	N"):			
TYP Ple	ase	coni			To confirm the command, type					
TYP Ple To co	ease onfirr	n the o	command, ty	pe						
TYP Ple To co >YES	ase onfirr ;	n the o	command, ty	pe						
TYP Ple To co >YES and p	ease onfirr 3 orese	m the one of the sthe E	command, ty Enter key.	pe						

NT1X89 in an IOC shelf (continued)

REQUEST	PASSED	FOR	LINKS.
REQUEST	PASSED	FOR	CARD.

If the BSY command	Do
passed	step 11
failed	step 20

At the shelf

11



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: Determine if the card you replace has switches. Make sure the switches on the replacement card and the card you replace have the same settings.

12 The next action depends on why you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 13
did not direct you to this proce- dure	step 14

13 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

At the MAP terminal

14 To load the MPC, type

>DOWNLD

and press the Enter key.

Example of a MAP response:

NT1X89 in an IOC shelf (end)

DOWNLOAD OF TABLE MPC FILE "MPC403AB" SUCCEEDED.

If the DOWNLD command	Do
passed	step 15
failed	step 20
To return the MP to service, type	
>RTS ALL	
and press the Enter key.	
Example of a MAP response:	
REQUEST PASSED FOR CARD. REQUEST PASSED FOR LINKS.	
Wait 1 min to determine the status of I	MPC components.
lf	Do
board status is COMACT, and the link status is ENABLD for each provisioned link	
the status of MPC components is other than listed here	step 20
Notify users that the MPC is in service).
Do not proceed if NT2X70AA, NT2X70 cards power the IOC shelf. The follow an IOC powered by NT2X70AA, NT2X cards:	DAB, or NT2X70AC power converter ring cards may not function reliably in 70AB, or NT2X70AC power converter
• NT1X55FA	
 NT1X67BC or NT1X67BD the run or all four ports combined) 	applications at 9600 baud (on one port
• NT1X89	
Go to step 20.	
To determine why the MPC is offline, c Continue as directed by operating con	ontact operating company personnel. npany personnel.
For additional help, contact the next le	val of our nort
	ever of support.

NT2X70 in an IOC

Application

Use this procedure to replace an NT2X70 in an input/output controller (IOC).

PEC	Suffix	Card name	Shelf or frame name
NT2X70	AD, AE, AF	Power converter card	IOC
NT2X70	EA	-48 V power converter card	IOC

If NT2X70AA, NT2X70AB, or NT2X70AC power converter cards power the IOC shelf, contact the personnel responsible for the next level of support. The following cards may not function reliably in an IOC powered by NT2X70AA, NT2X70AB, or NT2X70AC cards:

- NT1X55FA
- NT1X67BC or NT1X67BD that run applications at 9600 baud (on one port or all four ports combined)
- NT1X89

Refer to the Index if you cannot identify one of the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped shelf
- equipped frame

The Index contains a list of cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NT2X70 in an IOC



Replacing a NT2X70 in an IOC

At the MAP terminal

1

ATTENTION

This procedure directs you to manually busy all terminal controller cards for the IOC. Perform this procedure from a MAP terminal that does not connect to the IOC.



WARNING

Loss of service

This procedure directs you to remove an IOC and the device controllers from service. Perform this procedure only if you need to recover out-of-service components. Unless it si urgent, perform this procedure during periods of low traffic only.



WARNING

Loss of billing and other data

If NT2X70AA, NT2X70AB, or NT2X70AC power converter cards power the IOC shelf, contact the personnel responsible for the next level of support. The following cards may not function reliably in an IOC powered by NT2X70AA, NT2X70AB, or NT2X70AC cards: NT1X55FA, NT1X89, or NT1X67BC/BD that run applications at 9600 baud (on one port or all four ports combined).

Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.

2 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

- 3 To post the IOC that associates with the card you will replace, type >IOC ioc_no and press the Enter key.
 - where

ioc_no is the IOC identification number (0 to 19) Example of a MAP display:

IOC STAT	01	23								
DIRP: MLP :	NO AM.	A XFER DPPP	: . : .	SLM DPP	: . U: .	NO SC	P: AI:	. N	x25:	•
IOC 0	CARD PORT	0 0123	1 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123	8 0123
	STAT	P	P		·		·		·	
	TYPE	MTD	DDU	CONS	MPC	CONS	CONS	CONS	MPC	CONS

4 The next action depends on if terminal controller cards are on the shelf.

If terminal controller cards	Do	
are on the shelf	step 5	
are not on the shelf	step 11	
To post the card, type		
>CARD card_no		
and press the Enter key.		
where		
card_no is the card identification nur	mber (0 to 8)	
Example of a MAP response:		

) 1	2 3								
• •	• •								
AMA	B XFEI DPPI	R: . P: .	SLM DPP	U: SLM	bsy NO SC	P : AI:	. N	X25:	
CARD	0	1	2	3	4	5	б	7	8
PORT	0123	0123	0123	0123	0123	0123	0123	0123	0123
STAT	·	·		·				·	
TYPE	MTD	DDU	CONS	MPC	CONS		CONS	MPC	
6	Ckt	0		1	2		3		
5		•			-		-		
Id		RD040	RD	041	TEAM	4	ТЕАМб		
pe		VT100	VT	100	VT10	0	VT100		
	0 1 AMA CARD PORT STAT TYPE 6 S Id	D 1 2 3 AMA B XFEI DPPI CARD 0 PORT 0123 STAT TYPE MTD 6 Ckt 5 Id pe	0 1 2 3 AMA B XFER: . DPPPP: . . . CARD 0 1 PORT 0123 0123 STAT . . . TYPE MTD DDU 6 Ckt 0 std RD040 . vT100 . .	0 1 2 3 AMA B XFER: . SLM DPPP: . DPP . DPP CARD 0 1 2 2 PORT 0123 0123 0123 0123 STAT TYPE MTD DDU CONS 6 Ckt 0 . . . Id RD040 RD RD VT Ope VT100 VT . .	0 1 2 3 AMA B XFER: . SLM : SLM DPPPP: . DPPU: . CARD 0 1 2 3 PORT 0123 0123 0123 0123 STAT TYPE MTD DDU CONS MPC 6 Ckt 0 1 Id RD040 RD041 VT100 VT100 VT100 VT100	0 1 2 3 AMA B XFER: . SLM : SLMbsy NO DPPU: . AMA B XFER: . SLM : SLMbsy NO DPPU: . CARD 0 1 2 3 4 PORT 0123 0123 0123 0123 0123 STAT TYPE MTD DDU CONS MPC CONS 6 Ckt 0 1 2 2 Id RD040 RD041 TEAM pe VT100 VT100 VT100 VT100	0 1 2 3 AMA B XFER: . SLM : SLMbsy NOP : DPPU: . AMA B XFER: . DPPU: . CARD 0 1 2 3 4 5 PORT 0123 0123 0123 0123 0123 0123 STAT TYPE MTD DDU CONS MPC CONS 6 Ckt 0 1 2 Id RD040 RD041 TEAM4 pe VT100 VT100 VT100	0 1 2 3 AMA B XFER: . SLM : SLMbsy NOP : . N AMA B XFER: . DPPU: . SCAI: . N CARD 0 1 2 3 4 5 6 PORT 0123 0123 0123 0123 0123 0123 0123 STAT TYPE MTD DDU CONS MPC CONS CONS 6 Ckt 0 1 2 3 Id RD040 RD041 TEAM4 TEAM6 YT100 YT100 YT100	D 1 2 3 AMA B XFER: . SLM : SLMbsy NOP : . NX25: AMA B XFER: . DPPU: . SCAI: . CARD 0 1 2 3 4 5 6 7 PORT 0123 0123 0123 0123 0123 0123 0123 0123 STAT TYPE MTD DDU CONS MPC CONS MPC 6 Ckt 0 1 2 3 Id RD040 RD041 TEAM4 TEAM6 VT100 VT100 VT100 VT100 VT100 VT100

6 Note the CONS ID and status for each port.

lf	Do
all ports are ManBsy	step 10
a minimum of one port is Offl	step 60
a minimum of one port is . (dot)	step 7
all ports are in any other out-of-service state	step 8

7 Notify all operating company personnel that you will remove from service the CONS IDs that associate with the card you replace. Wait until all operating company personnel cease activity for these CONS IDs.

- 8 To manually busy a port on the card, type
 - >BSY port_no

and press the Enter key.

where

port_no

is the port identification number (0 to 3)

If the BSY command	Do
passed	step 9
failed	step 68

9 Repeat step 8 until all ports on the card are manually busy. Go to step 10.

1	0	Repeat st 11.	Repeat steps 5 to 9 for each terminal controller card on the shelf. Go to step 1.							
1	1	The next a shelf.	action de	epends	on if multi	protocol	controlle	er cards	(MPC)	are on the
		If MPC cards				Do				
		are on the shelf				stej	p 12			
		are not	on the s	shelf		stej	p 19			
1	2	To post th	e card,	type						
		>CARD	card_n	10						
		and press	the En	ter key.						
		where		,						
		card	no							
		is t	he card	identifie	cation nur	nber (0 t	:o 8)			
		Example	of a MA	P respo	nse:					
IOD IOC STAT	0 1	23								
DIRP: MLP :	AMA	B XFER DPPP	: . : .	SLI DP1	M : SLM] PU: .	osy NOI SCI	P: . AI: .	. N	x25:	
IOC 0	CARD PORT	0 0123	1 0123	2 0123	3 0123	4 0123	5 0123	6 0123	7 0123	8 0123
	STAT	·	·		·			••	·	
	TYPE	MTD	DDU	CONS	MPC	CONS		CONS	MPC	
Card	3 U U S	nit Iser Itatus	SYSI Re	0 IEM eady	BOARD COMACT	LINKO UNEQ	LINKI N/A	L LIN UNE	IK2 Q	LINK3 ENABLD
1	3	Determine	e the sta	ate of th	e card.					
		If the ca	rd state	e		Do				
		is mane	3			ste	p 18			
		is offi	L			ste	p 60			
		is other	than lis	sted he	re	ste	p 14			
		<i>Note:</i> display	The car	d state	appears u	under the	e BOARI) heade	er on th	e MAP

14 To display status information on current MPC conversations, type >oconv

and press the Enter key.

