G06.24 Software Installation and Upgrade Guide

Abstract

This manual provides detailed procedures for upgrading an HP NonStop™ S-series server to the G06.24 release version update (RVU) from any G06.06 or later RVU.

Product Version

N.A.

Supported Release Version Updates (RVUs)

This publication supports the G06.24 RVU only.

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What's New in This Manual

Manual Information

Abstract

This manual provides detailed procedures for upgrading an HP NonStop™ S-series server to the G06.24 release version update (RVU) from any G06.06 or later RVU.

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New and Changed Information

The following summarizes major changes in this.005 edition:

- With the introduction of the G06.24 RVU and the new boot code firmware (T7892ABD) needed for the S88000 processor, potential system problems can result if you upgrade the boot millicode and you not have the G06.24 OSM or TSM SPRs installed. See Section 8, Updating Processor Boot Code. See also the G06.24 RVU upgrade checklist in Section 2, G06.24 Upgrade Checklists.
- New information regarding OSS SPRs used to configure OSS as a persistent process can be found in OSS (G06.12 through G06.24) on page 1-25.
- New instructions are provided for installing EMS templates. See If Running INSTALL^TEMPLATES Is Required on page A-7 and If Running INSTALL^TEMPLATES Is Required on page B-13.
- A missing step has been added in Appendix C, Updating SWAN Concentrator CLIP Firmware, in Using the SWAN Fast Firmware Update Guided Procedure (Recommended if Using TSM).

About This Manual

This guide describes:

- Upgrading a single NonStop S-series server to the G06.24 release version update (RVU) of the HP NonStop Kernel operating system from any G06.06 or later G-series RVU, including installing DSM/SCM client software.
- Falling back from the G06.24 RVU to a previous (G06.06 or later) G-series RVU.

If you are migrating from an RVU prior to G06.06, contact your service provider trained by HP.

Who Should Use This Guide

This guide is written for operations staff and support personnel and requires a working knowledge of Windows 2000 Professional or Windows XP Professional, TSM or HP NonStop Open System Management (OSM) client and server components, system console software, the Distributed Systems Management/Software Configuration Manager (DSM/SCM) Planner Interface, Target Interface (ZPHITI), and ZPHIRNM applications.

What This Guide Does Not Cover

- System migration planning. System-wide issues involved in migrating to the latest G-series RVU are covered in:
  - *G06.24 Release Version Update Compendium*
  - Interactive Upgrade Guide
- Installing the G06.24 RVU from a host system to a remote or separate network-connected target system using an Expand connection or tape. See the *DSM/SCM User's Guide* for information on setting up target systems.
- Stopping and starting the ServerNet wide area network concentrator (SWAN) and SWAN 2, Expand lines, and other networking products and adapters. (SWAN firmware updates are covered in Appendix C, Updating SWAN Concentrator CLIP Firmware.)
- Installing HP NonStop Kernel Open System Services (OSS).
- Upgrading HP NonStop system console workstation applications. To install or upgrade HP and third-party system console client software, see the *NonStop System Console Installer Guide*.
- Installing and configuring the HP NonStop Open System Management (OSM) client-based and server components. To install and configure the OSM components, see the *OSM Migration Guide.*

- Installing, configuring, and migrating to HP NonStop SQL/MX. The *SQL/MX Installation and Management Guide f*or SQL/MX Release 2.0 describes step-by-step instructions for installing SQL/MX for Release 2.0, including fallback procedures.
- Installing and configuring the I/O Adapter module (IOAM) enclosure and its components. See your HP service provider.

How This Guide Relates to Other Manuals

- The *NonStop System Console Installer Guide* contains information on installing TSM client software Version 2003A, OSM client-based components, and other applications on the system consoles. (See instructions for installing the DSM/SCM client in Appendix B, Installing the Latest DSM/SCM SPRs and Client Software.)
- The *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional* describes how to migrate a system console running the Microsoft Windows 2000 operating system to the Microsoft Windows XP Professional operating system.
- The *G06.24 Release Version Update Compendium* provides summary information on the new features and migration and fallback issues for the G06.24 RVU.
- The Interactive Upgrade Guide, a Web-based delivery tool, accessed through NTL, that generates customized migration planning information and lists new features for D4x and G-series RVUs based on a desired platform.
- The *TSM Online User Guide*, TSM application online help, and TSM ReadMe describe how to use TSM 2003A applications to bring up and maintain HP NonStop S-series servers.
- The *OSM Migration Guide* describes how to prepare for migration from TSM to the HP NonStop Open System Management (OSM) Interface. Topics include comparison of OSM and TSM software, hardware products for which OSM is required, workstation hardware and software requirements for using OSM, coexistence and fallback issues, how to migrate an existing TSM system list for OSM use, and how to configure and start OSM server-side processes.
- *The OSM User's Guide* provides an overview of all OSM applications and components, how to configure and get started with OSM, and how to use the primary OSM interface, OSM Service Connection, to monitor and perform actions on system and cluster resources.
- The OutsideView online help provides information on configuring OutsideView sessions.
- The *DSM/SCM User's Guide* provides detailed, task-oriented instructions for using the DSM/SCM Planner Interface to perform the various tasks associated with installing and managing software revisions.

- The *NonStop S-Series Planning and Configuration Guide* provides information for planning and configuring the installation of a NonStop S-series server.
- The *NonStop S-Series Hardware Installation and FastPath Guide* provides detailed instructions and checklists for installing NonStop S-series servers.
- The *SQL/MX Installation and Management Guide* for SQL/MX Release 2.0 describes step-by-step instructions for installing SQL/MX for Release 2.0.

Notation Conventions

Hypertext Links

Blue underline is used to indicate a hypertext link within text. By clicking a passage of text with a blue underline, you are taken to the location described. For example:

> This requirement is described under Backup DAM Volumes and Physical Disk Drives on page 3-2.

General Syntax Notation

The following list summarizes the notation conventions for syntax presentation in this manual.

