Upgrading the IW SPM IP

Upgrade overview

Interworking Spectrum Peripheral Module - Internet Protocol (IW SPM IP) upgrades are performed on a circuit pack by circuit pack basis. Upgrading the software on all the individual circuit packs will upgrade the IW SPM IP.

The upgrade process requires upgrading the software in the IW SPM circuit packs. A separate load exists for each type of circuit pack. Software upgrades require the following sequence:

- SRM
- GEM
- CEM

An IW SPM upgrade involves upgrading circuit pack software loads. The circuit packs are grouped into circuit pack protection groups. A manual upgrade consists of the following phases:

- Check alarms on the IW SPM before starting the upgrade
- Verify the status of the IW SPM carriers before starting the upgrade.
- Update the circuit pack load inventory.
- Upgrade all RM circuit pack protection groups that require an upgrade
- For each RM circuit pack protection group, upgrade all circuit packs in the groups that require an upgrade.
- Upgrade CEMs that require an upgrade.

Upgrade Methods

An IW SPM upgrade consists of upgrading the software on all of the individual circuit packs on an IW SPM. Two different upgrade methods are available:

- Automated upgrades
- Manual upgrades

The automated method upgrades several circuit pack types at once. The manual method upgrades circuit pack types individually.

The Sync Resource Module (SRM) does not provide sparing therefore offices that use SRMs on an IW SPM IP for office synchronization must upgrade the SRMs prior to using the Automated Upgrade process. All SRMs must be upgraded manually before beginning the Automated Upgrade procedure. Each office has two IW SPM IPs with an SRM and they which can be located in the SYNCLK table.

Upgrade Preparation

Before performing an IW SPM upgrade, each of the following requirements should be met:

- an office image was taken in the last 24 hours
- all peripheral module (PM) logs are enabled
- the circuit pack is in-service and the activity state is inactive
- automatic routine exercise (REX) testing is suspended in the office

During upgrade preparation, the new load files are transferred from a tape to a disk drive. An upgrade tape can consist of any of the following:

Upgrade Release Types

Release	Explanation
milestone	upgrades to the next base software release
maintenance or emergency	upgrades to a new release within the current base software release
Pre-Patched SPM Load (PPSL) milestone	upgrades to the next base software release with corrective content (patches) included
PPSL maintenance	upgrades to a new release within the current base software release and includes patches

Software Loads

The IW SPM Load tape contains the IW SPM loads, IW SPM patches, and $XREF file which is identified by "XPMxx" where "xx" refers to the IW SPM load. The automatic upgrade procedure uses $XREF files to apply patches after loading. If the $XREF files are not loaded, then patches must be manually applied.

PrePatched SPM Loads have patches built in as part of the load and are identified by an alpha numeric suffix at the end of the file name. For example:

Load type	Numbering example
PPL	GEM19DE_010082A3
non-PPL	GEM19DI_010086

The following table shows an example of load names that might be used in an IW SPM upgrade and the appropriate procedure to follow. In this example, a milestone upgrade would be performed from release16 to release 17. In contrast, a PPSL maintenance release requires only updating the file names in the PMLOADS table and does not require performing upgrade procedures in the last column.

Milestone release load example

| Current load name in PMLOADS	Current active load file	New load name from SPM load tape contents	New active load file name from SPM load tape contents	Upgrade procedure to perform
SYN18BQ	SYN19BQ_010042	SYN19AE	SYN20AE_010010	Upgrading or Downgrading an SRM
GEM18AF	GEM19AF_010005	GEM20AE	GEM20AE_010010	Upgrade or Downgrade a GEM
IWS18AF	IWS19AF_010005	IWS20AE	IWS20AE_010010	Upgrading a CEM

Protection Groups

A protection group consists of multiple circuit packs grouped together for system reliability through sparing. Each protection group has a unique group identification (ID) assigned to it. The CEM does not

belong to a protection group, and therefore does not have a circuit pack protection group ID.

The MNCKTPAK table contains a listing of each circuit pack in the IW SPM and associated protection group IDs. The following figure identifies the important fields in the MNCKTPAK table when performing an upgrade.

Circuit pack upgrade fields
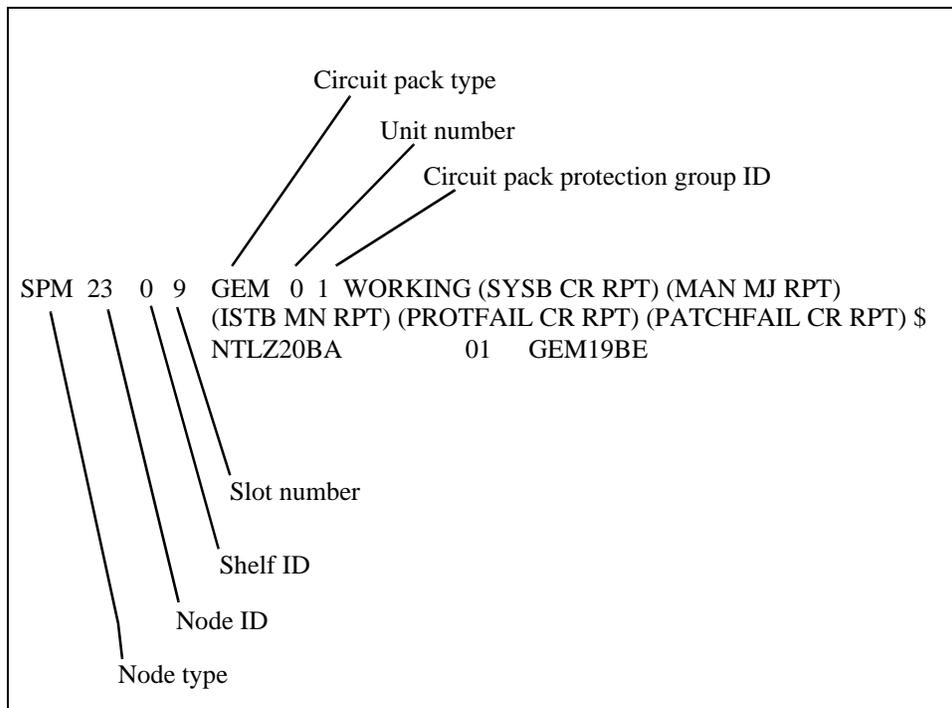
The circuit pack protection group ID is a subfield of the CPKTYPE field. The following list identifies the subfield name for each RM type.

- GEM: IPGRPID
- SRM: SRMGRPID

The protection group ID in the MNCKTPAK table is defined in the MNPRTGRP table through the GRPKEY field, GRPID subfield. The GRPID subfield values range from1 through 28.

Upgrade strategies

Nortel Networks strongly recommends completely loading entire IW SPMs with a single maintenance release or milestone upgrade. Failure to load all RMs and CEMs in an IW SPM can result in inadvertently running unsupported mixed load IW SPM configurations. Mixed load

configurations can, in turn, result in the reload of modules in an out-of-procedure sequence, which can be potentially service affecting. If unable to complete the loading of all IW SPMs in one session, plan to upgrade a limited number of IW SPMs in multiple sessions.

During the upgrade process IW SPMs not loaded with an upgrade load reflect an ISTB condition caused by a loadname mismatch in the MNCKTPAK table. The ISTB condition remains in effect until all IW SPMs have been upgraded.

Operating company personnel can upgrade more than one RM and more than one IW SPM at the same time.

To upgrade multiple RMs at the same time on the same IW SPM, open a MAPCI session for each RM type.

To concurrently upgrade multiple IW SPMs, Nortel Networks recommends upgrading up to two IW SPMs at the same time. Open a MAPCI session for each RM type on each IW SPM.

Note that during in-service loading, which involves downloading from the computing module (CM), you can load a maximum of eight RMs at the same time. The restriction of in-service loading no more than eight RMs at the same time also applies to CEMs. During mate loading, up to sixty four RMs can be loaded from the mate at the same time.

Periodically checking the carrier status during the upgrade process provides a method for monitoring the upgrade integrity.

For nonpatchable loads, post-release software updates (PRSU) must be built into the load file.

PPSL

A Pre-Patched SPM Load (PPSL) is a Spectrum load which includes the released base software content and the corrective content (patches). PPSL advantages include:

- reduce patching effort after reloading

- reduce recovery time

- reduce end to end upgrade time

After loading a PPSL, new patches can be applied using standard tools and procedures through post release software management (PRSM). PRSM can also remove patch files that were built into a PPSL.

A PPSL file is named with the first fourteen characters of the base load plus two additional appended characters to indicate the version number. The two-character appendage uses an alpha numeric format. For example, a PPSL for the base load CEM19AE_010041 could be CEM19AE_010041A3.

The QUERYPM FILES command for a posted IW SPM at the PM MAP level indicates the existence of a PPSL for a CEM through the default filename. For example:

```
CEM 0 InSv Act  Default Loadname: IWS19AE
                  Default Filename: IWS19AE_010041A3
                Running Load:      IWS19AE_010041
                Load in Flash:     IWS19AE_010041
```

A REPORT DEST command through PRSM identifies a PPSL by displaying a PRSU in the SPMLOAD destination with a name comprised of "SPPSL" concatenated with the seven character load name. For example, SPPSLCEM19AE.

A PPSL maintenance release requires datafill changes made only to the PMLOADS table. The file and volume names must be updated to reflect the new PPSL load name and location.

SPARTS

Patches applied to resource modules initially reside on the DRAM, the memory in which the load is running, of a device. The patched DRAM image does not copy over to the device's Flash memory until after patching activity has ceased on a device for a period of time. The delay between the end of the last patch action on the device and the start of the DRAM-to-Flash image copy varies depending on the load and the device:

- 60 minutes in SP14-16 loads (80 minutes for the inactive CEM in SP15-16)
- 5 minutes in SP17 and later loads (15 minutes for the inactive CEM)

It is possible that this delay could prevent patch updates to the PRSM database which would produce patching mismatches between the PRSM and the device's LPM (local patch manager). SPM Patching after RTS (SPARTS) addresses this issue.

When an RTS is initiated on a device, SPARTS obtains and compares a list of patches actually applied to the device to the patches applied to all other devices in the office that are running the same load. If no patch discrepancies exist, then SPARTS takes no further action. If patch

discrepancies exist, SPARTS applies any missing patches to the device and likewise removes any applied patches that are not running on other devices with the same load within the office.

SPARTS raises a PATCHFAIL alarm against the IW SPM node (not the device) if it fails to apply or remove any required patches. SPARTS schedules up to three attempts, each spaced 30 minutes apart, to correct a patch discrepancy. Once an attempt succeeds any subsequent attempts are cancelled and the PATCHFAIL alarm clears. A PATCHFAIL alarm can be manually cleared by running an ISTBAUDIT command against the device.

Run a DBAUDIT command against a device after loading or patching the first device. A DBAUDIT populates the PRSM database and ensures that SPARTS correctly handles patching on any other device loaded with the same load.

SPARTS does not apply a patch that has not already been applied in an office. SPARTS ensures that previously applied patches are applied every time an RTS is performed on a device.

Downgrading

Like a software upgrade, a software downgrade loads a different version of software to the SPM components. A downgrade is only performed due to an error condition that necessitates returning to a previous software version.

The downgrade procedure is identical to the upgrade procedure, performed in reverse order, for all components except for the CEM. Those components require different treatment depending on whether the downgrade is to an earlier release or an earlier version within the same release.

Software downgrades cannot span beyond three previous releases. For example, it is possible to downgrade a release 20 to a release 17 but it is not possible to downgrade a release 20 to a release 16.

Automated Upgrades

An automatic upgrade procedure, known as PANTHER, is designed only for upgrades and does not support software downgrades of any kind.

