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DMS-100 Family

DMS SuperNode SE

Card Replacement Procedures

BCS36 and up Standard 03.02 December 1993

northern telecom

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- incorporated minor review comments

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- added the procedure for replacing an NT9X10 card in a computing module/system load module shelf
- added burst mode changes where applicable

March 1993

BCS35 Standard 02.01

- updated the computing module/system load module (CM/SLM) card replacement procedures to include testing the CM after powering up
- included new card suffixes for the 9X13, 9X14 and 9X17
- changed all card replacement procedures that require the use of the disk utility to reflect changes in the utility's commands and output

July 1992

BCS34 Standard 01.02 first release of this document

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About this document

This document contains card replacement procedures for DMS SuperNode SE. The procedures described in this document are designed for maintenance personnel in an operating company.

When to use this document

Northern Telecom (NT) software releases are referred to as batch change supplements (BCS) and are identified by a number, for example, BCS29. This document is written for DMS-100 Family offices that have BCS36 and up.

More than one version of this document may exist. The version and issue are indicated throughout the document, for example, 01.01. The first two digits increase by one each time the document content is changed to support new BCS-related developments. For example, the first release of a document is 01.01, and the next release of the document in a subsequent BCS is 02.01. The second two digits increase by one each time a document is revised and rereleased for the same BCS.

To determine which version of this document applies to the BCS in your office, check the release information in *DMS-100 Family Guide to Northern Telecom Publications*, 297-1001-001.

How to identify the software in your office

The *Office Feature Record (D190)* identifies the current BCS level and the NT feature packages in your switch. You can list a specific feature package or patch on the MAP (maintenance and administration position) terminal by typing

>PATCHER;INFORM LIST identifier

and pressing the Enter key.

where
identifier is the number of the feature package or patch ID

You can identify your current BCS level and print a list of all the feature packages and patches in your switch be performing the following steps. First, direct the terminal response to the desired printer by typing

>SEND printer_id

and pressing the Enter key.

where
printer_id is the number of the printer where you want to print the data

Then, print the desired information by typing

>PATCHER;INFORM LIST;LEAVE

and pressing the Enter key.

Finally, redirect the display back to the terminal by typing

>SEND PREVIOUS

and pressing the Enter key.

How DMS SuperNode SE documentation is organized

This document is part of DMS SuperNode SE documentation that supports the Northern Telecom line of DMS SuperNode SE products. DMS SuperNode SE documentation is a subset of the DMS-100 Family library.

The DMS-100 Family library is structured in numbered layers, and each layer is associated with an NT product. To understand DMS SuperNode SE products, you need documents from the following layers:

- DMS-100 Family basic documents in the 297-1001 layer
- DMS SuperNode SE documents in the 297-5301 layer

DMS SuperNode SE documents and other documents that contain related information are listed in “Finding DMS SuperNode SE information” in *DMS SuperNode SE Product Guide*, 297-5301-010.

References in this document

The following documents are referred to in this document.

Number	Title
297-1001-001	*DMS-100 Family Guide to Northern Telecom Publications*
297-1001-821	*Menu Commands Reference Manual*
297-5301-010	*DMS SuperNode SE Product Guide*
297-5301-543	*DMS SuperNode SE Alarm and Performance Monitoring Procedures*

What precautionary messages mean

Danger, warning, and caution messages in this document indicate potential risks. These messages and their meanings are listed in the following chart.

Message	Significance
DANGER	Possibility of personal injury
WARNING	Possibility of equipment damage
CAUTION	Possibility of service interruption or degradation

Examples of the precautionary messages follow.

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

WARNING
Damage to backplane connector pins
Use light thumb pressure to align the card with the connectors. Next, use the levers to seat the card into the connectors. Failure to align the card first may result in bending of the backplane connector pins.

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

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 it is a command:

>BSY

Type the command that follows the input prompt and press the Return key.

Commands and fixed parameters

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

>BSY LINK

Enter the command or fixed parameter exactly as it appears on the page.

Variables

Variables are shown in lowercase letters:

>BSY LINK ps_link

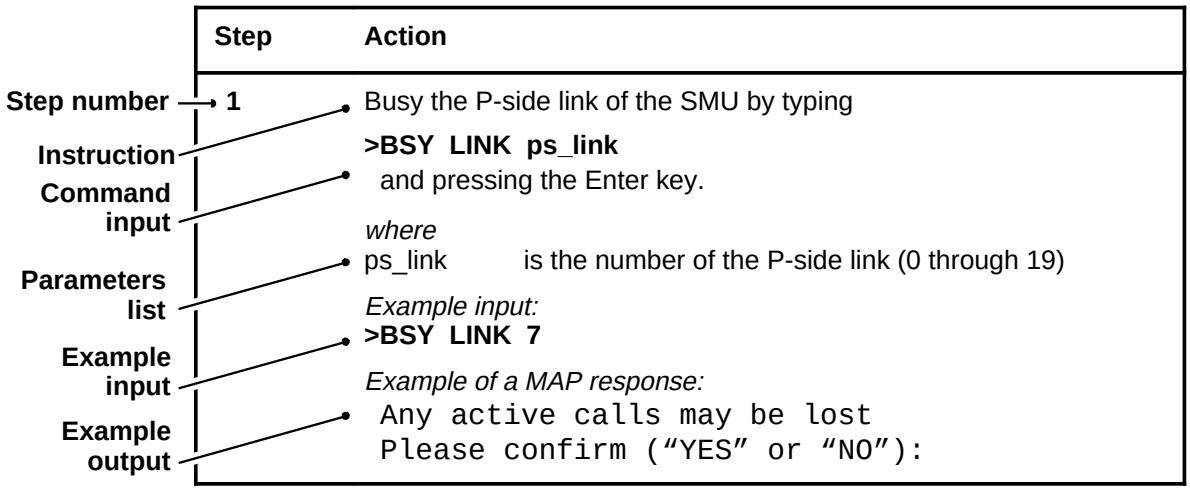
The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

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

```
Any active calls may be lost
Please confirm (“YES” or “NO”):
```

The following example illustrates the command syntax used in this document.



Card replacement procedures

Task list

The following list provides the names of all the procedures in this chapter. The procedures are organized by the product engineering code (PEC) of the card. The PECs are in alphanumeric order. To find the appropriate procedure, look for the PEC in the left column and go to the page number listed in the right column. If more than one entry appears under a PEC, look for the context of the card.

This chapter contains procedures for changing cards in the DMS SuperNode SE. For each card replacement task, you will find a procedure containing the following:

- explanatory and context-setting information
- summary flowchart
- step-action instructions

Explanatory and context-setting information

In each procedure, the paragraph titled “Application” tells you where you can use this procedure and for which versions of a card. Read this section before you try to perform the step-action instructions. The paragraph titled “Common procedures” lists common procedures that you may be asked to perform as you follow the step-action instructions. Go to these common procedures only when directed to do so.

Summary flowchart

The flowchart is only a summary of the main actions, decision points, and possible paths you may take. Do not use the summary flowchart to perform the procedure. Instead, use it to preview what you will be doing and to prepare for it. For example, if you see that these instructions will involve another office, you will know to advise that office before you begin the step-action instructions.

Step-action instructions

The step-action instructions tell you how to change a card. Normally, you will perform the steps in order, but you may be directed to return to a previous step and repeat a sequence. The successful completion of a step in a sequence may depend on previous steps; therefore, always perform the steps in the order specified.

While following the step-action instructions, you may be sent to the "Common procedures" chapter of this book to perform a set of instructions or to another NTP for a related procedure. If this happens, you will be told when to return to the original instructions, and to which point in those instructions you should go.

The step-action instructions provide the command syntax and machine output you use or see while performing this procedure. For help on DMS commands or output (for example, problems logging into a utility), see *Menu Commands Reference Manual*, 297-1001-821.

NT1X78
in a remote oscillator shelf

Application

Use this procedure to replace the following card in a remote oscillator shelf (ROS).

PEC	Suffixes	Name
NT1X78	AA	Power converter (+5 V, -5 V, -12 V, +24 V)

Common procedures

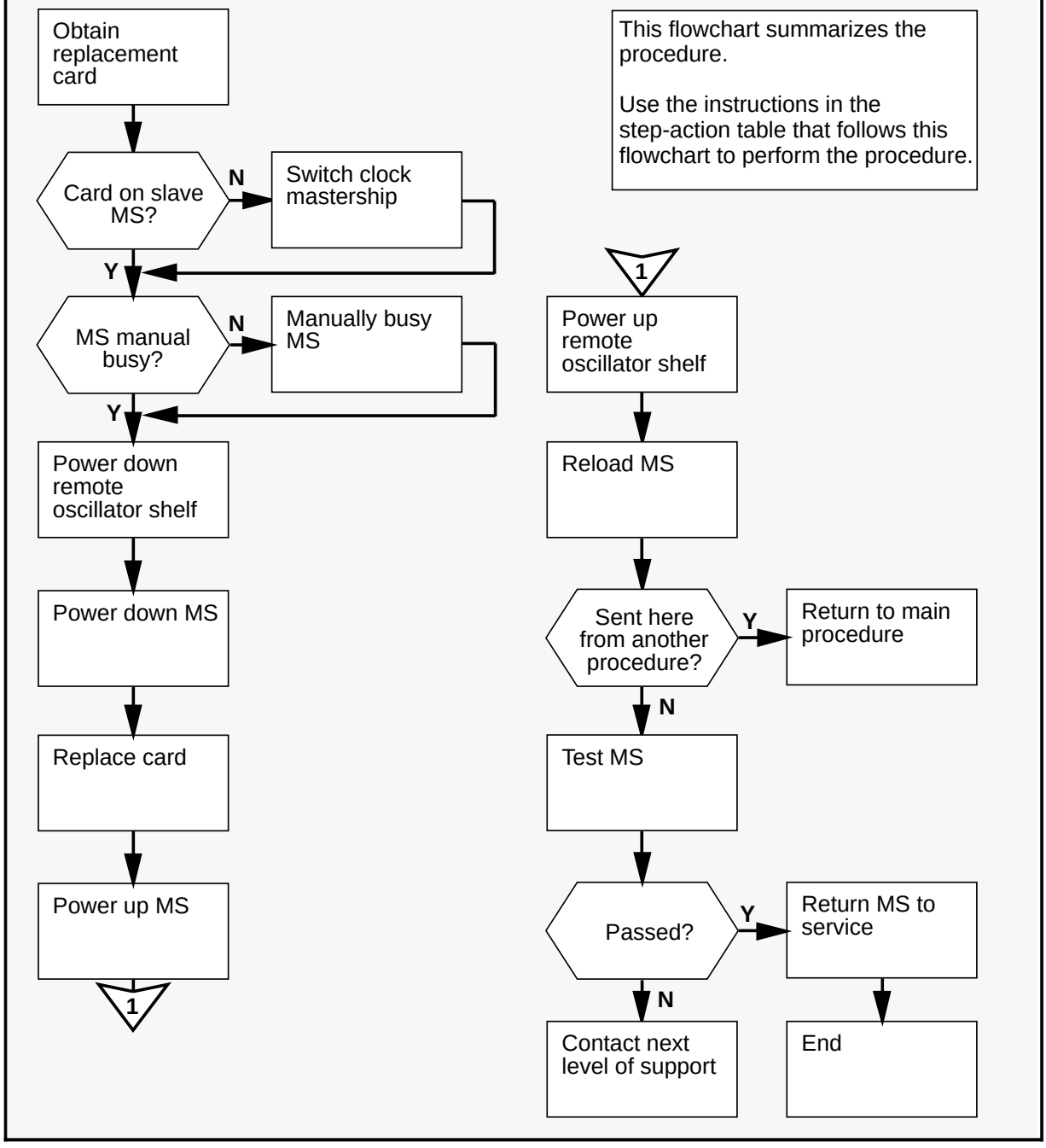
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

This following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT1X78 (continued)
in a remote oscillator shelf (continued)

Summary of Replacing an NT1X78 card in a remote oscillator shelf



NT1X78 (continued)
in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

3	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display.

If the message switch containing the card to be replaced is the	**Do**
slave MS, indicated by `Slave` under the Clock header	step 7
master MS, indicated by `Master` or `M Free` under the Clock header	step 4

-continued-

NT1X78 (continued)
in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action

4	Switch clock mastership by typing
	>SWMAST
	and pressing the Enter key.
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	If the SWMAST command — **Do**
	passed — step 6
	failed — step 5

5	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
6	Wait 10 min to ensure message switch (MS) stability, then continue with this procedure.
7	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 9 not `M` — step 8

-continued-

NT1X78 (continued) in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action

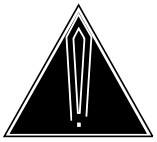
8	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the slave MS (0 or 1)
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`

If the response is	Do
`Request to MAN BUSY MS:0 passed`	step 9
`Request to MAN BUSY MS:1 passed`	step 9
anything else	step 28

-continued-

NT1X78 (continued)
in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action
At the MS shelf	
9	Determine which MS is the slave MS. **If the slave MS is** — **Do** MS 0 — step 10 MS 1 — step 11
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
10	Deactivate the interlock system between the MS and the ROS by powering down the slave MS as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 12.
11	Deactivate the interlock system between the MS and the ROS by powering down the slave MS as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

NT1X78 (continued)
in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action
At the ROS	
12	Power down the half of the ROS that includes the card to be replaced. ***Note:*** Slots 1 to 13 are associated with MS 0. Slots 14 to 26 are associated with MS 1. **If the power fail light on the converter** — **Do** lights — step 14 does not light — step 13
13	Disconnect the control cable from the back of the ROS plane you are working on. ***Note:*** Connector C00 corresponds to MS 0. Connector C01 corresponds to MS 1.
14	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
15	Power up the ROS that includes the card you replaced.
16	Determine if the control cable is connected to the back of the ROS you are working on. ***Note:*** Connector C00 corresponds to MS 0. Connector C01 corresponds to MS 1. **If the control cable is** — **Do** connected — step 18 not connected — step 17
17	Reconnect the control cable.

-continued-

NT1X78 (continued)
in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action
At the MS shelf	
18	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 19 MS 1 — step 20
19	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 21.
20	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	
21	Access the CI level of the MAP display by typing **>QUIT ALL** and pressing the Enter key.

22	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action

23	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 24
failed	step 28

Step	Action
24	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another MS maintenance procedure	step 27
anything else	step 25

-continued-

NT1X78 (continued)
in a remote oscillator shelf (continued)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action
	At the MAP

25	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`

If the TST command	Do
passed	step 26
failed	step 28

Step	Action

26	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 29
failed	step 28

Step	Action
27	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT1X78 (end)
in a remote oscillator shelf (end)

Replacing an NT1X78 card in a remote oscillator shelf (continued)

Step	Action
28	For further assistance, contact the personnel responsible for the next level of support.
29	You have completed this procedure.
	End

NT3X16
in a remote oscillator shelf

Application

Use this procedure to replace the following cards in a remote oscillator shelf (ROS).

PEC	Suffixes	Name
NT3X16	AA,	Stratum II oscillator and interface card
NT3X16	AB, BA, BB	Oscillator (DMS-core) and interface card

Common procedures

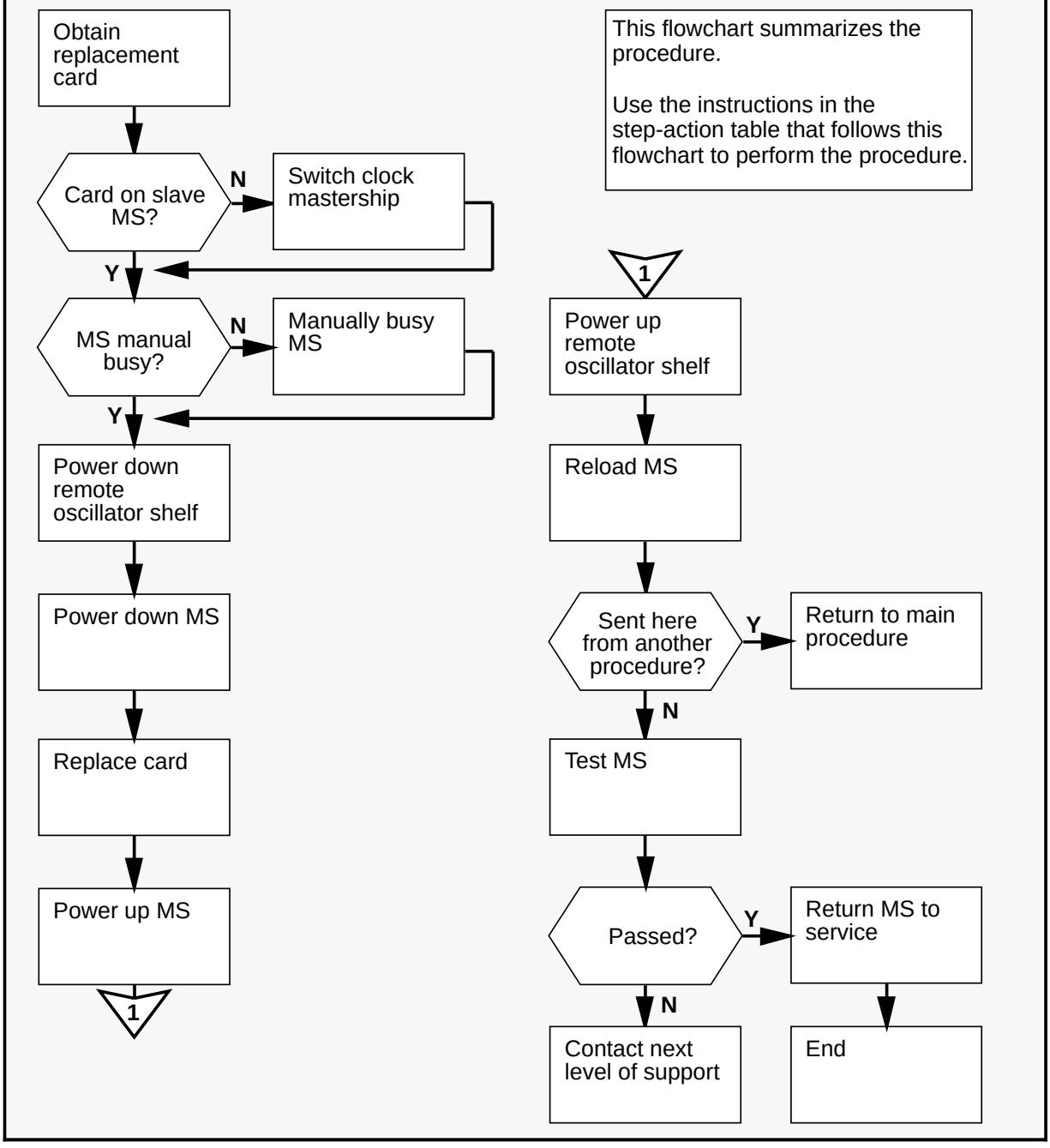
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT3X16 (continued)
in a remote oscillator shelf (continued)

Summary of Replacing an NT3X16 card in a remote oscillator shelf



NT3X16 (continued)
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

3	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display.

If the message switch containing the card to be replaced is the	**Do**
slave MS, indicated by the `Slave` under the Clock header	step 7
master MS, indicated by `Master` or `M Free` under the Clock header	step 4

-continued-

NT3X16 (continued)
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action

4	Switch clock mastership by typing
	>SWMAST
	and pressing the Enter key.
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	If the SWMAST command — **Do**
	passed — step 6
	failed — step 5

5	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
6	Wait 10 min to ensure message switch (MS) stability, then continue with this procedure.
7	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 9 not `M` — step 8

-continued-

NT3X16 (continued) in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action

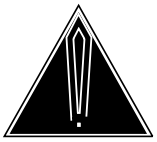
8	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`

If	Do
`Request to MAN BUSY MS:0 passed`	step 9
`Request to MAN BUSY MS:1 passed`	step 9
anything else	step 33

-continued-

NT3X16 (continued)
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action
At the MS shelf	
9	Determine which MS is the slave MS. **If the slave MS is** — **Do** MS 0 — step 10 MS 1 — step 11
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
10	Deactivate the interlock system between the MS and the ROS by powering down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 12.
11	Deactivate the interlock system between the MS and the ROS by powering down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

NT3X16 (continued)
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action
At the ROS	
12	Power down the half of the ROS that includes the card to be replaced. ***Note:*** Slots 1 to 13 are associated with MS 0. Slots 14 to 26 are associated with MS 1. **If the power fail light on the converter** — **Do** lights — step 14 does not light — step 13
13	Disconnect the control cable from the back of the ROS plane you are working on. ***Note:*** Connector C00 corresponds to MS 0. Connector C01 corresponds to MS 1.
14	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
15	Power up the ROS that includes the card you replaced. ***Note:*** Slots 14 to 26 are associated with MS 1. Slots 14 to 26 are associated with MS 1.
16	Determine if the control cable is connected to the back of the ROS plane you are working on. ***Note:*** Connector C00 corresponds to MS 0. Connector C01 corresponds to MS 1. **If the control cable is** — **Do** connected — step 18 not connected — step 17

-continued-

NT3X16 (continued)
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action
17	Reconnect the control cable.
At the MS shelf	
18	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 19 MS 1 — step 20
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
19	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 21.
20	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	
21	Access the CI level of the MAP display by typing **>QUIT ALL** and pressing the Enter key.

-continued-

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action

22	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`    Message Switch  Clock  Shelf 0  Inter-MS Link 0 1`
	`MS 0      .        M Free       .                R .`
	`MS 1      .        Slave        F                S .`

23	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 24
failed	step 33

Step	Action
24	Determine where the replacement card was stored before you installed it.

If the spare or replacement card was stored in	Do
the spares cabinet	step 25
a hot standby slot	step 32

-continued-

NT3X16 (continued)
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action
25	Determine if the NT3X16 card that was replaced was a stratum 2 or a stratum 2.5 clock by typing **>QUERYCK** and pressing the Enter key. **If the NT3X16 card is a** — **Do** stratum 2.0 clock — step 26 stratum 2.5 clock — step 27
26	For a stratum 2.0 clock, allow the new card to soak for 12 h before continuing. Go to step 28.
27	For a stratum 2.5 clock, allow the new card to soak for 1 h before continuing.
28	Determine the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** another maintenance procedure — step 32 anything else — step 29
At the MAP	
29	Access the MS level of the MAP display by typing **>MS** and pressing the Enter key.

-continued-

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action

30	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`

If the TST command	Do
passed	step 31
failed	step 33

Step	Action

31	Return the manual-busy MS to service by typing
	>RTS ms_number OOBAND
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 34
failed	step 33

Step	Action
32	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT3X16 (end)
in a remote oscillator shelf (end)

Replacing an NT3X16 in a remote oscillator shelf (continued)

Step	Action
33	For further assistance, contact the personnel responsible for the next level of support.
34	You have completed this procedure.
	End

NT9X10
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X10	AA	33-MHz 88000 BRISC CPU card

Common procedures

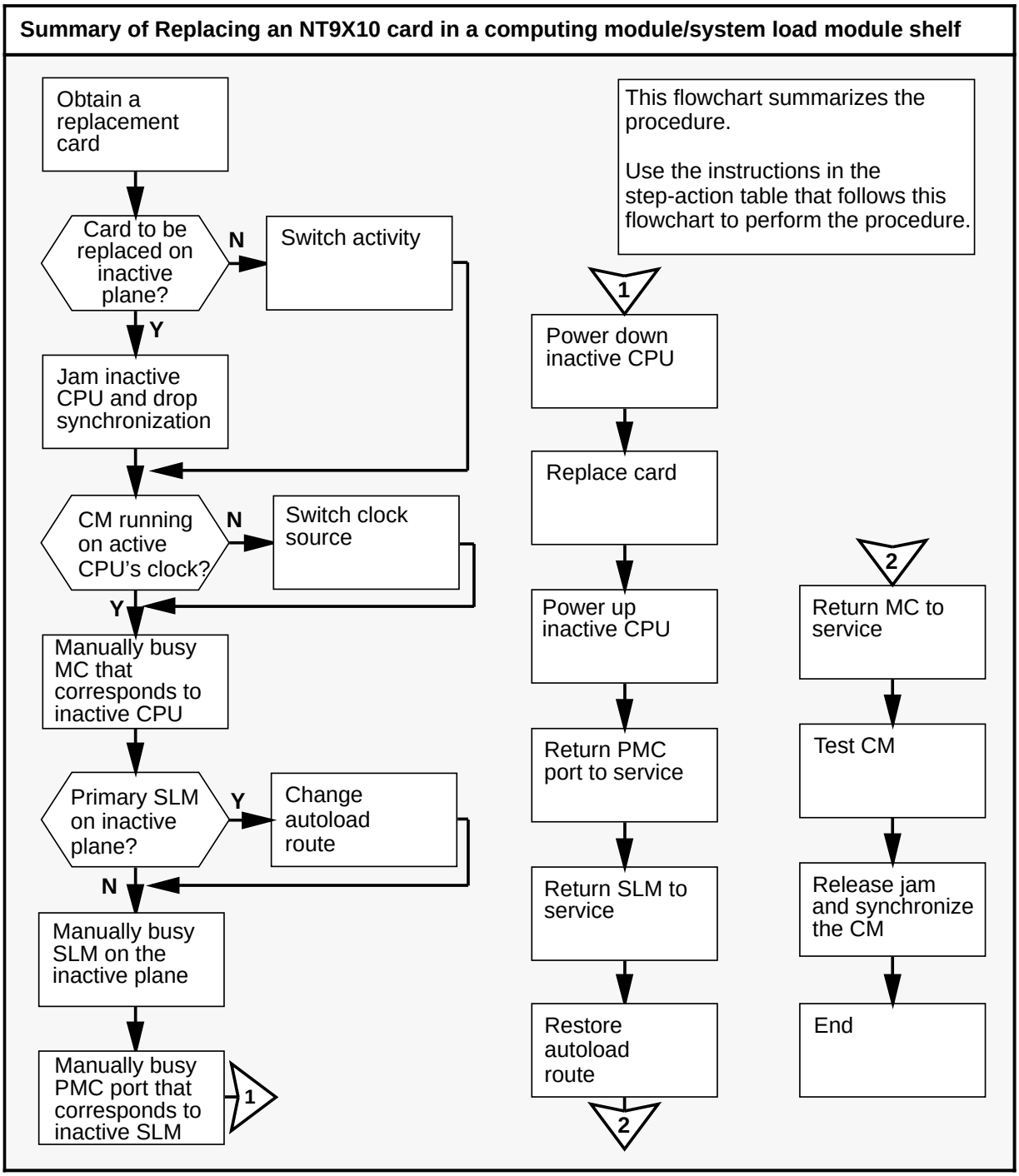
Activity switch with memory match, Switching the clock source, and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X10 card in a computing module/system load module shelf



Replacing an NT9X10 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Possible loss of data recording services** This procedure involves manually busying the system load module (SLM) that is on the same plane as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite plane from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 at the bottom of the face of the replacement card
	Example input:
	>CHECKREL CM NT9X10AA 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X10AA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP response, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 51

At the MAP	

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   .   cpu 1   .     .        .      .     .   .`

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is the active CPU or the inactive CPU. ***Note:*** The active CPU is shown under the Act header on the MAP display. In the example in step 6, the active CPU is CPU 1. **If the card is the** — **Do** inactive CPU — step 8 active CPU — step 15
8	Determine if the inactive CPU is jammed ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
	CAUTION **Possible loss of service** Do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
At the CM reset terminal for the inactive CPU	
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 13
`Drop synchronization failed`	step 51
`Aborted. Active CPU n has a faulty processor clock.`	step 51
anything else	step 51

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

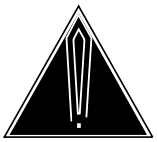
Step	Action
	At the CM reset terminal for the inactive CPU
14	Wait until A1 flashes on the reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 51

	At the MAP
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	 **CAUTION** **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the inactive side of the CM while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To run the CM on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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 test restart type =  WARM`
	`Last CM REXTST executed`
	`System memory in kbytes as of  14:39:07`
	`Memory (kbytes): Used = 105984 Avail =  12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the same plane as the active CPU or the inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

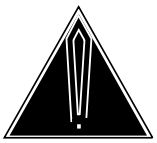
Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the active CPU (0 or 1) device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing 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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	Do
passed	step 24
failed	step 51

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: .`
	`PORT1: .`

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (0 or 1)
	port_number is the number of the inactive CPU (0 or 1)
	Note: The PMC number is shown to the right of the PMC header on the MAP dispay.
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`MC 0 MC 1`
	`. .`
	Note: In the example, dots under the MC headers mean that the associated MCs are in service.

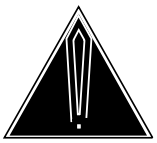
27	Determine the state of the message controller (MC) on the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy.

If the state of the MC is	Do
`mbsy`	step 29
not `mbsy`	step 28

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Do not manually busy the MC that corresponds to the active CPU. Powering down the plane with the active MC busied causes a warm restart.

28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_ number
	and pressing 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 29
did not busy	step 51

At the CM/SLM shelf

	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU plane by pressing down and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
31	Power up the inactive CPU plane by lifting and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
At the CM reset terminal for the inactive CPU	

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Testing Memory:`
	`Shelf  Slot  PEC  Module Status`
	`00  15  NT9X14EA  ...`
	`00  16  NT9X14EA  ...`
	`Waiting for activity...`

33	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 41
At the MAP	
34	Access the PMC level of the MAP display by typing **>CM;PMC** and pressing the Enter key.

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action

35	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the manual-busy SLM by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that was manually busied in step 23
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 return to service passed.`
38	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 41
39	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
40	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that originally was the primary SLM device_type is the type of SLM device (DISK or TAPE)
41	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** an MC Tbl alarm — step 50 a PMCFlt alarm — step 50 a PMCTbl alarm — step 50 a NoTOD alarm — step 50 an SBsyMC alarm — step 50 an MBsyMC alarm — step 50 a CBsyMC alarm — step 50 anything else — step 42
At the MAP	
42	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action

43	Return the manual-busy MC to service by typing
	>RTS mc_ number
	and pressing the Enter key.
	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 44
	failed — step 51

44	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** a CM alarm clearing procedure — step 50 anything else — step 45
45	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action

46	Test the inactive CPU by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

47	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 48
failed	step 51
anything else	step 51

At the CM reset terminal for the inactive CPU	
48	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

NT9X10 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

49	Synchronize the CPUs by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 52
the SYNC command failed	step 51
`Inactive CPU configuration does not support burst mode operation.`	step 51
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 51
anything else	step 51

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

-continued-

NT9X10 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X10 card in a computing module/system load module shelf (continued)

Step	Action
51	For further assistance, contact the personnel responsible for the next level of support.
52	You have completed this procedure.
	End

NT9X12
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffix	Name
NT9X12	AC	CPU port card

Common procedures

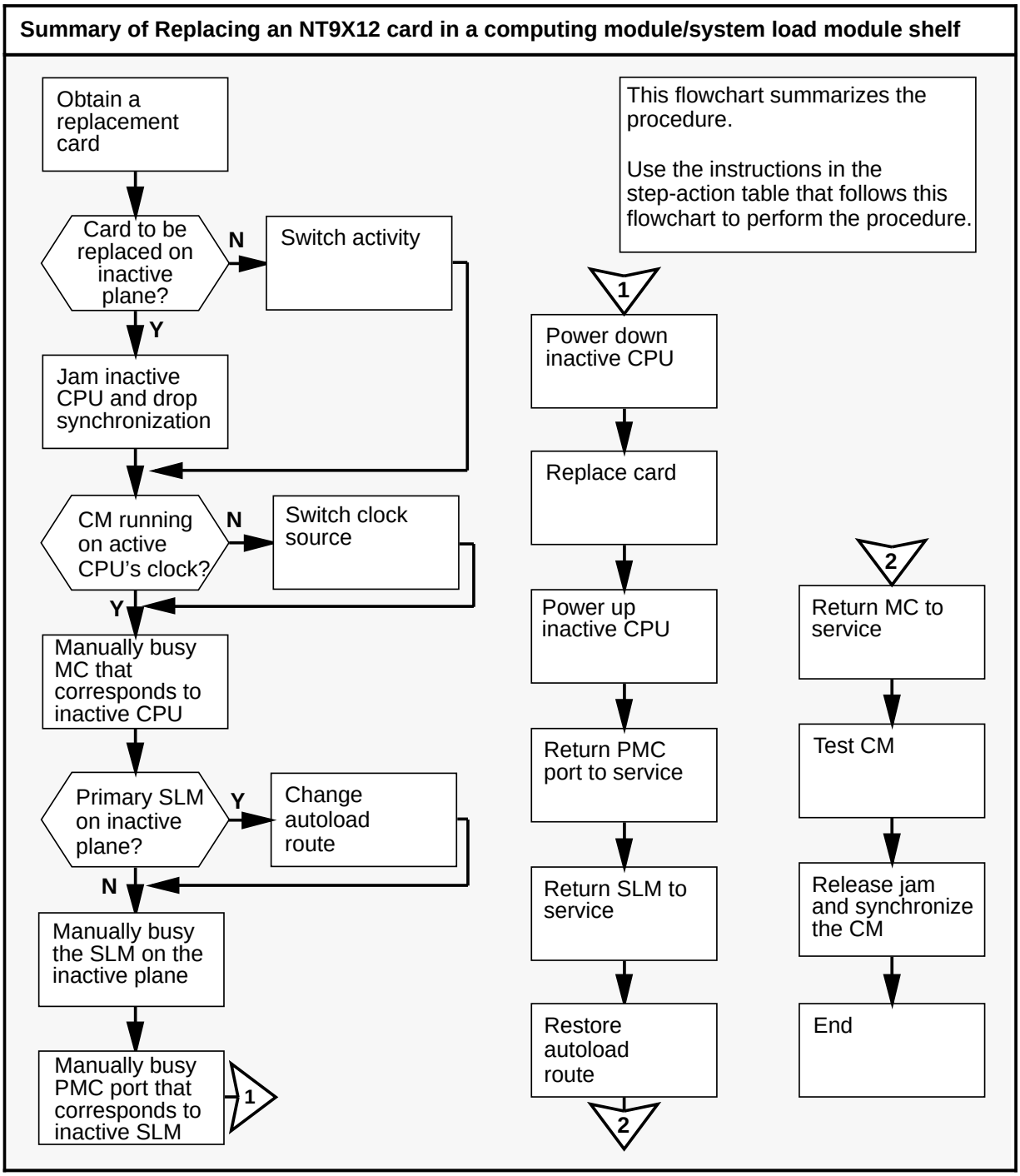
Activity switch with memory match, *Replacing a SuperNode SE card*, and *Switching the clock source* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X12 card in a computing module/system load module shelf



Replacing an NT9X12 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Possible loss of data recording services** This procedure involves manually busying the system load module (SLM) that is on the same plane as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite plane from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 at the bottom of the face of the replacement card
	Example input:
	>CHECKREL CM NT9X12AC 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X12AC 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP response, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 51

At the MAP	

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   .   cpu 1   .     .        .      .     .   .`

-continued-

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is on the active or the inactive side of the CM. ***Note:*** The active CPU is shown under the Act header of the MAP display. In the example in step 6, the active CPU is CPU 1. **If the card is on the** — **Do** inactive side — step 8 active side — step 15
8	Determine if the inactive CPU is jammed ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 13
`Drop synchronization failed`	step 51
`Aborted. Active CPU n has a faulty processor clock.`	step 51
anything else	step 51

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
14	Wait until A1 flashes on the reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 16 does not flash — step 51
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	CAUTION **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the inactive side of the CM while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To run the CM on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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 test restart type =  WARM`
	`Last CM REXTST executed`
	`System memory in kbytes as of  14:39:07`
	`Memory (kbytes): Used = 105984 Avail =  12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the same plane as the active or the inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

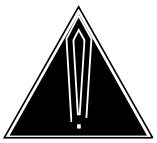
Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the active CPU (0 or 1) device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing 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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	Do
passed	step 24
failed	step 51

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the inactive CPU (0 or 1)
	Note: The PMC number is shown to the right of the PMC header on the MAP dispay.
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`MC 0 MC 1`
	`. .`
	Note: Dots under the MC headers mean that the associated MCs are in service.

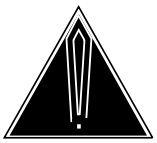
27	Determine the state of the message controller (MC) on the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy.

If the MC is	Do
`mbsy`	step 29
not `mbsy`	step 28

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Do not manually busy the MC that corresponds to the active CPU. Powering down the plane with the active MC busied causes a warm restart.

28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_ number
	and pressing the Enter key.
	where
	mc_number is the number of the MC on the inactive side (0 or 1)
	Note: The PMC number is shown to the right of the PMC heasder on the MAP display.
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`

If the MC	Do
busied	step 29
did not busy	step 51

-continued-

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM/SLM shelf
	WARNING **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU plane by pressing down and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
31	Power up the inactive CPU plane by lifting and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
	At the CM reset terminal for the inactive CPU

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Testing Memory:`
	`Shelf  Slot  PEC  Module Status`
	`00  15  NT9X14EA  ...`
	`00  16  NT9X14EA  ...`
	`Waiting for activity...`

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
33	Determine if the inactive CPU powered up successfully. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 51
At the MAP	
34	Access the PMC level of the MAP display by typing **>CM;PMC** and pressing the Enter key.

35	Return the manual-busy PMC port to service by typing
	
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the manual-busy SLM by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that was manually busied in step 23

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 return to service passed.`
38	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 41
39	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.
40	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number — is the number of the SLM (0 or 1) that was originally the primary SLM device_type — is the type of SLM device (DISK or TAPE)

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action	
41	Your next step depends on the reason for performing this procedure.	
	If you are performing this procedure as a result of	**Do**
	an MC Tbl alarm	step 50
	a PMCFlt alarm	step 50
	a PMCTbl alarm	step 50
	a NoTOD alarm	step 50
	an SBsyMC alarm	step 50
	an MBsyMC alarm	step 50
	a CBsyMC alarm	step 50
	anything else	step 42
At the MAP		
42	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.	

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action

43	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 44
failed	step 51

Step	Action
44	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 50
anything else	step 45

Step	Action
45	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X12 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action

46	Test the inactive CPU by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

47	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 48
failed	step 51
anything else	step 51

At the CM reset terminal for the inactive CPU

48	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

49	Synchronize the CPUs by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 52
the SYNC command failed	step 51
`Inactive CPU configuration does not support burst mode operation.`	step 51
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 51
anything else	step 51

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

-continued-

NT9X12 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X12 card in a computing module/system load module shelf (continued)

Step	Action
51	For further assistance, contact the personnel responsible for the next level of support.
52	You have completed this procedure.
	End

NT9X13
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X13	MA, MB	SuperNode SE core CM processor card

Common procedures

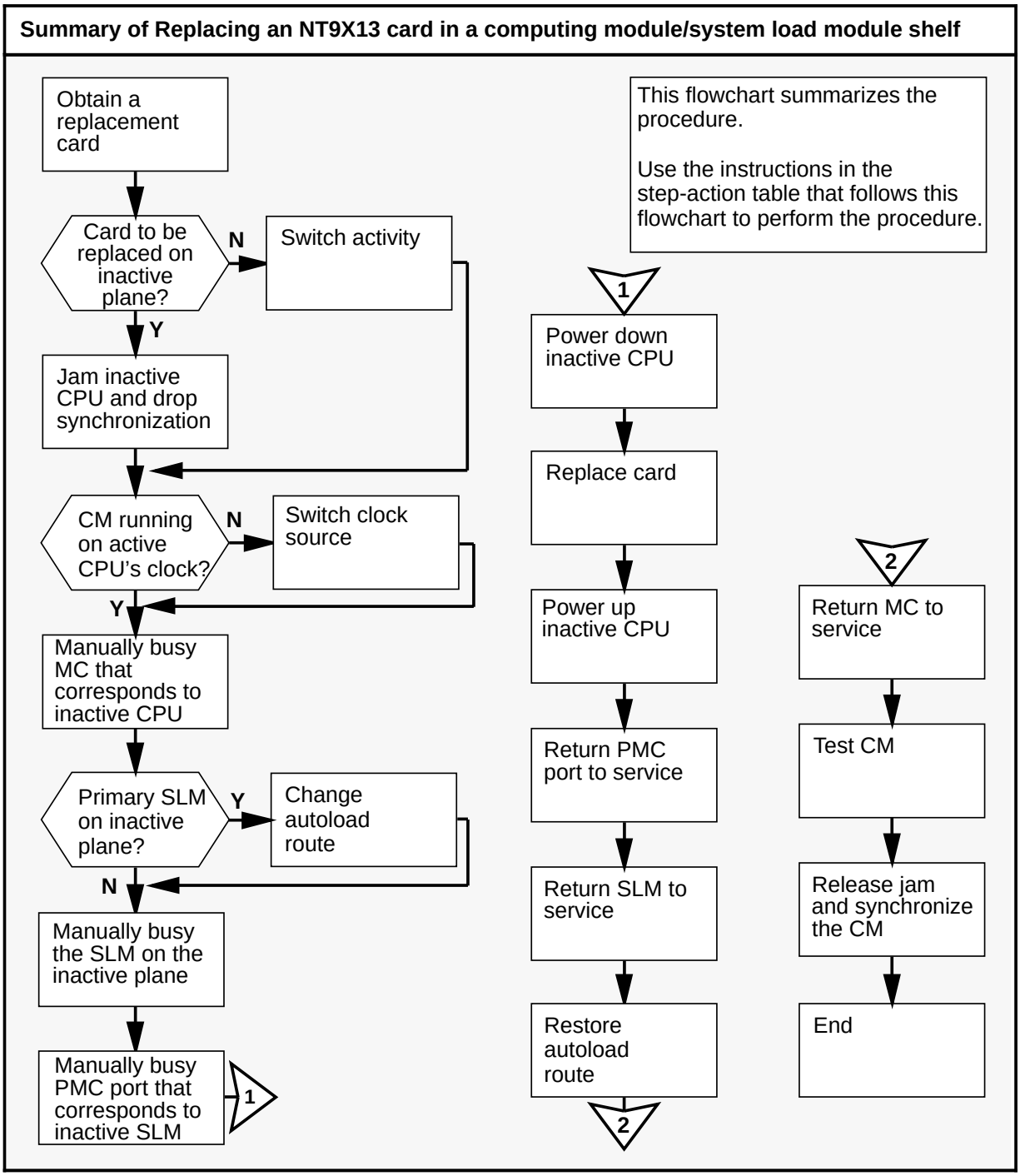
Activity switch with memory match, *Switching the clock source*, and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X13 card in a computing module/system load module shelf



NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Loss of data recording services** This procedure involves busying the system load module (SLM) that is on the same side of the switch as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite side of the switch from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 face of the replacement card
	Example input:
	>CHECKREL CM NT9X13MA 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X13MA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	**Do**
compatible	step 6
not compatible	step 3

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP response, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 51

At the MAP	

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   no  cpu 1   .     .  yes   .      .     .   .`

-continued-

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is the active CPU or theinactive CPU. ***Note:*** In the example in step 6, the active CPU is CPU 1. **If the card is the** — **Do** inactive CPU — step 8 active CPU — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM (YES/NO)`

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 13
`Drop synchronization failed.`	step 51
`Aborted. Active CPU n has a faulty processor clock.`	step 51
anything else	step 51

13	Confirm the command by typing **>YES** and pressing the Enter key.
At the CM reset terminal for the inactive CPU	
14	Wait until A1 flashes on the reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 51

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.
At the MAP	
	CAUTION **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the inactive side of the CM while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing the Enter key.
	Example of a MAP response:
	`CPU pair is NOT in sync, CPU 0 is active.`
	`CM is running on active CPU clock.`
	
	`Memory Error Correction is ENABLED.`
	
	`The Inactive CPU IS Jammed.`

If the CM is running on the	Do
inactive clock	step 17
active clock	step 18

17	To run the CM on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing the Enter key.
	Example of a MAP response:
	`CM  Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC`
	`0  .  cpu 0  .  .  .  .  .  .`
	`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 test restart type = RELOAD`
	`Last CMREXTST executed`
	`System memory in kbytes as of 14:39:07`
	`Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example shown in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the same plane as the active or the inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

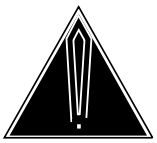
NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number — is the number of the SLM (0 or 1) that is on the same plane as the active CPU device_type — is the type of SLM device (DISK or TAPE)
22	Access the SLM corresponding to the inactive CPU by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number — is the number of the SLM (0 or 1) that is on the same plane as the inactive CPU *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 user SYSTEM ***Note:*** Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing the SLM on the inactive side of the switch from service. Before you busy the SLM, ensure that the data recording services provided by the SLM on the inactive side of the switch will be assumed by the SLM on the active side of the switch.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.`

If the BSY command	Do
passed	step 24
failed	step 51

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the port (0 or 1) on the inactive plane
	Note: The PMC number is shown to the right of the PMC header on the MAP dispay.
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

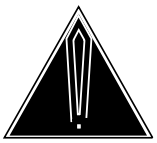
26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`MC 0 MC 1`
	`mbsy .`

27	Determine the state of the message controller (MC) on the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy.

If the MC is	**Do**
`mbsy`	step 29
not `mbsy`	step 28

-continued-

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you busy the MC that corresponds to the inactive CPU. Powering down the plane with the wrong MC busied results in a warm restart.

28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_number
	and pressing the Enter key.
	where
	mc_number is the number of the MC (0 or 1) on the inactive plane
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`

If the MC	Do
busied	step 29
did not busy	step 51

At the CM/SLM shelf

	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU by pressing down and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slot 33F through 35F.

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
31	Power up the inactive CPU by lifting and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
At the CM reset terminal for the inactive CPU	

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Shelf Slot`
	`00 12 NT9X14DB ...`
	`00 13 NT9X14DB ...`
	`Waiting for activity.....`

33	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 41
At the MAP	
34	Access the PMC level of the MAP display by typing **>CM;PMC** and pressing the Enter key.

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action

35	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the PMC number (0 or 1)
	port_number is the number of the port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the SLM that you manually busied in step 23 by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the manual-busy SLM (0 or 1)
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 returned to service passed.`
38	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 51
39	Access the CMMNT level of the MAP display by typing **>CMMNT** and pressing the Enter key.