UPPERCASE LETTERS. Uppercase letters indicate keywords and reserved words; enter these items exactly as shown. Items not enclosed in brackets are required. For example:

```
MAXATTACH
```

lowercase italic letters. Lowercase italic letters indicate variable items that you supply. Items not enclosed in brackets are required. For example:

```
file-name
```

computer type. `Computer type` letters within text indicate C and Open System Services (OSS) keywords and reserved words; enter these items exactly as shown. Items not enclosed in brackets are required. For example:

```
myfile.c
```

italic computer type. *`Italic computer type`* letters within text indicate C and Open System Services (OSS) variable items that you supply. Items not enclosed in brackets are required. For example:

```
pathname
```

[ ] Brackets. Brackets enclose optional syntax items. For example:

```
TERM [\system-name.]$terminal-name

INT[ERRUPTS]
```

A group of items enclosed in brackets is a list from which you can choose one item or none. The items in the list may be arranged either vertically, with aligned brackets on each side of the list, or horizontally, enclosed in a pair of brackets and separated by vertical lines. For example:

```
FC [ num  ]
   [ -num ]
   [ text ]
 K [ X | D ] address
```

{ } Braces. A group of items enclosed in braces is a list from which you are required to choose one item. The items in the list may be arranged either vertically, with aligned braces on each side of the list, or horizontally, enclosed in a pair of braces and separated by vertical lines. For example:

```
LISTOPENS PROCESS { $appl-mgr-name }
                  { $process-name  }
ALLOWSU { ON | OFF }
```

| Vertical Line. A vertical line separates alternatives in a horizontal list that is enclosed in brackets or braces. For example:

```
INSPECT { OFF | ON | SAVEABEND }
```

… Ellipsis. An ellipsis immediately following a pair of brackets or braces indicates that you can repeat the enclosed sequence of syntax items any number of times. For example:

```
M address [ , new-value ]...

[ - ] {0|1|2|3|4|5|6|7|8|9}...
```

An ellipsis immediately following a single syntax item indicates that you can repeat that syntax item any number of times. For example:

```
"s-char..."
```

Punctuation. Parentheses, commas, semicolons, and other symbols not previously described must be entered as shown. For example:

```
error := NEXTFILENAME ( file-name ) ;

LISTOPENS SU $process-name.#su-name
```

Quotation marks around a symbol such as a bracket or brace indicate the symbol is a required character that you must enter as shown. For example:

```
"[" repetition-constant-list "]"
```

Item Spacing. Spaces shown between items are required unless one of the items is a punctuation symbol such as a parenthesis or a comma. For example:

```
CALL STEPMOM ( process-id ) ;
```

If there is no space between two items, spaces are not permitted. In the following example, there are no spaces permitted between the period and any other items:

```
$process-name.#su-name
```

Line Spacing. If the syntax of a command is too long to fit on a single line, each continuation line is indented three spaces and is separated from the preceding line by a blank line. This spacing distinguishes items in a continuation line from items in a vertical list of selections. For example:

```
ALTER [ / OUT file-spec / ] LINE

      [ , attribute-spec  ]…
```

Notation for Messages

The following list summarizes the notation conventions for the presentation of displayed messages in this manual.

Bold Text. Bold text in an example indicates user input entered at the terminal. For example:

```
ENTER RUN CODE
?123
CODE RECEIVED:      123.00
```

The user must press the Return key after typing the input.

Nonitalic text. Nonitalic letters, numbers, and punctuation indicate text that is displayed or returned exactly as shown. For example:

```
Backup Up.
```

lowercase italic letters. Lowercase italic letters indicate variable items whose values are displayed or returned. For example:

```
p-register
process-name
```

[ ] Brackets. Brackets enclose items that are sometimes, but not always, displayed. For example:

```
Event number = number [ Subject = first-subject-value ]
```

A group of items enclosed in brackets is a list of all possible items that can be displayed, of which one or none might actually be displayed. The items in the list might

be arranged either vertically, with aligned brackets on each side of the list, or horizontally, enclosed in a pair of brackets and separated by vertical lines. For example:

```
proc-name trapped [ in SQL | in SQL file system ]
```

{ } Braces. A group of items enclosed in braces is a list of all possible items that can be displayed, of which one is actually displayed. The items in the list might be arranged either vertically, with aligned braces on each side of the list, or horizontally, enclosed in a pair of braces and separated by vertical lines. For example:

```
obj-type obj-name state changed to state, caused by
{ Object | Operator | Service }
```

```
process-name State changed from old-objstate to objstate
{ Operator Request. }
{ Unknown.          }
```

| Vertical Line. A vertical line separates alternatives in a horizontal list that is enclosed in brackets or braces. For example:

```
Transfer status: { OK | Failed }
```

% Percent Sign. A percent sign precedes a number that is not in decimal notation. The % notation precedes an octal number. The %B notation precedes a binary number. The %H notation precedes a hexadecimal number. For example:

```
%005400
```

```
%B101111
```

```
%H2F
```

```
P=%p-register E=%e-register
```

1 Overview of Installing G06.24

This section introduces the tools and requirements for:

- Upgrading a single NonStop S-series server to the G06.24 RVU from any G06.06 or later G-series RVU
- Falling back from G06.24 to a previous (G06.06 or later) G-series RVU

Disk Space Requirements

The maximum site update tape (SUT) with all standard products, plus all optional products available to customers, contains approximately 2 or 3 gigabytes (GB) of data, depending on optional products (however, actual disk space required can be much greater).

System Console Requirements

A system console is an HP-approved personal computer used to run maintenance and diagnostic software for NonStop S-series servers. New system consoles are preconfigured with the required HP and third-party software, which means that OSM is the preinstalled client, and Windows XP Professional is the default operating system.

When upgrading to the latest RVU, software upgrades can be installed from the HP NonStop System Console Installer CD (S7X-SWV1, Update 3), which must be ordered separately from Scout for NonStop Servers through HP NonStop eServices Portal at https://onepoint.nonstop.compaq.com/buildpage.asp. Always check Scout for any Installer updates. Depending on your current RVU, a Windows 2000 Service Pack might need to be installed. See the *NonStop System Console Installer Guide* for detailed information on installing the system console software.

Note that you can still install TSM from the Installer CD. TSM is compatible with both XP Professional and Windows 2000. Windows XP Professional is recommended for OSM and must be ordered separately. You must order the HP NonStop System Console Kit for Migrating to Microsoft Windows XP Professional. See the *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional*.

Unless OSM is already installed and configured on your server, use the TSM client and TSM server software to update firmware and perform a system load to the new G06.24 RVU. To use OSM, certain client-side system requirements must be met. See the *NonStop System Console Installer Guide* and the *OSM Migration Guide* for PC system requirements and information on migrating to OSM.