PANTHER consists of:

- the PMUPGRADE tool
  - — selects and copies the new PM load and patch files from the distribution media to the Core
  - — produces the PM upgrade plan outlining the tasks required to upgrade the PMs with the new loads and patches
- the SWUPGRADE PM tool
  - — automates task execution in the PM upgrade plan to load and patch the necessary PMs

Panther does not support the upgrade of unspared RMs therefore RM spares must be configured before beginning an automated upgrade.

PANTHER makes a set of eight SPMS for upgrade.It constructs an RM list that comprises the RM groups for all eight SPMs. The RM groups list contains RM groups of the first SPM in the current set sequentially followed by RM groups for the remaining SPMs.

Loading times for similar RM types vary only slightly, therefore PANTHER loads the RMs of similar protection groups concurrently to expedite the process without waiting for the slowest RM type to load. The loading times for the 8 RMs of similar RM protection type usually require the same amount of time and therefore the upgrade process does not wait for the slowest RM in the group to load.

PANTHER can concurrently mate load up to 64 RMs across 8 SPMs in the current upgrade set. The calculation for determining the maximum RMs available for mate loading is:

```
New RM Mate Loading Concurrency limit = 8(SPMs) *
8(Prot group per SPM) = 64
```

$XREF Patch Control File

The PMUPGRADE tool uses an $XREF patch control file to select the required PRSUs for a load. An XA-Core tape cartridge labeled as *Patches:Yes* should contain the appropriate $XREF file for the corresponding load. If the tape does not contain an $XREF file, then the PMUPGRADE tool bypasses the steps to select or copy PRSUs and generates the following MAP message:

WARNING: No Patch Control File Found. No patch files selected.

When an office receives an $XREF file through an X.25 NOP link, the file must be placed on the Patch File Distribution volume and the

corresponding PRSU files placed on temporary disk volumes specified as the ISN Patch Destination volume and the XPM Patch Destination volume. PRSUs cannot reside on the same volume as the $XREF file.

The PMUPGRADE tool communicates the $XREF file name and location to the SWUPGRADE PM tool during the automated PM update. The SWUPGRADE PM tool accesses and automatically applies the PRSUs to any designated PM load files.

When downloading patches and loads through file transfer protocol (FTP) or other electronic methods, an $XREF file automatically generates if the following two conditions are met:

•   all PM loads and corresponding patches are on a temporary disk volume

•   no other $XREF file is present on the distribution volume

Electronically downloading patches and loads automatically copies the PM loads and their corresponding patches from the disk distribution volume to the selected destination volumes and generates a new $XREF file available for use by the SWUPGRADE tool.

Tools and utilities

IW SPM IP upgrades are performed using the MAP display commands.

Prepare an automated upgrade

Use this procedure to prepare an automated (PANTHER) upgrade.

Before beginning the automated upgrade, ensure that spares are configured for all RMs requiring an upgrade.

Each destination volume must have sufficient free space for the new SPM load or PRSU files and meet all office criteria.

ATTENTION

The Sync Resource Module (SRM) in an IW SPM does not provide sparing therefore offices that use SRMs for IW SPM office synchronization must upgrade the SRMs prior to using the Automated Upgrade process. All SRMs must be upgraded manually before beginning the Automated Upgrade procedure. Each office has two IW SPM SRMs which can be located in the SYNCLK table.

Each destination volume must have sufficient free space for the new SPM load or PRSU files and meet all office criteria.

The Variable Abbreviations table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
printer	the printer name
log_name	the name of a log type (PRSM, SPM, NODE, TUPL)
log_#	the specific number of a log type
spm_no	the number of the SPM (0 through 85)
shlf_no	the SPM shelf number
slot_no	the slot number of a designated shelf
printer	the printer name
dist_vol	the name of the new Load File Distribution volume

Variable Abbreviations

Abbreviation	Definition
patch_vol	the name of the new Patch Distribution volume
load_number	the number of the current load
load_name_1 (2) (n)	the names of the loads to be included or excluded (repeat variable as needed)

Throughout the upgrade procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

ATTENTION

Before beginning this procedure, update the SPM inventory table to prevent offline SPMs in the process of installation or commissioning from being part of the upgrade report plan.

Change the loadname field for any OFFL SPM to the new loadname.

Prepare an automated upgrade

At the CI level of the MAP display

1   Send the terminal response to a printer by typing

>**RECORD START ONTO printer**

Example

>**RECORD START ONTO PRINTER1**

2   Enter the log utility and list devices for log output by typing

>**LOGUTIL**

>**LISTDEVS**

Example of an active log output device

```
No.  Device   Status         Rerouted  Format
----  -------  -------        ----------- -------
0    MAP121   Outputting Logs  No        STD
```

Example of an inactive log output device

```
No.  Device   Status    Rerouted  Format
----  -------  -------   ----------- -------
1    MAP121   Inactive.      No   STD
- End of devices -
```

If the device is	Do
Inactive	step 3
Active (outputting logs)	step 4

3   Start the device by typing

>STARTDEV device

Example of a MAP display

```
>startdev map121
Log device MAP121 has been started.
Number of devices started : 1
```

4   Verify that all reports for the PRSM, SPM, NODE, and TUPL log types are configured for output by typing

>LISTREPS SPECIAL log_name

Examples

>LISTREPS SPECIAL PRSM

>LISTREPS SPECIAL SPM

>LISTREPS SPECIAL NODE

>LISTREPS SPECIAL TUPL

Example of all log type reports configured for output

```
Log  Rep.       Event                Suppressed/
Name No. Class Type   Event Label    Thresholded    Syslog
------------------------------------------------------------------------------
67 report(s) printed
```

Example of suppressed log type reports

```
Log  Rep.       Event                Suppressed/
Name No. Class  Type   Event Label   Thresholded    Syslog
-------------------------------------------------------------------------------
SPM  650  0     PASS                  *supp*
SPM  651  0     FAIL                  *supp*
SPM  300  0     TBL  Device Fault Report   *supp*
```

If log reports are	Do
suppressed	step 5
not suppressed	step 8

5   Resume any PRSM, SPM, NODE, and TUPL logs that have been suppressed by typing

```
>RESUME log_name log_#
```

Example

```
>resume spm 650
1 report(s) RESUMED
```

6   Determine if the office uses SRMs for synchronization by typing

```
>TABLE SYNCLK
```

```
>LIST
```

Example

```
>table synclk
>list

CLKKEY              CLKDATA
                        OFFCDATA
 ------------------------------
 0                   STRAT3
SLAVE    SPM 64 SRM   SPM 68 SRM
```

If the office	Do
contains SRMs	step 7
does not contain SRMs	step 8

7   Manually upgrade all nodes configured with a Sync Resource Module (SRM) by following these procedures:

Procedure	Applies to the:
Prepare a manual upgrade or downgrade	SRM load only in the procedure
Perform a manual upgrade or downgrade	SRM load only in the procedure
Upgrading or Downgrading an SRM	the entire procedure

When both SRMs have been manually upgraded continue to step 8.

8   Identify the patch destination volume by typing

```
>TABLE PADNDEV;LIST ALL;QUIT
```

Example

```
TABLE: PADNDEV
```

```
TOP
DEVKEY      DEVICE
-------------------
      1 D030M17PTCH

      2 D030M15PTCH

      3   S01DIMAGE

BOTTOM
```

9 Access the PMUPGRADE utility by typing

>**PMUPGRADE**

10 Set confirmation to ON by typing

>**SET CONFIRMATION ON**

11 Carryover loads are load files on the tape that have the same version of the load currently used in the office. Operating company personnel can issue a SET CARRYOVER ON command to copy all SPM loads for the office. The default carryover setting is OFF.

If the office	Do
requires all SPM loads for the office be copied	step 12
does not require all SPM loads for the office to be copied	step 13

12 Set carryover to ON by typing

>**SET CARRYOVER ON**

13 Confirm the Load File Distribution setting is correct. If necessary, change the setting by typing

>**SET LOADDISTRIB dist_vol**

Example

>**SET LOADDISTRIB F02UTAPE**

14 Confirm the Load File Destination setting is correct. If necessary, change the setting by typing

>**SET LOADDEST dist_vol**

Example

>**SET LOADDEST F02LPMLOADS**

15 Confirm the Patch File Distribution setting is correct. If necessary, change the setting by typing

>**SET PATCHDISTRIB patch_vol**

Example

```
>SET PATCHDISTRIB F02UTAPE
```

16   The ISN, XPM, and SPM Patch Destination settings must point to the patch file destination volume. Confirm the ISN, XPM, and SPM Patch Destination settings are correct based on the PADNDEV table listing obtained in step 8. If necessary, change the setting by entering the following commands

```
>SET ISNPATCH patch_vol
```

```
>SET XPMPATCH patch_vol
```

```
>SET SPMPATCH patch_vol
```

> *Note:* The SPM patch destination volume should be entered in the PADNDEV table.

Example

```
>SET ISNPATCH F02LPMLOADS
```

```
>SET XPMPATCH F02LPMLOADS
```

```
>SET SPMPATCH F02LPMLOADS
```

17   Generate an office load report by typing

```
>DISPLAY LOADS
```

Result

PMUPGRADE compiles the PMUPGRADE Load Report from the PMLOADS table and the SPM inventory tables.

> *Note:* A load can have an empty "Tables Used" column. If office policy requires data in this column, perform the following steps:
>
> - Exit PMUPGRADE
> - Delete the out-dated load from the PMLOADS table
> - Go to step 9 of this procedure

18   Generate a node report for the office by typing

```
>DISPLAY NODES
```

Result

The PMUPGRADE Node Report is compiled from SPM inventory tables. The node name information for the MNCKTPAK table is obtained from the MNNODE table.

19   Display the firmware information by typing

```
>DISPLAY FWINFO
```

20   Set the preferred load to the current load by typing

>**SET FWPREFERRED load_number CURRENT**

Note 1: The preferred load must be equal to the current load.

Note 2: Repeat this step for each firmware load listed in
step 19.

21   Start the file copy phase of the utility by typing

>**START FILECOPY**

Time Requirements

The FILECOPY process copies files to the destination volume
and adds new loads to the PMLOADS table. The process
requires approximately 40 minutes. The amount of time depends
on the number of SPM loads and PRSU files.

22   When prompted to confirm a tape is in its appropriate drive,
confirm the tape is physically inserted in the drive. Do not use
the INSERTTAPE or IT commands on the tape.

If the tape cartridge label text indicates "Patches:Yes", the tape
includes the required PRSUs for SPM load files.

23   At the prompt, continue by typing

>**Y**

If the response indicates	Do
that EXT files for datafill in the SPMLDVAL table are not available in the distribution volume	step 24
the replacement load name cannot be found	step 25
multiple replacement load names are found	step 26
ready to continue	step 27

24   Stop the automated upgrade by typing

>**Q**

Contact the next level of support to update the SPMLDVAL table.

25   A response similar to the following example appears if
PMUPGRADE cannot locate the replacement load name.

```
No replacement loadname found on distribution volume for SM206BH1.
Please enter replacement loadname, or "S" (Same) or "Q" (Quit FILECOPY)
```

If	Do
A new load type replaces the current load type	Enter the new load name. Ensure the load name is typed accurately
	Go to step 27
The load is manufacture discontinued	Enter "S"
	Go to step 27
The load is a filler RM load name, indicating an RM that does not have a load	Enter "S"
	Go to step 27

26   If a response indicates that multiple replacements are found on the load distribution volume, enter the appropriate replacement listed or just the load name.

The loadname appears before the underscore in the load file name. For example, GEM19DE is the load name for the load file GEM19DE_010082A3.