Example of a MAP response:

MPC	L	LCN STATU	IS CCC SEC	C PARDEV IN	P OPEN OWNER
0 0	- 3 3	1 INACTIV 2 INACTIV	'E none none E none none	e none FII none FIL	L 0 none 0 none

lf	Do
a minimum of one session is ac- tive	step 15
all sessions are inactive	step 16

- **15** Notify all users that an interruption of MPC service will occur. Wait until all sessions are inactive before you proceed. Repeat step 14 if you need to verify MPC session activity.
- 16 To manually busy the card and links, type
 - >BSY ALL FORCE
 - and press the Enter key.

Example of a MAP response:

TYPE YES TO VERIFY FORCE, NO TO CANCEL COMMAND Please confirm ("YES", "Y", "NO", or "N"):

17 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

REQUEST PASSED FOR LINKS.REQUEST PASSED FOR CARD.

If the BSY command	Do
passed	step18
failed	step 68

18 Repeat steps 12 to 17 for each MPC card on the shelf. Go to step 19.

19	The next action depends on if disk drive or magnetic tape controller cards are on the shelf.							
	If disk drive controller of	cards	Do					
	are on the shelf		step 20					
	are not on the shelf		step 25					
20 To post the card, type								
	>CARD card_no							
	and press the Enter key.							
	where							
	card_no is the card identifica	ation number	(0 to 8)					
	Example of a MAP respon	ise.	(0.10.0)					
IOD IOC 0 1 STAT	2 3							
DIRP: AMA MLP : .	B XFER: . SLM DPPP: . DPP	: SLMbsy U: .	NOP : SCAI:	. N	x25:	•		
IOC CAR 0 POR	D 0 1 2 T 0123 0123 0123	3 0123 01	4 5 23 0123	6 0123	7 0123	8 0123		
STA	т							
TYP Card 0	E MTD DDU CONS MTD 0 TapeName Status Idle User	MPC CO	NS	CONS	MPC			
21	Determine the state of the	card.						
	If the card		Do					
	is MBSY step 24							
	is OFFL	step 60						
	is other than listed here	e	step 22					
22	To determine if files are op	e open on the DDU, type						

and press the Enter key.

Example of a MAP response:

VOLID	VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O	FILES_OPEN
0 1 2	IMAGE XPMLOADS RTMLOADS	2800 2801 2802	45000 35000 20000	D000 D000 D000	0 0 0	NO NO NO	0 0 0
	SMDR AMA1 TST AMA2	2807 2808 2809 280A	5000 5000 50 500	D000 D000 D000 D000	0 0 0	NO NO NO NO	0 0 0 0
	If files			Do			
	are open			step 6	51		
	are not of	pen		step 2	23		
23	To manually	y busy the cont	roller, type				
	>BSY						
	and press t	he Enter key.					
	Example of	f a MAP respon	se:				
	bsy OK						
24	Perform ste step 25.	eps 20 to 23 for	each disk d	drive cor	ntroller c	ard on t	the shelf. Go to
25	The next ac shelf.	ction depends o	n if magnet	ic tape c	lrive con	troller	cards are on the
	If magnet	tic tape contro	ller cards	Do			
	are on the	e shelf		step 2	26		
	are not of	n the shelf		step 3	31		
26	To post the	card, type					
	>CARD C	ard_no					
	and press t	he Enter key.					
	where						
	card_n is th	o e card identifica	ation numb	er (0 to 8	3)		
	Example of	f a MAP respon	se:				

```
IOD
IOC 0 1 2
                 3
STAT .
         .
             .
DIRP: AMA B XFER:
                                SLM : SLMbsy NOP :
                                                        •
                                                               NX25:
                         .
                                                                           .
MLP : .
              DPPP:
                                DPPU: .
                                                SCAI:
                          .
IOC
       CARD
                 0
                                2
                                        3
                                               4
                                                      5
                                                              6
                                                                      7
                                                                             8
                         1
 0
       PORT
               0123 0123 0123 0123 0123 0123 0123
                                                                   0123
                                                                           0123
       STAT
               . - - -
                                                                   . - - -
                      . - - - -
                              . . . .
                                     . - - -
                                             . . . .
                                                    _ _ _ _
                                                            ..--
                                                                           _ _ _ _
       TYPE MTD
                      DDU
                              CONS MPC
                                            CONS
                                                           CONS MPC
Card 0
           MTD
                            Ω
           TapeName
           Status
                        Idle
           User
     27
            Determine the state of the card.
              If the card
                                                Do
              is ManBsy
                                                step 30
              is Offl
                                                step 60
                                                step 29
              is Idle
              is other than listed here
                                                step 28
     28
            Notify all users that an interruption of service for the device will occur. Wait
            until all users cease to access the device before you proceed to the next step.
     29
            To manually busy the card, type
            >BSY
            and press the Enter key.
             Example of a MAP response:
            bsyOK
     30
            Repeat steps 26 to 29 for each magnetic tape drive controller card on the
            shelf. Go to step 31.
     31
            To return to the IOC level of the map display, type
            >QUIT
            and press the Enter key.
     32
            Determine the state of the IOC.
              If the state of the IOC
                                                Do
              is M
                                                step 34
```

Do
step 33

At the shelf

34

36



WARNING

Static electricity damage Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular

supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Pull down and set the handle of the power converter $\ensuremath{\mathsf{POWER}}$ switch to the OFF position.

35 To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note 1: Make sure the handle of the PWR switch on the replacement power converter is in the OFF position.

Note 2: Determine if the card you replace has switches. Make sure the switches on the replacement card and the card you replace have the same settings.

The next action depends on the power converter version and the type of supervisory panel.

lf you	Do
replace an NT2X70AE card and the FSP or MSP has circuit breakers	step 33
replace an NT2X70AE card and the FSP or MSP does not have circuit breakers	step 38
do not replace an NT2X70AE card and the FSP or MSP has circuit breakers	step 39
do not replace an NT2X70AE card and the FSP or MSP does not have circuit breakers	step 40

- **37** Power up the converter as follows:
 - **a** Pull up and set the handle of the POWER switch to the RESET position and hold.
 - **b** Pull up and set the handle of the converter circuit breaker on the FSP or MSP until the handle clicks into place.
 - c Release the handle.
 - d Go to step 41.
- **38** Power up the converter as follows:
 - **a** Pull up and set the handle of the POWER switch to the RESET position and hold until the CONVERTER FAIL LED turns off.
 - **b** Release the handle.
 - c Go to step 41.
- **39** Power up the converter as follows:
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press and hold the RESET button on the power converter.
 - c Pull up and set the handle of the converter circuit breaker on the FSP or MSP until the handle clicks into place.
 - d Release the RESET button.
 - e Go to step 41.
- **40** Power up the converter as follows:
 - **a** Pull up and set the handle of the POWER switch to the ON position.
 - **b** Press the RESET button on the power converter until the CONVERTER FAIL LED turns off.
 - c Release the RESET button.
- 41 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 42
did not direct you to this proce- dure	step 43

42 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

At the MAP terminal

43 To return the IOC to service, type

>RTS IOC

and press the Enter key.

44 The next action depends on if disk drive or magnetic tape controller cards are on the shelf. If disk drive or magnetic tape Do controller cards are on the shelf step 45 are not on the shelf step 48 45 To post the card, type >CARD card_no and press the Enter key. where card no is the card identification number (0 to 8) 46 To return the controller to service, type >RTS and press the Enter key. 47 Repeat steps 45 and 46 for each disk drive or magnetic tape controller card on the shelf. Go to step 48. 48 The next action depends on if MPC cards are on the shelf. If MPC cards Do are on the shelf step 49 are not on the shelf step 55 49 To post the card, type >CARD card no and press the Enter key. where card no is the card identification number (0 to 8) 50 To load the MPC, type >DOWNLD and press the Enter key. Example of a MAP response:

51

52

53 54 55

56

If the DOWNLD command	Do
passed	step 51
failed	step 68
To return the MPC to service, typ	e
>RTS ALL	
and press the Enter key.	
Example of a MAP response:	
REQUEST PASSED FOR CARD.	REQUEST PASSED FOR LINKS.
14	n-
the system status is Ready, MACT, and the link status is F	the board status is CO- step 53
the system status is Ready, MACT, and the link status is E the status of the MPC composed here	the board status is CO- step 53 ENABLD for each link nents are other than list- step 68
the system status is Ready, MACT, and the link status is F the status of the MPC compored here Notify all users that the MPC is in	the board status is CO- step 53 ENABLD for each link ments are other than list- step 68
the system status is Ready, MACT, and the link status is E the status of the MPC compored here Notify all users that the MPC is in Repeat steps 49 to 53 for each M	the board status is CO- step 53 ENABLD for each link ments are other than list- step 68 service. IPC card on the shelf. Go to step 55.
the system status is Ready, MACT, and the link status is E the status of the MPC compored here Notify all users that the MPC is in Repeat steps 49 to 53 for each N The next action depends on if ter	the board status is CO- step 53 ENABLD for each link nents are other than list- step 68 n service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf
the system status is Ready, MACT, and the link status is E the status of the MPC compored here Notify all users that the MPC is in Repeat steps 49 to 53 for each N The next action depends on if ter If terminal controller cards	the board status is CO- step 53 ENABLD for each link nents are other than list- step 68 n service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf Do
the system status is Ready, MACT, and the link status is E the status of the MPC compored here Notify all users that the MPC is in Repeat steps 49 to 53 for each M The next action depends on if ter If terminal controller cards are on the shelf	the board status is CO- step 53 ENABLD for each link ments are other than list- step 68 n service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf Do step 56
the system status is Ready, MACT, and the link status is E the status of the MPC compor- ed here Notify all users that the MPC is in Repeat steps 49 to 53 for each N The next action depends on if ter If terminal controller cards are on the shelf are not on the shelf	the board status is CO- step 53 ENABLD for each link ments are other than list- step 68 o service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf Do step 56 step 68
the system status is Ready, MACT, and the link status is E the status of the MPC compored here Notify all users that the MPC is in Repeat steps 49 to 53 for each N The next action depends on if ter If terminal controller cards are on the shelf are not on the shelf To post the card, type	the board status is CO- step 53 ENABLD for each link nents are other than list- step 68 n service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf Do step 56 step 68
the system status is Ready, MACT, and the link status is E the status of the MPC compor- ed here Notify all users that the MPC is in Repeat steps 49 to 53 for each N The next action depends on if ter If terminal controller cards are on the shelf are not on the shelf To post the card, type >CARD_card_no	the board status is CO- step 53 ENABLD for each link nents are other than list- step 68 n service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf Do step 56 step 68
the system status is Ready, MACT, and the link status is E the status of the MPC compor- ed here Notify all users that the MPC is in Repeat steps 49 to 53 for each N The next action depends on if ter If terminal controller cards are on the shelf are not on the shelf To post the card, type >CARD card_no and press the Enter key.	the board status is CO- step 53 ENABLD for each link ments are other than list- step 68 o service. IPC card on the shelf. Go to step 55. minal controller cards are on the shelf Do step 56 step 68

57 To return a port on the card to service, type

>RTS port_no

and press the Enter key.

where

port_no
 is the port identification number (0 to 3)

If the RTS command	Do
passed	step 58
failed	step 68

58 Repeat step 57 until all ports on the card are manually busy. Go to step 59.

59 Repeat steps 56 to 58 for each terminal controller card on the shelf. Go to step 68.

60 To determine why the component is offline, contact operating company personnel. Continue as directed by operating company personnel.