You can have both the TSM client and the OSM client-based components on your system consoles. However, to avoid duplicate dial-outs, use either the OSM Notification Director (ND) or TSM Notification Director, but *not* both.

To ensure that the OSM Notification Director runs as a persistent service:

1. Select **Start > Settings > Control Panel > Administrative Tools > Services**.
2. Select the **OSM Notification Director** from the list of Services.
3. Right-click and select **Properties**.
4. Select the **Recovery** tab and change the properties for First, Second and Subsequent failures to **Restart the Service**.
5. Click **OK** to apply the changes.

TSM Client Applications

Note. For future RVUs, only OSM is designed to support new functions.

After installing the appropriate software product revisions (SPRs) (see D46 SPR of DSM/SCM on page 3-3), upgrade your TSM client software.

Use the NonStop System Console Installer to upgrade TSM applications on the Microsoft Windows 2000 Professional or Windows XP Professional operating system. For instructions on using this CD to upgrade your system console, see the *NonStop System Console Installer Guide*.

After installing the appropriate TSM SPR and upgrading your system console to TSM client software Version 2003A, use the TSM Service Application and the TSM Low -Level Link Application to update firmware and to halt and restart the system. After you have migrated to G06.24, you can then install and configure OSM (if not previously installed.)

OSM Client-Based Components

OSM is designed to support new functions introduced in G06.21 and later.

Client installation instructions are included in the *NonStop System Console Installer Guide*. The previous T2752 product is replaced by three client-based OSM components. All three OSM components are installed from the NonStop System Console Installer CD, either from the master installer or individually from their own separate installers:

- OSM Low-Level Link (T0633)
- OSM Notification Director (T0632)
- OSM Console Tools (T0634):
  - Start menu shortcuts for launching OSM applications
  - Default home pages for easy access to systems for the OSM Service Connection and OSM Event Viewer

HP NonStop Server Software Requirements

You must install:

- The newest TSM server (T7945ABN or later) SPR if you are installing NonStop S78000 and S88000 servers.

  For TSM, if you have to install the most recent server SPRs, follow the instructions in the appropriate softdocs. Depending on your current configuration, for most TSM server SPRs, such as TSM Bind, the process might need to be aborted and then restarted using the Subsystem Control Facility (SCF). See the appropriate softdoc for pre-installation and post-installation details.

- OSM SPRs if you decide that you want to install and use OSM. These SPRs are available on the G06.24 SUT and on Scout:

  - T2723 (OSM Connection Library
  - T2724 (OSM Provider Interface Library)
  - T2725 (OSM Configuration)
  - T2726 (OSM XML API)
  - T2727 (OSM CIMOM)
  - T2728 (OSM Service Provider)
  - T2730 (OSM Event Viewer)
  - T2751 (OSM client-based Suite, which includes the OSM Service Connection and OSM Event Viewer)

  Check Scout for any new SPRs or requisite SPRs. See also the Interactive Upgrade Guide for new features and the *OSM Migration Guide* for installation and configuration information.

  - Use OSM to manage and configure the new HP NonStop ServerNet Switch (model 6780).
  - HP recommends using the OSM Service Connection (rather than the TSM Service Application) for all systems that are part of an HP NonStop ServerNet cluster. OSM suppresses generation of alarms and dial-outs on all nodes in the cluster when service actions are performed on a cluster from any node. This protection is not available if some nodes are being managed by TSM because TSM cannot communicate with OSM.
  - Only OSM, not TSM, automatically recognizes online disk remirroring.
  - Unless OSM is already installed, configure OSM *after* you have used TSM to update firmware and performed a system load of the new RVU. For information on OSM configuration, see the *OSM Migration Guide*.
  - Only OSM supports the I/O adapter module (IOAM) enclosure and its components. OSM provides the necessary ability to configure an IOAM enclosure before it is integrated into the system.

- SQL/MX Release 2.0 fallback SPRs. See Section 3, Installing SPRs Before Upgrading to the G06.24 RVU.
- A D46 product version of DSM/SCM on your host system *before* you install the SUT. Appendix B, Installing the Latest DSM/SCM SPRs and Client Software describes how to restore from tape and install the recommended D46 SPR of DSM/SCM. The D46 DSM/SCM client and server version enable you to manage OSS files.

Note. All OSS SUT-based products with `pax` files must have the A7CINFO file in their distributed subvolumes (DSVs) to be installed by DSM/SCM. Check the appropriate product softdocs and the Interactive Upgrade Guide to ensure DSM/SCM installation is possible.

OSS products that are not released with an A7CINFO file in their DSVs can still be installed using PINSTALL /COPYOSS. See the appropriate OSS manuals.

To ensure that OSS-managed files can be correctly restored in case of a fall back to an earlier RVU, do not use the PINSTALL /COPYOSS utilities to install those OSS products that DSM/SCM has installed on an OSS file system.

During the Build/Apply phase to manage OSS files, DSM/SCM indicates which OSS products in a configuration are not DSM/SCM-enabled. For those OSS products, use PINSTALL/COPYOSS.

  - If you are upgrading to the G06.24 RVU, download the most current client version of DSM/SCM (T6031D46) from the ZDSMSCM subvolume after the D46 new product version has been restored and activated from the SUT tape. The DSM/SCM T6031D46^ABJ client software supports T6031D46^ABJ server software and T6030/T6031D30^AAO and previous DSM/SCM server software (including T6031D31). To install the DSM/SCM client, see Appendix B, Installing the Latest DSM/SCM SPRs and Client Software.
  - Even if you installed the D46 product version update (PVU) introduced in G06.18, you should install the new D46 T6031^ABJ SPR introduced in G06.24. See Appendix B, Installing the Latest DSM/SCM SPRs and Client Software. If you have to fall back to a pre-D46 T6031 product version of DSM/SCM, you must run the FALLBACK macro available in T6031D46 and later product versions. You can export the FALLBACK macro from the DSM/SCM Archive.
- If you are running on a pre-G06.20 RVU, you must also install the Software Identification (SWID) product (T9298AAJ) before receiving the SUT. See Appendix B, Installing the Latest DSM/SCM SPRs and Client Software.

DSM/SCM and the G06.24 RVU

Starting with the G06.18 RVU, a new configuration file, A7CINFO, is introduced for the managing of OSS files. To manage OSS files, you must install the T6031 D46 PVU on the host system *before* receiving the SUT. The corresponding client version of the software must also be installed.