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
40	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) device_type is the type of SLM device (DISK or TAPE)
41	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** an MC Tbl alarm — step 50 a PMCFlt alarm — step 50 a PMCTbl alarm — step 50 a NoTOD alarm — step 50 an SBsyMC alarm — step 50 an MBsyMC alarm — step 50 a CBsyMC alarm — step 50 anything else — step 42
At the MAP	
42	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action

43	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 44
failed	step 51

Step	Action
44	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 50
anything else	step 45

Step	Action
45	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X13 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action

46	Test the CM by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

47	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 48
failed	step 51
anything else	step 51

At the CM reset terminal for the inactive CPU

48	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

49	Synchronize the CM by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 52
the SYNC command failed	step 51
`Inactive CPU configuration does not support burst mode operation.`	step 51
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 51
anything else	step 51

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

-continued-

NT9X13 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X13 card in a computing module/system load module shelf (continued)

Step	Action
51	For further assistance contact the personnel responsible for the next level of support.
52	You have completed this procedure.
	End

NT9X13
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X13	NA	CPU card

Common procedures

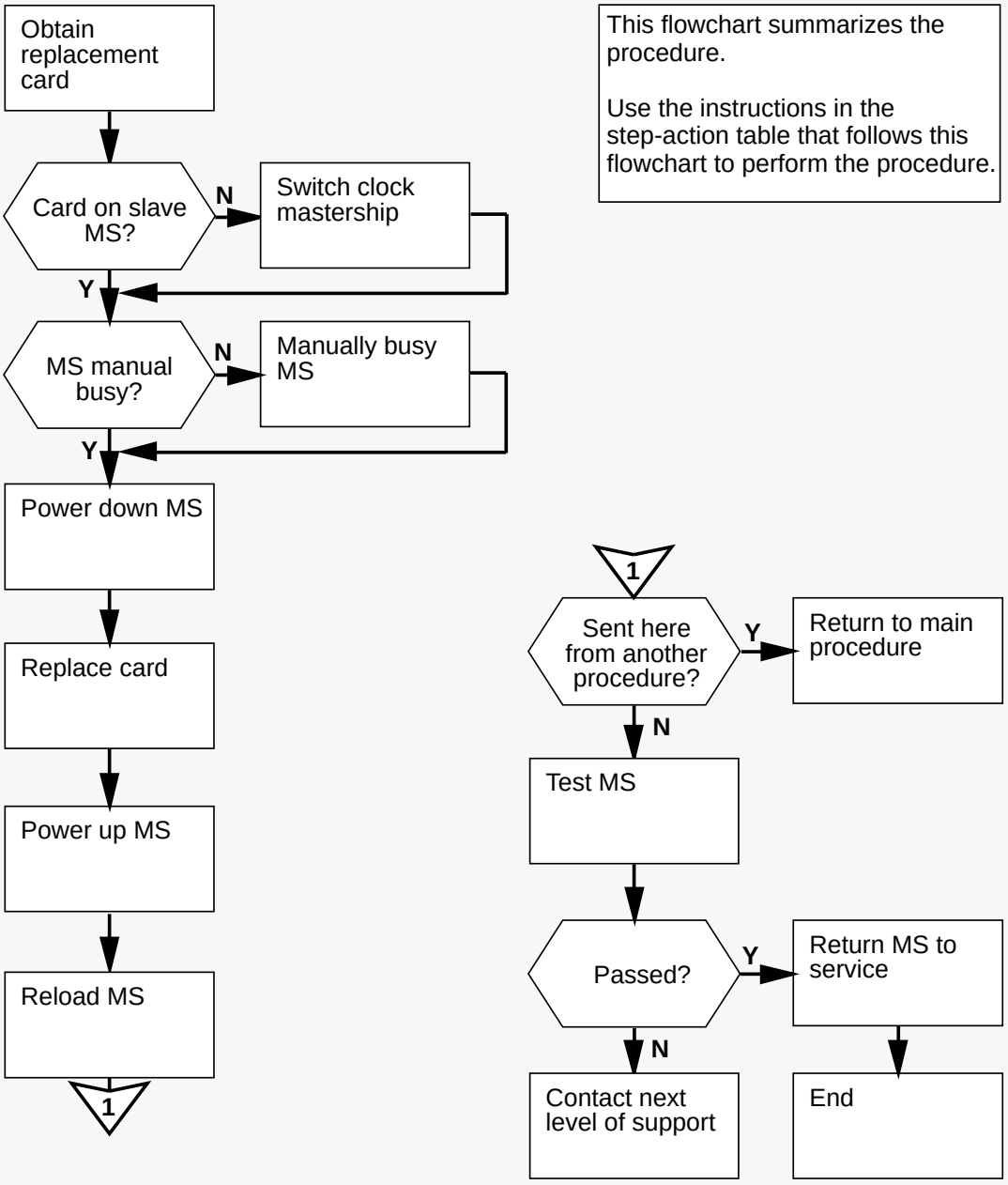
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X13 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X13 card in a message switch shelf



NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X13NA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X13NA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you are	Do
able to obtain a compatible replacement card	step 2
unable to obtain a compatible replacement card	step 29

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC:MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display.

If the MS containing the card to be replaced is the	Do
slave MS, indicated by `Slave` under the Clock header	step 11
master MS, indicated by `Master` or `M Free` under the Clock header	step 8

Step	Action

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`

If the SWMAST command	Do
passed	step 10
failed	step 9

Step	Action
9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.

-continued-

NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action
10	Wait 10 min to ensure MS stability, then continue with this procedure.
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy.

If the MS is	Do
not `M`	step 12
`M`	step 13

-continued-

NT9X13 (continued) in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action

12	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the slave MS (0 or 1)
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`

If the response is	Do
`Request to MAN BUSY MS:0 passed`	step 13
`Request to MAN BUSY MS:1 passed`	step 13
anything else	step 29

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

-continued-

NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action

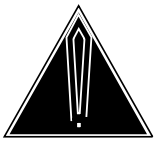
14	Translate the location of card 3 by typing
	>TRNSL ms_number 3
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0: 3 22 9X13NA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0: 3 22 9X26AB BACK`
	`No resources to translate on card 3.`

15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 21 MS 1 — step 22

-continued-

NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

23	Access the MS level of the MAP display by typing
	>MAPCI;MTC:MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action

24	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 25
failed	step 29

Step	Action
25	Determine the reason for performing this procedure.

If you are performing this procedure	Do
as a result of another maintenance procedure	step 28
anything else	step 26

-continued-

NT9X13 (continued)
in a message switch shelf (continued)

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action

26	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 27
failed	step 29

Step	Action

27	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 30
failed	step 29

Step	Action
28	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

Replacing an NT9X13 card in a message switch shelf (continued)

Step	Action
29	For further assistance, contact the personnel responsible for the next level of support.
30	You have completed this procedure.
	End

NT9X14
in a computing module/system load module shelf

Application

Use this procedure to replace the following cards in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X14	DB	24-Mbyte memory card
NT9X14	EA	96-Mbyte memory card

Common procedures

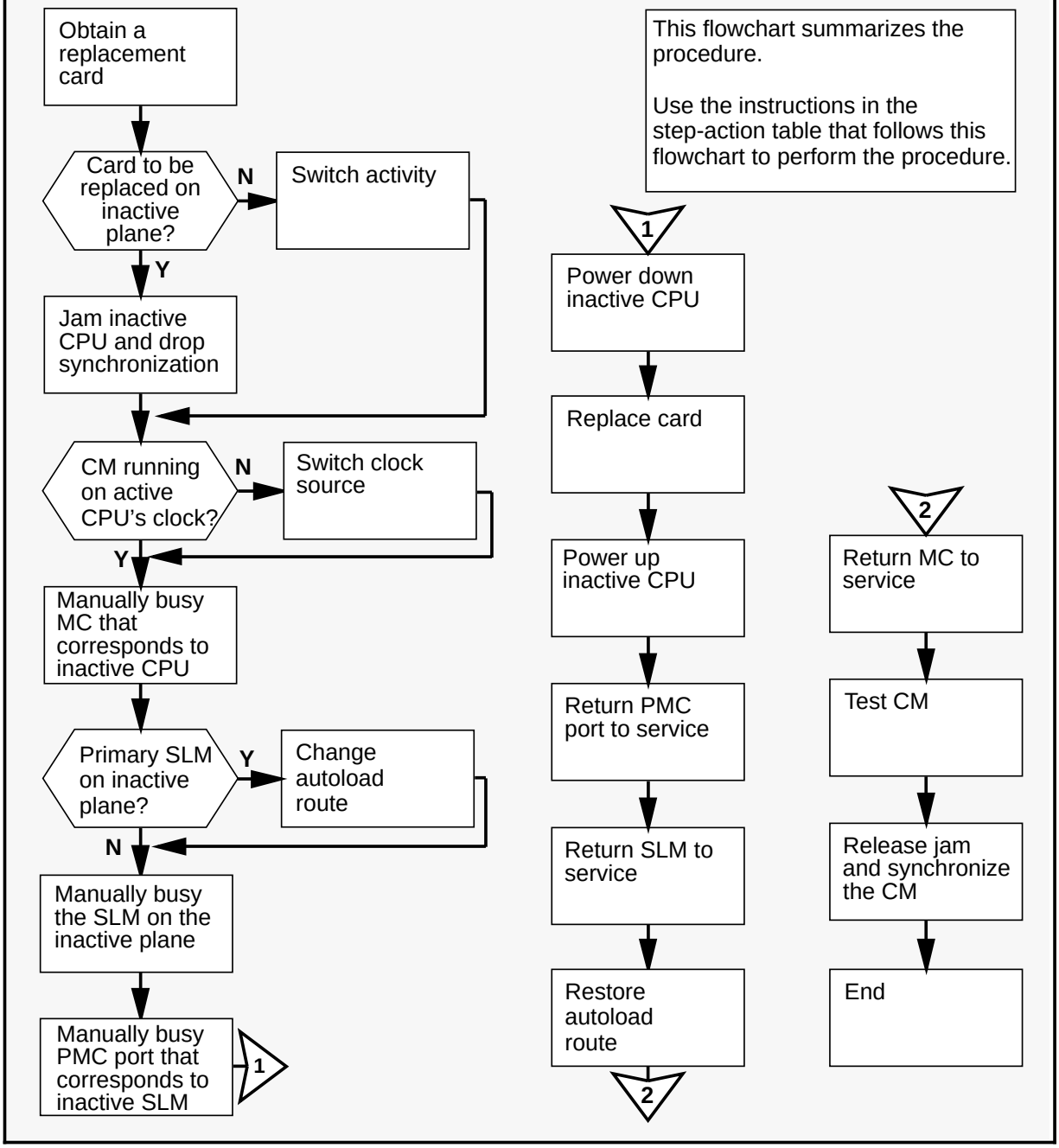
Activity switch with memory match, *Switching the clock source*, and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X14 card in a computing module/system load module shelf



Replacing an NT9X14 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Loss of data recording services** This procedure involves busying the system load module (SLM) that is on the same side of the switch as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite side of the switch from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 face of the replacement card
	Example input:
	>CHECKREL CM NT9X14DB 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X14DB 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP response, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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. **If you** — **Do** can obtain a compatible replacement card — step 2 cannot obtain a compatible replacement card — step 53

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`0   no  cpu 1   .     .  yes   .      .     .   .`

-continued-

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is on the same side as the active or the inactive CPU as indicated on the MAP display. ***Note:*** The active CPU is shown under the Act header of the MAP display. In the example in step 6, the active CPU is CPU 1. **If the card is on the** — **Do** inactive side — step 8 active side — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM (YES/NO)`

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 13
`Drop synchronization failed.`	step 53
`Aborted. Active CPU n has a faulty processor clock.`	step 53
anything else	step 53

13	Confirm the command by typing **>YES** and pressing the Enter key.
At the CM reset terminal for the inactive CPU	
14	Wait until A1 flashes on the reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 53

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.
At the MAP	
	CAUTION **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To run the CM on the active CPU's clock perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing the Enter key.
	Example of a MAP response:
	`CM  Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC`
	`0  .  cpu 0  .  .  .  .  .  .`
	`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 test restart type = RELOAD`
	`Last CMREXTST executed`
	`System memory in kbytes as of 14:39:07`
	`Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the same plane as the active or inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that is on the same plane as the active CPU device_type is the type of SLM device (DISK or TAPE)
22	Access the SLM corresponding to the inactive CPU by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) on the inactive plane
	CAUTION **Possible loss of data recording services** The following step involves removing the SLM on the inactive side of the switch from service. Before you busy the SLM, ensure that the data recording services provided by the SLM on the inactive side of the switch will be assumed by the SLM on the active side of the switch.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.`

If the BSY command	Do
passed	step 24
failed	step 53

-continued-

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

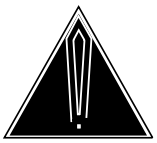
25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the port (0 or 1) on the inactive plane
	Note: The PMC number is shown to the right of the PMC header on the MAP dispay.
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`MC 0 MC 1`
	`mbsy .`

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
27	Determine the state of the message controller (MC) on the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy. **If the MC is** — **Do** `mbsy` — step 29 not `mbsy` — step 28
	 **CAUTION** **Possible loss of service** Ensure that you busy the MC that corresponds to the inactive CPU. Powering down the plane with the wrong MC busied causes a warm restart.

28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_number
	and pressing the Enter key.
	
	where
	mc_number is the number of the MC (0 or 1) on the inactive plane
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`
	
	If the MC — **Do**
	busied — step 29
	did not busy — step 53

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM/SLM shelf
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU by pressing down and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
31	Power up the inactive CPU by lifting and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
	At the CM reset terminal for the inactive CPU

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Shelf  Slot`
	`00  12  NT9X14DB...`
	`00  13  NT9X14DB...`
	`Waiting for activity...`

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
33	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 53
At the MAP	
34	Access the PMC level of the MAP display by typing **>CM;PMC** and pressing the Enter key.

35	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the manual-busy SLM by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1)

-continued-

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 returned to service passed.`
38	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 41
39	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.
40	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) device_type is the type of SLM device (DISK or TAPE)

41	Access the Memory level of the MAP display by typing
	>MEMORY
	and pressing the Enter key.
	Example of a MAP display:
	`CM 0`
	`Card 12345`
	`Plane 0 .....`
	`Plane 1 .....`

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
42	Test the card that was replaced by typing **>TST CARD card_number** and pressing the Enter key. *where* card_number is the number of the memory card (0 to 5) that was replaced

If the TST command	Do
passed	step 43
failed	step 53

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

If you are performing this procedure as a result of	Do
an MC Tbl alarm	step 52
a PMC Flt alarm	step 52
a PMC Tbl alarm	step 52
a NoTOD alarm	step 52
an SBsyMC alarm	step 52
an MBsy MC alarm	step 52
a CBsyMC alarm	step 52
anything else	step 44

44 Access the MC level of the MAP display by typing

>CM;MC

and pressing the Enter key.

-continued-

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action

45	Return the manual-busy MC to service by typing
	>RTS mc_ number
	and pressing the Enter key.
	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 46
failed	step 53

Step	Action
46	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 52
anything else	step 47

Step	Action
47	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action

48	Test the CM by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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"):`

49	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 50
failed	step 53
anything else	step 53

At the CM reset terminal for the inactive CPU

50	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

NT9X14 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

51	Synchronize the CM by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 54
the SYNC command failed	step 53
`Inactive CPU configuration does not support burst mode operation.`	step 53
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 53
anything else	step 53

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

-continued-

NT9X14 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X14 card in a computing module/system load module shelf (continued)

Step	Action
53	For further assistance, contact the personnel responsible for the next level of support.
54	You have completed this procedure.
	End

NT9X15
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X15	AA	Mapper card

Common procedures

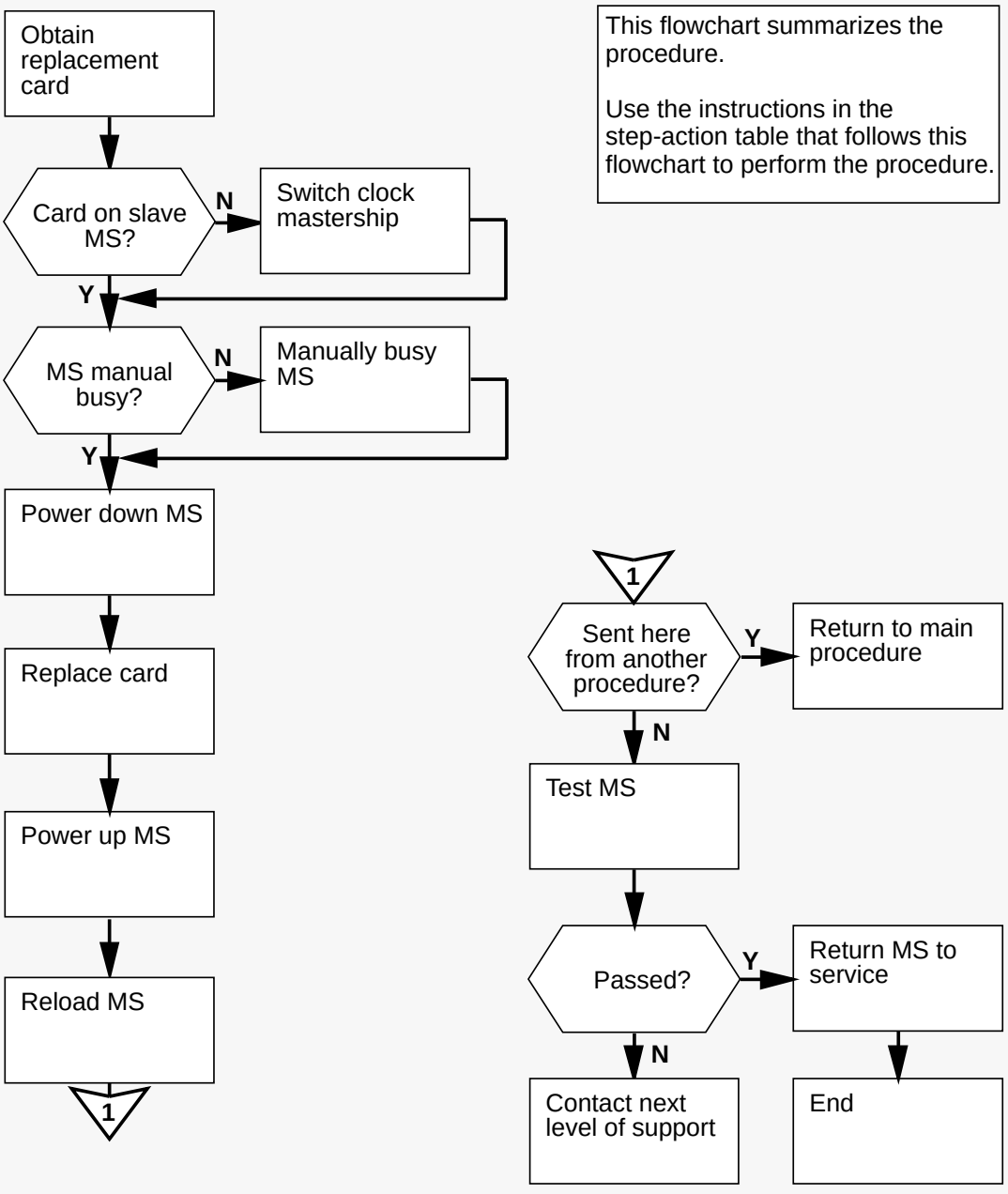
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X15 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X15 card in a message switch shelf



NT9X15 (continued)
in a message switch shelf (continued)

Replacing an NT9X15 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X15AA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X15AA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X15 (continued)
in a message switch shelf (continued)

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 29

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X15 (continued) in a message switch shelf (continued)

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by the `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X15 (continued)
in a message switch shelf (continued)

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 29

-continued-

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . . .F .`
	`MS 1 . . . . . .`

14	Translate the location of card 11 by typing
	>TRNSL ms_number 11
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:12 30 9X15AA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:12 30 BACK`
	`No resources to translate on card 11.`

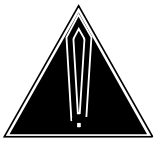
15	Record the location, description, slot number and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X15 (continued)
in a message switch shelf (continued)

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 21 MS 1 — step 22

-continued-

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

23	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X15 (continued)
in a message switch shelf (continued)

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action

24	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	**Do**
passed	step 25
failed	step 29

Step	**Action**
25	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	**Do**
another maintenance procedure	step 28
anything else	step 26

-continued-

Replacing an NT9X15 card in a message switch shelf (continued)

Step	Action

26	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 27
failed	step 29

Step	Action

27	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 30
failed	step 29

Step	Action
28	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT9X15 (end)
in a message switch shelf (end)

Replacing an NT9X15 card in a message switch shelf (continued)	
Step	**Action**
29	For further assistance, contact the personnel responsible for the next level of support.
30	You have completed this procedure.
	End

NT9X17
in a message switch shelf

Application

Use this procedure to replace the following cards in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X17	AD	Message switch four-port card
NT9X17	BB	DMS-bus 32-port card
NT9X17	DA	Message switch 64-port card

Common procedures

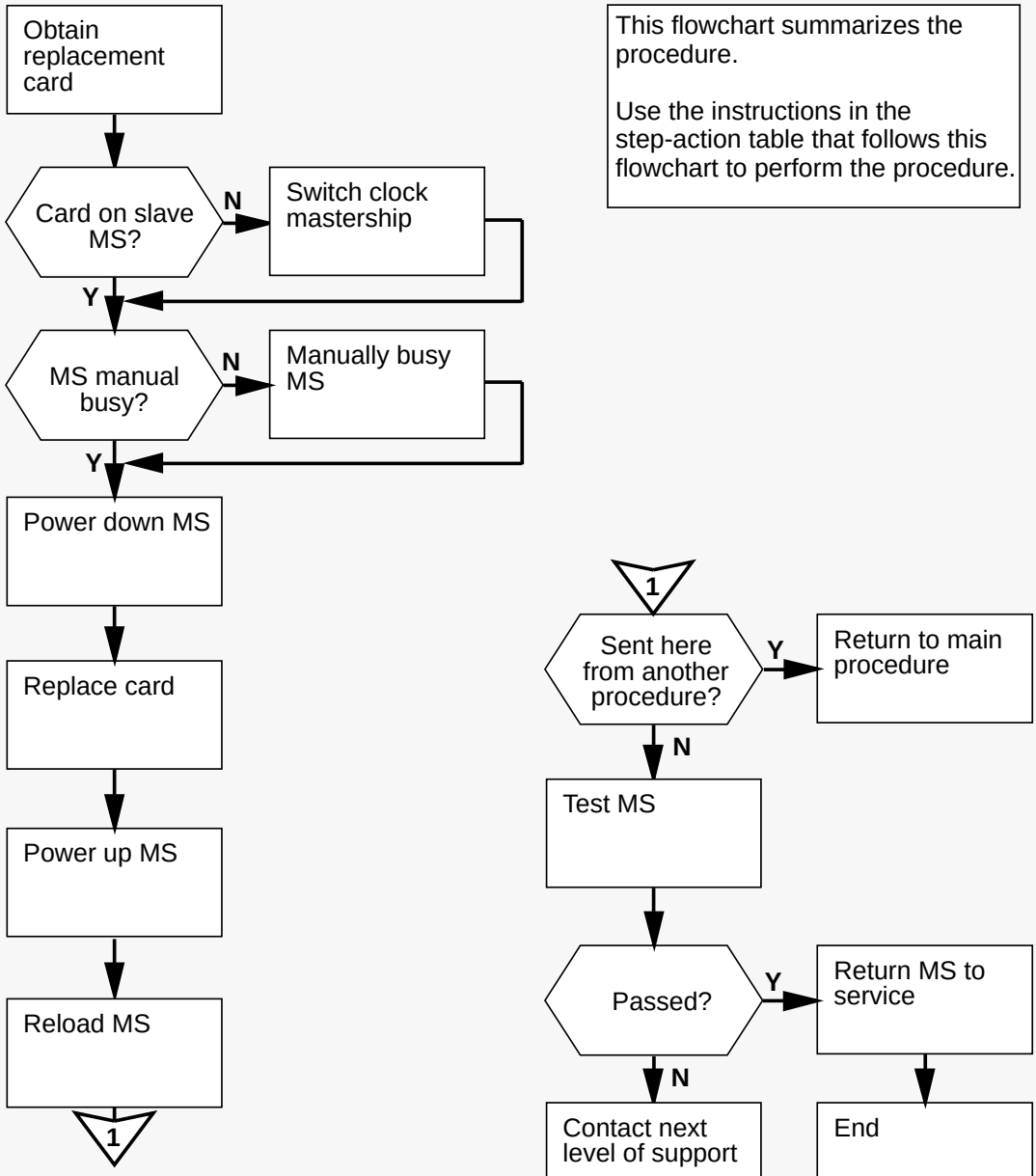
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X17 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X17 card in a message switch shelf



NT9X17 (continued) in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X17DA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X17DA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X17 (continued)
in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
can obtain a compatible replacement card	step 32

At the MAP

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X17 (continued)
in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X17 (continued)
in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	
	`Request to MAN BUSY MS:0 passed` — step 13
	
	`Request to MAN BUSY MS:1 passed` — step 13
	
	anything else — step 32

-continued-

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

14	Translate the location of the card to be replaced by typing
	>TRNSL ms_number card_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	card_number is the number of the card to be replaced (5 to 10)
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0: 4 23 9X17AC FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0: 4 23 9X62BA BACK`
	`No resources to translate on card 4.`

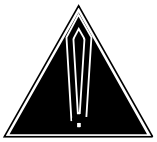
15	Record the location, description, slot number, and the product engineering code, including suffix, of the card being replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 6.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X17 (continued)
in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 21 MS 1 — step 22

-continued-

NT9X17 (continued) in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
23	Determine the suffix of the NT9X17 card you replaced.

If the suffix is	**Do**
AD or BB	step 26
DA	step 24

At the MAP	
24	Access the Shelf level of the MAP display by typing **>SHELF shelf_number** and pressing the enter key. *where* shelf_number is the number of the shelf (0 to 3)

-continued-

NT9X17 (continued)
in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
25	Load the correct firmware into the replacement card by typing **>LOADCD ms_number card_number1 FROMCD card_number2** and pressing the Enter key. *where* ms_number is the number of the MS (0 or 1) containing the card you replaced card_number1 is the number of the card you are loading into card_number2 is the number of the card you are loading from ***Note:*** Both cards must reside in the same MS, and card_number2 must also be an NT9X17DA card.

26	Access the MS level of the MAP display by typing
	> MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

27	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 28
failed	step 32

-continued-

NT9X17 (continued)
in a message switch shelf (continued)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action
28	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 31
anything else	step 29

29 Perform an out-of-service test on the manual-busy MS by typing

>TST ms_number
and pressing the Enter key.

where
ms_number is the number of the manual-busy MS (0 or 1)

Example of a MAP response:

```
Request to TEST OOS MS: 0 submitted.
Request to TEST OOS MS: 0 passed.
No node faults were found on MS 0.
No cards were found to be faulty on MS0.
Request to TEST VIA MATE MS: 0 submitted.
Request to TEST VIA MATE MS: 0 passed.
No node faults were found on MS 0.
No cards were found to be faulty on MS 0.
```

If the TST command	Do
passed	step 30
failed	step 32

-continued-

NT9X17 (end)
in a message switch shelf (end)

Replacing an NT9X17 card in a message switch shelf (continued)

Step	Action

30	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 33
failed	step 32

31	Return to the maintenance procedure that sent you to this procedure and continue as directed.
32	For further assistance, contact the personnel responsible for the next level of support.
33	You have completed this procedure.

End

NT9X21
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in the computing module/system load module (CM/SLM) shelf.

PEC	Suffix	Name
NT9X21	AB	Bus terminator paddle board

Common procedures

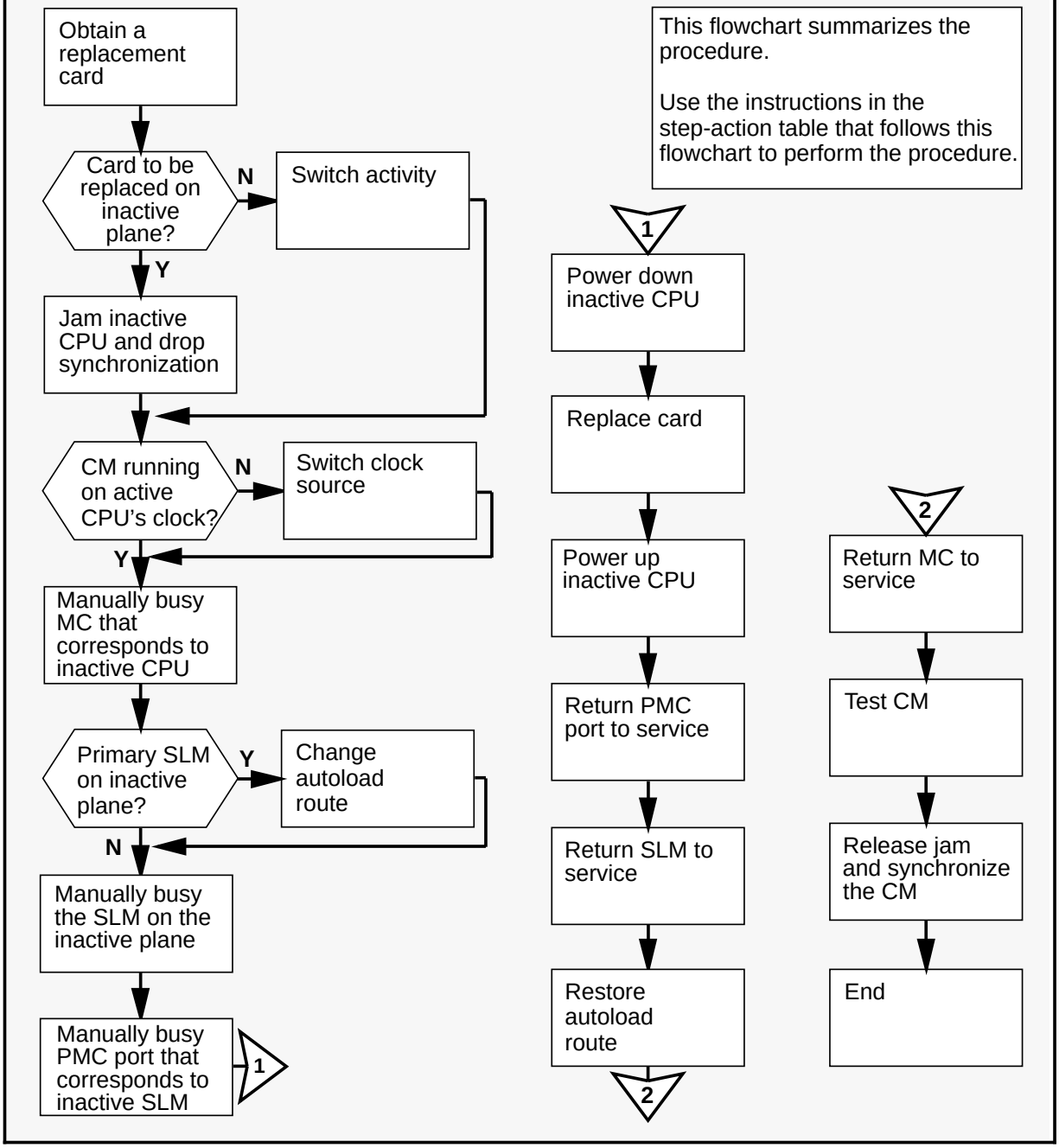
Activity switch with memory match, *Switching the clock source*, and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X21 card in a computing module/system load module shelf



Replacing an NT9X21 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Possible loss of data recording services** This procedure involves manually busying the system load module (SLM) that is on the same plane as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite plane from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 at the bottom of the face of the replacement card
	Example input:
	>CHECKREL CM NT9X21AB 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X12AB 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP response, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 51

Step	Action

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`0   .   cpu 1   .     .        .      .     .   .`

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is on the active or the inactive side of the CM. ***Note:*** The active CPU is shown under the Act header of the MAP display. In the example in step 6, the active CPU is CPU 1. **If the card is on the** — **Do** inactive side — step 8 active side — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 13
`Drop synchronization failed`	step 51
`Aborted. Active CPU n has a faulty processor clock.`	step 51
anything else	step 51

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
14	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 51

15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	CAUTION **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the inactive side of the CM while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing the Enter key.
	Example of a MAP response:
	`CPU pair is NOT in sync, CPU 0 is active.`
	`CM is running on active CPU clock.`
	`Memory Error Correction is ENABLED.`
	`The Inactive CPU IS Jammed.`

If the CM is running on the	Do
inactive clock	step 17
active clock	step 18

17	To run the CM on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the same plane as the active CPU or the inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

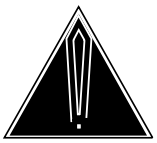
Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the active CPU (0 or 1) device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing 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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	Do
passed	step 24
failed	step 51

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the inactive CPU (0 or 1)
	Note: The PMC number is shown to the right of the PMC header on the MAP dispay.
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`MC 0 MC 1`
	`. .`
	Note: Dots under the MC headers mean that the associated MCs are in service.

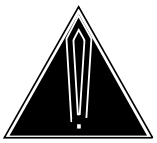
27	Determine the state of the message controller (MC) on the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy.

If the MC is	Do
`mbsy`	step 29
not `mbsy`	step 28

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Do not manually busy the MC that corresponds to the active CPU. Powering down the plane with the active MC busied causes a warm restart.

28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_number
	and pressing 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 29
did not busy	step 51

At the CM/SLM shelf

	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU plane by pressing down and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
31	Power up the inactive CPU plane by lifting upward and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
At the CM reset terminal for the inactive CPU	

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Testing Memory:`
	`Shelf  Slot  PEC  Module Status`
	`00  15  NT9X14EA  ...`
	`00  16  NT9X14EA  ...`
	`Waiting for activity...`

33	Determine if the inactive CPU powered up successfully. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 51
At the MAP	
34	Access the PMC level of the MAP display by typing **>CM;PMC** and pressing the Enter key.

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action

35	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the the manual-busy SLM by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that was manually busied in step 23
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 return to service passed.`
38	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 41
39	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
40	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that was originally the primary SLM device_type is the type of SLM device (DISK or TAPE)
41	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** an MC Tbl alarm — step 50 a PMCFlt alarm — step 50 a PMCTbl alarm — step 50 a NoTOD alarm — step 50 an SBsyMC alarm — step 50 an MBsyMC alarm — step 50 a CBsyMC alarm — step 50 anything else — step 42
At the MAP	
42	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action

43	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 44
failed	step 51

Step	Action
44	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 50
anything else	step 45

Step	Action
45	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action

46	Test the CM by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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"):`

47	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 48
failed	step 51
anything else	step 51

At the CM reset terminal for the inactive CPU

48	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

NT9X21 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

49	Synchronize the CPUs by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 52
the SYNC command failed	step 51
`Inactive CPU configuration does not support burst mode operation.`	step 51
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 51
anything else	step 51

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

-continued-

Replacing an NT9X21 card in a computing module/system load module shelf (continued)

Step	Action
51	For further assistance, contact the personnel responsible for the next level of support.
52	You have completed this procedure.
	End

NT9X23
in a message switch shelf

Application

Use this procedure to replace the following cards in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X23	AA	Four-port DS30 paddle board

Common procedures

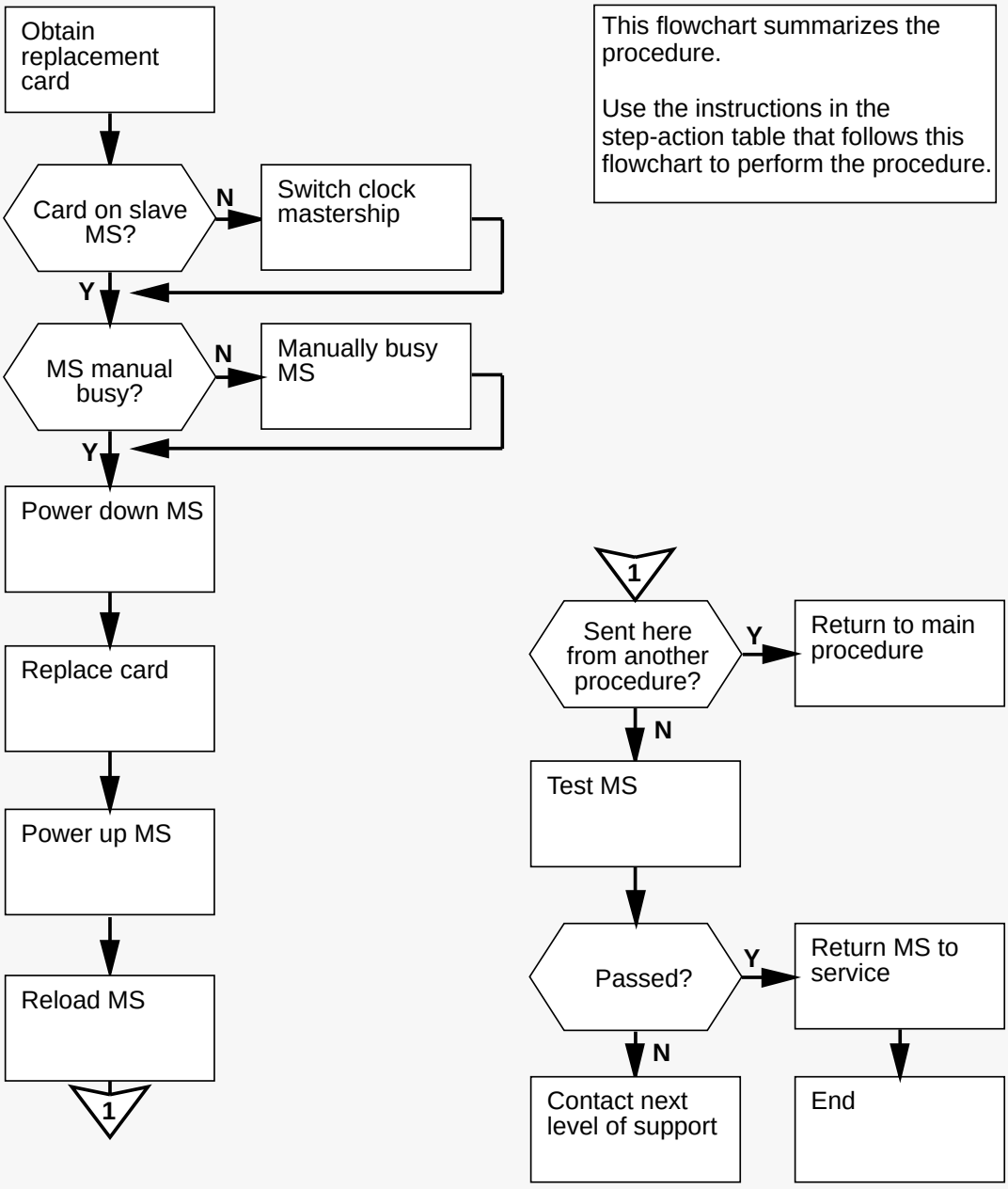
Failure to switch clock mastership is referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X23 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X23 card in a message switch shelf



NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X23AA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X23AA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	**Do**
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 39

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X23 (continued) in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
10	Wait 10 min to ensure MS stability, then continue with this procedure.
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy.

If the MS is	**Do**
not `M`	step 12
`M`	step 13

-continued-

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action

12	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the slave MS (0 or 1)
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`

If the response is	Do
`Request to MAN BUSY MS:0 passed`	step 13
`Request to MAN BUSY MS:1 passed`	step 13
anything else	step 39

Step	Action

13	Access the shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . F . . . .`
	`MS 1 . . . . . .`

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action

14	Translate the location of the card to be replaced by typing
	>TRNSL ms_number card_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	card_number is the number of the card to be replaced (5 to 10)
	
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0: 7 29 9X17AA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0: 7 29 9X23AA BACK`
	`No resources to translate on card 7.`

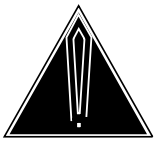
15	Record the location, description, slot number, and PEC, including suffix, of the card being replaced.
At the MS shelf	
16	Determine which MS is the slave MS.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X23 (continued) in a message switch shelf (continued)

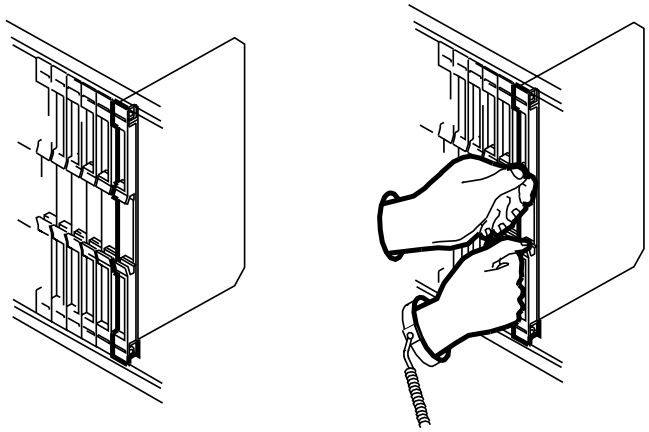
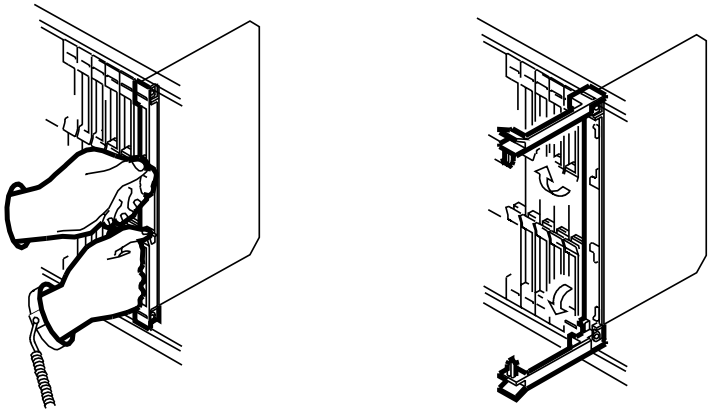
Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
19	Locate the card to be removed on the appropriate shelf. 
20	Label the connector on the RS-232 cable of the card to be replaced.
21	Open the locking levers on the card to be replaced. 

-continued-

Replacing an NT9X23 card in a message switch shelf (continued)

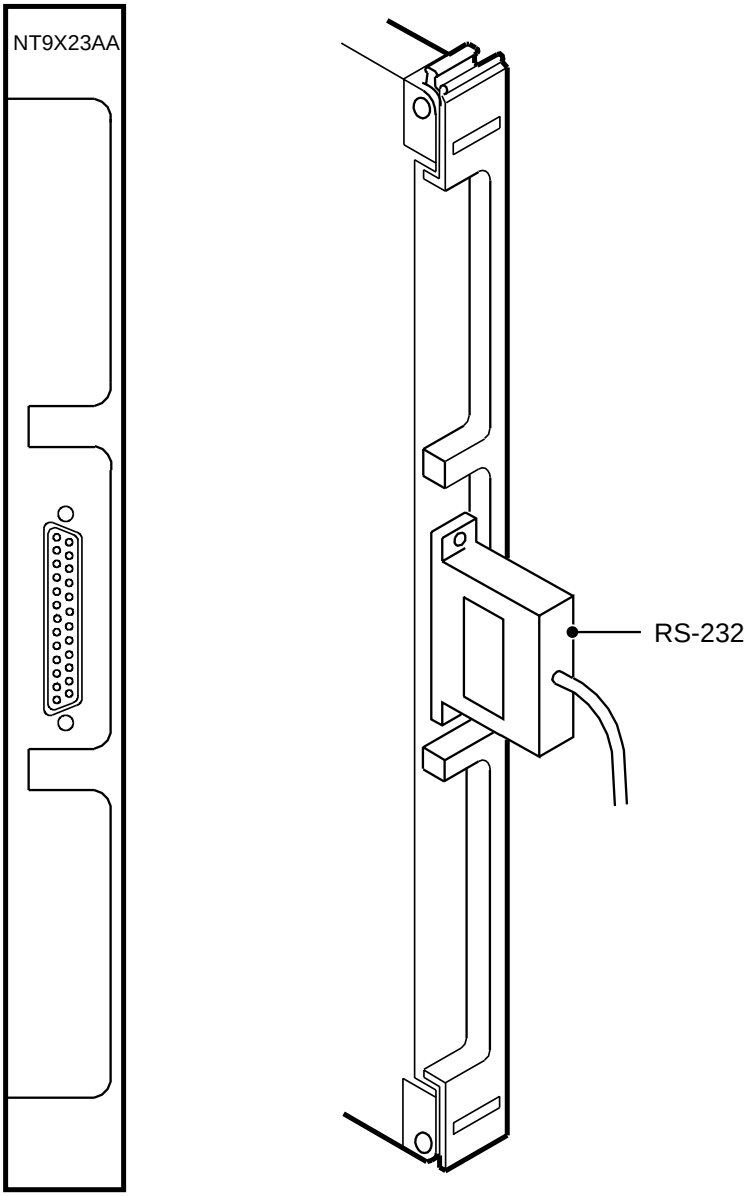
Step	Action
	 **WARNING** **Possible equipment damage** The pins in the RS-232 cable connector will bend if you remove the cables by first unseating the top pins and then removing the bottom pins. Then, when you insert the connector again, the pins will be misaligned and some pins may bend further and become unseated from the connector block.
22	Disconnect the RS-232 cable from the card you are removing as follows: ▪ to prevent damage to the pins, remove the connector at a 90° angle to the faceplate ▪ loosen the cable with the latch handles up Refer to the illustration on the next page.