61



WARNING

Loss of data

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- billing data is lost
- open Logutil files are lost or corrupted

Before starting card replacement procedures, close the DIRP volumes. Close files from DIRP and demount active volumes from the DDU. Use the procedure, "Deallocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.

62 Stop files recording to and from the Logutil. Type the following command at the Logutil command level:

>LOGUTIL;LISTDEVS

and press the Enter key.

63 Close files on volumes on the DDU of the IOC.

>STOPDEV dev_name

and press the Enter key.

where

NT2X70 in an IOC (end)

	dev_name is the name of the device			
	>QUI			
	and press the Enter key.			
64	Repeat the ALLOC command to d	Repeat the ALLOC command to determine if files are closed, by typing		
	>ALLOC			
	and pressing the Enter key.			
	If the files	Do		
	are open	step 65		
	are closed	step 66		
65	Confirm that you have done steps 61 to 64. If the files are still open, contact your next level of support.			
66	Manually busy the DDU, by typing			
	>BSY			
	and pressing the Enter key.			
	If the DDU	Do		
	is MBSY	step 67		
	is not MBSY	step 68		
67	When cards are replaced and the DDU is in service, open the files. Use the procedure "Allocating Recording Volumes in the DIRP Utility" in <i>Routine Maintenance Procedures</i> .			
68	For additional help, contact the next level of support.			

69 The procedure is complete.
NTFX30 in an ISM

Application

Use this procedure to replace an NTFX30 IOM controller card in an integrated services module (ISM) shelf.

PEC	Suffix	Card name	Shelf or frame name
NTFX30	AA	Controller card	ISM

Refer to the Index, if you cannot identify one of the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped frame
- equipped shelf

The Index contains a list of the cards, shelves, and frames that this card replacement book documents.

Common procedures

This procedure refers to the common procedure Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NTFX30 in an ISM



Replacing a NTFX30 in an ISM

ATTENTION

This procedure directs you to manually busy the controller card for the IOM. Perform this procedure from a MAP terminal that does not connect to the IOM.



WARNING Loss of service

This procedure instructs you to remove the controller card for the IOM. Perform this procedure only if you need to recover out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

At the MAP terminal

1 Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the MAP terminal

2 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

Example of a MAP display:

IOD IOC 0 1 2 3 STAT . . . S DIRP: SMDR B XFER: . SLM : . NPO: . NX25: . MLP : . DPPP: . DPPU: . SCAI :

3 To post the IOM controller system configured, type

```
>IOC ioc_no
```

and press the Enter key.

where

ioc no

is the IOM identification number

Example of an IOM MAP display:

4

5

6

7

LOC (STAT .) 1	2	3 S														
DIRP: MLP :	SMD	RВ	XF DP	ER: PP:				SLN DPI	: I U:		•	NP SC): AI	:		NX2	5:
IOC	POR	т 0	1	23	4	5	6	78	9	10	11	12	13	14	15	16	17
(10M) 0	TYP	E C O N	C O N	 C 0 N	C O N	M T D	_		M P C	_	-	-	-	_	-	S C S	S C S
The ne	xt ac	tion	dep	ends	s or	n if	ter	mina	al co	ontro	oller	port	s ar	e on	the	she	lf.
If tern	nina	con	tro	ller	por	ts			D	ο							
are or	n the	she	lf						st	ep :	5						
are no	ot on	the	she	elf					st	ep	10						
Note th	e co	nsole	es ((IS)	ID	an	d sta	itus	for	eacl	n po	rt.				
lf					,				D	0		•					
all po	orts a	re M	lan	Bsv					st	ep	10						
all po	orts a	re M m of	lan Con	Bsy e no	ort i	is (٦ff	7	st	ep en	10 55						
all po a min	orts a nimu	re M m of	fan On	Bsy e po	orti	is () Off	F]	st st	ep ep :	10 55						
all po a min a min	orts a iimu iimu	re N m of m of	fan On On	Bsy e po e po	ort i	is (is .	Off (d	f] lot)	st st	ep ep : ep (10 55 6						
all pc a min a min all p out-or	orts a nimu nimu ports f-ser	re M m of m of ar vice	Ian on on e sta	Bsy e po e po in te	ort i ort i anj	is (is . y	Off (d ot	f] lot) her	st st st	ep ep ep ep	10 55 6 8						
all po a min a min all p out-or Notify a CONS operation	orts a nimu nimu ports f-ser all op IDs t	re M m of m of ar vice eration hat a ompa	fan fon fon e sta	Bsy e po e po in in ite composite pers	ort i ort i anj	is (is . y y po ith nel	Off (d ot ers the ter	fl lot) her	st st st st el th d yo	ep ep ep ep ep at y	10 55 6 8 rou v nanu activ	vill re ially	emo bus f the	ve fr y. V	om s Vait i CON	serv until IS II	ice th all Ds.
all po a min a min all p out-o Notify a CONS operatin To post	orts a nimu ports f-ser all op IDs t ng co	re N m of m of ar vice eration hat a ompa port	fan fon on sta sta ng c isso	Bsy e po e po in ite composite pers ass	ort i ort i anj oanj e w	is (is . y y po ith nel ate	Off (d ot ers the ter s v	fl lot) her sonn e car mina vith t	st st st st el th d yc ate t	ep ep ep ep at y bu n the CON	10 55 6 8 rou v nanu activ	vill re ially ity o	emo bus f the	ve fr y. V ese (ce, 1	om s Vait i CON	serv until IS II	ice th all Ds.
all po a min a min all p out-o Notify a CONS operatin To post	orts a iimu iimu ports f-ser all op IDs t ng cc the pc	re N m of m of ar vice eration hat a ompa cort	fan fon fon sta ng c isso iny that	Bsy e po e po in te compociat pers ass	ort i ort i any oany e w onr	is (is . y y po ith nel ate	Off (d ot ers the ter s v	fl lot) her sonn e car mina	st st st st el th d yo ate t he (ep : ep : ep : ep : aat y bu n the a	10 55 6 8 rou v nanu activ	vill re ally ity o ou re	emo bus f the epla	ve fr y. V ese (ce, 1	om s Vait i CON	serv until IS IE	ice th all Ds.
all po a min a min all p out-or Notify a CONS operation To post >PORT and pre	orts a iimu iorts f-ser all op IDs t ng co the pc ess th	re M m of m of ar vice eration hat a pompa coort rt ne Er	fan fon fon sta sta sta sta sta sta sta ng c sta ng c sta ng c sta	B sy e po e po in te composite pers ass key.	ort i ort i anj oanj ooria	is (is . y y po ith nel ate	Off (d ot ers the ter s v	fl lot) her can min: vith t	st st st st el th d yc ate t he (ep ep ep ep aat y bu n the a	10 55 6 8 rou v nanu activ	vill re ially ity o ou r	emo bus f the epla	ve fr y. V ese (ce, 1	om s Vait t CON	serv until IS IE	ice th all Ds.
all po a min a min all p out-or Notify a CONS operatin To post >PORT and pre where	orts a iimu iimu oorts f-ser IDs t ng cc t the pc ess th	re M m of m of ar vice eratin hat a ompa oort	fan fon fon sta ng c issc iny f that	Bsy e po e po in te compociat pers ass key.	ort i ort i anj oanj e w onr	is (is . y y po ith nel ate	Off (d ot ers the ter s v	fl lot) her sonn e car mina	st st st st el th d yc ate 1 he (ep ep ep at y bu n the a	10 55 6 8 vou v nanu activ	vill re ally ity o ou re	emo bus f the epla	ve fr y. V ese (ce, 1	om s Vait (CON	serv until IS I	ice tł all Ds.
all po a min a min all p out-or Notify a CONS operatin To post >PORT and pre where pon	orts a iimu iimu poorts f-ser IDs t ng cc t the pc ess the s the	re M m of m of ar vice eratin hat a bompa cort rt_ ne Er	fan fon fon sta sta ng c ssc iny f that no nter	Bsy e po e po in te portat pers ass key.	ort i ort i anj oanj e w onr ocia	is (is . y y po ith nel ate	Off (d ot ers the ter s v	fl lot) her sonn e car mina with 1	st st st st el th d yo ate 1 he (ep : ep : ep : ep : nat y bu n the :	10 55 6 8 ou v nanu activ	vill re ially ity o ou r	emo bus f the epla	ve fr y. V ese (ce, 1	om s Vait (CON	serv until IS I[ice th all Ds.