To upgrade the DSM/SCM client, the DSM/SCM client version must be downloaded from the ZDSMSCM subvolume. (If you have acquired new system consoles, the most up-to-date DSM/SCM client is already installed.) For download and installation instructions for both the server-side and client-side, see Appendix B, Installing the Latest DSM/SCM SPRs and Client Software.

Installing Required or Recommended SPRs Before Installing a New RVU

Before installing G06.24, install required or recommended SPRs. An SPR could be required for any of these reasons:

- To prepare for fallback
- To install a defect repair for a product that is required for a successful upgrade
- To maintain interoperability for a product across a network

To determine which SPRs you should apply to your current RVU before you install G06.24, see Section 3, Installing SPRs Before Upgrading to the G06.24 RVU.

To install SPRs using DSM/SCM, see Appendix A, Using DSM/SCM to Install SPRs.

Installing the G06.24 RVU Using DSM/SCM

1. Receive new software into the DSM/SCM Archive.

   When software is received, the files from each product are stored in the DSM/SCM Archive, a holding area for your software. File attributes are stored in the DSM/SCM host database. Each time a new version of a product is received, only changed files are placed in the Archive, and file attributes are updated in the Host database.

2. Create a new software revision.

   A software revision is a list of products stored in the DSM/SCM Archive that will be built into a new software revision. A software revision can include a SUT, SPRs, and third-party software. When you create a new software revision, DSM/SCM selects the products in the SUT that are licensed for your site and replaces previous versions of the products.

3. Build and apply the new software configuration revision.

   The Build process creates an activation package containing all the products listed in the new software revision. During the Apply process, the activation package is transferred to the target system, and the new software is placed on the target system's subvolumes. When the Apply request is finished, a snapshot is automatically created and returned to the Host.

4. Activate the new operating system image.

   During the Build/Apply phase, DSM/SCM places product files in their target subvolumes (TSVs) with temporary (fabricated) file names so that the new files do not conflict with the file names of currently running programs. You run the ZPHIRNM program on the target system to:

   - Rename the files that currently have actual file names to fabricated names. These files become obsolete when the new files are renamed.
   - Rename the new files, which have fabricated names, to their actual names.

Managing Microcode and Firmware

You must ensure all microcode and firmware within your system is managed properly, updating it as necessary when new versions become available. Failure to do so can result in a wide range of system problems, from intermittent faults to partial or complete system outages.

Note. Always check Scout for the most recent updateable firmware.

Updating Disk and Tape Bootstrap Microcode

When you perform a system load, a disk or tape *bootstrap* microcode file is used by the system during its startup process. You must use the SCF program to update these files as new versions become available.

The SCF CONTROL DISK, REPLACEBOOT command converts a work file (SYSDISC) containing the new disk bootstrap loader and controller microcode to a special format and then writes it into space reserved for bootstrap microcode on the system disk.

Bootstrap Microcode Update Requirements for the G06.24 RVU

The disk and tape bootstrap programs (T8494) are unchanged in G06.24. A new disk bootstrap program (T8494AAA) became available in G06.06. Revive your mirrored disk as soon as possible after performing a system load.

Updating Firmware

Updateable firmware exists in many of the components in your system, such as:

- PMFs and IOMFs
- ServerNet LAN and WAN adapters
- ServerNet device adapters
- ServerNet Switch (6770) and ServerNet Switch (6780)
- IOAM Maintenance Entity (See your service provider for more information.)

You can perform many firmware updates manually using OSM, but some can be performed with SCF or by following TSM or OSM-guided procedures.

NonStop Cluster Switch Firmware

To monitor and manage a ServerNet Cluster product configured with 6780 switches, you can use either the OSM Service Connection or SCF commands. See the *ServerNet Cluster 6780 Operations Guide* for more information.

For information on required software, installation, migration, and fallback procedures, see the *ServerNet Cluster 6780 Planning and Installation Guide*.

ServerNet Adapter Firmware

You can manage firmware in most ServerNet adapters either manually with either OSM or TSM, or automatically, when the *autofirmup* attribute is set by SCF (the default when you add an adapter). If you choose to disable the autofirmup attribute of these adapters, then you must use the OSM Service Connection or TSM Service Application to manage the firmware manually based on the information in the table below.

Note. The ServerNet/FX and ServerNet/FX2 adapters do not provide the autofirmup capability. The firmware for these adapters *must* be managed manually.

The ServerNet adapters are:

- ATM3SA
- CCSA
- E4SA
- FESA
- GESA
- TRSA
- G4SA
- ServerNet/FX and ServerNet/FX2
- FCSA (ServerNet I/O adapter)

For more information, see the adapters' respective installation and support guides.

Firmware Updates and DSM/SCM (ZPHITI)

The DSM/SCM Target Interface (ZPHITI) provides operator instructions that inform you if any firmware needs to be updated before you run the ZPHIRNM (rename) program.

Firmware Updates Using OSM or TSM

Use the TSM Service Application or the OSM Service Connection (if OSM is already installed) to update service processor (SP) firmware and processor boot code *before* system load and to update SCSI boot code (pre-G06.08), SWAN concentrator CLIP, and other firmware *after* system load. Adapter firmware is generally automatically downloaded when a ServerNet adapter is started during system load. The easiest method for updating firmware is to use the OSM Service Connection Multi-Resource Actions dialog box to update firmware.

Firmware Update Requirements for the G06.24 RVU

If any of the firmware on your system does not match the versions listed in Table 1-2, G06.24 Updateable Firmware for ServerNet Adapters, on page 1-10, you must perform firmware updates. If OSM is not already installed and configured, use TSM to update firmware and load the system to the new RVU. If OSM is installed and configured, use the OSM Service Connection Multi-Resource Actions dialog box.

△ **Caution.** Before upgrading boot millicode using the online update function to T7892ABD, you must have the G06.24 or later version of either the TSM server (T7945ABN) or *all* OSM server-based SPRs (along with their prerequisites) configured and running. Otherwise, a system outage will result. For a list of G06.24 OSM SPRs, see OSM Server and Client Compatibility SPRs **on page 3-8**.

You must use OSM to update firmware for the HP NonStop Cluster 6780 Switch. For information on using OSM to update firmware, see the OSM online help.

Note. When migrating to G06.24 from an RVU *prior to* G06.08, update SCSI boot code *after* the system load. Update SP and processor boot code before performing the system load of G06.24.

