



Upgrading Multiservice Switch 15000/Media Gateway 15000/20000 in Succession IP Solutions

ATTENTION

Direct upgrade from SN05 to SN07 is not supported for Nortel Networks Multiservice Switch/Media Gateway 7480/15000/20000 nodes. Upgrade to SN06.2 first and then upgrade from SN06.2 to SN07. Refer to NTP 241-5701-272 *Passport 7400, 15000, 20000 Software Upgrade* in the SN06.2 Helmsman collection for the upgrade to SN06.2 and then return to this document to complete the upgrade to SN07.

The following topics are discussed in this section:

- [Who should read this document and why on page 1](#)
- [What you need to know on page 2](#)
- [How this document is organized on page 3](#)
- [What's new in this document on page 3](#)

Who should read this document and why

This document is intended for users who are using hitless software migration to upgrade Nortel Networks Multiservice Switch 15000/Media Gateway 15000/20000 nodes from:

- an SN06 or SN06.2 software version, or from one SN07 software version to another software version within the context of a PacketTrunking - IP (PT-IP), PacketTrunking - AAL2 (PT-AAL2),

Integrated Access Cable (IAC), or Integrated Access Wireline (IAW) solutions.

This document is also intended for users who are using hitless software migration to upgrade Nortel Networks Multiservice Switch 15000/Media Gateway 15000 nodes from:

- one SN07 software version to another software version within the context of an Universal Access - Internet Protocol (UA-IP) solution upgrade. This document does not describe hitless software migration for Multiservice Switch 20000 and Media Gateway 20000 nodes within the UA-IP solution.

The MultiService Switch provides IP routing functionality over both Ethernet and ATM while the Media Gateway 15000 provides standard trunk gateway functionality.

Note the following:

- For a non-hitless software migration on Multiservice Switch 15000/Media Gateway 15000/20000 or Media Gateway 7480 elements in UA-IP, PT-IP, PT-AAL2, IAC, and IAW solutions from SN06, or SN06.2 to SN07, refer to the *NN10600-272 Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide.

Note: After you have performed the non-hitless software migration using the *NN10600-272 Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide, refer to [Feature activation on page 107](#) in this document to activate the features.

- The upgrade of other components within the UA-IP solution is not within the scope of this document. For more information about the solution level upgrades, see *NN10320-100 ATM Solutions Basics*, *NN10004-100 UAA Product and Technology Fundamentals*, and *NN10300-100 IP Solutions Basics*.
- The examples shown in this document represent an SN07 to SN07 upgrade of Multiservice Switch 15000/Media Gateway 15000 in a UA-IP solution.

What you need to know

To perform the procedures discussed in this document, you must have an extensive knowledge of Unix, Nortel Networks Preside Multiservice Data Manager servers, and Multiservice Switch/Media Gateway software.

How this document is organized

This document presents a detailed flow chart of the specific tasks required to upgrade a Nortel Networks Multiservice Switch 15000/Media Gateway 15000/20000 node via Hitless software migration using Nortel Networks Preside Multiservice Data Manager (MDM) Command Console.

It also contains a detailed description of what happens on the node during a hitless software migration (HSM). Finally, it contains troubleshooting information and procedures to abort the upgrade if required.

The guide has three parts that reflect the basic phases of the upgrade:

- preparation phase
- migration phase
- new feature activation, troubleshooting and rollback phase

The preparation phase is the phase during which information is gathered and software is downloaded. This phase is described in the sections:

- [Information collection on page 11](#)
- [Downloading and backing up node software on page 19](#)

The migration phase is the phase during which pre-HSM checks are made, the migration occurs, and post migration check are made. This phase is described in the sections:

- [HSM \(Command Console\) pre-work on page 45](#)
- [HSM \(Command Console\) activation on page 71](#)

The new feature activation, troubleshooting and rollback phases are phases where the new features are activated (if applicable), problems are fixed, or the migration is rolled back (if required). These phases are described in the sections:

- [Feature activation on page 107](#)
- [Rollback on page 123](#)
- [Troubleshooting a software upgrade on page 127](#)

What's new in this document

This document is new in PCR 6.1 and SN07.

Branding changes

The terms Passport 15000 and PVG have been rebranded in conjunction with the new Nortel Networks' brand simplified naming format:

- The Passport 15000 is now referred to as the Nortel Networks Multiservice Switch 15000.
- The PVG is now referred to as the Media Gateway 15000.

The Multiservice Switch 15000 and Media Gateway 15000 network elements continue to share common hardware and software aspects. Hybrid systems can combine these network elements' capabilities, despite the fact that no specific brand exists for such hybrids.

For more information on the product rebranding, refer to NN10600-000 *Nortel Networks Multiservice Switch 7400/15000/20000 What's New in PCR6.1*.

Software migration

Upgrading a Nortel Networks Multiservice Switch 15000/Media Gateway 15000/20000 node in a carrier grade configuration is also known as a hitless software migration (HSM). HSM is not supported on Multiservice Switch/Media Gateway 7480 elements. During an upgrade of a Succession solution's components, the node must be upgraded so that you can access new, enhanced, or corrected software applications.

Note: If you are performing a software upgrade on Multiservice Switch/Media Gateway 7480 elements or, a non-hitless software upgrade on Multiservice Switch/Media Gateway 15000/20000 elements, or an upgrade on out-of-service (OOS) Multiservice Switch/Media Gateway 15000/20000 nodes, refer to the NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide.

This section describes the prerequisites that must be in place before an HSM can proceed. For overview information on performing HSM using Preside Multiservice Data Manager (MDM), see [What happens to the node during a hitless software migration on page 39](#).

- [Prerequisites to performing a software upgrade on page 5](#)
- [Upgrade task flow on page 9](#)

Prerequisites to performing a software upgrade



CAUTION

Calls in process of being set up are dropped

This strategy removes standby control and function processors from service. As a result, redundancy of the active shelf components is not available and some calls in the process of being set up (known as transient calls) are dropped. Stable calls are unaffected by the migration.

- Preside MDM software is backwards compatible and can manage the current and previous Nortel Networks Multiservice Switch/Media Gateway releases. However, Preside MDM software is not necessarily forward compatible. As a result, upgrade Preside MDM servers before upgrading the nodes they manage. To upgrade

servers, see NN10185-461 *Upgrading Preside MDM in Succession Networks*.

- If you have DS-1 IMA interfaces using the Edgelink100 MUX, ensure that you use Edgelink100 MUX software (R3.3) during the SN07 upgrade. Contact Telco Systems to get the Edgelink100 MUX software and upgrade procedures:
<http://www.telco.com/products/Transport/M13Multiplexers/EdgeLink100/>
- Ensure that all configuration changes from the Global Bulletin System (GBS) and any associated Method of Procedure (MOP) are reflected on the node before performing the upgrade.
- Before performing the upgrade, ensure that all journal files are either used or purged by issuing the *display ProvisioningSystem restorePossible* command. If the response is “yes”, see the table [Impact of an error condition on an HSM on page 128](#).
- Determine the order in which the nodes are upgraded. For in-band OAM topologies, you must upgrade all Multiservice Switch 15000/Media Gateway 15000 nodes in the following sequence:
 - all remote nodes first
 - Gateway nodes next (non-preferred first and preferred, second). For more information about preferred and non-preferred gateways, see NN10028-111 *Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Preside MDM in Succession Networks Product and Technology Basics PT-AAL1/UA-AAL1/UA-IP* and [Appendix B - In-band OAM quick reference on page 143](#).
 - For all out-of-band OAM configurations, upgrade all the Multiservice Switch 15000/Media Gateway 15000 nodes:
 - not physically co-located with the CS2K first
 - physically co-located with the CS2K next
- You need extensive knowledge of Unix, Multiservice Switch/Media Gateway software, and the Succession portfolio architecture.
- You need a:
 - user ID for Nortel Networks web support. See [Download release notes on page 13](#)
 - user ID for Preside MDM software download
 - user ID for general access to Preside MDM

- Multiservice Switch user ID configured for local access, and access to FTP, FMIP, Telnet and Preside MDM server
- Multiservice Switch user ID with a minimum command scope of *device* and a command impact of *configuration*.

To determine your command scope and impact, type **me**. Information about your user ID is displayed.

- Nortel Networks recommends that you perform the tasks involving commands issued from the command line using Preside MDM Command Console tool rather than a Telnet session. For more information on using the Command Console, see 241-6001-804 *Preside MDM Workstation Utilities User Guide*.
- Ensure that all components supporting the service intended to be hitless are enabled. A check of all components should be performed prior to activating the migration provisioning to minimize any impacts to associated services.
- Nodes must be connected to Preside MDM servers. The nodes must also be in service and capable of supporting traffic and network management functions. In addition, the nodes must not have any major or critical alarms raised on them.
- Review *Nortel Networks Multiservice Switch Release Notes PCR6.1* to determine the following:
 - how the data model has changed for this release and how you must adjust your configuration to compensate for these changes
 - which features and services are required by this release and by each of the processor cards, and which software files and applications you need to download to support these features and services
 - if the software you are installing is compatible with the other software already on the node
- Ensure that you have an alternate way to access the node in case you lose IP connectivity during the migration.

For example, you can connect an operator terminal as described in the section “Connecting an operator terminal” in the NN10600-130 *Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade*. You could also use a modem or some other mode of out-of-band connectivity that should have been in place during the initial installation of the node.

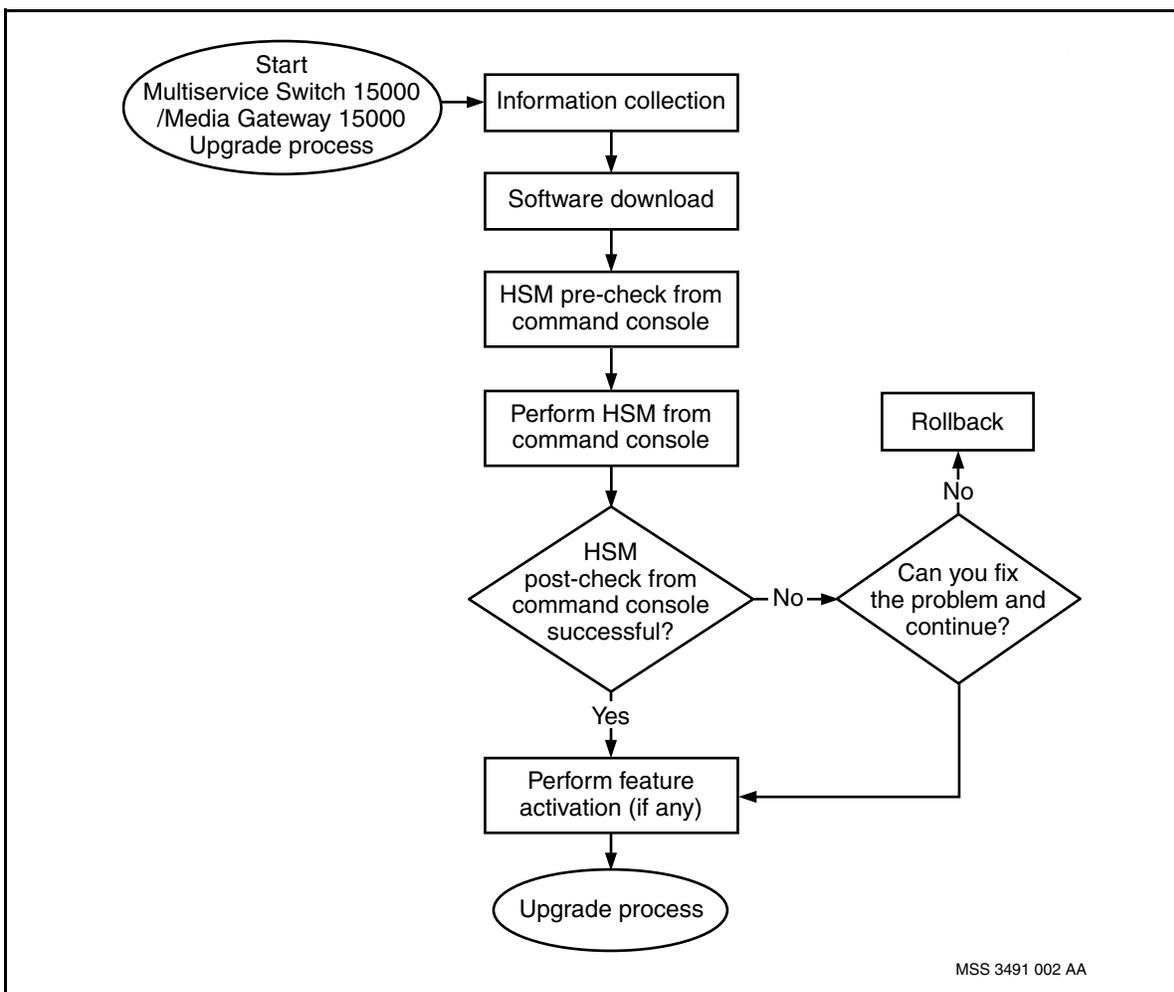
- You must complete the tasks described in the section [Upgrade task flow on page 9](#) before installing additional hardware and configuring additional capabilities.
- Because of the amount of time required to remove old software releases, you may want to do this several days before beginning the upgrade. In particular, running the *tidy Software* command can take several hours to complete. As a result, you may want to run it overnight.

Upgrade task flow

The figure [Upgrade task flow on page 9](#) shows the sequence of procedures you must perform to upgrade Multiservice Switch 15000 nodes deployed as a Media Gateway 15000. To link to any procedure, go to the list that follows the task flow charts.

Note: For information on performing upgrades on out-of-service (OSS) nodes, refer to the NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide.

Upgrade task flow



Work flow navigation

- [Information collection on page 11](#)
- [Downloading and backing up node software on page 19](#)
- [HSM \(Command Console\) pre-work on page 45](#) for migrations performed from the Command Console
- [HSM \(Command Console\) activation on page 71](#)
- [Feature activation on page 107](#)
- [Rollback on page 123](#)

Information collection

Collect information to identify and avoid any compatibility issues that could prevent a software migration completing successfully.

Prerequisites to information collection

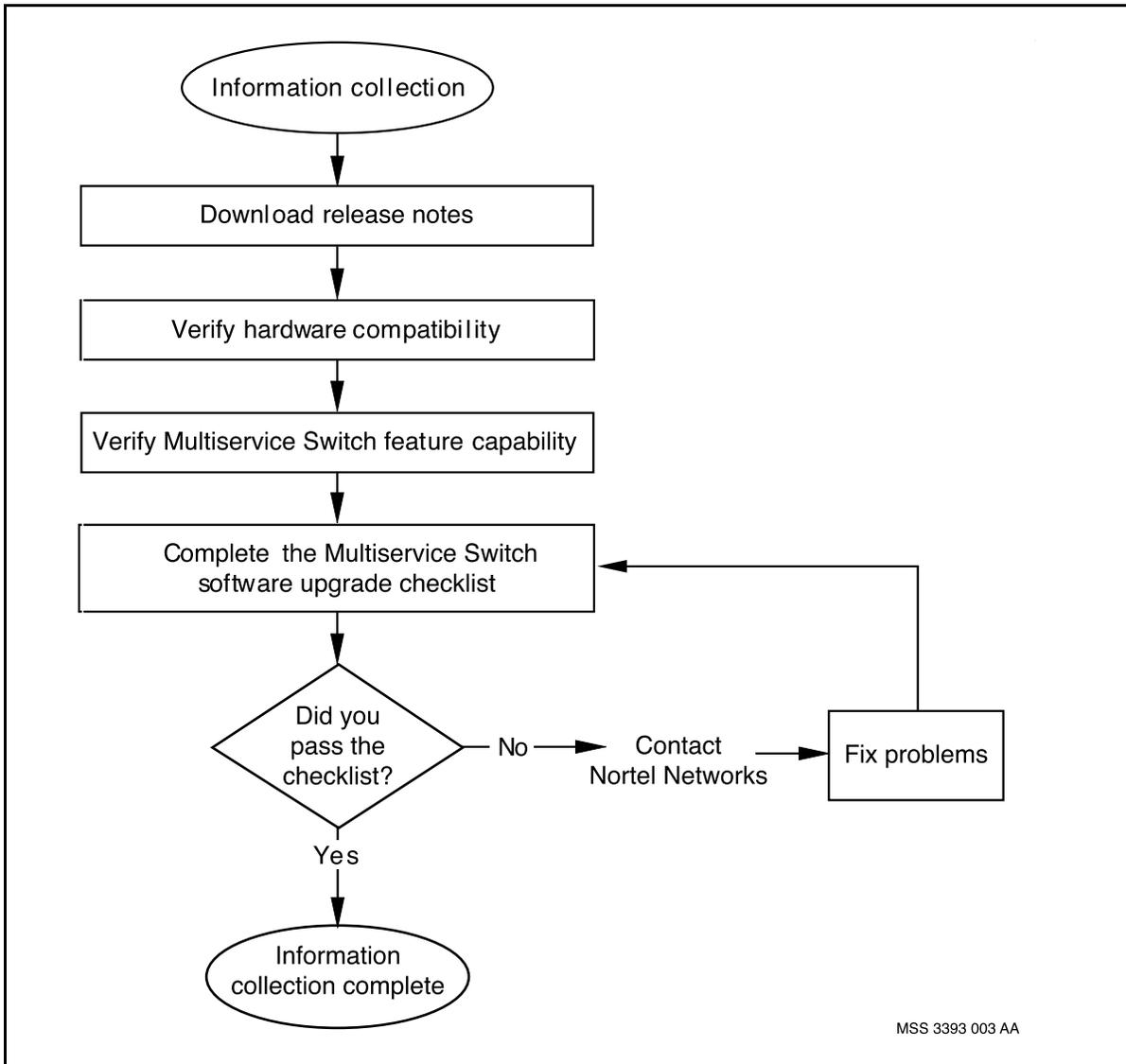
Before you start collecting information, you must:

- determine the order in which the Multiservice Switch 15000/Media Gateway 15000/20000 nodes will be upgraded
- determine if the Nortel Networks Preside Multiservice Data Manager (MDM) servers have been upgraded
- confirm which release of software is active on the node
- determine an upgrade path to identify the release to which you are migrating
- ensure that the node is operating without known errors or failures

Information collection task flow

The task flow shows you the sequence of procedures you perform to collect information about the upgrade. To link to any procedure, go to [Work flow navigation on page 12](#).

Information collection task flow



Work flow navigation

- [Download release notes on page 13](#)
- [Verify hardware compatibility on page 14](#)
- [Verify node feature compatibility on page 15](#)
- [Complete the software upgrade checklist on page 16](#)

Download release notes

Download the release notes for Multiservice Switch 15000/Media Gateway 15000/20000 in Succession solutions to collect specific information affecting hardware and services for each of the Multiservice Switch/Media Gateway software release (PCR) and Multiservice Switch for Succession software releases involved in the migration.

- 1 Go to the Nortel Networks public website.
<http://www.nortelnetworks.com/>
- 2 In the section titled Support, click *Technical Documentation*.
- 3 Click Passport in the list of products.
- 4 Click *Documentation* under Passport Packet Voice Gateway (PVG).
- 5 A security screen appears requesting your user ID and password for web support.
- 6 Enter your user ID and password.
- 7 Select and download all the documentation you require.

Verify hardware compatibility

Verify hardware compatibility to confirm that your hardware configuration will support all the software versions that will be used in the migration.

From the node

- 1** Note the product engineering codes (PECs) of all the function processor cards used installed in the node.
d shelf card/* prc
- 2** Review the hardware compatibility section in Nortel Networks Multiservice Switch Release Notes for each release in your migration path to determine if there are any other hardware considerations.
- 3** Compare your hardware configuration to the minimum supported hardware information in the Nortel Networks Multiservice Switch Release Notes of each release in the migration path.

Verify node feature compatibility

Verify the compatibility of features on the node to confirm that your configuration of services and features will not be negatively affected by the software migration.

From the node

- 1 Create a list of all the applications loaded on the node:
d -p sw lpt/* fl, log
- 2 Refer to the Nortel Networks Multiservice Switch Release Notes for each PCR in your migration path to confirm there are no known compatibility issues.
- 3 If you have any doubt about the compatibility between your existing features and your migration path, contact your Nortel Networks Service Representative before beginning the migration.

Complete the software upgrade checklist

Complete the software upgrade checklist to confirm that all potential complications have been considered and eliminated. Use the information gathered from performing the [Information collection on page 11](#).

Software upgrade checklist

Task	Yes	No	Date and Comments
A migration order has been established for all the Multiservice Switch/Media Gateway nodes in the network.			
Migration plan has been created including acceptance criteria and fall back strategy (backup and restore).			
Migration plan has been reviewed and verified by migration prime as well as operational and engineering resources.			
Migration operator has complete knowledge of Multiservice Switch/Media Gateway node applications, features and software.			
Migration operator has complete knowledge of all software versions in the migration.			
<i>Nortel Networks Multiservice Switch Release Notes</i> for all PCR releases in the migration path have been reviewed for potential impacts to the migration plan.			
Network health has been analyzed to verify that no known problems exist.			
Network management platform meets minimum hardware requirements.			
Network management software is compatible with each release in the migration plan.			

Task	Yes	No	Date and Comments
Multiservice Switch/Media Gateway hardware is compatible with all releases in the migration plan.			
Multiservice Switch/Media Gateway software is compatible with all releases in the migration plan.			
All provisioning files have been saved (backed up).			
Network configuration changes have been prohibited.			
The software version you are migrating to has been downloaded and installed on the Preside Multiservice Data Manager server acting as an SDS.			
The software version patches to be applied have been downloaded and installed on the Preside Multiservice Data Manager server acting as an SDS.			
All configuration changes, including patches, from the Global Bulletin System (GBS) and the Method of Procedure (MOP) are reflected on the node and server before performing the upgrade.			
The file system is organized and the migration operator knows which software versions are applicable to the migration plan.			
For networks using in-band OAM, is this node a gateway node, or a remote node?			
The software version currently running on the node is:			
The current patches running on the node are:			
The intended software after the migration is:			

Task	Yes	No	Date and Comments
The software patches you are applying during the upgrade are:			
The PCRs between the intended software release and the current PCR operating on the node:			

Downloading and backing up node software

Before you begin your upgrade, ensure that the correct version of Nortel Networks Multiservice Switch/Media Gateway software and the correct patches have been downloaded to the Nortel Networks Preside Multiservice Data Manager (MDM) server acting as the software distribution site (SDS). After verifying that you have the correct software and patches, you can download them to the Multiservice Switch 15000/Media Gateway 15000/20000 nodes. The SDS site must be a Preside MDM server for IP.