) Stat Cons Cons	tus 5 Id Type	Disc 1CONS VT100		
lly busy th	ne device,	type		
the Enter	r key.			
of MAP re	sponse:			
SY comm	and		Do	
			step 9	
			step 6.	3
ep 8 until	all CONS	ports are	manua	Illv busv.
action dep	ends on if	multiprot	ocol por	rts (MPC) are on the controller
orts			Do	
ne contro	ller card		step 1	1
on the co	ntroller c	ard	step 18	8
port that a	associates	s with the	MPC, ty	уре
port_no				
the Enter	r key.			
no he port id	entification	n number		
of an IOM	MAP disp	olay:		
		-		
Unit User	1 System	PROT	OCOT.	T.TNK
Status	Ready	x258	4	COMACT ENABLED
the state	e of the po	rt.		
the state	e of the po	rt.	Do	
	D Stat Cons Conf Ily busy th the Enter of MAP re SY comm ep 8 until action dep ports ne contro on the co port that a port_no the Enter no the Enter port da of an IOM Unit User	D Status Cons Id ConType Ily busy the device, the Enter key. of MAP response: SY command ep 8 until all CONS action depends on if ports he controller card on the controller c port that associates port_no the Enter key. no he port identification of an IOM MAP disp Unit 1 User SYSTEM	D Status Disc Cons Id 1CONS ConType VT100 Ily busy the device, type the Enter key. of MAP response: SY command Exp 8 until all CONS ports are action depends on if multiprot ports ne controller card on the controller card port that associates with the port_no the Enter key. no he port identification number of an IOM MAP display: Unit 1 User SYSTEM	0 Status Disc Cons Id ICONS ConType VT100 Ily busy the device, type the Enter key. of MAP response: SY command Do SY command Do step 9 step 9 step 6 ep 8 until all CONS ports are manual action depends on if multiprotocol portection depends on if multiprotocol portection depends on if multiprotocol portection depends with the MPC, type ports Do no the controller card step 1 port that associates with the MPC, type port_no the Enter key. no mo the Enter key. mo unit 1 User SYSTEM Unit 1 User

step 55
step 13
current MPC conversations, type
C SEC PARDEV INP OPEN OWN
ne none none FIL 0 non
ne none none FIL 0 non
Do
ac- step 14
step 15
ne port links, type
, NO TO CANCEL COMMAND Y", "NO", or "N")
, NO TO CANCEL COMMAND Y", "NO", or "N")
, NO TO CANCEL COMMAND Y", "NO", or "N")
, NO TO CANCEL COMMAND Y", "NO", or "N")
, NO TO CANCEL COMMAND Y", "NO", or "N")
, NO TO CANCEL COMMAND Y", "NO", or "N") Do

If the BS	command		Do		
failed			step 63		
Repeat ste	ps 11 to 16 fo	or each MPC	port on the IOM.		
The next a	ction depends	s on if disk dri	ve ports are on the controller card.		
lf disk dri	ve ports		Do		
are on the	e shelf		step 19		
are not of	n the shelf		step 24		
To post a p	ort that asso	ciates with the	e disk drive unit (DDU), type		
>PORT p	ort_no				
and press t	he Enter key				
where	,				
port n	0				
is th	e port identifi	cation numbe	r		
Example of	f a IOM MAP	display:			
Port 16	Unit	0			
(SCSI)	User	system	Drive_State		
	Status	Ready	On_line		
Determine	the state of th	he port.			
If the por	t		Do		
is ManB			step 24		
is OFFL			step 55		
is other t	han listed he	ere	step 21		
To determir	ne if open file	s are on the D	DDU, type		
>ALLOC					
and press t	he Enter key				
Example of	f a MAP displ	lav:			

~		SERIAL	_NO	BLOCKS	ADDR	TYPE	R/O	FILES_OPEN
0	IMAGE	2800		45000	D000	0	NO	0
1	XPMLOADS	2801		35000	D000	0	NO	0
2	RTMLOADS	2802		20000	D000	0	NO	0
•								
•								
•	CMDD	2007		F 0 0 0	D 000	0	110	0
/	SMDR	2807		5000	D000	0	NO	0
8		2808		5000		0	NO	0
9	TST AMA 2	2809		50		0	NO	0
10	AMAZ	280A		500	D000	0	NO	0
lf op	If open files				0			
are on the DDU				ste	ep 56			
are r	not on the D	DU		ste	ep 22			
To ma	nually busy t	he device	on	the contro	oller ca	rd type	ć	
io ina	induliy buby i		. 011			ia, type	,	
>BSY								
and p	ress the Ente	er key.						
Exam	ple of MAP r	esponse:						
bsy								
bsy OK								
bsy OK If a se	cond DDU is	s on the co	ontro	oller card,	repeat	steps	19 to	22.
bsy OK If a se The ne (DAT)	cond DDU is ext action de ports are on	s on the co pends on i the contro	ontro if ma oller	oller card, agnetic tap card.	repeat be drive	steps e (MTD	19 to) or di	22. gital audio tape
bsy OK If a se (DAT) If MT	econd DDU is ext action de ports are on FD or DAT p e	s on the co pends on i the contro orts	ontro if ma oller	bller card, agnetic tap card. Do	repeat be drive	: steps e (MTD	19 to) or di	22. gital audio tape
bsy OK If a se (DAT) If M1 are o	econd DDU is ext action dep ports are on FD or DAT p e on the contr	s on the co pends on i the contro orts oller card	ontro if ma oller	oller card, agnetic tap card. Do	repeat be drive	: steps e (MTD	19 to) or di	22. gital audio tape
bsy ok If a se (DAT) If MT are of are r	econd DDU is ext action dep ports are on FD or DAT p e on the contra- not on the co	s on the co pends on i the contro orts oller card ontroller	ontro if ma oller 1 caro	oller card, agnetic tap card. Do sto	repeat be drive p ep 25 ep 30	: steps e (MTD	19 to) or di	22. gital audio tape
bsy OK If a se (DAT) If MT are o are r To pos	econd DDU is ext action dep ports are on FD or DAT p e on the contra- not on the contra- st a port that	s on the co pends on i the contro orts oller card ontroller associate	if ma oller	oller card, agnetic tap card. Do sto d sto	repeat be drive p ep 25 ep 30 D or D	: steps e (MTD	19 to) or di	22. gital audio tape
bsy OK If a se (DAT) If MT are o are r To pos >POR:	cond DDU is ext action deports are on FD or DAT p on the contra- not on the contra- st a port that F port_no	on the co pends on i the contro orts oller card ontroller associate	if ma oller	oller card, agnetic tap card. Do sto d sto	repeat be drive p ep 25 ep 30 D or D	: steps e (MTD	19 to) or di	22. gital audio tape
bsy OK If a se (DAT) If MT are c are r To pos >POR:	cond DDU is ext action dep ports are on FD or DAT p on the contra- not on the contra- st a port that F port_not	s on the co pends on i the contro orts oller card ontroller associate or key.	if ma oller 1 carc	oller card, agnetic tap card. Do sto d sto ith the MT	repeat be drive p ep 25 ep 30 D or D	: steps e (MTD	19 to) or di e	22. gital audio tape
bsy OK If a se (DAT) If MT are of are r To pos >POR and pl where	cond DDU is ext action deports are on FD or DAT p on the contra- not on the contra- st a port that F port_no ress the Enter of	s on the co pends on i the contro orts oller card ontroller associate or key.	if ma oller	oller card, agnetic tap card. Do sto d sto ith the MT	repeat be drive p ep 25 ep 30 D or D	: steps e (MTD	19 to) or di e	22. gital audio tape
bsy OK If a se (DAT) If MT are o are r To pos >POR: and pr where po	cond DDU is ext action deports are on TD or DAT p on on the contra- not on the contra- not on the contra- st a port that T port_no is the port in	on the co pends on i the contro orts oller card ontroller associate or key.	if ma oller	oller card, agnetic tap card. Do sto d sto ith the MT	repeat be drive p ep 25 ep 30 D or D	: steps e (MTD	19 to) or di e	22. gital audio tape
bsy OK If a se (DAT) If MT are o are r To pos >POR: and pu where po	cond DDU is ext action dep ports are on FD or DAT p on the contra- not on the contra- not on the contra- st a port that F port_no is the port ic port_no	s on the co pends on i the contro orts oller card ontroller associate or key.	if ma oller 1 carc	oller card, agnetic tap card. Do sto d sto ith the MT	repeat be drive p ep 25 ep 30 D or D	: steps e (MTD	19 to) or di e	22. gital audio tape

Port 5	MTD TapeName Status	Ready	DevType User
Determine	the state of the	port.	
If the po	rt state		Do
is ManB	5		step 30
is OFFL	,		step 55
is Idle			step 28
is other than listed here			step 27
Notify all u until all use	isers that an inter ers cease to acce	rruption of s ess the devic	ervice for the device will occur. Wait ce before you proceed to the next step.
To manual	ly busy the port,	type	
>BSY			
and press	the Enter key.		
Example of	of MAP response.	:	
bsy OK			
Repeat ste the control	eps 25 to 28 for e ller card.	ach magne	tic tape drive or digital audio port on
To return t	o the IOC level o	f the MAP o	lisplay, type
>QUIT			
and press	the Enter key.		
Determine	the state of the l	IOM.	
If the sta	te of the IOM		Do
is M			step 33
is other	than listed here		step 32
To manual	ly busy the IOM	controller ca	ard, type
>BSY IC	DC		
and press	the Enter key.		
Example of	of MAP response.	:	

bsy OK

At the ISM shelf

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WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of the modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the controller card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

34 Wait for internal diagnostic tests on the card to complete.

Note 1: After you insert the new NTFX30 card, the LED is off for approximately 30 seconds. The color of the LED changes to red and then to green if the internal diagnostic tests pass. The internal diagnostic tests take less than 2 minutes.

Note 2: You view the LED through a small plastic window on the card faceplate.

35 To list the IOM load file, type

>DISKUT;LF VOLUME

and press the Enter key.

36 To access the TOOLSUP control, type

>TOOLSUP

and press the Enter key.

37 To access the UPGIOM tool, type

>ACCESS ON UPGIOM

and press the Enter key.

Note: The command response asks for a password. To obtain the password, call Northern Telecom. Use the password to enter.

38



DANGER

How to download IOM load file This command downloads the complete IOM load file as specified in the parameter. The command provides reprogramming options for the flash.

To reprogram the IOM flash ROM on the new controller card, type

>UPGIOM file_name RPGM

and press the Enter key.

where

file_name is the IOM load file

Note: RPGM is the optional parameter that indicates if the system specifies the reprogramming option

Example input

>UPGIOM IOMRAA01 RPGM

Example of MAP response:

WARNING: This command will reprogram the onboard IOM Flash memory. Proceed with caution.

Reprogramming 100% Reprogram IOC 14 successful

If the reprogram	Do
passes	step 41
fails	step 39

At the ISM shelf

39



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of the MSP to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the failed controller card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

40



DANGER How to download IOM load file

This command downloads the complete IOM load file as specified in the parameter. The command also provides reprogramming options for the flash.