27   Review the Load File Selection Report and determine if any loads need to be added or removed from the report.

If	Do
one or more loads need to be added or removed from the report	step 28
the report is complete and no loads need to be added or removed	step 33

28   Stop the file copy process by typing

`>N`

If	Do
one or more loads need to be removed from the report	step 29
one or more loads need to be added to the report	step 30

29   Remove the loads from the report by typing

```
>SET EXCLUDELOADS load_name_1 load_name_2 ...
load_name_n
```

   Note: Separate each load name with a space.

Example

```
>SET EXCLUDELOADS BTMKA02 ECLI4BC
```

If	Do
one or more loads need to be added to the report	step 30
the report is complete and no loads need to be added or removed	step 31

30   Add the loads to the report by typing

```
>SET INCLUDELOADS load_name_1 load_name_2 ...
load_name_n
```

   Note: Separate the load names with a blank space.

Example

```
>SET INCLUDELOADS BTMKA02 ECLI4BC
```

If	Do
one or more loads need to be removed from the report	step 29
the report is complete and no loads need to be added or removed	step 31

31   Repeat the file selection phase of the utility by typing

```
>START FILECOPY
```

32   Confirm that the appropriate load names have been added or removed from the Load File Selection Report.

If the Load File Selection Report	Do
does not show the excluded and/or included load names	step 28
shows the excluded and/or included load names	step 33

33   Accept the Load Selection Report by typing

```
>Y
```

34   Confirm the patch file selection prompt by typing

     >Y

> *Note:* PMUPGRADE uses the $XREF patch control files to select PRSUs for copying. Depending on the method of PRSU delivery, this file may not be available. If the file is not available, PMUPGRADE generates a warning that no patch control file has been found. Contact your next level of support for instruction on how to proceed with the upgrade and a list of required PRSUs to be manually applied.

35   Create the list of files to copy by typing

     >Y

Time Requirements

This final phase of the FILECOPY process requires approximately 20 minutes to complete adding new loads to the PMLOADS table. The amount of time depends on the number of SPM loads and PRSU files.

36

ATTENTION

Perform this step only if any offline SPMs are being installed or commissioned in the office.

Open a second window and update the LOAD field in the MNCKTPAK field to reflect the new software load for each RM type in all offline SPMs

37   Generate a PMUPGRADE load report for the office by typing

     >DISPLAY LOADS

Confirm the selected new loads have been added to the report.

38   Start the generation of the PM upgrade plan by typing

     >START PLAN

> *Note:* Only one PM upgrade plan can be executed at a time. A new plan cannot be started until an existing plan has been cancelled or completed.

39   Display the PM upgrade plan by typing

     >DISPLAY PLAN

The PMUPGRADE Plan Report organizes the SPM upgrade by tasks and layers. A task is a set of SPMs of the same type at the

same site with the same load requirements. A layer is a grouping of tasks.

40   Review the PMUPGRADE report.

- Confirm all SPMs that require upgrading are included in the plan report

  Note: For loads added to the Loadfile Selection Report with the SET INCLUDELOADS command, the associated SPMs must be manually upgraded.

- Confirm the correct loads are included with each task in the plan report.

- Confirm that the sequence of tasks in the plan report conforms to office policy.

  Note: If the sequence of tasks does not comply, use the RUNSTEP command during the automated SPM upgrade to change the order of tasks.

- Confirm offline SPMs that are being installed or commissioned in the office are not included in the plan report. If an offline SPM is included in the plan

  — quit the PMUPGRADE process

  — update the appropriate SPM inventory table. Change the loadname field for that SPM to the new loadname from the loadfile selection report.

  — start this procedure again from step 8

41   Exit the PMUPGRADE utility by typing

     >QUIT

42   Stop the terminal responses from printing by typing

     >RECORD STOP ONTO printer_name

43   Remove the SPM load tape from the tape drive.

Check office policy concerning additional copies of SPM load and PRSU files. Some offices require additional copies of SPM load and PRSU files on a parallel device.

At your desk

44 Any new hardware, identified by a Product Engineering Code (PEC), required for the software upgrade release must be installed.

If each node	Do
has the required hardware	step 45
does not have the required hardware	Contact your next level of support for more information.

45 You have completed this procedure.

Perform an automated upgrade

Use at least two devices with this procedure. Use one device to perform the automated SPM upgrade. Use the second device as a trace device to monitor the progress of the automated SPM upgrade.

Some offices use a third device during the automated SPM upgrade. Use the third device as a MAP terminal. Post the SPMs and monitor SPM loading, patching, and service status.

Send the output of each device to a printer for record keeping.

SWUPGRADE PM will disable the Spectrum Patching After RTS (SPARTS) tool during the automated upgrade. When SWUPGRADE PM is completed or aborted, SPARTS is automatically re-enabled.

The SPM601 log generates when SPARTS is disabled and also enabled. No action is required when this log is generated.

Variable Abbreviations

Abbreviation	Definition
printer	the printer name
max_no	the UNLIMITED or the maximum number of SPMs the system upgrades concurrently
dev_name	the name of the new Patch Distribution volume
spm_no	the ID (number) of the SPM
step_name	the name of the step

MAP displays in this procedure are provided as reference examples and may not represent the actual screen display. Load versions and resource modules (RMs) listed on the screen may vary depending on the office configuration.

Throughout the upgrade procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

Perform an automated upgrade

At the CI level of the MAP display

1   Send the terminal responses to a printer by typing

     `>RECORD START ONTO printer`

2   Enter the SWUPGRADE PM increment for automated SPM upgrades by typing

     `>SWUPGRADE PM`

3   Establish a second device as a trace device by typing

     `>SET TRACE_DEVICE dev_name`

     Note: The second device records SWUPGRADE PM operations during the automated SPM upgrade.

4   The trace device must display a message indicating that the device is selected for TRACEing.

If the device	Do
displays the message	step 5
does not display the message	Confirm the correct device is selected as the trace device. If necessary, repeat step 3.

5   Start the SPM upgrade shift by typing

     `>SET SHIFT STARTED`

     SWUPGRADE PM checks for the availability of a $XREF patch cross-reference file and processes patch cross-reference information.

6   Display the SWUPGRADE PM environment variables by typing

     `>DISPLAY VAR ALL`

     The variable name TRACE_DEVICE is the trace device established in step 3. SHIFT indicates the status of the current upgrade shift. CONCURRENCY indicates the maximum number of concurrent upgrades.

7   Display HELP for the CONCURRENCY variable by typing

     `>HELP VAR CONCURRENCY`

8   Determine the maximum number of SPMs to upgrade concurrently. Note that a concurrency value set to UNLIMITED can exceed the maintenance window for the SPM upgrade shift in large scale offices. The maximum value cannot exceed eight.

The value defaults to eight if entering a value of UNLIMITED or greater than eight.

If the value in CONCURENCY	Do
needs to be changed	step 9
does not need to be changed	step 11

9   Set the concurrency value by typing

     `>SET CONCURRENCY max_no`

10   Display the environment variables and confirm the change by typing

     `>DISPLAY VAR ALL`

11   Set prompting to on by typing

     `>PROMPTING ON`

     PROMPTING ON is the recommended method of operation. Set PROMPTING ON forces a pause after each automated step. This allows user intervention for the next required step. The remainder of this procedure assumes prompting is enabled.

12   From a second terminal, post the nodes designated for an upgrade by typing

     `>MAPCI;MTC;PM;POST SPM spm_no`

     Example

     `>MAPCI;MTC;PM;POST SPM 23`

13   Display alarms on the RMs on the SPMs by typing

     `>QUERYPM FLT`

14   Display and note any alarms on the nodes by typing

     `>LISTALM`

15   Display and note the carrier statuses on the node by typing

     `>MAPCI;MTC;TRKS;CARRIER;POST SPM spm_no  1`

16   Determine the impact of the current alarm status on the upgrade.

If there are	Do
alarms other than ISTB alarm	step 17
no alarms or all alarms are ISTB alarms	step 18

17   Perform the appropriate alarm clearing procedures. After completing the required procedures, go to step 18.

---

18 From the SWUPGRADE device, begin the automated SPM upgrade by typing

`>START`

19 Display and review the upgrade steps by typing

`>DISPLAY STEPS`

A step with an "_A_" identifies the step as an automated step. An "_M_" identifies the step as a manual step.

After an automated step has been completed the status changes from NEEDED to COMPLETED.

The columns marked as PERM, ACT, and PROC are used by other platforms and do not apply to the SPM upgrade.

Steps proceed automatically, however the option exists to manually select a step.

20 Display HELP on the step you wish to execute by typing

`>HELP STEP step_name`

SWUPGRADE PM displays a brief description of the step including

- the nodes affected by the step
- the load(s) and PRSU(s) required by the step
- the steps required prior to the step

If upgrading from	Do
an SN06 release to SN07 or higher	step 21
an SN07 release or higher	step 22

21 If upgrading to SN07 (or higher) from an SN06 release, Succession offices must only upgrade IW SPM IPs. To ensure this, choose only to upgrade steps identified by the presence of a GEM load (NTLZ20 resource module).

IW SPM IP MAP Example

```
PMUPGRADE task:      1
Node type:          SPM
Loaded from flash:  NO
Automated:          YES
Concurrency:        UNLIMITED
        Nodes:
                   SPM 0
                   SPM 1
        Loads:
                   GEM20CP
                   IWS20CQ
```

22   Based on your office requirements, determine if you wish to upgrade or not upgrade (override) the step.

If	Do
not upgrading a step	step 23
upgrading a step	step 25

23   Override the step by typing

>OVERRIDE step_name

24   At the prompt, accept the override by typing

>Y

> *Note:* After overriding a step, the option to reinstate that step exists by typing **>RESET step_name** .

25   Ensure that the HELP STEP command has been performed for every step_name.

If all step_names have	Do
not been verified	step 20
been verified	step 26

26   Execute the upgrade process sequentially or out of sequence through one of the following commands:

If executing the upgrade	Do
sequentially	Type **>GO**
out of sequence	Type **>RUNSTEP step_name** **ATTENTION** Do not choose to RUNSTEP a step_name that was selected for override.

27   Monitor the automated upgrade progress through the following:

- the trace device response
- the status of each node
- a log device

SWUPGRADE PM stops executing if:

- nodes are not ready for upgrading

- all nodes have been successfully upgraded

- An SPM upgrade failure occurs.

- The SWUPGRADE PM shift exceeds the 14 hour time limit.

- a SET SHIFT FINISHED or SET SHIFT ABORTED command has been entered

    Note: SET SHIFT FINISHED stops the step after the full upgrade for the nodes in the step has completed

    SET SHIFT ABORTED stops the step after the current maintenance action for node(s) has completed.

28   After SWUPGRADE PM completes a step, the trace device displays an upgrade status report for each node.

If	Do
every node in the step passed and you want to continue the SPM upgrade shift	step 19
a node in the step failed	step 29
every node in the step passed and you want to finish the SPM upgrade shift	step 30

   Note: Use the QUERYPM FILES command from the MAP display to confirm each node is correctly loaded and in-service.

29   Possible reasons for a node failure are:

- The SPM status, or one of its units, changed due to a maintenance problem not related to the automated upgrade.

- The SPM load file or required PRSU files are not in the Destination Volume.

- The node encountered a hardware problem.

Review logs PM703, SPM650, SPM651,SPM300, SPM500,SPM335 and NODE500, plus the trace device output to determine why the node failed the automated upgrade.