Prerequisites to software download and backup

Review the prerequisites:

- Within the UA-IP solution, one of the Preside MDM servers has been configured as a software distribution site (SDS). The server acting as the SDS manages, stores, and provides access to Multiservice Switch/Media Gateway software and patches. To upgrade a node, download the required software from this server to the nodes.
- Downloading software and patches onto the SDS server, and downloading the software and patches from the server to the nodes can be done at any time prior to the hitless software migration (HSM). Unless there are specific operational requirements, perform these tasks before the upgrade period begins.
- The application version list must contain the following applications: base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces. The application version list must not contain any additional applications.

Note: WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.

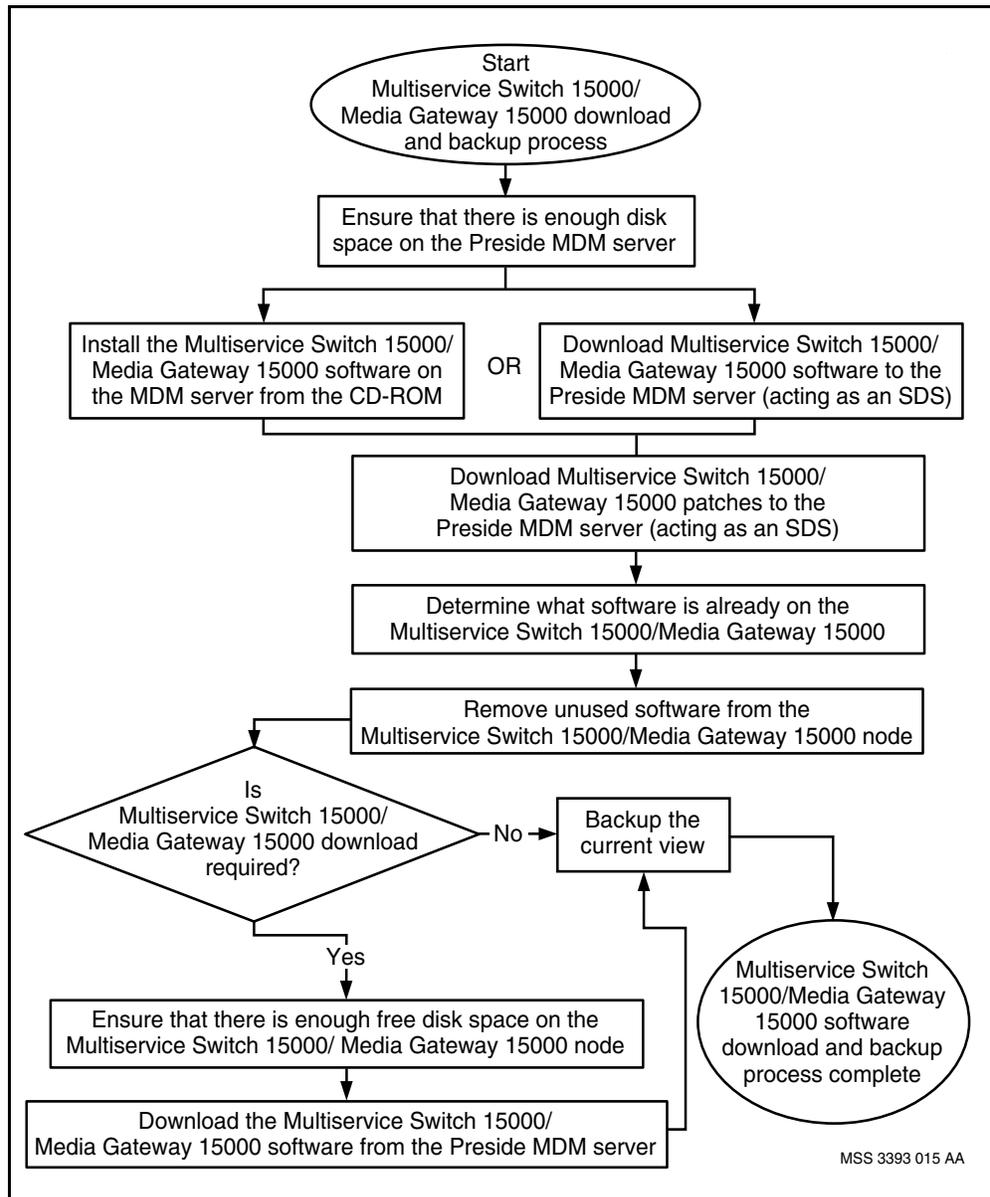
Software installation and download task flow

The task flow shows the sequence of procedures to perform in order to download software and patches to the server acting as the SDS, and then downloading them to the nodes.

The procedures to configure the server as an SDS, downloading the software and patches to the SDS server, and finally downloading it to the nodes are listed following the [Software download and backup task flow on page 20](#).

These procedures are located in two documents. Four are in this document and the remaining procedures are in the NN10600-270 *Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation*. To complete this task, perform the procedures in the listed sequence.

Software download and backup task flow



Work flow navigation

- [Ensuring that there is enough disk space on the server on page 22](#)
- [Download the software to the server from Nortel Networks website on page 24](#)
- [Download software patches to the server from Nortel Networks website on page 26](#)
- [Installing software on the server from CD-ROM on page 28](#)
- “Determining what software is already on the node” in *NN10600-270 Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation*
- “Removing unused software from the node” in *NN10600-270 Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation*
- [Ensuring that there is enough free space on the node on page 30](#)
- [Download software from the Preside MDM server on page 32](#)
- [Back up the current view on page 36](#)

Ensuring that there is enough disk space on the server

Before downloading the required software and patches to the Nortel Networks Preside Multiservice Data Manager (MDM) server acting as the SDS, verify that the server has sufficient disk space.

Prerequisites

- The software requires approximately 350 Mbytes of space. See *Nortel Networks Multiservice Switch Release Notes PCR6.1* to verify the amount of disk space required by this release.

Procedure steps

From the server acting as the SDS

- 1 Log in to the Multiservice Switch 15000/Media Gateway 15000/20000 node using the appropriate permissions.
- 2 Determine how much disk space is available on the partition containing the Nortel Networks Multiservice Switch/Media Gateway software:

df -k /localdisk/pp15ksw/software

Note: This directory path assumes that the SDS server user ID configured to access the downloadable has a home directory of /localdisk/pp15ksw. If the user ID has a different home directory, adjust the directory accordingly.

The system indicates (in kilobytes) how much disk space is available in the disk partition.

- 3 Verify that the space available is more than 350 Mbytes. It is recommended that you have more than the minimum space available.
- 4 If there is not 350 Mbytes of space, remove files from the SDS server, as required. You can safely remove software from the SDS after all subtending nodes are upgraded to a new release.

Software is located among multiple directories (base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces). Each release subdirectory must be located and

removed. The directory structure on the SDS includes the following directories:

- a user-defined home directory which is the default login directory.

The home directory must have a subdirectory called software.

- application directories, which contain the software application version directories
- software application version directories, which contain all the control files and object files for a particular version of an application

Download the software to the server from Nortel Networks website

After verifying that Nortel Networks Preside Multiservice Data Manager (MDM) server acting as the SDS has sufficient disk space, you can begin to download the software from Nortel Networks website. When you download the software from this website, a copy of the software is placed in the directory you specify.

Prerequisites

- You need a web access account with a user name and password. Contact your Nortel Networks customer representative for more information on accessing the website.
- Refer to the software downloads area of the Nortel Networks website (www.nortelnetworks.com) to determine the software load that you must install.
- The software you need to download may be composed of more than one file. Ensure that you download all software files that belong to the release you require.
- After downloading the required software release from the website, you need to download the associated patches.
- Verify which Multiservice Switch software and patches are available on the Preside MDM server.
- Ensure that there is enough disk space on the server.

From the server acting as SDS

- 1 Login to the server acting as the SDS.
- 2 On the web, go to www.nortelnetworks.com.
- 3 In the Support section of the window, click *Software Downloads*.
The Software Downloads window opens.
- 4 Click *Log In*.
- 5 When prompted, enter your user name and password for the web access login.
- 6 In the Product Family section of the Software Downloads window, click *Passport*.
The Passport Product Family window opens.

For Multiservice Switch 15000/20000 patches in an UA-IP solution or, to obtain patches for Media Gateway 15000/20000 from SN06 or SN06.2 to SN07 in a PT-IP, PT-AAL2, IAC, or IAW solution network, go to step [7](#).

- 7 Under the Passport Packet Voice Gateway (PVG) section, click *Software*.
The software patches you can download are listed.
- 8 Click the version of the release software you want to download.
Note: The software you want to download may be composed of more than one file. Ensure that you download all software files that belong to the release you require.
The Software Downloads: Software Detail Information window opens.
- 9 Click the load name listed beside the File Download heading.
A Save As dialog opens.
- 10 Specify a folder in the user ID home directory of the server to indicate where you want the software placed. This is typically: **/localdisk/pp15ksw/**
- 11 Click **Save**.
- 12 On the Preside MDM server, change directories to the directory containing the software (This is the same directory you specified in step [10](#)):
cd /localdisk/pp15ksw/
- 13 Uncompress the software file:
uncompress <load_name>.tar.Z
- 14 Untar the software file:
tar -xvf <load_name>.tar
- 15 Repeat step [9](#) through step [14](#) for every software file you want to download.
- 16 Remove the tar file.

Variable values

Variable	Value
<load_name>	The name of the software load file that you want to download.

Download software patches to the server from Nortel Networks website

In addition to the main software release, you may need to download the patches from Nortel Networks website to the Preside Multiservice Data Manager (MDM) server acting as the SDS. When you download the patches from this website, a copy is placed in the specified directory. The SDS site must be a Preside MDM server for IP.

Prerequisites

- You need an account with a user name and password. Contact your Nortel Networks customer representative for more information on accessing Nortel Networks website.
- Refer to the software downloads area of Nortel Networks website (www.nortelnetworks.com) to determine the software patches that you must install. If there are no patches listed for this release, it means that there are no patches currently required for this release.
- Verify which Nortel Networks Multiservice Switch software and patches are available on the Preside MDM server.
- Ensure that there is enough disk space on the server.

From the server acting as the SDS

- 1 Log in.
- 2 On the web, go to www.nortelnetworks.com.
- 3 In the Technical Support section of the window, click *Software Downloads*.
The Software Downloads window opens.
- 4 Click *Log In*.
- 5 When prompted, enter your user name and password for access login.
- 6 In the Product Family section of the Software Downloads window, click *Passport*.
The Passport Product Family window opens.
For Multiservice Switch 15000/20000 patches in an UA-IP solution or, to obtain patches for Media Gateway 7480/15000/20000 from SN06 or SN06.2 to SN07 in a PT-IP, PT-AAL2, IAC, or IAW solution network, go to step [7](#).
- 7 Under the Passport Packet Voice Gateway (PVG) section, click *Software*.

- The software patches you can download are listed.
- 8 Click the patch that you want to download.
The Software Downloads: Software Detail Information window opens.
Note: If there are no patches listed for this release, it means that there are no patches currently required for this release. You can move on to the next task in the upgrade process.
 - 9 Click the patch name listed beside the File Download heading.
 - 10 A Save As dialog is displayed.
 - 11 Specify a folder in the home directory of the MDM user to indicate where you want the patch placed. This is typically:
/localdisk/pp15ksw/
 - 12 Click *Save*.
 - 13 On the Preside MDM server, change directories to the directory containing the patch (This is the same directory you specified in step [11](#)):
cd /localdisk/pp15ksw/
 - 14 Uncompress the patch file:
uncompress <patch_name>.tar.Z
 - 15 Untar the patch:
tar -xvf <patch_name>.tar
 - 16 Repeat step [8](#) through step [15](#) for every patch you need.
 - 17 Remove the tar file.

Variable values

Variable	Value
<patch_name>	The name of the patch that you want to download.

Installing software on the server from CD-ROM

An alternative to downloading Nortel Networks Multiservice Switch/Media Gateway software from the server acting as the SDS, is to install it from the CD-ROM using the installation program.

Prerequisites

- You need a copy of Nortel Networks Multiservice Switch PCR6.1 software CD. Contact your Nortel Networks customer representative for information on how to order a CD.
- You need the IP address of the Nortel Networks Preside Multiservice Data Manager (MDM) server acting as the SDS.
- After installing the required software release from the CD-ROM you need to download the required patches. For more information, see [Download software patches to the server from Nortel Networks website on page 26](#).

Installing software

From the server acting as SDS

- 1 Login.
- 2 Insert the software CD in the server's CD-ROM drive.
- 3 Create a directory for mounting the CD:
cd /
mkdir /cdrom
Note: If the mountable CDs have been used for other applications, you may not have to create this directory.
- 4 Start the installation program:
/cdrom/cdrom0/install
- 5 Follow the installation program's prompts.
- 6 When the installation program prompts you for a product, select Passport 15000.
- 7 When the installation program prompts you, select Install software.
- 8 When the installation program prompts you for a directory in which to place the software, type the following:
/localdisk/pp15ksw/
The installation program indicates when the installation is complete. At this time, the software has been installed in the

directory you defined when prompted by the installation program.

- 9** Once the software has been successfully installed, log back into the server acting as the SDS.
- 10** Eject the CD from the CD-ROM drive: **eject cdrom**

Ensuring that there is enough free space on the node

Before downloading software and patches to the node, ensure that the node has sufficient disk space for the software applications that you need.

Prerequisites

- Ensure that there is sufficient space to download the software files for the following applications: base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces. The amount of space required for the eight applications is approximately 350 Mbyte.

Note: WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.

- If you need to upgrade the fabric card firmware with this release, you also need to download the fabric application. Allocate additional space for this application.
- If you need to download patches, allocate additional space for the patches.
- See Nortel Networks Multiservice Switch Release Notes *PCR6.1* and the software downloads area of Nortel Networks website (www.nortelnetworks.com) to determine the software load and patches that you must install, and the amount of disk space required for them. See the section on determining which software is already on the node in NN10600-270 *Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation*.

From the node

- 1 Log in to the Multiservice Switch 15000/Media Gateway 15000/20000 node using the appropriate permissions.
- 2 Determine the space currently available on the file system:
display FileSystem freeSpace
The number of bytes available on the system is displayed.
- 3 Verify that the space available is more than 350 Mbyte.
Note: If you need to install patches, you need to allocate additional space for the patches.
- 4 If the file system does not have enough available space, remove any unused software and provisioning files. See the section on

removing unused software in NN10600-270 *Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation*.

Note: Removing unused software will usually free up sufficient disk space. However, it is possible that a significant amount of disk space is being used by spooling files if they are not being removed often enough by the Management Data Provider (MDP). If this is the case, use MDP to retrieve and delete spooling files. See 241-6001-309 *Preside MDM Management Data Provider User Guide*.

Download software from the Preside MDM server

Before beginning the hitless software migration (HSM), you need to download the software from the Nortel Networks Preside Multiservice Data Manager (MDM) server acting as the SDS for the nodes.

Prerequisites

- [Download the software to the server from Nortel Networks website on page 24](#)
- [Download software patches to the server from Nortel Networks website on page 26](#)
- You have performed the procedure “Ensuring that there is enough free space on the file system” see NN10600-270 *Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation*
- Download the software files for the following applications: base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces.

Note: WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.

- If you need to upgrade the fabric card firmware with this release, you will also need to download the fabric application. For more information, see [Upgrade the fabric on page 89](#).
- Refer to the software downloads area of Nortel Networks website (www.nortelnetworks.com) to determine the software load and patches that you must install. If there are no patches listed for this release, it means that there are no patches currently required for this release.
- You need the IP address of the Preside MDM server acting as the SDS.
- You need the user ID that has read access to the software on the SDS server, and the associated password for that user ID. This is the user ID for the folder specified in step 10 of [Download the software to the server from Nortel Networks website on page 24](#).
- Use the Preside MDM server Command Console tool to perform this upgrade. For more information on opening the Command Console, see 241-6001-804 *Preside MDM Workstation Utilities User Guide*.

From the node

- 1 Login with the appropriate permissions.

Note: You need a user ID with a minimum command scope of *device* and a command impact of *configuration*.

- 2 Verify that the downloader is inactive:

display Software Download status

The value of the *status* attribute must be inactive.

- 3 Set the processor target type for the application versions:

set Software Download processorTargets PPC i960

- 4 Create the list of software applications that you need to download:

set Software Download avListToDownload !

<application_versions>

You must download the software files for the following applications:

- base_CF01xxx
- networking_CF01xxx
- atmNetworking_CF01xxx
- ip_CF01xxx
- wanDte_CF01xxx

Note: WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.

- ethernet_CF01xxx
- pvg_CF01xxx
- aal1Ces_CF01xxx
- fabric_CF01xxx (only if a fabric upgrade is necessary)
- patch_CF01xxx

Note: You can only download patch_CF01xxx if the switch is already at SN07, or if patch baseFT420A_XXXX

is active on the shelf. See step 8 in [Perform HSM using Command Console on page 73](#).

The node downloads any patches associated with the application versions you specify.

If you are upgrading a Media Gateway 15000/20000 from SN06 or SN06.2 to SN07 in a PT-IP, PT-AAL2, IAC, or IAW solution network, note the following:

- If the Media Gateway 15000/20000 shelf includes 4pGigE Function Processors (4pGe FP), and you are upgrading from SN06.2, ensure that patch baseFT397A_CE02S2D has been activated on the shelf prior to performing the HSM to SN07. Refer to Bulletin 2004005174 for further information about this patch.
- If you do not have any 4pGigE Function Processors (product code NTHW49AA) installed in the Media Gateway15000/20000 shelf, review [HSM overview on page 39](#) to see a description of HSM on Media Gateway 15000/20000. From the command console enter the list of pre-check commands provided in the procedure [Verify the status of the node before the upgrade on page 46](#) to ensure that no components are degraded or disabled prior to HSM.
- If your Media Gateway 15000/20000 network includes the 4pGe FP at SN06, please contact your Nortel account representative to request a similar patch for SN06 prior to performing an HSM to SN07.

- 5 Verify that the software applications that you want to download are in the list of software that will be downloaded:

display Software Download avListToDownload

- 6 Start downloading the software:

**start -host(<ipAddress>) -user(<userId>)
-password(<password>) Software Download**

The download process begins.

- 7 Monitor the progress of the download:

display Software Download

When the *status* attribute is *inactive* and the *filesToTransfer* attribute is 0, the download is complete.

- 8 Verify that the software listed in step 4 was downloaded:

list Software ApplicationVersion/*

- 9 Verify that the patches listed in the software downloads area of Nortel Networks website (www.nortelnetworks.com) were downloaded:

list Software ApplicationVersion/* Patch/*

Variable values

Variable	Value
<application_versions>	<p>A space-separated, case sensitive list of application versions.</p> <p>You must download the new version of the base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces applications.</p> <p><i>Note:</i> WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.</p> <p>If you need to upgrade the fabric card firmware with this release, you will also need to download the fabric application. For more information, see Upgrade the fabric on page 89.</p>
i960	An attribute indicating that the i960 processor type is being used. This attribute is always required.
<ipAddress>	The IP address of the Preside MDM SDS server.
<password>	The password for the, <userID> on the Preside MDM SDS server.
PPC	An attribute indicating that the PowerPC processor type is being used. This attribute is always required.
<userID>	The user ID for server account that contains software to be downloaded. The value is usually pp15ksw.

Back up the current view

Save a current view from a node using Nortel Networks Preside Multiservice Data Manager (MDM) Service Data Backup/Restore tool. This tool copies service data and application version information from the node to a reliable data storage site. This view can be used to restore provisioning on a node in case of file corruption.

Prerequisites

- The view to be saved must be either a committed or portable view.
- You must have write permissions on the node, with a minimum impact of service, a minimum scope of device, and a minimum access of ftp and fmip.
- The backup site can be the Preside MDM server or another Nortel Networks Multiservice Switch node. It can also be a Software Distribution Site (SDS) configured to store backed-up service data from a node.
- Verify that the backup site has enough space to accommodate the backup. For more information, see NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software*.
- The Service Data Backup/ Restore tool uses the */tmp* directory to perform some of its file processing (for example, archive, compress, and uncompress). Your local disk needs to have twice the amount of space as the actual size of the files you are transferring for back up. You need to clean up the local disk if errors are raised (for example, “*No space left on device*”). In this case, you can mount the */tmp* directory from a lower-usage disk on a selected file server.
- The Service Data Backup/ Restore tool backs up only the node’s configuration data. It does not back up node software.
- The Backup server, the Restore server, the Nortel Networks Multiservice Switch 15000 Backup provider, and the Nortel Networks Multiservice Switch 15000 restore provider must all be running on the Preside MDM server in order for the Service Data Backup/Restore tool to function properly. Using the Preside MDM Server Administration tool, verify that these four servers are running. If they are not or if you need more information, see 241-6001-807 *Preside MDM Network Backup and Restore*.
- Using the **display -o prov** command, ensure that the committed view, the current view, the edit view, and the last used view are identical. If these views are not the same, see NN10600-270 *Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation* for information on making them the same.

- The Preside MDM server has been configured to regularly back up the provisioning files from the nodes. By creating a backup of the committed file before beginning the upgrade, you ensure that you have the most current committed file you can have before beginning the migration.
- If a view is not saved prior to an upgrade attempt and you have to revert to a previous software load, then you must re-configure the old software release manually.
- If you need to revert to a saved view of an older software version, when the node restarts it restarts in the operational state it was in when you saved that view.

**CAUTION**

This procedure backs up all views currently stored on each node and should be done during a maintenance window.

Procedure steps

- 1 Login to a Preside MDM server.
- 2 Open a Preside MDM window:
/opt/MagellanNMS/bin/nmstool &
The copyright dialog and the Preside MDM window open.
- 3 Click **OK** to close the copyright dialog.
- 4 From the Preside MDM window, select Configuration > Passport > Administration > Passport Service Data Backup/Restore.
The Passport Service Data Backup/Restore window opens.
- 5 Select the **Add ...** button.
- 6 Select the device(s) to be backed up by selecting the groups and/or nodes located in the Device Groups panel.
- 7 From the popup menu, select the value **full** to ensure that the default for the backup is to do a full backup and not an incremental one.
- 8 Enter the appropriate user ID and password to authenticate for the selected device(s).
- 9 Click **OK**.