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

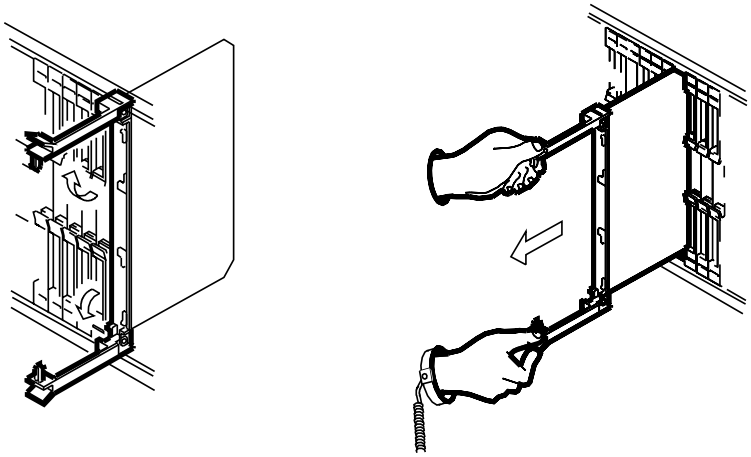
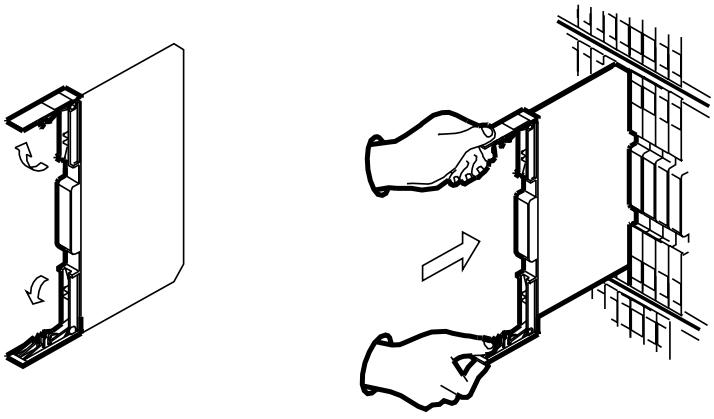
Replacing an NT9X23 card in a message switch shelf (continued)

Step **Action**



-continued-

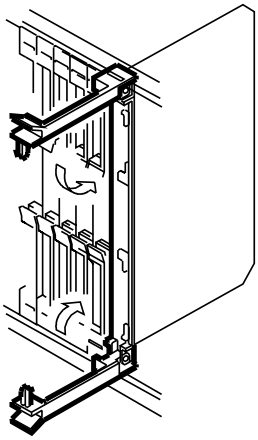
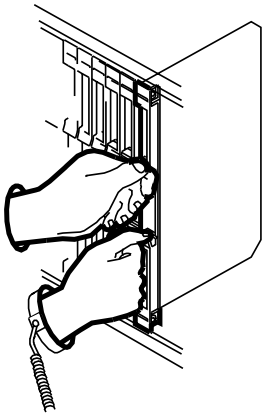
Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
23	Gently pull the card towards you until it clears the shelf. 
24	Place the card you have removed in an electrostatic discharge (ESD) protective container.
25	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
26	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf. 

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
27	Seat the card in the shelf. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.
	WARNING **Possible equipment damage** The pins in the RS-232 cable connector will bend if you remove the cables by first unseating the top pins and then removing the bottom pins. Then, when you insert the connector again, the pins will be misaligned and some pins can bend further and become unseated from the connector block.
28	Connect the RS-232 cable to the replacement card, as follows: ▪ to prevent damage to the pins, carefully insert the connector on the card with the latch handles up ▪ The retaining screws on the RS-232 connection should be finger-tight and fully screwed in. This ensures that all pins make the proper contact.
29	Lock the card in the shelf by closing the locking levers.  

-continued-

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action
30	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 31 MS 1 — step 32
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
31	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
32	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

33	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X23 (continued)
in a message switch shelf (continued)

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action

34	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 35
failed	step 39

Step	Action
35	Determine the reason for performing this procedure.

If you are performing the procedure	Do
as a result of another maintenance procedure	step 38
anything else	step 36

-continued-

Replacing an NT9X23 card in a message switch shelf (continued)

Step	Action

36	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 37
failed	step 39

Step	Action

37	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 40
failed	step 39

Step	Action
38	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT9X23 (end)
in a message switch shelf (end)

Replacing an NT9X23 card in a message switch shelf (continued)	
Step	**Action**
39	For further assistance, contact the personnel responsible for the next level of support.
40	You have completed this procedure.
	End

NT9X25
in a message switch shelf

Application

Use this procedure to replace the following cards in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X25	BA	MS port terminator paddle board

Common procedures

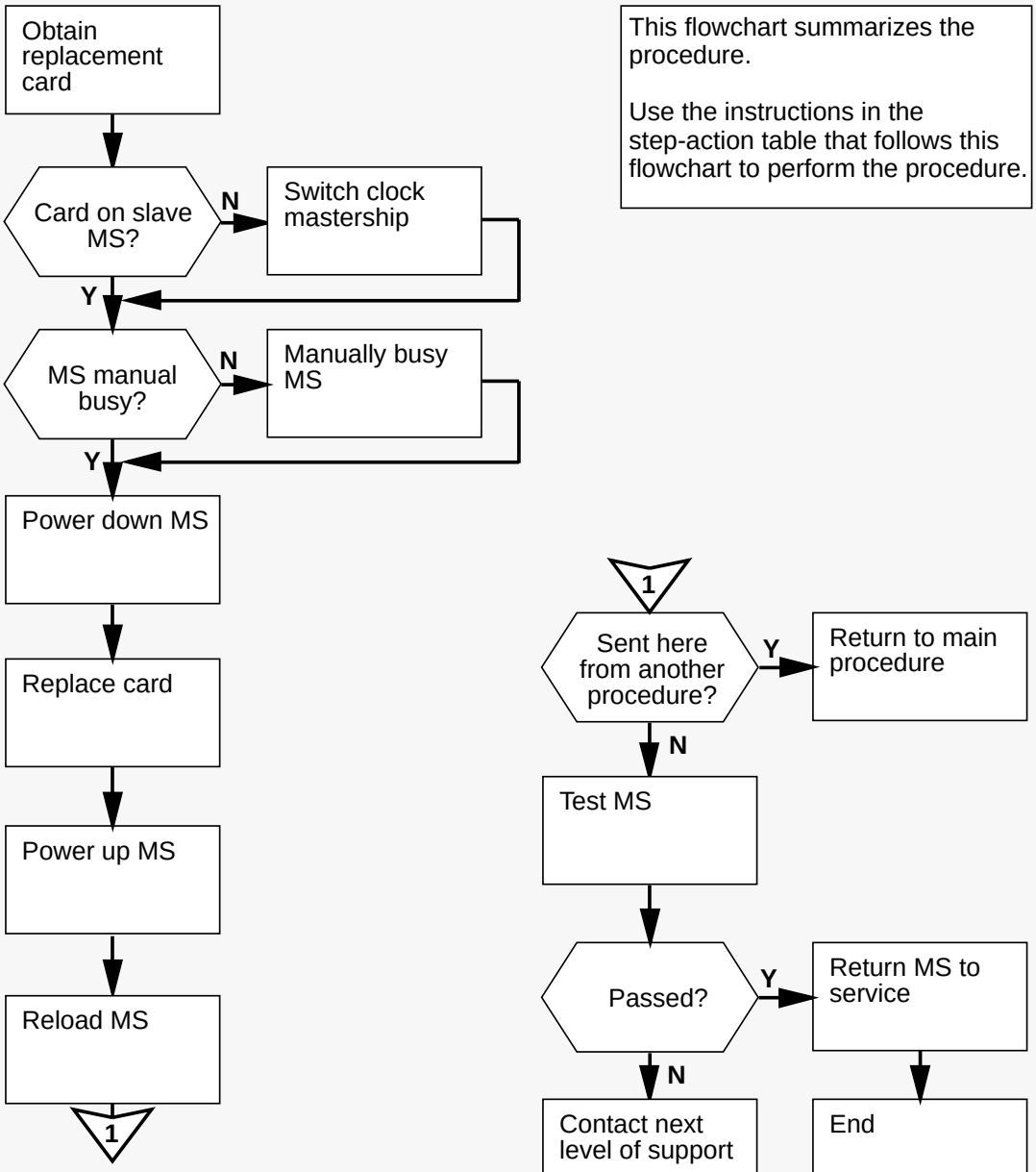
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X25 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X25 card in a message switch shelf



NT9X25 (continued)
in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X25BA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X25BA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	**Do**
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X25 (continued)
in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
can obtain a compatible replacement card	step 29

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X25 (continued)
in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X25 (continued)
in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 29

-continued-

NT9X25 (continued) in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . F . . . .`
	`MS 1 . . . . . .`

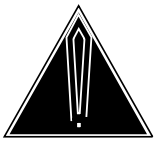
14	Translate the location of the card to be replaced by typing
	>TRNSL ms_number card_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	card_number is the number of the card to be replaced (5 to 10)
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:10 29 FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:10 29 9X25 BACK`
	`No resources to translate on card 10.`

15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS. **If the slave MS is** — **Do** MS 0 — step 17 MS 1 — step 18

-continued-

NT9X25 (continued)
in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 21 MS 1 — step 22

-continued-

NT9X25 (continued) in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

23	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X25 (continued)
in a message switch shelf (continued)

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action

24	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 25
failed	step 29

Step	Action
25	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 28
anything else	step 26

-continued-

Replacing an NT9X25 card in a message switch shelf (continued)

Step	Action

26	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 27
failed	step 29

Step	Action

27	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	Do
passed	step 30
failed	step 29

Step	Action
28	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT9X25 (end)
in a message switch shelf (end)

Replacing an NT9X25 card in a message switch shelf (continued)	
Step	**Action**
29	For further assistance, contact the personnel responsible for the next level of support.
30	You have completed this procedure.
	End

NT9X26
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X26	CA	Remote terminal interface paddle board
NT9X26	DB	BRISC RTIF paddle board

Common procedures

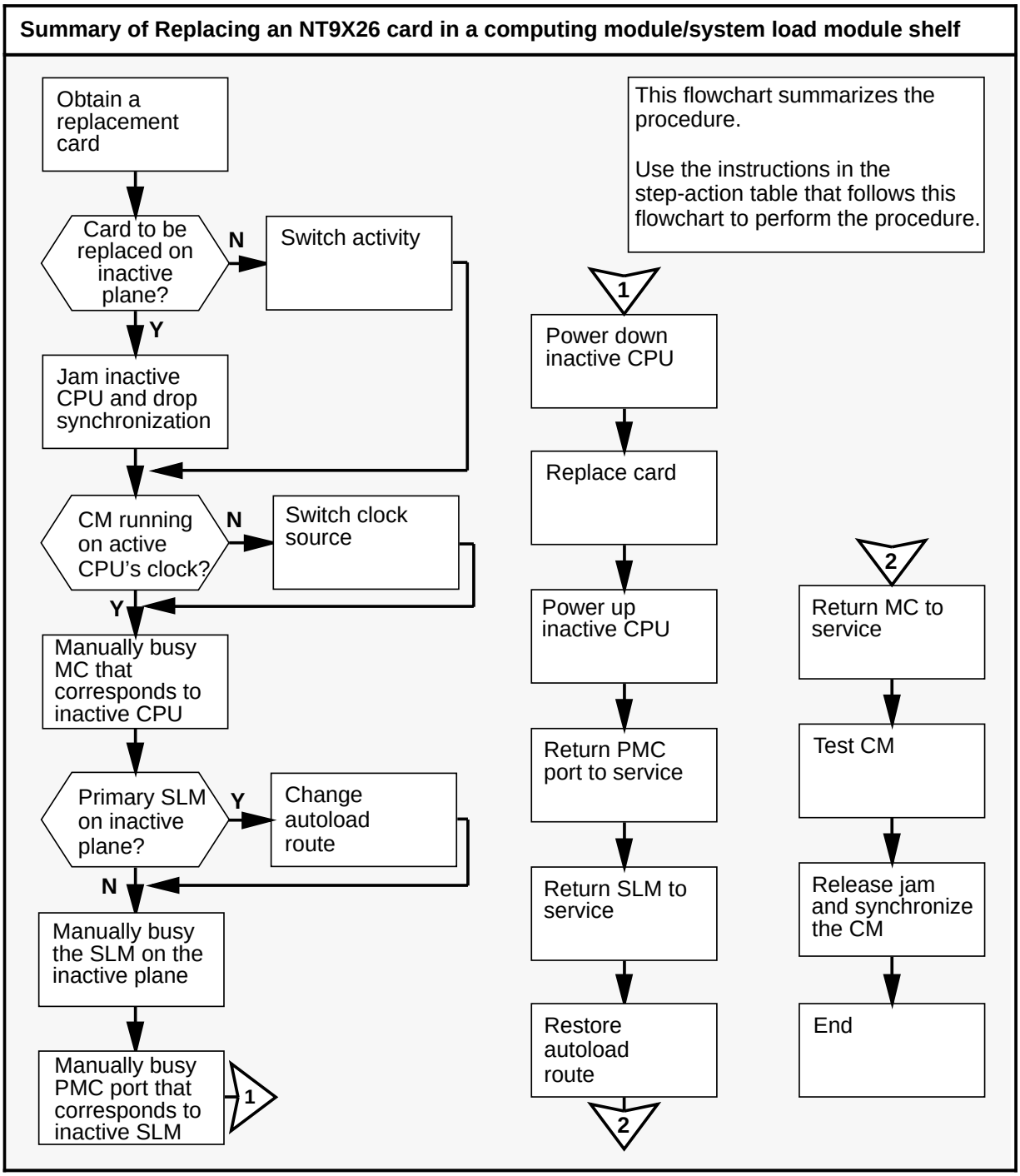
Activity switch with memory match, *Switching the clock source*, and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X26 card in a computing module/system load module shelf



Replacing an NT9X26 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Possible loss of data recording services** This procedure involves busying the system load module (SLM) that is on the same side of the switch as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite side of the switch from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 face of the replacement card
	Example input:
	>CHECKREL CM NT9X26CA 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X26CA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	**Do**
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 52

At the MAP	

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   no  cpu 1   .     .  yes   .     .      .   .`

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is on the active or the inactive side of the CM. ***Note:*** The active CPU is shown under the Act header of the MAP display. In the example in step 6, the active CPU is CPU 1. **If the card is on the** — **Do** inactive side — step 8 active side — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in of sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM (YES/NO)`

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 13
`Drop synchronization failed`	step 52
`Aborted. Active CPU n has a faulty processor clock.`	step 52
anything else	step 52

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
14	Wait until A1 flashes on the reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 16 does not flash — step 52
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	CAUTION **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 US Jammed.`

If the CM is running on the	Do
inactive clock	step 17
active clock	step 18

17	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing the Enter key.
	Example of a MAP response:
	`CM  Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC`
	`0  .  cpu 0  .  .  .  .  .  .`
	`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 test restart type = RELOAD`
	`Last CMREXTST executed.`
	`System memory in kbytes as of 14:39:07`
	`Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the same plane as the active CPU or the inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

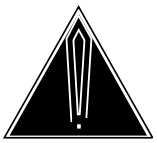
Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) on the active plane device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing the Enter key.
	where
	slm_number is the number of the SLM (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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing the SLM on the inactive side of the switch from service. Before you busy the SLM, ensure that the data recording services provided by the SLM on the active side of the switch.

23	Manually busy the SLM by typing
	>BSY
	and pressing the Enter key.
	Example of a MAP response:
	`SLM 0 busy passed.`
	If the BSY command — **Do**
	passed — step 24
	failed — step 52

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the port (0 or 1) on the inactive plane
	Note: The PMC number is shown to the right of the PMC header on the MAP dispay.
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`MC 0 MC 1`
	`mbsy .`
	Note: Dots under the MC headers mean that the associated MCs are in service.

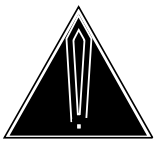
27	Determine the state of the message controller (MC) on the inactive CPU. ***Note:*** The term mbsy under the MC header of the MAP display means that the MC is manual busy.

If the MC is	Do
`mbsy`	step 29
not `mbsy`	step 28

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you busy the MC that corresponds to the inactive CPU. Powering down the plane with the wrong MC busied causes a warm restart.

28	Manually busy the MC by typing
	>BSY mc_number
	and pressing the Enter key.
	where
	mc_number is the number of the MC (0 or 1) on the inactive plane
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`

If the MC	Do
busied	step 29
did not busy	step 52

At the CM/SLM shelf

	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU by pressing down and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slot 4F. For CPU 1, the power converter is located in slot 33F.

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
31	Power up the inactive CPU by lifting and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slot 4F. For CPU 1, the power converter is located in slot 33F.
At the CM reset terminal for the inactive CPU	

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response
	`Shelf Slot`
	`00 12 NT9X14DB`
	`00 13 NT9X14DB`
	`Waiting for activity.....`

33	Determine if the inactive CPU powered up successfully. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 52
34	Access the PMC level of the MAP display by typing **>CM;PMC** and pressing the Enter key.

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action

35	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the manual-busy SLM by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the manual-busy SLM (0 or 1)
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 returned to service passed.`
38	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 41
39	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
40	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that originally was the primary SLM device_type is the type of SLM device (DISK or TAPE)
At the CM reset terminal for the inactive CPU	
41	Determine the result of the last self-test by typing **>\SELF TEST** and pressing the Enter key.

If the test	Do
passed	step 42
failed	step 52

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action	
42	Your next step depends on the reason for performing this procedure.	
	If you are performing this procedure as a result of	**Do**
	an MC Tbl alarm	step 51
	a PMCFlt alarm	step 51
	a PMCTbl alarm	step 51
	a NoTOD alarm	step 51
	an SysBsy alarm	step 51
	an MBsyMC alarm	step 51
	a CBsyMC alarm	step 51
	anything else	step 43
At the MAP		
43	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.	

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action

44	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 45
failed	step 52

Step	Action
45	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 51
anything else	step 46

Step	Action
46	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X26 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action

47	Test the CM by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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"):`

48	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 49
failed	step 52
anything else	step 52

At the CM reset terminal for the inactive CPU

49	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

50	Synchronize the CM by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 53
the SYNC command failed	step 52
`Inactive CPU configuration does not support burst mode operation.`	step 52
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 52
anything else	step 52

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

-continued-

NT9X26 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X26 card in a computing module/system load module shelf (continued)

Step	Action
52	For further assistance, contact the personnel responsible for the next level of support.
53	You have completed this procedure.
	End

NT9X26
in a message switch shelf

Application

Use this procedure to replace the following cards in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X26	AB	Remote terminal interface paddle board

Common procedures

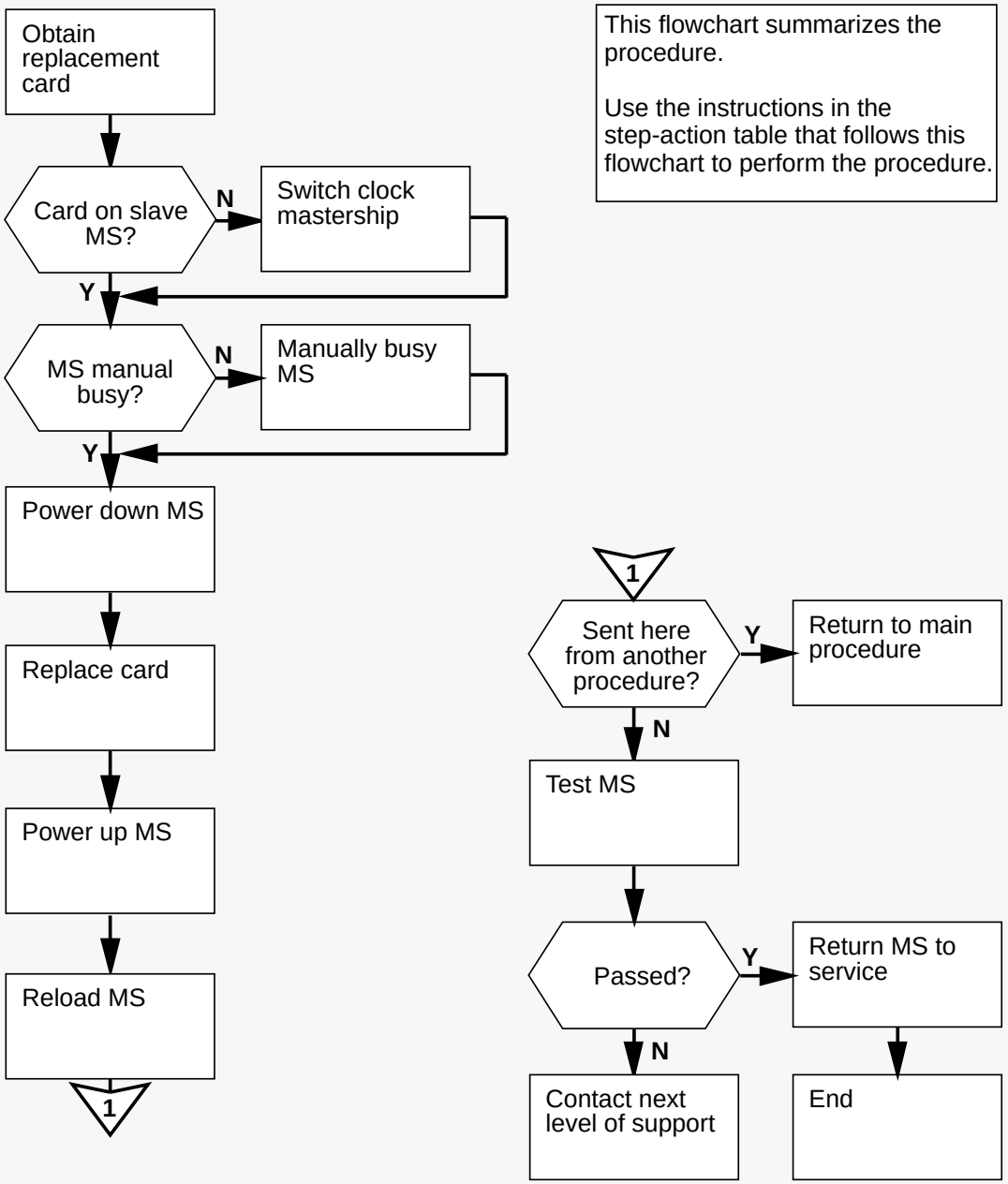
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X26 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X26 card in a message switch shelf



NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X26AB 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X26AB S0 SC 10 *NO`
	`Card release is below baseline`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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. **If you** — **Do** can obtain a compatible replacement card — step 2 cannot obtain a compatible replacement card — step 35

6	Access the MS level display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

-continued-

NT9X26 (continued) in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action

8	Switch clock mastership by typing
	>SWMAST
	and pressing the Enter key.
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	If the SWMAST command — **Do**
	passed — step 10
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** not `M` — step 12 `M` — step 13

-continued-

NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action

12	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the slave MS (0 or 1)
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`

If the response is	Do
`Request to MAN BUSY MS:0 passed`	step 13
`Request to MAN BUSY MS:1 passed`	step 13
anything else	step 35

Step	Action

13	Access the shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . F . . . .`
	`MS 1 . . . . . .`

-continued-

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action

14	Translate the location of card 3 by typing
	>TRNSL ms_number 3
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:3 23 9X13NA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:3 23 9X26AB BACK`
	`No resources to translate on card 3.`

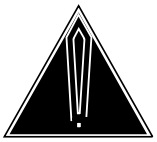
15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Disconnect the cable from the card.
20	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
21	Reconnect the cable to the card.

-continued-

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action
22	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 23 MS 1 — step 24
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
23	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 25.
24	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

25	Access the MS level display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action

26	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 27
failed	step 35

At the CM RTIF

27	Run a self-test by typing **>\SELF TEST** and pressing the Enter key. *RTIF response:* `SELF TEST RESULTS: CHECKSUM OK RAM OK 9X26OK`

If the command	Do
passed	step 28
failed	step 35

At the MAP

28	Access the Shelf level of the MAP display by typing **>SHELF shelf_number** and pressing the Enter key. *where* shelf_number is the number of the shelf (0 to 3)

-continued-

NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action
29	Access the Card level for the card you replaced by typing **>CARD 3** and pressing the Enter key.
30	Test the card you replaced by typing **>TST ms_number position** and pressing the Enter key. *where* ms_number is the number of the manual-busy MS (0 or 1) position is FRONT or BACK *Example input:* **>TST 0 BACK** *Example of a MAP response:* `Request to TST INSV MS: 0 shelf: 0 card 3 back submitted.`

If the TST command	Do
passed	step 31
failed	step 35

Step	Action
31	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 34
anything else	step 32

-continued-

NT9X26 (continued)
in a message switch shelf (continued)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action

32	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`
	If the TST command — **Do**
	passed — step 33
	failed — step 35

33	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	If the RTS command — **Do**
	passed — step 36
	failed — step 35

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

-continued-

NT9X26 (end) in a message switch shelf (end)

Replacing an NT9X26 card in a message switch shelf (continued)

Step	Action
35	For further assistance, contact the personnel responsible for the next level of support.
36	You have completed this procedure.
	End

NT9X30
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X30	AA	+5V 86-A power converter

Common procedures

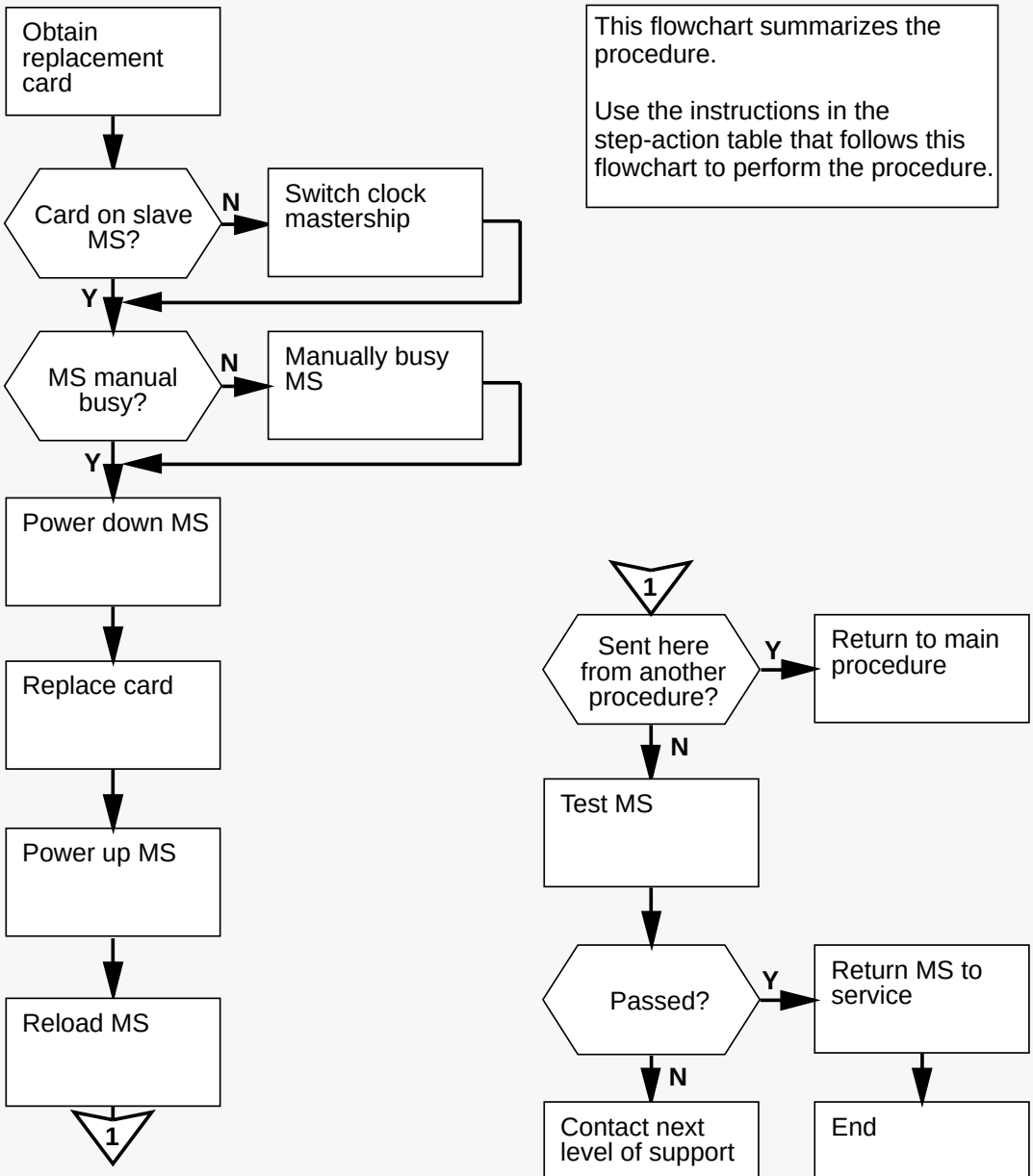
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X30 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X30 card in a message switch shelf



NT9X30 (continued)
in a message switch shelf (continued)

Replacing an NT9X30 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X30AA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X30AA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X30 (continued)
in a message switch shelf (continued)

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 26

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X30 (continued) in a message switch shelf (continued)

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.

-continued-

NT9X30 (continued)
in a message switch shelf (continued)

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action
10	Wait 10 min to ensure MS stability, then continue with this procedure.
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

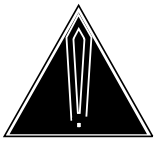
12	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 26

-continued-

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action
	At the MS shelf
13	Determine which MS is the slave MS, using the information obtained in step 6.

If the slave MS is	Do
MS 0	step 14
MS 1	step 15



CAUTION
Possible loss of service
Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.

WARNING
Static electricity damage
Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.

14 Power down the slave MS, as follows:

a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F.

b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

Go to step 16.

15 Power down the slave MS, as follows:

a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F.

b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

NT9X30 (continued)
in a message switch shelf (continued)

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action
16	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
17	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 18 MS 1 — step 19
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
18	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 20.
19	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	
20	Ensure you are at the MS level of the MAP by typing **>MS** and pressing the Enter key.

-continued-

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action

21	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 22
failed	step 26

Step	Action
22	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 25
anything else	step 23

-continued-

NT9X30 (continued)
in a message switch shelf (continued)

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action

23	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`
	If the TST command — **Do**
	passed — step 24
	failed — step 26

24	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	If the RTS command — **Do**
	passed — step 27
	failed — step 26

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

-continued-

NT9X30 (end)
in a message switch shelf (end)

Replacing an NT9X30 card in a message switch shelf (continued)

Step	Action
26	For further assistance, contact the personnel responsible for the next level of support.
27	You have completed this procedure.
	End

NT9X31
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X31	AA	-5V 20-A power converter card

Common procedures

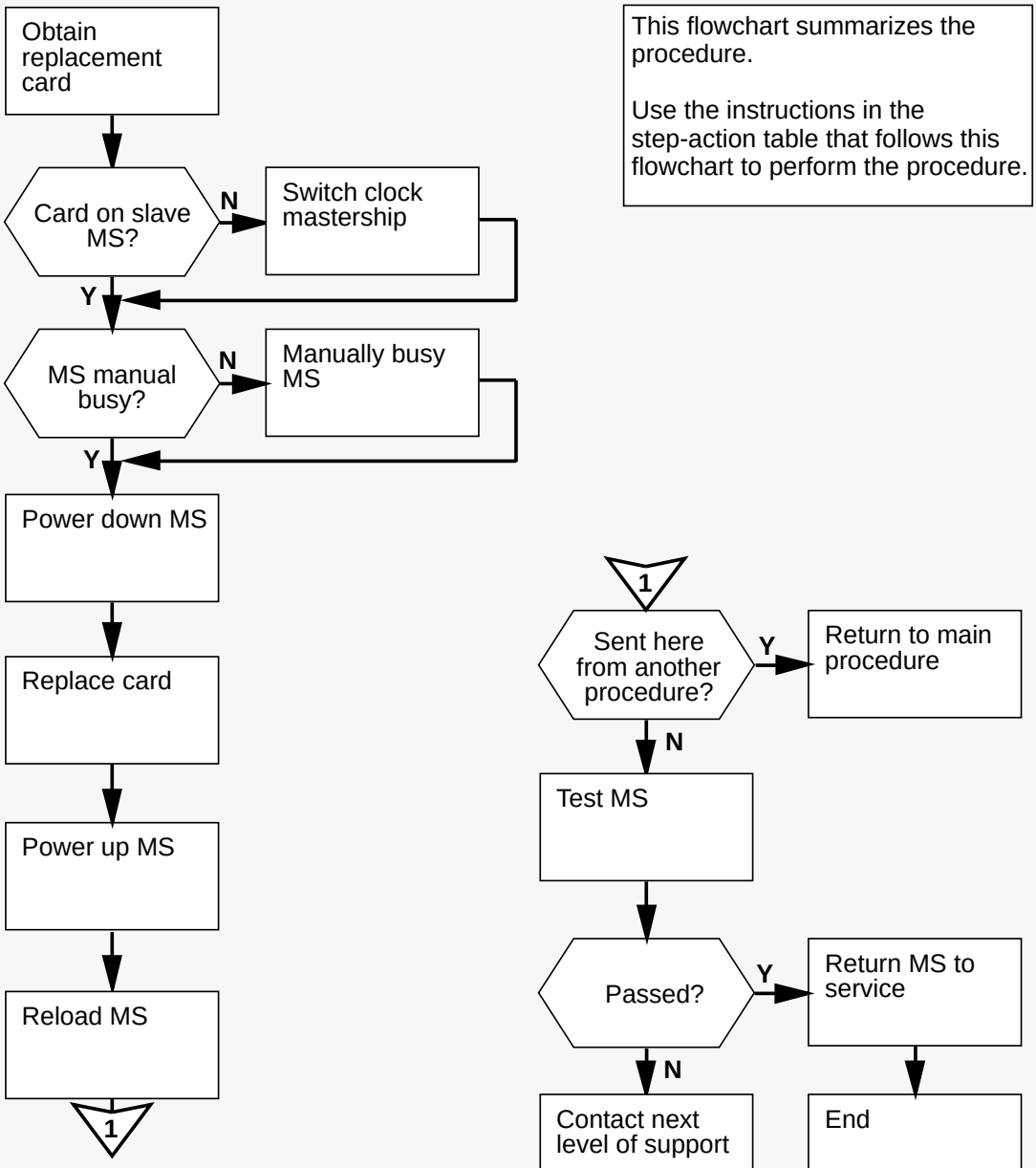
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X31 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X31 card in a message switch shelf



NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X31AA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X31AA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 26

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

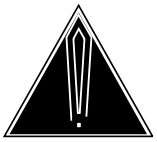
12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 26

-continued-

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
At the MS shelf	
13	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 14
MS 1	step 15



CAUTION
Possible loss of service
Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.

WARNING
Static electricity damage
Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.

14 Power down the slave MS, as follows:

a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F.

b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

Go to page 16.

15 Power down the slave MS, as follows:

a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F.

b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
16	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
17	Determine which MS was powered down. **If the MS that was powered down is** — **Do** MS 0 — step 18
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
18	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 20.
19	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.

-continued-

NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
At the MAP	

20	Ensure you are at the MS level of the MAP by typing
	>MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

21	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	**Do**
passed	step 22
failed	step 26

22	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	**Do**
another maintenance procedure	step 25
anything else	step 23

-continued-

NT9X31 (continued)
in a message switch shelf (continued)

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action

23	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`
	If the TST command — **Do**
	passed — step 24
	failed — step 26

24	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	If the RTS command — **Do**
	passed — step 27
	failed — step 26

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

-continued-

Replacing an NT9X31 card in a message switch shelf (continued)

Step	Action
26	For further assistance, contact the personnel responsible for the next level of support.
27	You have completed this procedure.
	End

NT9X44
in a computing module/system load module shelf

Application

Use this procedure to replace the following assembly in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X44	AC	System load module IA assembly

Note: In the following procedure, the terms SLM and SLM assembly have the same meaning.

Common procedures

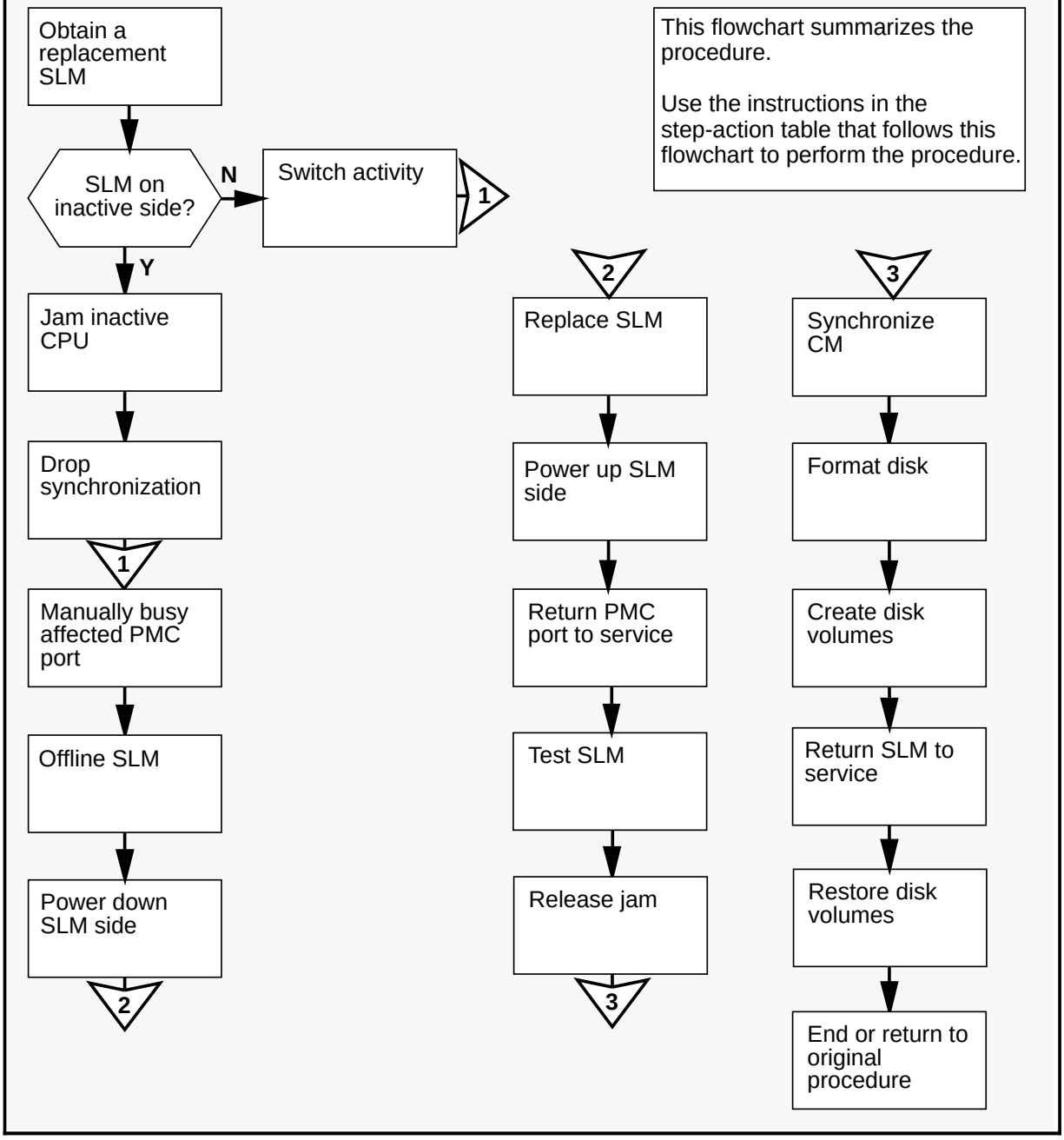
Activity switch with memory match and *Switching the clock source* are referenced in this procedure.

Action

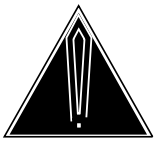
The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X44 card in a computing module/system load module shelf



Replacing an NT9X44 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Loss of data recording services** This procedure involves removing an SLM from service. Before attempting this procedure, ensure that the data recording services provided by the SLM being removed from service will be assumed by another device. Also ensure that adequate recording space has been allocated on that device.
1	Obtain a replacement SLM assembly. Ensure that the replacement SLM has the same product engineering code (PEC), including suffix, as the SLM being removed.
2	Ensure that you have a backup SLM tape. ***Note:*** The backup tape must contain all of the disk files resident on the SLM you are going to replace. **If you** — **Do** have a backup SLM tape — step 3 do not have a backup SLM tape — step 74
At the MAP	

3	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`0   .   cpu 1   .     .        .      .     .   .`

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
4	Determine if the SLM you are going to replace is on the side of the switch with the active CPU or the inactive CPU. ***Note:*** In the example in step 3, the active CPU is CPU 1. **If the SLM is on the side of the switch with the** — **Do** inactive CPU — step 5 active CPU — step 12
5	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 8 not jammed — step 6
At the CM reset terminal for the inactive CPU	
	CAUTION **Loss of service** Do not jam the active CPU. Jamming the active CPU while the computing module (CM) is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
6	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
7	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
8	Determine if the CPUs are in sync. ***Note:*** A dot or EccOn under the Sync header means that the CPUs are in sync. The word no means that the CPUs are not in sync.

If the CPUs are	Do
in sync	step 9
not in sync	step 13

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
9	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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”):` — step 10 `Drop synchronization failed` — step 74 `Aborted. Active CPU n has a faulty processor clock.` — step 74 anything else — step 74

10	Confirm the command by typing
	>YES
	and pressing the Enter key.
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
11	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 13 does not flash — step 74
12	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	CAUTION **Loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

13	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing the Enter key.
	Example of a MAP response:
	`CPU pair is NOT insync, CPU n is active.`
	`CM is running on active CPU clock.`
	
	`Memory Error Correction is ENABLED.`
	
	`The Inactive CPU IS Jammed.`

If the CM is running on the	Do
inactive clock	step 14
active clock	step 15

14	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action

15	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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`

16	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 15, the primary autoload device is the disk of SLM 0.
17	Determine if the SLM you are replacing contains the primary or secondary autoload device. **If the SLM you are replacing contains the** — **Do** primary autoload device — step 18 secondary autoload device — step 19

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
18	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing 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.`

19	Access the SLM you are replacing by typing
	
	>IOD;SLM slm_number
	and pressing the Enter key.
	
	where
	slm_number is the number of the SLM (0 or 1) that is being replaced
	
	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`
	`user SYSTEM`
	
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
20	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	Do
passed	step 21
failed	step 74

21	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action

22	Manually busy the port that corresponds to the inactive CPU (for example, if CPU 0 is inactive, busy port 0), by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	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.`

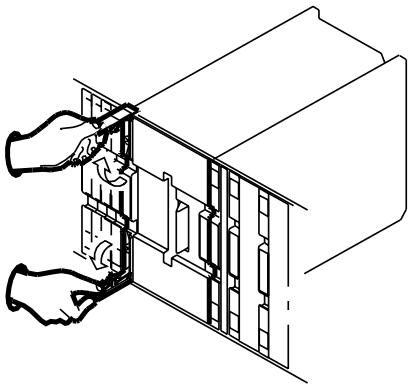
23	Access the SLM you are replacing by typing **>SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM that is being replaced (0 or 1)

24	Offline the SLM by typing
	>OFFL
	and pressing the Enter key.
	Example of a MAP response:
	`WARNING: The link to SLM 0 is out service.`
	`Setting this SLM offline is not safe enough`
	`for its drives. The 12-volt converter power`
	`card has to be turned off manually before`
	`attempting to remove the SLM unit.`
	`Please confirm (”YES”, ”Y”, ”NO”, or ”N”):`

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

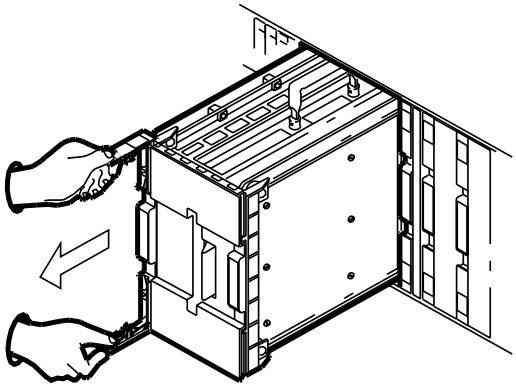
Step	Action
25	Confirm the command by typing **>YES** and pressing the Enter key. *Example of a MAP response:* `SLM 0 now offline. Do not remove SLM card until disk drive is spun down! This will be indicated when the SLM card light turns off.`
At the CM/SLM shelf	
	WARNING **Equipment damage and possible loss of service** Do not switch off the NTDX15 power converter. Switching off the NTDX15 power converter will power down the CPU plane, not the SLM. The SLM is powered by the NT9X91 power converter.
26	Power down the inactive SLM. Switch off the SLM power converter (NT9X91) by pressing down and releasing the power switch located on the faceplate of the converter. ***Note:*** For CPU 0, the power converter is located in slots 1F through 3F. For CPU 1, the power converter is located in slots 36F through 38F.
27	Pull open the locking levers on the SLM until they are horizontal. 

-continued-

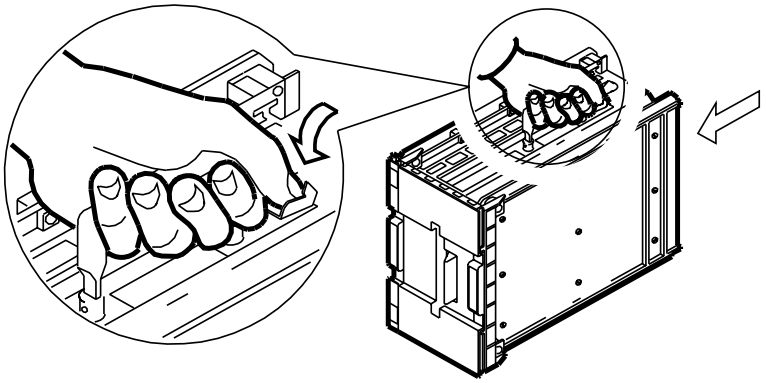
NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
28	Slowly pull the SLM towards you until the locking latch at the back of the SLM prevents the SLM from clearing the shelf.



29	Close the locking levers on the faceplate.
30	Grasp the carrying handle, and use your thumb to press the locking latch while sliding the SLM from the shelf.



31	Place the SLM you have removed in an electrostatic discharge (ESD) protective container.
32	Pick up the new SLM by its carrying handle.

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
33	Pull open the locking levers until they are horizontal.
34	Using your free hand to support and align the SLM with the slots in the shelf, gently slide the SLM into the shelf until the locking latch at the back of the SLM engages the shelf. Do not use undue force.
35	Slide the SLM into the shelf until it stops.
36	Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the SLM is fully seated in the shelf.
37	Close the locking levers on the faceplate.
38	Power up the inactive SLM. Switch on the SLM power converter (NT9X91) by lifting and releasing the power switch located on the faceplate of the converter. ***Note:*** For CPU 0, the power converter is located in slots 1F through 3F. For CPU 1, the power converter is located in slots 36F through 38F.
39	Insert a blank tape into the SLM.
At the MAP	

40	Access the PMC level of the MAP display by typing
	
	>CM;PMC
	and pressing the Enter key.
	