If you can	Do
determine why the node failed	Correct the problem and return to step 26

If you can	Do
not determine why the node failed	Contact your next level of support.
	If the problem is resolved, go to <u>step 26</u>
	To continue the upgrade shift, go to <u>step 19</u>
	To end the upgrade shift, go to <u>step 30</u>

30   Finish the automated SPM upgrade shift by typing

    `>SET SHIFT FINISHED`

    Result

    A Summary Report for PM Software Upgrade containing the following information:

- the step name
- the elapsed time between the previous and current step
- the time the step began
- the elapsed time to execute the step
- the final result status

    A result status of STEP NOT COMPLETE indicates SWUPGRADE PM did not perform the step. This could indicate a step that was overridden and performed manually.

    The SET SHIFT FINISHED command can generate a PM700 log that indicates the SPM upgrade shift has finished. No action is required for this log.

31   Display the step of the automated SPM upgrade by typing

    `>DISPLAY STEPS`

If all steps	Do
except UPGRADE_COMPLETE are complete or overridden	<u>step 32</u>
are not complete or overridden and you do not intend to continue[1]	<u>step 35</u>

1.If all steps are not complete and overridden the upgrade can be resumed at a later date by restarting this procedure at <u>**step 1**</u>.

32   Execute the UPGRADE_COMPLETE step by typing

    `>GO`

33 Obtain the final record of all completed steps by typing

`>DISPLAY STEPS`

34 Complete the UPGRADE_COMPLETE step by typing

`>GO`

35 Quit the SWUPGRADE PM utility by typing

`>QUIT`

36 Stop the terminal responses from printing by typing

`>RECORD STOP ONTO printer`

37 You have completed this procedure.

Complete the automatic upgrade using the [Post upgrade or downgrade process](#).

Prepare a manual upgrade or downgrade

This procedure prepares the disk volume and file names in the PMLOADS and MNCKTPAK tables for a software upgrade. The Variable Abbreviations table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
printer	the printer name
log_name	the name of a log type
log_#	the specific number of a log type
spm_no	the number of the node (0 through 85)
drive_no	the XA-Core tape drive number
tape_vol	the name of the tape cartridge volume
pc_file	the name of the patch control file
load_name	the load name of the new load (as it appears in the PMLOADS table)
act_file	the active load file name (as it appears in the PMLOADS table)
act_vol	the active volume name (as it appears in the PMLOADS table). The volume identifies the device where the act_ file is stored.
bkp_file	the backup load file name (as it appears in the PMLOADS table). The backup load file name should be identical to the act_file name.
bkp_vol	the backup volume name (as it appears in the PMLOADS table). The backup volume identifies where the bkp_file is stored. The backup volume name should be identical to the act_vol name.
disk_vol	the name of the backup disk volume

Variable Abbreviations

Abbreviation	Definition
act_load	the name of the new active load (as it appears in the PMLOADS table)
shelf_ID	the shelf number (0 or 1)
slot_no	the number of slot location (1 through 14)
rm_name	the RM name (CEM, GEM, etc.)
rm_no	the RM number

Throughout the procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

ATTENTION

Follow your company policy for soaking selected circuit packs before upgrading the rest of your office.

ATTENTION

The XA-Core command syntax for drive_no and disk_no correspond to the following identifiers in the XA-Core command examples:

Shelf position is the front (F) or rear (R) shelf position of the input output processor (IOP).

Slot position is the two-digit number of the slot position for the IOP with the tape device.

Packlet position is the upper (U) or lower (L) packlet position of the IOP with the tape device.

In the command example F17UTAPE, F is the shelf position, 17 is the two-digit slot position, U is the packlet position, and TAPE identifies the software delivery medium.

Prepare a manual upgrade or downgrade

At the CI level of the MAP display

1   Send the terminal response to a printer by typing

        >RECORD START ONTO printer

        Example

        >RECORD START ONTO PRINTER1

2   Enter the log utility and list devices by typing

        >LOGUTIL

        >LISTDEVS

        Example of a MAP display

```
No. Device  Status      Rerouted Format
---- -------  -------      ----------- -------
0 MAP121    Outputting Logs  No   STD
```

3   Verify that logs are routed to a printer by typing

        >LISTREPS SPECIAL PRSM

        Example of a MAP display

```
Log  Rep.  Event            Suppressed/
Name No. Class Type  Event Label      Thresholded      Syslog
------------------------------------------------------------------------------------
16 report(s)  printed
```

        >LISTREPS SPECIAL SPM

        Example of a MAP display

```
Log  Rep.  Event            Suppressed/
Name No. Class Type  Event Label      Thresholded      Syslog
------------------------------------------------------------------------------------
67 report(s)  printed
```

        >LISTREPS SPECIAL NODE

        Example of a MAP display

```
Log  Rep.  Event            Suppressed/
Name No. Class Type  Event Label      Thresholded      Syslog
------------------------------------------------------------------------------------
11 report(s)  printed
```

        >LISTREPS SPECIAL TUPL

        Example of a MAP display

```
Log  Rep.   Event              Suppressed/
Name No. Class Type Event Label     Thresholded      Syslog
--------------------------------------------------------------------------------
9 report(s)  printed
```

4   Resume any SPM, NODE, and TUPL logs that have been suppressed by typing

>RESUME log_name log_#

Example

>RESUME SPM 311

5   Post each IW SPM scheduled for an upgrade by typing

>MAPC NODISP;MTC;PM;POST SPM spm_no

6   List and print the loads on the SPM by typing

>QUERYPM FILES

7   Exit the SPM screen by typing

>QUIT ALL

8   Identify the patch destination volume by typing

>TABLE PADNDEV;LIST ALL;QUIT

Example

```
TABLE: PADNDEV
TOP
DEVKEY        DEVICE
-------------------
      1 SFDEV
      2 F17LPTCH_CM
BOTTOM
```

9   Place the load tape into the tape drive of the selected disk volume.

10   Access the disk utility by typing

>DISKUT

Response

```
Disk utility is now active
```

11   Identify the PMLOADS volume by typing

>LV

MAP Example

```
Volumes found on the node CM:
```

```
------------------------------
NAME                     TYPE     TOTAL        FREE
TOTAL  OPEN  ITOC   LARGEST
                                  BLOCKS      BLOCKS
FILES FILES FILES  FREE SEGMENT
-------------------------------------------------
------------------------------
F17LIMAGE1           FTFS  2048000      305152
13     0     4     129024
F17LIMAGE2           FTFS  2048000      376832
12     0     0     169984
F17LIMAGE3           FTFS  2048000      362496
14     0     4     229376
F17LPMLOADS          FTFS   614400      409440
39     0     0     259904
F17LSPMLOADS         FTFS   819200      648544
15     0     0     464224
F17LPATCH            FTFS    81920       39264
318    0     0      39264
```

12   Insert the load tape into the tape drive by typing

IT drive_no

Example

IT F02UTAPE

13   List the load file contents of the tape by typing

LF drive_no

Example

>LF F02PMLOADS

14   Identify the load files required for upgrading by comparing the load files on the tape to the load files currently on the IW SPM (determined in step 6).

15   Determine if the tape contains patch control files.

If the tape cartridge label text indicates	Do
"Patches: Yes"	step 16
"Patches: No"	step 18

16   Without changing the load file names, copy the patch control file to the PMLOADS volume determined in step 11 by typing

>RE FILE act_vol drive_no pc_file

Example

>RE FILE F02LPMLOADS F02UTAPE XPM35RTP$XREF

17   Print the patch content of the patch control file by typing

>PRINT pc_file

Example

>PRINT XPM35RTP$XREF

18   Copy each load/patch file individually from the tape to a disk volume by typing

For loads:

>SCANF tape_vol COPY act_vol load_name

Example

>SCANF SPM00035 COPY F02LPMLOADS CEM15CV_010073F

For patches:

>SCANF tape_vol COPY act_vol NAME *PATCH

Example

>SCANF SPM00035 COPY F17LPMLOADS NAME TLC75S0Q$PATCH

> **Note 1:** The disk (destination device) and the tape cartridge (origination device) must be in the same tape unit.

> **Note 2:** The patch volume was determined in [step 8](). A patch volume that begins with the letter "D" is located on an IOM disk and must be copied to the Store File Device (SFDEV). From SFDEV, copy the patches to the IOM disk.

19   List the load and patch file disk volume, and verify that all required files have been correctly copied to the disk volume, by typing

>LF load_vol

>LF patch_vol

Example

>LF F02PMLOADS

>LF F17LPTCH

> **Note:** If a load or patch volume begins with the letter "D", it must be listed through disk utility.

Example

 >DSKUT

```
>LIV D030PM17PTCH ALL
```

20 If a load and patch update worksheet has been completed, compare the results of step 19 to the worksheet.

If	Do
you discover required load files that were not copied on the disk volume	step 18
all required load files have been copied onto the disk volume	step 21

21 Steps 21 through 26 copy the upgrade load and PRSU patch files identified in step 19 to their respective back up volumes.

Eject the load tape by typing

```
>ET drive_no
```

Example

```
>ET F02UTAPE
```

22 List the active load file contents on the disk volume by typing

```
>LF disk_vol
```

Example

```
>LF F0LPMLOADS
```

23 Copy each load file from the active disk volume to a backup disk volume by typing

```
>COPY  act_load  disk_vol
```

Example

```
>COPY CEM18CB F02LPMLOADS
```

24 List the loads on the backup volume to ensure that all loads have been copied by typing

```
>LF disk_vol
```

Example

```
>LF F0LPMLOADS
```

25 Review the listing and verify that all of the load files have been copied to the backup volume.

If all load files	Do
are not in the backup volume	step 23
are in the backup volume	step 27

26   Continue based on the patch status.

If PRSUs	Do
were in the PMLOADS volume	repeat [step 22](#) through [step 25](#) for the patch volume
are in a separate volume	[step 27](#)

27   Remove the SPM load tape from the tape drive and quit the disk utility by typing

>QUIT

Store the load tape in an available on-site location for future use.

28   Access the PMLOADS table by typing

>TABLE PMLOADS

29   Steps vary based on the upgrade release type.

If the release type is	Do
a milestone (new release)	[step 30](#)
a maintenance or emergency (same release)	[step 31](#)

30   For each required load, add a new load name by typing

>ADD load_name act_file act_vol bkp_file bkp_vol N

Example

>ADD CEM19AF CEM19AF_010005 S00DPMLOADS CEM19AF_010005 S00DPMLOADS N

31   For each new load file, update the file name to reflect the new load values

Example

The following example changes the load file name and backup load file name from CEM19DI_010086A1 to CEM19DI_010086A2.

>POS CEM17DI

```
     CEM19DI
```

```
CEM19DI_010086A1        S00DPMLOADS
CEM19DI_010086A1        S00DPMLOADS
```

>CHA

```
ACTFILE: CEM19DI_010086A1
```

```
>CEM19DI_010086A2

ACTVOL: S00DPMLOADS

>

BKPFILE: CEM19DI_010086A1

>CEM19DI_010086A2

BKPVOL: S00DPMLOADS

>

UPDACT: N

>

TUPLE TO BE CHANGED:
      CEM19DI

CEM19DI_010086A2       S00DPMLOADS
CEM19DI_010086A2       S00DPMLOADS            N

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>Y

TUPLE CHANGED
```

32 The MNCKTPAK table requires updating only when the load changes for a milestone release. If only changing the load file in the PMLOADS table, no changes are required for the MNCKTPAK table.

> *Note:* Prior to making changes to the MNCKTPAK table, post the SPM to be upgraded and check for and clear any alarms.