The added devices now appear in the **Device List** of the main Passport Backup and Restore window.

- 10** Click **Backup** to start the backup procedure for all the devices listed in the **Device List**.

This will proceed to backup all the views currently stored on each node, and should be done during a maintenance window.

- 11** Alternatively, specific views can be backed up as follows. For each device in the Device List:

- change the parameter under the Mode column from **full** to **selective**.
- select the specific view to backup from the Configuration column.
- click **Backup** to start the backup of the selected view for each node in the **Device List**.

HSM overview

This section describes Nortel Networks Multiservice Switch/Media Gateway hitless software migration (HSM) and its associated processes. While an HSM must be preceded by pre-migration checks and followed by post-migration checks, these checks are not described in this overview. For information on pre-migration checks, see [HSM \(Command Console\) pre-work on page 45](#). For information on post-migration checks, see [Verify the success of HSM on page 97](#).

What happens to the node during a hitless software migration

Nortel Networks Multiservice Switch 15000/20000 and Media Gateway 15000/20000 nodes support hitless software upgrades in Succession PT-IP, PT-AAL2, IAC, or IAW solutions. Nortel Networks Multiservice Switch 15000 and Media Gateway 15000 nodes support hitless software upgrades in Succession UA-IP solution. During a hitless software migration, the Multiservice Switch 15000/20000 or Media Gateway 15000/20000 shelf logically splits into two shelves: the service shelf and the migration shelf. The service shelf contains the active FPs and is controlled by the active CP. The migration shelf contains the standby FPs and is controlled by the standby CP. The standby cards that are being loaded with the new version of software are referred to as the migrating cards.

During the migration, the active CP and FPs continue to operate using the old version of software while a new version of software is being loaded and provisioned on the migrating CP and FPs. The active cards remain active until the migrating cards have finished migrating to the new software and are ready to take over.

When the migration shelf is ready, the migration shelf will become the active shelf without operator intervention. This is called migration switchover. The CP and FPs in the former service shelf then reset and are loaded with the new version of software.

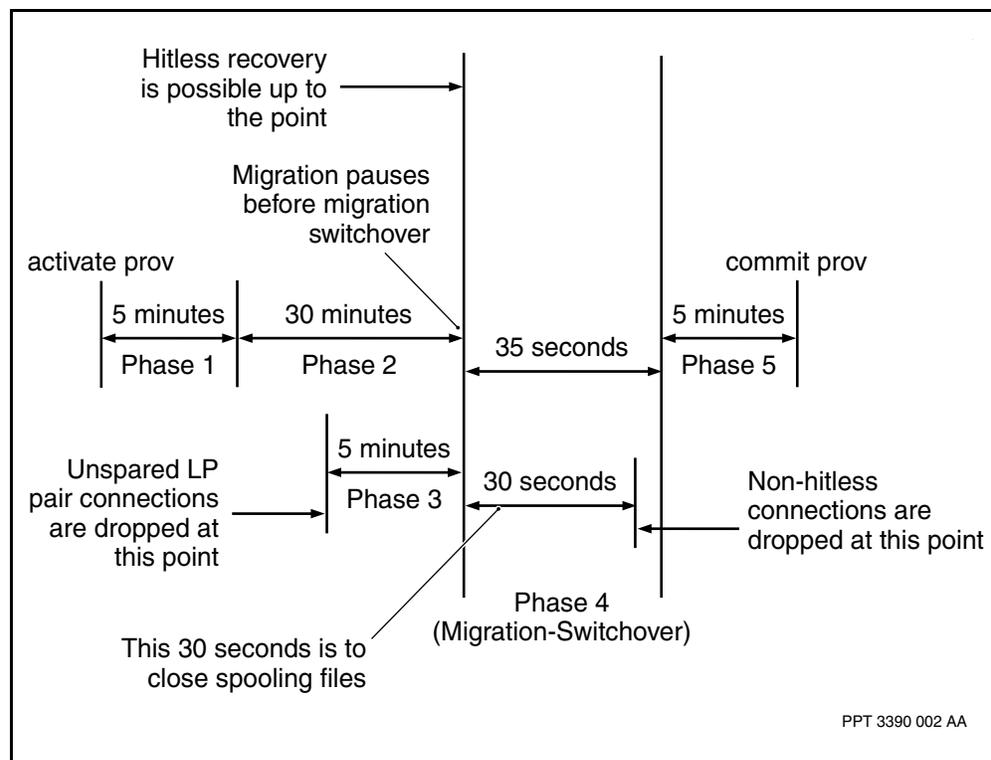
If a problem is detected by the system, the process pauses automatically allowing the operator to stop migration or fix the problem and continue.

The five phases of a hitless software migration are as follows:

- [Phase 1 - Preparation of the CP on page 41](#)
- [Phase 2 - CP migration on page 41](#)
- [Phase 3 - FP migration on page 42](#)
- [Phase 4 - Migration switchover on page 43](#)
- [Phase 5 - Post migration on page 43](#)

Refer to the figure [Hitless software migration phases on page 40](#) for more information about the phases.

Hitless software migration phases



Phase 1 - Preparation of the CP

Preparing the CP

As the hitless migration begins, the following occurs:

- 1 The edit view is saved in a temporary file.
- 2 Hitless CP switchover is disabled.
- 3 The card availability status of the standby CP is set to migrating. The standby CP resets to load new software.
- 4 The system responds to the **activate prov** command indicating that a software migration activation is to be performed.
- 5 Certain operator commands are automatically disabled.
- 6 The **Prov Migration** component is created and a SET warning alarm is issued against this component indicating that a software migration is being performed.

Note: The disabled operator commands remain disabled by the system until after the migration switchover or hitless recovery.

Phase 2 - CP migration

CP migration

After the system raises the SET warning alarm to complete phase 1, the following occurs:

- 1 The LED of the migrating CP eventually changes to fast, pulsing green.
- 2 The new provisioning view migrates to the migrating CP.
- 3 Committed formats of the migrated view are saved on the migrating CP.
- 4 The active CP splits the physical shelf into two logical shelves: the service shelf and the migration shelf. The active CP also prepares for the FP migrations according to the following criteria:
 - For FPs in a one-for-one sparing model, one FP remains under the control of the active CP in the service shelf while the second FP goes under the control of the migrating CP. The second FP's card availability is set to migrating and is reset to load new software. At this point, equipment protection is disabled.

- For FPs that do not fit the previous criteria, the FPs remain under the control of the active CP in the service shelf. These FPs are reloaded with new software after the migration switchover occurs.
- 5 Provisioning data is delivered within the migrating CP.
 - 6 Applications that run on the CP are initialized.

Note: Disk synchronization occurs in the background during this phase. This phase is not complete until disk synchronization is complete.

Phase 3 - FP migration

FP migration

After the system initializes the CP applications to complete phase 2, the following occurs:

- 1 The migrating FPs load new software and start up in migration mode.
- 2 The LEDs of the migrating FPs eventually change to fast, pulsing green or to solid green.
- 3 Provisioning data is delivered on the migrating FPs.
- 4 The migrating FPs are loaded with dynamic data for services, such as ATM and IP. The automatic pause condition exists when a fault scenario occurs on the migration shelf such that an application cannot achieve its expected switchover behavior. The software migration pauses before the migration switchover. The **Prov Migration** component is operationally disabled and an appropriate alarm is raised against it. The operator must either issue a **continue -force prov** command to continue with the migration switchover, or **stop prov** to stop the software migration.

After a **continue -force prov** command is issued, the system does not pause again. If you are in an SN07 to SN07 migration, and the system has paused prior to migration switchover, the expected pause at migration switchover does not occur.

Phase 4 - Migration switchover

Migration switchover

After the system notifies the active CP that phase 3 is complete, the following occurs:

- 1 Migration switchover begins when the CPs close all spooled files. For example, alarms and security logs.
- 2 All processors in the service and migration shelves are notified to switchover.
- 3 Processors within the service shelf reset to load new software.
- 4 The CP and FPs in the migration shelf become the service shelf. FPs providing services, such as ATM and IP, re-establish signalling and routing functions. The CP and FPs with the new software start providing service.
- 5 Any sparing panels are switched over.
- 6 Final port initialization is completed.
- 7 The shelf becomes one when all CPs and FPs are running the new software. The shelf is no longer logically split.

Phase 5 - Post migration

Post-migration

After all CPs and FPs are running the new software and phase 4 is complete, all alarms are cleared and the following occurs:

- 1 The restarting CP and FPs load new firmware, new software, and their provisioning data is activated.
- 2 FP applications initialize with provisioning data and re-establish services, such as ATM and IP. Dynamic service data is loaded from the active FPs.
- 3 Network management connectivity is re-established.
- 4 Equipment protection and inter-card APS are re-established.
- 5 The operator commands which are disabled during the software migration are now available.
- 6 The operator must complete provisioning by confirming the provisioning changes. This phase is completed once the operator commits the new provisioning view.

HSM (Command Console) pre-work

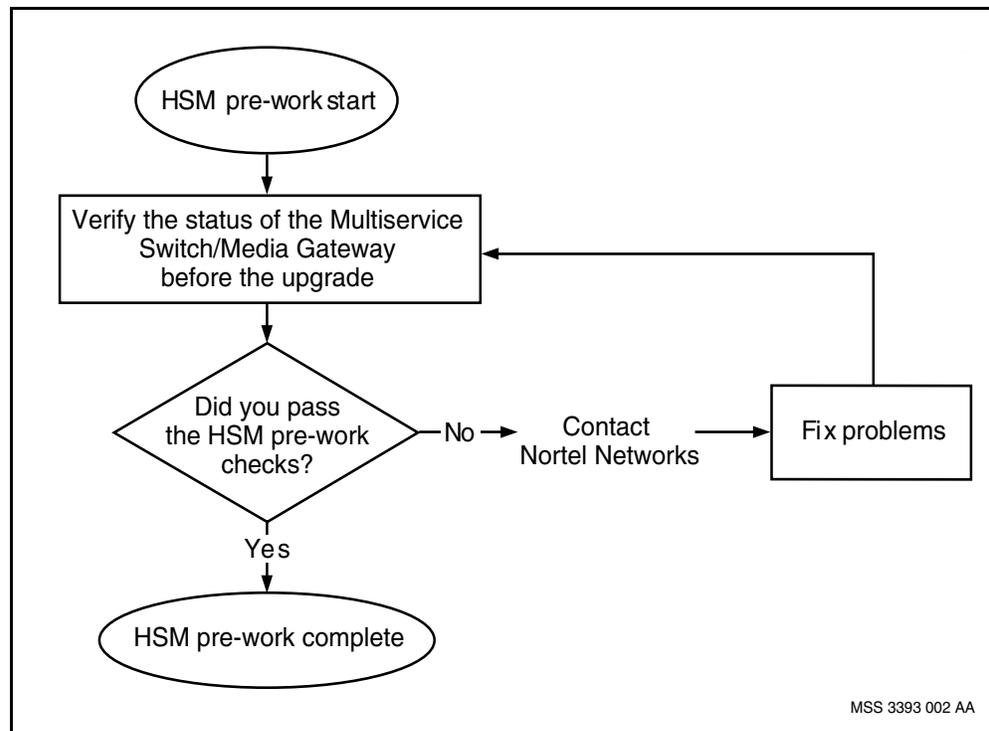
Complete the HSM pre-work before you proceed with a software upgrade.

Prerequisites

- Complete [Downloading and backing up node software on page 19](#).

The task flow shows the sequence of procedures you need to perform prior to performing the HSM.

HSM pre-work task flow



Verify the status of the node before the upgrade

Verify the status of Multiservice Switch 15000/Media Gateway 15000/20000 nodes before upgrading to ensure that the nodes do not have any alarms raised, and that they are configured correctly. Record the current status, so you can compare it to the node status following the upgrade to verify that the upgrade proceeded correctly.

Note: The following pre-checks apply to Multiservice Switch 15000/Media Gateway 15000 nodes in a UA-IP solution. Solutions using AAL2, SPVCs for VoIP, ASPEN signalling and/or electrical TDM cards will require additional pre-checks of the related components.

Prerequisites

- Save the information gathered in the following procedure to verify the success of the upgrade. To save the information to a file if you are using Nortel Networks Preside Multiservice Data Manager (MDM), select Command Console, select **Log to File** from the File menu and set the options in the Log to File dialog as required. If you are not using Command Console, use the standard UNIX logging functionality.
- If any of the components displayed in the following procedure are not enabled or have alarms, investigate the cause and correct the problem before proceeding with the hitless software migration. The node that you are upgrading and all of the nodes connected to it must be free of alarms.

- 1 Verify that the disk and file systems are synchronized:
display FileSystem syncStatus
- 2 Verify that the syncProgress between the disk and the file system is 100%:
display FileSystem syncProgress
- 3 Ensure that network synchronization on the system is enabled, unlocked, synchronized, and free of alarms:
display NetworkSynchronization
- 4 Ensure that there is no provisioning activity occurring on the control processors by verifying that the *provisioningActivity* value is none:
display prov provisioningActivity

- 5 Ensure that there is no provisioning activity occurring on the control processors by verifying that the *standbyCpActivity* value is none:

display prov standbyCpActivity

- 6 Ensure that there is no provisioning activity occurring on the control processors by verifying that the *standbyCpActivityProgress* value is n/a:

display prov standbyCpActivityProgress

- 7 Ensure that there is no provisioning activity occurring on the control processors by verifying that there is either no value for the *provisioningSession* or the value is the same as the value for Preside MDM server session:

display prov provisioningSession

Note: To find the value of the Preside MDM session, issue the **me** command. An empty value or a value the same as your session is the expected response.

- 8 Ensure that there is no provisioning activity occurring on the control processors by verifying that the *editViewAddedComponents* value is 0:

display prov editViewAddedComponents

- 9 Ensure that there is no provisioning activity occurring on the control processors by verifying that the *editViewDeletedComponents* value is 0:

display prov editViewDeletedComponents

- 10 Ensure that there is no provisioning activity occurring on the control processors by verifying that the *editViewChangedComponents* value is 0:

display prov editViewChangedComponents

- 11 Verify the status of the node's fabrics before migration:

display shelf fabriccard/* osistate

For both fabrics, the *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty. Both fabrics must be enabled and free of alarms.

The following shows sample output when you verify the status of the fabrics before migration:

```
> display shelf fabriccard/* osistate

Shelf FabricCard/*
-----
|FabricCard|osiAd|osiO|osiUs|osiAai|osiProc|osiCntr|osiAlar|osiS|osiUn
|           |min |per |age | 1 |       | 1 |   m |tby |knw
-----
|x           |unlck|ena |activ|       |       |       |       |nSet|false
|y           |unlck|ena |activ|       |       |       |       |nSet|false
```

- 12** Verify that all logical processors on the system are enabled, unlocked, and free of alarms:

display Lp/* osistate

The *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty. All of the logical processors must be enabled and free of alarms.

The following shows sample output for this command:

```
> display Lp/* osistate

Lp/*
=====
|Lp|osiAd|osiO|osiUs|osiAvai|osiProc|osiCntr|osiAlar|osiS|osiUn
|  |min |per |age | 1 |       | 1 |   m |tby |knw
=====
| 0|unlck|ena |activ|       |       |       |       |serv|false
| 8|unlck|ena |activ|       |       |       |       |serv|false
| 9|unlck|ena |activ|       |       |       |       |serv|false
|14|unlck|ena |activ|       |       |       |       |serv|false
```

- 13**



CAUTION

Possibility of non-hitless software migration

Any card that does not have equipment protection enabled will undergo a non-hitless software upgrade during the migration and experience an outage. If there is a card that has equipment protection configured on it, but has a value of *nset* or *!N* equipment protection displayed in the *osiStby* column, that protection pair will also undergo a service outage.

Investigate why that value is being displayed and correct the problem before proceeding with a hitless software migration.

Verify that the equipment protection has been configured properly and all spared cards are ready to take over:

display Shelf Card/* SparedServices

All cards configured with equipment protection should have a value of *serv*. All standby function processors should have a value of *hot* indicating *hot standby*.

The *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty.

The following shows sample output when you verify that the equipment protection is configured properly, and all spared cards are ready to take over:

```
> display Shelf Card/* SparedServices
```

Card	osiAd min	osiO per	osiUs age	osiAvai l	osiProc	osiCntr l	osiAlar m	osiS tby	osiUn knw
0	unlck	ena	activ					hot	false
1	unlck	ena	activ					serv	false
8	unlck	ena	activ					serv	false
9	unlck	ena	activ					hot	false
14	unlck	ena	activ					serv	false
15	unlck	ena	activ					hot	false

- 14 Verify that all logical processors using the dual LP sparing model are enabled, unlocked and free of alarms:

display Dlep/* osistate

The following shows sample output for this command:

```
> display Dlep/* osistate
```

Dlep/*	osiAd min	osiO per	osiUs age	osiAvai l	osiProc	osiCntr l	osiAlar m	osiS tby	osiUn knw
6	unlck	ena	activ					nSet	false

- 15 If the node is connected with GigE to a Passport 8600 node, verify that all the Ethernet ports configured on the system are enabled, unlocked and free of alarms:

display Lp/* Ethernet/* osistate

The following shows sample output for this command:

```
> display Lp/* Ethernet/* osistate

Lp/* Eth/*
+====+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|Lp|Eth|osiAd|osiO|osiUs|osiAvai|osiProc|osiCntr|osiAlar|osiS|osiUn|
|   |   |min  |per  |age  |   1   |   |   1   |   m   |tby  |knw  |
+====+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|14| 0|unlck|dis  |idle |depend |   |   |   |   |false|
|14| 1|unlck|ena  |busy |   |   |   |   |   |false|
|15| 0|unlck|ena  |busy |   |   |   |   |   |false|
|15| 1|unlck|ena  |busy |   |   |   |   |   |false|
|15| 3|unlck|ena  |busy |   |   |   |   |   |false|
```

- 16 Verify that all the *Sonet* ports configured on the system are enabled, unlocked, and free of alarms:

display Lp/* Sonet/* osistate

The *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty. All of the *SONET* ports must be enabled and free of alarms.

The following shows sample output for this command:

```
5> display Lp/* Sonet/* osistate
Lp/* Sonet/*
-----
|Lp|Sonet|osi  |osi  |osi  |osi  |osi  |osi  |osi  |osi  |osi  |
|   |   |Admin|Oper|Usage|Avail|Proc |Cntr|Alarm|Stby |Unknw|
-----
|2  | 1  |unlck|ena  |busy |   |   |   |   |   |false|
|2  | 2  |unlck|ena  |busy |   |   |   |   |   |false|
|3  | 1  |unlck|ena  |busy |   |   |   |   |   |false|
|3  | 2  |unlck|ena  |busy |   |   |   |   |   |false|
|8  | 0  |unlck|ena  |busy |   |   |   |   |   |false|
```

- 17 Verify that there are no shelf hardware failures.

display sh hardware

```

d sh hardware

Shelf
  hardwareFailures =
ok   2004-09-09 20:03:32.53

2> h sh hard
Shelf
  Attribute      hardwareFailures (hwFailures)
  Access         Read:  passive      Write: not allowed
  Criticality    none
  Type           SET OF Enumeration
  Values
card,powerConverter,coolingUnit,terminatorCard,fan,
powerSupply,fabricCard,macAddressCard,alarmBitsCard
Default

```

- 18** Display the *Laps* components to identify any *Laps* components that have any faults or a manual override associated with them.

Note: Use the `-noTabular` option to view the following hidden attributes: *osiUnknw*, *osiStby*, *osiAlarm*, *osiCntrl*, *osiProc*, *osiAvail*, *mmAlarm*, *pfAlarm* and *timeUntilRestore*.

display Laps/*

The *Laps* component should be unlocked, enabled, working, and protected.

Acceptable values for the operational attribute *NearEndRequest* (*neReq*) are "NoRequ" (noRequest) and "doNotR" (doNotRevert).

The following shows a sample output for this command:

```
display Laps/*
```

Laps	osiAd min	osiO per	osiUs age	neRxLi ne	neReq	neReqC han	feReq	feReqC han	sdOnLin es	switchovers
200	unlck	ena	busy	protec	doNotR	workin	noRequ	protec		1
201	unlck	ena	busy	protec	doNotR	workin	noRequ	protec		1
202	unlck	ena	busy	protec	doNotR	workin	noRequ	protec		1
203	unlck	ena	busy	protec	doNotR	workin	noRequ	protec		1
600	unlck	ena	busy	workin	noRequ	protec	noRequ	protec		4
601	unlck	ena	busy	workin	lockou	protec	noRequ	protec		2
602	unlck	ena	busy	protec	manual	workin	doNotR	workin		1

- 19** For each *Laps* component listed in the output, whose values for *neReq* are "lockou" (lockoutOfProtection) or "manual", remove this state of line automatic protection switching (LAPS):

clear Laps/<laps_inst>

In the sample command output for step 18, the clear command would be needed for *Laps/601* and *Laps/602*.

- 20** Verify that the *lop*, *ais*, *rfi*, *slm*, *txAis*, and *txRdi* attributes of the *Laps Sts* components have a value of *off*.

display Laps/* Sts/0

The *osiAdmin* column should contain only *unlck* values. All of the attributes from *lop* to *txRdi* should have a value of *off*.

The following shows sample output for this command:

```
> display Laps/* Sts/0

Laps/* Sts/0
  Use -noTabular to see the many hidden attributes.
-----+-----
| Laps | osiAd | osiO | osiUs | snmpOp | lop | ais | rfi | slm | txA | txR | pefs | pc
|      | min  | per  | age  | erStat |    |    |    |    | is  | di  |      | 
|      |      |      |      | us     |    |    |    |    |    |    |      | 
-----+-----
| 800 | unlck | ena  | busy | up     | off | off | off | off | off | off | 215 | 
| 802 | unlck | ena  | busy | up     | off | off | off | off | off | off | 279 | 
| 803 | unlck | ena  | busy | up     | off | off | off | off | off | off | 279 |
```

- 21** Verify that the *Laps* components are enabled, unlocked, and free of alarms:

display Laps/* osistate

The *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty. All of the *Laps* components must be enabled and free of alarms.