To reprogram the IOM flash ROM on the new controller card, type

>UPGIOM file_name RPGM

and press the Enter key.

where

file name

is the IOM load file

Note: RPGM is the optional parameter that indicates if the system specifies the reprogramming option

Example input

>UPGIOM IOMRAA01 RPGM

Example of MAP response:

WARNING: This command will reprogram the onboard IOM Flash memory. Proceed with caution. Reprogramming 100% Reprogram IOC 14 successful If the reprogram Do step 41 passes fails step 63 To quit the TOOLSUP utility, type >QUIT and press the Enter key. The next action depends on the reason that you perform this procedure. If a maintenance procedure Do directed you to this procedure step 43 did not direct you to this step 44 procedure Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.. At the MAP terminal To return the IOM to service, type >RTS IOC and press the Enter key. The next action depends on if consoles, disk drives, magnetic tape drives or DAT tape ports are present. If console, disk drive, magnetic Do drive or DAT ports step 46 are present step 49 are not present To post the device port, type >PORT port_no and press the Enter key. where

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46

	port_no is the port identification numl	per (0 to 17)
47	To return the port to service, type	
	>RTS	
	and press the Enter key.	
	If RTS command	Do
	passes	step 48
	fails	step 63
48	Repeat steps 46 and 47 for each dis port.	sk drive, magnetic tape drive or DAT tape
49	The next action depends on if MPC	ports are present.
	If MPC ports	Do
	are present	step 50
	are not present	step 64
50	To post the MPC port, type	
	>PORT port_no	
	and press the Enter key.	
	where	
	<pre>port_no is the port identification numl</pre>	ber (0 to 17)
51	To return the MPC port to service, t	уре
	>RTS	
	and press the Enter key.	
	Example of MAP response:	
	REQUEST PASSED FOR UNIT REQUEST PASSED FOR LINKS	
	If RTS command	Do
	passes	step 52
	fails	step 63

lf		Do
the system s and the link	status is Ready, the port status is COMACT, status is ENABLED for each link.	step 50
status of Ml	PC components is other than listed here	step 63
Repeat steps	50 to 52 for each port on the shelf.	
Notify users th	at MPC service is available.	
To determine personnel. Co	why the component is offline, consult operating co ontinue as directed by operating company person	ompany nel.
	WARNING Loss of data If files are open do not busy the controller. If you controller while files are open, billing data will be additional help, contact the next level of support.	busy the lost. For
If device indep following even	endent recording package (DIRP) volumes are o	pen, the
• the DDU of	lrops SysB	
billing data	a is lost	
• open Logi	itil files are lost or corrupted	
Before starting Close files froi procedure, "De <i>Maintenance</i> i	a card replacement procedures, close the DIRP were not active volumes from the DE eallocating Recording Volumes in the DIRP Utility Procedures.	volumes. DU. Use the " in <i>Routine</i>
Stop files reco the Logutil cor	rding to and from the Logutil. Type the following on and level:	command at
>LOGUTIL;L	ISTDEVS	
and press the	Enter key.	
Close files on	volumes on the DDU of the IOC.	
>STODEV de	ev_name	
and press the	Enter key.	

where

dev_name

is the name of the device

>QUIT

NTFX30 in an ISM (end)

and press the Enter key.

59 Repeat the ALLOC command to determine if files are closed, by typing >ALLOC

and pressing the Enter key.

If the files	Do
are open	step 60
are closed	step 61

- 60 Confirm that you have done steps 56 to 59. If the files are still open, contact your next level of support.
- 61 Manually busy the DDU, by typing

>BSY

and pressing the Enter key.

If the DDU	Do
is MBSY	step 62
is not MBSY	step 63

- **62** When cards are replaced and the DDU is in service, open the files. Use the procedure "Allocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.
- 63 For additional help, contact the next level of support.
- 64 The procedure is complete.

NTFX31 in an ISM

Application

Use this procedure to replace an NTFX31 paddle board assembly in an input/output module (IOM) in an integrated services module (ISM) shelf.

PEC	Suffix	Card name	Shelf or frame name
NTFX31	AA	Paddle board assembly	ISM

Refer to the Index, if you cannot identify one of the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped frame
- equipped shelf

The Index contains a list of the cards, shelves, and frames that this card replacement book documents.

Common procedures

This procedure refers to the common procedure Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing a NTFX31 in an ISM



NTFX31 in an ISM

ATTENTION

This procedure directs you to manually busy the controller card for the IOM. Perform this procedure from a MAP terminal that does not connect to the IOM.



WARNING Loss of service

This procedure instructs you to remove the paddle board for the IOM. Perform this procedure only if you need to recover out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

At the MAP terminal

1 Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the MAP terminal

2 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key.

Example of a MAP display:

IOD IOC 0 STAT .	1 :	2 3 . S						
DIRP: S MLP :	SMDR 1	B XFER: DPPP:		SLM : DPPU:	NPO: SCAI	:	NX25:	
To post f	the con	figured ION	l cont	roller, type				
>IOC	ioc_n	o						

and press the Enter key.

where

3

ioc no

is the IOM identification number

Example of an IOM MAP display:

4

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IOD IOC 0 1 STAT	2 3 . S	
DIRP: SMDI MLP : .	R B XFER: . SLM DPPP: . DPF	I: . NPO: . NX25: PU: . SCAI:
IOC POR' (IOM) STA' 0 TYP: The next act	Т 0 1 2 3 4 5 6 7 8 Т––– Е С С С С М О О О О Т N N N N D ion depends on if termina	9 10 11 12 13 14 15 16 17 M S S S S C C C C C C S <td< td=""></td<>
If terminal	controller ports	Do
are on the	shelf	step 5
are not on	the shelf	step 10
Note the cor	soles (CONS) ID and sta	tus for each port.
lf		Do
all ports a	re ManBsy	step 9
a minimur	n of one port is Offl	step 65
a minimur	n of one port is (.) dot	step 6
all ports an out-of- ser	re in any other vice state	step 8
Notify all ope CONS IDs the Wait until all IDs.	erating company personne nat associate with the con operating company perso	el that you will remove from service the troller card that you manually busy. nnel terminate activity for these CONS
To post the p	port that associates with the	he CONS that you replace, type
>PORT po:	rt_no	
and press th	e Enter key.	
where		
port_no is the	port identification numbe	r

Example of an IOM MAP display:

IOIC	2	Status Cons Id ConType	Disc 1CONS VT100		
To manu >BSY	ually bu	isy the device	e, type		
Example	e of M/	AP response:	ŗ		
, DSY OK		,			
If the I	3SY co	ommand		Do	
passec	1			step 9	
failed				step 6	6
Repeat	step 7	and 8 until a	II CONS po	rts are	manually busy.
The nex card.	t actior) depends on	if multiprot	ocol po	rts (MPC) are on the controller
If MPC	; ports			Do	
are on	the co	ontroller car	ď	step 1	1
are no	t on th	e controller	card	step 1	8
To post	a port f	that associate	es with the	MPC, t	уре
>PORT	port	_no			
and pres	ss the l	Enter key.			
where					
where por	t_no ; the po	ort identificati	ion number		
where por is Example	t_no s the po e <i>of an</i>	ort identificati IOM MAP di	ion number <i>isplay:</i>		
where por is Example Port 9	t_no the po e of an Un Use Stat	ort identificati IOM MAP di it 1 r SYSTE us Ready	ion number isplay: M PROTO X258-	OCOL 4	LINK COMACT ENABLED
where por is Example Port 9 Determi	t_no s the po e of an Un Use Stat	ort identificati IOM MAP di it 1 r SYSTE us Ready state of the p	ion number <i>isplay:</i> M PROT(X258- port.	DCOL 4	LINK COMACT ENABLED
where por is Example Port 9 Determi If the p	t_no s the po e of an Un Use Stat ne the Jort	ort identificati IOM MAP di it 1 r SYSTE us Ready state of the p	ion number isplay: M PROTO x258- port.	DCOL 4 Do	LINK COMACT ENABLED