	Example of a MAP display:
	`PMC 0`
	`istb`
	
	`PORT0: mbsy`
	`PORT1: .`

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action

41	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`
	If the RTS command — **Do**
	passed — step 42
	failed — step 74

42	Access the SLM that was replaced by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM that was replaced (0 or 1)
43	Manually busy the SLM by typing **>BSY** and pressing the Enter key. **If the BSY command** — **Do** passed — step 44 failed — step 74

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
44	Spin up the SLM disk by typing **>SPIN UP** and pressing the Enter key. *Example of a MAP response:* `Disk of SLM n is ready.`

45	Test the new SLM by typing
	>TST ALL
	and pressing 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”):`

46	Confirm the command by typing
	>YES
	and pressing the Enter key.
	MAP response:
	`Proceeding with request...`
	`WARNING: Once the tape is rewound,`
	`the ALL test can take up to 18 minutes.`

If the TST command	Do
passed	step 49
failed, and a card list is generated	step 47
anything else	step 74

47	Record the location, description, slot number, and PEC, including suffix, of the first card on the list.

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
48	Change the card by performing the appropriate card replacement procedure in this document. When you have completed the procedure, return to this point. Go to step 51.
At the CM reset terminal for the inactive CPU	
49	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

50	Synchronize the CM by typing
	>CM;SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 51
the SYNC command failed	step 74
`Inactive CPU configuration does not support burst mode operation.`	step 74
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 74
anything else	step 74

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action

51	Access the disk administration utility by typing
	>DISKADM disk_name
	and pressing the Enter key.
	where
	disk_name is the name of the disk in the SLM that was 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 S00D on CM is now active.`
	`DISKADM;  CM`

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action

52	Format the disk by typing
	>FORMATDISK disk_name
	and pressing the Enter key.
	
	where
	disk_name is the name you assign to the disk (maximum 17 characters)
	
	Note: The purpose of the disk name is to help you identify the contents of the disk. The name is not used by the file system.
	
	Example input:
	>FORMATDISK NEWSLMDISK
	
	Example of a MAP response:
	`***** WARNING *****`
	
	`Formatting of NEWSLMDISK`
	`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 NEWSLMDISK as the name for the disk.`
	`perform quick format,`
	`exclude force option.`
	
	`Do you want to continue?`
	`Please confirm (”YES”, ”Y”, ”NO”, or ”N”):`

53	Confirm the command by typing **>YES** and pressing the Enter key.
54	Consult office records or office personnel to obtain a list of all the volumes required on the SLM disk.

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action

55	Create a volume by typing
	>CREATEVOL volume_name volume_size STD
	and pressing the Enter key.
	
	where
	volume_name is the name of the new volume (maximum of eight characters)
	volume_size is the size of the volume in megabytes
	
	Example input:
	>CREATEVOL S00DVOL1 20 STD
	
	Example of a MAP response:
	`STD volume S00DVOL1 will be created on S00D.`
	
	`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"):`

56	Confirm the command by typing **>YES** and pressing the Enter key.
57	Repeat steps 55 and 56 for each disk volume required.
58	Quit the disk administration utility by typing **>QUIT** and pressing the Enter key.

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
59	Access the SLM that was replaced by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM that was replaced (0 or 1)
60	Return the SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM n return to service passed.`

If the RTS command	Do
passed	step 61
failed	step 74

61	Obtain the backup SLM tape for the SLM you replaced.
At the CM/SLM shelf	
62	Remove the blank tape from the SLM, and insert the backup SLM tape into the SLM.
At the MAP	

63	Access the disk utility by typing
	>DISKUT
	and pressing the Enter key.
	Example of a MAP response:
	`Disk utility is now active.`
	`DISKUT:`

-continued-

NT9X44 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
64	Mount the tape cartridge by typing **>INSERTTAPE tape_device_name** and pressing the Enter key. *where* tape_device_name — is the name of the tape device containing the backup SLM 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.`
65	Restore the back up files to the SLM disk you replaced by typing **>RE STDVOL disk_vol_name tape_device_name tape_file_name** and pressing the Enter key. *where* disk_vol_name — is the name of the disk (S00D or S01D), and the name of the volume on the disk to which the backup files will be restored tape_device_name — is the name of the tape device (S00T or S01T) containing the backup SLM tape tape_file_name — is the name of the tape file that contains the backup files
66	Repeat step 65 for all of the disk volumes you created in step 55.
67	Demount the tape cartridge by typing **>EJECTTAPE tape_device_name** and pressing the Enter key. *where* tape_device_name — is the name of the tape device containing the backup SLM tape (S00T or S01T) *Example of a MAP response:* `The eject operation may take up to 5 minutes to position the tape to the beginning.`

-continued-

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
68	Quit the disk utility by typing **>QUIT** and pressing the Enter key.
69	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.
70	Determine if the primary autoload device was changed in step 18. **If the autoload device was** — **Do** changed — step 71 not changed — step 72
71	Change the primary autoload device to the device you recorded in step 16 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number — is the number of the SLM that was originally the primary SLM (0 or 1) device_type — is the type of SLM device (DISK or TAPE)
72	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** another maintenance procedure — step 73 anything else — step 75
73	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT9X44 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X44 card in a computing module/system load module shelf (continued)

Step	Action
74	For further assistance, contact the personnel responsible for the next level of support.
75	You have completed this procedure.
	End

NT9X46
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffix	Name
NT9X46	AA	Parallel port interface paddle board

Common procedures

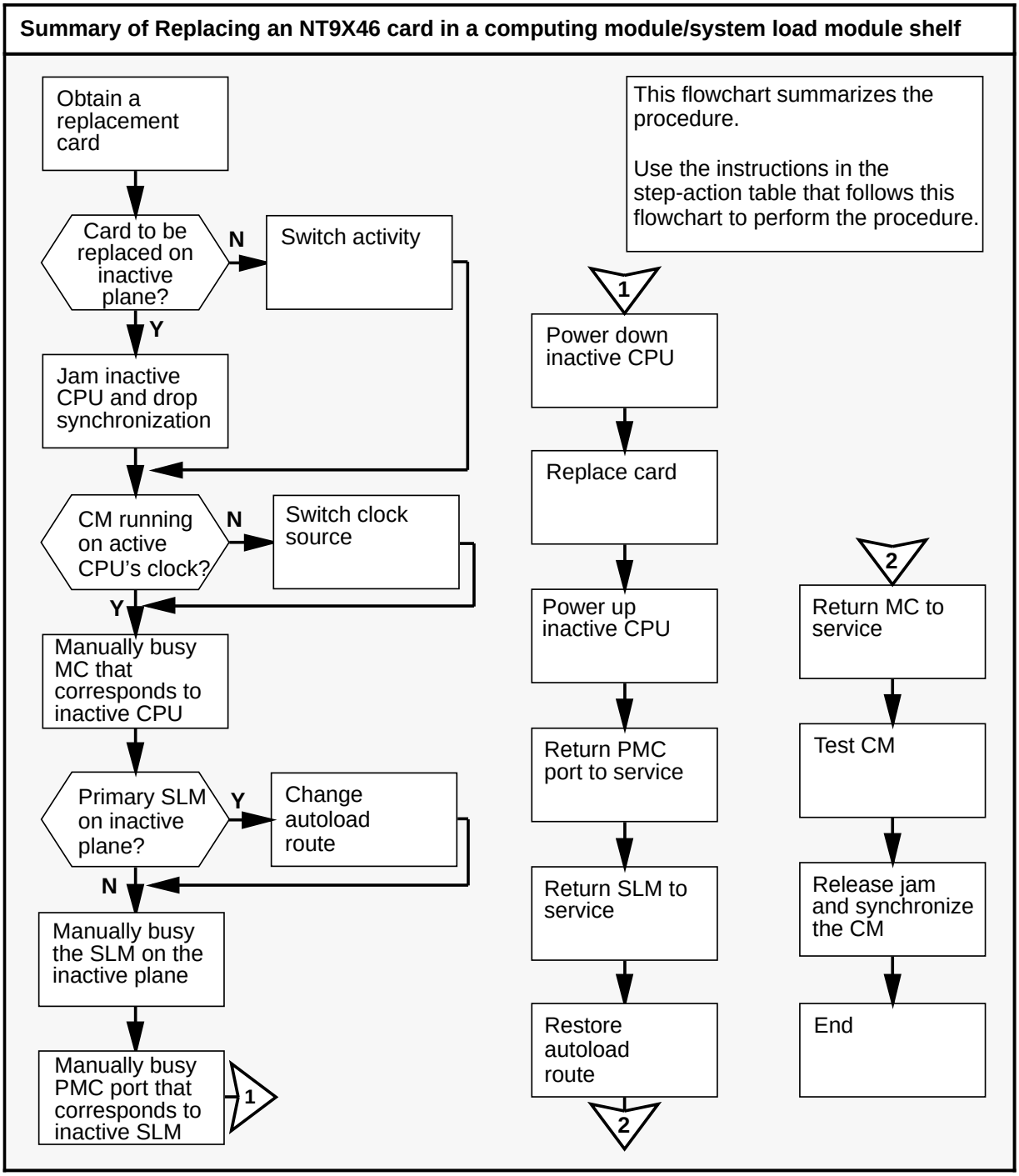
Switching the clock source, *Replacing a SuperNode SE card*, and *Activity switch with memory match* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X46 card in a computing module/system load module shelf



NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Loss of data recording services** This procedure involves manually busying the system load module (SLM) that is on the same plane as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite plane from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 at the bottom of the face of the replacement card
	Example input:
	>CHECKREL CM NT9X46AA O2
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X46AA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	**Do**
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 66

Step	Action

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   .   cpu 1   .     .        .       .     .   .`

7	Determine if the card you are going to replace is on the side of the switch with the active CPU or the inactive CPU. ***Note:*** The active CPU is shown under the Act header on the MAP display. In the example in step 6, the active CPU is CPU 1.

If the card is on the side of the switch with the	Do
inactive CPU	step 8
active CPU	step 15

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Loss of service** Do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
11	Determine if the CPUs are in sync. ***Note:*** A dot or EccOn under the Sync header means that the CPUs are in sync. The word no means that the CPUs are not in sync. **If the CPUs are** — **Do** in sync — step 12 not in sync — step 16
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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”):` — step 13 `Drop synchronization failed` — step 66 `Aborted. Active CPU n has a faulty processor clock.` — step 66 anything else — step 66

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

At the CM reset terminal for the inactive CPU	
14	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 66

15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	CAUTION **Loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing the Enter key.
	Example of a MAP response:
	`CPU pair is NOT in sync, CPU n is active.`
	`CM is running on active CPU clock.`
	
	`Memory Error Correction is ENABLED.`
	
	`The Inactive CPU IS Jammed.`

If the CM is running on the	Do
inactive clock	step 17
active clock	step 18

17	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU. **If the primary autoload device is on the side of the switch with the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

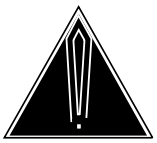
Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing 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.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing 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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that both SLM 0 and SLM 1 are in service.

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	Do
passed	step 24
failed	step 66

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	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.`

26	Access the SLM corresponding to the inactive CPU by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the inactive CPU (0 or 1)

27	Offline the SLM by typing
	>OFFL
	and pressing the Enter key.
	Example of a MAP response:
	`WARNING: The link to SLM 0 is out service.`
	`Setting this SLM offline is not safe enough`
	`for its drives. The 12-volt converter power`
	`card has to be turned off manually before`
	`attempting to remove the SLM unit.`
	`Please confirm (”YES”, ”Y”, ”NO”, or ”N”):`

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

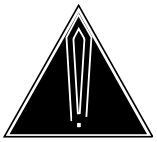
Step	Action
28	Confirm the command by typing **>YES** and pressing the Enter key. *Example of a MAP response:* `SLM 0 now offline. Do not remove SLM card until disk drive is spun down! This will be indicated when the SLM card light turns off.`
29	Determine if the NT9X46 card to be replaced is part of the CM or SLM subsystem. **If the card to be replaced is located in slot** — **Do** 17R or 22R (CM subsystem) — step 30 07R or 28R (SLM subsystem) — step 38

30	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`CM 0`
	`MC 0 MC 1`
	`. .`
	Note: Dots under the MC headers mean that the associated MCs are in service.

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
31	Determine the state of the message controller (MC) corresponding to the inactive CPU. ***Note:*** The term Mbsy under the MC header of the MAP display means that the MC is manual busy. ***Note:*** MC 0 corresponds to CPU 0. MC 1 corresponds to CPU 1. **If the state of the MC is** — **Do** `mbsy` — step 33 not `mbsy` — step 32
	 **CAUTION** **Loss of service** Do not manually busy the MC that corresponds to the active CPU. Powering down the plane with the active MC busied causes a warm restart.

32	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_ number
	and pressing 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 33
	did not busy — step 66

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM/SLM shelf
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
33	Power down the inactive plane. Switch off the two power converters, NT9X91 and NTDX15, by simultaneously pressing down and releasing the power switches located on the faceplates of the converters.
34	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
35	Power up the inactive plane. Switch on the two power converters, NT9X91 and NTDX15, by simultaneously lifting and releasing the power switches located on the faceplates of the converters.
	At the CM reset terminal for the inactive CPU

36	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Testing Memory:`
	`Shelf  Slot  PEC  Module Status`
	`00  12  NT9X14EA  ...`
	`00  13  NT9X14EA  ...`
	`Waiting for activity...`

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
37	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed.

If the inactive CPU	Do
powered up	step 43
did not power up	step 66

At the CM/SLM shelf

WARNING
Equipment damage and possible loss of service
Do not switch off the NTDX15 power converter. Switching off the NTDX15 converter will power down the CPU plane, not the SLM plane. The SLM is powered by the NT9X91 power converter.

38	Power down the inactive SLM plane by pressing down and releasing the power switch located on the faceplate of the NT9X91 power converter. ***Note:*** For plane 0, the power converter is located in slots 1F through 3F. For plane 1, the power converter is located in slots 36F through 38F.

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
	WARNING **Equipment damage and possible loss of service** Remove the interconnect cable from the NT9X46 cards on the inactive plane only. Also, ensure that you disconnect the cable in the correct sequence.
39	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
40	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
41	Reconnect 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
42	Power up the inactive SLM plane by lifting and releasing the power switch located on the faceplate of the NT9X91 power converter. ***Note:*** For plane 0, the power converter is located in slots 1F through 3F. For plane 1, the power converter is located in slots 36F through 38F.

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
	At the MAP

43	Access the PMC level of the MAP display by typing
	>PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: mbsy`
	`PORT1: .`

44	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

45	Access the SLM that was offlined by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM that was put offline (0 or 1)
46	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.`

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
47	Test the SLM by typing **>TST** and pressing the Enter key. **If the TST command** / **Do** passed / step 50 failed, and a card list is generated / step 48 anything else / step 66
48	Record the location, description, slot number, and PEC, including suffix, of the first card on the list.
49	Change the card by performing the appropriate card replacement procedure in this document. When you have completed the procedure, return to this point. Go to step 51.
50	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 return to service passed.`
51	Determine if the autoload route was changed. **If the autoload route was** / **Do** changed / step 52 not changed / step 54
52	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
53	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM that was originally the primary SLM (0 or 1) device_type is the type of SLM device (DISK or TAPE)
54	Determine if the NT9X46 card you replaced is part of the CM or SLM subsystem. **If the card you replaced is located in slot** — **Do** 17R or 22R (CM subsystem) — step 55 07R or 28R (SLM subsystem) — step 62
55	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** an MC Tbl alarm — step 65 a PMCFlt alarm — step 65 a PMCTbl alarm — step 65 a NoTOD alarm — step 65 an SBsyMC alarm — step 65 an MBsyMC alarm — step 65 a CBsyMC alarm — step 65 anything else — step 56

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
56	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.

57	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 58
failed	step 66

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

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 65
anything else	step 59

59	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X46 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action

60	Test the inactive CPU by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

61	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 62
failed	step 66
anything else	step 66

At the CM reset terminal for the inactive CPU	
62	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

63	Synchronize the CPUs by typing
	>SYNC
	and pressing the Enter key.
	MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 64
the SYNC command failed	step 66
`Inactive CPU configuration does not support burst mode operation.`	step 66
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 66
anything else	step 66

-continued-

NT9X46 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X46 card in a computing module/system load module shelf (continued)

Step	Action	
64	Your next step depends on the reason for performing this procedure.	
	If you are performing this procedure as a result of	**Do**
	another maintenance procedure	step 65
	anything else	step 67
65	Return to the maintenance procedure that sent you to this procedure and continue as directed.	
66	For further assistance, contact the personnel responsible for the next level of support.	
67	You have completed this procedure.	
	End	

NT9X49
in a message switch shelf

Application

Use this procedure to replace the following cards in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X49	CC	Message switch P-bus terminator circuit pack

Common procedures

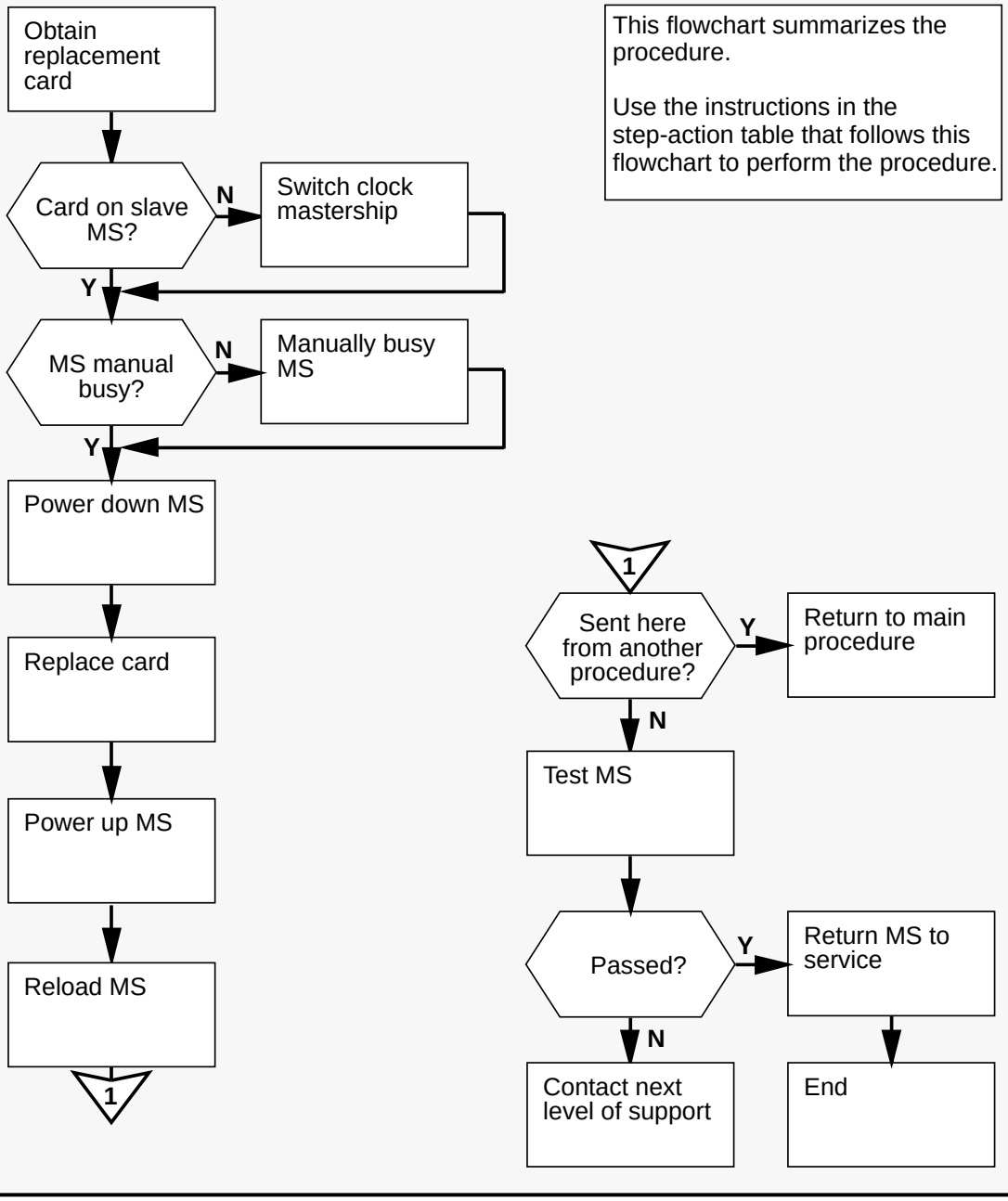
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X49 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X49 card in a message switch shelf



NT9X49 (continued)
in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X49CC 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X49CC S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X49 (continued)
in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 29

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X49 (continued)
in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X49 (continued)
in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 29

-continued-

NT9X49 (continued) in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

14	Translate the location of card 13 by typing
	>TRNSL ms_number 13
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:13 32 9X49CA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:13 32 BACK`
	`No resources to translate on card 13.`

15	Record the location, description, slot number, and the PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS. **If the slave MS is** — **Do** MS 0 — step 17 MS 1 — step 18

-continued-

NT9X49 (continued)
in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action
	CAUTION **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	WARNING **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 21 MS 1 — step 22

-continued-

NT9X49 (continued) in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

23	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X49 (continued)
in a message switch shelf (continued)

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action

24	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 25
failed	step 29

Step	Action
25	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 28
anything else	step 26

-continued-

Replacing an NT9X49 card in a message switch shelf (continued)

Step	Action

26	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 27
failed	step 29

Step	Action

27	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the RTS command	Do
passed	step 30
failed	step 29

-continued-

NT9X49 (end)
in a message switch shelf (end)

Replacing an NT9X49 card in a message switch shelf (continued)	
Step	**Action**
28	Return to the maintenance procedure that sent you to this procedure and continue as directed.
29	For further assistance, contact the personnel responsible for the next level of support.
30	You have completed this procedure.
	End

NT9X52
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X52	AA	MSP T-bus access card

Common procedures

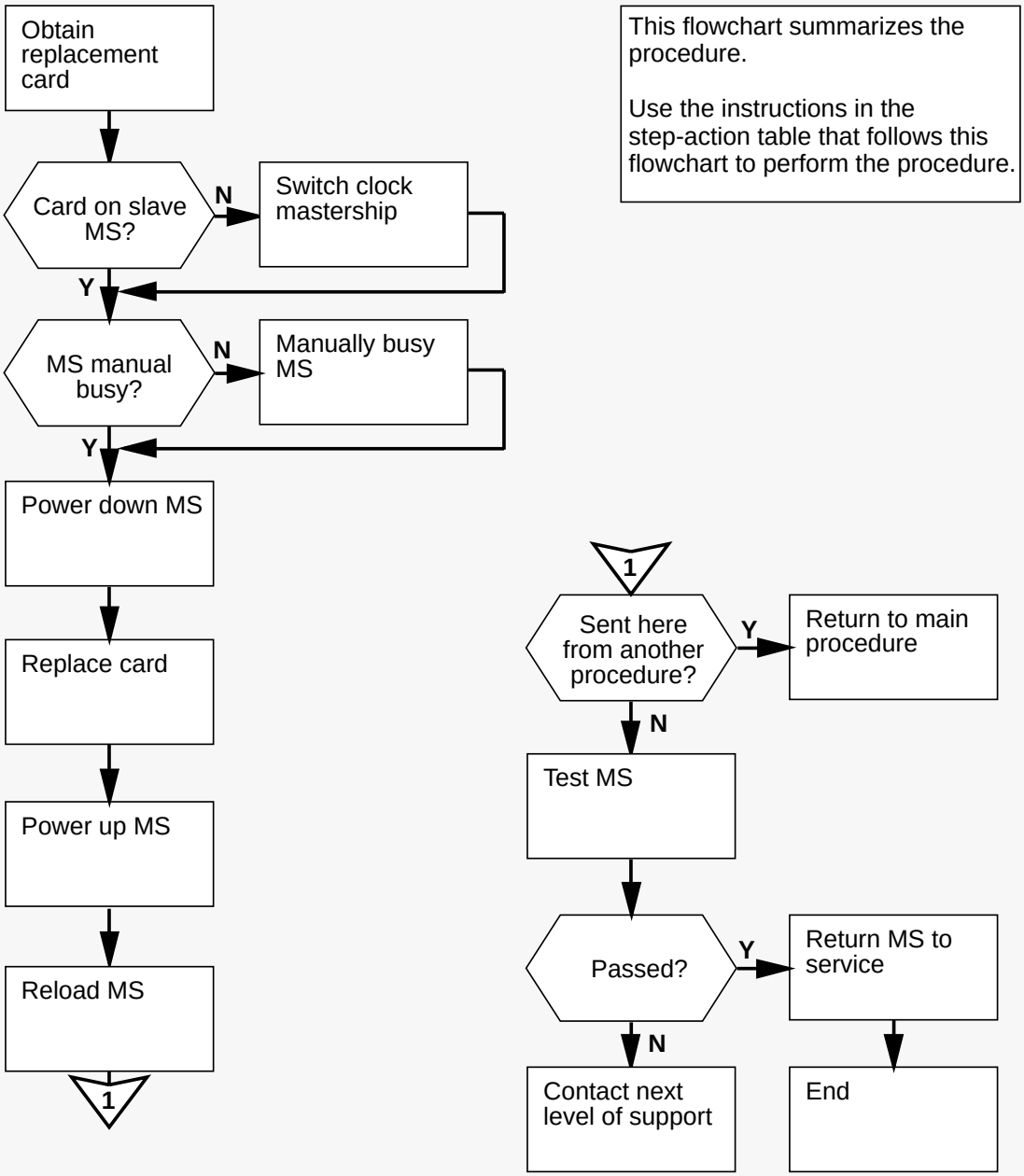
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X52 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X52 card in a message switch shelf



NT9X52 (continued) in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X52AA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X52AA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X52 (continued)
in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 29

At the MAP

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X52 (continued)
in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X52 (continued)
in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 29

-continued-

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

14	Translate the location of card 1 by typing
	>TRNSL ms_number 1
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:1 20 9X52AA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:1 20 BACK`
	`No resources to translate on card 1.`

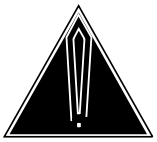
15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X52 (continued)
in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 21 MS 1 — step 22

-continued-

NT9X52 (continued) in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

23	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X52 (continued)
in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action

24	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 25
failed	step 29

Step	Action
25	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 28
anything else	step 26

-continued-

NT9X52 (continued)
in a message switch shelf (continued)

Replacing an NT9X52 card in a message switch shelf (continued)

Step	Action

26	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	**Do**
passed	step 27
failed	step 29

Step	Action

27	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`

If the RTS command	**Do**
passed	step 30
failed	step 29

Step	Action
28	Return to the maintenance procedure that sent you to this procedure and continue as directed.

-continued-

NT9X52 (end)
in a message switch shelf (end)

Replacing an NT9X52 card in a message switch shelf (continued)	
Step	**Action**
29	For further assistance, contact the personnel responsible for the next level of support.
30	You have completed this procedure.
	End

NT9X53
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X53	AC	Combined clock card

Common procedures

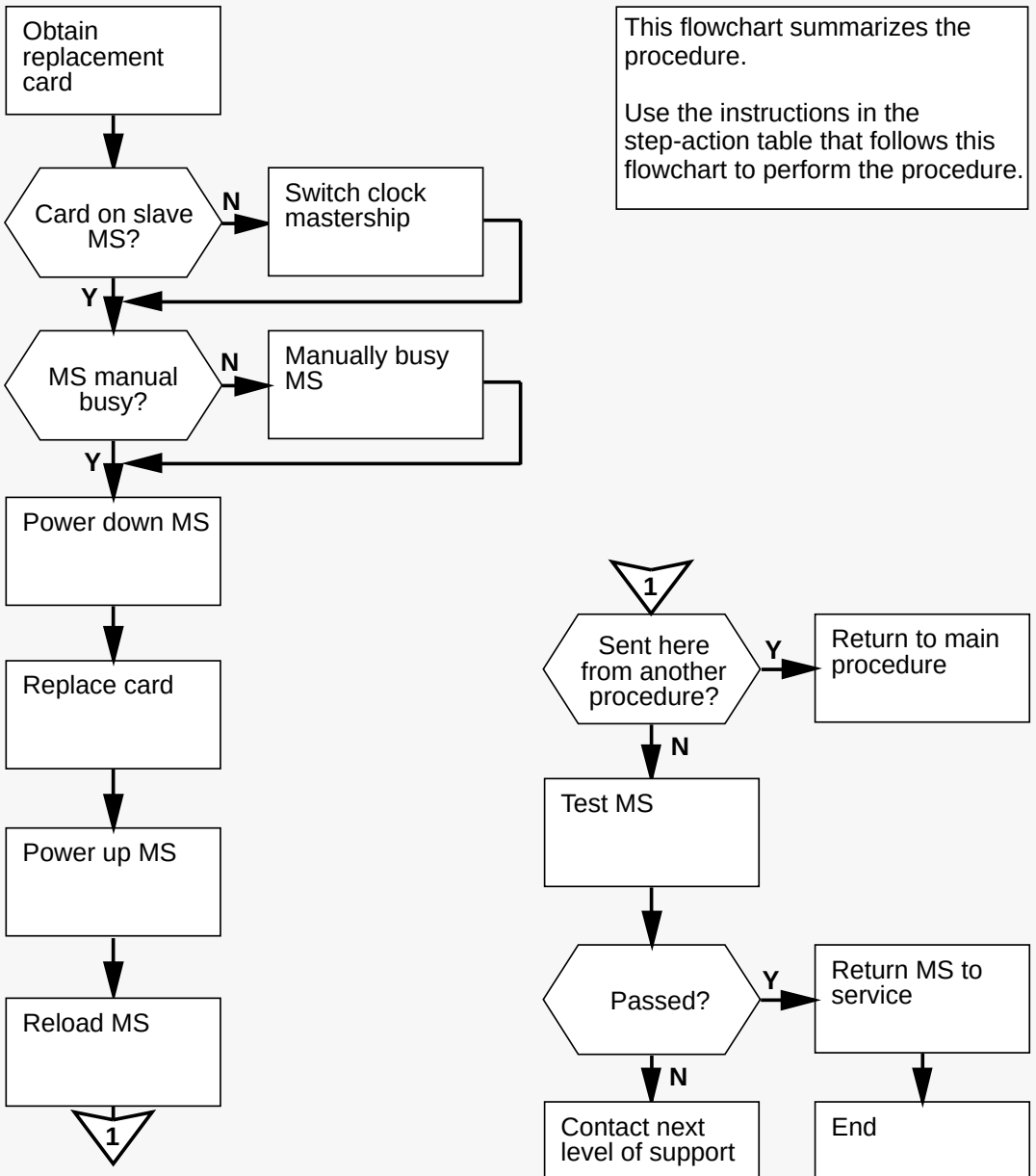
Failure to switch clock mastership and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X53 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X53 card in a message switch shelf



NT9X53 (continued) in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X53AC 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X53AC S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X53 (continued)
in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 29

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X53 (continued) in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue .

-continued-

NT9X53 (continued)
in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 29

-continued-

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

14	Translate the location of card 2 by typing
	>TRNSL ms_number 2
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:2 21 9X53AC FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:2 21 9X54AD BACK`
	`No resources to translate on card 2.`

15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X53 (continued)
in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action
	CAUTION **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	WARNING **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.
19	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.
20	Determine which MS was powered down. **If the MS that was powered down is** / **Do** MS 0 / step 21 MS 1 / step 22

-continued-

NT9X53 (continued) in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
21	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 23.
22	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

23	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X53 (continued)
in a message switch shelf (continued)

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action

24	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 25
failed	step 29

Step	Action
25	Determine the reason for performing this procedure.

If you are performing this procedure	Do
as a result of another maintenance procedure	step 28
anything else	step 26

-continued-

Replacing an NT9X53 card in a message switch shelf (continued)

Step	Action

26	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 27
failed	step 29

Step	Action

27	Return the manual-busy MS to service by typing
	>RTS ms_number OOBAND
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the RTS command	Do
passed	step 30
failed	step 29

-continued-

NT9X53 (end)
in a message switch shelf (end)

Replacing an NT9X53 card in a message switch shelf (continued)	
Step	**Action**
28	Return to the maintenance procedure that sent you to this procedure and continue as directed.
29	For further assistance, contact the personnel responsible for the next level of support.
30	You have completed this procedure.
	End

NT9X54
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X54	AC	Subsystem clock paddle board (external interface)
NT9X54	AD	Subsystem clock paddle board (Japan)

Common procedures

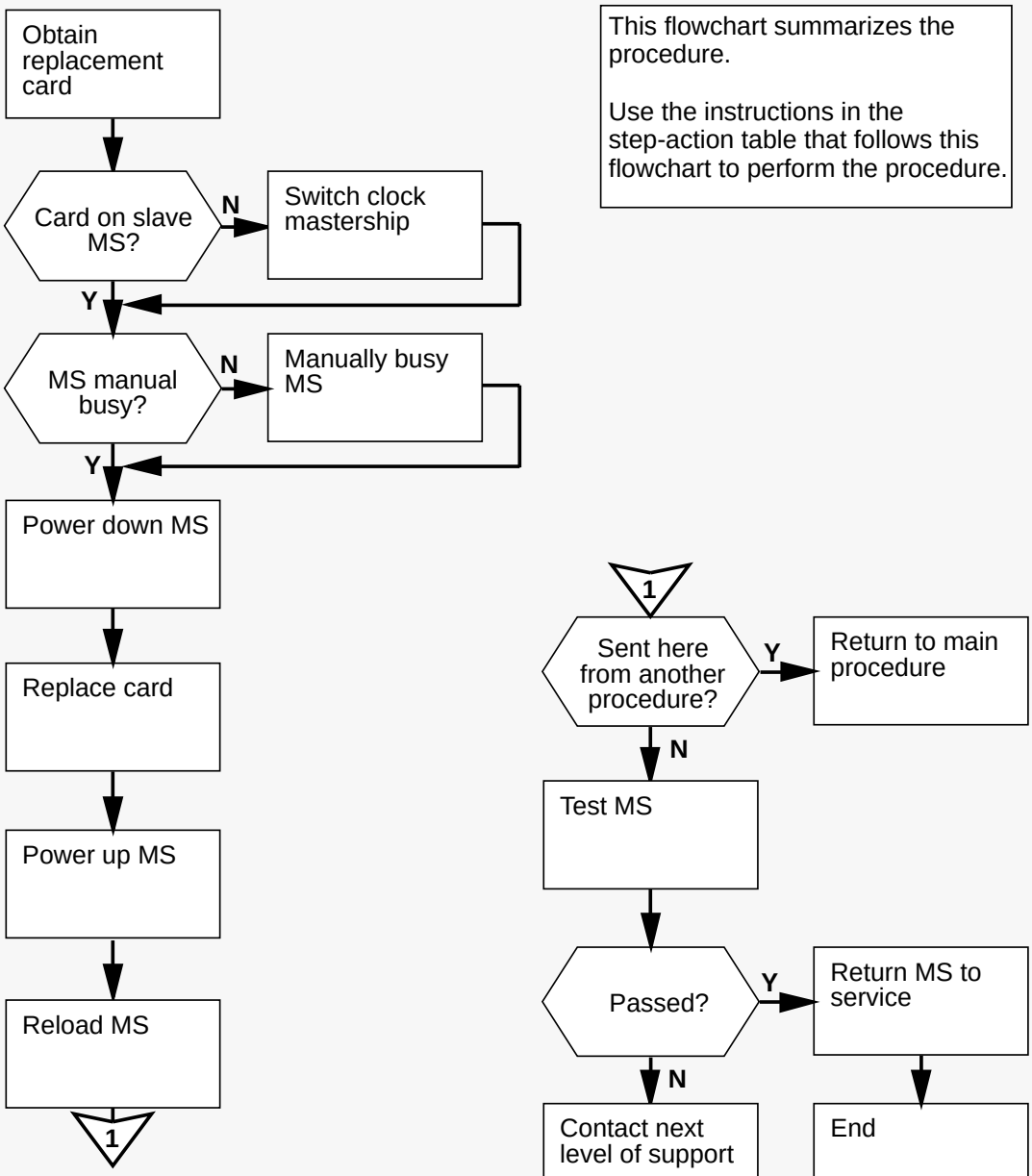
Failure to switch clock mastership is referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X54 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X54 card in a message switch shelf



NT9X54 (continued)
in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	
	Example input:
	>CHECKREL MS NT9X54AD 10
	
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X54AD S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X54 (continued)
in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 37

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X54 (continued) in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X54 (continued)
in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 37

-continued-

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

14	Translate the location of card 2 by typing
	>TRNSL ms_number 2
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:12 2 9X53AC FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:12 2 9X54AD BACK`
	`No resources to translate on card 2.`

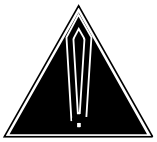
15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS, using the information obtained in step 7.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X54 (continued)
in a message switch shelf (continued)

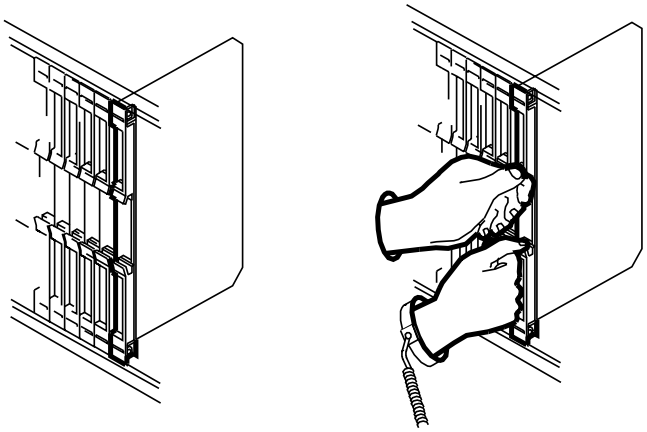
Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

NT9X54 (continued)
in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf (continued)

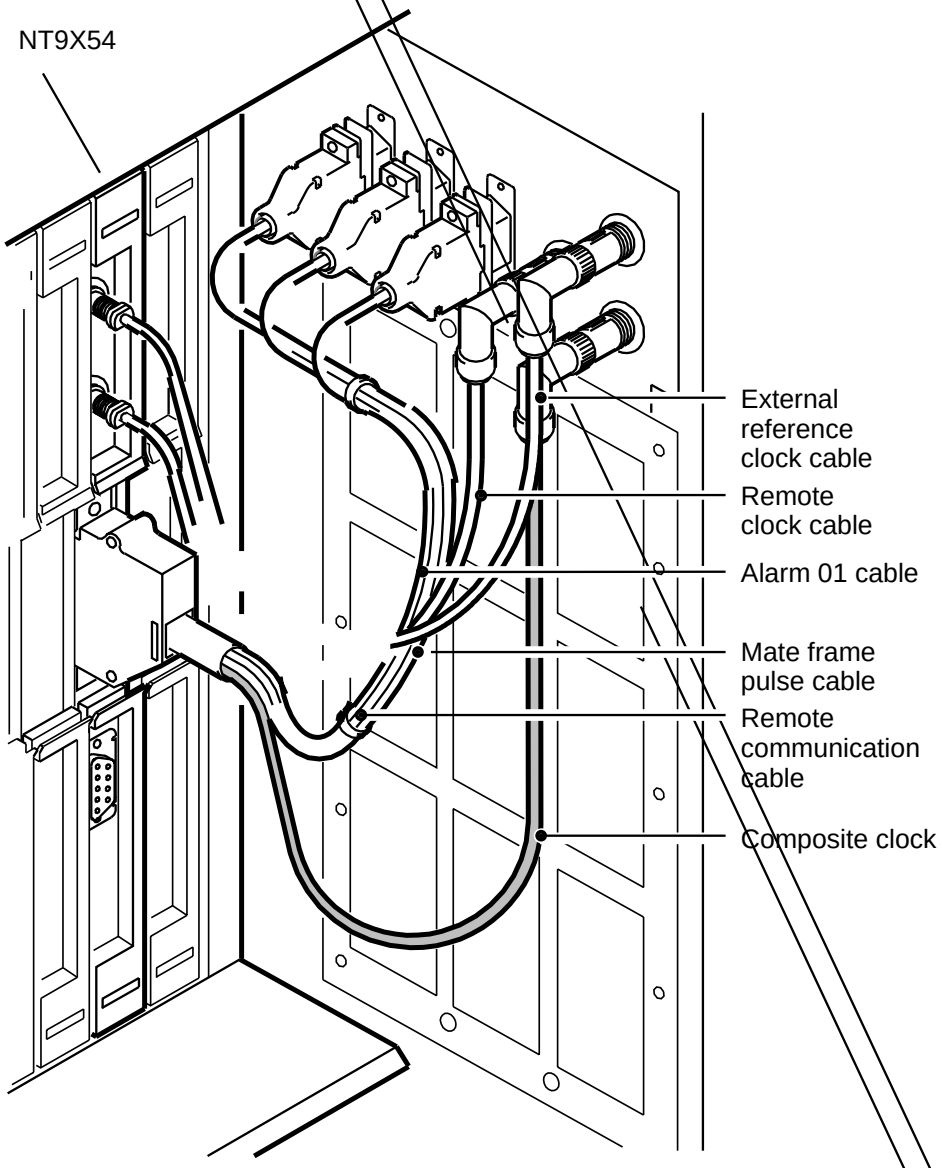
Step	Action
19	Locate the card to be removed on the appropriate shelf. 
20	Label the cables connected to the faceplate of the card you are replacing.

-continued-

NT9X54 (continued)
in a message switch shelf (continued)

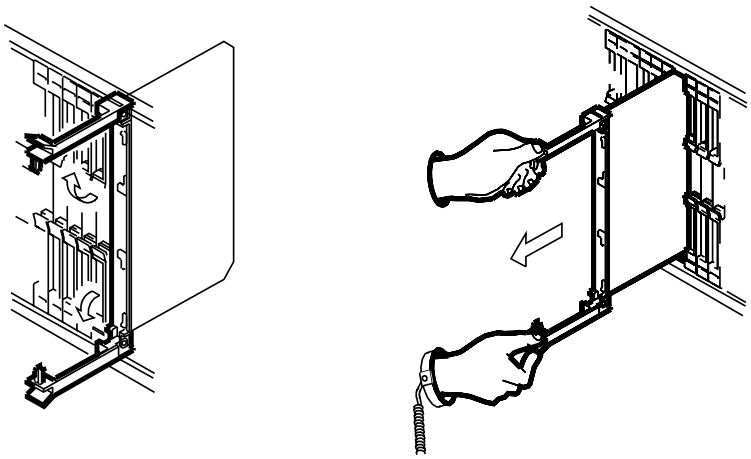
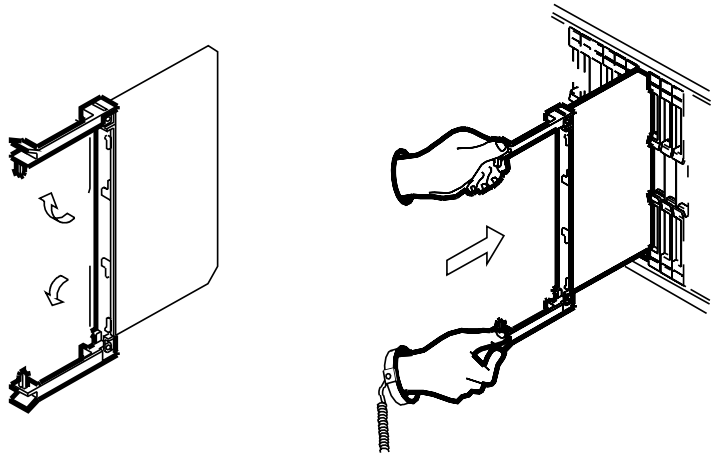
Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
21	Remove any cables from the faceplate of the card you are replacing. Refer to the following figure.



-continued-

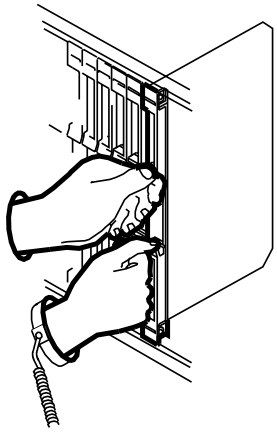
Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
22	Gently pull the card towards you until it clears the shelf. 
23	Place the card you have removed in an electrostatic discharge (ESD) protective container.
24	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
25	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf. 