The following shows sample output for this command:

```
> display Laps/* osistate

Laps/*
-----+-----
| Laps | osiAd | osiO | osiUs | osiAvai | osiProc | osiCntr | osiAlar | osiS | osiUn
|      | min  | per  | age  | l       |          | l       | m       | tby  | knw
|      |      |      |      |         |          |         |         |      | 
-----+-----
| 800 | unlck | ena  | busy |         |          |         |         | nSet | false
| 802 | unlck | ena  | busy |         |          |         |         | nSet | false
| 803 | unlck | ena  | busy |         |          |         |         | nSet | false
```

- 22** If *DS3* components have been configured, verify that the components are enabled, unlocked, and free of alarms:

display lp/* ds3/* osistate

The *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty. All of the *DS3* components must be enabled and free of alarms.

The following shows sample output for this command:

```
> display lp/* ds3/* osistate
```

Lp/* DS3/*

Lp	DS3	osiAd min	osiO per	osiUs age	osiAvai l	osiProc	osiCntr l	osiAlar m	osiS tby	osiUn knw
10	0	unlck	ena	busy					nSet	false
10	1	unlck	ena	busy					nSet	false
14	0	unlck	ena	busy					nSet	false
14	1	unlck	ena	busy					nSet	false

- 23** If *DS1* components have been configured, verify that the components are enabled, unlocked, and free of alarms:

display lp/* ds3/* ds1/* osistate

The *osiAdmin* column should contain only *unlck* values. The *osiAvail* column should be empty. All of the *DS1* components must be enabled and free of alarms.

The following shows sample output for this command:

```
> display lp/* ds3/* ds1/* osistate
```

Lp/* DS3/* DS1/*

Lp	DS3	DS1	osiAd min	osiO per	osiUs age	osiAvai l	osiProc	osiCntr l	osiAlar m	osiS tby	osiUn knw
14	0	1	unlck	ena	busy					nSet	false
14	0	2	unlck	ena	busy					nSet	false
14	0	3	unlck	ena	busy					nSet	false
14	0	4	unlck	ena	busy					nSet	false
14	0	5	unlck	ena	busy					nSet	false

- 24** If *DS3 DS1 Chan* components have been configured, verify that the components are enabled, unlocked, and free of alarms:

display lp/* ds3/* ds1/* chan/* osistate

The `osiAdmin` column should contain only `unlck` values. The `osiAvail` column should be empty. All of the *DS3 DS1 Chan* components must be enabled and free of alarms.

The following shows sample output for this command:

```
> display lp/* ds3/* ds1/* chan/* osistate
```

Lp/*	DS3/*	DS1/*	Chan/*	osi Admin	osi Oper	osi Usage	osi Avail	osi Proc	osi Cntrl	osi Alarm	osi Stby	osi Unkn
14	0	1	0	unlck	ena	busy					nSet	fals
14	0	2	0	unlck	ena	busy					nSet	fals
14	0	3	0	unlck	ena	busy					nSet	fals
14	0	4	0	unlck	ena	busy					nSet	fals

- 25** If *DS3 IMA* components have been configured, verify that the components are enabled, unlocked, and free of alarms:

display lp/* ds3/* ima/* osistate

The `osiAdmin` column should contain only `unlck` values. The `osiAvail` column should be empty. All of the *DS3 IMA* components must be enabled and free of alarms.

The following shows sample output for this command:

```
> display lp/* ds3/* ima/* osistate
```

Lp/*	DS3/*	Ima/*	osiAd min	osiO per	osiUs age	osiAvai l	osiProc	osiCntr l	osiAlar m	osiS tby	osiUn knw
14	0	0	unlck	ena	busy					nSet	false
14	0	1	unlck	ena	busy					nSet	false
14	0	2	unlck	ena	busy					nSet	false
14	1	0	unlck	ena	busy					nSet	false
14	1	1	unlck	ena	busy					nSet	false
14	1	2	unlck	ena	busy					nSet	false

- 26** If *DS3 IMA LINK* components have been configured, verify that the components are enabled, unlocked, and free of alarms:

display lp/* ds3/* ima/* lk/* osistate

The `osiAdmin` column should contain only `unlck` values. The `osiAvail` column should be empty. All of the *DS3 IMA* components must be enabled and free of alarms.


```

> display atmif/* uni sig/(operatingmode = normal) osistate

AtmIf/* Uni Sig
-----
|AtmIf|osiAd|osiO|osiUs|Response
|      | min |per | age |
-----
| 215|unlck|ena |activ|

```

- 29** Verify that the *ILMI* channel osistate for the *AtmInterface* is enabled and unlocked:

display atmif/* uni ilmi/(operatingMode = addressRegEnabled) osistate

The osiAdmin column should contain only *unlck* values. All of the *ILMI* components must be enabled.

Note: If *ILMI* is not configured, disabled is a valid osiState.

The following shows sample output for this command:

```

10> display atmif/* uni ilmi/(operatingMode = addressRegEnabled)
osistate

AtmIf/* Uni Ilmi
-----
AtmIf|osiAd|osiO|osiUs|Response
|      | min |per | age |
-----
 45|unlck|dis |idle |
 48|unlck|dis |idle |
 49|unlck|dis |idle |
 55|unlck|dis |idle |
 59|unlck|ena |activ|
 63|unlck|ena |activ|
100|unlck|ena |activ|
101|unlck|ena |activ|
212|unlck|dis |idle |

```

- 30** Verify that all *PNNI signalling* components are enabled and unlocked:

display AtmIf/* Pnni Sig osistate

The osiAdmin column should contain only *unlck* values. All of the *PNNI Signalling* components must be enabled.

The following shows sample output for this command:

```

10> display AtmIf/* Pnni Sig osistate

AtmIf/* Pnni Sig
-----
AtmIf|osiAdmin|osiOper|osiUsage|Response
-----
201|unlck|ena|activ|
202|unlck|ena|activ|

```

- 31** Verify that the *Atmmpe* components are unlocked, enabled, and active:

display Atmmpe/* osistate

The following shows sample output for this command:

```

> display Atmmpe/* osistate

AtmMpe/*
+====+-----+-----+-----+-----+
|AtmMpe|osiAd|osiO|osiUs|Response|
|      |min  |per  |age  |      |
+====+-----+-----+-----+-----+
|      |unlck|ena  |activ|      |
| 800 |unlck|ena  |activ|      |
| 810 |unlck|ena  |activ|      |
| 900 |unlck|ena  |activ|      |
|1000 |unlck|ena  |activ|      |
|1001 |unlck|ena  |activ|      |
|1100 |unlck|ena  |activ|      |
|1101 |unlck|ena  |activ|      |
|1400 |unlck|ena  |activ|      |
|1401 |unlck|ena  |activ|      |
|1402 |unlck|ena  |activ|      |
|1420 |unlck|ena  |activ|      |
|1421 |unlck|ena  |activ|      |
|1422 |unlck|ena  |activ|      |
|1500 |unlck|ena  |activ|      |
|1501 |unlck|ena  |activ|      |
|1502 |unlck|ena  |activ|      |
|1520 |unlck|ena  |activ|      |
|1521 |unlck|ena  |activ|      |
|1522 |unlck|ena  |activ|      |

```

- 32** Verify that the *Ac* components are unlocked, enabled, and active:

display Atmmpe/* Ac/* osistate

The following shows sample output for this command:

```

> display Atmmpe/* Ac/* osistate

AtmMpe/* Ac/*
+====+-----+-----+-----+-----+
|AtmMpe|Ac |osiAd|osiO|osiUs|Response
|      |  |  min | per | age  |
+====+-----+-----+-----+-----+
|   800| 1|unlck|ena |activ|
|   800| 2|unlck|ena |activ|
|   800| 3|unlck|ena |activ|
|   810| 1|unlck|ena |activ|
|   900| 1|unlck|ena |activ|
|  1000| 1|unlck|ena |activ|
|  1001| 1|unlck|ena |activ|
|  1100| 1|unlck|ena |activ|
|  1101| 1|unlck|ena |activ|
|  1400| 1|unlck|ena |activ|
|  1401| 1|unlck|ena |activ|
|  1402| 1|unlck|ena |activ|
|  1420| 1|unlck|ena |activ|
|  1421| 1|unlck|ena |activ|
|  1422| 1|unlck|ena |activ|
|  1500| 1|unlck|ena |activ|
|  1501| 1|unlck|ena |activ|
|  1502| 1|unlck|ena |activ|
|  1520| 1|unlck|ena |activ|

```

- 33** If the Multiservice Switch 15000/Media Gateway 15000/20000 node is connected with GigE to a Passport 8600, node verify that all *LanApplications* components are enabled and unlocked:

display La/* osistate

The following shows sample output for this command:

```

> display La/* osistate

La/*
+====+-----+-----+-----+-----+
|La |osiAd|osiO|osiUs|Response
|  |  min | per | age  |
+====+-----+-----+-----+-----+
|  0|unlck|ena |busy |
|140|unlck|dis |idle |
|141|unlck|ena |busy |
|150|unlck|ena |busy |
|151|unlck|ena |busy |
|153|unlck|ena |busy |

```

- 34** Verify that all *VirtualRouter* components are unlocked, enabled and active:

display Vr/* osistate

The following shows sample output for this command:

```
> display Vr/* osistate
```

Vr/*

Vr	osiAd min	osiO per	osiUs age	Response
0	unlck	ena	activ	
VOIP	unlck	ena	activ	

- 35** Verify that all *ProtocolPorts* components are unlocked, enabled and active:

display Vr/* Pp/* osistate

The following shows sample output for this command:

```
> display Vr/* Pp/* osistate
```

Vr/* Pp/*

Vr	Pp	osiAd min	osiO per	osiUs age
0	ATMMPE	unlck	ena	activ
0	OAMENET0	unlck	ena	activ
VOIP	8600_1A	unlck	dis	idle
VOIP	8600_1B	unlck	ena	activ
VOIP	8600_2A	unlck	ena	activ
VOIP	8600_2B	unlck	ena	activ
VOIP	9K_1_CC	unlck	ena	activ
VOIP	9K_1_OAM	unlck	ena	activ
VOIP	9K_2_CC	unlck	ena	activ
VOIP	9K_2_OAM	unlck	ena	activ
VOIP	9K_3_CC	unlck	ena	activ
VOIP	9K_3_OAM	unlck	ena	activ
VOIP	9K_4_CC	unlck	ena	activ
VOIP	9K_4_OAM	unlck	ena	activ
VOIP	ADTECH#8	unlck	ena	activ
VOIP	NSTA12_IPMCONN	unlck	ena	activ
VOIP	NSTA12_MG	unlck	ena	activ
VOIP	NSTA12_SG	unlck	ena	activ
VOIP	PP_D6_1000_CC	unlck	ena	activ
VOIP	PP_D6_1001_CC	unlck	ena	activ
VOIP	PP_D7_800_CC	unlck	ena	activ

- 36** Verify that all Ip components are unlocked, enabled and active:

display Vr/* Ip osistate

The following shows sample output for this command:

```
> display Vr/* Ip osistate
```

Vr/* Ip				
Vr	osiAd min	osiO per	osiUs age	Response
0	unlck	ena	activ	
VOIP	unlck	ena	activ	

- 37** If the Multiservice Switch 15000/Media Gateway 15000/20000 node is connected with GigE to a Passport 8600 node, verify that all *Ospf* components are unlocked, enabled, and active:

display Vr/* Ip Ospf osistate

The following shows sample output for this command:

```
> display Vr/* Ip Ospf osistate
```

Vr/* Ip Ospf				
Vr	osiAd min	osiO per	osiUs age	Response
VOIP	unlck	ena	activ	

- 38** If the Multiservice Switch 15000/Media Gateway 15000/20000 is connected with GigE to a Passport 8600, verify that the state of the *Ospf neighbor* components is "full":

display Vr/* Ip Ospf Nbr/* state

The following shows sample output for this command:

```
> display Vr/* Ip Ospf Nbr/* state
```

Vr/* Ip Ospf Nbr/*,*				
Vr	address	address LessInd ex	state	
1	14.22.8.2	0	full	
1	14.22.9.2	0	full	
1	18.22.65.1	0	full	

39 Verify that the static routes are up.

The "osiOper" (operational state) of all static routes are *ena* (enabled). In addition, if a protected default route (addr = 0.0.0.0 and mask = 0.0.0.0), the "protL" (protection level) must be "cardPro" (card protected).

display Vr/* Ip static routeEntry/* operationalState, protectionLevel

The following shows sample output for this command:

```
> display Vr/* Ip static routeEntry/* operationalState,protectionLevel
```

Vr/* Ip Static Route/*,*,*					
Vr	addr	mask	tos	osiO per	protL
VOIP	0.0.0.0	0.0.0.0	0	ena	cardPro
VOIP	10.0.32.0	255.255.240.0	0	ena	notApp

40 Verify that all *Nexthop* components under static routes have an operational status of enabled:

display Vr/VoIP Ip static route/* nexthop/* operationalState

The following shows sample output for this command:

```
Vr/VoIP Ip Static Route/*,*,* Nh/*
```

addr	mask	tos	Nh	osiO per
0.0.0.0	0.0.0.0	0	10.48.0.97	ena
0.0.0.0	0.0.0.0	0	10.48.0.129	dis
10.0.16.0	255.255.240.0	0	10.48.0.2	ena
10.0.32.0	255.255.240.0	0	10.48.0.10	ena
10.15.1.0	255.255.255.0	0	10.48.1.65	dis
10.16.16.0	255.255.240.0	0	10.48.0.2	ena
10.16.32.0	255.255.240.0	0	10.48.0.10	ena

41 Verify that all *Vsp* components are unlocked, enabled and active:

display Lp/* Vsp osistate (for VSP3 - NTHW84xx)
and/or

display Dlep/* Vsp osistate (for VSP3-0 - NTHW77xx)

The following shows sample output for the second command:

```

> display Dlep/* Vsp osistate

Dlep/* Vsp
-----
|Dlep|osiAd|osiO|osiUs|Response
|   |  min |per  |age  |
-----
|   6|unlck|ena  |activ|

```

- 42** Verify that all *ProcessingModule* components are unlocked, enabled and active:

display Lp/* Vsp PModule/* osistate (for VSP3 - NTHW84xx)
and/or

display Dlep/* Vsp PModule/* osistate (for VSP3-0 -
NTHW77xx)

The following shows sample output for the second command:

```

> display Dlep/* Vsp Pm/* osistate

Dlep/* Vsp PModule/*
-----
|Dlep|PModule|osiAd|osiO|osiUs|Response
|   |   |  min |per  |age  |
-----
| 6|   1|unlck|ena  |activ|
| 6|   2|unlck|ena  |activ|
| 6|   3|unlck|ena  |activ|
| 6|   4|unlck|ena  |activ|
| 6|   5|unlck|ena  |activ|
| 6|   6|unlck|ena  |activ|
| 6|   7|unlck|ena  |activ|
| 6|   8|unlck|ena  |activ|
| 6|   9|unlck|ena  |activ|
| 6|  10|unlck|ena  |activ|
| 6|  11|unlck|ena  |activ|
| 6|  12|unlck|ena  |activ|
| 6|  13|unlck|ena  |activ|
| 6|  14|unlck|ena  |activ|
| 6|  15|unlck|ena  |activ|
| 6|  16|unlck|ena  |activ|
| 6|  17|unlck|ena  |activ|
| 6|  18|unlck|ena  |activ|
| 6|  19|unlck|ena  |activ|
| 6|  20|unlck|ena  |activ|
| 6|  21|unlck|ena  |activ|
| 6|  22|unlck|ena  |activ|
| 6|  23|unlck|ena  |activ|

```

- 43** Verify that all *Nsta* components are unlocked, enabled and active:

display Nsta/* osistate

The following shows sample output for this command:

```
> display Nsta/* osistate

Nsta/*
-----
|Nsta |osiAd|osiO|osiUs|Response
|      | min |per | age |
-----
|  12 |unlck|ena |activ|
```

- 44** Verify that all *TDMAccessGroup* components are unlocked, enabled and active:

display Nsta/* vgs tag/* osistate

The following shows sample output for this command:

```
> display Nsta/* vgs tag/* osistate

Nsta/* Vgs Tag/*
-----
|Nsta | Tag |osiAd|osiO|osiUs|Response
|      |    | min |per | age |
-----
|  12 |  111|unlck|ena |idle |
|  12 |  122|unlck|ena |idle |
|  12 |  133|unlck|dis |idle |
```

- 45** Verify that all *Aal1Ces* components are unlocked and enabled:

display Aal1Ces/* osistate

The following shows sample output for this command:

```

> display AallCes/* osistate

AallCes/*
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|AallCes|osiAd|osiO|osiUs|osiAvai|osiProc|osiCntr|osiAlar|osiS|osiUn|
|      |min |per |age |   l   |      |   l   |   m   |tby |knw |
-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 10011|unlck|ena |activ|      |      |      |      |nSet|false|
| 10012|unlck|ena |activ|      |      |      |      |nSet|false|
| 10013|unlck|ena |activ|      |      |      |      |nSet|false|
| 10014|unlck|ena |activ|      |      |      |      |nSet|false|
| 10021|unlck|ena |activ|      |      |      |      |nSet|false|
| 10022|unlck|ena |activ|      |      |      |      |nSet|false|
| 10023|unlck|ena |activ|      |      |      |      |nSet|false|
| 10024|unlck|ena |activ|      |      |      |      |nSet|false|
| 10031|unlck|ena |activ|      |      |      |      |nSet|false|
| 10032|unlck|ena |activ|      |      |      |      |nSet|false|
| 10033|unlck|ena |activ|      |      |      |      |nSet|false|
| 10034|unlck|ena |activ|      |      |      |      |nSet|false|
| 10041|unlck|ena |activ|      |      |      |      |nSet|false|

```

- 46** Verify that all *IpMConn* components are unlocked, enabled and active:

display Nsta/* vgs IpMConn osistate

The following shows sample output for this command:

```

> display Nsta/* vgs IpMConn osistate

Nsta/* Vgs IpMConn
-----+-----+-----+-----+-----+
|Nsta |osiAd|osiO|osiUs|Response|
|      |min |per |age |      |
-----+-----+-----+-----+-----+
| 12 |unlck|ena |activ|      |

```

- 47** Verify that all *ControlConnection* components are unlocked, enabled and active:

display Nsta/* vgs Ctrl/* osistate

The following shows sample output for this command:

```
> display Nsta/* vgs Ctrl/* osistate

Nsta/* Vgs Ctrl/*
-----
|Nsta |Ctrl|osiAd|osiO|osiUs|Response
|    |   |min |per | age |
-----
|  12|mg  |unlck|ena |activ|
|  12|sg  |unlck|ena |activ|
```

48 Verify that all *vt1dot5* components are unlocked and enabled:

display Laps/* Sts/* vt1dot5/* osistate

The following shows sample output for this command:

```
> display Laps/* Sts/* vt1dot5/* osistate

Laps/* Sts/* Vt1dot5/*,*
-----
|Laps |Sts|l|m|osiAd|osiO|osiUs|osi |osi |osi |osi |osiS|osiUn
|    |  | | |min |per | age |Avail|Proc|Cntrl|Alarm|tby | knw
-----
|  120|  0|1|1|unlck|ena |busy |   |   |   |   |nSet|false
|  120|  0|1|2|unlck|ena |busy |   |   |   |   |nSet|false
|  120|  0|1|3|unlck|ena |busy |   |   |   |   |nSet|false
|  120|  0|1|4|unlck|ena |busy |   |   |   |   |nSet|false
|  120|  0|2|1|unlck|ena |busy |   |   |   |   |nSet|false
|  120|  0|2|2|unlck|ena |busy |   |   |   |   |nSet|false
|  120|  0|2|3|unlck|ena |busy |   |   |   |   |nSet|false
```

- 49** Verify that all *vt1dot5 DS1* components are unlocked and enabled:

display Laps/* Sts/* vt1dot5/* ds1/* osistate

The following shows sample output for this command:

```
> display Laps/* Sts/* vt1dot5/* ds1/* osistate

Laps/* Sts/* Vt1dot5/*,* DS1
-----
|Laps|Sts|l|m|osiAd|osiO|osiUs|osi|osi|osi|osi|osiS|osiUn|
|    |   | | |  min |per | age |Avail|Proc|Cntrl|Alarm|tby | knw |
-----
| 1300| 0|1|1|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|1|2|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|1|3|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|1|4|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|1|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|2|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|3|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|4|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|3|1|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|3|2|unlck|ena|busy|   |   |   |   |   |nSet|false|
```

- 50** Verify that all *vt1dot5 DS1 Chan* components are unlocked and enabled:

display Laps/* Sts/* vt1dot5/* ds1/* chan/* osistate

The following shows sample output for this command:

```
> display Laps/* Sts/* vt1dot5/* ds1/* chan/* osistate

Laps/* Sts/* Vt1dot5/*,* DS1 Chan/*
-----
|Laps|Sts|l|m|Chan|osiAd|osiO|osiUs|osi|osi|osi|osi|osiS|osiUn|
|    |   | | |   |  min |per | age |Avail|Proc|Cntrl|Alarm|tby | knw |
-----
| 1300| 0|1|1| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|1|2| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|1|3| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|1|4| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|1| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|2| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|3| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|2|4| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|3|1| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
| 1300| 0|3|2| 0|unlck|ena|busy|   |   |   |   |   |nSet|false|
```

- 51** Verify that all *CasDefn* components are unlocked, enabled and active:

display Nsta/* vgs casdefn/* osistate

The following shows sample output for this command:

```
> display Nsta/* vgs casdefn/* osistate

Nsta/* Vgs CasDefn/*
-----
|Nsta |CasDefn|osiAd|osiO|osiUs|Response
|      |      |min |per |age |
-----
|  12|      |0|unlck|ena |activ|
```

- 52** Verify that all *IsdnUserAdaption* components are unlocked, enabled and active:

display Nsta/* vgs iua/* osistate

The following shows sample output for this command:

```
> display Nsta/* vgs iua/* osistate

Nsta/* Vgs Iua
-----
|Nsta |osiAd|osiO|osiUs|Response
|      |min |per |age |
-----
|   2|unlck|ena |activ|
|  11|unlck|ena |activ|
```

- 53** Verify that all *Q921* components are unlocked, enabled and active:

display Nsta/* vgs q921/* osistate

The following shows sample output for this command:

```
> display Nsta/* vgs q921/* osistate

Nsta/* Vgs Q921/*
-----
|Nsta |Q921|osiAd|osiO|osiUs|Response
|      |      |min |per |age |
-----
|  12|  22|unlck|ena |activ|
```

- 54** If the node being migrated relies on OAM Ethernet connectivity, verify that the active control processor has Ethernet connections with a value of up:

display Lp/0 Oamenet/0 activeStatus

The following shows sample output for this command:

```
> display Lp/0 Oamenet/0 activeStatus
Lp/0 OamEnet/0
  activeStatus = available
```

Note: If the Multiservice Switch 15000/Media Gateway 15000 node is using in-band OAM, only the gateway node needs Ethernet connectivity. You may have an Ethernet connection to a remote node for emergency access.