					D	0			
is C)FFI	_			st	ep 65			
is o	ther	than	listed here	;	st	ep13			
To dia	splay	statu	is information	on on ci	urrent N	IPC conve	ersation	s, type	
and r	oress	the F	nter kev						
Exan	nple	of a N	IAP respon	se:					
MPC	L _	LCN	STATUS	CCC	SEC	PARDEV	INP	OPEN	OW
0	3	1	INACTIVE	none	none	e none	FIL	0	noi
0	3	2	INACTIVE	none	none	e none	FIL	0	no
lf					D	ο			
a m	inim	num (of one sess	ion is a	ac- st	ep14			
tive	•					-			
all : Notify sessi	sessi y all u ons a	ons a users are in	that an inte active befor	erruptior e you p	st of MP proceed	ep15 C service . To verify	will occ	ur. Wai	t unt activ
All : Notify sessi repea To ma >BSY and p	y all u ons a at ste anua F oress	ons a users are in p 13. Ily bu ORCE the E	that an inter active befor sy the port	e erruptior e you p and por	st o of MP proceed	ep15 C service . To verify type	will occ MPC s	eur. Wai session	t unti activ
All s Notify sessi repea To ma >BSY and p <i>Exan</i>	y all u ons a at ste anua F oress	ons a users are in p 13. Illy bu orce the E of a N	that an inter active before sy the port Enter key.	erruptior re you p and por <i>se:</i>	st n of MP roceed	ep15 C service . To verify type	will occ	eur. Wai session	t unti activ
all : Notify sessi repea To m >BSY and p Exan	y all u ons a at ste anua press nple o	Ons a users are in p 13. Illy bu ORCE the E of a M S TO conf:	that an interactive before active before sy the port Enter key. <i>IAP respon</i> VERIFY H irm ("YES	erruptior re you p and por <i>se:</i> FORCE ,	st n of MP roceed rt links, NO T'	c service . To verify type 0 CANCEI 0", or `	will occ MPC s . COMM `N″)	eur. Wai session	t unt activ
all : Notify sessi repea To ma >BSY and p Exan TYPE Plea	y all u ons a at ste anua press nple o se o nfirm	ons a users are in: p 13. Illy bu or CE the E of a N S TO conf:	that an inter active before sy the port Enter key. MAP respone VERIFY F irm ("YES command, "	erruptior re you p and por se: FORCE , S″ , "Y	st n of MP roceed "t links, NO T' ", "N	C service . To verify type 0 CANCEI 0", or `	will occ MPC s DCOMM	eur. Wai	t unt activ
all : Notify sessi repea To m >BSY and p Exan TYPE Plea To cc >YES	y all u ons a at stee anua FF press nple o SE SE onfirm	ons a users are in p 13. Illy bu or CE the E of a M conf: n the o	that an inter active before sy the port Enter key. MAP respone VERIFY I irm ("YES command, "	e erruptior e you p and por se: FORCE , S ^T , ^N Y	st n of MP proceed rt links, NO T' ", "N	ep15 C service . To verify type 0 CANCEI 0″, or `	will occ MPC s	ur. Wai session	t unt
all : Notify sessi repeation >BSY and p Exan TYPE Pleat To co >YES and p	y all u ons : at ste anua r F(r) ress nple (; YE: se (onfirm ; press	ons a users are in p 13. Illy bu or CE the E of a N S TO conf: n the c	that an inter active before sy the port Enter key. <i>IAP respon</i> VERIFY F irm ("YES command, "	erruptior re you p and por se: FORCE , S ⁷⁷ , ^w Y	st n of MP roceed "t links, NO T' ", "N	ep15 C service . To verify type 0 CANCEI 0", or `	will occ MPC s . COMM `N″)	eur. Wai session	t unti activ
all : Notify sessi repeation >BSY and p Exan Type Pleat To co >YES and p Exan	y all u ons : at ste anua r F(press nple (; YE; se (onfirm soress nple (ons a users are in. p 13. Illy bu or CE the E of a N S TO conf: n the C	that an interactive that an interactive before sy the port Enter key. <i>MAP respon</i> VERIFY H irm ("YES command, " Enter key. <i>P response</i>	erruptior re you p and por se: FORCE , S″ , "Y type	st n of MP roceed rt links, NO T' ", "N	ep15 C service . To verify type 0 CANCEI 0", or `	will occ MPC s	eur. Wai	t unti activ
all : Notify sessi repea To m >BSY and p Exan Type Plea To cc >YES and p Exan REQU	y all u ons a at ste anua r F (press press press press press ser s	ons a users are in: p 13. Illy bu ORCE the E of a N S TO conf: the E of MA	that an interactive before sy the port Enter key. MAP respond VERIFY H irm ("YES command, " Enter key. AP response SED FOR U SED FOR U	erruption re you p and por se: FORCE, S", "Y sype	st n of MP roceed rt links, NO Tr ", "N	ep15 C service . To verify type 0 CANCEI 0", or `	will occ MPC s	eur. Wai	t unti
all : Notify sessi repea To m >BSY and p Exan Type Plea To cc >YES and p Exan REQU REQU	y all u ons : at stee anua Free press nple o : YE: se o onfirm soress nple o EST EST	ons a users are in p 13. Illy bu or CE the E of a M S TO conf: the E of MA PASS PASS SY CO	that an interactive before sy the port Enter key. MAP response VERIFY H irm ("YES command, " Enter key. AP response SED FOR I SED FOR I SED FOR I	e erruptior e you p and por se: FORCE, S", "Y cype	st n of MP proceed rt links, ", "No " D	ep15 C service . To verify type 0 CANCEI 0", or `	will occ MPC s	ur. Wai	t unti activ

If the BS	Y command		Do		
failed			step 66		
Repeat ste	eps 11 to 16 fo	or each MPC	port on the IOM.		
The next a card.	ction depends	s on if disk driv	e unit (DDU) ports are on the controlle		
lf DDU p	orts		Do		
are on th	e shelf		step 19		
are not o	on the shelf		step 24		
To post a p	port that asso	ciates with the	e DDU, type		
>PORT F	ort_no				
and press	the Enter key				
where					
port_r is th	10 ne port identifi	cation numbe	r		
Example c	of an IOM MA	P display:			
Port 16	Unit	0			
(SCSI)	User	system	Drive_State		
	Status	Ready	On_line		
Determine	the state of t	he port.			
If the po	rt		Do		
is ManB			step 24		
is OFFL			step 65		
is other	than listed he	ere	step 21		
To determi	ne if open file	s are on the [DDU, type		
>ALLOC					
and press	the Enter key				
Evampla	of a MAP disp	lav:			

VOLID	VOL_NAME	SERIAL_NO	BLOCKS	ADDR	TYPE	R/O	FILES_OPEN
0	IMAGE	2800	45000	D000	0	NO	0
1	XPMLOADS	2801	35000	D000	0	NO	0
2	RTMLOADS	2802	20000	D000	0	NO	0
•							
•							
•	CMDD	2007	5000	0000	0	NO	0
8	SMDR AMA1	2808	5000		0	NO	0
9	TST	2809	50	D000	0	NO	0
10	AMA2	280A	500	D000	0	NO	0
If ope	en files		Do)			
are o	n the DDU		ste	ep 57			
are n	ot on the D	DU	ste	p 22			
To mar	nually busy t	he device on t	he contro	ller car	d type		
10 11121	lually busy ti				u, type		
>BSY							
and pre	ess the Ente	r key.					
Examp	ole of MAP re	esponse:					
bsy							
OK.							
Repea	t steps 19 to	22 if a secon	d DDU is	on the	control	ler ca	ird.
The ne (DAT) p	xt action dep ports are on	ends on if ma the controller	gnetic tap card.	e drive	(MTD)	or dig	gital audio tape
If MT	D or DAT po	orts	Do)			
are of	n the contro	oller card	ste	ep 25			
are of	n the contro ot on the co	oller card	ste	ер 25 ер 30			
are o are n To pos	n the contro ot on the co t a port that	oller card ontroller card associates wit	ste ste	ep 25 ep 30 D or D4	AT, type)	
are o are n To pos	n the contro ot on the co t a port that port_no	oller card ontroller card associates wit	ste ste th the MT	p 25 p 30 D or D/	АТ, type)	
are of are n To pos >PORT and pre	n the contro ot on the co t a port that port_no ess the Ente	oller card ontroller card associates wit r key.	ste ste	p 25 p 30 D or D4	АТ, type	<u>;</u>	
are o are n To pos >PORT and pre where	n the contro ot on the co t a port that port_no ess the Ente	oller card ontroller card associates wit r key.	ste ste	p 25 p 30 D or D4	АТ, type)	
are o are n To pos >PORT and pre where po	n the contro ot on the co t a port that port_no ess the Ente rt_no is the port id	oller card ontroller card associates wit r key. lentification nu	ste ste th the MT	p 25 p 30 D or D4	\Т, type	;	
are o are n To post >PORT and pre where po Examp	n the contro ot on the co t a port that port_no ess the Ente rt_no is the port id ole of an ION	oller card ontroller card associates wit r key. entification nu 1 MAP display	ste ste th the MT umber	p 25 p 30 D or DA	\Т, type	}	

Port 5	MTD TapeName Status	Idle	DevType User	
Determine	e the state of the p	port.		
If the po	ort		Do	
is ManE	Bsy		step 29	
is OFFL	_		step 65	
is Idle			step 28	
is other	than listed here		step 27	
Notify all uuntil all us	users that an inter ers cease to acce	ruption of se ss the devic	ervice for the device will o e before you proceed to th	ccur. Wait ie next step.
To manua	lly busy the device	e, type		
>BSY				
and press	the Enter key.			
Example	of MAP response:			
bsy OK				
Repeat st	eps 25 to 28 for e	ach MTD de	evice or DAT on the IOM.	
To return t	to the IOC level of	the MAP di	splay, type	
>QUIT				
and press	the Enter key.			
Determine	e the state of the I	OM.		
If the sta	ate of the IOM		Do	
is M			step 33	
is other	than listed here		step 32	
To manua	Ily busy the IOM of	controller ca	rd, type	
>BSY I	OC			
and press	the Enter key.			
Example of	of MAP response:			
bsy OK				

At the front of the ISM shelf

33



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of the modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Unseat the IOM controller card NTFX30 in slot 3 or 4 of the ISM shelf.

34 If the media storage card NTFX32 is equipped, unseat the card. The card is in slots 4 and 5.

At the rear of the ISM shelf

35



WARNING

Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of MSP to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Locate the paddle board assembly in slot 03 or 04 on the backplane. Note the numbers and positions of the connectors on the harness from the paddle board. Detach the connectors on the harness from the paddle board.

Disconnect the cable harness that connects the paddle board to the DDU/DAT connector on the backplane.



- **36** Locate the paddle board ground cable. Disconnect at the backplane end of the cable. Refer to the diagram in step 35.
- **37** To replace the paddle board assembly in slots 03 or 04, remove the bolts that secure the paddle board bracket to the backplane. Secure the paddle board assembly in position with screws and washers. Refer to the diagram in step 35.
- 38 Connect the paddle board ground cable. Refer to the diagram in step 35.
- **39** Connect the connectors on the cable harness to the receptacles on the paddleboard assembly and the DDU/DAT connector on the backplane. Make sure that the names on the cable connectors match the names on the paddle board.
- 40 Connect the cable harness to the DDU/DAT connector on the backplane.

At the front of the ISM shelf

41



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of the MSP to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Reseat the NTFX32 card that you unseated in step 34.

Note 1: After you reseat the NTFX32 card, both LEDs on the faceplate must be on.

Note 2: You view the LED through a plastic window (light pipe) on the card faceplate.

- 42 Reseat the NTFX30 card that you unseated in step 33.
- 43 Wait for internal diagnostic tests on the NTFX30 card to complete.

Note 1: After you reseat the NTFX30 card, the LED is off for approximately 30 seconds. The color of the LED changes to red and then to green if the internal diagnostic tests pass. The internal diagnostic tests take less than 2 minutes.

Note 2: You view the LED through a small plastic window on the card faceplate.

44 The next action depends on the reason that you perform the procedure.

If a maintenance procedure	Do
directed you to this procedure	step 45
did not direct you to this procedure	step 46

45 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

At the MAP terminal

- 46 To return the IOM to service, type
 - >RTS IOC

and press the Enter key.