If this is	Do
a milestone release	[step 33](#)
not a milestone release	[step 38](#)

33 Access the MNCKTPAK table by typing

>TABLE MNCKTPAK

34 List the contents of the table by typing

>LIST ALL

35 Update the circuit pack load inventory for each IW SPM scheduled for an upgrade during the maintenance window by typing

>POS SPM spm_no shelf_ID slot_no

Example

```
>POS SPM 23 0 9
```

Response

```
SPM 23 0 9 GEM 0 1 WORKING(SYSB CR RPT)(MANB MJ
RPT) (ISTB MN RPT)(PROTFAIL CR RPT)(PATCHFAIL MJ
RPT) $ NTLZ20BA     01     GEM19BE
```

36   Update the appropriate circuit pack load names to match the new loads in the upgrade by typing

```
>CHA LOAD load_name
```

Example

```
>CHA LOAD GEM19A0
```

37   Confirm the system prompt by typing

```
>Y
```

38   Stop the terminal response from printing by typing

```
>RECORD STOP ONTO printer
```

39   You have successfully completed this procedure. Go to the procedure <u>Perform a manual upgrade or downgrade</u>.

Perform a manual upgrade or downgrade

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)

Throughout the upgrade procedure, the request to type a command requires pressing the Enter key on the keyboard after the command has been typed.

Perform a manual upgrade or downgrade

At the CI level of the MAP display

1   Ensure that the 'Prepare a manual upgrade or downgrade' section of this document has been completed.

2   Post the SPM designated for an upgrade by typing

     `>MAPCI;MTC;PM;POST SPM spm_no`

      Example

     `>MAPCI;MTC;PM;POST SPM 23`

3   Check alarms on the SPM node and circuit packs by typing

Alarm Source	Command
SPM node	**>LISTALM**
circuit pack	**>QUERYPM FLT**

4   Any alarms, other than ISTB alarms, must be cleared before continuing.

If the alarm listings show	Do
alarms other than ISTB alarm	step 5
no alarms or ISTB alarms only	step 6

5   Perform the appropriate alarm clearing procedure. After alarms other than ISTB have been cleared, continue to <u>step 6</u>.

If performing	Do
an upgrade	<u>step 6</u>
a downgrade	<u>step 7</u>

6   Upgrade circuit packs by protection groups for each IW SPM that requires an upgrade. The order for upgrading circuit packs, and the procedures are below.

> *Note:* The order for upgrading circuit packs is as follows: SRM -> GEM -> CEM.

If	Do
SRM	<u>Upgrading or Downgrading an SRM</u>
GEM	<u>Upgrade or Downgrade a GEM</u>
CEM	<u>Upgrading a CEM</u>
After upgrading packs	<u>step 10</u>

7   The procedure for downgrading the CEM varies based on whether downgrading to a different release or within the same release.

> *Note:* The order for downgrading circuit packs is as follows: CEM -> GEM -> SRM.

If downgrading to a	Do
different release (i.e. 16.0 -> 15.8)	<u>step 8</u>
different version in the same release (i.e.15.4 ->15.3)	<u>step 9</u>

8   Downgrade circuit packs to an earlier release as follows:

If	Do
CEM	<u>Downgrading a CEM to an earlier release</u>
GEM	<u>Upgrade or Downgrade a GEM</u>
SRM	<u>Upgrading or Downgrading an SRM</u>
After downgrading packs	<u>step 10</u>

9 Downgrade circuit packs to an earlier version within the same release as follows:

If	Do
CEM	Downgrading a CEM to an earlier version in the same release
GEM	Upgrade or Downgrade a GEM
SRM	Upgrading or Downgrading an SRM

10 When all circuit packs protection groups have been upgraded or downgraded follow the Perform a manual upgrade or downgrade procedure.

ATTENTION

Follow your company policy for soaking selected circuit packs before upgrading the rest of your office. See the appendix "Limited soak-in deployment" to soak a new load on a circuit pack without changing default loads in table PMLOADS and table MNCKTPAK.

Upgrading or Downgrading an SRM

> **CAUTION**
>
> Complete the procedure <u>Prepare a manual upgrade or downgrade</u> before upgrading or downgrading a component.

This procedure changes the software load for a Sync Resource Module (SRM) which provides the timing source for the switch.

Both IW SPMs with SRMs configured must be upgraded prior to upgrading the remaining IW SPMs. After upgrading the first SPM/SRM, immediately upgrade the second SPM/SRM. It is important to upgrade the SPM/SRMs one after the other, not simultaneously.

The following <u>Variable Abbreviations</u> table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
rm_no	the Sync RM number
link_no	the BITS link number (0 to 2)
patch_id	the PRSU name

At the CI level of the MAP display

1   Access and monitor the switch timing links at the clock level of the MS to determine the STANDBY SRM by typing

   `>MAPCI;MTC;MS;CLOCK`

   Example of a MAP screen:

```
   MS 0      .          Master        F                ..
   MS 1      .          Slave         F                ..

Shelf 0                 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain           |     |
MS 0  . . . . . I - - I - - - - - - - - - . - - . . . . . .
MS 1  . . . . . I - - I - - - - - - - - - F - - . . . . . .

Card 02 Alm Stat %Adj Src | Car Stat Sp PM    RMTyp SSM
MS 0  . .  Lkg +08.6 Lk0 | Lk0 Lck  - SPM 022 SRM  PRS
MS 1  . .  Syn -00.8 Ms0 | Lk1 Smp  - SPM 023 SRM  PRS
Links Slipping:  NA   out of  NA
MTC:
MS:
SHELF:
CLOCK:
```

> *Note:* The active timing node is indicated by "Lck" in the "Stat" column. In this example, SPM 022 is the active SPM/SRM (the SRM that is providing the clocking reference to the MS). Therefore the upgrade would begin on SPM 023.

2   From a second window, post the SPM with the STANDBY SRM by typing

    >MAPCI;MTC;PM;POST SPM spm_no

    Example of a MAP screen:

```
 SPM 23  INSV     Class: IW
 Shlf0 SL A Stat   Shlf0 SL A Stat  Shlf1 SL A Stat   Shlf1 SL A Stat
 --- -  1 A Insv  CEM 1  8 I Insv  --- -  1 - ----   --- -  8 - ----
 --- -  2 A Insv  GEM 0  9 A Insv  --- -  2 - ----   --- -  9 - ----
 --- -  3 I Insv  GEM 1 10 I Insv  --- -  3 - ----   --- - 10 - ----
 --- -  4 A Insv  --- - 11 A Insv  --- -  4 - ----   --- - 11 - ----
 --- -  5 - ----  --- - 12 A Insv  --- -  5 - ----   --- - 12 - ----
 SRM 0  6 A ISTb  --- - 13 I Insv  --- -  6 - ----   --- - 13 - ----
 CEM 0  7 A Insv  --- - 14 A Insv  --- -  7 - ----   --- - 14 - ----
```

3   Access the SRM card by typing

    >SELECT SRM 0

    Example of a MAP screen:

```
Interface:

Loc : Row D FrPos 1 ShPos 6 ShId 0 Slot 6  Prot Grp : 1
Default Load: SYN19EF                Prot Role: Working
```

4   Ensure that the SRM is in an ISTB condition with the new load listed as default, by typing.

>**QUERYMOD**

Example of a MAP screen:

```
SPM 23   SRM 0   Query: Request has been submitted.
SRM  0 ISTb Act    Loc: Row D  FrPos  1 ShPos  6 ShId 0  Slot  6

Default Load: SYN19EF            Actual Load: SYN17EDD
```

5   Access the BITS link level by typing

>**BITS**

Example of a MAP screen:

```
SPM 23    SRM 0
   LinkNo   BitsName   Status  State   SSM   AlmSev
      0      BITSA       Act    InSv    PRS
      1      BITSB      InAct   InSv    PRS
 .    2      BITSOUT            Uneq    NIL
 BITS:
```

6   Record the BITS link numbers associated with the SRM and the state of each link.

7   Manual busy (ManB) the inactive BITS links by typing

>**BSY link_no**

Example

>**BSY 1**

Response

Busy:Request has been Submitted.

Busy:Command Completed.State Change has passed.

8   Force the active BITS links to ManB by typing

>**BSY link_no FORCE**

Example

>**BSY 0 FORCE**

Response

WARNING: BITSB Link is a Timing Link.

Do you want to BUSY this Link.

Please confirm ("YES","Y","NO",or "N"):

9   At the confirmation prompt, type:

>Y

Response

```
Busy:Request has been Submitted.
Busy:Command Completed.State Change has passed.
```

10   Return to the SRM level by typing

>QUIT

11   Force the SRM to ManB by typing

>BSY FORCE

Response

```
WARNING: This RM provides timing information.
Bsying out this RM might result in loss of
Synchronization.
A Bsy action may impact services on this node.
Do you wish to continue?
Please confirm ("YES","Y","NO",or "N"):
```

12   At the confirmation prompt, type:

>Y

Response

```
SRM Busy:Request has been Submitted.
SRM Busy:Command Completed.
```

13   Load the SRM with the new load by typing

>LOADMOD

If the loadname is	Do
not in the SPMLDVAL table	step 14
in the SPMLDVAL table	step 15

14   At the confirmation prompt, continue by typing

>Y

Example of MAP response

>y

*** WARNING: Table SPMLDVAL is not datafilled for this loadname. Contact
your next level of support before proceeding with upgrade. Do you want to
continue without datafilling the table?

Please confirm ("YES", "Y", "NO", or "N"):

If choosing to	Do
continue	step 15[1]
update the SPMLDVAL table	stop the upgrade and contact the next level of support

1.Continuing the upgrade when the loadname is not in the SPMLDVAL table pre-
vents that load from being available in that table for future reference.

15   At the confirmation prompt, type:

    >Y

    Response

    ```
SRM Load:Request has been submitted.
SRM Load: Command Completed. Command Passed
```

If the SRM device is	Do
the first for the office	step 16
the second for the office	step 23

16   Open a third window and access the PRSM tool by typing

    >PRSM

17   Ensure that PRSM recognizes any pre-applied PRSUs and has
found all applied PRSU files by typing

    >DBAUDIT SPM spm_no SRM rm_no

    Example

    >DBAUDIT SPM 23 SRM 0

Example of MAP response

Database audit submitted for 1 DESTs
Auditing destination SPM 23 SRM 0....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs

18   Identify if PRSM found all patch files built into the PPSL by typing

    **>SELECT PRSUID CATEGORY STATUS BUILTIN FROM
DESTSET SPM spm_no SRM rm_no**

Example of MAP response

```
>select prsuid category status builtin from destset spm 23 srm 0
PRSUID      CAT    ST   BUILTIN
------------ -----  ---  ------------
TAB51S0P   GEN   A    Y
BUZ80S0P   GEN   A    Y
CTC51S0P   GEN   A    Y
DXH62S0P   GEN   A    Y
 DXH63S0P  GEN   A    Y
JXM65S0P   GEN   A    Y
KAA01S0P   GEN   A    Y
KRI62S0P   GEN   A    Y
LLH11S0P   GEN   A    Y
SBF80S0P   GEN   A    Y
SBF90S0P   GEN   A    Y
TAV54S0P   GEN   A    Y
```

Note: An empty list appears for a non-PPSL load (the load is not pre-patched).

An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume as instructed in the Upgrade Preparation procedure.

If this situation should occur use the validate command in PRSM for each PRSU with a category of ??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 23 SRM 0**

Also before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume according to the Upgrade Preparation procedure.

19   If required, patch the SRM device.

If patches	Do
are required for the load file	step 20
are not required for the load file	step 21

Note: The required patches were printed in of the procedure entitled "Preparing a manual upgrade or downgrade".

20   Apply the patches by typing

>APPLY 'patch_id | patch_id | patch_id IN SPM spm_no   SRM rm_no

Example

>APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23 SRM 0

Note: Repeat the command as necessary to apply additional patches.

21   Ensure that the SRM is correctly patched by typing

`>REPORT DEST SPM spm_no SRM rm_no`

Example

`>REPORT DEST SPM 23 SRM 0`

Note 1: For the first SRM, the output should be the combination of the PSRUs applied in step 20 and the pre-applied PRSUs displayed in step 18.

Note 2: For the second SRM, the list of patches should be identical to the list obtained in this step for the first SRM.

Example of MAP response