- 55** If the node being migrated relies on OAM Ethernet connectivity, verify that the standby control processor has Ethernet connections with a value of up:

display Lp/0 Oamenet/0 standbyStatus

The following shows sample output for this command:

```
> display Lp/0 Oamenet/0 standbyStatus
Lp/0 OamEnet/0
  standbyStatus = available
```

- 56** Optionally, display, ping, and record information about the IP accessibility of the node to verify the reachability of the node:

list ac ipaccess/*

The following shows sample output for this command:

```
> list ac ipaccess/*
Ac IpAccess/10.0.0.0
Ac IpAccess/47.0.0.0
```

- 57** Verify and record information about the IP reachability of the first Preside MDM server from the node:

ping -trace -ip(<MDM1 IP>) Vr/0 Ip Icmp

The following shows sample output for this command:

```
> ping -trace -ip(10.47.0.3) Vr/0 Ip Icmp
Vr/0 Ip Icmp
  IP Trace Route for 10.47.0.3:
  Path taken:
  Hop 1:   10.47.0.3          (time = 1ms)
```

- 58** Verify and record information about the IP reachability of the second Preside MDM server from the node:

ping -trace -ip(<MDM2 IP>) Vr/0 Ip Icmp

In conjunction with step [57](#), ensure that both Preside MDM servers are connected to this node with as diverse paths as possible, and that each server is accessible.

The following shows sample output for this command:

```
ping -tr -ip(10.47.0.2) Vr/0 Ip Icmp
Vr/0 Ip Icmp
IP Trace Route for 10.47.0.2:
Path taken:
Hop 1: 10.47.0.2 (time = 1ms)
```

Variable values

Variable	Value
<laps_inst>	The instance value of the <i>Laps</i> component whose manual overrides you want to remove. This instance value is an integer between 0 and 15999.

HSM (Command Console) activation

Perform the HSM by setting the application version list, setting the patchlist, if required, and activating the provisioning changes. When the activation completes, the node will be running the new software.

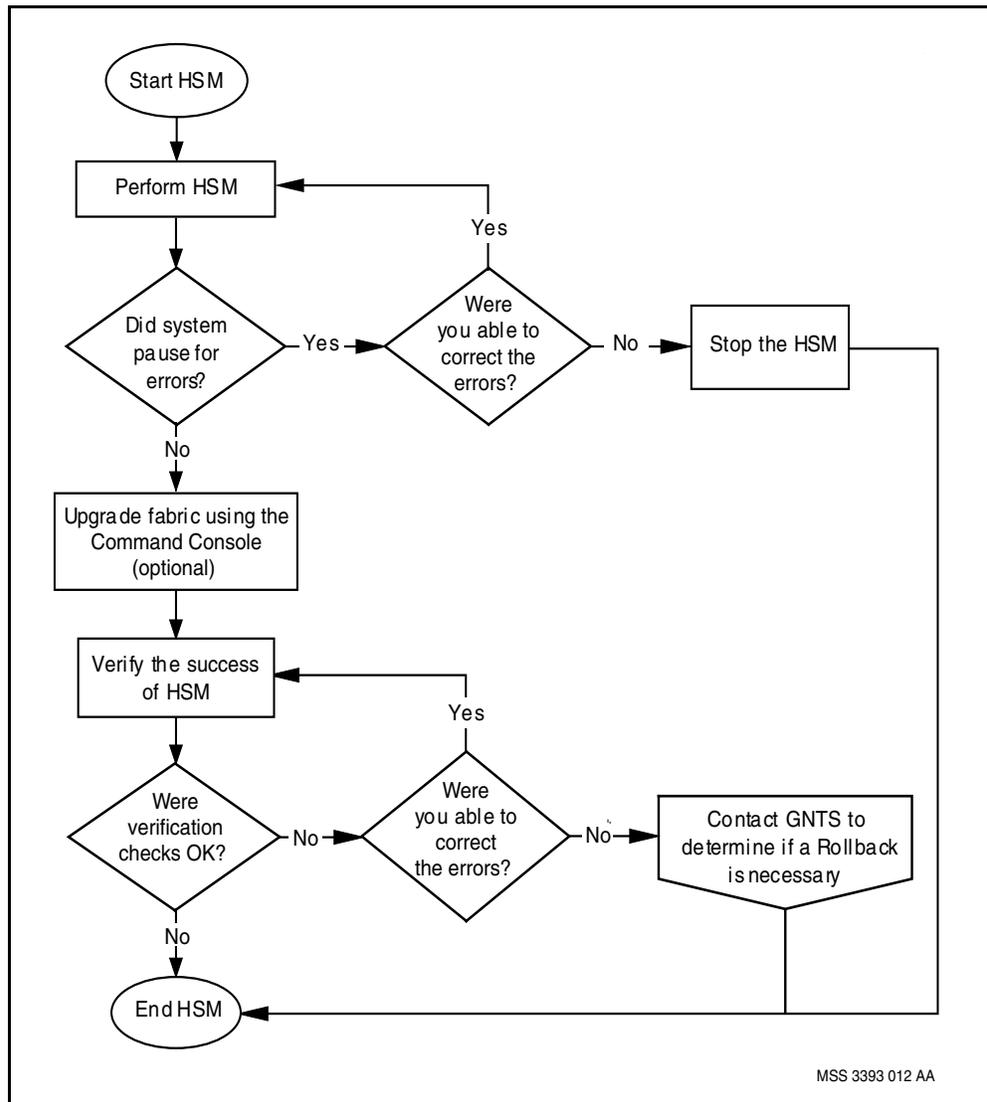
Prerequisites

- Complete the HSM pre-work. See [HSM \(Command Console\) pre-work on page 45](#) for more information.
- Upgrade the Multiservice Switch 15000/Media Gateway 15000 nodes in UA-IP, PT-IP, PT-AAL2, IAC or IAW solution networks one at a time in the order decided on when you performed in x.

HSM task flow

The task flow shows the sequence of procedures you need to perform the HSM. To link to any procedure, go to the [Work flow navigation on page 72](#).

HSM task flow



Work flow navigation

- [Perform HSM using Command Console on page 73](#)
- [Upgrade the fabric on page 89](#)
- [Verify the success of HSM on page 97](#)
- [Stop the HSM using Command Console on page 104](#)

Perform HSM using Command Console

Upgrade Multiservice Switch 15000/Media Gateway 15000/20000 nodes in UA-IP, PT-IP, PT-AAL2, IAC or IAW solution networks by setting the application version list, setting the patchlist, if required, and activating the provisioning changes. When the activation completes, the node will be running with the new software.

Prerequisites to performing the hitless software migration



CAUTION

Calls being setup are dropped

This strategy removes standby control and function processors from service. As a result, redundancy in the event of failure of the active shelf components is not available and some calls in the process of being set up (known as transient calls) are dropped. Stable calls are unaffected by the migration.

Undertake the procedures required by this strategy during low-traffic periods.

- Perform HSM Pre-work.
- Do not load the software application for the fabric. Refer to [Upgrade the fabric on page 89](#) for more information about upgrading the fabric firmware.
- Do not modify the “sw avl, pa” lists using the command “load -f (<view name>) prov”. When performing HSM using the Command Console, enter the new “sw avl, pa” lists manually. Use of the “load” command could result in a disruptive software migration.
- Perform this upgrade using the Command Console tool on Nortel Networks Preside Multiservice Data Manager (MDM) server rather than a Telnet session. Using the Command Console, ensures that you remain connected to the node and can monitor the CP switchover. For more information on opening the Command Console, see 241-6001-804 *Preside MDM Workstation Utilities User Guide*.
- The Multiservice Switch 15000/Media Gateway 15000/20000 node in UA-IP, PT-IP, PT-AAL2, IAC or IAW solution networks must contain two control processors (CP). One CP must be active and the other CP must be in standby mode.
- Hitless software migration only applies to FPs in a one-for-one equipment sparing configuration. The active FPs must be

provisioned for one-for-one equipment sparing. During the software migration, equipment protection is unavailable for those cards whose standby card is part of the migration shelf.

- While you perform software migration tasks, the system may interrupt the process to display warnings or notifications. Some of these notifications may require you to confirm your intent before continuing. Respond as required by the online instructions.
- You must have an advanced knowledge of Unix, the Multiservice Switch/Media Gateway software, and Succession portfolio architecture.
- Activate the same software applications in SN07 as are present in the current software release (SN06/SN06.2) to allow hitless software migration. These applications may include: base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces. WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.

Note: The ethernet application is required in SN07 to load software on 4pGigE function processors. However since the ethernet application is not present in releases prior to SN07, customers must use a specific pre-SN07 patch to perform a HSM from software releases earlier than SN07. Refer to step [4](#) of [Download software from the Preside MDM server on page 32](#) or step [6](#) in this procedure.

- Refer to the software downloads area of the Nortel Networks Web site (www.nortelnetworks.com) to determine the software patches that you need to add to the patchlist. If there are no patches listed for this release, it means that there are no patches currently required for this release.

From the node

- 1 Login to the node using the appropriate permissions.
- 2 Enter provisioning mode so that you can issue the appropriate commands:

start prov

The following shows sample output for this command:

```
7> start prov
Prov
The edit view differs from the current view.
Added 2 provisioning component(s) to the edit view.
```

Note: If the system indicates that the edit view and the current view are the same, proceed to step [4](#).

- 3 Copy the current view into the edit view to ensure that they are identical:

copy prov

Note: If you were referenced to this step as a method to abort the migration before activation, no outage will occur as you have not yet started the hitless software migration.

- 4 Display the current software application version list:

display -c Software avList

The following shows sample output for this command:

```
> display -c software avlist
Sw
  avList = base_CF0129E,      networking_CF0129E,    atmNetworking_CF0129E,
           ip_CF0129E,       wanDte_CF0129E,       ethernet_CF0129E,
           pvg_CF0129E,      aal1Ces_CF0129E
```

Note: If you are upgrading a Media Gateway 15000/20000 from SN06 or SN06.2 to SN07 in an UA-IP, PT-IP, PT-AAL2, IAC, or IAW solution networks, and there are 4pGigE Function Processors (4pGe FP) active on the node, go to step [6](#). If no 4pGe FPs are active, go to step [5](#) and skip step [6](#).

To perform a software upgrade on Media Gateway 7480 elements, or a non-hitless upgrade on Media Gateway 15000/20000 refer to NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide for information.

- 5 Replace all of the old application versions in the application version list with the new application versions:

set Software avList ! <new_applications>

The software applications you need to load are base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces. Do not add any other applications to the application version list. Go to step [7](#).

Note: Do not set the software applications for the fabric. Refer to [Upgrade the fabric on page 89](#) for more information about upgrading the fabric firmware.

```
> set software avlist ! base_CF0130E networking_CF0130E
atmNetworking_CF0130E
ip_CF0130E wanDte_CF0130E pvg_CF0130E aal1Ces_CF0130E
```

Note: You may need to set a different list of software application versions.

- 6 Replace all of the old application versions in the application version list with the new application versions:

set Software avList ! <new_applications>

set Software avList ethernet_CF01D

Note: For HSM to occur on Media Gateway15000/20000 in UA-IP, PT-IP, PT-AAL2, IAC or IAW solution networks, the new and old applications must be identical (except the load name, e.g. if SN06.2 applications are base, networking, ip, pvg, aal1Ces, atmNetworking, and wanDte then SN07 applications must be the same). However, 4pGe FP in SN07 requires an additional application (ethernet). Normally such an addition would cause a non hitless software migration to occur but patch baseFT397A_CE02S2D in SN06.2 (and its equivalent in SN06) allows the HSM to proceed without problem.

- 7 Check that the new applications are in the application version list and that the applications are the same as those listed in step [4](#) (apart from the load name):

display Software avList

The following shows sample output for this command:

```
> display software avlist
Sw
  avList = base_CF0130E,  networking_CF0130E,
atmNetworking_CF0130E,
           ip_CF0130E,    wanDte_CF0128H,  ethernet_CF0130E,
           pvg_CF0130E,   aallCes_CF0130E
```

Note 1: If you are upgrading a Media Gateway15000/20000 from SN06 or SN06.2 to SN07 in a PT-IP, PT-AAL2, IAC or IAW solution networks, go to step [9](#).

Note 2: If you upgrading a Multiservice Switch 15000 in UA-IP solution, go to step [8](#).

8



CAUTION

Clear the patch list prior to software migration

Regardless of whether patches are being applied, execute the following command to clear the patch list prior to software migration: **set software patchlist !**

See the Nortel Networks Multiservice Switch Release Notes for PCR 6.1 to determine the software patches required and apply the patches if needed for SN07 to the patchlist.

Note: This procedure applies only to non-disruptive patches.

set Software patchlist ! <patches>

Attention: If you are migrating directly from a pre-SN07 release to SN07 FVS with patches, you must apply a patch to your current release before downloading the SN07 FVS software.

Switches must be running baseFT420A_XXXX.

Once this patch is applied, download the SN07FVS software, including patch_CF01xxx. Then migrate to SN07FVS with patches as described in this procedure.

Contact Nortel Networks Global Network Product Support to obtain the appropriate baseFT420A_XXXX migration patch. The patch readme file contains download and activation instructions.

9

Verify that the patch list is set correctly:

display -c Software patchlist

The following shows sample output for this command:

```
PROV 2> d -c Sw patchlist
Sw
  patchlist = atmNetworkingFT032A,
             baseFT173A,          baseFT172A,
```

10**CAUTION****Potential interruption of calls in progress**

The software upgrade for Multiservice Switch 15000/Media Gateway 15000 nodes is hitless if the new provisioning view contains only the new AVL and optionally, a new patch list. If the system indicates that more than one provisioning change has occurred and one of those two changes was not clearing a patchlist and setting a new one, the node will go through a software migration that is not hitless and all calls on the node are interrupted.

If more than one provisioning change has occurred, repeat step [3](#) and then perform the procedure [Verify the success of HSM on page 97](#).

Verify that the *editViewChangedComponents* attribute indicates that you have made only one provisioning change:

The following shows a sample output for the command:

display -o prov

```
> display -o prov
Prov
  adminState = unlocked
  operationalState = enabled
  usageState = busy
  provisioningActivity = none
  activityProgress = n/a
  standbyCpActivity = none
  standbyCpActivityProgress = n/a
  committedFileName = UAIP_CF0129E_Complete.full.005
  currentViewFileName = UAIP_CF0129E_Complete.full.005
  lastUsedFileName = UAIP_CF0129E_Complete.full.005
  provisioningSession = Nmis Fmip Session/6
  provisioningUser = MAINT
  checkRequired = no
  confirmRequired = no
  editViewName = none
  editViewAddedComponents = 0
  editViewDeletedComponents = 0
  editViewChangedComponents = 1
  currentJournal = 0
  journalDisabledReason = not disabled
  restorePossible = no
```

11**CAUTION****Proceeding with a non-hitless software migration**

The nodes will go through a software migration that is not hitless and all calls on the node are interrupted if the system returns the following message:

All applications will experience service outage.

If this happens, fix the problem and repeat step [11](#) or stop the migration if you cannot fix the problem.

Perform a semantic check:

check prov

The node can continue with a hitless software migration if the system returns the following message:

Some applications may experience service outage.

The following shows sample output for this command:

```
PROV 2> check prov
Lp/0
  Warning:
    Reason: Lp 0 (card 0) will be reset when this view is activated.
Lp/8
  Warning:
    Reason: Lp 8 (card 8) will be reset when this view is activated.
Lp/10
  Warning:
    Reason: Lp 10 (card 10) will be reset when this view is activated.
Prov
  Warning:
    Activation will disrupt service for the following component(s):
      Lp/0,
      Lp/8,
      Lp/10
  Warning:
    Activation will result in a software migration system reload. Some
    applications may experience service outage.
```

12 Save the edit view with portable formats:

save -f(<filename>) -portable prov

Use a consistent naming convention for all view files and ensure the filename corresponds to the new load.

For example:

```
UAIP_CF0SXX_UNIQUE_IDENTIFIER
```

"UAIP" identifies the Succession Solution. "CF01SXX" identifies the Multiservice Switch 15000 software application version. The "UNIQUE_IDENTIFIER" is the part of the naming convention that helps identify the provisioning contained by a view.

13

**CAUTION****Unexpected messages about the logical processors**

If the system gives you unexpected messages about the logical processors during the migration, abort the migration. For more information see [Stop the HSM using Command Console on page 104](#).

Apply the changes:

activate -pause prov

Note: The system can pause for one of two reasons: the system has found a fault or an operator issued a pause command. If the system pauses because the operator has used the -pause command, the operator can issue the continue -prov command to continue the HSM.

Sample output for successful pause

```
PROV> activate -pause prov ... continued ...  
  
The software migration is paused, pause reason:  
Details:  
ACTIVATE -PAUSE PROV operator command  
  
To resume, type Continue Prov. To stop, type Stop Prov.
```

The following sample shows an example of a failed output for this command.

Sample output for failed pause

```
PROV> activate -pause prov ... continued ...
The software migration is paused, pause reason:
Details:
On Card 1: some appls(s) may not be ready for SO.
ACTIVATE -PAUSE PROV operator command.

To resume, type Continue Prov.  To stop, type Stop Prov.

PROV> continue prov
Prov
Continue Prov failed due to a pausable event, pause reason:
Details:
On Card 1: some appl(s) may not be ready for SO.
Use -force option to continue the migration.  To abort
migration type Stop Prov.
```

14



CAUTION

Unexpected messages about the logical processors

If the system gives you unexpected messages about the logical processors during the migration, abort the migration. For more information see [Stop the HSM using Command Console on page 104](#).



CAUTION

Exercise caution when using the continue -force prov command

Contact Nortel Networks Global Networks Technical Support (GNTS) for advice or assistance before issuing a **continue -force prov** command during a software migration pause.

Always issue a continue prov command:

continue prov

The migration is now taking place. The time required to complete the migration depends on the number of calls and components

that have been provisioned on the node. Generally, migrations take between fifteen minutes and three and a half hours.

Note 1: After you enter **activate prov**, after the CP switchover during the hitless software migration, connectivity between the node and Preside MDM server is temporarily lost. The active alarms for the node clear and the node appears grey in the Network Viewer until the connection is re-established. The connection between the node and the server re-establishes itself automatically within a minute. Messages, such as the following, may be observed on the Command Console and the system log display during this time:

```
(Command Console): CC_ERROR 1019 Passport
Register Command error: APPLICATION_ERROR 1122
FMIP connection locked or down, command
terminated
```

```
(System log display): CO: APPLICATION_ERROR 1112
Fdtr lost connection to DESIGN_2 W MSG
00000001 NMS ft1400-2 (25335) 15-13:37:02CO:
APPLICATION_ERROR 1111 Fdtr cannot connect to
DESIGN_2 because the connection was lost
```

Note 2: If there are any logical processors that cannot participate in the hitless software migration because of provisioning reasons (for example, they are unspared or in a 1 for N configuration) or because of operational reasons (for example, a standby card is unavailable), the system identifies these logical processors.

Note 3: If the list of logical processors changes during the software migration, the system generates a *Migration Visible Alarm*, which pauses the software migration. You have three options at this point, abort (**stop prov**), fix the problem and continue (**continue -force prov**), or ignore the problem and continue (**continue -force prov**).

You can choose to abort the migration at this time. For more information, see [Stop the HSM using Command Console on page 104](#). You can choose to continue the migration by typing **continue -force prov**.

- 15 To monitor the progress of the migration, enter the following command:

display -o prov

The results of this command are constantly updated in operational mode. Even when the node is reconnecting, you can use this command to monitor the upgrade.

You can continue to issue this command up until you lose connectivity to the node. When the active control processor begins to load the software, connectivity is lost. After you lose connectivity, you will need to log back into the node (see step [16](#)). If you are using Preside MDM Command Console, the connection to the node is automatically re-established, but you will need to get back into provisioning mode. For more information, see step [17](#).

The following shows sample output for this command:

```
52> display -o prov
Prov
  adminState = unlocked
  operationalState = enabled
  usageState = busy
  provisioningActivity = activation
  activityProgress = software migration in progress
  standbyCpActivity = loading new software on CP
  standbyCpActivityProgress = 10%
  committedFileName = CF01S1A_with_base_Mar22_04.full.006
  currentViewFileName = CF01S1A_with_base_Mar22_04.full.006
  lastUsedFileName = CF01S1A_with_base_Mar22_04.full.006
  provisioningSession =
  provisioningUser = none
  checkRequired = no
  confirmRequired = no
  editViewName = CF01S1A_base_Mar22_04.full.006
  editViewAddedComponents = 0
  editViewDeletedComponents = 0
  editViewChangedComponents = 0
  currentJournal = 0
  journalDisabledReason = not disabled
  restorePossible = no
```

These four attributes describe the progress of the migration. They will be updated as the migration proceeds.



- 16** If using Telnet, when prompted, login to the node with the appropriate permissions.
- 17** Enter provisioning mode: **start prov**
- 18** Within 20 minutes of activating the new software and completing the software migration, confirm the changes to avoid a non-hitless rollback to the previously committed configuration:
confirm prov

The following shows sample output for this command:

```
PROV 3> confirm prov
Prov
    Activation confirmed. Rollback will not
occur.
```

- 19** Check that the edit view is the same as the current view:
copy prov

The message should confirm that both views are the same.

The following shows sample output for this command:

```
4> st pr
Prov
The edit view is identical to the current view.
    The current view needs to be semantically checked.
Issue:
    Copy Prov
    Check Prov
to correct. It may also be advisable to re-save
or re-commit.
```

- 20** Perform a semantic check on the changes: **check prov**
You may see warnings during the semantic check, but they will not disrupt service.

Note: If the semantic check fails, troubleshoot the problem using [Troubleshooting a software upgrade on page 127](#).

- 21** If the semantic check passes, save the view:

save prov

- 22** If the semantic check passes, commit the final version of the view:

commit prov

The following shows sample output for this command:

```
PROV 9> commit prov
Prov
    Saving the current view into CF0151A_base_Mar22_04.full.006
(with commit,portable formats) ...
Prov
    The committed file is CF0151A_base_Mar22_04.full.006.
```

A committed file is required in case of a node reset, at which time the committed view will be reloaded.