-continued-

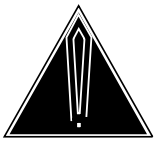
NT9X54 (continued)
in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
26	Seat and lock the card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers. 
27	Reconnect any previously removed cables to the faceplate of the replacement card.
28	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 29 MS 1 — step 30

-continued-

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 31.
30	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

31	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X54 (continued)
in a message switch shelf (continued)

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action

32	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 33
failed	step 37

Step	Action
33	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 36
anything else	step 34

-continued-

Replacing an NT9X54 card in a message switch shelf (continued)

Step	Action

34	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 35
failed	step 37

Step	Action

35	Return the manual-busy MS to service by typing
	>RTS ms_number OOBAND
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the RTS command	Do
passed	step 38
failed	step 37

-continued-

NT9X54 (end)
in a message switch shelf (end)

Replacing an NT9X54 card in a message switch shelf (continued)	
Step	**Action**
36	Return to the maintenance procedure that sent you to this procedure and continue as directed.
37	For further assistance, contact the personnel responsible for the next level of support.
38	You have completed this procedure.
	End

NT9X62
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X62	AA	Dual-port SE512 paddle board
NT9X62	BA	Four-port DS512 paddle board

Common procedures

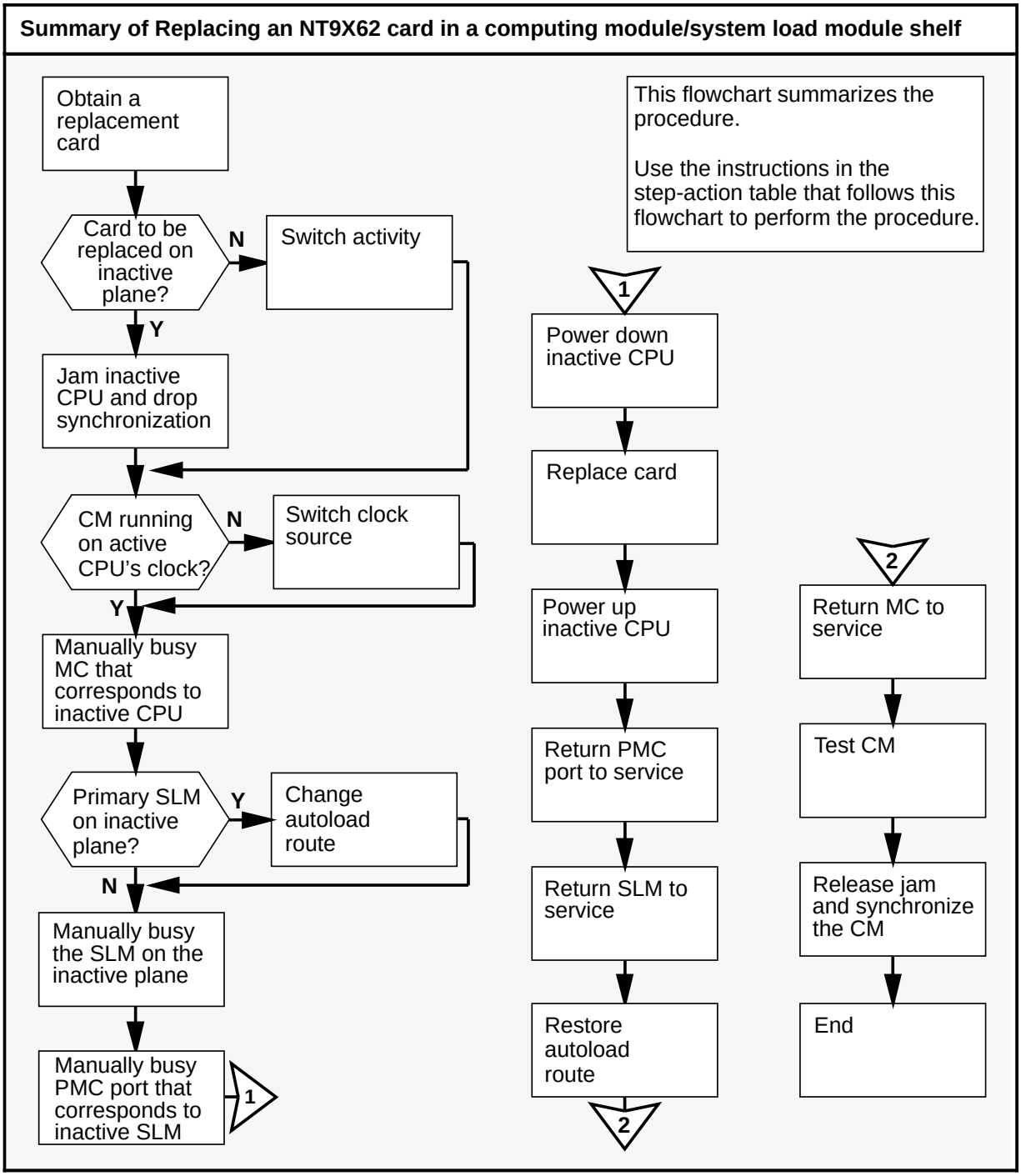
Activity switch with memory match and *Switching the clock source* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X62 card in a computing module/system load module shelf



NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Loss of data recording services** This procedure involves busying the system load module (SLM) on the same side of the switch as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite side of the switch from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM pec release
	and pressing the Enter key.
	where
	pec — is the PEC and suffix of the replacement card
	release — is the two-character code located on the face of the replacement card
	Example input:
	>CHECKREL CM NT9X62AA 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X62AA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 61

At the MAP

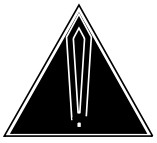
6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   no  cpu 1   .     .  yes   .      .     .   .`

7	Determine if the card you are going to replace is on the active or the inactive side of the CM. ***Note:*** The active CPU is shown under the Act header on the MAP display. In the example in step 6, the active CPU is CPU 1.

If the card is on the	Do
inactive side	step 8
active side	step 15

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	 **CAUTION** **Loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM (YES/NO)`
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync. **If the CM is** — **Do** in sync — step 12 not in sync — step 16
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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”):` — step 13 `Drop synchronization failed` — step 61 anything else — step 61
13	Confirm the command by typing **>YES** and pressing the Enter key. *Example of a MAP response:* `Maintenance action submitted. Running in simplex mode with active CPU n.`

-continued-

NT9X62 (continued) in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
14	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 61

15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	CAUTION **Loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X62 (continued) in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing the Enter key.
	Example of a MAP response:
	`CM  Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC`
	`0  .  cpu 0  .  .  .  .  .  .`
	`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 test restart type = RELOAD`
	`Last CMREXTST executed.`
	`System memory in kbytes as of 14:39:07`
	`Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU. **If the primary autoload device is on the side of the switch with the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

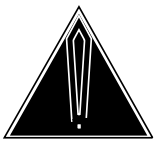
Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
21	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) on the active plane device_type is the type of SLM device (DISK or TAPE)

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing the Enter key.
	where
	slm_number is the number of the SLM (0 or 1) on the inactive plane
	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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that both SLM 0 and SLM 1 are in service.

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Loss of data recording services** This step involves removing the SLM on the inactive side of the switch from service. Before you busy the SLM, ensure that the data recording services provided by the SLM on the inactive side of the switch will be assumed by the SLM on the active side of the switch.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.`

If the BSY command	Do
passed	step 24
failed	step 61

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the port (0 or 1) on the inactive plane
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

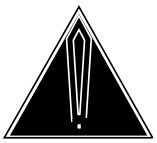
26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`CM 0`
	`MC 0 MC 1`
	`mbsy .`

27	Determine the state of the message controller (MC) on the inactive plane. ***Note:*** The term mbsy under the MC header means that the MC is manual busy.

If the state of the MC is	Do
`mbsy`	step 29
not `mbsy`	step 28

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Loss of service** Ensure that you busy the MC that corresponds to the inactive CPU. Powering down the plane with the wrong MC busied causes a warm restart.

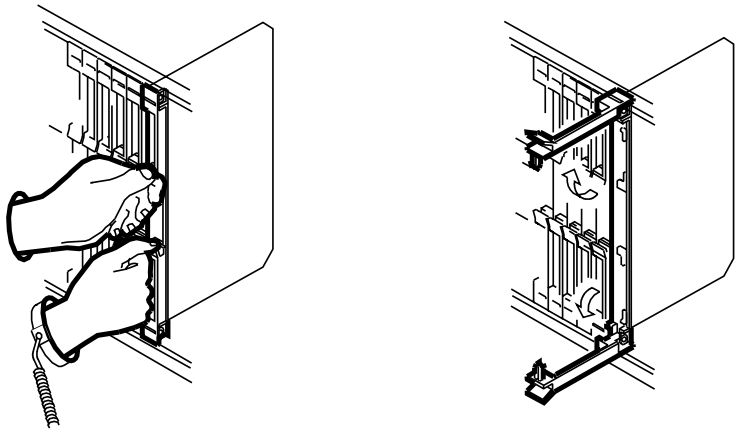
28	Manually busy the MC by typing
	>BSY mc_number
	and pressing the Enter key.
	where
	mc_number is the number of the MC (0 or 1) on the inactive plane
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`
	If the MC — **Do**
	busied — step 29
	did not busy — step 61

At the CM/SLM shelf	
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU by pressing and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
30	Locate the card to be removed on the appropriate shelf.

-continued-

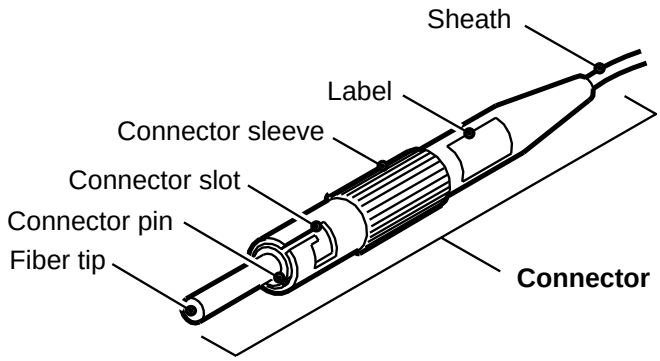
NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
31	Open the locking levers on the card to be replaced. 
32	Label each fiber link pair “transmit” for the top fiber of each port and “receive” for the bottom fiber of each port.

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

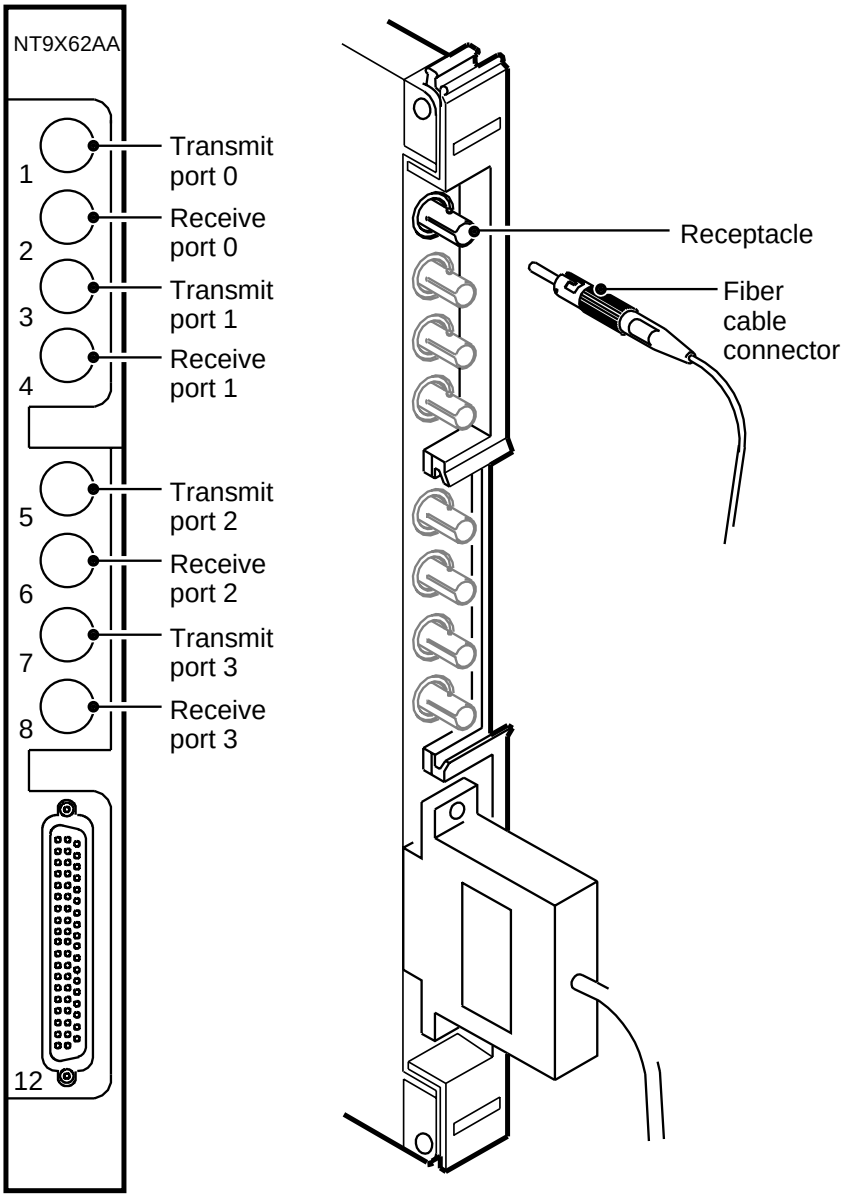
Step	Action
	WARNING **Avoid contaminating the fiber tip surface** Do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.
	WARNING **Fiber cable may become damaged** Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).
33	Disconnect the fiber links from the card as follows: ▪ Loosen the fiber connections with the locking levers open. ▪ Gently push in and turn the fiber cable connector counterclockwise halfway until the connector slides out of its receptacle. ▪ Place dust caps on the ends of the connectors as you disconnect them. 

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

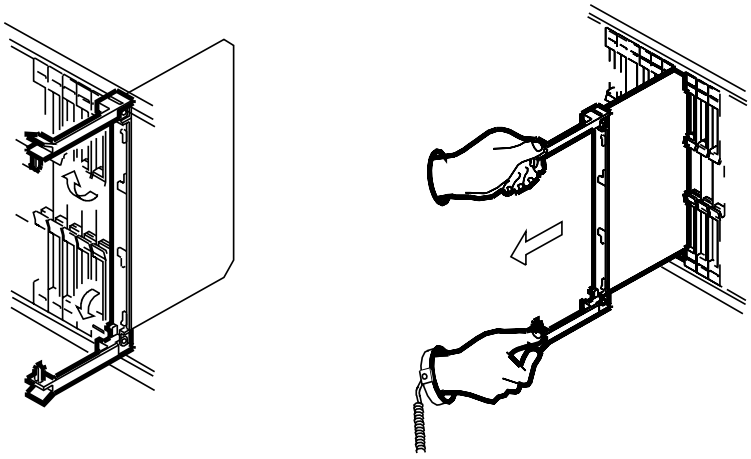
Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step **Action**



-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

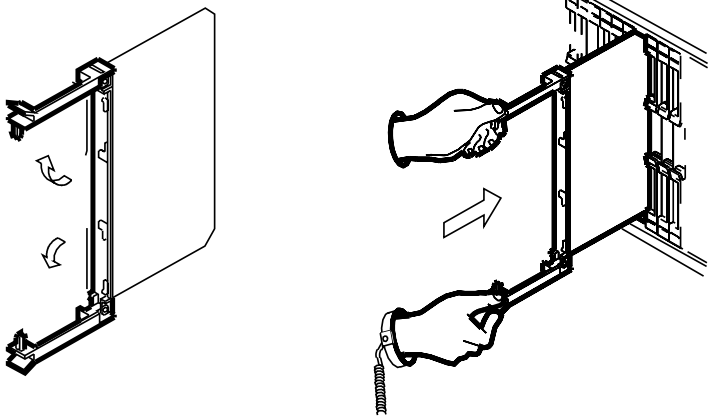
Step	Action
34	Gently pull the card towards you until it clears the shelf. 
35	Place the card you have removed in an electrostatic discharge (ESD) protective container.
36	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
37	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.



38	Seat the card in the shelf. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.

WARNING

Fiber cable may become damaged

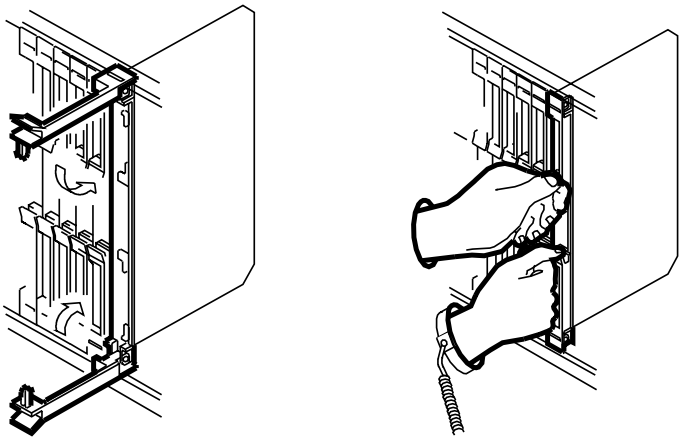
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).

39 Reconnect the fiber links as follows:

- Tighten the fiber connections with the locking levers open.
- Gently guide the fiber connector into its receptacle notches.
- Push in and turn the fiber connector clockwise halfway until the connection is finger-tight.

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
40	Lock the card in the shelf by closing the locking levers. 
41	Power up the inactive CPU by lifting and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
At the CM reset terminal for the inactive CPU	

42	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests, the continue with this procedure.
	
	Example of an RTIF response:
	`Shelf  Slot`
	`00  12  NT9X14DB  ...`
	`00  13  NT9X14DB  ...`
	`Waiting for activity.....`

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
43	Determine if the inactive CPU powered up successfully. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 44 did not power up — step 61
At the MAP	

44	Access the PMC level of the MAP display by typing
	
	>CM;PMC
	and pressing the Enter key.
	
	Example of a MAP display:
	`PMC 0`
	`.`
	
	`PORT0: mbsy`
	`PORT1: .`

45	Return the manual-busy PMC port to service by typing
	
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
46	Access the SLM that you manually busied in step 23 by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1)
47	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 returned to service passed.`
48	Determine if the primary autoload route was changed. **If the autoload route was** — **Do** changed — step 49 not changed — step 51
49	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.
50	Change the primary autoload device to the device you recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) device_type is the type of SLM device (disk or tape)

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action	
51	Your next step depends on the reason for performing this procedure.	
	If you are performing this procedure as a result of	**Do**
	an MC Tbl alarm	step 60
	a PMCFlt alarm	step 60
	a PMCTbl alarm	step 60
	a NoTOD alarm	step 60
	an SBsyMC alarm	step 60
	an MBsyMC alarm	step 60
	a CBsyMC alarm	step 60
	anything else	step 52
At the MAP		
52	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.	

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action

53	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 54
failed	step 61

Step	Action
54	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
a CM alarm clearing procedure	step 60
anything else	step 55

Step	Action
55	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X62 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action

56	Test the inactive CPU by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

57	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 58
failed	step 61
anything else	step 61

At the CM reset terminal for the inactive CPU

58	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

59	Synchronize the CM by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 62
the SYNC command failed	step 61
`Inactive CPU configuration does not support burst mode operation.`	step 61
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 61
anything else	step 61

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

-continued-

NT9X62 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X62 card in a computing module/system load module shelf (continued)

Step	Action
61	For further assistance, contact the personnel responsible for the next level of support.
62	You have completed this procedure.
	End

NT9X62
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X62	CA	SR-512 subrate paddle board

Common procedures

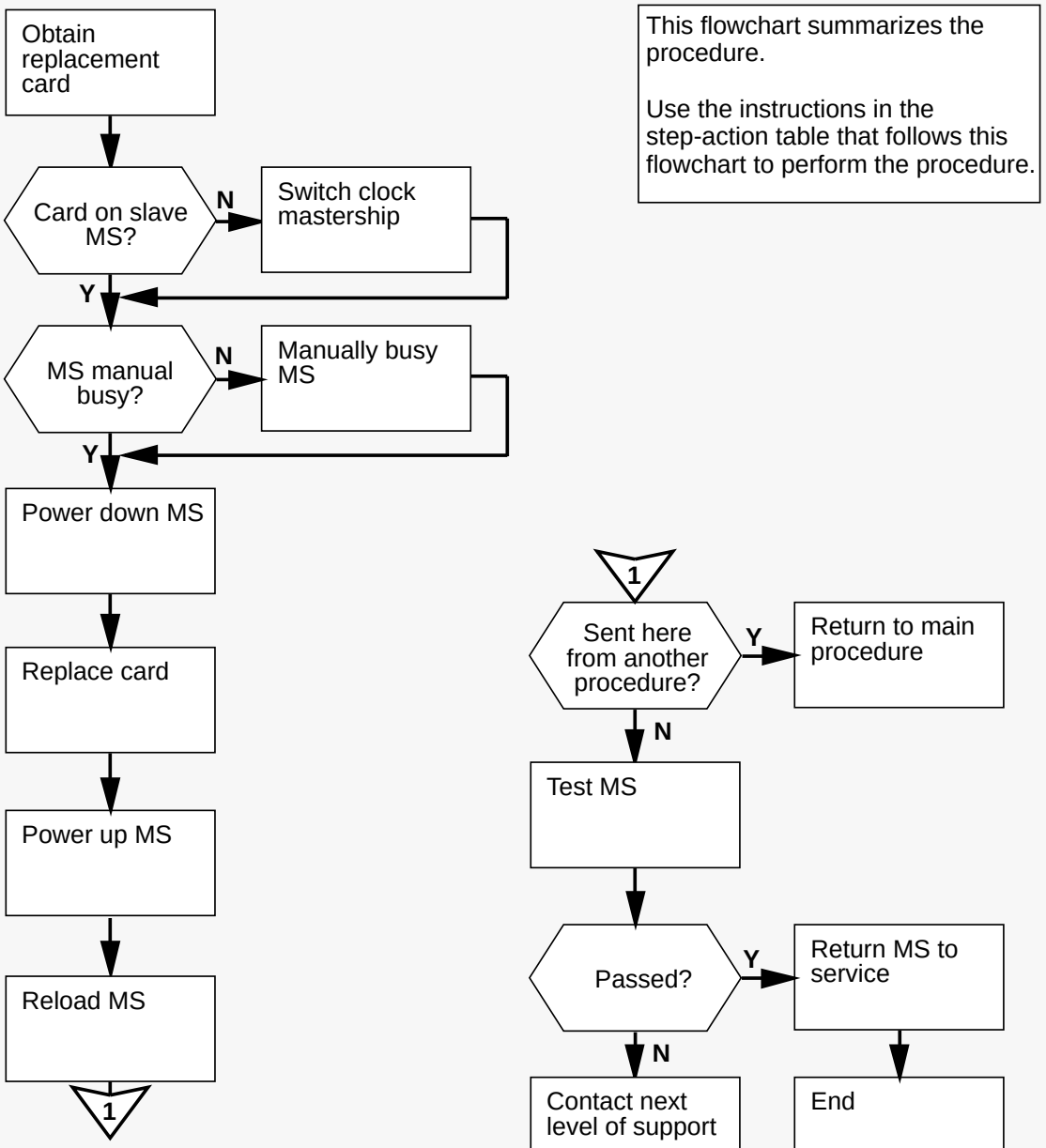
Failure to switch clock mastership is referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X62 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X62 card in a message switch shelf



NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being replaced.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X62CA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X62CA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 38

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X62 (continued) in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 38

-continued-

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . . . . . . . . . .`

14	Translate the location of the card to be replaced by typing
	>TRNSL ms_number card_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	card_number is the number of the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPec`
	`Host 00 A00 SCC 0 39 MS 1 :0 : 6 27 9X17AC FRNT`
	`Host 00 A00 SCC 0 39 MS 1 :0 : 6 27 9X62BA BACK`
	`No resources to translate on card 6.`

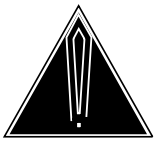
15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

NT9X62 (continued)
in a message switch shelf (continued)

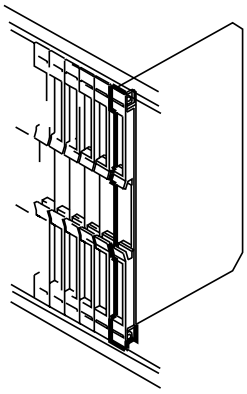
Replacing an NT9X62 card in a message switch shelf (continued)

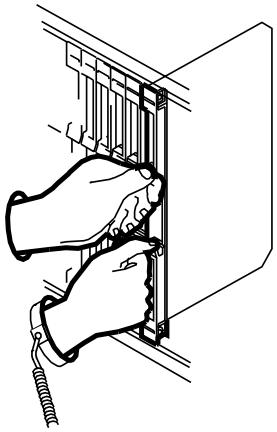
Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

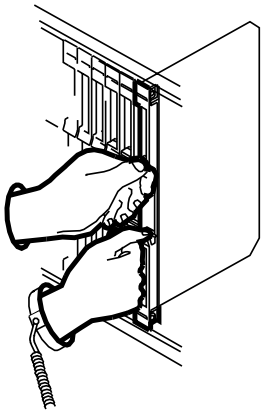
Replacing an NT9X62 card in a message switch shelf (continued)

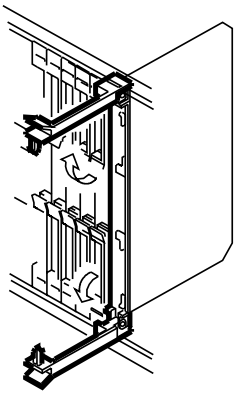
Step	Action
19	Locate the card to be removed on the appropriate shelf.





Step	Action
20	Open the locking levers on the card to be replaced.

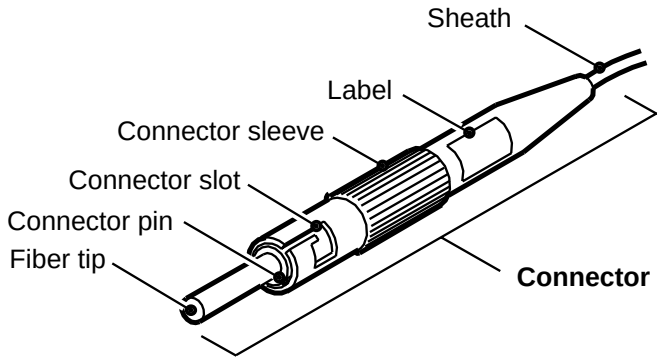




-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

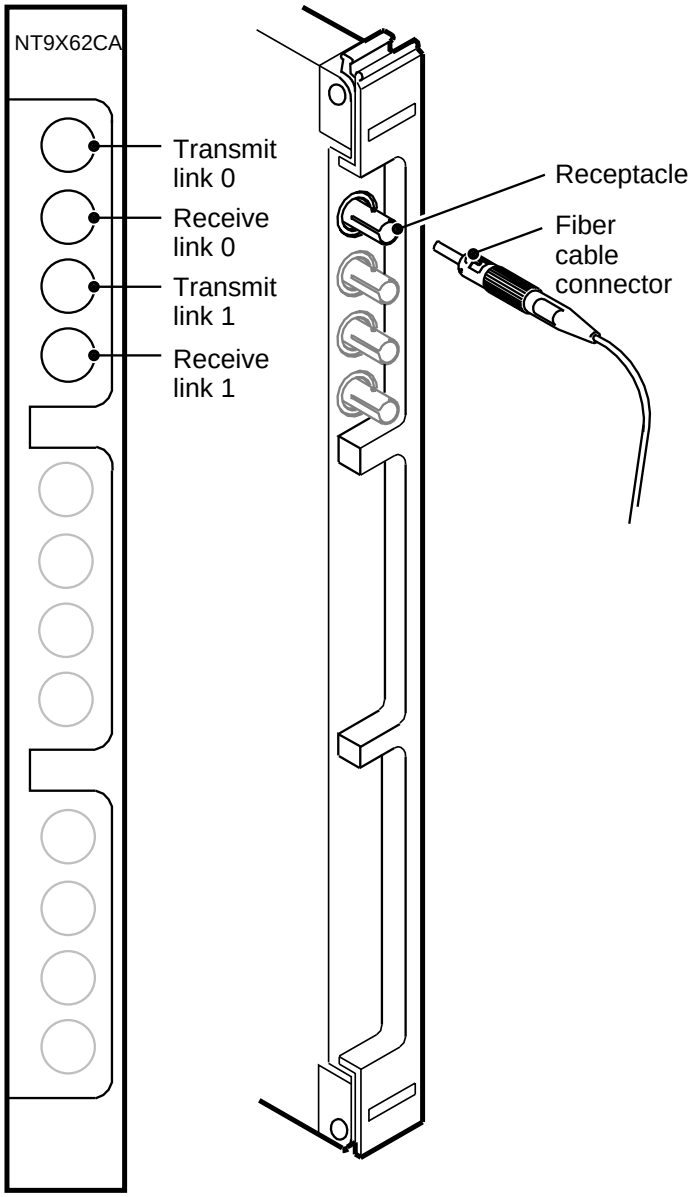
Step	Action
	WARNING **Avoid contaminating the fiber tip surface** Do not touch the tip of the fiber. Dirt or oil from the skin transferred to the fiber tip surface degrades fiber performance.
	WARNING **Fiber cable may become damaged** Exercise care in handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).
	The following illustration shows the type of connector used to connect fiber to an NT9X62 card. 
21	Label each fiber link pair. Use Transmit for the top fiber of each port and Receive for the bottom fiber of each port. Disconnect the fiber links from the card as follows, referring to the figure on the next page: ▪ Loosen the fiber connections with the latch handles up. ▪ Gently push in and turn the fiber cable connector counterclockwise halfway until the connector slides out of its receptacle. ▪ Place dust caps on the ends of the connectors as you disconnect them.

-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

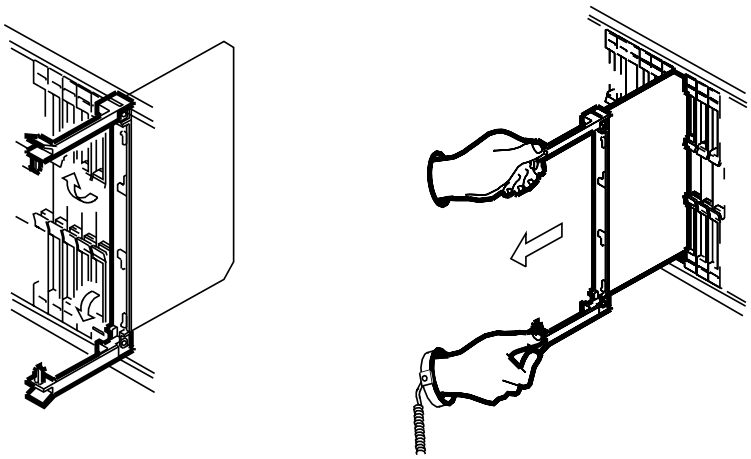
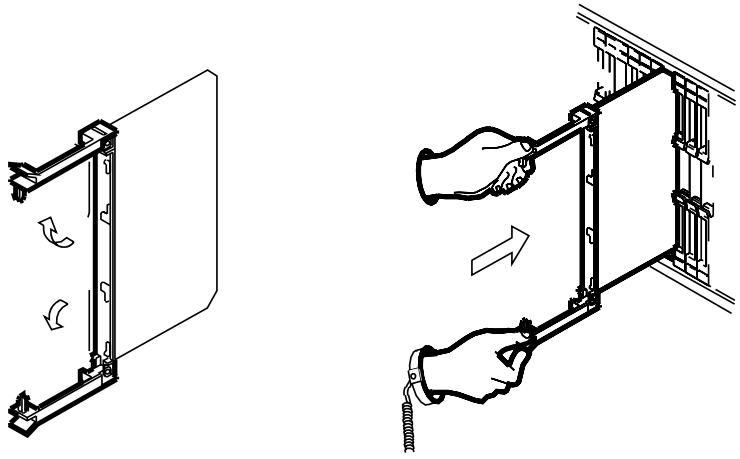
Step **Action**



-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

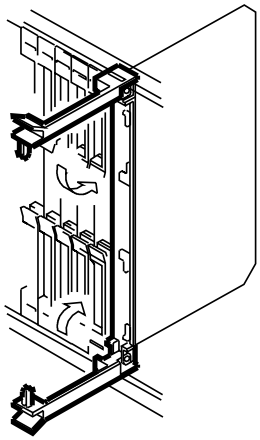
Step	Action
22	Gently pull the card towards you until it clears the shelf. 
23	Place the card you have removed in an electrostatic discharge (ESD) protective container.
24	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
25	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf. 

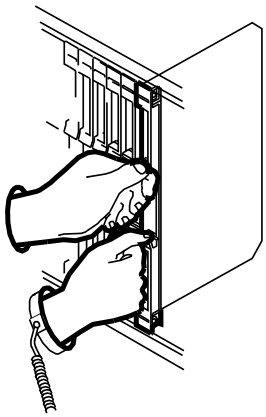
-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action
26	Seat the card in the shelf. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.
	WARNING **Fiber cable may become damaged** Exercise care in handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 25 mm (1 in.).
27	Reconnect the fiber links as follows: ▪ Tighten the fiber connections with the locking levers open. ▪ Gently guide the fiber connector into its receptacle notches. ▪ Push in and turn the fiber connector clockwise halfway until the connection is finger-tight.
28	Lock the card in the shelf by closing the locking levers.





-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action
29	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 30 MS 1 — step 31
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
30	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 32.
31	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

32	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action

33	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 34
failed	step 38

Step	Action
34	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 37
anything else	step 35

-continued-

NT9X62 (continued)
in a message switch shelf (continued)

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action

35	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 36
failed	step 38

Step	Action

36	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the RTS command	Do
passed	step 39
failed	step 38

-continued-

Replacing an NT9X62 card in a message switch shelf (continued)

Step	Action
37	Return to the maintenance procedure that sent you to this procedure and continue as directed.
38	For further assistance, contact the personnel responsible for the next level of support.
39	You have completed this procedure.
	End

NT9X69
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X69	BA	DMS-bus 16-link DS30 paddle board

Common procedures

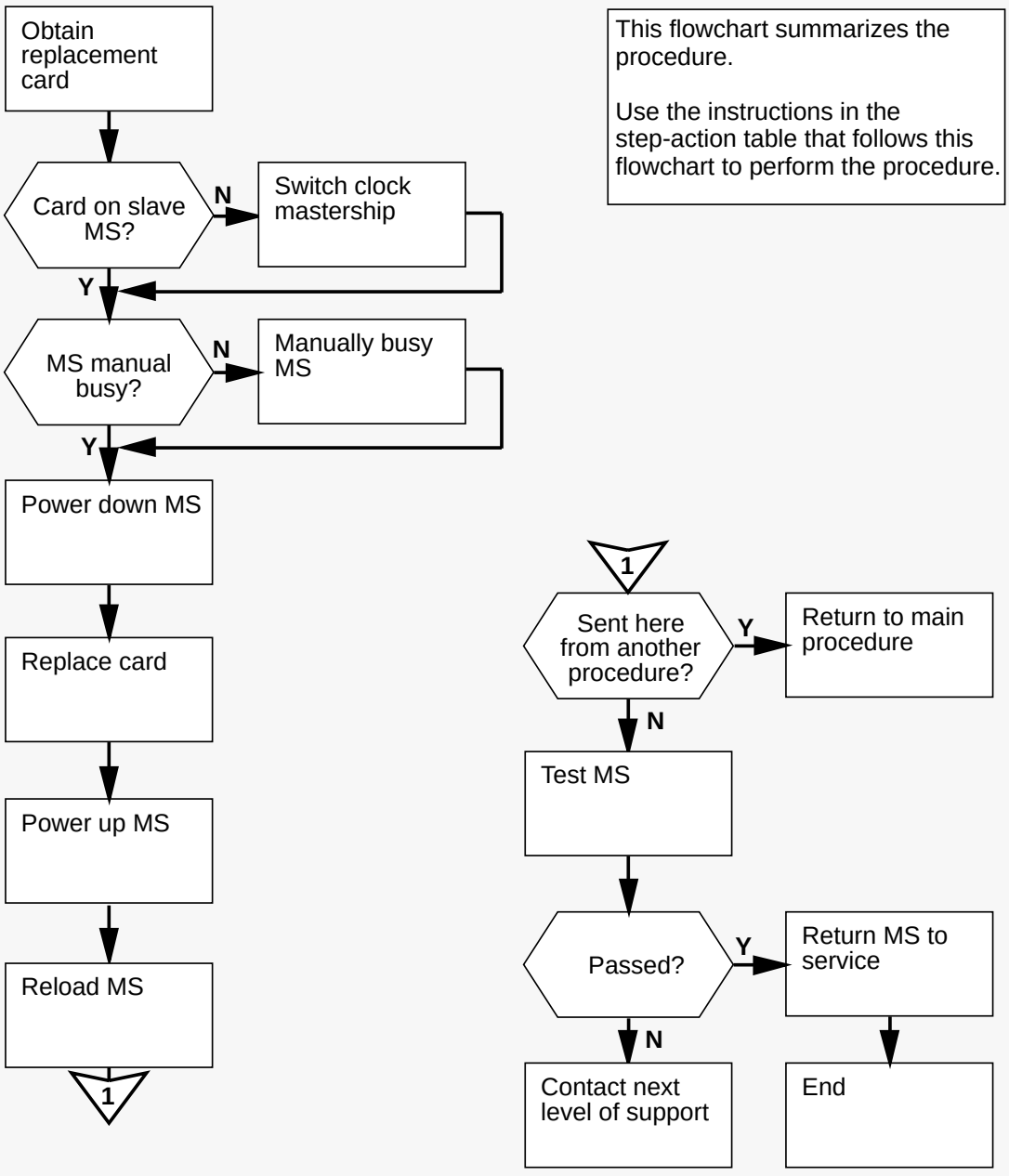
Failure to switch clock mastership is referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X69 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X69 card in a message switch shelf



NT9X69 (continued) in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X69BA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X69BA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT) .

-continued-

NT9X69 (continued)
in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 38

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X69 (continued)
in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 38

-continued-

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . . . . F . . . .`
	`MS 1 . . . . . .`

14	Translate the location of the card to be replaced by typing
	>TRNSL ms_number card_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	card_number is the number of the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPec`
	`Host 00 A00 SCC 0 39 MS 1 :0 : 7 27 9X17AC FRNT`
	`Host 00 A00 SCC 0 39 MS 1 :0 : 7 27 9X69BA BACK`
	`No resources to translate on card 7.`

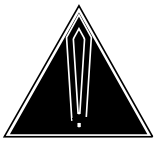
15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS.

If the slave MS is	Do
MS 0	step 17
MS 1	step 18

-continued-

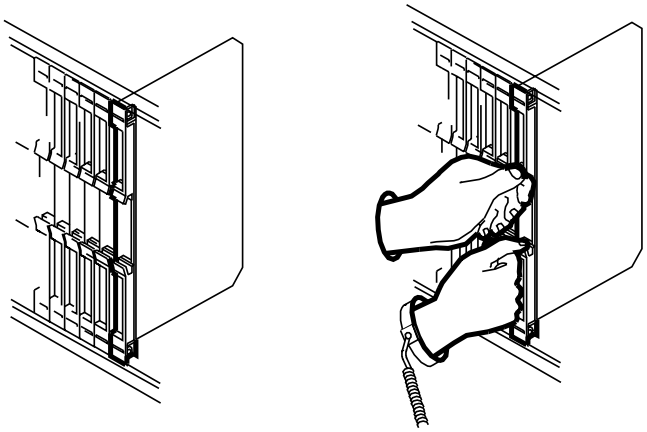
NT9X69 (continued)
in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F.

-continued-

Replacing a NT9X69 card in a message switch shelf (continued)

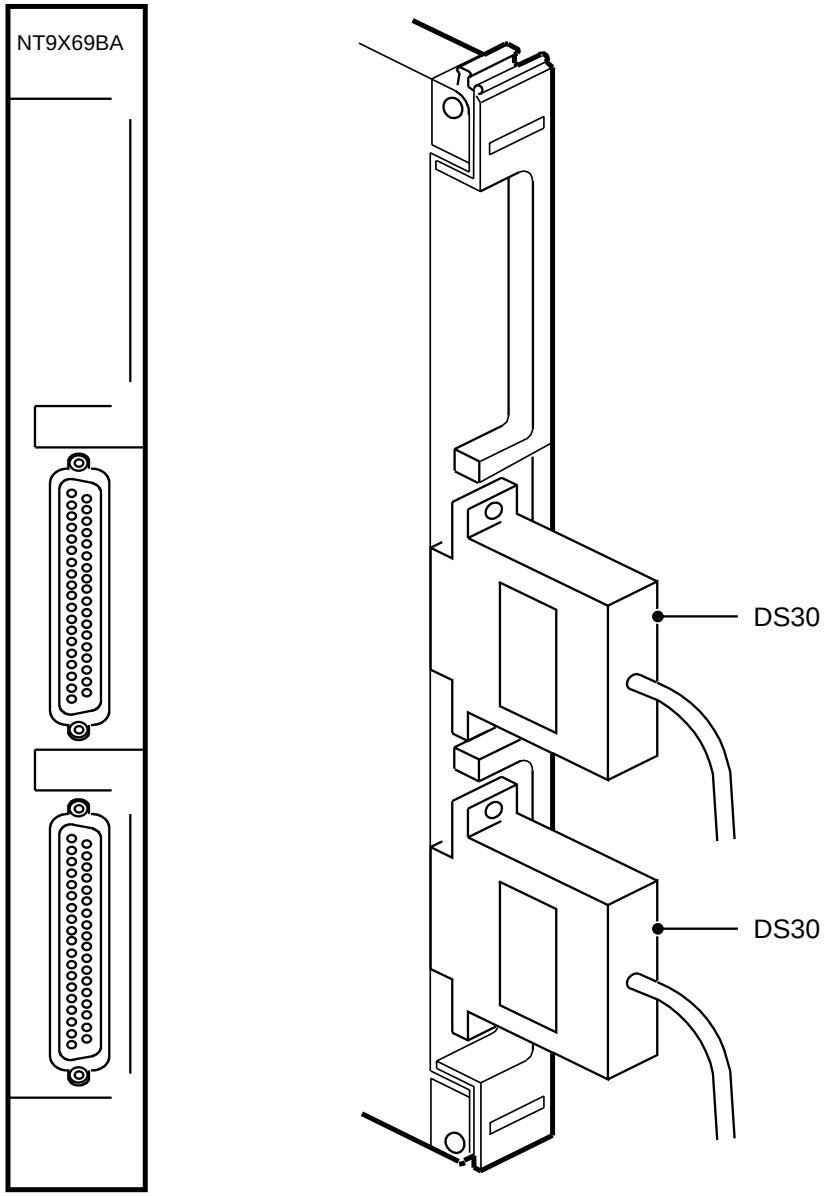
Step	Action
19	Locate the card to be removed on the appropriate shelf. 
	WARNING **Damage to the pins on the DS30 connector** Do not remove the cables by first unseating the top pins and then removing the bottom pins. This bends the pins. When the connector is inserted again, the pins will be misaligned and some pins may then be bent and become unseated from the connector block.
20	Disconnect the DS30 connector cables from the card as follows, referring to the figure on the next page. ▪ To prevent damage to the pins, remove the connectors at a 90° angle to the faceplate. ▪ Loosen the DS30 connections. Refer to the figure on the next page.

-continued-

NT9X69 (continued)
in a message switch shelf (continued)

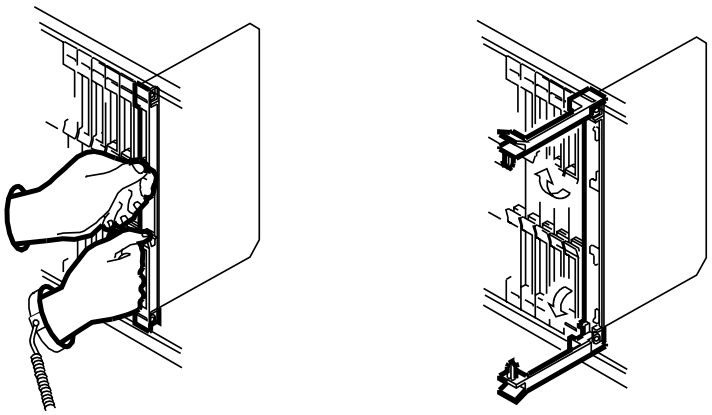
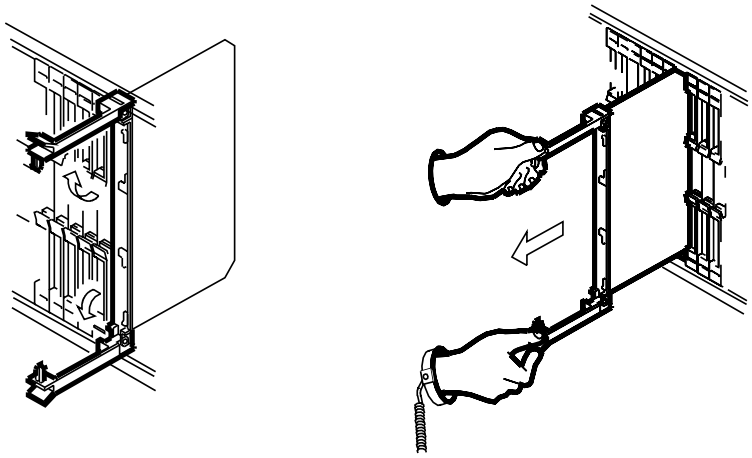
Replacing a NT9X69 card in a message switch shelf (continued)

Step **Action**



-continued-

Replacing a NT9X69 card in a message switch shelf (continued)

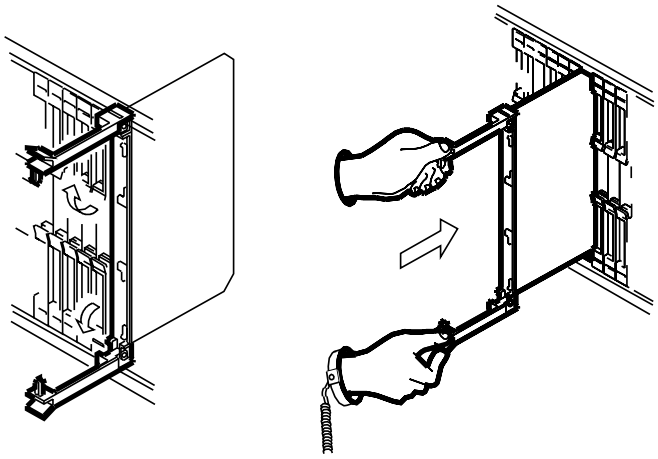
Step	Action
21	Open the locking levers on the card to be replaced. 
22	Gently pull the card towards you until it clears the shelf. 
23	Place the card you have removed in an electrostatic discharge (ESD) protective container.
24	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

-continued-

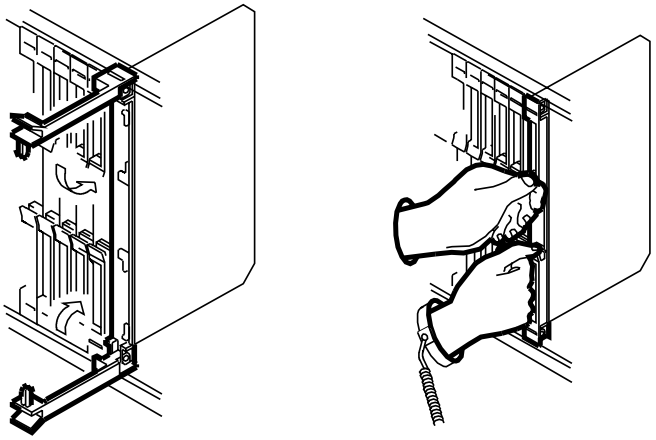
NT9X69 (continued)
in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
25	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.



26	Seat the card in the shelf. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.
27	Lock the card in the shelf by closing the locking levers.