47 The next action depends on if consoles, disk drives, MTDs, or DAT tape ports are present.

lf consoles, disk drives, MTDs, or DAT ports	Do
are present	step 48

If consoles, disk drives, MTDs, or DAT ports	Do
are not present	step 51
To post the device port, type	
>PORT port_no	
and press the Enter key.	
where	
<pre>port_no is the port identification number</pre>	er (0 to 17)
To return the port to service, type	
>RTS	
and press the Enter key.	
If the RTS command	Do
passes	step 50
1	
fails Repeat steps 48 and 49 for each disl	step 66 c drive, MTD, or DAT tape port
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports	step 66 c drive, MTD, or DAT tape port ports are present. Do
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type >PORT port_no	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type >PORT port_no and press the Enter key.	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type >PORT port_no and press the Enter key. where	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type >PORT port_no and press the Enter key. where port_no is the port identification number	step 66 < drive, MTD, or DAT tape port ports are present. Do step 52 step 67 er (0 to 17)
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type >PORT port_no and press the Enter key. where port_no is the port identification number To return the MPC port to service, type	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67 er (0 to 17) De
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are not present To post the MPC port, type >PORT port_no and press the Enter key. where port_no is the port identification number To return the MPC port to service, type >RTS ALL	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67 er (0 to 17) De
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are present are not present To post the MPC port, type >PORT port_no and press the Enter key. where port_no is the port identification number To return the MPC port to service, type >RTS ALL and press the Enter key.	step 66 < drive, MTD, or DAT tape port ports are present. Do step 52 step 67 er (0 to 17) De
fails Repeat steps 48 and 49 for each disl The next action depends on if MPC p If MPC ports are present are present are not present To post the MPC port, type >PORT port_no and press the Enter key. where port_no is the port identification number To return the MPC port to service, type >RTS ALL and press the Enter key. Example of a MAP response:	step 66 c drive, MTD, or DAT tape port ports are present. Do step 52 step 67 er (0 to 17) De

lf	Do
the system status is Ready, the port status is COMACT, and the link status the system status is ENABLED for each link.	step 55
the status of MPC components is other than listed here	step 66
Repeat steps 52 to 54 for each port or	n the shelf.
Notify users that MPC service is availa	able.



WARNING Loss of data

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- · billing data is lost
- open Logutil files are lost or corrupted

Before starting card replacement procedures, close the DIRP volumes. Close files from DIRP and demount active volumes from the DDU. Use the procedure, "Deallocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.

58 Stop files recording to and from the Logutil. Type the following command at the Logutil command level:

>LOGUTIL;LISTDEVS

and press the Enter key.

59 Close files on volumes on the DDU of the IOC.

>STOPDEV dev_name

and press the Enter key.

where

dev_name

is the name of the device

NTFX31 in an ISM (end)

60	To quit the disk utility, type >QUIT			
	and press the Enter key.			
61	Repeat the ALLOC command to determine if files are closed, by typing >ALLOC and pressing the Enter key.			
	If the files	Do		
	are open	step 62		
	are closed	step 63		
62	Confirm that you have done steps 57 to 61. If the files are still open, contact your next level of support.			
63	Manually busy the DDU, by typing			
	>BSY			
	and pressing the Enter key.			
	If the DDU is	Do		
	MBSY	step 64		
	not MBSY	step 66		
64	When cards are replaced and the DDU is in service, open the files. Use the procedure "Allocating Recording Volumes in the DIRP Utility" in <i>Routine Maintenance Procedures</i> .			
65	To determine why the component is offline, consult operating company personnel. Continue as directed by operating company personnel.			
66	For additional help, contact the n	ext level of support.		

67 The procedure is complete.

NTFX32AA in an ISM

Application

Use this procedure to replace an NTFX32AA storage media card in the shelves or frames identified in the following table.

PEC	Suffixes	Card name	Shelf/frame name
NTFX32	AA	Storage media card	ISM

To replace an NTFX32BA (3.5-in. disk drive unit) and an NTFX32CA (digital audio tape unit) see *Trouble Locating and Clearing Procedures*.

Refer to the Index, if you cannot identify one of the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped frame
- equipped shelf

The Index contains a list of the cards, shelves, and frames that this card replacement NTP documents.

Common procedures

This procedure refers to the common procedure Replacing a card.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing an NTFX32AA in an ISM



NTFX32AA in an ISM

At the MAP terminal

- 1 Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.
- 2 To access the IOD level of the MAP display, type

```
>MAPCI;MTC;IOD
```

and press the Enter key.

Example of a MAP display:

IOD IOC 0 1 2 3 STAT . . . S DIRP: SMDR B XFER: SLM : NPO: . NX25: . . . MLP : . DPPP: DPPU: SCAI :

3 To post the IOM controller system configured, type

>IOC ioc_no

and press the Enter key.

where

ioc_no is the IOM identification number

Example of an IOM MAP display:

IOD IOC 0 1 2 3 STAT . . . S DIRP: SMDR B XFER: SLM : NPO: NX25: . . . DPPU: MLP : . DPPP: SCAI : IOC PORT 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 (IOM) STAT . . . - . . - - . _ _ _ 0 TYPE C C C M М S S 000 ОТ Ρ C C NNN ND С S S

4 The next action depends on if a 3.5-in. disk drive unit (DDU)NTFX32 BA or a digital audio tape (DAT) unit NTFX32CA is on the media storage card.

If the media storage card	Do
contains a 3.5-in. DDU	step 5
contains a DAT unit	step 6

At the ISM shelf

- 5 To remove the 3.5-in. DDU, perform the correct procedure in *Trouble Locating* and *Clearing Procedures*. Complete the section of the procedure to remove the disk drive and return to this point.
- **6** To remove the DAT unit, perform the correct procedure in *Trouble Locating and Clearing Procedures.* Complete the section of the procedure to remove the tape unit and return to this point.
- 7 To replace the media storage card, perform the procedure *How to replace a card*. Complete the procedure and return to this point.

If the media storage card	Do
contains a 3.5-in. DDU	step 8
contains a DAT unit	step 9

- 8 To install the 3.5-in. DDU unit that you removed in step 6, perform the correct procedure in *Trouble Locating and Clearing Procedures*. Complete the section of the procedure to remove the disk drive and return to this point.
- **9** To install the DAT unit that you removed in step 6, perform the correct procedure in *Trouble Locating and Clearing Procedures*. Complete the section of the procedure to remove the tape unit and return to this point.
- **10** The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step11
did not direct you to this proce- dure	step12

11 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

At the MAP terminal

12 To return the IOM to service, type

>RTS

and press the Enter key.

13 For additional help, contact the next level of support.

NTFX32AA in an ISM (end)

14 The procedure is complete.
System cards in an IOC

Application

Use this procedure to replace the following cards in an input/output controller (IOC).

PEC	Suffix	Card name	Shelf or frame name
NT0X67	AA	IOC terminator card	IOC
NT1X62	AA	Input/output controller card	IOC
NT1X62	AB	IOC message controller card	IOC
NT1X62	CA, CB	IOC message processor card	IOC

Refer to the Index, if you cannot identify one of the following features for the card that you want to replace:

- product engineering code (PEC)
- PEC suffix
- equipped frame
- equipped shelf

The Index contains a list of the cards, shelves, and frames that this card replacement book documents.

Common procedures

This procedure refers to the common procedure Replacing a card.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of replacing System cards in an IOC



System cards in an IOC

At the MAP terminal

1

ATTENTION

This procedure directs you to manually busy all terminal controller cards for the IOC. Perform this procedure from a MAP terminal that does not connect to the IOC.



WARNING

Loss of service This procedure instructs you to remove an IOC and the device controllers of an IOC from service. Perform this procedure only if you need to recover out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

2 To access the IOD level of the MAP display, type

>MAPCI;MTC;IOD

and press the Enter key. Example of a MAP display:

IOC 0 1 2 3 STAT

3

To post the IOC that associates with the card you replace, type

>IOC ioc_no

and press the Enter key.

where

ioc_no is the IOC identification number (0 to 19)

Example of a MAP display:

IOC STAT	0 1 2	3							
DIRP MLP	9: POOL07 : .	XFER: DPPP:	. DI	SLM PPU:	•	NOP SCAI	: .	NX2	5: .
IOC 0 PC ST	CARD 0 DRT 0123 DAT	1 0123 	2 0123	3 012303	4 123	5 0123 	6 0123 	7 0123 	8 0123
TY	The next of	DDU C	ONS M	MPC (CONS	MPC	CONS	MPC	CONS
4	If termina							on the s	
					otor	5			
			_		step	5			
	are not or	n the shelf	f		step) 11			
5	To post the	card, type							
	>CARD ca	ard_no							
	and press ti	he Enter k	ey.						
	where	_							
	card_n is the	o e card ider	ntificatio	n numbe	er (0 to	o 8)			
	Example of	a MAP dis	splay:						
IOD IOC 0 STAT .	123								
DIRP: AM MLP :	A B XFEF . DPPP		SLM : DPF	SLMbs U:	sy NO	P : SCAI:	. 1	NX25:	
IOC CA 0 PO ST	RD 0 RT 0123 AT	1 0123	2 0123	3 012301	4	5 0123	6 0123	7 0123	8 0123
TY Card 6 Status	PE MTD Ckt	DDU 0	CONS	MPC 1	CON	S 2	 COI 3	NS MP	2
Cons Id ConType		RD040 VT100	RDC VT1)41 .00	TEA VT1	M4 00	TEAM VT10	6 0	
6	Note the CO	ONS ID an	d the st	atus for	each p	oort.			
	lf				Do				
	all ports a	are ManB	sy		step	0 10			

Do
Efl step 61
dot) step 7
ther step 8
sonnel that you will remove from service all e card you manually busy. Wait until all rminate the activity of these CONS IDs.
ard, type
umber (0 to 3)
Do
step 9
step 62
busy all ports on the card. Go to step 10.
v busy all ports on the card. Go to step 10. ninal controller card on the shelf. Go to step
v busy all ports on the card. Go to step 10. ninal controller card on the shelf. Go to step Iltiprotocol controller (MPC) cards are on the
busy all ports on the card. Go to step 10. ninal controller card on the shelf. Go to step altiprotocol controller (MPC) cards are on the Do
busy all ports on the card. Go to step 10. ninal controller card on the shelf. Go to step altiprotocol controller (MPC) cards are on the Do step 12
v busy all ports on the card. Go to step 10. hinal controller card on the shelf. Go to step iltiprotocol controller (MPC) cards are on the Do step 12 step 19
v busy all ports on the card. Go to step 10. hinal controller card on the shelf. Go to step iltiprotocol controller (MPC) cards are on the Do step 12 step 19
v busy all ports on the card. Go to step 10. hinal controller card on the shelf. Go to step iltiprotocol controller (MPC) cards are on the Do step 12 step 19
v busy all ports on the card. Go to step 10. hinal controller card on the shelf. Go to step iltiprotocol controller (MPC) cards are on the Do step 12 step 19
v busy all ports on the card. Go to step 10. hinal controller card on the shelf. Go to step iltiprotocol controller (MPC) cards are on the Do step 12 step 19
v busy all ports on the card. Go to step 10. hinal controller card on the shelf. Go to step iltiprotocol controller (MPC) cards are on the Do step 12 step 19 umber (0 to 8)