Table 1-1 lists the updateable firmware for processors, SPs, and SCSI SACs.

Table 1-1. G06.24 Updateable Firmware for Processors, SPs, and SCSI SACs

Product Number	Description	Host CRU/FRU	Disk File Name	Default Location	Mgmt Tool	Related Information
T0503AAB	SCSI boot code	PMF and PMF 2	IBOOT	SYS*nn* subvolume	TSM SA and LLL OSM SC and LLL	Section 11, Loading the G06.24 RVU; TSM or OSM online help
T1089ABP	SP firmware	PMF and PMF 2; IOMF and IOMF2	SPCODE9	SYS*nn* subvolume	TSM SA and LLL OSM SC and LLL	Section 7, Updating Service Processor (SP) Firmware; TSM or OSM online help
T8461AAE	NonStop S7000 processor firmware	PMF and PMF 2	CPUCODE8	SYS*nn* subvolume	TSM SA and LLL OSM SC and LLL	Section 8, Updating Processor Boot Code; TSM or OSM Online User Guide
T7892ABD	NonStop S70000, S74000, S7600, S7800, S78000 S8x000 processor firmware	PMF and PMF 2	CPUCODE9	SYS*nn* subvolume	TSM SA and LLL OSM SC and LLL	Section 8, Updating Processor Boot Code; TSM or OSM Online User Guide

Table 1-2 lists the product numbers and updateable firmware for all ServerNet adapters that are installed on S-series servers and other modules connected to S-series servers.

Table 1-2. G06.24 Updateable Firmware for ServerNet Adapters

Product Number	Description	Host CRU/FRU	Disk File Name	Default Location	Mgmt Tool	Related Information
T0059AAB	ServerNet/FX (FOX Gateway) firmware	FXSA	M6740	SYS*nn* subvolume	TSM SA OSM SA	*ServerNet/FX Adapter Installation and Support Guide*
T0232G05	3862 Token-Ring ServerNet adapter	TRSA	C0232R00	SYS*nn* subvolume	TSM SA OSM SC	*Token-Ring Adapter Installation and Support Guide*
T0283G06	3863 Fast Ethernet ServerNet adapter firmware	FESA	C0283R00	SYS*nn* subvolume	TSM SA OSM SC	*Fast Ethernet Adapter Installation and Support Guide*
T0309G08	6763 Common Communication ServerNet adapter firmware	CCSA	C0309R00	SYS*nn* subvolume	TSM SA OSM SC	*6763 Common Communication ServerNet Adapter Installation and Support Guide*
T0426AAA	ServerNet/FX 2 (FOX Gateway 2) firmware	FX2SA	M6770	SYS*nn* subvolume	TSM SA OSM SC	*ServerNet/FX 2 Adapter Installation and Support Guide*
T0507G06	3865 Gigabit Ethernet ServerNet adapter (GESA) firmware	GESA-C (copper) and GESA-F (fiber optic)	C0506R00	SYS*nn* subvolume	TSM SA OSM SC	*Gigabit Ethernet Adapter Installation and Support Guide*
T7824G01^ AAA	3861 Ethernet 4 ServerNet adapter (E4SA) firmware	E4SA	C7824R00	SYS*nn* subvolume	TSM SA OSM SC	*Ethernet Adapter Installation and Support Guide*
T8158G02	ATM3 ServerNet adapter (ATM3SA) firmware	ATM3SA	C8158R00	SYS*nn* subvolume	TSM SA OSM SC	*ATM Adapter Installation and Support Guide*
T0612G06	Gigabit 4-port ServerNet adapter (G4SA)	G4SA	C0612R00	SYS*nn* subvolume	OSM SC	*G4SA Adapter Installation and Support Guide*

Table 1-3 lists the firmware for ServerNet SWAN concentrators.

Table 1-3. G06.24 Updateable Firmware for ServerNet WAN (SWAN and SWAN 2) Concentrators

Product Number	Description	Host CRU/FRU	Disk File Name	Default Location	Mgmt Tool	Related Information
T0097AAA	SWAN 2 Kernel firmware	SWAN 2 concentrator CLIPs	C7953Q00	CSS*nn* subvolume	SCF; TSM SA Guided Procedure OSM SC	*SWAN 2 Concentrator Installation and Support Guide*
T7953AAN	SWAN Kernel firmware	SWAN concentrator CLIPs	C7953P00	CSS*nn* subvolume	SCF; TSM SA Guided Procedure OSM SC	Appendix C, Updating SWAN Concentrator CLIP Firmware; *SWAN Concentrator Installation and Support Guide*

Table 1-4 lists the product number and updateable firmware information for the cluster switch. Check with Scout for the latest SPRs.

Table 1-4. G06.24 Updateable Firmware for the NonStop ServerNet Switch

Product Number	Description	Host CRU/FRU	Disk File Name	Default Location	Mgmt Tool	Related Information
T0569AAF	Cluster switch firmware	Cluster Switch	M6770	SYS*nn* subvolume	SCF; TSM SA	*NonStop ServerNet Cluster Manual*
T2790AAB	Cluster switch firmware (logic board configuration)	6780 ServerNet Switch	M2789	SYS*nn* subvolume	SCF; OSM SC	*ServerNet Cluster 6780 Operations Guide*
T2789AAB	Cluster switch firmware (logic board: router-2 firmware)	6780 ServerNet Switch (Router-2 ASIC*)	C2790	SYS*nn* subvolume	SCF; OSM SC	*ServerNet Cluster 6780 Operations Guide*
T2819AAB	Cluster switch firmware (FPGA** for hardware monitoring)	6780 ServerNet Switch (FPGA)	LBC2819	SYS*nn* subvolume	SCF; OSM SC	*ServerNet Cluster 6780 Operations Guide*
*ASIC (application-specific integrated circuit); **FPGA (field-programmable gate array)						

Table 1-5 lists the product number and updateable firmware information for the IOAM Maintenance Entity and FCSA. Check with your HP service provider for more information.

Table 1-5. G06.24 IOAM Firmware

Product Number	Description	Host CRU/FRU	Disk File Name	Default Location	Mgmt Tool	Related Information
T2805A01*	Maintenance Entity firmware	IOAM	M2805	SYS*nn* subvolume	OSM SC	*Modular I/O Installation and Configuration Guide*
T0630G06*	Fibre Channel ServerNet adapter (FCSA)	FCSA	I0630	SYS*nn* subvolume	OSM SC	*Fibre Channel ServerNet Adapter (FCSA) Installation and Support Guide*
*Only HP service providers are authorized to update the firmware. Check Scout for the latest SPRs.						