-continued-

NT9X69 (continued) in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
28	Reconnect the DS30 connection cables, as follows: ▪ To prevent damage to the pins, carefully insert the connectors on the card. ▪ Tighten the DS30 connections. ▪ The retaining screws on the DS30 connections should be finger-tight and fully screwed in to ensure that all pins make the proper contact.
29	Determine which MS was powered down. **If the MS that was powered down is** / **Do** MS 0 / step 30 MS 1 / step 31

-continued-

NT9X69 (continued)
in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
30	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 32.
31	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

32	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action

33	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 34
failed	step 38

Step	Action
34	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 37
anything else	step 35

-continued-

NT9X69 (continued)
in a message switch shelf (continued)

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action

35	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 36
failed	step 38

Step	Action

36	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the RTS command	Do
passed	step 39
failed	step 38

-continued-

Replacing a NT9X69 card in a message switch shelf (continued)

Step	Action
37	Return to the maintenance procedure that sent you to this procedure and continue as directed.
38	For further assistance, contact the personnel responsible for the next level of support.
39	You have completed this procedure.
	End

NT9X73
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X73	BA	LMS-F-bus rate adapter

Common procedures

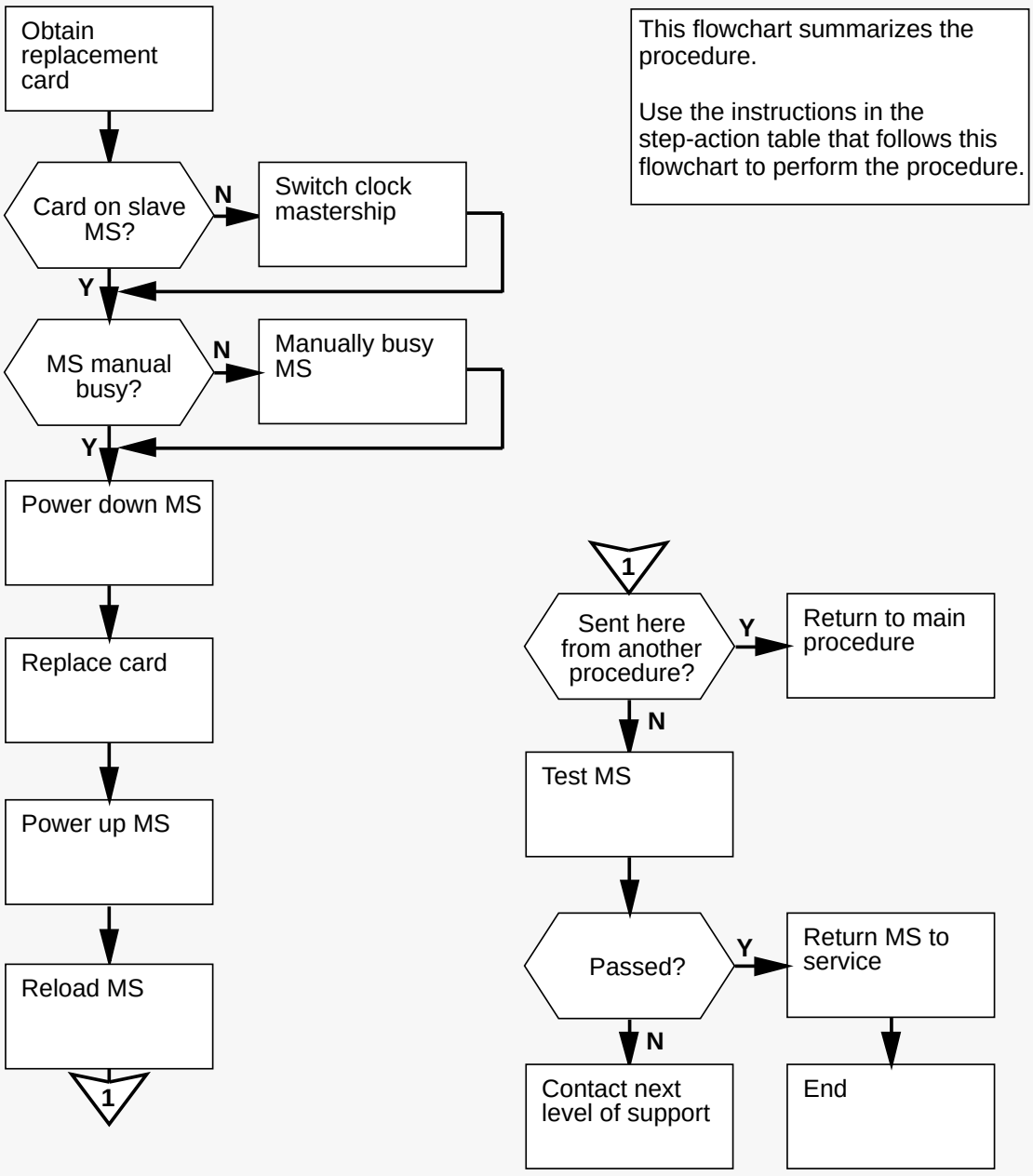
Failure to switch clock mastership is referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X73 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X73 card in a message switch shelf



NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X73BA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X73BA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	**Do**
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT) .

-continued-

NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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. **If you** / **Do** can obtain a compatible replacement card — step 2 cannot obtain a compatible replacement card — step 33

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** / **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

-continued-

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action

8	Switch clock mastership by typing
	>SWMAST
	and pressing the Enter key.
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	If the SWMAST command — **Do**
	passed — step 10
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

-continued-

NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action

12	Manually busy the MS containing the card to be replaced by typing
	>BSY ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the slave MS (0 or 1)
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`

If the response is	Do
`Request to MAN BUSY MS:0 passed`	step 13
`Request to MAN BUSY MS:1 passed`	step 13
anything else	step 33

13	Translate the location of card 12 by typing
	>TRNSL ms_number 12
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 A00 SCC 0 39 MS 1 :0:12 31 9X73BA FRNT`
	`HOST 00 A00 SCC 0 39 MS 1 :0:12 31 9X79BA BACK`
	`No resources to translate on card 12.`

14	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.

-continued-

Replacing an NT9X73 card in a message switch shelf (continued)

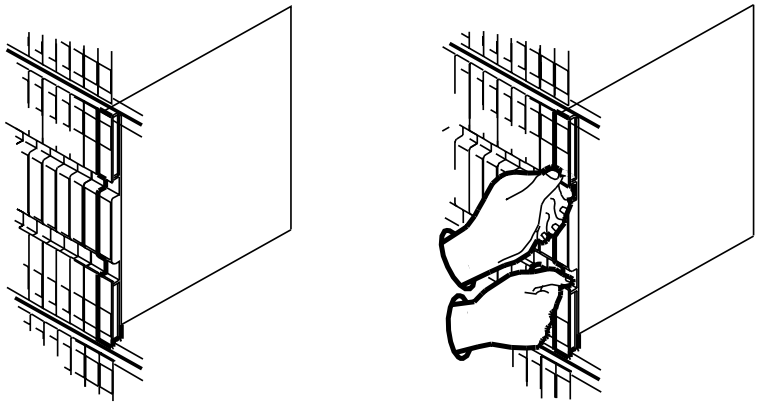
Step	Action
	At the MS shelf
15	Determine which MS is the slave MS. **If the slave MS is** — **Do** MS 0 — step 16 MS 1 — step 17
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
16	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F. Go to step 18.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

-continued-

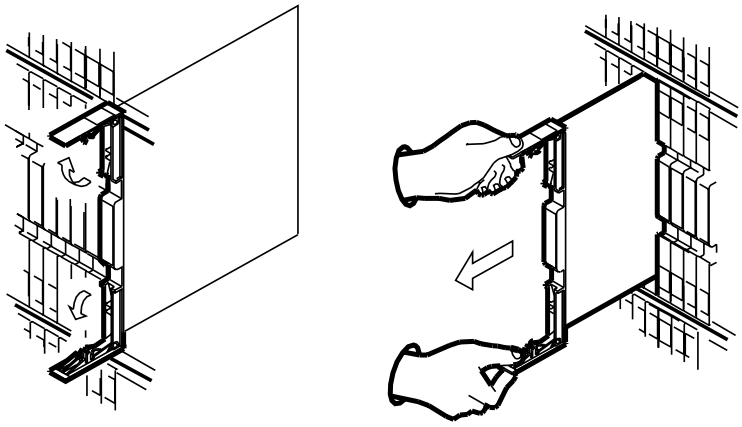
NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action
18	Locate the card to be removed on the appropriate shelf. Open locking levers.



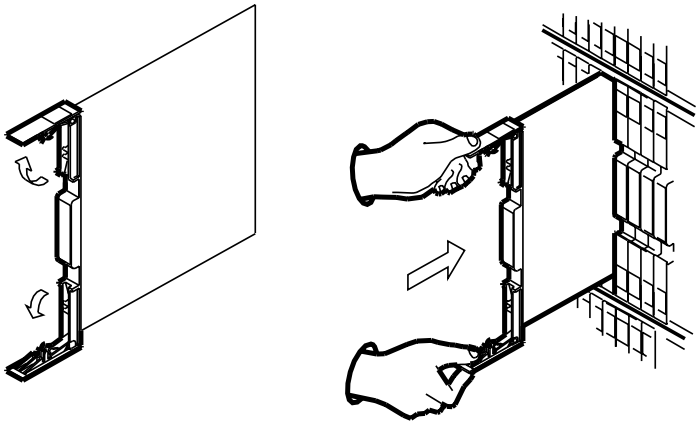
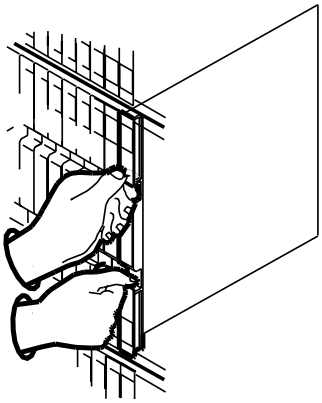
Step	Action
19	Gently pull the card towards you until it clears the shelf.



Step	Action
20	Place the card you have removed in an electrostatic discharge (ESD) protective container.
21	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

-continued-

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action
22	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf. 
23	Seat and lock the card. a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers. 
24	Determine which MS was powered down.

If the slave MS that was powered down is	**Do**
MS 0	step 25
MS 1	step 26

-continued-

NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
25	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 27.
26	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

27	Ensure you are at the MS level of the MAP display by typing
	
	> MS
	and pressing the Enter key.
	
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action

28	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	**Do**
passed	step 29
failed	step 33

Step	**Action**
29	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	**Do**
another maintenance procedure	step 32
anything else	step 30

-continued-

NT9X73 (continued)
in a message switch shelf (continued)

Replacing an NT9X73 card in a message switch shelf (continued)

Step	Action

30	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`
	If the TST command — **Do**
	passed — step 31
	failed — step 33

31	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`
	If the RTS command — **Do**
	passed — step 34
	failed — step 33

-continued-

Replacing an NT9X73 card in a message switch shelf (continued) **Step**	**Action**
32	Return to the maintenance procedure that sent you to this procedure and continue as directed.
33	For further assistance, contact the personnel responsible for the next level of support.
34	You have completed this procedure.
	End

NT9X79
in a message switch shelf

Application

Use this procedure to replace the following card in a message switch (MS) shelf.

PEC	Suffixes	Name
NT9X79	BA	F-bus termination paddle board

Common procedures

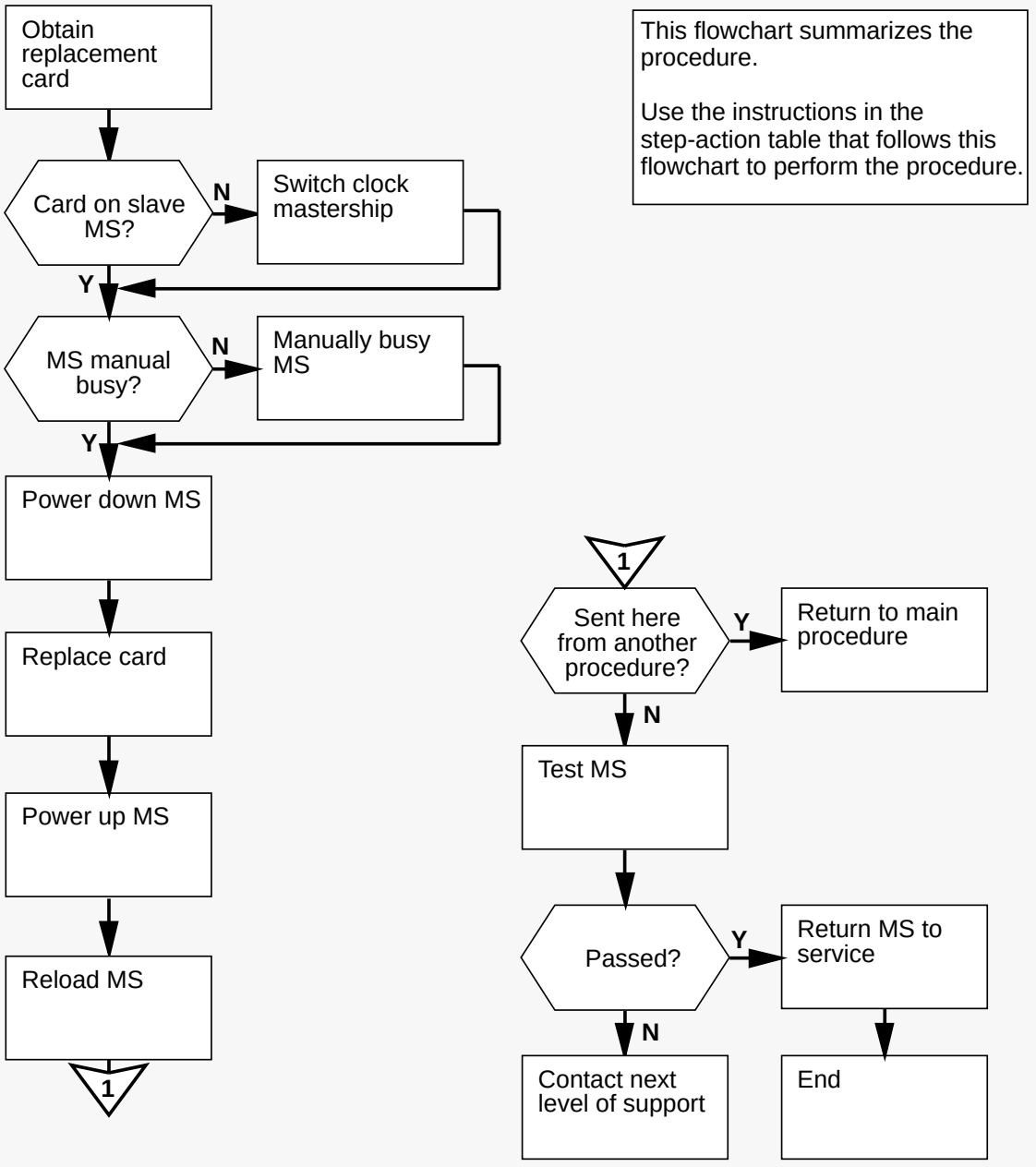
Failure to switch clock mastership is referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X79 (continued)
in a message switch shelf (continued)

Summary of Replacing an NT9X79 card in a message switch shelf



NT9X79 (continued)
in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf

Step	Action
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being replaced.
At the MAP	

2	Ensure that the replacement card is compatible with the software load by typing
	>CHECKREL MS 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 face of the replacement card
	Example input:
	>CHECKREL MS NT9X79BA 10
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X79BA S0 SC 10 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the MS.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

-continued-

NT9X79 (continued)
in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 37

At the MAP	

6	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X79 (continued) in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
7	Determine the clocking configuration. ***Note:*** The clocking configuration is indicated under the Clock header at the MS level of the MAP display. **If the MS containing the card to be replaced is the** — **Do** slave MS, indicated by `Slave` under the Clock header — step 11 master MS, indicated by `Master` or `M Free` under the Clock header — step 8

8	Switch clock mastership by typing
	
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	
	passed — step 10
	
	failed — step 9

9	Perform the procedure *Failure to switch clock mastership* on page 2-15. When you have completed the procedure, return to this point.
10	Wait 10 min to ensure MS stability, then continue with this procedure.

-continued-

NT9X79 (continued)
in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
11	Determine if the MS containing the card to be replaced is manual busy. ***Note:*** The letter M under the Message Switch header indicates which MS is manual busy. **If the MS is** — **Do** `M` — step 13 not `M` — step 12

12	Manually busy the MS containing the card to be replaced by typing
	
	>BSY ms_number
	and pressing the Enter key.
	
	where
	ms_number is the number of the slave MS (0 or 1)
	
	Example of a MAP response:
	`Request to MAN BUSY MS: 0 submitted.`
	`Request to MAN BUSY MS: 0 passed.`
	
	If the response is — **Do**
	`Request to MAN BUSY MS:0 passed` — step 13
	`Request to MAN BUSY MS:1 passed` — step 13
	anything else — step 37

-continued-

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action

13	Access the Shelf level of the MAP display by typing
	>SHELF shelf_number
	and pressing the Enter key.
	where
	shelf_number is the number of the shelf (0 to 3)
	Example of a MAP display:
	`Shelf 0 1 1 1 1`
	`Card 1 2 3 4 5 6 7 8 9 0 1 2 3`
	`Chain`
	`MS 0 . . . . . F . . . .`
	`MS 1 . . . . . .`

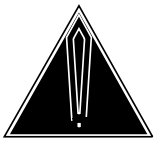
14	Translate the location of the card to be replaced by typing
	>TRNSL ms_number card_number
	and pressing the Enter key.
	where
	ms_number is the number of the MS (0 or 1) containing the card to be replaced
	card_number is the number of the card to be replaced
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPec`
	`Host 00 A00 SCC 0 39 MS 1 :0 : 6 27 9X17AC FRNT`
	`Host 00 A00 SCC 0 39 MS 1 :0 : 6 27 9X62BA BACK`
	`No resources to translate on card 6.`

15	Record the location, description, slot number, and PEC, including suffix, of the card to be replaced.
At the MS shelf	
16	Determine which MS is the slave MS. **If the slave MS is** — **Do** MS 0 — step 17 MS 1 — step 18

-continued-

NT9X79 (continued)
in a message switch shelf (continued)

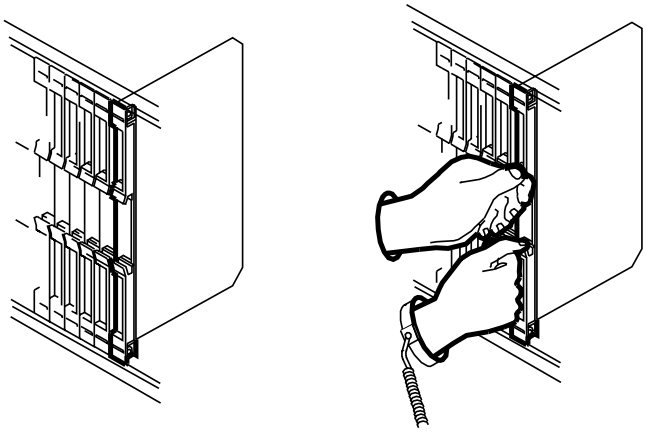
Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you power down the slave MS. If you power down the MS containing the master clock, the system will shut down completely.
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
17	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 36F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 33F. Go to step 19.
18	Power down the slave MS, as follows: a. Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F. b. Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

-continued-

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
19	Locate the card to be removed on the appropriate shelf.

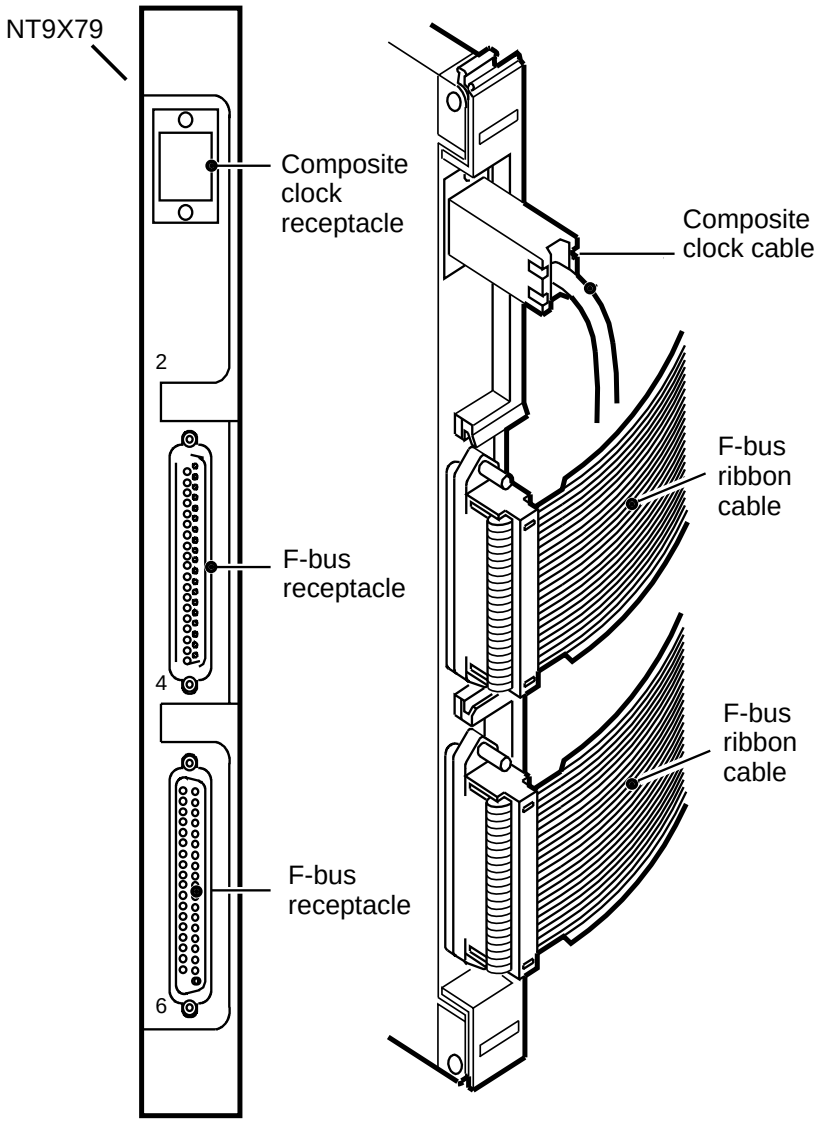


-continued-

NT9X79 (continued)
in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf (continued)

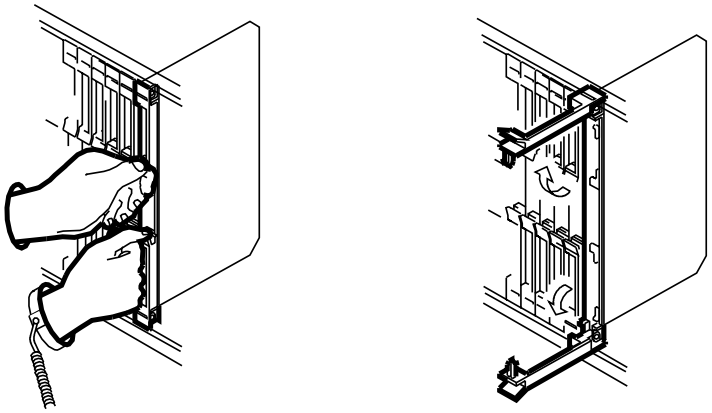
Step	Action
20	Disconnect the cables from the NT9X79 card, as follows: ▪ a. First, remove the composite clock cable. ▪ b. Second, use a screwdriver to disconnect the F-bus ribbon cables from the card.



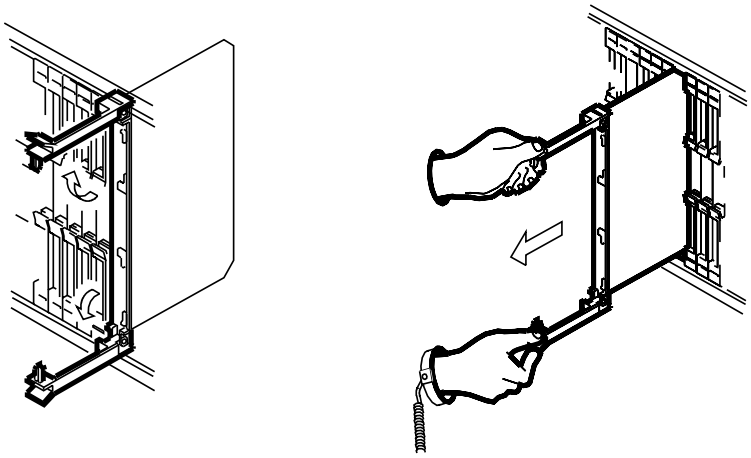
-continued-

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
21	Open the locking levers on the card to be replaced.



22	Gently pull the card towards you until it clears the shelf.

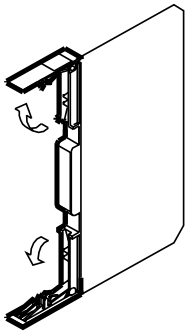
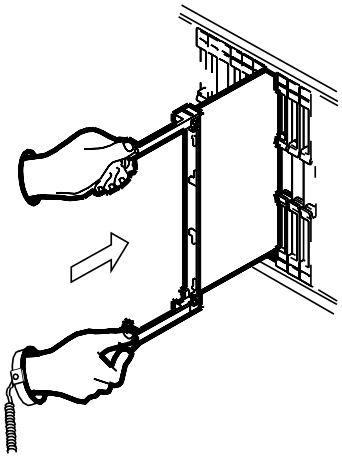
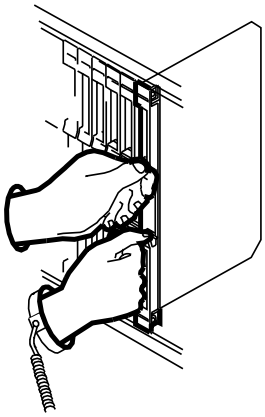


23	Place the card you have removed in an electrostatic discharge (ESD) protective container.
24	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

-continued-

NT9X79 (continued)
in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
25	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.  
26	Seat and lock the card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers. 
27	Reconnect the composite clock and the F-bus ribbon cables to the replacement card, as follows: ▪ a. To prevent damage to the pins, carefully insert the cables. ▪ b. Using a screwdriver, tighten the retaining screws on the F-bus ribbon cables. To ensure that all pins make the proper contact, the retaining screws should be finger-tight and fully screwed in.

-continued-

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action
28	Determine which MS was powered down. **If the slave MS that was powered down is** — **Do** MS 0 — step 29 MS 1 — step 30
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F. Go to step 31.
30	Power up the slave MS, as follows: a. Lift and release the switch on the faceplate of the NT9X31 power converter in slot 33F. b. Lift and release the switch on the faceplate of the NT9X30 power converter in slot 36F.
At the MAP	

31	Access the MS level of the MAP display by typing
	>MAPCI;MTC;MS
	and pressing the Enter key.
	Example of a MAP display:
	`Message Switch Clock Shelf 0 Inter-MS Link 0 1`
	`MS 0 . M Free . R .`
	`MS 1 . Slave F S .`

-continued-

NT9X79 (continued)
in a message switch shelf (continued)

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action

32	Reload the most recent MS image file by typing
	>LOADMS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to Load MS: 0 submitted.`
	`Request to Load MS: 0 passed.`
	`Loading completed, entry point is #06045FCO`

If the LOADMS command	Do
passed	step 33
failed	step 37

Step	Action
33	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	Do
another maintenance procedure	step 36
anything else	step 34

-continued-

Replacing an NT9X79 card in a message switch shelf (continued)

Step	Action

34	Perform an out-of-service test on the manual-busy MS by typing
	>TST ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to TEST OOS MS: 0 submitted.`
	`Request to TEST OOS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS0.`
	`Request to TEST VIA MATE MS: 0 submitted.`
	`Request to TEST VIA MATE MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the TST command	Do
passed	step 35
failed	step 37

Step	Action

35	Return the manual-busy MS to service by typing
	>RTS ms_number
	and pressing the Enter key.
	where
	ms_number is the number of the manual-busy MS (0 or 1)
	Example of a MAP response:
	`Request to RTS MS: 0 submitted.`
	`Request to RTS MS: 0 passed.`
	`No node faults were found on MS 0.`
	`No cards were found to be faulty on MS 0.`

If the RTS command	Do
passed	step 38
failed	step 37

-continued-

NT9X79 (end)
in a message switch shelf (end)

Replacing an NT9X79 card in a message switch shelf (continued)	
Step	**Action**
36	Return to the maintenance procedure that sent you to this procedure and continue as directed.
37	For further assistance, contact the personnel responsible for the next level of support.
38	You have completed this procedure.
	End

NT9X86
in a computing module/system load module shelf

Application

Use this procedure to replace the following cards in a computing module/system load module (CM/SLM) shelf.

PEC	Suffixes	Name
NT9X86	AA	Dual-port message controller card

Common procedures

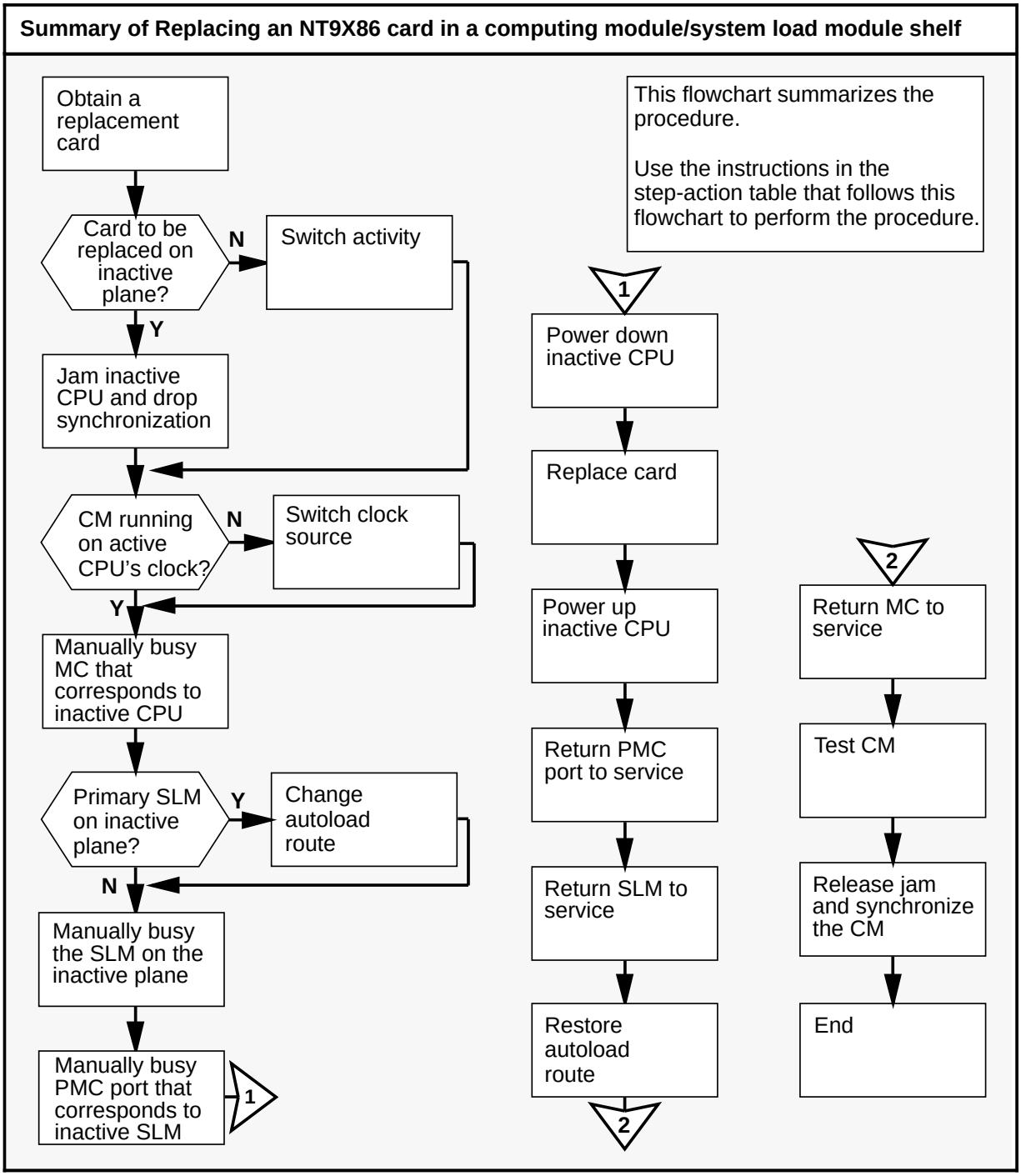
Activity switch with memory match, *Switching the clock source*, and *Replacing a SuperNode SE card* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X86 card in a computing module/system load module shelf



NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Possible loss of data recording services** This procedure involves busying the system load module (SLM) on the same side of the switch as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite side of the switch from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 face of the replacement card
	Example input:
	>CHECKREL CM NT9X86AA 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X86AA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	Do
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 51

At the MAP	

6	Access the CM level of the MAP display by typing
	>CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   no  cpu 1   .     .  yes   .      .   mbsy  .`

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the card you are going to replace is on the active or the inactive side of the CM. ***Note:*** The active CPU is shown under the Act header on the MAP display. In the example in step 6, the active CPU is CPU 1. **If the card is on the** — **Do** inactive side — step 8 active side — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM (YES/NO)`

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync. **If the CM is** — **Do** in sync — step 12 not in sync — step 16
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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”):` — step 13 `Drop synchronization failed` — step 51 anything else — step 51

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

At the CM reset terminal for the inactive CPU	
14	Wait until A1 flashes on the reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing.

If A1	Do
flashes	step 16
does not flash	step 51

15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
	At the MAP
	CAUTION **Possible loss of service** Ensure the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing the Enter key.
	Example of a MAP response:
	`CM  Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC`
	`0  .  cpu 0  .  .  .  .  .  .`
	`Traps:  Per minute = 0  Total = 5`
	`AutoLdev:  Primary = SLM 0 DISK  Secondary = SLM 1 DISK`
	`Image Restartable = No image test since last restart`
	`Next CM REXTST restart type = RELOAD`
	`Last CMREXTST executed`
	`System memory in kbytes as of 14:39:07`
	`Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example shown in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU. **If the primary autoload device is on the side of the switch with the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

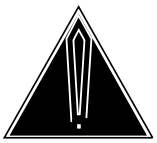
Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
21	Change the primary autoload device to a device on the side of the switch with the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) on the active side device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing the Enter key.
	where
	slm_number is the number of the SLM (0 or 1) on the inactive side
	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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** This step involves removing the SLM on the inactive side of the switch from service. Before you busy the SLM, ensure that the data recording services provided by the SLM on the inactive side of the switch will be assumed by the SLM on the active side of the switch.

23	Manually busy the SLM by typing
	>BSY
	and pressing the Enter key.
	Example of a MAP response:
	`SLM 0 busy passed.`
	If the BSY command — **Do**
	passed — step 24
	failed — step 51

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	port_number is the number of the port (0 or 1) on the inactive plane
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

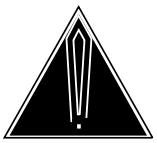
26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`CM 0`
	`MC 0 MC 1`
	`mbsy .`
	Note: Dots under the MC headers mean that the associated MCs are in service.

27	Determine the state of the message controller (MC) corresponding to the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy.

If the state of the MC is	**Do**
`mbsy`	step 29
not `mbsy`	step 28

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure you busy the MC that corresponds with the inactive CPU. Powering down the plane with the wrong MC busied causes a warm restart.

28	Manually busy the MC by typing
	>BSY mc_number
	and pressing the Enter key.
	where
	mc_number is the number of the MC (0 or 1) on the inactive plane
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`
	If the MC — **Do**
	busied — step 29
	did not busy — step 51

At the CM/SLM shelf	
	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU by pressing down and releasing the switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
30	Perform the procedure *Replacing a SuperNode SE card* on page 2-27. When you have completed the procedure, return to this point.

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
31	Power up the inactive CPU by lifting and releasing the switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.
At the CM reset terminal for the inactive CPU	

32	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests, then continue with this procedure.
	
	Example of an RTIF response:
	`Shelf  Slot`
	`00  12  NT9X14DB  ...`
	`00  13  NT9X14DB  ...`
	`Waiting for activity.....`

33	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 34 did not power up — step 51
At the MAP	

34	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	
	Example of a MAP display:
	`PMC 0`
	`.`
	
	`PORT0: mbsy`
	`PORT1: .`

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action

35	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

36	Access the SLM that you manually busied in step 23 by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that was manually busied in step 23
37	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 returned to service passed.`
38	Determine if the primary autoload route was changed. **If the autoload route was** — **Do** changed — step 39 not changed — step 41
39	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
40	Change the primary autoload device to the device you recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) that was originally the primary SLM device_type is the type of SLM device (DISK or TAPE)
41	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** an MC Tbl alarm — step 50 a PMCFlt alarm — step 50 a PMCTbl alarm — step 50 a NoTOD alarm — step 50 a SBsyMC alarm — step 50 an MBsyMC alarm — step 50 a CBsyMC alarm — step 50 anything else — step 42
At the MAP	
42	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action

43	Return the manual-busy MC to service by typing
	>RTS mc_ number
	and pressing the Enter key.
	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 44
	failed — step 51

44	Your next step depends on the reason for performing this procedure. **If you are performing this procedure as a result of** — **Do** a CM alarm clearing procedure — step 50 anything else — step 45
45	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NT9X86 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action

46	Test the inactive CPU by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

47	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 48
failed	step 51
anything else	step 51

At the CM reset terminal for the inactive CPU

48	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

49	Synchronize the CM by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 52
the SYNC command failed	step 51
`Inactive CPU configuration does not support burst mode operation.`	step 51
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 51
anything else	step 51

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

-continued-

NT9X86 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X86 card in a computing module/system load module shelf (continued)

Step	Action
51	For further assistance contact the personnel responsible for the next level of support.
52	You have completed this procedure.
	End

NT9X91
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module (CM/SLM) shelf.

PEC	Suffix	Name
NT9X91	AA	Storage device power converter

Common procedures

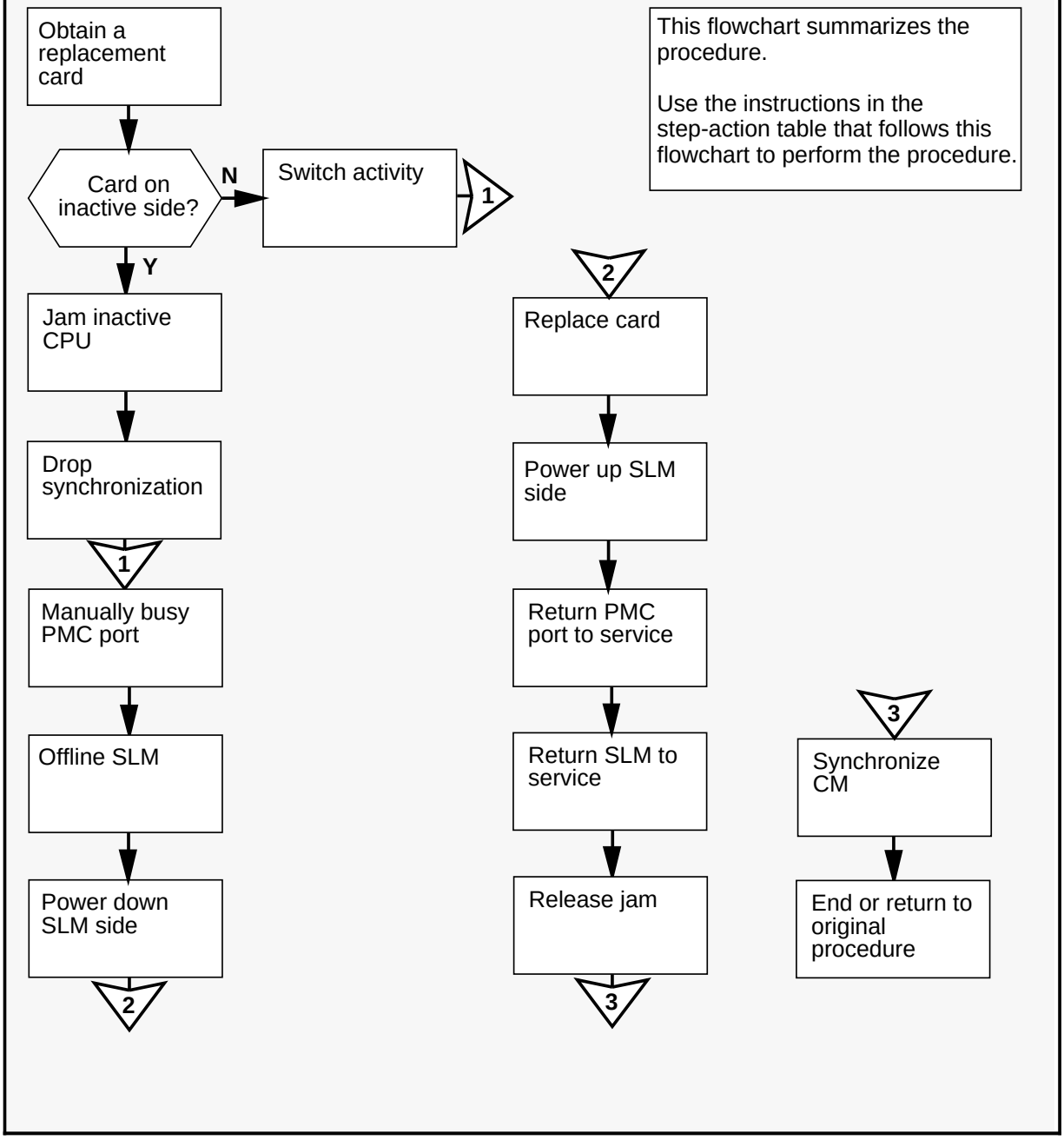
Switching the clock source and *Activity switch with memory match* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

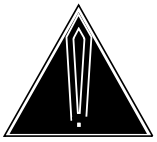
NT9X91 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing an NT9X91 card in a computing module/system load module shelf



NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf

Step	Action
	 **CAUTION** **Loss of data recording services** This procedure involves manually busying the system load module (SLM) on the same plane as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite plane from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   .   cpu 1   .     .        .      .     .   .`

3	Determine if the converter you are going to replace is on the side of the switch with the active CPU or the inactive CPU. ***Note:*** The active CPU is shown under the Act header on the MAP display. In the example in step 2, the active CPU is CPU 1.

If the converter is on the side of the switch with the	**Do**
inactive CPU	step 4
active CPU	step 11

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
4	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the CPU is jammed. The area is blank if the CPU is not jammed.

If the inactive CPU is	**Do**
jammed	step 7
not jammed	step 5

At the CM reset terminal for the inactive CPU

CAUTION
Possible loss of service
Do not jam the active CPU. Jamming the active CPU while the computing module (CM) is out of sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.

5 Jam the inactive CPU by typing

>\JAM
and pressing the Enter key.

RTIF response:
```
PLEASE CONFIRM: (YES/NO)
```

6 Confirm the command by typing

>YES
and pressing the Enter key.

RTIF response:
```
JAM DONE
```

-continued-

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
At the MAP	
7	Determine if the CPUs are in sync. ***Note:*** A dot or EccOn under the Sync header means that the CPUs are in sync. The word no means that the CPUs are not in sync. **If the CPUs are** — **Do** in sync — step 8 not in sync — step 12
8	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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”):` — step 9 `Drop synchronization failed` — step 45 `Aborted. Active CPU n has a faulty processor clock.` — step 45 anything else — step 45

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action

9	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

At the CM reset terminal for the inactive CPU	
10	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 12 does not flash — step 45
11	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
	At the MAP
	 **CAUTION** **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

12	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 13
active clock	step 14

13	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action

14	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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`

15	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example shown in step 14, the primary autoload device is the disk of SLM 0.
16	Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU.

If the primary autoload device is on the side of the switch with the	**Do**
active CPU	step 18
inactive CPU	step 17

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

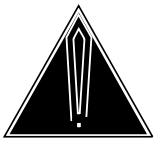
Step	Action
17	Change the primary autoload device to a device on the same plane as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the active CPU (0 or 1) device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

18	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing 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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that the associated SLMs are in service.

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
19	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	**Do**
passed	step 20
failed	step 45

20	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action

21	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	
	where
	pmc_number is the number of the peripheral module controller (PMC) (0 or 1)
	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.`

22	Access the SLM corresponding to the inactive CPU by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the inactive CPU (0 or 1)

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

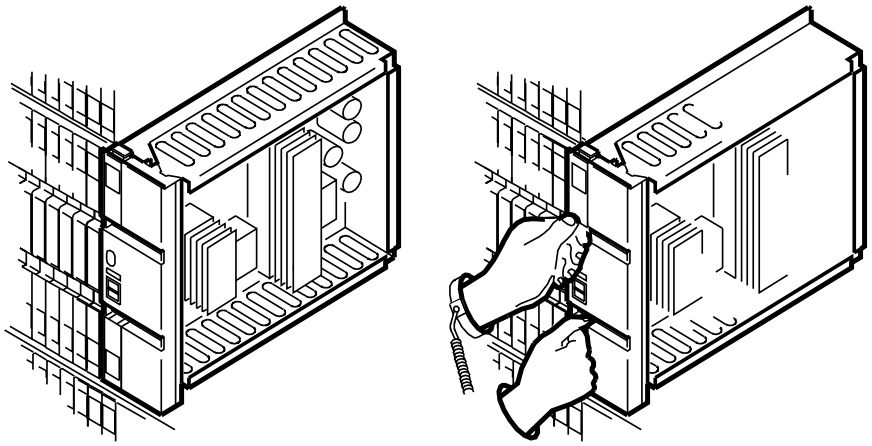
Step	Action
23	Offline the SLM by typing **>OFFL** and pressing the Enter key. *Example of a MAP response:* `WARNING: The link to SLM 0 is out service. Setting this SLM offline is not safe enough for its drives. The 12-volt converter power card has to be turned off manually before attempting to remove the SLM unit. Please confirm (″YES″, ″Y″, ″NO″, or ″N″):`
24	Confirm the command by typing **>YES** and pressing 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.`

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
	At the CM/SLM shelf
25	Power down the appropriate SLM plane. Switch off the SLM power converter (NT9X91) by pressing down and releasing the power switch located on the faceplate of the converter. ***Note:*** For plane 0, the power converter is located in slots 1F through 3F. For plane 1, the power converter is located in slots 36F through 38F.
	WARNING **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
26	Locate the card to be removed on the appropriate shelf.