23 Verify that the edit view and the current view are the same:**display -o prov**

The following shows sample output for this command:

```
20> display -o prov
Prov
adminState = unlocked
operationalState = enabled
usageState = idle
provisioningActivity = none
activityProgress = n/a
standbyCpActivity = none
standbyCpActivityProgress = n/a
committedFileName = CF0151A_base_Mar22_04.full.006
currentViewFileName = CF0151A_base_Mar22_04.full.006
lastUsedFileName = CF0151A_base_Mar22_04.full.006
provisioningSession =
provisioningUser = none
checkRequired = no
confirmRequired = no
editViewName = CF0151A_base_Mar22_04.full.006
editViewAddedComponents = 0
editViewDeletedComponents = 0
editViewChangedComponents = 0
journalUsage = 0 %
journalDisabledReason = not disabled
restorePossible = no
```

**CAUTION****Do not enable autopatch feature in SN07 for Media Gateway 7480/15000/20000**

Media Gateway 7480/15000/20000 customers should NOT enable the auto patch application feature or perform hitless software FP patching in SN07 as outlined in the NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide. Media Gateway 7480 customers must still perform two upgrades: one from SN06 or SN06.2 to SN07 FCS and the second to apply patches in SN07 FCS. Before applying patches in SN07, Media Gateway 7480 customers must Download the Patch Av from the Multiservice Switch SDS in order to view the patches on the switch and enter provisioning mode so commands can be issued. See NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* for more details on how to apply patches in SN07.

Exit provisioning mode after the migration is complete:

end prov

Variable values

Variable	Value
<filename>	The name of the file that contains the committed or portable provisioning data. The variable must be between 1 and 31 characters in length. Use a consistent naming convention.
<new_applications>	A space-separated, case-sensitive list of application versions. The release is indicated by the version number after the underscore.

Variable values

Variable	Value
	<p>The applications required for Succession UA-IP are base, networking, atmNetworking, ip, wanDte, ethernet, pvg, and aal1Ces. The application version list must not contain any additional applications. <i>Note:</i> WanDte is not mandatory for all upgrades. It must only be downloaded and activated in SN07 if it is present in the pre-SN07 release.</p>
<patches>	<p>A space-separated, case-sensitive list of patches. The patches you need to add to the patch list are listed at the software downloads area of Nortel Networks website.</p>

Upgrade the fabric

You can upgrade the fabric firmware installed on Nortel Networks Multiservice Switch 15000 fabric cards to take advantage of enhancements and new functionality contained in later firmware releases. All software running on Multiservice Switch 15000 nodes is compatible with any firmware running on the fabric cards.



CAUTION

Loss of redundancy in the transport fabric

This upgrade strategy results in a loss of redundancy in the transport fabric.

Undertake the procedures required by this strategy during low-traffic periods.

Use this procedure to upgrade a Media Gateway 15000/20000 from SN06 or SN06.2 to SN07 in UA-IP, PT-IP, PT-AAL2, IAC, or IAW solution networks.

Prerequisites

- You do not need to upgrade the fabric card firmware every time you upgrade the control and function processor software. An alarm is raised by the system whenever a newer version of the fabric card firmware is available. To see if you need to upgrade the transport fabric firmware, see *Nortel Networks Multiservice Switch Release Notes PCR6.1*.
- The new fabric card firmware must be downloaded from a Nortel Networks Preside Multiservice Data Manager (MDM) server acting as the software distribution site (SDS). For more information on how to download from the SDS, see NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software*.
- You can install new fabric card firmware at any time during normal node operation. Installing the new fabric firmware during off-peak hours will limit loss of data on the fabric switchover.
- The node must contain two fabric cards. A single fabric card shelf cannot be upgraded.
- The fabric card that is receiving the new firmware version must be locked and must not be running any traffic or tests. The fabric card that is not receiving the new firmware version must be unlocked and enabled.

From the Command Console

- 1 Determine if a fabric upgrade is required for Media Gateway 15000/20000:

display Shelf Fabric/* banks

If the output is:

```
"recommendedVersionToInstall = Fabric software  
version is up to date".
```

a fabric upgrade is not required.

- 2 Display the attributes of the fabric card banks:

display Shelf FabricCard/<n> banks

The following shows sample output for this command:

```
1> d sh fa/x banks  
Shelf FabricCard/x  
fixedBankVersion = 8.2  
writableBankVersion = 9.3  
recommendedVersionToInstall = CF01S1A  
activeBank = writable  
bankOnShelfRestart = writable  
downloadProgressPercent = 100 %  
writableBankStatus = loaded  
ok 2004-02-23 16:57:25.02
```

- 3 Verify that the required fabric firmware version has been downloaded to the node:

list Sw Av/Fabric_<version>

The following shows sample output for this command:

```
2> l sw AV/fabric_CF01S1A  
Sw Av/FABRIC_CF01S1A  
Component has no operational subcomponents of the requested  
type.  
ok 2004-02-23 23:13:25.85
```

If the correct fabric firmware has not been downloaded to the node, see [Download software from the Preside MDM server on page 32](#).

- 4 Verify both fabrics are enabled and unlocked:

display Shelf FabricCard/*

The following shows a sample output for this command:

```

> display Shelf FabricCard/*

Shelf FabricCard/*
  Use -noTabular to see the many hidden attributes.
+=====+-----+-----+-----+-----+-----+-----+-----+
|FabricCard|osiAd|osiO|osiUs|productCode|serialNumber|failure|dependency|
|          |min  |per  |age  |          |          |Cause |InEffect  |
+=====+-----+-----+-----+-----+-----+-----+-----+
|x          |unlck|ena  |activ|NTHR16BA 03|NNTM03505HG8|      |          |
|y          |unlck|ena  |activ|NTHR16BA 03|NNTM03505J03|      |          |

```

- 5 Verify that the appropriate card ports on both fabrics are in service:

display Shelf FabricCard/* CardPort/*

All card ports without a *dependenciesInEffect* of *CardNotInstalled* must be unlocked and enabled.

The following shows sample output for this command:

```

4> d sh fa/* ca/*
Shelf FabricCard/* CardPort/*
Use -noTabular to see the many hidden attributes.
-----
|FabricCard|CardPort|osiAd|osiO|osiUs|failures|dependencies|selfTestEr
|           |          |min |per |age |InEffect|  InEffect  |rorCode
-----
|x          |          |0|unlck|ena |activ|          |          |          |0
|x          |          |1|unlck|ena |activ|          |          |          |0
|x          |          |2|unlck|ena |activ|          |          |          |0
|x          |          |3|unlck|ena |activ|          |          |          |0
|x          |          |4|unlck|dis |idle |          |cardNo    |          |0
|x          |          |5|unlck|dis |idle |          |cardNo    |          |0
|x          |          |6|unlck|ena |activ|          |          |          |0
|x          |          |7|unlck|ena |activ|          |          |          |0
|x          |          |8|unlck|dis |idle |          |cardNo    |          |0
|x          |          |9|unlck|dis |idle |          |cardNo    |          |0
|x          |          |10|unlck|dis |idle |          |cardNo    |          |0
|x          |          |11|unlck|dis |idle |          |cardNo    |          |0
|x          |          |12|unlck|dis |idle |          |cardNo    |          |0
|x          |          |13|unlck|dis |idle |          |cardNo    |          |0
|x          |          |14|unlck|dis |idle |          |cardNo    |          |0
|x          |          |15|unlck|dis |idle |          |cardNo    |          |0
|y          |          |0|unlck|ena |activ|          |          |          |0
|y          |          |1|unlck|ena |activ|          |          |          |0
|y          |          |2|unlck|ena |activ|          |          |          |0
|y          |          |3|unlck|ena |activ|          |          |          |0
|y          |          |4|unlck|dis |idle |          |cardNo    |          |0
|y          |          |5|unlck|dis |idle |          |cardNo    |          |0
|y          |          |6|unlck|ena |activ|          |          |          |0
|y          |          |7|unlck|ena |activ|          |          |          |0
|y          |          |8|unlck|dis |idle |          |cardNo    |          |0
|y          |          |9|unlck|dis |idle |          |cardNo    |          |0
|y          |          |10|unlck|dis |idle |          |cardNo    |          |0
|y          |          |11|unlck|dis |idle |          |cardNo    |          |0
|y          |          |12|unlck|dis |idle |          |cardNo    |          |0
|y          |          |13|unlck|dis |idle |          |cardNo    |          |0
|y          |          |14|unlck|dis |idle |          |cardNo    |          |0
|y          |          |15|unlck|dis |idle |          |cardNo    |          |0

```

- 6** Verify that the fabric ports on the cards are unlocked and enabled:

display Shelf Card/* fabricPort/* state

The following shows sample output for this command:

```

5> d sh ca/* fabric/* state
Shelf Card/* FabricPort/*
-----
|Card|FabricPort|osiAd|osiO|osiUs|osiAvai|osiProc|osiCntr|osiAlar|osiS|osiUn
|   |   |   min |per | age |   l   |   |   l   |   m   |tby | knw
-----
|   |   |   |   |   |   |   |   |   |   |   |
| 0|x   |unlck|ena |activ|   |   |   |   |nSet|false
| 0|y   |unlck|ena |activ|   |   |   |   |nSet|false
| 1|x   |unlck|ena |activ|   |   |   |   |nSet|false
| 1|y   |unlck|ena |activ|   |   |   |   |nSet|false
| 2|x   |unlck|ena |activ|   |   |   |   |nSet|false
| 2|y   |unlck|ena |activ|   |   |   |   |nSet|false
| 3|x   |unlck|ena |activ|   |   |   |   |nSet|false
| 3|y   |unlck|ena |activ|   |   |   |   |nSet|false
| 6|x   |unlck|ena |activ|   |   |   |   |nSet|false

```

7 Lock the fabric card to be upgraded:

lock Shelf FabricCard/<n>

The following shows sample output for this command:

```

6> lock sh fa/x
Shelf FabricCard/x; 2002-08-12 16:37:34.50
SET critical operator operationalCondition 00001000
ADMIN: locked          OPER: enabled          USAGE: idle
AVAIL:                 PROC:                 CNTRL:
ALARM:                 STBY: notSet          UNKNW: false
Id: 01000057 Rel:
Com: Fabric Card is locked
Int: 1/0/2/29063; bcsBus.cc; 677; ""
Shelf FabricCard/x
ok                      2002-08-12 16:37:34.50

Shelf FabricCard/x; 2002-08-12 16:37:34.50
SET critical equipment processorProblem 00001001
ADMIN: locked          OPER: disabled          USAGE: idle
AVAIL: dependency      PROC:                 CNTRL:
ALARM:                 STBY: notSet          UNKNW: false
Id: 01000058 Rel:
Com: Fabric Card is disabled

```

8 Install the new firmware on the locked fabric card.:

install -file(<version>) Shelf FabricCard/<n>

Wait a few minutes for the firmware to install and for the system to notify the operator of any errors or success.

The following shows sample output for this command:

```
7> install -file(CF01S1A) shelf fabriccard/x
Shelf FabricCard/x
The command has been issued to the fabric card.

7> install -file(CF01S1A) shelf fabriccard/x ... continued .
Shelf FabricCard/x
The command completed successfully.
ok                2004-02-24 13:09:57.99
```

- 9** Display the attributes of the fabric card banks to verify that the upgrade was a success. If the activeBank is set to *fixed*, the fabric card was not able to use the new firmware load and reverted back to the fixed bank. If this happens, contact GNTS.

display Shelf FabricCard/<n> banks

The following shows sample output for this command:

```
8> d sh fa/x banks
Shelf FabricCard/x
fixedBankVersion = 8.2
writableBankVersion = 9.4
recommendedVersionToInstall = Fabric software version is up
date.
activeBank                = writable
bankOnShelfRestart        = writable
downloadProgressPercent   = 100 %
writableBankStatus         = loaded
ok 2004-02-24 13:10:01.43
```

- 10** Verify that the fabric card operates correctly by running a manual test with the new firmware before you unlock and send live traffic over the card.

start Shelf FabricCard/<n> test

The following shows sample output for this command:

```
9> start shelf fabriccard/x test
Shelf FabricCard/x Test
Test started.

9> stop shelf fabriccard/x test ... continued ...
Shelf FabricCard/x Test
Test stopped.
ok                2004-02-24 13:12:19.40
```

The test results show whether the fabric card is operating correctly. You can view the results of a test while the bus test is still in progress or after it has completed.

display Shelf FabricCard/<n> Test results

If the entry in the *fabricSelfTestResults* attribute shows OK, the fabric card test has passed.

Note: If there are any problems with the upgraded fabric card, see NN10600-520 *Nortel Networks Multiservice Switch 7400/15000/20000 Fault and Performance Management: Troubleshooting* to interpret the test results.

11



CAUTION

Fabric card not returning to service

If the writable bank is set as the committed bank and it becomes corrupt, the fabric card might not come up. If the writable bank is corrupt, it must be replaced. Contact GNTS.

Unlock the fabric card to return it to service:

unlock Shelf FabricCard/<n>

Note: The fabric unlock command may time-out because the response is not returned until the fabric has finished running the diagnostics. This is normal.

12 Repeat step [4](#) through step [11](#) for the other fabric card.

13 If the test result is not OK, or if the writable bank appears not to be working correctly after being unlocked, lock the fabric and revert back to the fixed bank. To set fabric x from the writable bank to the fixed bank, enter the following commands:

Note: By setting *activeBank* to fixed, *bankOnShelfRestart* is also set to fixed.

```
lock Shelf FabricCard/<x>  
set sh fab/<x> activeBank fixed  
unlock sh fabric Card/<x>
```

Contact Nortel Networks Global Networks Technical Support (GNTS) to inform them about the fabric card upgrade failure.

Variable values

Variable	Value
<n>	The instance value of the fabric card, X or Y.
<version>	The firmware that is referred to by the <i>recommendedVersionToInstall</i> in 8 .

Verify the success of HSM

After completing the upgrade, verify that the HSM executed correctly and that the connections are functioning as they were prior to the upgrade.

Should your checks fail, decide whether or not you should continue with the HSM. If you are uncertain, contact GNTS for help deciding.

If an unexpected service disruption occurs with the HSM for Media Gateway 15000/20000 upgrades from SN06 or SN06.2 to SN07 in UA-IP, PT-IP, PT-AAL2, IAC, or IAW solution networks, contact Nortel Emergency Response at 1-800-4NORTEL option 9-1. If you are performing a software upgrade on Media Gateway 7480 elements, refer to the NN10600-272 *Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software* guide.

Prerequisites

- If your network has a lot of live connections, displaying the status of the logical processors, SONET ports, and ATM interfaces will result in large amounts of output.
- [Verify the status of the node before the upgrade on page 46](#)
- [Perform HSM using Command Console on page 73](#)

From the node

- 1 Login to the node using the appropriate permissions.
- 2 Verify that the disk and file systems are synchronized:
display FileSystem syncStatus
- 3 Verify the *syncProgress* between the disk and file system is 100%:
display FileSystem syncProgress
- 4 Ensure that network synchronization on the system is enabled, unlocked, synchronized, and free of alarms:
display NetworkSynchronization
- 5 Compare the status of the fabrics with the status recorded in step 11 of the procedure [Verify the status of the node before the upgrade on page 46](#):
d shelf fabriccard/* osistate

- 6 Compare the status of the logical processors with the status recorded in step [12](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Lp/* osistate
- 7 Compare the status of the equipment protection with the status recorded in step [13](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Shelf Card/* SparedServices
- 8 Compare the status of the logical processors using the dual L sparing model with the status recorded in step [14](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Dlep/* osistate
- 9 Compare the status of the Ethernet ports with the status recorded in step [15](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Lp/* Ethernet/* osistate
- 10 Compare the status of the SONET ports with the status recorded in step [16](#) of the procedure [Verify the status of the node before the upgrade.](#):
display Lp/* Sonet/* osistate
- 11 Compare the status of the *lop*, *ais*, *rfl*, *slm*, *txAis*, and *txRdi* attributes with the status recorded in step [20](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Laps/* Sts/0
- 12 Compare the status of the *Laps* components with the status recorded in step [21](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Laps/* osistate
- 13 If configured, compare the status of the *DS3* components with the status recorded in step [22](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display lp/* ds3/* osistate
- 14 If configured, compare the status of the *DS1* components with the status recorded in step [23](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display lp/* ds3/* ds1/* osistate

- 15 If configured, compare the status of the *DS3 DS1 Chan* components with the status recorded in step [24](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Ip/* ds3/* ds1/* chan/* osistate
- 16 If configured, compare the status of the *DS3 IMA* components with the status recorded in step [25](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Ip/* ds3/* ima/* osistate
- 17 If configured, compare the status of the *DS3 IMA LINK* components with the status recorded in step [26](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Ip/* ds3/* ima/* lk/* osistate
- 18 Compare the status of the *ATM interfaces* with the status recorded in step [27](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Atmlf/* osistate
- 19 Compare the status of the *UNI signalling* components with the status recorded in step [28](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display atmif/* uni sig/(operatingMode = normal) osistate
- 20 Compare the status of the *ILMI channel* with the status recorded in step [29](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display atmif/* uni ilmi/(operatingMode = addressRegEnabled) osistate
- 21 Compare the status of the *PNNI signalling* components with the status recorded in step [30](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Atmlf/* Pnni Sig osistate
- 22 Compare the status of the *Atmmpe* components with the status recorded in step [31](#) of the procedure [Verify the status of the node before the upgrade on page 46](#):
display Atmmpe/* osistate
- 23 Compare the status of the *Ac* components with the status recorded in step [32](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Atmmpe/* Ac/* osistate

- 24 If the Multiservice Switch 15000 node is connected with GigE to a Multiservice Switch 8600 node, compare the status of the *LanApplications* components with the status recorded in step 33 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display La/* osistate**
- 25 Compare the status of the *VirtualRouter* components with the status recorded in step 34 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Vr/* osistate**
- 26 Compare the status of the *ProtocolPorts* components with the status recorded in step 35 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Vr/* Pp/* osistate**
- 27 Compare the status of the *Ip* components with the status recorded in step 36 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Vr/* Ip osistate**
- 28 If the Multiservice Switch 15000 node is connected with GigE to a Multiservice Switch 8600 node, compare the status of the *Ospf* components with the status recorded in step 37 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Vr/* Ip Ospf osistate**
- 29 If the Multiservice Switch 15000 node is connected with GigE to a Multiservice Switch 8600 node, compare the status of the *Ospf neighbor* components with the status recorded in step 38 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Vr/* Ip Ospf Nbr/* state**
- 30 Compare the status of the static routes with the status recorded in step 39 of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Vr/* Ip static routeEntry/* operationalState, protectionLevel**
- 31 Compare the status of the *nextHop* components under static routes with the status recorded in step 40 of the procedure [Verify the status of the node before the upgrade on page 46](#). The components must have an operational status of enabled.
- display Vr/VoIP Ip static route/* nexthop/* operationalState**

- 32 Compare the status of the *Vsp* components with the status recorded in step 41 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Lp/* Vsp osiState (for VSP3 - NTHW84xx)
and
display Dlep/* Vsp osiState (for VSP3-0 - NTHW77xx)
- 33 Compare the status of the *ProcessingModule* components with the status recorded in step 42 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Lp/* Vsp Pm/* osiState (for VSP3 - NTHW84xx)
and
display Dlep/* Vsp Pm/* osiState (for VSP3-0 - NTHW77xx)
- 34 Compare the status of the *Nsta* components with the status recorded in step 43 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Nsta/* osiState
- 35 Compare the status of the *TDMAccessGroup* components with the status recorded in step 44 of the procedure [Verify the status of the node before the upgrade](#).
display Nsta/* vgs tag/* osiState
- 36 Compare the status of the *Aal1Ces* components with the status recorded in step 45 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Aal1Ces/* osiState
- 37 Compare the status of the *IpMConn* components with the status recorded in step 46 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Nsta/* vgs IpMConn osiState
- 38 Compare the status of the *ControlConnection* components with the status recorded in step 47 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Nsta/* vgs Ctrl/* osiState
- 39 Compare the status of the *vt1dot5* components with the status recorded in step 48 of the procedure [Verify the status of the node before the upgrade on page 46](#).
display Laps/* sts vt1dot5/* osistate
- 40 Compare the status of the *vt1dot5 DS1* components with the status recorded in step 49 of the procedure [Verify the status of the node before the upgrade on page 46](#).

- display Laps/* sts vt1dot5/* ds1/* osistate**
- 41 Compare the status of the *vt1dot5 DS1 Chan* components with the status recorded in step [50](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Laps/* sts vt1dot5/* ds1/* chan/* osistate**
- 42 Compare the status of the *CasDefn* components with the status recorded in step [51](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Nsta/* vgs casdefn/* osistate**
- 43 Compare the status of the *IsdnUserAdaption* components with the status recorded in step [52](#) of the procedure [Verify the status of the node before the upgrade](#).
- display Nsta/* vgs iua/* osistate**
- 44 Compare the status of the *Q921* components with the status recorded in step [53](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Nsta/* vgs q921/* osistate**
- 45 If the node being migrated relies on OAM Ethernet connectivity, compare the status of the active control processor with the status recorded in step [54](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Lp/0 Oamenet/0 activeStatus**
- 46 If the node being migrated relies on OAM Ethernet connectivity, compare the status of the standby control processor with the status recorded in step [55](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- display Lp/0 Oamenet/0 standbyStatus**
- 47 Compare the information about the IP reachability of the first Preside MDM server from the Multiservice Switch 15000/Media Gateway 15000 node with the information recorded in step [56](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- list ac ipaccess/***
- 48 Compare the information about the IP reachability of the first Preside MDM server from the Multiservice Switch 15000/Media Gateway 15000 node with the information recorded in step [57](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).
- ping -trace -ip(<MDM1 IP>) Vr/0 Ip lcmp**

- 49** Compare the information about the IP reachability of the second Preside MDM server from the Multiservice Switch 15000/Media Gateway 15000 node with the information recorded in step [58](#) of the procedure [Verify the status of the node before the upgrade on page 46](#).

```
ping -trace -ip(<MDM2 IP>) Vr/0 Ip Icmp
```

Stop the HSM using Command Console

During an upgrade of the nodes, you may encounter problems that require you to abort the upgrade. Generally, you want to abort a hitless software migration if service windows close, failures occur on other nodes, or a MigrationVisibleAlarm is raised, indicating an unknown impact or a known service affecting impact. If a MigrationVisibleAlarm is raised, the system pauses the migration. If you expected the alarm and want to continue with the migration, issue the **continue prov** command.