```
REPORT DEST SPM 23 SRM 0
PRSUID       STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13    20020915 23:29 GEN A SRM20BU N SPM 23 SRM 0
DEF10S13    20020915 23:33 GEN A SRM20BU N SPM 23 SRM 0
GHI45S13    20020915 23:36 GEN A SRM20BU N SPM 23 SRM 0
TAB51S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
CTC51S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
BUZ80S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
DXH63S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
DXH62S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
JXM65S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
KAA01S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
KRI62S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
LLH11S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
SBF80S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
SBF90S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
TAV54S0P    20020915 23:10 GEN A SRM20BU N SPM 23 SRM 0
```

22   Exit the PRSM tool by typing

`>QUIT`

23   From the second window opened in step 2, return the SRM to service by typing

`>RTS`

Response

```
SPM SRM RTS:Request has been submitted.
SPM SRM RTS: Command Completed.
```

24   Access the BITS level by typing

`>BITS`

25   Restore the BITS links to service by typing

`>RTS   link_no`

Example

`>RTS  0`

`>RTS  1`

Result

The links change from InAct ManB to Act InSv and InAct InSv.

26   Return to the SPM level by typing

`>QUIT`

27   Return to the posted node level by typing

`>QUIT`

28   Display alarms on the SPM by typing

`>QUERYPM FLT`

Display alarms on the SPM by typing

`>LISTALM`

If new alarms were introduced during this procedure, clear the alarms using procedures in the Fault Management section.

If the SRM device is	Do
the first for the office	step 29
the second for the office	step 31

29   From the original window in step 1, switch the SRM from ACTIVE to STANDBY by typing

`>SWCARR`

30   Go to step 1 and repeat the procedure for the second SRM.

31   The SRM circuit pack protection group upgrade or downgrade is completed.

If	Do
upgrading	Upgrade or Downgrade a GEM on page 51
downgrading	Post upgrade or downgrade process on page 65

Upgrade or Downgrade a GEM

The procedure requires:

- in-service loading the inactive GEM
- switching activity between the inactive and the active GEM
- loading the inactive GEM
- switching activity to return resources to original locations

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
inact_rm	the number of the inactive GEM
rm_no	the number of the GEM number
prsu_id	the PRSU name
act_rm	the number of an active GEM
shelf_no	the shelf number of the inactive GEM

Upgrading or downgrading a GEM

At the CI level of the MAP display

1   If not already posted, post the SPM by typing

```
>MAPCI;MTC;PM;POST SPM spm_no
```

2   Record the unit number and shelf number of the inactive GEM in the circuit pack protection group. Also record the number of the inactive CEM.

3   Select the inactive GEM by typing

```
>SELECT GEM inact_rm
```

Example

```
>SELECT GEM 1
```

Result

Both GEMs are in an ISTb status due to the load name change made in the MNCKTPAK table.

4   Ensure that the GEM is ISTB and inactive by typing.

>**QUERYMOD**

> *Note:* The default load is the new load and the actual load is
> the load scheduled for change.

Example of MAP display

SPM 23 GEM 1 Query: Request has been submitted.
GEM 1 ISTb InAct Loc: Row CC FrPos 28 ShPos 0 ShId 0 Slot 10
Default Load: GEM198BI   Actual Load: GEM19BU

5   In-service load the inactive RM by typing

>**LOADMOD INSVLD**

During execution of the LOADMOD INSVLD command, the RM
automatically goes to a SysB state and then returns to service.

If the loadname is	Do
not in the SPMLDVAL table	step 6
in the SPMLDVAL table	step 7

6   At the confirmation prompt, continue by typing

>**Y**

Example of MAP response

>y

*** WARNING: Table SPMLDVAL is not datafilled for this loadname. Contact
your next level of support before proceeding with upgrade. Do you want to
continue without datafilling the table?

Please confirm ("YES", "Y", "NO", or "N"):

If choosing to	Do
continue	step 7[1]
update the SPMLDVAL table	stop the upgrade and contact the next level of support

1.Continuing the upgrade when the loadname is not in the SPMLDVAL table pre-
vents that load from being available in that table for future reference.

7   At the confirmation prompt, continue by typing

>**Y**

Example of MAP response

```
SPM 23  GEM  1   Load: Request has been submitted.
SPM 23 GEM  1  Load: Command completed. Command passed.
```

If the GEM load is	Do
the first for this office	<u>step 8</u>
not the first for this office	<u>step 14</u>

8   Open a second window and access the PRSM tool by typing

    >PRSM

9   Ensure that PRSM recognizes any pre-applied PRSUs by typing

    >DBAUDIT SPM spm_no GEM rm_no

    Example

    >DBAUDIT SPM 23 GEM 1

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 23 GEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

10   Identify if PRSM found all patch files built into the PPSL by typing

    >SELECT PRSUID CATEGORY STATUS BUILTIN FROM
    DESTSET SPM spm_no CEM cem_no

Example of MAP response

```
>select prsuid category status builtin from destset spm 23 cem 0
PRSUID      CAT    ST   BUILTIN
------------ -----  ---  ------------
TAB51S0P   GEN   A   Y
BUZ80S0P   GEN   A   Y
CTC51S0P   GEN   A   Y
DXH62S0P   GEN   A   Y
 DXH63S0P  GEN   A   Y
JXM65S0P   GEN   A   Y
KAA01S0P   GEN   A   Y
KRI62S0P   GEN   A   Y
LLH11S0P   GEN   A   Y
SBF80S0P   GEN   A   Y
SBF90S0P   GEN   A   Y
TAV54S0P   GEN   A   Y
```

    Note: An empty list appears for a non-PPSL load (the load is not pre-patched).

    An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during

the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume as instructed in the Upgrade Preparation procedure.

If this situation should occur use the validate command in PRSM for each PRSU with a category of??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 23 GEM 1**

Also before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume according to the Upgrade Preparation procedure.

11   If required, patch the GEM load file.

If patches	Do
are required for the load file	step 12
are not required for the load file	step 13

12   Apply the patches by typing

```
>APPLY 'patch_id | patch_id | patch_id IN SPM
spm_no  GEM inact_rm
```

Example

```
>APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23
GEM 1
```

> *Note:* Repeat the command as necessary to apply additional patches.

13   Ensure that the inactive GEM has been patched correctly by typing

```
>REPORT DEST SPM spm_no GEM inact_rm
```

Example

```
>REPORT DEST SPM 23 GEM 1
```

> *Note:* The output should be the combination of the PSRUs applied in and the pre-applied PRSUs displayed in.

Example of MAP response

```
REPORT DEST SPM 23 GEM 1
PRSUID        STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13     20020915 23:29 GEN A GEM19BU N SPM 23 GEM 1
DEF10S13     20020915 23:33 GEN A GEM19BU N SPM 23 GEM 1
GHI45S13     20020915 23:36 GEN A GEM19BU N SPM 23 GEM 1
TAB51S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
CTC51S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
BUZ80S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
DXH63S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
DXH62S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
JXM65S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
KAA01S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
KRI62S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
LLH11S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
SBF80S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
SBF90S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
TAV54S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 1
```

14   From the original window, access the protection level of the MAP by typing

>**PROT**

15   Switch activities from the active GEM to the inactive GEM by typing

>**MANUAL act_rm inact_rm**

Example

>**MANUAL 0 1**

16   Confirm the system prompt by typing

>**Y**

Result

The active GEM becomes the inactive GEM and the former inactive (upgraded) GEM becomes active.

17   Exit the PROT level by typing

>**QUIT**

18   Select the inactive GEM by typing

>**SELECT inact_rm**

Example

>**SELECT GEM 0**

19   Ensure that the GEM is ISTb and inactive by typing

>**QUERYMOD**

20   Mate load the inactive GEM from its mate by typing

>**LOADMOD MATE act_rm**

Example

>**LOADMOD MATE 1**

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

21   At the confirmation prompt, continue by typing

>**Y**

Example of MAP response

```
SPM 23   GEM  0   Load: Request has been submitted.
SPM 23  GEM  0   Load: Command completed. Command passed.
```

22   From the second window running the PRSM tool, ensure that SPARTS correctly patched the RM by typing

>**REPORT DEST SPM spm_no GEM inact_rm**

Example

>**REPORT DEST SPM 23 GEM 0**

> *Note:* The resulting list should match the list obtained in .

Example of MAP response

```
REPORT DEST SPM 23 GEM 0
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13     20020915 23:29 GEN A GEM19BU N SPM 23 GEM 0
DEF10S13     20020915 23:33 GEN A GEM19BU N SPM 23 GEM 0
GHI45S13     20020915 23:36 GEN A GEM19BU N SPM 23 GEM 0
TAB51S0P    20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
CTC51S0P    20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
BUZ80S0P    20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
DXH63S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
DXH62S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
JXM65S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
KAA01S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
KRI62S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
LLH11S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
SBF80S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
SBF90S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
TAV54S0P     20020915 23:10 GEN A GEM19BU N SPM 23 GEM 0
```

23   Ensure that any patch failures are corrected by typing

>**ISTBAUDIT SPM spm_no GEM inact_rm**

Example

>**ISTBAUDIT SPM 23 GEM 0**

Example of MAP response

This DEST set does not have any patch-related problems.

24   Exit the PRSM tool by typing

      >QUIT

25   From the original window, access the protection level of the MAP by typing

      >PROT

26   Switch activities from the active GEM to the inactive GEM by typing

      >MANUAL act_rm inact_rm

      Example

      >MANUAL 1 0

27   Confirm the system prompt by typing

      >Y

28   The GEM circuit pack upgrade is completed.

If	Do
upgrading	Upgrading a CEM
downgrading	Post upgrade or downgrade process

In summary, this upgrade procedure requires:

- in-service loading the inactive CEM
- switching activity between the inactive and the active CEM
- in-service loading the inactive CEM
- switching activity to return resources to the original location

The Variable Abbreviations table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM
rm_no	the CEM resource module (RM) number
inact_rm	the number of the inactive CEM RM
act_rm	the number of the active CEM RM
prsu_id	the PRSU name

Upgrade a CEM

At the CI level of the MAP display

1 If not already posted, post the node by typing

```
>MAPCI;MTC;PM;POST SPM spm_no
```
Example
```
>MAPCI;MTC;PM;POST SPM 23
```

2 Record the unit number and shelf number of the inactive CEM.

3 Select the inactive CEM, designated with an "I", by typing

```
>SELECT CEM inact_rm
```
Example
```
>SELECT CEM 1
```

4 In-service load the inactive CEM by typing

```
>LOADMOD INSVLD
```

During execution of the command, the CEM automatically goes to a SysB state and then returns to service.

If the loadname is	Do
not in the SPMLDVAL table	step 5
in the SPMLDVAL table	step 6

5   At the confirmation prompt, continue by typing

>Y

Example of MAP response

>y

*** WARNING: Table SPMLDVAL is not datafilled for this loadname. Contact your next level of support before proceeding with upgrade. Do you want to continue without datafilling the table?

Please confirm ("YES", "Y", "NO", or "N"):

If choosing to	Do
continue	step 6[1]
update the SPMLDVAL table	stop the upgrade and contact the next level of support

1.Continuing the upgrade when the loadname is not in the SPMLDVAL table prevents that load from being available in that table for future reference.

6   At the confirmation prompt, continue by typing

>Y

If the CEM device is	Do
the first for this office	step 7
not the first for this office	step 13

7   Open a second window and access the PRSM tool by typing

>PRSM

8   Ensure that PRSM recognizes any pre-applied PRSUs and has found all applied PRSU files by typing

>DBAUDIT SPM spm_no CEM inact_rm

Example

>DBAUDIT SPM 23 CEM 1

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 23  CEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

9   Identify if PRSM found all patch files built into the PPSL by typing

>**SELECT PRSUID CATEGORY STATUS BUILTIN FROM
DESTSET SPM spm_no CEM rm_no**

Example of MAP response