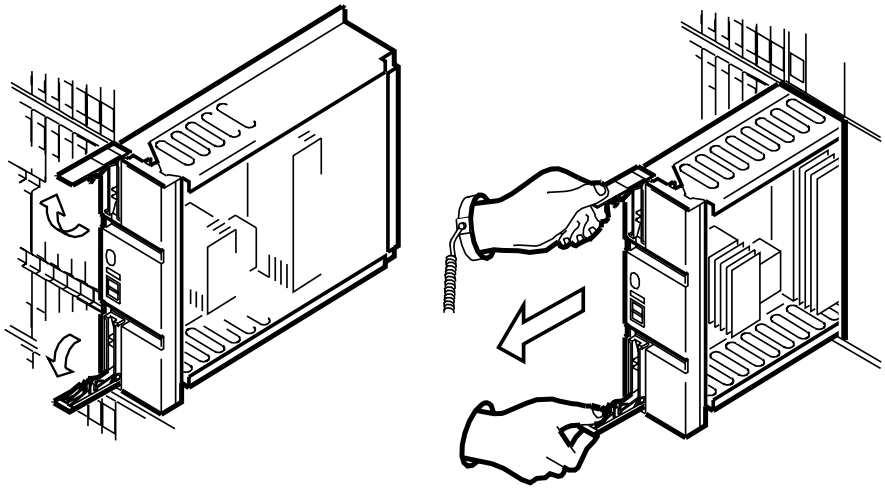


-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
27	Pull open the locking levers on the card until they are horizontal. Gently pull the card towards you until it clears the shelf.



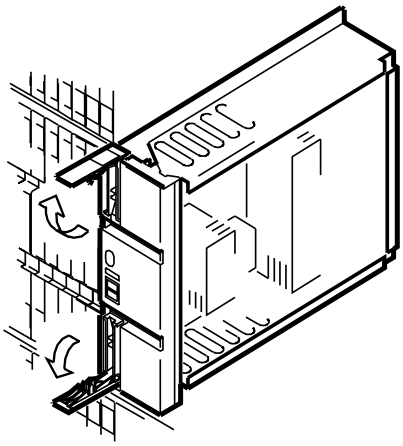
28	Place the card you have removed in an electrostatic discharge (ESD) protective container.
29	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

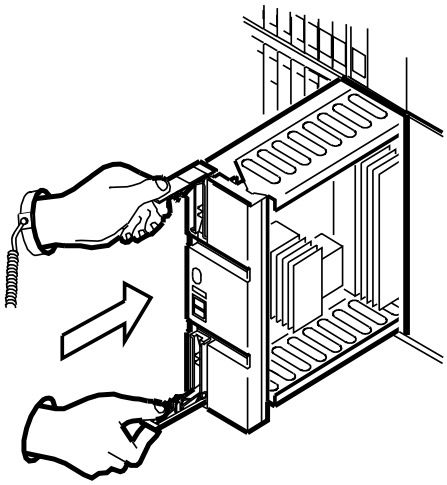
-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

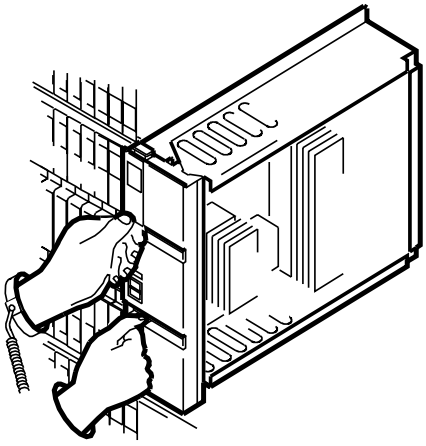
Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
30	Pull open the locking levers on the replacement card until they are horizontal. Align the card with the slots in the shelf and gently slide the card into the shelf.





31	Seat and lock the card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers.



-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
32	Power up the appropriate SLM plane. Switch on the SLM power converter (NT9X91) by lifting and releasing the power switch located on the faceplate of the converter. ***Note:*** For plane 0, the power converter is located in slots 1F to 3F. For plane 1, the power converter is located in slots 36F to 38F.
At the MAP	

33	Access the PMC level of the MAP display by typing
	
	>CM;PMC
	and pressing the Enter key.
	
	Example of a MAP display:
	`PMC 0`
	`istb`
	
	`PORT0: mbsy`
	`PORT1: .`

34	Return the manual-busy PMC port to service by typing
	
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	
	where
	pmc_number is the PMC number (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

35	Access the SLM that was put offline by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the SLM that was put offline (0 or 1)

-continued-

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action

36	Manually busy the SLM by typing
	>BSY
	and pressing the Enter key.
	Example of a MAP response:
	`SLM 0 busy passed.`
	If the BSY command — **Do**
	passed — step 37
	failed — step 45

37	Test the manual-busy SLM by typing **>TST** and pressing the Enter key. **If the TST command** — **Do** passed — step 40 failed, and a card list is generated — step 38 anything else — step 45
38	Record the location, description, slot number, and PEC, including suffix, of the first card on the list.
39	Change the card by performing the appropriate card replacement procedure in this document. When you have completed the procedure, return to this point. Go to step 43.
40	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM n return to service passed.`

-continued-

NT9X91 (continued)
in a computing module/system load module shelf (continued)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
41	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action
At the MAP	

42	Synchronize the CM by typing
	>CM;SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 43
the SYNC command failed	step 45
results in the MAP response `Inactive CPU configuration does not support burst mode operation.`	step 45
results in the MAP response `Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 45
anything else	step 45

-continued-

NT9X91 (end)
in a computing module/system load module shelf (end)

Replacing an NT9X91 card in a system load module shelf (continued)

Step	Action	
43	Your next step depends on the reason for performing this procedure.	
	If you are performing this procedure as a result of	**Do**
	another maintenance procedure	step 44
	anything else	step 46
44	Return to the maintenance procedure that sent you to this procedure and continue as directed.	
45	For further assistance, contact the personnel responsible for the next level of support.	
46	You have completed this procedure.	
	End	

NTDX15
in a computing module/system load module shelf

Application

Use this procedure to replace the following card in a computing module/system load module shelf (CM/SLM) shelf.

PEC	Suffixes	Name
NTDX15	AA	Power converter ±5 V

Common procedures

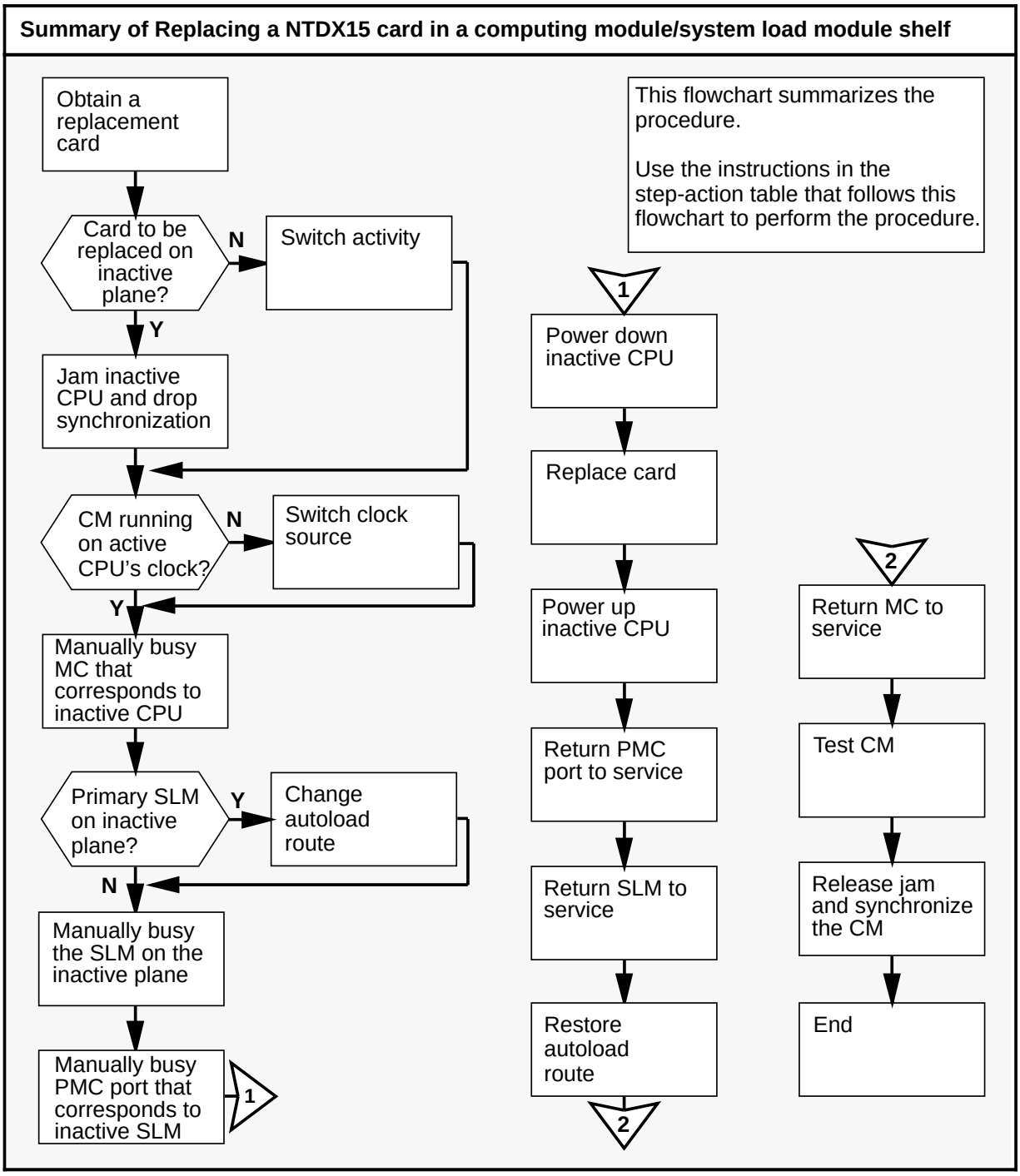
Switching the clock source and *Activity switch with memory match* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

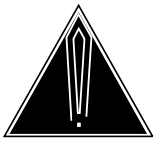
NTDX15 (continued)
in a computing module/system load module shelf (continued)

Summary of Replacing a NTDX15 card in a computing module/system load module shelf



NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf

Step	Action
	 **CAUTION** **Possible loss of data recording services** This procedure involves manually busying the system load module (SLM) on the same plane as the card you are replacing. Before attempting this procedure, ensure that the data recording services will be assumed by the SLM on the opposite plane from the card you are replacing.
1	Obtain a replacement card. Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.
At the MAP	

2	Determine if the replacement card is compatible with the software load by typing
	>CHECKREL CM 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 face of the replacement card
	Example input:
	>CHECKREL CM NTDX15AA 02
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NTDX15AA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** 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.

If you	**Do**
can obtain a compatible replacement card	step 2
cannot obtain a compatible replacement card	step 56

At the MAP	

6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   .   cpu 1   .     .        .      .     .   .`

-continued-

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
7	Determine if the power converter you are going to replace is on the active or the inactive side of the computing module (CM). ***Note:*** The active CPU is shown under the Act header on the MAP display. In the example in step 6, the active CPU is CPU 1. **If the power converter is on the** — **Do** inactive side — step 8 active side — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** — **Do** jammed — step 11 not jammed — step 9
At the CM reset terminal for the inactive CPU	
	CAUTION **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is out of sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
At the MAP	
11	Determine if the CM is in sync. ***Note:*** A dot or Eccon under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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"):`	step 13
`Drop synchronization failed`	step 56
`Aborted. Active CPU n has a faulty processor clock.`	step 56
anything else	step 56

Step	Action

13	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
At the CM reset terminal for the inactive CPU	
14	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 16 does not flash — step 56
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.

-continued-

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	
	 **CAUTION** **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the shelf while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To force the CM to run on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing 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`

19	Record the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example shown in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU. **If the primary autoload device is on the same plane as the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
21	Change the primary autoload device to a device on the same side of the switch as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing 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.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing 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`
	`user SYSTEM`
	Note: The dots to the right of the SLM Stat header mean that both SLM 0 and SLM 1 are in service.

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** The following step involves removing from service the SLM on the inactive plane. Before you manually busy the SLM, ensure that the data recording services provided by the SLM on the inactive plane will be assumed by the SLM on the active plane.
23	Manually busy the SLM by typing **>BSY** and pressing the Enter key. *Example of a MAP response:* `SLM 0 busy passed.` ***Note:*** The letter M to the right of the SLM Stat header means that the associated SLM is manual busy.

If the BSY command	Do
passed	step 24
failed	step 56

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral message controller (PMC) (0 or 1)
	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.`
	Example of a MAP display:
	`PMC 0`
	`istb`
	`PORT0: mbsy`
	`PORT1: .`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`CM 0`
	`MC 0 MC 1`
	`. .`

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
27	Determine the state of the message controller (MC) corresponding to the inactive CPU. ***Note:*** The term mbsy under the MC header means that the MC is manual busy. **If the state of the MC is** — **Do** `mbsy` — step 29 not `mbsy` — step 28
	CAUTION **Possible loss of service** Ensure that you busy the MC that corresponds to the inactive CPU. Powering down the plane with the wrong MC busied causes a warm restart.

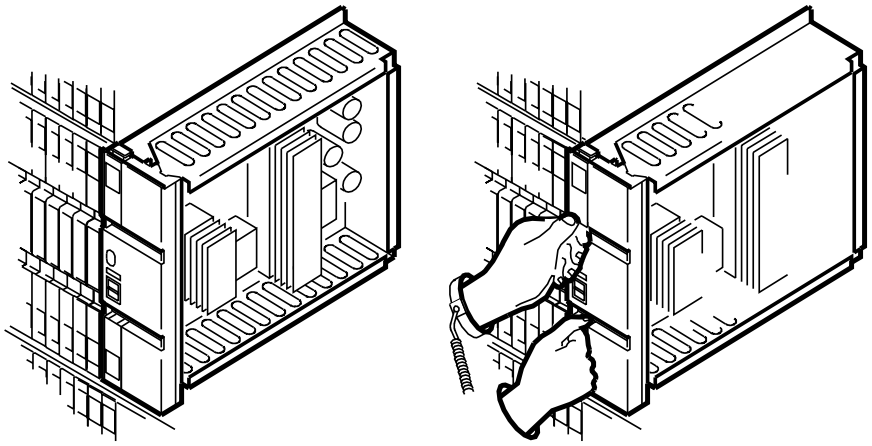
28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_number
	and pressing the Enter key.
	
	where
	mc_number is the number of the inactive CPU (0 or 1)
	
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`
	
	If the MC — **Do**
	busied — step 29
	did not busy — step 56

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
	At the CM/SLM shelf
	WARNING **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU plane by pressing down and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For plane 0, the power converter is located in slots 4F through 6F. For plane 1, the power converter is located in slots 33F through 35F.
30	Locate the card to be removed on the appropriate shelf.

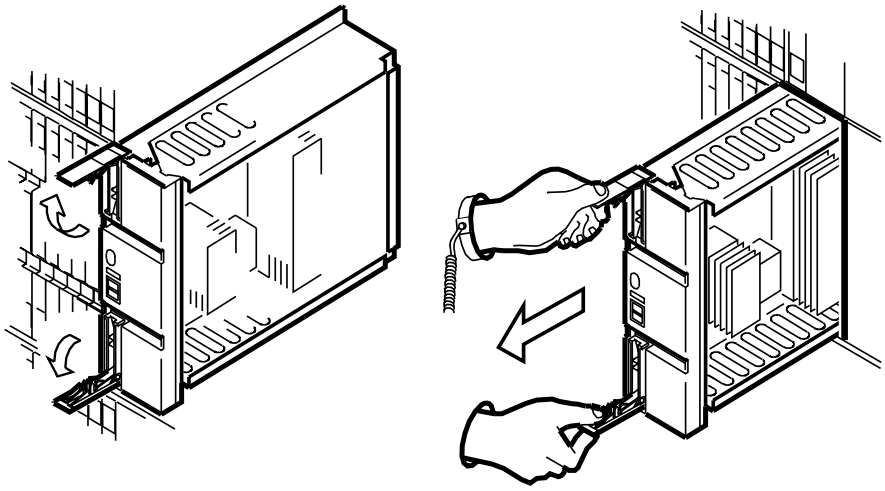


-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
31	Pull open the locking levers on the card until they are horizontal. Gently pull the card towards you until it clears the shelf.



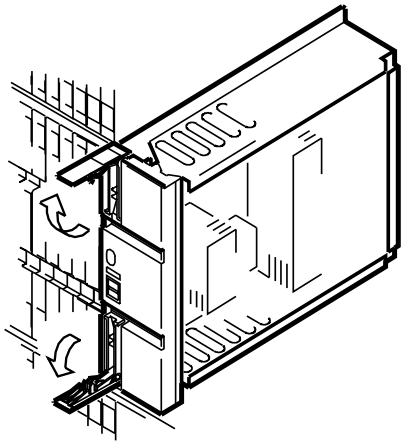
32	Place the card you have removed in an electrostatic discharge (ESD) protective container.
33	Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

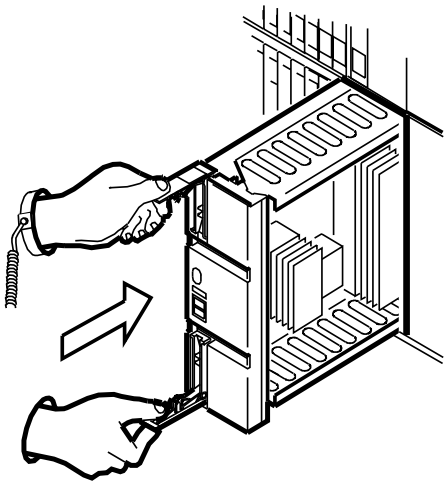
-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

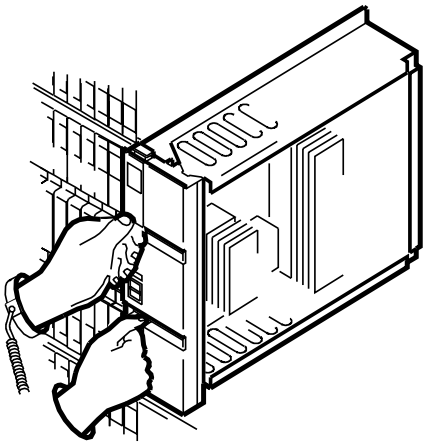
Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
34	Pull open the locking levers on the replacement card until they are horizontal. Align the card with the slots in the shelf and gently slide the card into the shelf.





35	Seat and lock the card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers.



-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
36	Power up the inactive CPU plane by lifting and releasing the power switch located on the faceplate of the NTDX15 power converter. ***Note:*** For plane 0, the power converter is located in slots 4F through 6F. For plane 1, the power converter is located in slots 33F through 35F.
At the CM reset terminal for the inactive CPU	

37	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests, then continue with this procedure.
	
	Example of an RTIF response:
	`Testing Memory:`
	`Shelf  Slot  PEC  Module Status`
	`00  12  NT9X14EA  ...`
	`00  13  NT9X14EA  ...`
	`Waiting for activity...`

38	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed.

If the inactive CPU	Do
powered up	step 39
did not power up	step 56

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

39	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0: mbsy`
	`PORT1: .`

40	Return the manual-busy PMC port to service by typing
	>RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the PMC number (0 or 1)
	port_number is the number of the manual-busy port (0 or 1)
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

41	Access the manual-busy SLM by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the manual-busy SLM (0 or 1)
42	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 return to service passed.`

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
43	Determine if the autoload route was changed. **If the autoload route was** — **Do** changed — step 44 not changed — step 46
44	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.
45	Change the primary autoload device to the device recorded in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number — is the number of the SLM (0 or 1) that was originally the primary SLM device_type — is the type of SLM device (DISK or TAPE)

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
46	Your next step depends on the reason for performing this procedure.

If you are performing this procedure as a result of	Do
an MC Tbl alarm	step 55
a PMCFlt alarm	step 55
a PMCTbl alarm	step 55
a NoTOD alarm	step 55
an SBsyMC alarm	step 55
an MBsyMC alarm	step 55
a CBsyMC alarm	step 55
anything else	step 47

47	Access the MC level of the MAP display by typing **>CM;MC** and pressing the Enter key.

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action

48	Return the manual-busy MC to service by typing
	>RTS mc_ number
	and pressing the Enter key.
	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 49
failed	step 56

Step	Action
49	Determine the reason for performing this procedure.

If you are performing this procedure as a result of	**Do**
a CM alarm clearing procedure	step 55
anything else	step 50

Step	Action
50	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action

51	Test the inactive CPU by typing
	>TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

52	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 53
failed	step 56
anything else	step 56

At the CM reset terminal for the inactive CPU

53	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

NTDX15 (continued)
in a computing module/system load module shelf (continued)

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
At the MAP	

54	Synchronize the CPUs by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 57
the SYNC command failed	step 56
`Inactive CPU configuration does not support burst mode operation.`	step 56
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 56
anything else	step 56

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

-continued-

Replacing a NTDX15 card in a computing module/system load module shelf (continued)

Step	Action
56	For further assistance, contact the personnel responsible for the next level of support.
57	You have completed this procedure.
	End

Memory extension in the CM

Application

Use this procedure to perform memory extensions in the computing module/system load module (CM/SLM) shelf. The following table lists the memory cards available.

PEC	Suffixes	Name
NT9X14	DB	24-Mbyte memory card
NT9X14	EA	96-Mbyte memory card

The two memory cards (DB and EA) are organized as follows:

- NT9X14DB three 8-Mbyte modules
- NT9X14EA three 32-Mbyte modules

This procedure explains how to add memory cards to extend one of the following:

- a pure 8-Mbyte memory configuration with 8-Mbyte modules
- a pure 32-Mbyte memory configuration with 32-Mbyte modules

In a pure 8-Mbyte memory configuration, memory transfers are done in blocks of 8-Mbytes.

In a pure 32-Mbyte memory configuration, memory transfers are done in blocks of 32-Mbytes.

Common procedures

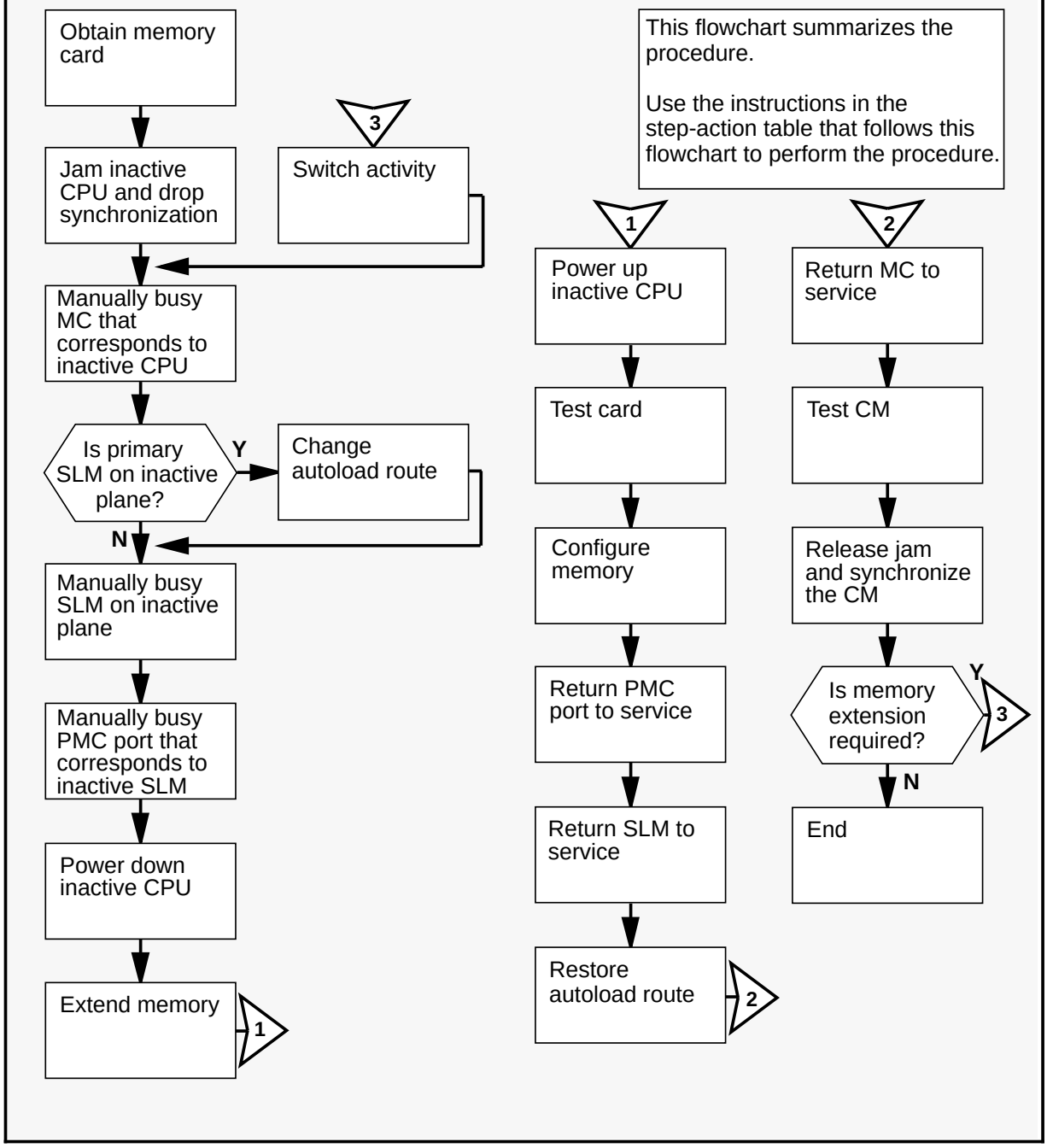
Switching the clock source and *Activity switch with memory match* are referenced in this procedure.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

Memory extension in the CM (continued)

Summary of Memory extension in the CM



Memory extension in the CM (continued)

Memory extension in the CM

Step	Action
1	Obtain a memory card. The memory card must have the same product engineering code (PEC), including suffix as the other memory cards on the shelf.
At the MAP	

2	Determine if the card is compatible with the software load by typing
	>CHECKREL CM 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 face of the replacement card
	
	Example input:
	>CHECKREL CM NT9X14EA 02
	
	Example of a MAP response:
	`PEC BASELINE EXCEPT RELEASE COMPATIBLE`
	`NT9X14EA 10 13 14 02 *NO`
	`Card release is below baseline.`
	`Do not plug the card into the CM.`

If the replacement card is	Do
compatible	step 6
not compatible	step 3

3	From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).
4	Determine which of the release codes displayed 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 ***Note:*** The range of release codes in ascending order is 01 to 09, 0A to 0Z, and 10 to VZ.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
5	Obtain a memory card with a compatible release code. **If you** / **Do** can obtain a memory card with a compatible release code — step 2 cannot obtain a memory card with a compatible release code — step 54
At the MAP	

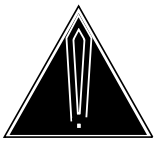
6	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   no  cpu 1   .     .  yes   .      .     .   .`

7	Determine if memory has been extended on either plane of the CM. **If** / **Do** neither plane has been extended — step 8 one plane has been extended — step 15
8	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header means that the CPU is jammed. The area is blank if the CPU is not jammed. **If the inactive CPU is** / **Do** jammed — step 11 not jammed — step 9

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
	 **CAUTION** **Possible loss of service** Ensure that you do not jam the active CPU. Jamming the active CPU while the CM is not in sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
9	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM (YES/NO)`
10	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
	At the MAP
11	Determine if the CM is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 12
not in sync	step 16

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
12	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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”):` — step 13 `Drop synchronization failed` — step 54 `Aborted. Active CPU n has a faulty processor clock.` — step 54 anything else — step 54
13	Confirm the command by typing **>YES** and pressing the Enter key. *Example of a MAP response:* `Maintenance action submitted. Running in simplex mode with active CPU n.`
At the CM reset terminal for the inactive CPU	
14	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 16 does not flash — step 54

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
15	Perform the procedure *Activity switch with memory match* on page 2-3. When you have completed the procedure, return to this point.
At the MAP	
	CAUTION **Possible loss of service** Ensure that the CM is running on the active CPU's clock. Powering down the inactive side of the CM while the CM is running on the inactive CPU's clock may cause a cold restart or a system image reload.

16	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing 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 is running on the	Do
inactive clock	step 17
active clock	step 18

17	To run the CM on the active CPU's clock, perform the procedure *Switching the clock source* on page 2-33. When you have completed the procedure, return to this point.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action

18	Access the CMMNT level of the MAP display by typing
	>CMMNT
	and pressing the Enter key.
	Example of a MAP response:
	`CM  Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC`
	`0  .  cpu 0  .  .  .  .  .  .`
	`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 test restart type = RELOAD`
	`Last CMREXTST executed`
	`System memory in kbytes as of 14:39:07`
	`Memory (kbytes): Used = 105984 Avail = 12800 Total = 118784`

19	Determine the primary autoload device. ***Note:*** The primary autoload device is shown to the right of the Primary header. In the example in step 18, the primary autoload device is the disk of SLM 0.
20	Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU. **If the primary autoload device is on the side of the switch with the** — **Do** active CPU — step 22 inactive CPU — step 21

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
21	Change the primary autoload device to a device on the same side as the active CPU by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) on the active plane device_type is the type of SLM device (DISK or TAPE) *Example of a MAP response:* `New autoload route has been set.`

22	Access the SLM corresponding to the inactive CPU by typing
	>IOD;SLM slm_number
	and pressing the Enter key.
	where
	slm_number is the number of the SLM (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`
	`user SYSTEM`
	Note: Dots to the right of the SLM Stat header mean that both SLM 0 and SLM 1 are in service.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
	 **CAUTION** **Possible loss of data recording services** This step involves removing the SLM on the inactive side of the switch from service. Before you busy the SLM, ensure that the data recording services provided by the SLM on the inactive side of the switch will be assumed by the SLM on the active side of the switch.

23	Manually busy the SLM by typing
	>BSY
	and pressing the Enter key.
	Example of a MAP response:
	`SLM 0 busy passed.`
	Example of a MAP display:
	`SLM  0  1`
	`Stat  M  .`

If the BSY command	Do
passed	step 24
failed	step 54

24	Access the PMC level of the MAP display by typing
	>CM;PMC
	and pressing the Enter key.
	Example of a MAP display:
	`PMC 0`
	`.`
	`PORT0:  pbsy`
	`PORT1:  .`

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action

25	Manually busy the port that corresponds to the inactive CPU by typing
	>BSY pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the peripheral module controller (0 or 1)
	port_number is the port number (0 or 1) on the inactive plane
	Example input:
	>BSY 0 PORT 0
	Example of a MAP response:
	`Maintenance action submitted.`
	`Passed.`

26	Access the MC level of the MAP display by typing
	>MC
	and pressing the Enter key.
	Example of a MAP display:
	`CM 0`
	`MC 0 MC 1`
	`. .`

27	Determine the state of the message controller (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 is** — **Do** `mbsy` — step 29 not `mbsy` — step 28

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
	 **CAUTION** **Possible loss of service** Ensure that you busy the MC that corresponds to the inactive CPU. Powering down the plane with the wrong MC busied causes a warm restart.

28	Manually busy the MC that corresponds to the inactive CPU by typing
	>BSY mc_number
	and pressing the Enter key.
	where
	mc_number is the number of the MC (0 or 1) on the inactive plane
	Example of a MAP response:
	`Maintenance action submitted.`
	`MC busied OK.`

If the MC	Do
busied	step 29
did not busy	step 54

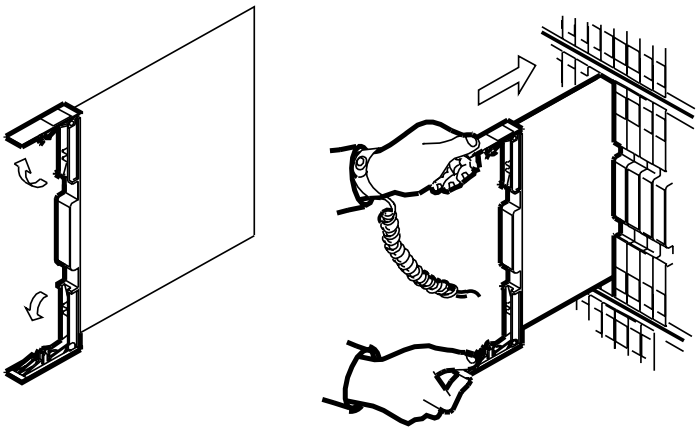
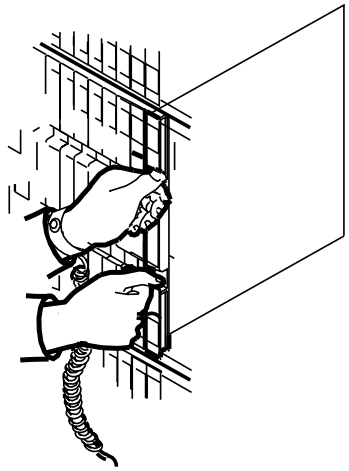
At the CM/SLM shelf

	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
29	Power down the inactive CPU by pressing down and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F though 6F. For CPU 1, the power converter is located in slots 33F through 35F.
30	Remove the NT9X19 filler faceplate located closest to the NT9X13 card by opening the locking levers and gently pulling the faceplate towards you until it clears the shelf.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
31	Pull open the locking levers on the memory card to be installed until they are horizontal. Align the card with the slots in the shelf and gently slide the card into the shelf. 
32	Seat and lock the memory card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers. 
33	Power up the inactive CPU shelf by lifting and releasing the power switch on the faceplate of the NTDX15 power converter. ***Note:*** For CPU 0, the power converter is located in slots 4F through 6F. For CPU 1, the power converter is located in slots 33F through 35F.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
	At the CM reset terminal for the inactive CPU

34	After powering up the inactive CPU, wait a few minutes for the switch to complete memory card tests.
	
	Example of an RTIF response:
	`Shelf Slot`
	`00 12 NT9X14DB ...`
	`00 13 NT9X14DB ...`
	`Waiting for activity.....`

35	Determine if the inactive CPU powered up. ***Note:*** When the CPU has successfully powered up, the Waiting for activity message is displayed. **If the inactive CPU** — **Do** powered up — step 36 did not power up — step 54
	At the MAP

36	Access the Memory level of the MAP display by typing
	>MEMORY
	and pressing the Enter key.
	
	Example of a MAP display:
	`CM 0`
	`Card 12345`
	`Plane 0 ...--`
	`Plane 1 ...--`

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
37	Test the memory card that was installed by typing **>TST CARD card_number** and pressing the Enter key. *where* card_number is the number of the memory card (0 to 5) *Example of a MAP response:* `Maintenance action submitted.`

If the TST command	Do
passed	step 38
failed	step 54

38	Configure the memory to ensure a match between the inactive CPU and its mate by typing **>CONFIG** and pressing the Enter key. *MAP response:* `WARNING:` `I will now ask the mate CPU to re-configure its memories. I will take the new configuration data and re-build the MEMORY MAP display for the inactive CPU memory cards. This must only be done when out of SYNC and during a memory extension or reduction (adding or deleting a memory card or replacing a memory card with one of a different PEC code).` `Please confirm (″YES″, ″Y″, ″NO″, or ″N″):`

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
39	Confirm the command by typing **>YES** and pressing the Enter key. *Example of a MAP response:* `Maintenance action submitted.`

If the response indicates	Do
the command passed	step 40
the command failed	step 54
`Configure aborted. 9X14BB memory is incompatible with 9X14EA memory.`	step 54

40	Return the manual-busy PMC port to service by typing
	>PMC;RTS pmc_number PORT port_number
	and pressing the Enter key.
	where
	pmc_number is the number of the PMC (0 or 1)
	port_number is the number of the port (0 or 1)
	Example of a MAP response:
	`PMC 0`
	`.`
	`PORT0: pbsy`
	`PORT1: .`

41	Access the SLM that you manually busied in step 23 by typing **>IOD;SLM slm_number** and pressing the Enter key. *where* slm_number is the number of the manual-busy SLM (0 or 1)

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action
42	Return the manual-busy SLM to service by typing **>RTS** and pressing the Enter key. *Example of a MAP response:* `SLM 0 returned to service initiated.`
43	Determine if the primary autoload device was changed. **If the autoload device was** — **Do** changed — step 44 not changed — step 46
44	Access the CMMNT level of the MAP display by typing **>CM;CMMNT** and pressing the Enter key.
45	Change the primary autoload device to the device you noted in step 19 by typing **>AUTOLD SLM slm_number device_type** and pressing the Enter key. *where* slm_number is the number of the SLM (0 or 1) device_type is the SLM device type (DISK or TAPE)
46	Access the MC level of the MAP display by typing **>MC** and pressing the Enter key.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action

47	Return the manual-busy MC to service by typing
	>RTS mc_number
	and pressing the Enter key.
	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 48
failed	step 54

Step	Action

48	Test the inactive CPU by typing
	>CM;TST
	and pressing the Enter key.
	Example of a MAP response:
	`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”):`

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action

49	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 50
failed	step 54

At the CM reset terminal for the inactive CPU	
50	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`
At the MAP	
51	Access the CM level of the MAP display by typing **>CM** and pressing the Enter key.

-continued-

Memory extension in the CM (continued)

Memory extension in the CM (continued)

Step	Action

52	Synchronize the CM by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful`

If the response indicates	Do
the SYNC command was successful	step 55
the SYNC command failed	step 54
`Inactive CPU configuration does not support burst mode operation.`	step 54
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 54
anything else	step 54

Step	Action
53	Determine if the memory has been extended on both sides of the CM.

If memory has	Do
been extended on both sides	step 55
not been extended on both sides	step 1

-continued-

Memory extension in the CM (end)

Memory extension in the CM (continued)

Step	Action
54	For further assistance, contact the personnel responsible for the next level of support.
55	You have completed this procedure.
	End

Card replacement common procedures

Task list

To find the common procedure you need, look for its title in the following list and go to the page number indicated.

This chapter contains common procedures. A common procedure is a separate set of steps that you perform only if you have been directed to do so from one or more of the following maintenance procedures:

- alarm and performance monitoring
- trouble locating and clearing
- routine maintenance

WARNING
Damage to equipment or loss of service
Use the common procedures only if you have been directed to do so in an alarm clearing, trouble locating, or routine maintenance procedure. The common procedures do not contain preliminary or concluding steps. If you use these procedures independently, you may damage equipment or cause loss of service.

WARNING
Static electricity damage
Wear a wrist strap connected to the wrist-strap grounding point on the frame supervisory panel (FSP) while handling cards. This precaution protects the cards against damage caused by static electricity.

Activity switch with memory match

Application

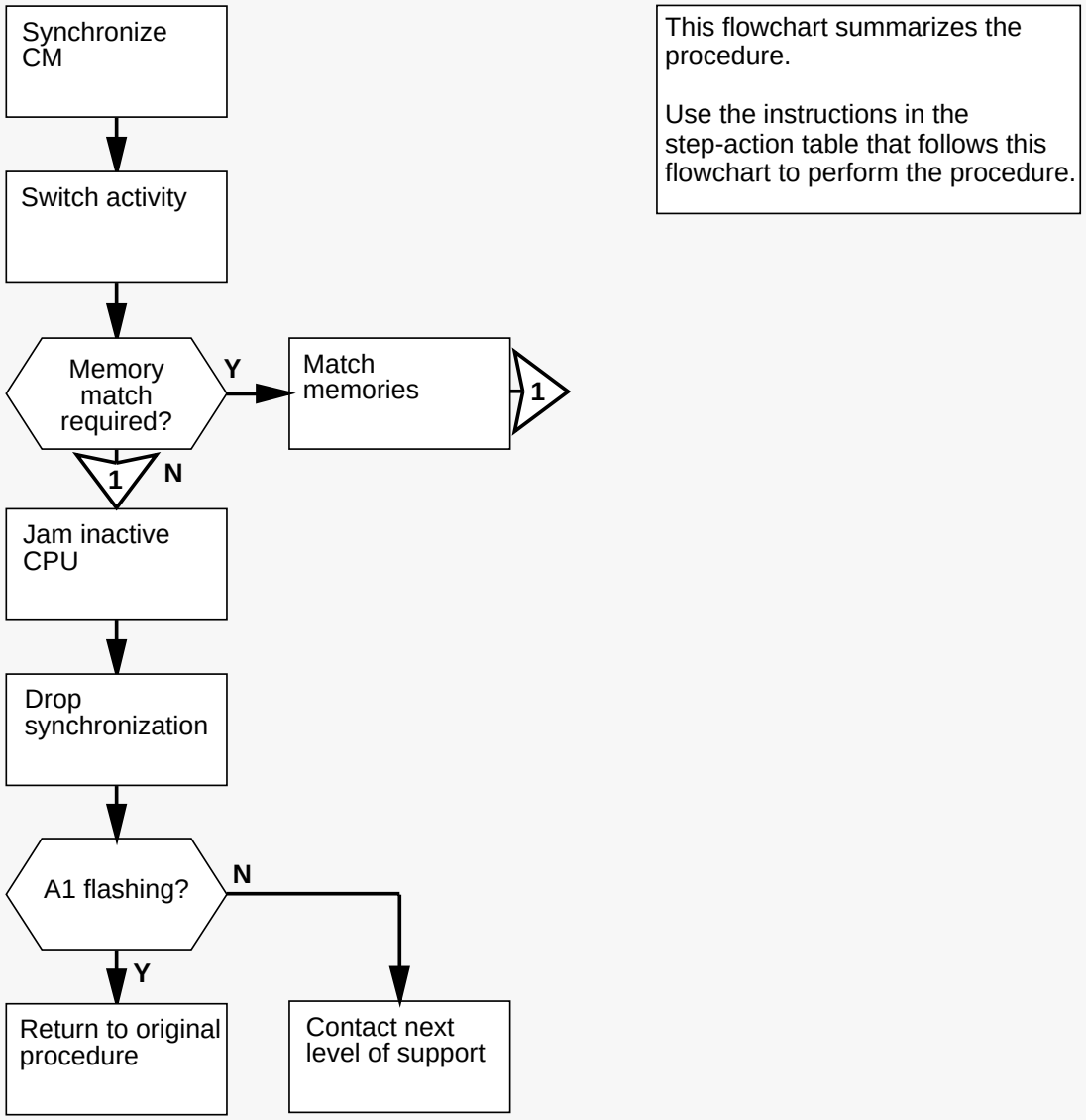
Use this procedure to switch activity between the active and inactive CPU. This procedure assumes that the switch is in sync and that neither CPU is jammed.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

Activity switch with memory match (continued)

Summary of Activity switch with memory match



Activity switch with memory match (continued)

Activity switch with memory match

Step	Action
	 **WARNING** **Possible equipment damage** Proceed only if you have been directed to this procedure from a step in a card replacement procedure. Using this procedure independently may cause equipment damage or service interruption.
At the MAP	

1	Ensure that you are at the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC`
	`  0   no  cpu 1  .     .  yes    .     .     .   .`

2	Determine if the inactive CPU is jammed. ***Note:*** The word yes under the Jam header indicates that the CPU is jammed. This area is blank if the CPU is not jammed.

If the inactive CPU is	Do
jammed	step 3
not jammed	step 4

At the CM reset terminal for the inactive CPU	
3	Before proceeding, determine from office records or from office personnel why the inactive CPU is jammed. When permitted, release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Activity switch with memory match (continued)

Activity switch with memory match (continued)

Step	Action
At the MAP	
4	Determine if the computing module (CM) is in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM is	Do
in sync	step 6
not in sync	step 5

-continued-

Activity switch with memory match (continued)

Activity switch with memory match (continued)

Step	Action
5	Before proceeding, determine from office records or from office personnel why synchronization was dropped. When permitted, synchronize the CM by typing **>SYNC** and pressing the Enter key.

If the response indicates	Do
the SYNC command was successful	step 6
the SYNC command failed	step 23
`Inactive CPU configuration does not support burst mode operation.`	step 23
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 23
anything else	step 23

-continued-

Activity switch with memory match (continued)

Activity switch with memory match (continued)

Step	Action
6	Switch activity by typing **>SWACT** and pressing the Enter key. *Example of a MAP response:* `Switch of activity will cause the CM to be running on the inactive CPU's processor clock. System will drop SYNC and then re-SYNC in order to switch to the active CPU's clock. Do you wish to continue? Please confirm ("YES", "Y", "NO", or "N"):`
7	Confirm the command by typing **>YES** and pressing the Enter key.
8	Determine if the switch of activity was successful.

If the response was	Do

`Maintenance action submitted.`
`Switch of Activity successful.`
`Drop Synchronization in progress...`
`Running in simplex mode with active CPU 1.`
`Synchronization in progress...`
`Synchronization successful.`
	step 9

anything else	step 23

-continued-

Activity switch with memory match (continued)

Activity switch with memory match (continued)

Step	Action
9	Your next step depends on whether a memory match between CPUs is required.

If you are	Do
replacing cards in the CM	step 10
clearing a LowMem alarm	step 10
clearing a CM Flt alarm	step 10
performing any other procedure	step 17

10 Access the Memory level of the MAP display by typing

>MEMORY
and pressing the Enter key.

Example of a MAP display:

```
CM 0
     Card  12345
   Plane 0 .....
   Plane 1 .....
```

11 Match the memories of the CPUs by typing

>MATCH ALL
and pressing the Enter key.

Example of a MAP response:

```
Matching memory between CPUs in SYNC.
Match ok.
```

If the response is	Do
`Match ok`	step 12
anything else	step 23

12 Access the CI level of the MAP display by typing

>QUIT ALL
and pressing the Enter key.

-continued-

Activity switch with memory match (continued)

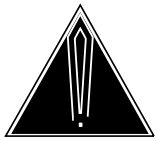
Activity switch with memory match (continued)

Step	Action
13	Access the log utility by typing **>LOGUTIL** and pressing the Enter key.
14	Determine if an MM100 log report was generated by the memory match by typing **>OPEN MM 100** and pressing the Enter key. ***Note:*** If no report was generated, the response is Log empty. **If the response is** — **Do** `Log empty` — step 15 anything else — step 23
15	Determine if an MM101 log report was generated by the memory match by typing **>OPEN MM 101** and pressing the Enter key. **If the response is** — **Do** `Log empty` — step 16 anything else — step 23
16	Quit the log utility by typing **>QUIT** and pressing the Enter key.

-continued-

Activity switch with memory match (continued)

Activity switch with memory match (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
	 **CAUTION** **Loss of service** Do not jam the active CPU. Jamming the active CPU while the CM is out of sync causes a cold restart. The reset terminal for the active CPU is identified by the word Active on the top banner of its display.
17	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`
18	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`
	At the MAP
19	Access the CM level of the MAP display by typing **>MAPCI;MTC;CM** and pressing the Enter key.