To abort a hitless software migration, you must issue the **stop prov** command. To do so without causing a service outage, you must issue this command either:

- when the migration is paused due to an **activate - pause prov** command or,
- during the migration switchover phase.

This phase is a short period of time during which the logical or migrating shelf (which held the former standby control processors and standby function processors, but which are now being loaded with the new software) takes control and becomes the service shelf. By issuing the command during this phase, you can roll back to the view before the software application version list has changed without any system impact.

Stopping the HSM

From the Command Console

1



CAUTION

Service Outage

Issuing the **stop prov** command after the migration switchover phase will cause a service outage.

Stop the migration:

stop prov

The following shows sample output for this command:

```
PROV 56> stop prov
Prov
ok                2001-08-10 15:29:10.78
PROV 57>
Fs; 2001-08-10 15:29:10.81
SET minor equipment processorProblem 70081019
ADMIN: unlocked      OPER: enabled      USAGE: active
AVAIL:               PROC:               CNTRL:
ALARM:               STBY: notSet      UNKNW: false
Id: 02BA            Rel: Lp/0
Com: File system lost disk synchronization.
Int: 0/0/0/0; sfsFileSys.cc; 1195; ""
PROV 57>
Fs Disk/1; 2001-08-10 15:29:10.82
CLR cleared processing underlyingResourceUnavail 00000000
ADMIN: unlocked      OPER: disabled     USAGE: idle
AVAIL:               PROC:               CNTRL:
ALARM:               STBY: notSet      UNKNW: false
Id: 02BB            Rel: Lp/0
Com: Cleared all alarms against standby DISK
Int: 0/0/0/0; sfsFileSys.cc; 1238; ""
PROV 57>
--- Response 43 continued ...
The software upgrade failed due to a failure in upgrading the
standby CP.
Failure reason: Standby Cp crashed. Software migration aborted.
command failed 2001-08-10 15:29:10.83
PROV 57>
Prov Migration; 2001-08-10 15:29:10.98
CLR cleared operator operationalCondition 70000033
ADMIN: unlocked      OPER: enabled      USAGE: active
AVAIL:               PROC:               CNTRL:
ALARM:               STBY: notSet      UNKNW: false
Id: 02BC            Rel: Lp/0
Com: Prov Migration component deleted.
Int: 0/0/2/6973; casAlarm.cc; 1132; S_PCR2.2.1.2
```

2 Exit provisioning mode.

end prov

3 To resume a hitless software migration after issuing the **stop prov** command, wait until both control processors' LEDs are green, with one flashing and one solid, and return to step [2](#) in [HSM \(Command Console\) activation on page 71](#).

Feature activation



CAUTION

No feature activation is required in an SN07 to SN07 UA-IP upgrade.

In an SN07 to SN07 UA-IP upgrade, no feature activation is required, assuming that the SN07 release was installed from initial commissioning.

The information in this chapter is for reference purposes only and if required, is meant to be used in consultation with GNTS.

The mandatory Nortel Networks Multiservice Switch 15000/Media Gateway 15000 features for a UA-IP solution in this release are:

- Active alarm list
- Debug stream activation
- Enabling the recurring fan alarm

The optional features in this release are:

- Optional Secure FTP activation for a SN07 migration
- Setting the Succession release name identification

The following table lists the SN07 features for a PT-IP, PT-AAL2, IAC, or IAW solution for the Media Gateway 15000/20000 and indicates whether they are mandatory or not.

Media Gateway features

Node	Feature	Mandatory
Media Gateway 15000/20000	Active alarm list	Yes
Media Gateway 15000/20000	Recurring fan alarm	Yes
Media Gateway 15000/20000	Secure FTP	No
Media Gateway 15000/20000	Debug stream	Yes

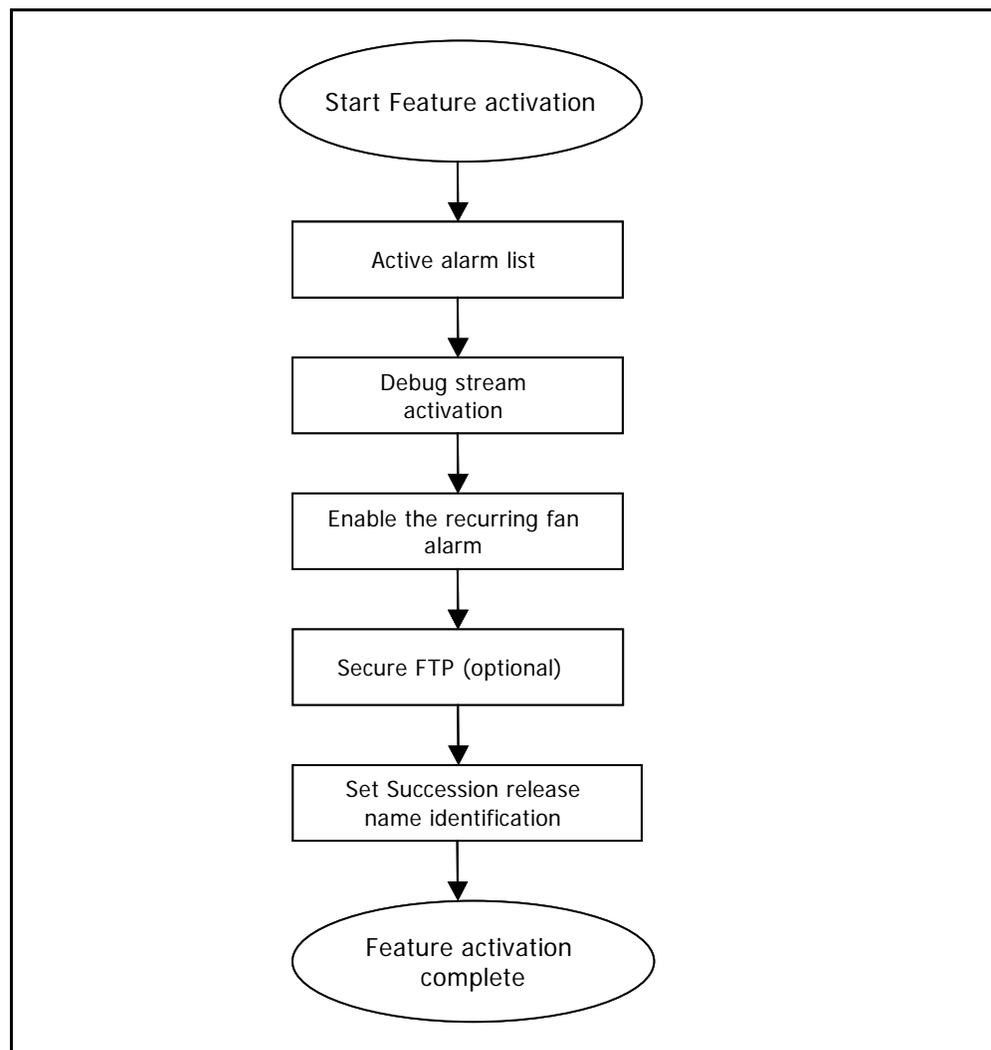
Prerequisites

- Complete the HSM. See [HSM \(Command Console\) activation on page 71](#).

Feature activation task flow

The task flow shows you the sequence of procedures you need to perform to activate new features in an SN07 to SN07 UA-IP upgrade for a Multiservice Switch 15000/Media Gateway 15000. To link to any procedure, go to the [Work flow navigation on page 109](#) that follows the flow chart.

Feature activation work flow



Work flow navigation

- [Active alarm list on page 110](#)
- [Debug stream activation on page 112](#)
- [Enabling the recurring fan alarm on page 114](#)
- [Secure FTP activation for a SN07 migration on page 116](#)
- [Setting the Succession release name identification on page 118](#)

Active alarm list

In a Succession solution, the Nortel Networks Preside Multiservice Data Manager (MDM) server collects alarm data from multiple Nortel Networks Multiservice Switch/Media Gateway nodes. This allows the Preside MDM active alarm list to contain more fault information, and operate more efficiently.

If your network is configured to collect alarm data from multiple Multiservice Switch/Media Gateway nodes you can view the active alarm list through any one of the nodes.

Note: The alarms will display in the local window if the *dataStreams* operational attribute for your log in session has "alarm sending" enabled.

Prerequisites

- SN07 software must be running on the Multiservice Switch 15000/Media Gateway 15000/20000 node.

From the node

1 Login to the node using the appropriate permissions.

2 Enter provisioning mode:

start prov

3 Configure the active alarm list feature:

set sw lpt/cp featurelist activeAlarmList

4 Perform a semantic check on the changes:

check prov

Note: If the semantic check fails, troubleshoot the problem using [Troubleshooting a software upgrade on page 127](#).

5 If the semantic check passes, activate the view:

activate prov

6 If the semantic check passes, confirm the final version of the view:

confirm prov

7 If the semantic check passes, save the view:

save prov

- 8 If the semantic check passes, commit the final version of the view:
commit prov
- 9 Verify that the you can see active alarms on the node:
r aas

Debug stream activation

In a Succession solution, Multiservice Switch 15000/Media Gateway 15000/20000 nodes can be enabled to collect crash data. To do this, the DCS debug collector agent queue must be configured to spool DCS debug stream data.

Prerequisites

- SN07 software must be running on the Multiservice Switch 15000/Media Gateway 15000/20000 node.

From the node

- 1 Login to the node using the appropriate permissions.
- 2 Enter provisioning mode:
start prov
- 3 Repeat this step for each FP you want to collect debug data for:
add lp/<n> eng ds/debug
- 4 Set the agent queue size override for the DCS debug stream. Repeat this step for each FP you want to collect debug data for:
set lp/<n> eng ds/debug ov agentQueueSize 50
- 5 Turn spooling on for the DCS debug stream:
set col/debug sp spooling on
- 6 Verify that the agent queue size override for the DCS debug stream has been set:
display lp/<*> eng ds/debug ov agentQueueSize
- 7 Verify that spooling has been turned on for the DCS debug stream. Repeat this step for each FP template you want to verify:
display col/debug sp
- 8 Perform a semantic check on the changes:
check prov
Note: If the semantic check fails, troubleshoot the problem using [Troubleshooting a software upgrade on page 127](#).
- 9 If the semantic check passes, activate the view: **activate prov**
- 10 If the semantic check passes, confirm the final version of the view:
confirm prov

- 11** If the semantic check passes, save the view:
save prov
- 12** If the semantic check passes, commit the final version of the view:
commit prov

Enabling the recurring fan alarm



CAUTION

The recurring fan alarm must not be activated for Media Gateway 7480.

Do not activate the recurring fan alarm for Media Gateway 7480 in SN07 in a PT-IP, PT-AAL2, IAC, or IAW solution network.

In a Succession solution, it is possible to configure a recurring fan failure alarm on Multiservice Switch 15000/Media Gateway 15000/20000 nodes. The alarm can be repeated periodically (every 8 hours with the same severity, and on the fourth occurrence the fan severity is increased to critical) until the problem is cleared. This raises the operator's attention to the problem and ensures action is taken before an outage occurs.

Prerequisites

- SN07 software must be running on the node.

From the node

1 Login to the node using the appropriate permissions.

2 Enter provisioning mode:

start prov

3 Configure the recurring fan alarm feature:

set shelf repeatFanAlarm ON

4 Perform a semantic check on the changes:

check prov

Note: If the semantic check fails, troubleshoot the problem using [Troubleshooting a software upgrade on page 127](#).

5 If the semantic check passes, activate the view:

activate prov

6 If the semantic check passes, confirm the final version of the view:

confirm prov

7 If the semantic check passes, save the view:

save prov

- 8** If the semantic check passes, commit the final version of the view:

commit prov

Secure FTP activation for a SN07 migration

The Secure FTP feature is optional and can be activated for Multiservice Switch/Media Gateway 7480/15000/20000.

When you configure secure FTP authentication on a node, encrypted passwords can be used during FTP sessions.

Note: When this feature is activated, the node denies all FTP communication except from a Nortel Networks Preside Multiservice Data Manager (MDM) application configured with secure FTP.

Multiservice Switch nodes initiate FTP sessions with Preside MDM servers for the purposes of downloading software. To ensure that secure FTP authentication is used, configure the FTP daemon and add the security feature to the feature list of the control processor.

Prerequisites

- Secure FTP authentication must have been enabled on the Preside MDM servers to ensure secure communications. For more information, see NN10185-461 *Upgrading Preside MDM in Succession Networks*.
- SN07 software must be running on the node.

From the node

- 1 Login to the node using the appropriate permissions.
- 2 Enter provisioning mode so that you can issue the appropriate commands:
start prov
- 3 Add the FTP security feature to the feature list of the control processor:
set Software Lpt/CP featurelist secureFtpAuth1Only
- 4 Perform a semantic check on the changes:
check prov
- 5 Apply the changes:
activate prov
- 6 Within 20 minutes of applying the changes, confirm the changes to avoid a non-hitless rollback to the previously committed configuration:
confirm prov

- 7 Save the view:
save prov
- 8 Commit the final version of the view:
commit prov
- 9 Exit provisioning mode once the migration is complete:
end prov

Setting the Succession release name identification

The commentText field of the Multiservice Switch 15000/Media Gateway 15000/20000 shelf component contains record release and load information that appears in the following order:

- Succession release
- patchlevel of Nortel Networks Preside Multiservice Data Manager (MDM) software used to commission the node
- version of Installation Methods used to commission the node
- version of the Engineering Specification Book used to commission the node

To help identify which Succession release the MDM and Multiservice Switch 15000/Media Gateway 15000/20000 are running and help operators determine if these elements are compatible with other elements in the Succession network, the MDM 15.1 toolset allows you to set the Succession release name on the MDM tool launcher and to modify the commentText field of the shelf component. An alternate way to modify the Succession release name is to use the **Set Shelf Commenttext** command.

Perform either the:

- [Setting Succession release name using the Set Shelf CommentText command on page 118](#) or
- [Setting Succession release name for Multiservice Switch 15000/Media Gateway 15000 on page 120](#)

Prerequisites

- upgrade to SN07.

Setting Succession release name using the Set Shelf CommentText command

From the node

- 1 Login to the node using the appropriate permissions.
- 2 Display the comment text field:
display Shelf CommentText

The following shows sample output for this command:

```
7> display Shelf CommentText  
SN06, MDM 142-09, IM9095 1.01, IM1662 1.35, IM1661 1.04, Spec 2.0
```

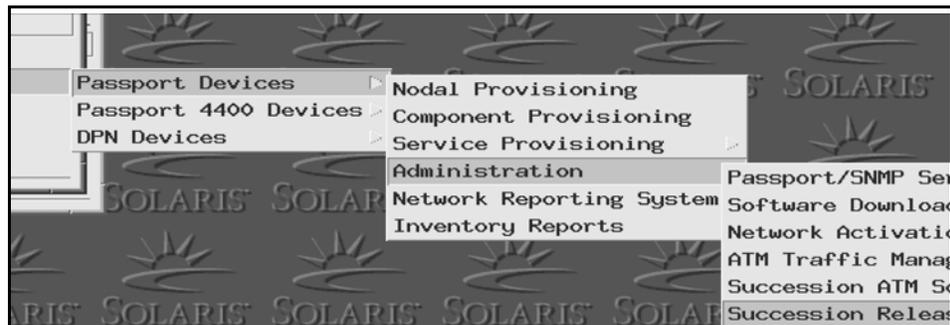
- 3** If the first entry (the release name) is not the release you have running on the node, update this entry by setting the text to contain "SN07" leaving the remainder of the text unchanged. For example:

```
set Shelf CommentText "SN07, MDM 142-09, IM9095 1.01,  
IM1662 1.35, IM1661 1.04, Spec 2.0"
```

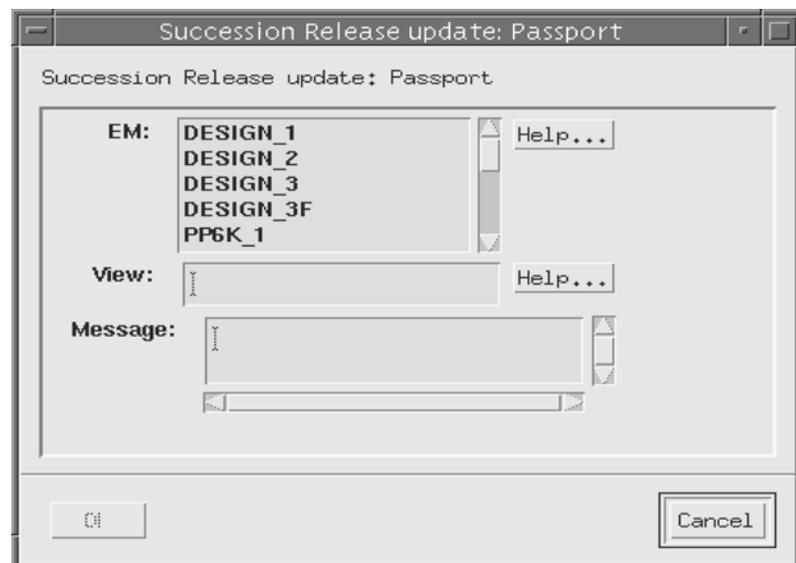
Setting Succession release name for Multiservice Switch 15000/ Media Gateway 15000

From the Preside MDM server

- 1 Login — see NN10185-461 *Upgrading Preside MDM in Succession Networks*.
- 2 From the Preside MDM window, choose:
Configuration > Passport > Administration > Succession
Release Update: Passport.



Initial screen for setting the Multiservice Switch 15000/Media Gateway 15000/20000 shelf display.

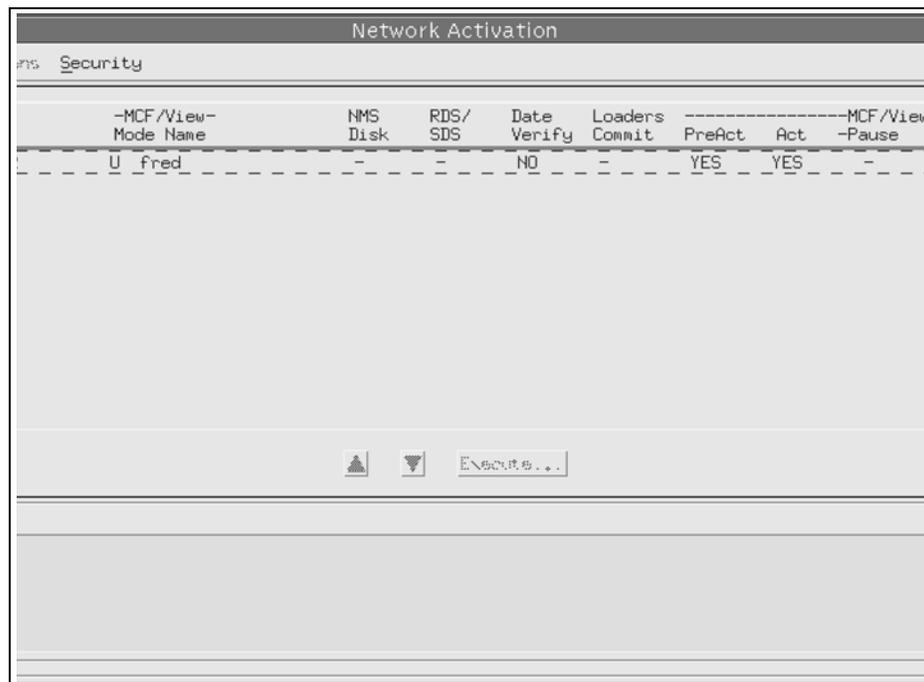


- 3 Select the Multiservice Switch 15000/Media Gateway 15000/20000 element name.
- 4 Select the View name.

This is the Multiservice Switch 15000/Media Gateway 15000/20000 element name and View name where the provisioning will be saved.

5 Click **OK**.

The Network Activation tool (NAT) starts.



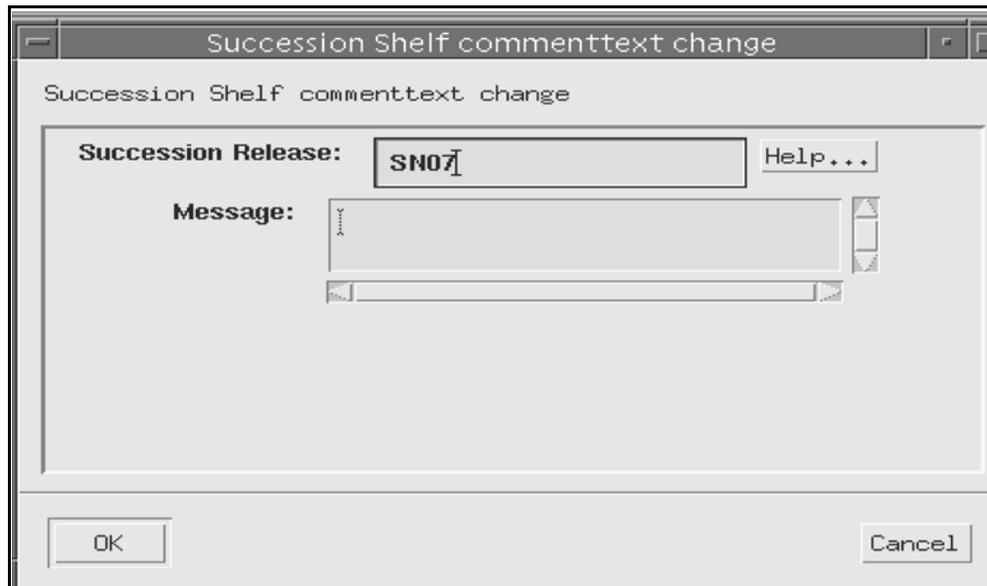
6 Enter the group name (or select) a Multiservice Switch 15000/Media Gateway 15000/20000 group that has configuration privileges.

7 Click **Execute**.

After you execute the NAT record, you are prompted for the new Succession release that will appear in the Multiservice Switch 15000/Media Gateway 15000/20000 Shelf CommentText field.

Use the format: SNxx.y (for example, SN06.2 or SN07)

The Succession Shelf comment text change window appears.



8 Click **OK**.

The Multiservice Switch 15000/Media Gateway 15000/20000 *Shelf CommentText* attribute on the target node is updated with the Succession release name being displayed before the rest of the information in the Shelf CommentText field.

If you click *Cancel*, the process is cancelled and the *Shelf CommentText* attribute remains unchanged.