```
>select prsuid category status builtin from destset spm 23 cem 0
PRSUID    CAT   ST   BUILTIN
------------- -----  ---  ------------
TAB51S0P  GEN  A   Y
BUZ80S0P  GEN  A   Y
CTC51S0P  GEN  A   Y
DXH62S0P  GEN  A   Y
 DXH63S0P GEN  A   Y
JXM65S0P  GEN  A   Y
KAA01S0P  GEN  A   Y
KRI62S0P  GEN  A   Y
LLH11S0P  GEN  A   Y
SBF80S0P  GEN  A   Y
SBF90S0P  GEN  A   Y
TAV54S0P  GEN  A   Y
```

Note: An empty list appears for a non-PPSL load (the load is not pre-patched).

An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume as instructed in the Upgrade Preparation procedure.

If this situation should occur use the validate command in PRSM for each PRSU with a category of ??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 23 CEM 1**

Also before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume according to the Upgrade Preparation procedure.

10   If required, patch the CEM load file.

If patches	Do
are required for the RM load file	step 11
are not required for the RM load file	step 13

Note: The required patches were printed in step 17 of the procedure entitled "Prepare a manual upgrade or downgrade".

11   Apply the patches by typing

>APPLY 'prsu_id | prsu_id | prsu_id IN SPM spm_no CEM inact_rm

Example

>APPLY 'ABC05S13 | DEF10S13 | GHI45S13 IN SPM 23 CEM 1

Note: Repeat the command as necessary to apply additional patches.

12   Ensure that the inactive CEM is correctly patched by typing

>REPORT DEST SPM spm_no CEM inact_rm

Example

>REPORT DEST SPM 23 CEM 1

Note: The output should be the combination of the PSRUs applied in <u>step 11</u> and the pre-applied PRSUs displayed in <u>step 9</u>.

Example of MAP response

```
REPORT DEST SPM 23 CEM 1
PRSUID        STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------
ABC05S13    20020915 23:29 GEN A CEM17BU N SPM 23 CEM 1
DEF10S13    20020915 23:33 GEN A CEM17BU N SPM 23 CEM 1
GHI45S13    20020915 23:36 GEN A CEM17BU N SPM 23 CEM 1
TAB51S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
CTC51S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
BUZ80S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
DXH63S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
DXH62S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
JXM65S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
KAA01S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
KRI62S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
LLH11S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
SBF80S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
SBF90S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
TAV54S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 1
```

13   From the original window, access the protection level of the MAP by typing

>PROT

14   Switch activities from the active CEM to the inactive CEM by typing

>MANUAL

15   Confirm the system prompt by typing

  `>Y`

Result

The active CEM becomes the inactive CEM and the former inactive (upgraded) CEM becomes active.

16   Exit the PROT level by typing

`>QUIT`

17   Select the inactive CEM by typing

`>SELECT inact_rm`

Example

`>SELECT CEM 0`

18   Ensure that the CEM is ISTb and inactive by typing

`>QUERYMOD`

19   In-service load the inactive CEM by typing

`>LOADMOD INSVLD`

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

20   At the confirmation prompt, continue by typing

`>Y`

21   From the second window running the PRSM tool, ensure that SPARTS correctly patched the RM by typing

`>REPORT DEST SPM spm_no CEM inact_rm`

Example

`>REPORT DEST SPM 23 CEM 0`

   Note: The resulting list should match the list obtained in .

Example of MAP response

```
REPORT DEST SPM 23 CEM 0
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13    20020915 23:29 GEN A CEM17BU N SPM 23 CEM 0
DEF10S13    20020915 23:33 GEN A CEM17BU N SPM 23 CEM 0
GHI45S13    20020915 23:36 GEN A CEM17BU N SPM 23 CEM 0
TAB51S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
CTC51S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
BUZ80S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
DXH63S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
DXH62S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
JXM65S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
KAA01S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
KRI62S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
LLH11S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
SBF80S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
SBF90S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
TAV54S0P    20020915 23:10 GEN A CEM17BU N SPM 23 CEM 0
```

22   Ensure that any patch failures are corrected by typing

     >ISTBAUDIT SPM spm_no CEM inact_rm

     Example

     >ISTBAUDIT SPM 23 CEM 0

Example of MAP response

This DEST set does not have any patch-related problems.

23   Exit the PRSM tool by typing

     >QUIT

24   From the original window, access the protection level of the MAP by typing

     >PROT

25   Switch activities from the active CEM to the inactive CEM by typing

     >MANUAL

26   Confirm the system prompt by typing

     >Y

27   Exit the protection level by typing

     >QUIT

28   Display any CEM alarms by typing

     >QUERYMOD

29   Exit the CEM level by typing

    `>QUIT`

30   Display any SPM alarms, with both CEMs in service, by typing

    `>LISTALM`

31   If new alarms were introduced during this procedure, clear the alarms using procedures in the Fault Management section.

32   The CEM circuit pack upgrade procedure is complete.

    Complete the upgrade using the Post upgrade or downgrade process procedure.

Post upgrade or downgrade process

Perform this procedure after the entire office upgrade or downgrade is completed. The process consists of:

- dumping an image to disk after completing maintenance shift upgrade or downgrade activities
- deleting the old file names from the PMLOADS table
- deleting the old load and patch files from disk volumes

The Variable Abbreviations table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
load_name	the name of the old load (as it appears in the PMLOADS table)
disk_vol	the name of the backup disk volume
act_load	the name of the new active load (as it appears in the PMLOADS table)

Post upgrade or downgrade process

At MAP level

1   Access the PMLOADS table by typing

      `>TABLE PMLOADS`

2   Position on each old load name designated for deletion in the PMLOADS table by typing

      `>POS load_name`

      Example

      `>POS GEM19AF`

3   Initiate the tuple deletion by typing

      `>DEL`

4   At the confirmation prompt, delete the tuple by typing

      `>Y`

5   Access the disk utility by typing

      `>DISKUT`

Response

```
Disk utility is now active
```

6　　List the active PMLOADS volume by typing

>LF disk_vol

Example

>LF F0LPMLOADS

7　　Delete each load file from the active disk volume by typing

>DDF act_load

Example

>DDF CEM19CD_010064A1

8　　List the loads on the active volume to ensure that all loads have been deleted by repeating step 6.

Follow step 7 for any files that have not been deleted.

9　　Repeat step 1 through step 7 for the backup and patch volumes.

When all active, backup, and patch files have been deleted, continue to step 10.

10　　Quit the disk utility by typing

>QUIT

11　　Store an image of the completed upgrade or downgrade to a disk volume by typing

DUMP act_file image_vol ACTIVE RETAIN NOSDM

Example

>DUMP DSP16AF_010005 S00DIMAGE ACTIVE RETAIN NOSDM

> *Note:* The route action to turn off SDM spooling option (nosdm) reduces CI lockout time. Without specifying a route action, the default value is leave SDM spooling on (usesdm).

12　　The process is completed.

Downgrading a CEM to an earlier release

> **CAUTION**
>
> Complete the procedure [Prepare a manual upgrade or downgrade](#) before upgrading or downgrading a component.

In summary, this downgrade procedure requires:

- busying the inactive and active CEMs
- loading the inactive and active CEMs
- returning the inactive and active CEMs to service
- applying patches to the inactive and active CEMs

This procedure requires simultaneously placing both CEMs in a busy condition which places the SPM in an out of service condition.

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the IW SPM (0 to 85)
rm_no	the number of the CEM resource module (RM) number
inact_rm	the number of the inactive CEM RM
patch_id	the PRSU name
filename	the name of the replacement load file
act_rm	the number of the active CEM RM

Downgrading a CEM to an earlier release

At the CI level of the MAP display

1   Review the CEM load and patch files.

> *Note:* Ensure that all necessary patches are present for the new CEM load.

2 If not already posted, post the IW SPM by typing

`>MAPCI;MTC;PM;POST SPM spm_no`

Example

`>MAPCI;MTC;PM;POST SPM 23`

3 Record the unit number and shelf number of the inactive CEM.

4 Select the inactive CEM, designated with an "I", by typing

`>SELECT CEM inact_rm`

Example

`>SELECT CEM 1`

5 Busy the inactive CEM by typing

`>BSY`

6 Load the inactive CEM by typing

`>LOADMOD filename NOWAIT`

Example

`>LOADMOD CEM19BU_010046 NOWAIT`

If the loadname is	Do
not in the SPMLDVAL table	step 7
in the SPMLDVAL table	step 8

7 At the confirmation prompt, continue by typing

`>Y`

Example of MAP response

>y
*** WARNING: Table SPMLDVAL is not datafilled for this loadname. Contact
your next level of support before proceeding with upgrade. Do you want to
continue without datafilling the table?

Please confirm ("YES", "Y", "NO", or "N"):

If choosing to	Do
continue	step 8[1]
update the SPMLDVAL table	stop the upgrade and contact the next level of support

1.Continuing the upgrade when the loadname is not in the SPMLDVAL table prevents that load from being available in that table for future reference.

8   After the CEM that was selected in step 4 has finished loading, this step selects and step 9 busies the active CEM still in service. These steps minimize the resulting outage of taking both CEMs out of service.

Select the active CEM by typing

>SELECT CEM act_rm

Example

>SELECT CEM 0

9

> ⚠ **CAUTION**
> **Possible service interruption**
> Performing this step will drop all RMs to a CBSY state and all SPM traffic will be lost until step 13 is performed.

Busy the active CEM by typing

>BSY FORCE

10   Load the forced busied CEM by typing

>LOADMOD filename NOWAIT

Result

Both CEMs remain ManB and swap Active and Inactive states.

If the loadname is	Do
not in the SPMLDVAL table	step 11
in the SPMLDVAL table	step 12

11   At the confirmation prompt, continue by typing

>Y

Example of MAP response

>y
*** WARNING: Table SPMLDVAL is not datafilled for this loadname. Contact your next level of support before proceeding with upgrade. Do you want to continue without datafilling the table?

Please confirm ("YES", "Y", "NO", or "N"):

If choosing to	Do
continue	step 12[1]

If choosing to	Do
update the SPMLDVAL table	stop the upgrade and contact the next level of support

1.Continuing the upgrade when the loadname is not in the SPMLDVAL table prevents that load from being available in that table for future reference.

12   Select the CEM that was busied and loaded in step 5 and step 6 by typing

> *Note:* This CEM was previously InAct ManB and is now Act ManB

>SELECT CEM rm_no

Example

>SELECT CEM 1

13   Return the CEM selected in step 12 to service by typing

>RTS

This CEM becomes the active CEM and RMs and circuits recover.

If the CEM device is	Do
the first for this office	step 14
not the first for this office	step 20

14   Access the PRSM tool from a second window by typing

>PRSM

15   Ensure that PRSM recognizes any pre-applied PRSUs and has found all applied PRSU files for the CEM that was returned to service in step 13 by typing

>DBAUDIT SPM spm_no CEM rm_no

Example

>DBAUDIT SPM 23 CEM 1

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 23 CEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

16   Identify if PRSM found all patch files built into the PPSL by typing

>SELECT PRSUID CATEGORY STATUS BUILTIN FROM DESTSET SPM spm_no CEM rm_no

Example of MAP response