Updating Firmware Before System Load

△ **Caution.** A system outage can occur if you use the online processor boot code update option with down rev TSM and OSM SPRs. See Section 3, Installing SPRs Before Upgrading to the G06.24 RVU and the Interactive Upgrade Guide for the correct SPRs**.**

Use the TSM Service Application to update SP firmware and processor boot code *before* you perform a system load with the new RVU. HP recommends using the online processor boot code option in TSM.

If OSM is already installed and configured on your current RVU, including the client, use the OSM Service Connection Multi-Resource Actions dialog box to update firmware. HP recommends using the online processor boot code option in OSM.

Updating Firmware After System Load

Use the TSM Service Application or the OSM Service Connection (if OSM is already installed and configured) to update all remaining firmware, such as the SWAN concentrator as necessary, after you perform a system load with the new RVU.

If you are employing the 6780 ServerNet switch, you must use the OSM Service Connection to update the firmware. The same is true for updating firmware for the IOAM.

Investigating a New RVU

Several resources are available to help you plan for installing a new RVU:

- The *Release Version Update Compendium* provides highlights of the new products and features for each G-series RVU. It also discusses the effect these changes have on installation and configuration, operations and management, data files, applications, and networks.
- The Interactive Upgrade Guide simplifies the planning of software and hardware for RVUs. Select the products and RVUs you use, and the Interactive Upgrade Guide automatically displays customized migration instructions and lists new features.
- The *Managing Software Changes* manual explains the TRM2000 and provides information about system migration and installation processes, software product revision (SPR) analysis, and resources for investigating new RVUs and SPRs.
- Scout for NonStop Servers is a Web-based SPR analysis and delivery tool. You can access Scout through HP NonStop eServices Portal at https://onepoint.nonstop.compaq.com/buildpage.asp. Online help for using Scout is available on the Scout Website.
- The DSM/SCM Planner Interface provides a facility for viewing and printing softdocs after you receive new software into the archive. See the *DSM/SCM User's Guide* for more information.

Installing a New RVU

Note. A checklist is provided in Section 2, G06.24 Upgrade Checklists that summarizes the tasks required to upgrade to G06.24.

Table 1-6 maps the major tasks involved in installing a new RVU to the tools with which you perform the tasks and the sections in which these tasks are documented.

Table 1-6. Tasks and Tools for Installing the G06.24 RVU (page 1 of 2)

To Perform This Task...	Use This Tool...	Documented in...
1. Install a D46 product version of DSM/SCM and fallback/interoperability SPRs. HP recommends that you install the D46 SPR on the host and on the client. You must also install the SWID product T9298D40^AAK if you are running an RVU before G06.20.	DSM/SCM Planner Interface	Section 3, Installing SPRs Before Upgrading to the G06.24 RVU Appendix B, Installing the Latest DSM/SCM SPRs and Client Software
2. Save the current configuration file (CONF*xxyy*).	Subsystem Control Facility (SCF)	Section 4, Preparing to Upgrade the Server Software
3. Upgrade the system console to TSM client software Version 2003A (if necessary). or upgrade the OSM client-component software	NonStop System Console Installer	*NonStop System Console Installer Guide* System Console Requirements on page 1-1.
4. Receive new G06.24 software into the DSM/SCM Archive.	DSM/SCM Planner Interface	Section 5, Installing the G06.24 RVU
5. Create a new software revision.	DSM/SCM Planner Interface	Section 5, Installing the G06.24 RVU
6. Build and apply the activation package.	DSM/SCM Planner Interface	Section 5, Installing the G06.24 RVU
7. Install and configure the latest TSM or OSM server SPRs	DSM/SCM Planner Interface	See the *OSM Migration Guide* or the TSM softdocs. See also support note S03133A.
8. Replace disk bootstrap microcode (if migrating from an RVU prior to G06.06).	Subsystem Control Facility (SCF)	Section 6, Replacing the Disk Bootstrap Microcode (Pre-G06.06)
9. Perform firmware updates required *before* system load.	TSM Service Application or OSM Service Connection (if OSM is installed)	Section 7, Updating Service Processor (SP) Firmware Section 8, Updating Processor Boot Code
10. Activate the new software revision.	DSM/SCM ZPHIRNM program	Section 10, Running ZPHIRNM

Table 1-6. Tasks and Tools for Installing the G06.24 RVU (page 2 of 2)

To Perform This Task...	Use This Tool...	Documented in...
11. Update EMS template files (if necessary).	INSTALL^TEMPLATES TACL macro	If Running INSTALL^TEMPLATES Is Required on page A-7
12. Halt the processors.	TSM Low-Level Link Application or OSM Low-Level Link	Halt the Processors on page 11-2
13. Load the new operating system from disk into the memory of one processor (system load).	TSM Low-Level Link Application or OSM Low-Level Link	Section 11, Loading the G06.24 RVU
14. Reload the new operating system into the rest of the processors.	TACL RELOAD command	Section 11, Loading the G06.24 RVU
15. Perform firmware updates required *after* system load.	TSM Service Application or OSM Service Connection. (Must use OSM for 6780 switch and MSIO.)	Section 9, Updating SCSI Boot Code (Pre-G06.08 RVU) Section C, Updating SWAN Concentrator CLIP Firmware
16. Configure specific optional products	SCF, macros	Configure Specific Products (Post-System Load) on page 12-12

Upgrading NonStop S-Series Servers

If you are upgrading from the NonStop S7000 system (NSR-W), and before you upgrade to S76000 (NSR-X), S86000 (NSR-Y) / S7600 (NSR-E), NonStop S7800 (NSR-J), S78000 (NSR-H), S88000 (NSR-Z), you must change the SYSTEM_PROCESSOR_TYPE in the ALLPROCESSORS paragraph in the CONFTEXT file. In the CONFTEXT file, you can specify *only one* processor type. Neither NSR-D (S7400), nor NSR-W (S7000) can be specified in a system with mixed processor types.