Rollback

If you need to back out of a software upgrade after the software has been activated, you can revert to a provisioning view that was saved from a previous version of the software.

After successfully completing the rollback, use the MDM toolset to change the Succession release name. See [Setting the Succession release name identification on page 118](#).

Prerequisites

**CAUTION****Reverting to an earlier software version is not hitless**

After the originally-active CP and FPs have been reset, reverting back to the old configuration view is not hitless. At this point, any downgrade to the old configuration view results in a loss of call processing. While loading the old software and configuration view, the following events occur: call processing is initially maintained while the previous software load is loaded into one of the control processors. The function processors then go out of service, resulting in a loss of calls.

**CAUTION****Loss of provisioning changes**

If you revert the node to an earlier version of the software, provisioning changes made to the upgraded version are lost.

- You must ensure the FPs and CPs on the shelf are compatible with the level of software to which you are reverting. To verify the minimum software requirements of the FPs, see NN10600-551 *Nortel Networks Multiservice Switch 7400/15000/20000 FP Configuration Reference*. To verify the software requirements of the

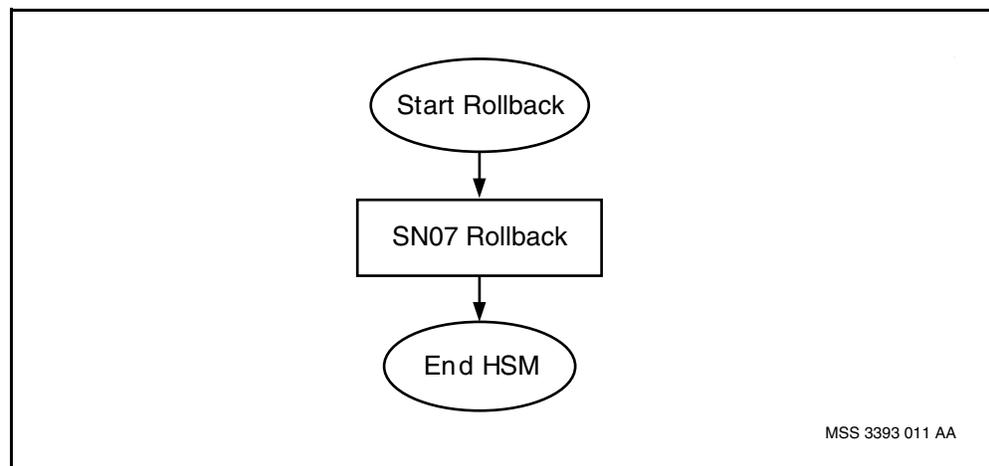
CPs, see NN10600-120 *Nortel Networks Multiservice Switch 15000/20000 Hardware Description*.

- If you need to revert to a saved view of an older software version, when the node restarts, it restarts in the operational state it was in when the view was saved.
- The Backup server, the Restore server, the Backup provider, the Restore provider, the FMDR server, and the GMDR server must all be running on the Nortel Networks Preside Multiservice Data Manager (MDM) server for the Devices Backup and Restore tool to function properly. See 241-6001-807 *Preside MDM Network Backup and Restore* for information on how to check these servers.
- Nortel Networks recommends that you perform this upgrade using the Preside MDM Command Console tool. For more information on opening the Command Console, see 241-6001-804 *Preside MDM Workstation Utilities User Guide*.

Rollback task flow

The task flow shows you the procedure you need to perform to rollback to the last committed view saved prior to HSM.

Rollback task flow chart



SN07 Rollback

Rollback to the last committed view saved prior to the HSM.

Prerequisites

- Contact GNTS before initiating a rollback to verify that a rollback is necessary.

From the node

- 1 Login with the appropriate permissions.
- 2 Enter provisioning mode so that you can issue the appropriate commands:

start prov

3



CAUTION

Possible loss of calls

After activating the previously saved view, the following events occur: call processing is initially maintained while the previous software load is loaded into the control processors. The function processors then go out of service, resulting in a loss of calls.

Activate the previously saved view:

reloadcp -force -file(<committedViewName>) lp/0

Network connectivity is lost and the node begins reloading the old software.

- 4 When the server reconnects to the node, confirm the provisioning changes:

confirm prov

- 5 Save the view:

save prov

- 6 Commit the provisioning changes:

commit prov

- 7 Exit provisioning mode after the commit is complete:
end prov

Variable values

Variable	Value
<committedViewName>	The name of the previously saved committed view.

Troubleshooting a software upgrade

Refer to one of the following sections for information on:

- [Error condition during an HSM on page 128](#)
- [Problems with a hitless software migration \(HSM\) on page 132](#)
- [Active equipment crashes during an HSM on page 134](#)
- [Problems with loading software and patches on page 136](#)
- [Problems with a fabric card version during a HSM on page 138](#)

If you have any errors associated with HSM on Media Gateway 15000/20000 that require further troubleshooting, contact Global Network Technical Support (GNTS).

Error condition during an HSM

The table [Impact of an error condition on an HSM on page 128](#) describes the error conditions that can occur in each phase of a software migration, how the system responds to the error conditions, and the steps you must take to correct the error condition.

Note: If you are performing the migration using the native CLI, alarms appear directly in the console window. If you are using the Command Console, open Nortel Networks Preside Multiservice Data Manager (MDM) Alarm Display in log mode to monitor the alarms.

Impact of an error condition on an HSM

Phase	Error condition	Result and action
1) Active CP pre-work	<p>Criteria for activate prov is not met.</p> <p>Cannot save temp file.</p> <p>Active CP crashes (service shelf).</p> <p>“Yes” in response to the <i>display ProvisioningSystemrestore Possible</i> command.</p>	<p>Command failed</p> <p>Command failed. Check disk usage and tidy disk if necessary.</p> <p>CP switchover. Take action based on responses or alarms received as a result of the failed activity.</p> <p>The journal files have not been purged. Purge the files by issuing the <i>commit -force prov</i> command. Then re-issue the <i>display ProvisioningSystemrestore Possible</i> disk to verify the files have been purged. To restore these journal files, see the Restore Prov command section in NN10600-050 <i>Nortel Networks Multiservice Switch 7400/15000/20000 Command Reference</i>.</p>
<p>Note: For more information on alarms, see NN10600-500 <i>Nortel Networks Multiservice Switch 6400/7400/15000/20000 Alarms Reference</i>.</p>		

Impact of an error condition on an HSM

Phase	Error condition	Result and action
2) CP migration	Cannot load new software.	Command failed. Take action based on responses or alarms received as a result of the failed activity.
	Cannot build migration provisioning view.	Command failed. Take action based on responses or alarms received as a result of the failed activity.
	Cannot save commit formats. Cannot deliver shelf management data.	Command failed. Take action based on responses or alarms received as a result of the failed activity. Command failed. Take action based on responses or alarms received as a result of the failed activity.
3) FP migration	Cannot load new software.	FP failed. Take action based on responses or alarms received as a result of the failed activity.
	An application does not acknowledge the provisioning data entry.	Application failed. Take action based on responses or alarms received as a result of the failed activity.
	An application negatively acknowledges the provisioning data delivery.	Application failed. Take action based on responses or alarms received as a result of the failed activity.
	An application cannot achieve synchronization of dynamic data.	Application failed. Take action based on responses or alarms received as a result of the failed activity.
4) Migration	Active CP crashes (service shelf).	Continue with software migration.
<p>Note: For more information on alarms, see NN10600-500 <i>Nortel Networks Multiservice Switch 6400/7400/15000/20000 Alarms Reference</i>.</p>		

Impact of an error condition on an HSM

Phase	Error condition	Result and action
5) Post-migration switchover	Former migrating CP cannot become active.	Service shelf outage. The system rolls back to the committed provisioning view. No operator action.
	Former migrating FP cannot become active.	FP outage. The new provisioning view is maintained. Respond to alarms generated by the system.
	Operator does not or cannot confirm provisioning changes.	Service shelf outage. The system rolls back to the committed provisioning view. No operator action.
	The newly active CP crashes (with or without standby CP available).	Service shelf outage. The system rolls back to the committed provisioning view. No operator action.
	FP crashes.	Normal recovery procedure. The FP resets, reloads software, reloads provisioning data and restarts applications. The new provisioning view is maintained.
	Former service shelf FPs/CP cannot reload with new software.	Equipment sparing is not restored. The new provisioning view is maintained. Respond to alarms generated by the system.
	Disk synchronization failed or unexpectedly lost.	Respond to alarms generated by the system. The <i>commit prov</i> command is not accepted until disk synchronization is achieved or the standby CP is removed from service.
<p>Note: For more information on alarms, see NN10600-500 <i>Nortel Networks Multiservice Switch 6400/7400/15000/20000 Alarms Reference</i>.</p>		

Problems with a hitless software migration (HSM)

Problems with an HSM may be caused by one of the following

- the new software does not load
- the migration provisioning view does not build
- the commit formats did not save
- an application does not acknowledge the provisioning data entry, negatively acknowledges the data delivery, or cannot achieve the synchronization of dynamic data
- the disk synchronization fails
- a *confirm prov* command is not issued within 20 minutes of activating the new software

Problem indicators

Migration alarms are displayed on the OSS and the node. For example:

- 7000 0033-0035 - Prov Migration alarms used to indicate migration pause and applications not ready for switchover
- 7006 0005 - FP failure to FTP firmware from CP during migration
- 7012 0204 - Lp software does not support HSM - services on that Lp will be interrupted during the software migration
- 7054 0101 - Electrical FP sparing panel, as configured does not support HSM

Corrective action

The following table shows the sequence of tasks you need to perform to isolate and correct various problems during an HSM. This table references procedures contained in this document or located in other Nortel Networks Multiservice Switch, Preside Multiservice Data Manager, or Succession documents.

Corrective action for problems during an HSM

Task	Use the section ...	in
1. On the Preside MDM server, open the Command Console tool and connect to the network using an FMIP session.	“Connecting to the network”	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
2. On the Preside MDM server, log the command output to a file.	“Logging command output to a file”	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
3. On the Preside MDM server, open the Network Viewer tool, the Alarm Display tool and the Alarm Help.	“Starting the Network Viewer” “Viewing alarms in the Active mode” “Starting Alarm Help”	241-6001-011 <i>Preside MDM Fault Management User Guide</i>
4. If the hitless software migration fails, ensure that there is enough free space on the file system.	“Ensuring that there is enough free space on the file system”	NN10600-270 <i>Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation</i>
5. Verify that the committed provisioning view is complete after the migration.	“Correcting provisioning view problems”	NN10198-912 <i>Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Preside MDM in Succession Networks Fault Management Troubleshooting PT-AAL1/UA-AAL1/UA-IP</i>
6. Correct other problems as directed by the alarm remedial text or as indicated by the documentation.	This chapter.	This document.

Active equipment crashes during an HSM

Active equipment crashing during a hitless software migration (HSM) may be caused by one of the following:

- locked equipment
- a control processor (CP) switchover

Problem indicators

Alarms are displaying on the Nortel Networks Multiservice Switch node while new software is being loaded on the active shelf, the active control processor (CP), or the active function processor (FP).

Corrective action

The following table shows the sequence of tasks you need to perform to isolate and correct active equipment crashes during an HSM. This table refers to procedures contained in this document or located in other Nortel Networks Multiservice Switch, Preside Multiservice Data Manager, or Succession documents.

Corrective action for active equipment crashes during an HSM

Task	Use the section ...	in
1. On the Preside MDM server, open the Command Console tool and connect to the network using an FMIP session.	"Connecting to the network"	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
2. On the Preside MDM server, log the command output to a file.	"Logging command output to a file"	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
3. On the Preside MDM server, open the Network Viewer tool, the Alarm Display tool and the Alarm Help.	"Starting the Network Viewer" "Viewing alarms in the Active mode" "Starting Alarm Help"	241-6001-011 <i>Preside MDM Fault Management User Guide</i>
4. If any of the equipment is locked, unlock it.	"Unlock command"	NN10600-050 <i>Nortel Networks Multiservice Switch 7400/15000/20000 Command Reference</i>

Corrective action for active equipment crashes during an HSM

Task	Use the section ...	in
5. Collect data about the crash.	“Isolating the problem that causes a crash.”	NN10198-912 <i>Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Preside MDM in Succession Networks Fault Management Troubleshooting PT-AAL1/UA-AAL1/UA-IP</i>
6. Determine why the newly active CP or FP failed.	This chapter.	This document.
7. Abort the hitless software migration if the problems identified in task 4 cannot be resolved.	SN07 Rollback on page 125	This document.
8. Contact Nortel Networks GNTS and provide them with the information collected in task 2.		

Problems with loading software and patches

Problems with loading software and patches may be caused by one of the following:

- an incorrect version of software is being loaded
- the patches being loaded are not up-to-date
- the software and card types are incompatible

Problem indicators

- errors occur when the *check prov* command is issued
- issuing the *display Software avList* and *display Software patchList* commands indicate that the software or patches did not load

Corrective action

The following table shows the sequence of tasks you need to perform to isolate and correct problems associated with loading software and patches. This table refers to procedures contained in this document or located in other Nortel Networks Multiservice Switch, Preside Multiservice Data Manager, or Succession documents

Corrective action for problems loading software and patches

Task	Use the section ...	in
1. On the Preside MDM server, open the Command Console tool and connect to the network using an FMIP session.	"Connecting to the network"	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
2. On the Preside MDM server, log the command output to a file.	"Logging a command output to a file"	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>

Corrective action for problems loading software and patches

Task	Use the section ...	in
3. Isolate the problem with the software or the patch.	“Isolating check prov problems”	NN10198-912 <i>Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Preside MDM in Succession Networks Fault Management Troubleshooting PT-AAL1/UA-AAL1/UA-IP</i>
4. Using the appropriate Nortel Networks Multiservice Switch Release Notes, identify the version of software that should be running on the node.	Download release notes on page 13	This document.
5. If the problem is an incorrect application version, or that an application has not been loaded, upgrade the application.	Download the software to the server from Nortel Networks website on page 24 Download software from the Preside MDM server on page 32 HSM (Command Console) activation on page 71	This document
6. If the problem is that the card type and the software features are incompatible, reinstall the software.	Verify hardware compatibility on page 14 Verify node feature compatibility on page 15	This document.

Problems with a fabric card version during a HSM

Problems with a fabric card version during an HSM may be caused by one of the following:

- the wrong firmware version was installed
- multiple versions of the firmware are in use
- the writable bank is corrupt

Probable indicators

7002 0002 upgrade fabric version alarm is displaying on the OSS

Corrective action

The following table shows the sequence of tasks you need to perform to isolate and correct problems during loading software and patches.

Corrective action for problems loading software and patches

Task	Use the section ...	in
1. On the Preside MDM server, open the Command Console tool and connect to the network using an FMIP session.	"Connecting to the network"	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
2. On the Preside MDM server, log the command output to a file.	'Logging command output to a file"	241-6001-804 <i>Preside MDM Workstation Utilities User Guide</i>
3. Using the appropriate Nortel Networks Multiservice Switch Release Notes, identify the version of software that should be running on the node.	Download release notes on page 13	This document.

Corrective action for problems loading software and patches

Task	Use the section ...	in
4. Verify that the correct version of fabric firmware is being used.	“Identifying the firmware that is installed on the fabric”	NN10198-912 <i>Nortel Networks Multiservice Switch 15000, Media Gateway 15000 and Preside MDM in Succession Networks Fault Management Troubleshooting PT-AAL1/UA-AAL1/UA-IP</i>
6. If the fabric card firmware is not up-to-date, upgrade it.	“Fabric replacement may need a fabric firmware upgrade” Upgrade the fabric on page 89 or “Fabric firmware upgrade”	NN10600-120 <i>Nortel Networks Multiservice Switch 15000/20000 Hardware Description</i> This document or the NN10600-272 <i>Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software</i>

Appendix A - Alarms seen during an upgrade

Alarms are expected during a migration. The following alarms may be seen and most of these are to be expected. However, depending on your configuration, and the phase of migration any alarm may be expected and considered normal behavior.

Note: This is not a comprehensive list of alarms. Monitor all alarms carefully and use your judgement to determine what alarms, if any, need operator intervention.

For more information on these and other alarms, see NN10600-500 *Nortel Networks Multiservice Switch 6400/7400/15000/20000 Alarms Reference*.

Alarms seen during an upgrade

Phase	Error condition	Result and action
0999 0001	Loss of connectivity.	Normal behavior after active CP resets.
7000 0007	Activation complete. Enter 'confirm prov' to confirm the activation or the rollback will occur in 20 minutes.	Normal behavior.
7000 0033	Prov migration component created.	Normal behavior.
7011 5251	The far end has raised an Alarm Indication Signal.	Critical behavior. The line on the migration shelf card went out of service and the far end could not switch to the line of the service card and is now receiving P-AIS. The outage recovers on migration switchover.

Alarms seen during an upgrade

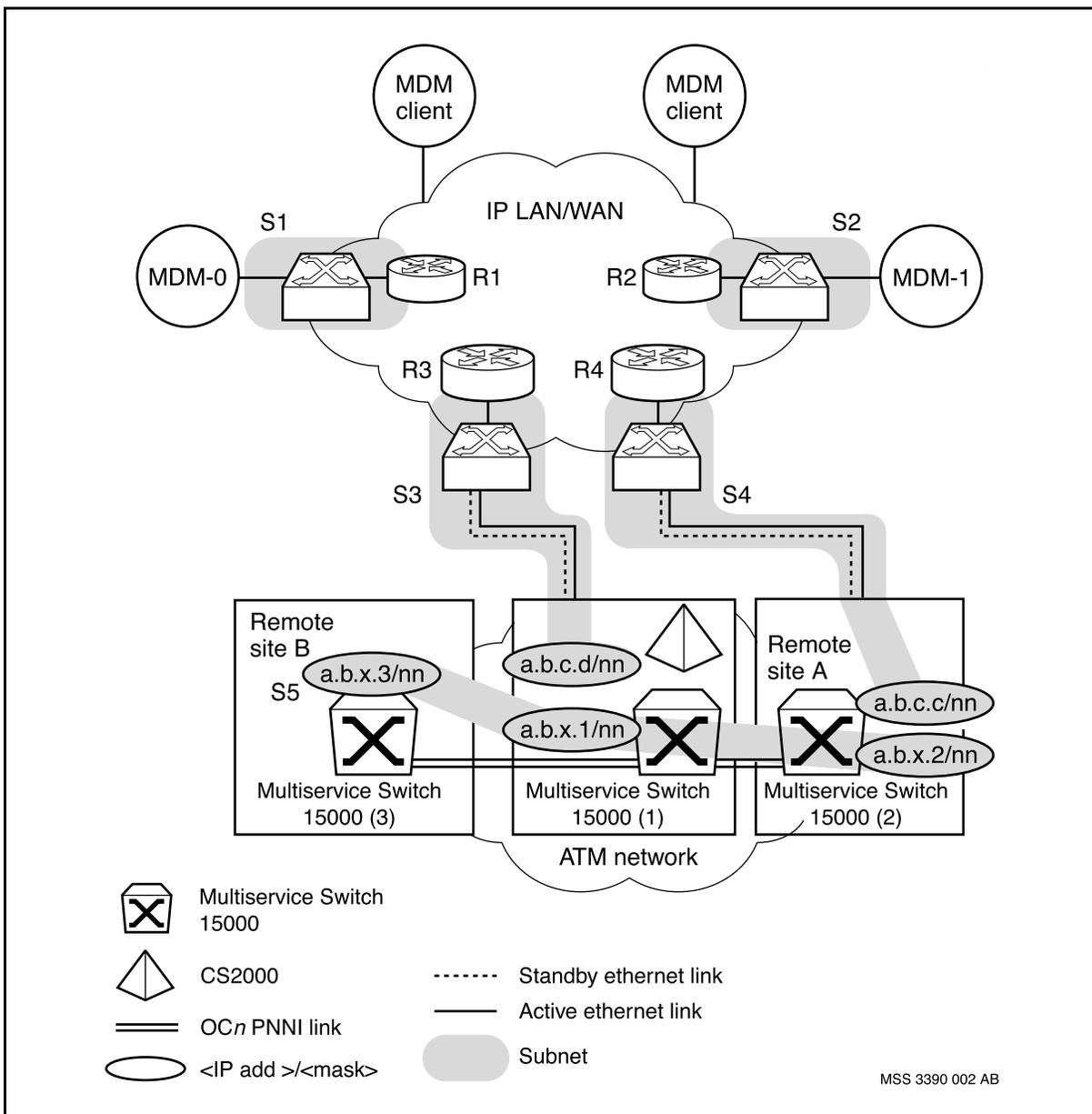
Phase	Error condition	Result and action
7011 5274	The APS request signalFail has been detected.	Normal behavior. As the first set of cards restart and enter the migration shelf, the associated Sonet lines go out of service (LOS>L-AIS). In response, the far end signals "signalFail" in the Kbytes of the line to the Service cards.
7012 0100	Card is disabled.	Normal behavior. Occurs with new loads.
7012 0200	LP is disabled.	Normal behavior. LP disabled, card disabled alarms: these cards are joining the migration active CPs with the card alarm that follows.

Appendix B - In-band OAM quick reference

Key relationships

The figure, [Sample in-band connectivity topology on page 143](#) illustrates a typical in-band OAM configuration. A brief description of the items in this diagram and their relationship to each other is provided below.

Sample in-band connectivity topology



MDM-0 and MDM-1

These Nortel Networks Preside Multiservice Data Manager (MDM) servers manage Nortel Networks Multiservice Switch network.

The chosen server is the server that the operator uses as a launching point for Preside MDM applications, such as Command Console.

The alternate server is another Preside MDM server that could be used to perform the same set of tasks, but wasn't chosen.

Multiservice Switch -1

This Multiservice Switch 15000 node is in the Succession Office and is a Gateway node using out-of-band connectivity.

From the perspective of Preside MDM-0, S3 represents subnet to the preferred Multiservice Switch 15000 node.

Multiservice Switch-2

This Multiservice Switch 15000 node is in a remote office and is a Gateway node using out-of-band connectivity.

From the perspective of Preside MDM-0, S4 represents the subnet to the alternate Multiservice Switch 15000 node.

Multiservice Switch-2 and Multiservice Switch-3

S5 represents the in-band OAM subnet. Multiservice Switch-1 has a direct ATMMPE ATM (PVC) connection to every other Multiservice Switch 15000 node.

These Multiservice Switch 15000 nodes are Remote nodes using in-band connectivity with Multiservice Switch-1.