```
>select prsuid category status builtin from destset spm 23 cem 1
PRSUID     CAT   ST   BUILTIN
-----------  -----  ---  ------------
TAB51S0P   GEN  A   Y
BUZ80S0P   GEN  A   Y
CTC51S0P   GEN  A   Y
DXH62S0P   GEN  A   Y
 DXH63S0P  GEN  A   Y
JXM65S0P   GEN  A   Y
KAA01S0P   GEN  A   Y
KRI62S0P   GEN  A   Y
LLH11S0P   GEN  A   Y
SBF80S0P   GEN  A   Y
SBF90S0P   GEN  A   Y
TAV54S0P   GEN  A   Y
```

Note: An empty list appears for a non-PPSL load (the load is not pre-patched).

An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume as instructed in the Upgrade Preparation procedure.

If this situation should occur use the validate command in PRSM for each PRSU with a category of ??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 23 CEM 1**

Also before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume according to the Upgrade Preparation procedure.

17　　If required, patch the CEM load file.

If patches	Do
are required for the load file	step 18
are not required for the load file	step 20

Note: The required patches were printed in step 17 of the procedure entitled "Preparing a manual upgrade or downgrade".

18　　Apply the patches by typing

>APPLY 'patch_id | patch_id | patch_id IN SPM spm_no CEM inact_rm

Example

>APPLY 'ABC05513 | DEF10513 | GHI45513 IN SPM 23 CEM 1

Note: Repeat the command as necessary to apply additional patches.

19   Ensure that SPARTS correctly patched the active CEM by typing

>REPORT DEST SPM spm_no CEM rm_no

Example

>REPORT DEST SPM 23 CEM 1

Note: The output should be the combination of the PSRUs applied in step 18 and the pre-applied PRSUs displayed in step 16.

Example of MAP response

```
REPORT DEST SPM 23 CEM 1
PRSUID        STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13    20020915 23:29 GEN A CEM19BU N SPM 23 CEM 1
DEF10S13    20020915 23:33 GEN A CEM19BU N SPM 23 CEM 1
GHI45S13    20020915 23:36 GEN A CEM19BU N SPM 23 CEM 1
TAB51S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
CTC51S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
BUZ80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
DXH63S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
DXH62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
JXM65S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
KAA01S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
KRI62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
LLH11S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
SBF80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
SBF90S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
TAV54S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
```

20   From the original window, select the CEM that was loaded in step 10 by typing

>SELECT CEM inact_rm

Example

>SELECT CEM 0

21   Return the inactive CEM to service by typing

>RTS

22   From the second window running the PRSM tool, ensure that SPARTS correctly patched the RM by typing

>REPORT DEST SPM spm_no CEM inact_rm

Example

>REPORT DEST SPM 23 CEM 0

Note: The resulting list should match the list obtained in step 19.

Example of MAP response

```
REPORT DEST SPM 23 CEM 0
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13    20020915 23:29 GEN A CEM19BU N SPM 23 CEM 0
DEF10S13    20020915 23:33 GEN A CEM19BU N SPM 23 CEM 0
GHI45S13    20020915 23:36 GEN A CEM19BU N SPM 23 CEM 0
TAB51S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
CTC51S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
BUZ80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
DXH63S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
DXH62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
JXM65S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
KAA01S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
KRI62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
LLH11S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
SBF80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
SBF90S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
TAV54S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
```

23   Ensure that any patch failures are corrected by typing

>**ISTBAUDIT SPM spm_no CEM inact_rm**

Example

>**ISTBAUDIT SPM 23 CEM 0**

Example of MAP response

This DEST set does not have any patch-related problems.

24   Exit the PRSM tool by typing

>**QUIT**

25   Display any CEM alarms by typing

>**QUERYMOD**

26   From the original window, exit the CEM level by typing

>**QUIT**

27   Display any alarms, with both CEMs in service, by typing

>**LISTALM**

28   If new alarms were introduced during this procedure, clear the alarms using procedures in the Fault Management section.

29   The CEM circuit pack downgrade procedure is complete.

Continue the downgrade process with the procedure Upgrade or Downgrade a GEM.

Downgrading a CEM to an earlier version in the same release

> ⚠️ **CAUTION**
>
> Complete the procedure <u>Prepare a manual upgrade or downgrade</u> before upgrading or downgrading a component.

In summary, this downgrade procedure requires:

*   in-service loading the inactive CEM
*   switching activity between the inactive and the active CEM
*   loading the inactive CEM

The following table defines the variables used in this procedure.

Variable Abbreviations

Abbreviation	Definition
spm_no	the number of the SPM (0 to 85)
inact_rm	the number of the inactive CEM
patch_id	the patch name
filename	the name of the replacement load file
act_rm	the number of an active CEM

Downgrading a CEM to an earlier version in the same release

At the CI level of the MAP display

1   If not already posted, post the SPM by typing

```
>MAPCI;MTC;PM;POST SPM spm_no
```
Example

```
>MAPCI;MTC;PM;POST SPM 23
```

2   Record the unit number and shelf number of the inactive CEM.

3   Select the inactive CEM, designated with an "I", by typing

```
>SELECT CEM inact_rm
```

Example

```
>SELECT CEM 1
```

4   In-service load the inactive CEM by typing

```
>LOADMOD INSVLD
```

During execution of the command, the CEM automatically goes to a SysB state and then returns to service.

If the loadname is	Do
not in the SPMLDVAL table	step 5
in the SPMLDVAL table	step 6

5   At the confirmation prompt, continue by typing

```
>Y
```

Example of MAP response

>y

*** WARNING: Table SPMLDVAL is not datafilled for this loadname. Contact
your next level of support before proceeding with upgrade. Do you want to
continue without datafilling the table?

Please confirm ("YES", "Y", "NO", or "N"):

If choosing to	Do
continue	step 6[1]
update the SPMLDVAL table	stop the upgrade and contact the next level of support

1.Continuing the upgrade when the loadname is not in the SPMLDVAL table prevents that load from being available in that table for future reference.

6   At the confirmation prompt, continue by typing

```
>Y
```

Example of MAP response

SPM 23   CEM 1   Load: Request has been submitted.
SPM 23   CEM 1   Load: Command completed. Command passed.

If the CEM device is	Do
the first for this office	step 7
not the first for this office	step 13

7 Open a second window and access the PRSM tool by typing

```
>PRSM
```

8 Ensure that PRSM recognizes any pre-applied PRSUs and has found all applied PRSU files by typing

```
>DBAUDIT SPM spm_no CEM inact_rm
```

Example

```
>DBAUDIT SPM 23 CEM 1
```

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 23  CEM 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

9 Identify if PRSM found all patch files built into the PPSL by typing

```
>SELECT PRSUID CATEGORY STATUS BUILTIN FROM
DESTSET SPM spm_no CEM rm_no
```

Example of MAP response

```
>select prsuid category status builtin from destset spm 23 cem 1
PRSUID      CAT   ST   BUILTIN
------------ ----- --- ------------
TAB51S0P   GEN   A    Y
BUZ80S0P   GEN   A    Y
CTC51S0P   GEN   A    Y
DXH62S0P   GEN   A    Y
 DXH63S0P  GEN   A    Y
JXM65S0P   GEN   A    Y
KAA01S0P   GEN   A    Y
KRI62S0P   GEN   A    Y
LLH11S0P   GEN   A    Y
SBF80S0P   GEN   A    Y
SBF90S0P   GEN   A    Y
TAV54S0P   GEN  A    Y
```

> *Note:* An empty list appears for a non-PPSL load (the load is not pre-patched).
>
> An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume as instructed in the Upgrade Preparation procedure.
>
> If this situation should occur use the validate command in PRSM for each PRSU with a category of ??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 23 CEM 1**

Also before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume according to the Upgrade Preparation procedure.

10   If required, patch the CEM load file.

If patches	Do
are required for the load file	step 11
are not required for the load file	step 13

Note: The required patches were printed in step 17 of the procedure entitled "Preparing a manual upgrade or downgrade".

11   Apply the patches by typing

```
>APPLY 'prsu_id | prsu_id | prsu_id IN SPM
spm_no  CEM inact_rm
```

Example

```
>APPLY 'ABC05S13 | DEF10S13 | GHI45S13 IN SPM 23
CEM 1
```

Note: Repeat the command as necessary to apply additional patches.

12   Ensure that the inactive CEM is correctly patched by typing

```
>REPORT DEST SPM spm_no CEM inact_rm
```

Example

```
>REPORT DEST SPM 23 CEM 1
```

Note: The output should be the combination of the PSRUs applied in step 11 and the pre-applied PRSUs displayed in step 9.

Example of MAP response

```
REPORT DEST SPM 23 CEM 1
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13    20020915 23:29 GEN A CEM19BU N SPM 23 CEM 1
DEF10S13    20020915 23:33 GEN A CEM19BU N SPM 23 CEM 1
GHI45S13    20020915 23:36 GEN A CEM19BU N SPM 23 CEM 1
TAB51S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
CTC51S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
BUZ80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
DXH63S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
DXH62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
JXM65S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
KAA01S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
KRI62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
LLH11S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
SBF80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
SBF90S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
TAV54S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 1
```

13 From the original window, access the protection level of the MAP by typing

>**PROT**

14 Switch activities from the active CEM to the inactive CEM by typing

>**MANUAL**

15 Confirm the system prompt by typing

>**Y**

Result

The active CEM becomes the inactive CEM and the former inactive (downgraded) CEM becomes active.

16 Exit the PROT level by typing

>**QUIT**

17 Select the inactive CEM by typing

>**SELECT CEM inact_rm**

Example

>**SELECT CEM 0**

18 Ensure that the CEM is ISTb and inactive by typing

>**QUERYMOD**

19 In-service load the inactive CEM by typing

>**LOADMOD INSVLD**

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

20 At the confirmation prompt, continue by typing

>**Y**

Example of MAP response

```
SPM 23  CEM  0   Load: Request has been submitted.
SPM 23  CEM  0   Load: Command completed. Command passed.
```

21 From the second window running the PRSM tool, ensure that SPARTS correctly patched the RM by typing

>**REPORT DEST SPM spm_no CEM inact_rm**

Example

>**REPORT DEST SPM 23 CEM 0**

> *Note:* The resulting list should match the list obtained in .

Example of MAP response

```
REPORT DEST SPM 23 CEM 0
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
---------------- -------- ----- --- --- -- -------- - ----------------------
ABC05S13     20020915 23:29 GEN A CEM19BU N SPM 23 CEM 0
DEF10S13     20020915 23:33 GEN A CEM19BU N SPM 23 CEM 0
GHI45S13      20020915 23:36 GEN A CEM19BU N SPM 23 CEM 0
TAB51S0P   20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
CTC51S0P   20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
BUZ80S0P   20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
DXH63S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
DXH62S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
JXM65S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
KAA01S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
KRI62S0P     20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
LLH11S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
SBF80S0P    20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
SBF90S0P   20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
TAV54S0P   20020915 23:10 GEN A CEM19BU N SPM 23 CEM 0
```

22 Ensure that any patch failures are corrected by typing

>**ISTBAUDIT SPM spm_no CEM inact_rm**

Example

>**ISTBAUDIT SPM 23 CEM 0**

Example of MAP response

This DEST set does not have any patch-related problems.

23 Exit the PRSM tool by typing

>**QUIT**

24   The CEM circuit pack downgrade procedure is complete.

Continue the downgrade process with the 'Upgrade or Downgrade a GEM.