For processor model S70000 running G06.24 and later, you must change the processor type from NSR-G to NSR-C in the ALLPROCESSORS paragraph in the CONFTEXT file. Failure to change the processor type when loading the new SYS*nn* causes an immediate %100441 halt. All other references to NSR-G are still valid, which means that any query performed on the system will return NSR-G if the PMF is a model 1951 PMF CRU (S70000).

After you change the CONFTEXT file, you must perform all required DSM/SCM requests to create a new SYS*nn*, including the new processor type. Perform a system load of the new SYS*nn* after the new hardware is installed.

△ **Caution.** Never load the new SYS*nn* that contains the new processor type into your current processors. Otherwise, a system outage will result, and you will have to fall back to your previous RVU. To check your current processor type, use either OSM, if installed and configured, or TSM.

For details on processor types, see the *NonStop S-Series Planning and Configuration Guide*.

Installing an IOAM Enclosure and Other Components

△ **Caution.** IOAM enclosures must be installed by service providers trained by HP.

An IOAM enclosure enables you to access additional disk storage. It is mounted into a standard 19-inch rack and connects to the MSEB of S76000 and later S-series systems. IOAM enclosures contain several components, including specially-designed ServerNet I/O adapters. One adapter of this type is the Fibre Channel ServerNet Adapter (FCSA), which is used to connect to additional disk storage, such as an Enterprise Storage System (ESS) disk.

In preparation, note that:

- Your site must be equipped with an operational LAN.
- Your site must have access to a DHCP server, or you must have software that mimics one.
- IP addresses are assigned dynamically.
- Both Tetra-8 and Tetra-16 are supported for IOAM installation.

Note. For more information about installing and configuring FCSAs or the ESS, contact your HP service provider.

Before the HP service providers install and configure the IOAM and its other hardware components, the G06.24 SUT is installed and a system load is performed. You must have the latest OSM client and server installed and configured.

Certain limitations exist for configurations that include ESS or IOAM enclosures. For a comprehensive list of these limitations, contact your HP representative. Some limitations are:

- If you migrate data from a NonStop S-series system to an ESS, and the data is located on disks within I/O enclosures, these I/O enclosures must be populated with IOMF 2 CRUs.
- Only ESS-trained technicians can handle or configure ESS equipment. For any activities that involve installing, configuring, or operating the ESS, the technician trained for working with the ESS must be on site and available.

- You must install the IOAM enclosure as group 11, 12, 13, 14, or 15. The presence of an IOAM enclosure in your system requires that certain other groups be left empty. For more information, contact your service provider.
- You must isolate SWAN adapters on your system before you install an IOAM enclosure. For more information, contact your service provider.

Migrating Existing Data to ESS

The migration of existing data from internal SCSI-attached, 514-byte sector disks to industry standard, 512-byte sector disk subsystems includes an improved method for checksum protection. The new checksum protection method employed for unstructured files requires the data stored on disk be contiguous and aligned in units of 28KB.

When a non-partitioned unstructured file is created or migrated to ESS, the extent sizes are rounded up to a mod-14 boundary, since an extent page is 2KB. This ensures continuity of the data set protected by the checksum. This design ensures the best possible performance for unstructured files, without adding significant overhead for checksums. Each 28KB of data is protected with a 4KB check block, which contains the checksum information.

Partitioned unstructured files *cannot* be migrated to an ESS without first performing a migration of all partitions of the unstructured file set to a mod-14 extent boundary. Partitioned unstructured files must use the same extent size and maximum extents for all partitions because positioning is dependent upon a consistent size for each of the partitions. Online migration attempts will abort when an unstructured partitioned file *without* mod-14 extent sizes is present on the source disk.

Before attempting a migration to ESS, rebuild all partitions, using a mod-14 extent size. Usually, this is accomplished by an offline copy to a new partition set.

The FCHECK utility (G06.24) includes a migration option that reports the files that cannot be migrated to ESS because of this format limitation, in addition to reporting the amount of disk space required for check block protection.

Falling Back to the Previous RVU

If you encounter a problem that cannot be resolved while running G06.24, you can fall back to a previous G-series RVU, provided you have already installed the appropriate fallback SPRs for your system.

Fallback SPRs are described in Section 3, Installing SPRs Before Upgrading to the G06.24 RVU.

Using DSM/SCM FALLBACK and CLEANOSS Macros

If you need to fall back from an RVU that does not have installed a D46 DSM/SCM PVU, you must run the DSM/SCM FALLBACK macro from the ZDSMSCM subvolume. The interactive macro must be run by the DSM/SCM owner or by super ID (255,255). The FALLBACK macro reverts the DSM/SCM Host or Target, or both, database back to a pre-D46 state for use by a pre-D46 product version of DSM/SCM. The FALLBACK macro removes all DSM/SCM OSS management information. Therefore, you must always use the COPYOSS procedures to install OSS software until you re-enable DSM/SCM to manage OSS files.

To later manage OSS files again, you must migrate to the DSM/SCM D46 PVU and re-receive the software into the archive to properly process the DSM/SCM-enabled OSS software.

If a Host and Target system are running on the D46 product version of DSM/SCM and only the Host falls back to a pre-D46 product version, run the FALLBACK macro only on the Host system.

Notes on the FALLBACK Macro

The FALLBACK macro will not be available in the ZDSMSCM subvolume when you fall back to an RVU *prior to* G06.18. Therefore, you must retrieve the FALLBACK macro from the SUT prior to falling back or use the FUP DUP command to copy it to a subvolume for use during fallback.

Note that you can migrate back to an earlier RVU SUT version without migrating back to an earlier DSM/SCM version. To do this and eliminate the need to run the FALLBACK macro, copy T6031D46 into the configuration on top of the older SUT. See the *DSM/SCM User's Guide* for more information.