-continued-

Activity switch with memory match (continued)

Activity switch with memory match (continued)

Step	Action
	At the MAP
20	Drop synchronization by typing **>DPSYNC** and pressing the Enter key.

If the response is	Do
`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”):`	step 21
`Drop synchronization failed.`	step 23
`Aborted. Active CPU n has a faulty processor clock.`	step 23
anything else	step 23

21	Confirm the command by typing
	>YES
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Running in simplex mode with active CPU n.`

-continued-

Activity switch with memory match (end)

Activity switch with memory match (continued)

Step	Action
	At the CM reset terminal for the inactive CPU
22	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 24 does not flash — step 23
23	For further assistance, contact the personnel responsible for the next level of maintenance support.
24	Return to the maintenance procedure that sent you to this procedure and continue as directed.
	End

Failure to switch clock mastership

Application

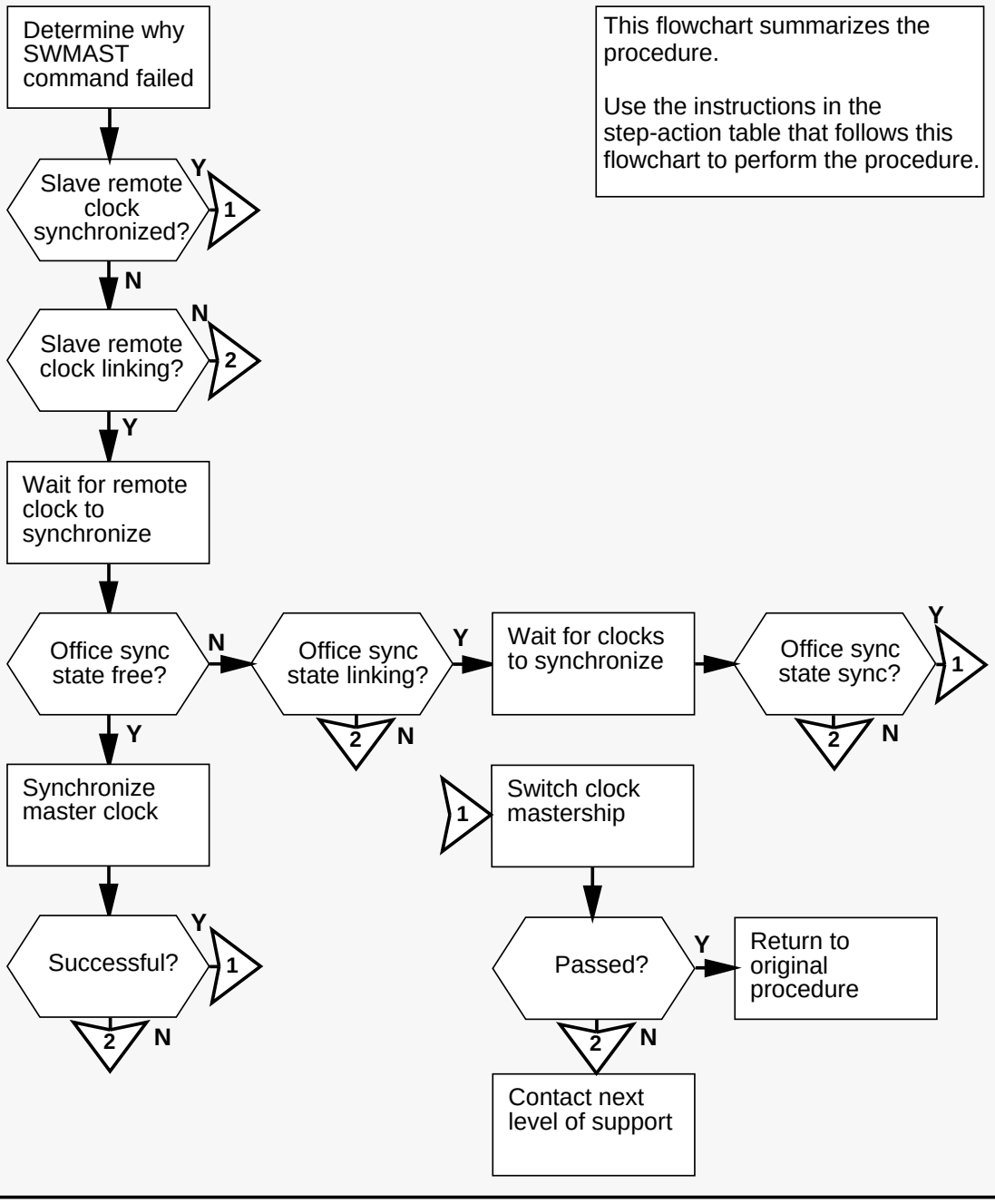
Use this procedure to clear a failure to switch clock mastership.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

Failure to switch clock mastership (continued)

Summary of Failure to switch clock mastership



Failure to switch clock mastership (continued)

Failure to switch clock mastership

Step	Action
	 **WARNING** **Possible equipment damage** Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Using this procedure independently can cause equipment damage or service interruption.
At the MAP	
1	Determine why the switch of mastership failed. **If the error response is** — **Do** `SWMAST not allowed, slave MS remote not SYNCed` — step 2 `SWMAST not allowed, slave MS has serious clock faults` — step 22 `SWMAST not allowed, mate MS is OOS` — step 23 anything else — step 24

2	Access the MS level of the MAP display by typing
	
	>MAPCI;MTC;MS
	and pressing the Enter key.
	
	Example of a MAP display:
	`Message Switch  Clock  Shelf 0  Inter-MS Link 0 1`
	`MS 0  .  M Free  .  . .`
	`MS 1  .  Slave  .  . .`

3	Determine which MS is the slave MS. ***Note:*** In the example in step 2, the slave MS is MS 1.

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action

4	Access the Clock level of the MAP display by typing
	>CLOCK
	and pressing the Enter key.
	Example of a MAP display:
	`Card 02 Alm Int  %Adj Src Rem  %Adj Src | Car Stat Sp PM     CCT`
	`MS 0  .  .  Syn +00.7 Rm0 Fr  +03.1 Lk0 | Lk0 Lck   0 DTC 002 02`
	`MS 1  .  .  Syn +01.3 In0 Syn -02.7 In0 | Lk0 Smp   0 DTC 001 02`
	`Links slipping:      4 out of 10276`

5	Determine the state of the slave remote clock. ***Note:*** The state of the slave remote clock is shown to the right of the slave MS under Rem header. In the example in step 4, the state of the slave remote clock is Syn. **If the slave remote clock is** — **Do** `Fr` — step 6 `LKg` — step 8 `Syn` — step 21
6	Perform an in-service test on the clock card of the slave message switch (MS) by typing **>TST ms_number** and pressing the Enter key. *where* ms_number is the number of the slave MS (0 or 1) **If the TST command** — **Do** passed, or passed with `Istb` — step 7 failed — step 23

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action
7	Determine the state of the slave remote clock.

If the state of the slave remote clock is	Do
LKg	step 8
Fr	step 10
Syn	step 21

Step	Action
8	Wait until the slave remote clock has finished linking and has synchronized itself, then continue with this procedure. ***Note:*** Allow up to 30 min for the slave remote clock to synchronize.
9	Determine the state of the slave remote clock.

If the state of the slave remote clock is	Do
Fr	step 10
Syn	step 21
LKg	step 24

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action

10	Determine the office sync state of the clocks by typing
	>QUERYCK
	and pressing the Enter key.
	Note: The office sync state is shown to the right of the Office SYNC state header.
	Example of a MAP response:
	`Office SYNC state = LKng`
	`Clock type = Stratum 2.5`
	`Office configuration = Master External Office`
	`External Frequency = fl0000`
	`External Select = Analog`
	`External Termination = 50ohm`
	`External Alarm = Minor`
	`Master Clock = MS0`
	`Remote Clock Configuration = reference`
	`MS0 Clock Alarms: REM EXT`
	`MS1 Clock Alarms: none`

If the office sync state is	Do
`Free`	step 11
`LKng`	step 15
`Sync`	step 21

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action

11	Start the synchronization of the master clock by typing
	>SYNC
	and pressing 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 ...`

If the in-service test	Do
passed, and the response is `Clock synchronization started ...`	step 13
passed with `Istb`, a card list is generated, and the response is `Clock synchronization started ...`	step 13
passed or passed with `Istb`, the response is `Request to Synchronize Clock 0: failed,` and an error response is returned	step 17
passed, and the responses are `Warning: Master clock has a faulty remote` and `Clock synchronization started ...`	step 12
failed, the response is `Request to Synchronize Clock 0: failed,` and an error response is returned	step 17
failed, and a card list is generated	step 24

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action

12	Determine if the Rem alarm is present by typing
	>QUERYCK
	and pressing the Enter key.
	Note: A Rem alarm is shown to the right of the MS0 or MS1 Clock Alarms header.
	Example of a MAP response:
	`Office SYNC state = LKng`
	`Clock type = Stratum 2.5`
	`Office configuration = Master External Office`
	`External Frequency = fl0000`
	`External Select = Analog`
	`External Termination = 50ohm`
	`External Alarm = Minor`
	`Master Clock = MS0`
	`Remote Clock Configuration = reference`
	`MS0 Clock Alarms: none`
	`MS1 Clock Alarms: Rem`
	If the Rem alarm is — **Do**
	present — step 24
	not present — step 14

13	Access the clock status information by typing
	>QUERYCK
	and pressing the Enter key.
	Example of a MAP response:
	`Office SYNC state = LKng`
	`Clock type = Stratum 2.5`
	`Office configuration = Master External Office`
	`External Frequency = fl0000`
	`External Select = Analog`
	`External Termination = 50ohm`
	`External Alarm = Minor`
	`Master Clock = MS0`
	`Remote Clock Configuration = reference`
	`MS0 Clock Alarms: none`
	`MS1 Clock Alarms: Rem`

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action
14	Determine the office sync state of the clocks.

If the office sync state is	Do
LKng	step 15
Sync	step 21
Free	step 24

Step	Action
15	Wait for the clock to synchronize with its timing source, then continue with this procedure. ***Note:*** Allow up to 2 h for the clock to synchronize with its timing source.
16	Determine if the clocks are synchronized by typing **>QUERYCK** and pressing the Enter key.

If the office sync state is	Do
Sync	step 21
LKng	step 24
Free	step 24

-continued-

Failure to switch clock mastership (continued)

Failure to switch clock mastership (continued)

Step	Action
17	Your next step depends on the error response that was generated. **If the error response is** — **Do** `Currently no master clock. Reattempt command in 10 seconds` — step 18 `Clock is already syncing` — step 19 `Clock must be Free running in Master-Internal Offices` — step 24 `Data mismatch between the CM and MS 0/1` — step 24 `Master clock has no remote reference` — step 24 `Carriers are not inservice` — step 24 `No external reference link available` — step 24 `Master stratum1 alarm 0/1 present and SYNCLK table EXTALARM MAJOR` — step 24
18	Wait 10 s, then continue with this procedure. Go to step 11.
19	Wait for the clock to synchronize with its timing source, then continue with this procedure. ***Note:*** Allow up to 2 h for the clock to synchronize with its timing source.

-continued-

Failure to switch clock mastership (end)

Failure to switch clock mastership (continued)

Step	Action
20	Determine if the clocks are synchronized by typing **>QUERYCK** and pressing the Enter key. **If the office sync state is** — **Do** `Sync` — step 21 `LKng` — step 24 `Free` — step 24

21	Switch clock mastership by typing
	>SWMAST
	and pressing the Enter key.
	
	Example of a MAP response:
	`Request to Switch Clock Mastership MS: 0 submitted.`
	`Request to Switch Clock Mastership MS: 0 passed.`
	
	If the SWMAST command — **Do**
	passed — step 25
	failed — step 24

22	Perform the procedure *Clearing an MS CLOCK major alarm* in *DMS SuperNode SE Alarm and Performance Monitoring Procedures*, 297-5301-543.
23	Perform the procedure *Clearing an MS SysB major alarm* in *DMS SuperNode SE Alarm and Performance Monitoring Procedures*, 297-5301-543.
24	For further assistance, contact the personnel responsible for the next level of support.
25	Return to the maintenance procedure that sent you to this procedure and continue as directed.
	End

Replacing a SuperNode SE card

Application

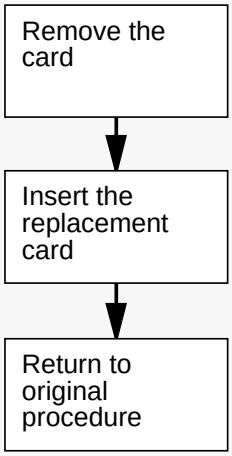
Use this procedure to replace a card in a DMS SuperNode SE cabinet.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

Replacing a SuperNode SE card (continued)

Summary of Replacing a SuperNode SE card



This flowchart summarizes the procedure.

Use the instructions in the step-action table that follows this flowchart to perform the procedure.

Replacing a SuperNode SE card (continued)

Replacing a SuperNode SE card

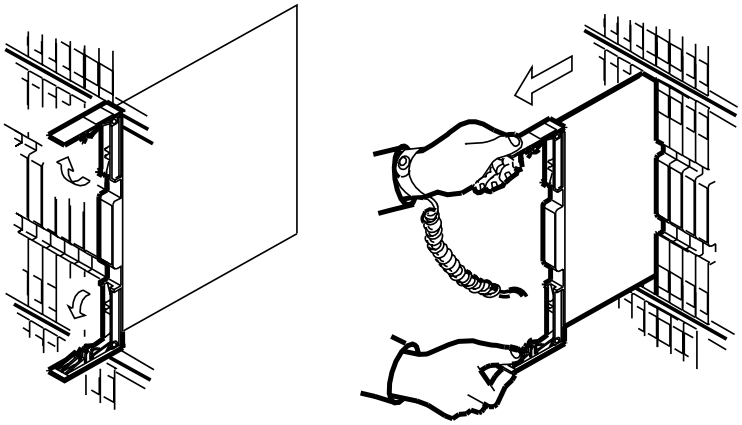
Step	Action
	WARNING **Possible equipment damage** Proceed only if you have been directed to this procedure from a step in a card replacement procedure. Using this procedure independently may cause equipment damage or service interruption.
	WARNING **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity.
At the shelf	
1	Locate the card to be removed on the appropriate shelf.
2	Remove any cables from the faceplate of the card to be removed and note the connector numbers.

-continued-

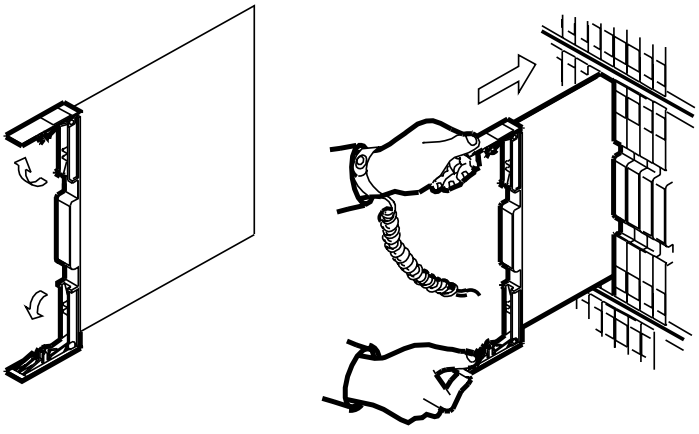
Replacing a SuperNode SE card (continued)

Replacing a SuperNode SE card (continued)

Step	Action
3	Open the locking levers on the card to be removed. Gently pull the card towards you until it clears the shelf.



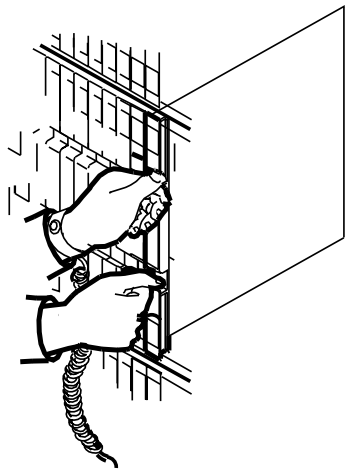
4	Place the card you have removed in an electrostatic discharge (ESD) protective container.
5	Ensure that the replacement card has the same product engineering code (PEC), including suffix, as the card you just removed.
6	Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.



-continued-

Replacing a SuperNode SE card (end)

Replacing a SuperNode SE card (continued)

Step	Action
7	Seat and lock the card, as follows. a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf. b. Close the locking levers. 
8	Reconnect any previously removed cables to the faceplate of the replacement card.
9	Return to the card replacement procedure that sent you to this procedure and continue as directed.
	End

Switching the clock source

Application

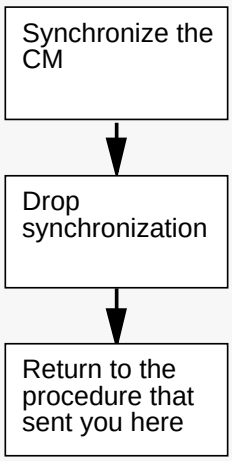
Use this procedure to force the active CPU to provide the clocking signal.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

Switching the clock source (continued)

Summary of Switching the clock source



This flowchart summarizes the procedure.

Use the instructions in the step-action table that follows this flowchart to perform the procedure.

Switching the clock source (continued)

At the CM reset terminal for the inactive CPU

Switching the clock source

Step	Action
	 **WARNING** **Possible equipment damage** Proceed only if you have been directed to this procedure from a step in a card replacement procedure. Using this procedure independently may cause equipment damage or service interruption.

At the CM reset terminal for the inactive CPU

1	Release the jam on the inactive CPU by typing **>\RELEASE JAM** and pressing the Enter key. *RTIF response:* `JAM RELEASE DONE`

-continued-

Switching the clock source (continued)

Switching the clock source (continued)

Step	Action
At the MAP	

2	Synchronize the computing module (CM) by typing
	>SYNC
	and pressing the Enter key.
	Example of a MAP response:
	`Maintenance action submitted.`
	`Synchronization successful.`

If the response indicates	Do
the SYNC command was successful	step 3
the SYNC command failed	step 18
`Inactive CPU configuration does not support burst mode operation.`	step 18
`Burst mode operation will now be disabled as it is not supported by both CPUs. Current high call processing utilization indicates that disabling burst mode operation may result in raising call processing utilization to a point where CALL ORIGINATION FAILURES MAY OCCUR.`	step 18
anything else	step 18

-continued-

Switching the clock source (continued)

Switching the clock source (continued)

Step	Action

3	Access the Memory level of the MAP display by typing
	>MEMORY
	and pressing the Enter key.
	Example of a MAP response:
	`CM 0`
	`Card 12345`
	`Plane 0 .....`
	`Plane 1 .....`

4	Match the memories of the CPUs by typing
	>MATCH ALL
	and pressing the Enter key.
	Example of a MAP response:
	`Matching memory between CPUs in SYNC.`
	`Match ok.`

If the response is	Do
`Match ok`	step 5
anything else	step 18

5	Access the CI level of the MAP display by typing **>QUIT ALL** and pressing the Enter key.
6	Access the log utility by typing **>LOGUTIL** and pressing the Enter key.

-continued-

Switching the clock source (continued)

Switching the clock source (continued)

Step	Action
7	Determine if an MM100 log report was generated by the memory match by typing **>OPEN MM 100** and pressing the Enter key. ***Note:*** If no report was generated, the response is Log empty.

If the response is	Do
`Log empty`	step 8
anything else	step 18

Step	Action
8	Determine if an MM101 log report was generated by the memory match by typing **>OPEN MM 101** and pressing the Enter key.

If the response is	Do
`Log empty`	step 9
anything else	step 18

Step	Action
9	Quit the log utility by typing **>QUIT** and pressing the Enter key.

10	Access the CM level of the MAP display by typing
	>MAPCI;MTC;CM
	and pressing the Enter key.
	Example of a MAP display:
	`CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC`
	`0 . cpu 1 . . . . . .`

-continued-

Switching the clock source (continued)

Switching the clock source (continued)

Step	Action
11	Determine if the CM remained in sync. ***Note:*** A dot or EccOn under the Sync header means that the CM is in sync. In the example in step 10, the CM is in sync. **If the CM** — **Do** remained in sync — step 12 did not remain in sync — step 18
At the CM reset terminal for the inactive CPU	
12	Jam the inactive CPU by typing **>\JAM** and pressing the Enter key. *RTIF response:* `PLEASE CONFIRM: (YES/NO)`
13	Confirm the command by typing **>YES** and pressing the Enter key. *RTIF response:* `JAM DONE`

-continued-

Switching the clock source (continued)

Switching the clock source (continued)

Step	Action
At the MAP	
14	Drop synchronization by typing **>DPSYNC** and pressing the Enter key. **If the response is** — **Do** `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"):` — step 15 `Drop synchronization failed.` — step 18 `Aborted. Active CPU n has a faulty processor clock.` — step 18 anything else — step 18
15	Confirm the command by typing **>YES** and pressing the Enter key. *Example of a MAP response:* `Maintenance action submitted. Running in simplex mode with active CPU n.`

-continued-

Switching the clock source (end)

Switching the clock source (continued)

Step	Action
At the CM reset terminal for the inactive CPU	
16	Wait until A1 flashes on the CM reset terminal for the inactive CPU. ***Note:*** Allow about 5 min for A1 to start flashing. **If A1** — **Do** flashes — step 17 does not flash — step 18

17	Determine if the CM is running on the active CPU's clock by typing
	>INSYNC
	and pressing the Enter key.
	
	Example of a MAP response:
	`CPU pair is NOT insync, CPU 1 is active.`
	`CM is running on active CPU clock.`
	
	`Memory Error Correction is ENABLED.`
	
	`The Inactive CPU IS Jammed.`
	
	If the CM is running on the — **Do**
	inactive clock — step 18
	active clock — step 19

18	For further assistance, contact the personnel responsible for the next level of support.
19	You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.
	End

Appendix: **Figures**

This appendix contains illustrations of the following:

- computing module (CM) and system load module (SLM) shelf layout
- message switch (MS) shelf layout

Figure 3-1
Example of a SuperNode SE CM and SLM shelf

FW-30322

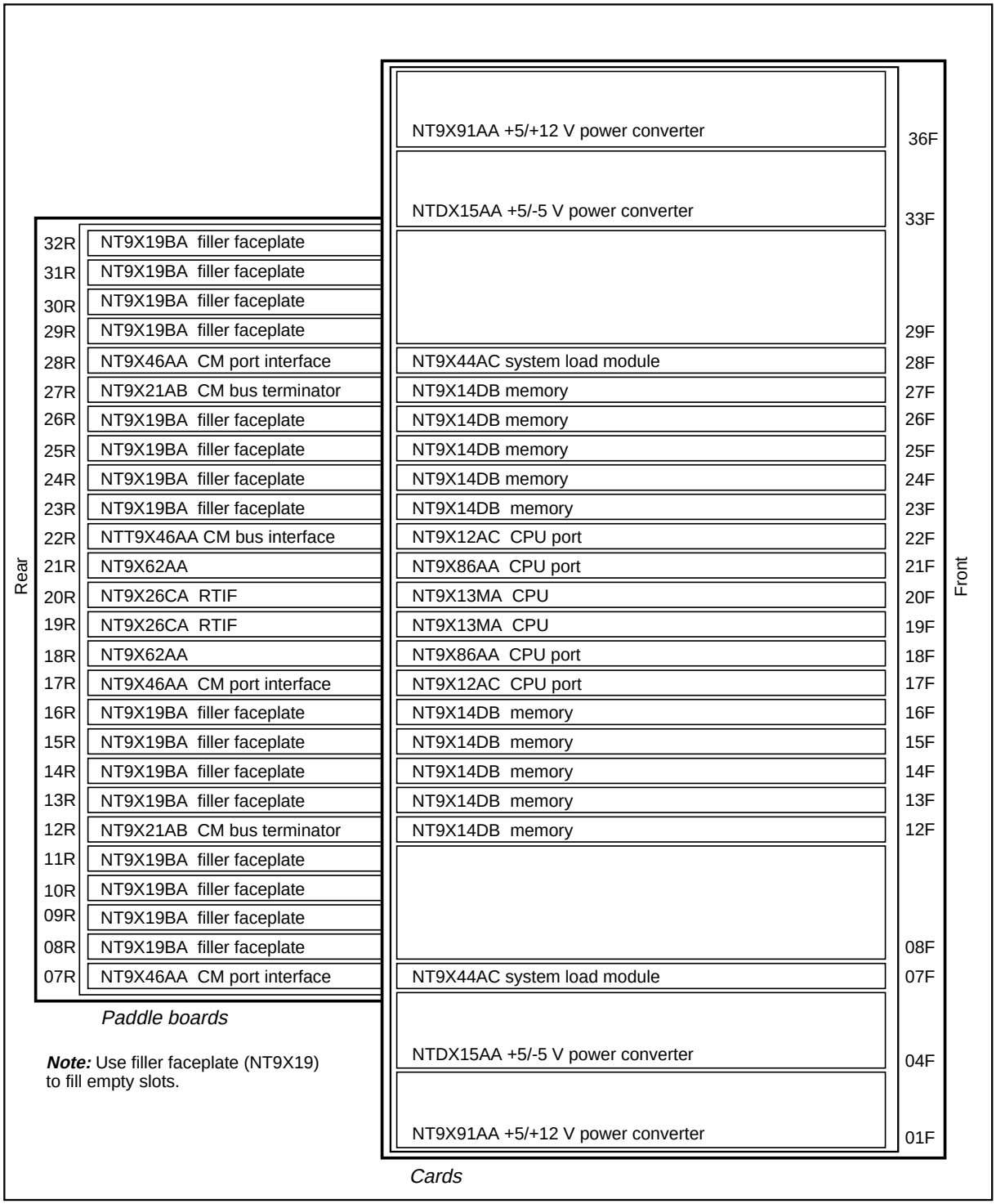
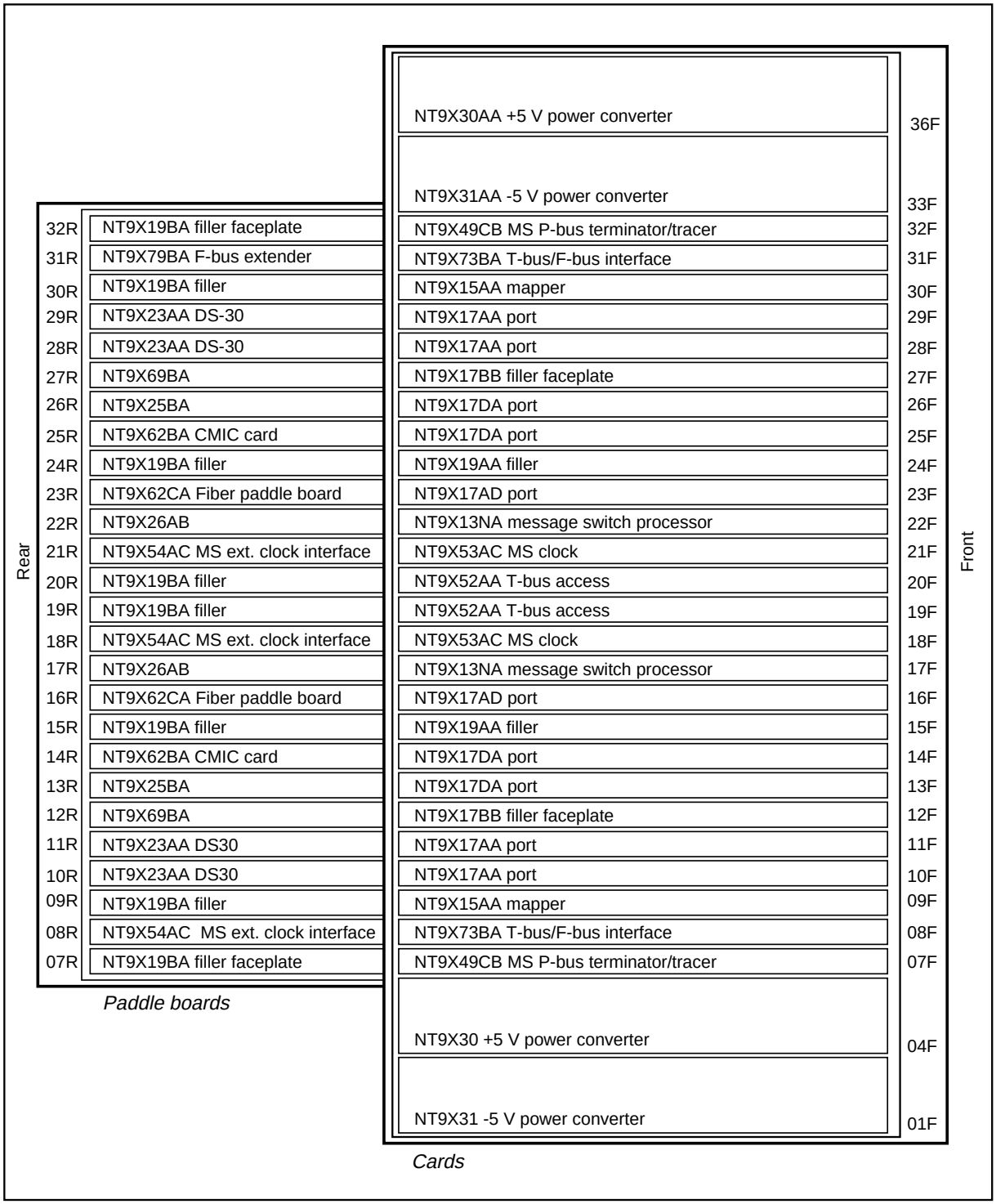


Figure 3-2
Example of a SuperNode SE MS shelf

FW-30318



List of terms

AMA

See automatic message accounting (AMA).

automatic message accounting (AMA)

An automatic recording system that documents all the necessary billing data of subscriber-dialed long distance calls.

boot

The process of starting up a computer.

bus

An electrical connection that allows two or more wires or lines to be connected together.

cabinetized power distribution center (CPDC)

A cabinetized module providing power for Remote Switching Center-SONET (RSC-S) equipment.

card

A plug-in circuit pack containing components. In a DMS switch, card is the preferred term for a printed circuit pack or a printed circuit board.

CCITT

From the French for International Telegraph and Telephone Consultative Committee (Comité Consultatif International Télégraphique et Téléphonique). Until March 1993, the CCITT was one of four permanent groups within the International Telecommunication Union (ITU). The CCITT studied technical issues in telecommunication on an international basis, and issued recommendations intended to improve standardization and effectiveness within the industry. The work of the CCITT continues in the ITU Telecommunication Standardization Sector (ITU-T).

CCS

See common channel signaling (CCS).

CCS7

See Common Channel Signaling 7 (CCS7).

central processing unit (CPU)

The hardware unit of a computing system that contains the circuits that control and perform the execution of instructions.

central side (C-side)

The side of a node that faces away from the peripheral modules (PM) and toward the central control (CC). Also known as control side. *See also* peripheral side (P-side).

circuit switching

The temporary connection of two or more channels between two or more points in order to provide the user with exclusive use of an open channel with which to exchange information. Also known as line switching.

CLASS

See custom local area signaling service (CLASS).

clock (CLK)

- A repetitive precisely timed signal used to control a synchronous process such as logic or transmission.
- A hardware device that provides accurate timing signals to synchronize DMS-100 Family circuits.
- A stable square-wave oscillator that can maintain a precise output frequency for long periods of time.

CLK

See clock (CLK).

CM

See computing module (CM).

CMIC

See computing module interface card (CMIC).

cold restart

An initialization phase during which temporary storage is deallocated and cleared. All calls are dropped and the peripheral processors (PP) clear all channel assignments. *See also* warm restart, restart.

common channel signaling (CCS)

A signaling method in which information relating to a multiplicity of labeled messages is transmitted over a single channel using time-division multiplex (TDM) digital techniques.

Common Channel Signaling 7 (CCS7)

A digital message-based network signaling standard, defined by the CCITT, that separates call signaling information from voice signals so that interoffice signaling is exchanged over a separate signaling link.

common peripheral module (CPM)

A family of peripheral modules (PM) used in the DMS-100 Family switches. The CPM replaces the XMS-based peripheral module (XPM).

computing module (CM)

The processor and memory of the dual-plane combined core (DPCC) used by DMS SuperNode. Each CM consists of a pair of CPUs with associated memory that operate in a synchronous matched mode on two separate planes. Only one plane is active; it maintains overall control of the system while the other plane is on standby.

computing module interface card (CMIC)

In a DMS SuperNode processor, the card used by the message switch to act as an interface with the computing module (CM). The CMIC uses fiber optics transmission links.

control side

See central side (C-side).

cooling unit (CU)

Typically, a five-fan unit mounted on equipment frames to ventilate equipment and prevent overheating.

CPDC

See cabinetized power distribution center (CPDC).

CPM

See common peripheral module (CPM).

CPU

See central processing unit (CPU).

C-side

See central side (C-side).

CU

See cooling unit(CU).

Custom Local Area Signaling Service (CLASS)

A set of call services that provides the ability to supply calling line identification to the call destination, store information on the last incoming and last outgoing call, and monitor the status of a destination line.

dc

See direct current (dc).

digital trunk controller (DTC)

A peripheral module (PM) that connects DS30 links from the network with digital trunk circuits.

direct current (dc)

An almost nonpulsating unidirectional current in which the changes in value are either zero or so small that they can be ignored.

DMS-bus

The messaging control component of the DMS SuperNode processor. The DMS-bus components are a pair of message switches (MS).

DMS-core

The call management and system control portion of the DMS SuperNode processor. The DMS-core portion consists of a computing module (CM) and a system load module (SLM).

DMS-link

The networking software of the DMS SuperNode processor. The DMS-link software consists of open and standard protocols that allow the DMS SuperNode to function in a multivendor environment.

DMS SuperNode

A central control complex (CCC) for the DMS-100 switch. The two major components of DMS SuperNode are the computing module (CM) and the message switch (MS). Both components are compatible with the network module (NM), the input/output controller (IOC), and XMS-based peripheral modules (XPM).

DMS SuperNode SE (SNSE)

A smaller version of DMS SuperNode designed to service smaller offices (maximum 20 000 lines). It is based on existing SuperNode technology and can be used in all existing applications of SuperNode, including Common Channel Signaling 7 (CCS7) and international. SNSE supports all SuperNode software features at a reduced call processing capacity.

DPCC

See dual-plane combined coret (DPCC).

DTC

See digital trunk controller (DTC).

dual-plane combined core (DPCC)

One of the three cabinet models for the DMS SuperNode processor. The DPCC contains a computing module (CM) shelf, two message switch (MS) shelves, and a system load module (SLM) shelf.

EIU

See Ethernet interface unit (EIU).

electrostatic discharge (ESD)

A transfer of electrostatic charge either caused by direct contact between two bodies that are at different electrostatic potentials, or induced by an electrostatic field.

end office (EO)

A switching office (SO) arranged for terminating subscriber lines and provided with trunks for establishing connections to and from other SOs.

ENET

See enhanced network (ENET).

enhanced network (ENET)

A channel-matrixed time switch that provides pulse code modulated voice and data connections between peripheral modules (PM). ENET also provides message paths to the DMS-bus components.

EO

See end office (EO).

ESD

See electrostatic discharge (ESD).

Ethernet interface unit (EIU)

The unit that connects the DMS SuperNode to the local area network.

F-bus

See frame transport bus (F-bus).

frame transport bus (F-bus)

An 8-bit bus that provides data communications between a link interface module (LIM) and the application-specific units (ASU) that are provisioned in a link peripheral processor (LPP) cabinet or frame. To ensure reliability, two load-sharing F-buses are provided in an LPP. Each F-bus is dedicated to one of the two LIM units.

IMS

See I/O Message System (IMS).

input/output (I/O)

A device or medium used to achieve a bidirectional exchange of data. Data exchange in the DMS-100 switch is performed in accordance with the I/O Message System (IMS).

I/O Message System (IMS)

A system that organizes the transmission and reception of internal messages between components of the DMS-100 Family switches. IMS defines the structure, protocol, and maintenance features of internal message handling.

integrated service digital network (ISDN)

A set of standards proposed by the CCITT to establish compatibility between the telephone network and various data terminals and devices. ISDN is a fully digital network, in general evolving from a telephone integrated digital network. It provides end-to-end connectivity to support a wide range of services, including circuit-switched voice, circuit-switched data, and packet-switched data over the same local facility.

International Telegraph and Telephone Consultative Committee

See CCITT.

I/O

See input/output (I/O).

IOD

See I/O device (IOD).

I/O device (IOD)

A device that allows data to be entered into a data processing system, received from the system, or both.

ISDN

See integrated services digital network (ISDN).

LIM

See link interface module (LIM).

link

- In a DMS switch, a connection between any two nodes.
- A four-wire group of conductors providing transmit and receive paths for the serial speech or message data between components of DMS-100 Family switches. Speech links connect peripheral modules (PM) to the network modules (NM). Message links connect NM controllers or I/O controllers (IOC) to the central message controller (CMC).
- A logical switched virtual circuit (SVC). Up to 256 logical SVCs are carried on a physical X.25 communication cable.

link interface module (LIM)

A peripheral module (PM) that controls messaging between link interface units (LIU) in a link peripheral processor (LPP). The LIM also controls messages between the LPP and the DMS-bus component. An LIM consists of two LIM units and two frame transport buses (F-bus). The two LIM units operate in a load-sharing mode with each other. *See also* frame transport bus (F-bus), link peripheral processor (LPP), and local message switch (LMS).

link interface unit (LIU)

A peripheral module (PM) that processes messages entering and leaving a link peripheral processor (LPP) through an individual signaling data link.

link peripheral processor (LPP)

The DMS SuperNode equipment frame or cabinet that contains two types of peripheral modules (PM): a link interface module (LIM) and one or more application-specific units (ASU). *See also* application-specific unit (ASU), CCS7 link interface unit (LIU7), and link interface module (LIM).

LIU

See link interface unit (LIU).

LMS

See local message switch (LMS).

local message switch (LMS)

A shelf in the link peripheral processor (LPP) frame or cabinet. The LMS exchanges messages between application-specific units (ASU) in the LPP and provides access to the DMS-bus. Also known as link interface module (LIM).

LPP

See link peripheral processor (LPP).

maintenance and administration position

See MAP.

maintenance trunk module (MTM)

In a trunk module equipment (TME) frame, a peripheral module (PM) that is equipped with test and service circuit cards and contains special buses to accommodate test cards for maintenance. The MTM provides an interface between the DMS-100 Family digital network and digital or analog test and service circuits.

MAP

Maintenance and administration position. A group of components that provides a user interface between operating company personnel and the DMS-100 Family switches. The interface consists of a video display unit (VDU) and keyboard, a voice communications module, test facilities, and special furniture.

mapper

A circuit pack used in routing messages in the DMS SuperNode message switch.

MC

See message controller (MC).

message controller (MC)

A node connected to the peripheral side of a central message controller (CMC).

message switch (MS)

A high-capacity communications facility that functions as the messaging hub of the dual-plane combined core (DPCC) of a DMS SuperNode processor. The MS controls messaging between the DMS-bus components by concentrating and distributing messages and by allowing other DMS-STP components to communicate directly with each other.

message switching

An arrangement whereby a message is received, stored until the proper outgoing line is available, and then retransmitted. *See also* circuit switching.

MS

See message switch (MS).

MTM

See maintenance trunk module (MTM).

node

The terminating point of a link. The meaning of the term depends on its context. For example, a circuit can be a node in the context of another circuit within a module, the module itself can be a node in the context of another component of the network, and so forth. Some common applications are as follows:

- in network topology, a terminal of any branch of a network or a terminal common to two or more branches of a network
- in a switched communications network, the switching points, including patching and control facilities
- in a data network, the location of a data station that interconnects data transmission lines
- a unit of intelligence within a system; in a DMS switch, it includes the CPU, network module (NM), and peripheral modules (PM)

OAM

See operation, administration, and maintenance (OAM).

OFFL

See offline (OFFL).

offline (OFFL)

- Equipment or devices not under direct control of the CPU.
- An equipment state in which a node is known to the I/O system. Connection information is defined, but the node is inaccessible for normal I/O and system maintenance activity. In this state, the node can be accessed by a nonresident commissioning package without affecting the rest of the system.
- Terminal equipment not connected to a transmission line.

OM

See operational measurements (OM).

operation, administration, and maintenance (OAM)

All of the tasks necessary for providing, maintaining, or modifying the services provided by a switching system. These tasks include provisioning of hardware, creation of a new service, and trouble recognition and clearance.

operational measurements (OM)

The hardware and software resources of the DMS-100 Family switches that control the collection and display of measurements taken on an operating system. The OM subsystem organizes the measurement data and manages its transfer to displays and records. The OM data is used for maintenance, traffic, accounting, and provisioning decisions.

packet switching

The transmission of data by means of addressed packets, whereby a transmission channel is occupied only for the duration of the packet transmission.

paddle board (PB)

A small circuit card that mounts on the rear of a DMS equipment shelf. The PB carries the cable interfaces and local service functions, such as local clock sources and bus terminations or both.

PB

See paddle board (PB).

P-bus

See processor bus (P-bus).

PDC

See power distribution center (PDC).

PEC

See product engineering code (PEC).

peripheral module (PM)

Any hardware module in the DMS-100 Family switches that provides an interface between external line, trunk, or service facilities. A PM contains peripheral processors (PP), which perform local routines, thus relieving the load on the CPU.

peripheral processor (PP)

A hardware device in the peripheral module (PM) that performs local processing independent of the CPU. The PP is driven by read-only memory (ROM) in the PM, thus releasing CPU run time for higher level activities.

peripheral side (P-side)

The side of a node facing away from the central control (CC) and toward the peripheral modules (PM). *See also* central side (C-side).

PM

See peripheral module (PM).

power distribution center (PDC)

The frame containing the components for distributing office battery feeds to equipment frames of the DMS-100 Family switches. The PDC accepts A cables and B cables from the office battery and provides protected subsidiary feeds to each frame or shelf. The PDC also contains noise suppression and alarm circuits and provides a dedicated feed for the alarm battery supply.

PP

See peripheral processor (PP).

processor bus (P-bus)

The bus used in DMS SuperNode modules for processor communications.

product engineering code (PEC)

An eight-character identifier for each marketable hardware item manufactured by Northern Telecom.

protocol

A strict procedure required to initiate and maintain communication. Protocols may exist at many levels in one network, such as link-by-link, end-to-end, and subscriber-to-switch.

P-side

See peripheral side (P-side).

reload-restart

The setting of software pointers in a program to simulate reloading of software into DMS-100 Family switches. Office configuration and translation data is retained, but all dynamic data is cleared.

remote switching center (RSC)

A remote common peripheral module (CPM) that provides an interface with a large number of analog lines, digital trunking, or both at a remote location. The RSC also handles remote-off-remote connections from other remote sites. *See also* remote switching center-SONET (RSC-S).

remote switching center-SONET (RSC-S)

An enhanced version of the RSC. The RSC-S is a remote common peripheral module (CPM) peripheral that provides all the functions and features of the existing RSC, but with increased capacity and the option of fiber optic connectivity. *See also* remote switching center (RSC).

remote terminal interface (RTIF)

See reset terminal interface (RTIF).

reset terminal interface (RTIF)

In a DMS SuperNode switch, a user interface terminal that is used to reboot the system and monitor its status. The RTIF can be either a remote terminal that is connected through a modem or a local terminal. Also known as remote terminal interface.

restart

To reestablish the process of executing a routine after a program or data error or a machine malfunction. Restarting usually involves returning to checkpoints placed at appropriate intervals such that, in the event of a failure, a job can be resumed without starting at the beginning of the run. A restart has a severity associated with it that reflects the importance of the resources being reset. *See also* cold restart, warm restart.

RSC

See remote switching center (RSC).

RSC-S

See remote switching center-SONET (RSC-S).

RTIF

See reset terminal interface (RTIF).

SCC

See SuperNode combined core (SCC).

SCP

See service control point (SCP).

service control point (SCP)

A node in a Common Channel Signaling 7 (CCS7) signaling network that supports application databases. The function of an SCP is to accept a query for information, retrieve the requested information from one of its application databases, and send a response message to the originator of the request.

service switching point (SSP)

A Common Channel Signaling 7 (CCS7) signaling node that interacts with the service control point (SCP) to implement special service code features.

signaling transfer point (STP)

A node in a Common Channel Signaling 7 (CCS7) network that routes messages between nodes. Signaling transfer points transfer messages between incoming and outgoing signaling links but, with the exception of network management (NWM) information, do not originate or terminate messages. Signaling transfer points are deployed in pairs. If one STP fails, the mate takes over, ensuring that service continues without interruption.

SLM

See system load module (SLM).

SONET

See synchronous optical network (SONET).

speech link

See link.

SSP

See service switching point (SSP).

STP

See signaling transfer point (STP).

SuperNode combined core (SCC)

The cabinet for the DMS SuperNode SE. The SCC cabinet contains a computing module/system load module shelf, a message switch shelf, an enhanced network and interface (ENI) for an optional ENET and LIUs, and an optional link interface shelf.

SWACT

See switch of activity (SWACT).

switch of activity (SWACT)

In a DMS fault tolerant system, a switch that changes the states of two identical devices devoted to the same function. A SWACT makes an active device inactive and an inactive device active.

synchronous optical network (SONET)

A standard for optical transport that defines optical carrier levels and their electrically equivalent synchronous transport signals. The SONET standard allows for a multivendor environment, positioning of the network for transport of new services, synchronous networking, and enhanced operation, administration, and maintenance (OAM).

system load module (SLM)

A mass storage system in a DMS SuperNode processor that stores office images. From the SLM, new loads or stored images can be booted into the computing module (CM).

TM

See trunk module (TM).

trunk module (TM)

A peripheral module (PM), in a trunk module equipment (TME) frame, that provides speech and signaling interfaces between a DS30 network port and analog trunks.

volume

- A certain portion of data, together with its data carrier, that can be handled conveniently as a unit.
- A data carrier, such as a reel of magnetic tape, that can be mounted and dismounted as a unit.
- That portion of a single unit of storage that is accessible to a single read/write mechanism, for example, a disk pack.

warm restart

An initialization phase during which temporary storage is deallocated and cleared. Transient calls are dropped while calls in the talking state continue. *See also* cold restart, restart.

DMS-100 Family

DMS SuperNode SE

Card Replacement Procedures

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