IOD IOC 0 STAT .	L 2 3	
DIRP: A MLP :	A B XFER: . SLM : SLMbsy NOP : . DPPP: . DPPU: . SCAI: .	NX25: .
IOC C. 0 Po S'	RD 0 1 2 3 4 5 6 RT 0123 0123 0123 0123 0123 0123 0123 AT PE MTD DDU CONS MPC CONS CONS	7 8 0123 0123
Card 3	nit 0 ser SYSTEM BOARD LINKO LINK1 LINK tatus Ready COMACT UNEQ N/A UNEQ	2 LINK3) ENABLD
13	Determine the state of the card.	
	If the card state Do	
	is MANB step 18	
	is OFFL step 61	
	is other than listed here step 14	
	Note: The card state appears under the BOARD headed display.	on the MAP
14	To display status information on current MPC conversation	s, type
	>QCONV	
	and press the Enter key.	
	Example of a MAP response.	
	MPC L LCN STATUS CCC SEC PARDEV INP	OPEN OWNER
	0 31INACTIVE none none noneFIL0 32INACTIVE none none noneFIL	0 none 0 none
	lf Do	
	a minimum of one session is ac- step 15 tive	
	all sessions are inactive step 16	
15	Notify all users that an interruption of MPC service will occ sessions are inactive before you proceed. To verify MPC s repeat step 14.	ur. Wait until all session activity,

16 To manually busy the card and card links, type

>BSY ALL FORCE

and press the Enter key.

Example of a MAP response:

TYPE YES TO VERIFY FORCE, NO TO CANCEL COMMAND Please confirm ("YES", "Y", "NO", or "N"):

17 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

REQUEST PASSED FOR LINKS. REQUEST PASSED FOR CARD.

If the BSY command	Do
passed	step 18
failed	step 62

18 Repeat steps 12 to 17 for each MPC card on the shelf. Go to step 19.

19 The next action depends on if disk drive controller cards are on the shelf.

If disk drive controller cards	Do
are on the shelf	step 20
are not on the shelf	step 25
To post the card, type	
>CARD card_no	
and press the Enter key.	
where	
card_no is the card identification num	ber (0 to 8)

Example of a MAP display:

IOD IOC STA	0 1 2 T	3					
DIR MLP	P: AMA B X : . D	FER: . PPP: .	SLM DPP	: SLMb U: .	sy NOP SCA	:	. NX25:
IOC 0	CARD PORT 01 STAT	0 1 23 0123 	2 0123 0 	34 10323	5 0123 	6 0123 	7 8 0123 0123
	Card 0	MTD TapeName Status User	0 Idle	CONS		CONS	MFC
21	Determine t	he state of the	e card.				
	If the card	I		Do			
	is MBSY			step	24		
	is OFFL		step 61				
	is other th	nan listed her	here step 22				
22	To determine if files are open on the DDU, type >ALLOC and press the Enter key. <i>Example of a MAP response:</i>						
VOLID 0 1 2	VOL_NAME IMAGE XPMLOADS RTMLOADS	SERIAL_NO 2800 2801 2802	BLOCKS 45000 35000 20000	5 ADDR D000 D000 D000	TYPE 0 0 0	R/O NO NO NO	FILES_OPEN 0 0 0
7 8 9 10	SMDR AMA1 TST AMA2	2807 2808 2809 280A	5000 I 5000 I 50 I 50 I 500I	0000 0000 0000 0000	0 0 0 0	NO NO NO NO	0 0 0 0
	If files			Do			
	are open			step	54		
are closed			step	23			

23	To manually busy the controller, type >BSY				
	and press the Enter key.				
	Example of a MAP response:				
	bsy OK				
24	Repeat steps 20 to 23 for each disk drive controller card on the shelf. Go to step 25.				
25	The next action depends on if magnetic tape drive (MTD) controller cards are on the shelf.				
	If MTD controller cards Do				
	are on the shelf step 26				
	are not on the shelf step 31				
26	To post the card, type				
	>CARD card_no				
	and press the Enter key.				
	where				
	card_no				
	Example of a MAR display:				
	Example of a MAP display.				
IOD IOC 0 STAT .	1 2 3 · · ·				
DIRP: A MLP :	MA B XFER: . SLM : SLMbsy NOP : . NX25: . . DPPP: . DPPU: . SCAI: .				
IOC C 0 P ST	ARD 0 1 2 3 4 5 6 7 8 ORT 0123 0123 0123 0123 0123 0123 0123 0123 AT DE MTD DDU CONS MPC CONS MPC				
Card 0	MTD DD0 CONS MPC CONS CONS MPC MTD 0 TapeName Status Idle User				

27	Determine the state of the card.	
	If the card	Do
	is ManBsy	step 30
	is Offl	step 61
	is Idle	step 29
	is other than listed here	step 28
28	Notify all users an interruption of all users cease to access the dev	service for the device will occur. Wait until ice before you proceed to the next step.
29	To manually busy the card, type	
	>BSY	
	and press the Enter key.	
	Example of a MAP response:	
	bsy OK	
30	Repeat steps 26 and 29 for each N 31.	MTD controller card on the shelf. Go to step
31	To return to the IOC level of the M	1AP display, type
	>QUIT	
	and press the Enter key.	
32	Determine the state of the IOC.	
	If the state of the IOC	Do
	is M	step 34
	is other than listed here	step 33
33	To manually busy the IOC, type	
	>BSY IOC	
	and press the Enter key.	

At the shelf

34



WARNING Static electricity damage

Wear a wrist strap that connects to the wrist-strap grounding point of the frame supervisory panel (FSP) or the modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

35 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 36
did not direct you to this proce- dure	step 37

36 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

At the MAP terminal

37 To return the IOC to service, type

>RTS IOC

and press the Enter key.

38 The next action depends on if disk drive or MTD controller cards are on the shelf.

If disk drive or MTD controller cards	Do
are on the shelf	step 39
are not on the shelf	step 42
To post the card, type	
>CARD card_no	
and press the Enter key.	
where	

	card_no is the card identification num	per (0 to 8)	
40	To return the controller to service, ty	ре	
	>RTS		
	and press the Enter key.		
41	Repeat steps 39 and 40 for each dis shelf. Go to step 42.	k drive or MTD controller card on the	
42	The next action depends on if MPC cards are on the shelf.		
	If MPC cards	Do	
	are on the shelf	step 43	
	are not on the shelf	step 49	
43	To post the card, type		
	>CARD card_no		
	and press the Enter key.		
	where		
	card_no is the card identification numl	per (0 to 8)	
44	To load the MPC, type		
	>DOWNLD		
	and press the Enter key.		
	Example of a MAP response:		
	DOWNLOAD OF TABLE MPC FILM	E "MPC403AB" SUCCEEDED.	
	If the DOWNLD command	Do	
	passed	step 45	
	failed	step 62	
45	To return the MPC to service, type		
	>RTS ALL		
	and press the Enter key.		
	Example of a MAP response:		
	REQUEST PASSED FOR CARD.RE	QUEST PASSED FOR LINKS.	

lf		Do	
the system status is Ready, the MACT, and the link status is EN	e board status is CO- JABLD for each link	step 4	
these statuses are other than lis	sted here	step 6	
Repeat steps 43 to 46 for each card on the shelf. Go to step 48.			
Notify users that MPC service is available.			
The next action depends on if term	inal controller cards are o	on the s	
If terminal controller cards	Do		
are on the shelf	step 50		
are not on the shelf	step 63		
To post the card, type			
>CARD card_no			
and press the Enter key.			
where			
card_no is the card identification nun	nber (0 to 8)		
To return a port on the card to serv	vice, type		
>RTS port_no			
and press the Enter key.			
where			
port_no is the port identification number (0 to 3)			
If the RTS command	Do		
passed	step 52		
failed	step 62		
Repeat step 51 uptil you return to s	arvice all parts on the to	minal c	

53 Repeat steps 50 to 52 for each terminal controller card on the shelf. Go to step 63.

54



WARNING Loss of data

If files are open do not busy the controller. If you busy the controller while files are open, billing data will be lost. For additional help, contact the next level of support.

If device independent recording package (DIRP) volumes are open, the following events occur:

- the DDU drops SysB
- billing data is lost
- open Logutil files are lost or corrupted

Before starting card replacement procedures, close the DIRP volumes. Close files from DIRP and demount active volumes from the DDU. Use the procedure, "Deallocating Recording Volumes in the DIRP Utility" in *Routine Maintenance Procedures*.

55 Stop files recording to and from the Logutil. Type the following command at the Logutil command level:

>LOGUTIL;LISTDEVS

and press the Enter key.

56 Close files on volumes on the DDU of the IOC.

>STOPDEV dev_name

and press the Enter key.

where

dev_name

is the name of the device

>QUIT

and press the Enter key.

57 Repeat the ALLOC command to determine if files are closed, by typing

>ALLOC

and pressing the Enter key.

If the files	Do
are open	step 58
are closed	step 59

58 Confirm that you have done steps 54 to 57. If the files are still open, contact your next level of support.

System cards in an IOC (end)

59	Manually busy the DDU, by typing >BSY			
	and pressing the Enter key.			
	If the DDU	Do		
	is MBSY	step 60		
	is not MBSY	step 62		
60	When cards are replaced and the DDU is in service, open the files. Use the procedure "Allocating Recording Volumes in the DIRP Utility" in <i>Routine Maintenance Procedures</i> .			
61	To determine why the component is offline, consult operating company personnel. Continue as directed by operating company personnel.			
62	For additional help, contact the next level of support.			

63 The procedure is complete.

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