Notes on the CLEANOSS Macro

If you fall back and then migrate to a G06.18 or later RVU, DSM/SCM might notify you during the Apply that the CLEANOSS macro must be run. The current OSS environment is being managed by a logical target other than the one trying to manage OSS files with the current DSM/SCM Build/Apply. You must cancel the Apply, and run the CLEANOSS macro. The EMS message gives you basic instructions:

```
The current OSS environment is managed by target oss-system
(according to /zzDSMSCM.Managed). To switch OSS management
from oss-system to target-system, CANCEL the Apply, run
CLEANOSS, run Verify Database, then RESTART the Apply.
```

If you receive the following EMS message (5305), or a similar one, it indicates that you *are* running the D46 PVU of T6031 *but not* the most current EMS templates to effectively display the CLEANOSS message. It is possible that you restored the T6041D46 PVU from tape and activated it, but the correct templates were either not properly installed or the NonStop Kernel is pointing to the wrong template files:

```
11:43:03 AM 10/27/03 $Z420 DSM/SCM: *5305* Server Class TA-001 of PATHMON
\TINY.$YPHI activity id \TINY211933793397226152, activity code 20, planner id
SUPER.SUPER in stage 202:
EMSTEXT -- No template and no TEXT token for event.  SSID = TANDEM.DSMSCM.D30
Event number = 5305  Subject = \TINY211933793397226152
```

See the *DSM/SCM Messages Manual* for more information on what message should be displayed. You can probably continue, but you will not receive properly formatted and detailed DSM/SCM EMS messages.

For detailed information on using the FALLBACK macro and CLEANOSS, see Section 12 in the *DSM/SCM User's Guide*. For more information on configuring DSM/SCM Targets, see the *DSM/SCM User's Guide*.

DSM/SCM Client and Server Compatibility

The D46 DSM/SCM client is backward compatible with other DSM/SCM product versions (backward compatible to T6030D30/T6031D30 [AAO and later]).

Using ZPHIRNM

After you have returned the SP firmware, processor boot code, and SCSI boot code back to the previous versions, if needed, you must run the ZPHIRNM program *again* to change the temporary names of the previous product files to their actual names. ZPHIRNM renames all files associated with the software revision last applied to the operating system image (SYS*nn*) subvolume.

Note. In most instances, it is not necessary to return SP firmware or SCSI boot code back to the previous firmware versions when falling back to an earlier RVU. Check with Scout for SPR backward compatibility. If you are returning to an RVU prior to G06.16, you *must* return processor boot code back to the previous version before performing a system load of the previous RVU. If you are returning to a G06.16 or later RVU, it is not necessary to return processor boot code back to the previous version.

Table 1-7 maps the major tasks involved with falling back to a previous RVU to the tools with which you perform the tasks and the sections in this guide in which these tasks are documented.

Table 1-7. Tasks and Tools for Falling Back to the Previous RVU

To Perform This Task...	Use This Tool...	Documented in This Section...
1. Submit a backout request.	DSM/SCM Target Interface (ZPHITI)	Section 14, Backing Out the DSM/SCM Revision
2. Return the firmware back to the prevision versions (if necessary).	TSM Service Application OSM Service Connection (if installed)	Section 15, Returning Firmware to Previous Versions
3. Reactivate the previous software revision.	DSM/SCM ZPHIRNM program	Section 16, Running ZPHIRNM to Reactivate the Previous Software Revision
4. Load the NonStop Kernel from the previous RVU into the first processor.	TSM Low-Level Link Application OSM Low-Level Link (if installed)	Section 17, Loading the Previous RVU and Resuming Normal Operations
5. Reload the remaining processors.	TACL RELOAD command	Section 17, Loading the Previous RVU and Resuming Normal Operations
6. Run the FALLBACK macro if DSM/SCM has been reverted back to a pre-T6031D46 version.	FALLBACK macro	Section 17, Loading the Previous RVU and Resuming Normal Operations

Resecuring and Licensing Requirements

Following are important resecuring and licensing requirements.

NonStop TCP/IP FTP (G06.08)

ALL files in the CSS*nn* subvolume must be secured “NUNU” to work properly. See the T6022AAG or later softdoc for details.

Do Not Move or Relicense Pathway Files

The HP NonStop TS/MP PATHMON (T8344) product and Pathway/iTS (T8343) must be licensed before the PATHMON process can start an application.

△ **Caution.** DSM/SCM *requires* the presence of HP NonStop TS/MP. The DSM/SCM product places these files in the correct volume and subvolume. The ZLICSA59 and ZLICSA58 files must be installed in the subvolume $SYSTEM.ZPATHWAY. *Do not move* these files.

If you receive a licensing error as listed in Table 1-8, TS/MP has not been licensed.

Table 1-8. Pathway Licensing Errors

Licensing Error	Description
1163	The PATHMON process could not start because it could not confirm that either the TS/MP product or the Pathway/iTS product is licensed for your site.
1164	A command to a remote system requires the TS/MP or the Pathway/iTS product, but the PATHMON process cannot confirm that the required product is licensed for the remote system. For example, you will receive this error if you attempt to use PATHCOM to define a server class on a remote system when TS/MP is not licensed for that remote system.
3245	Your application program has attempted to issue a SCREEN COBOL SEND operation to an external terminal control process (TCP) on a remote system, but the local TCP could not confirm that the Pathway/iTS product is licensed for the remote system. The SEND operation fails.

Secure SCF Product Modules (G*nn.nn*)

You can secure SCF product modules with network read and execute access, NxNx. SCF product modules are named Z*xxx*SCF (where *xxx* is the three-letter product acronym) and are installed on $SYSTEM.SYSTEM.

Resecure Visual Inspect (G*nn.nn*)

Visual Inspect consists of a server component (T9756), a standard product distributed on all SUTs, and a client component (T7877), which is an independent product (IP). If necessary, resecure the server INSPECT files (INSPBRKR, INSPRULE, INSPSVR, and INSPSMSG) in the SYS*nn* subvolumes with network read and execute access, NxNx.

For other migration issues, see Visual Inspect (G06.20) on page 1-40.

G06.24 Installation and Fallback Alerts for Products

Review carefully the following alerts for products before upgrading to the G06.24 RVU. Several tasks are required either before or during the upgrade to ensure that you will be able to upgrade to G06.24 or to fall back to a G06.06 or subsequent G-series RVU if necessary.

4619 Disk Drives

The 4619 disk drive can be installed in the same system enclosure as disk drives of different model numbers. However, disk drives in a mirrored volume must always be the same model number, even if they are of the same capacity. Because of the difference in rotational speed between the 4618 (10K rpm) and 4619 (15K rpm) disk drives, placing the 4618 and 4619 disk drives in a mirrored volume is supported only during an online disk replacement procedure.

6780 ServerNet Switch (G06.21)

For information on required software, installation, migration, and fallback procedures, see the *ServerNet 6780 Planning and Installation Guide*.

Backup and Restore 2 (BR2) (G06.24)

Backup and Restore 2.0 supports OSS and SQL/MX files and consists of these major components:

- Backup and Restore Command Interface (BRCOM) (T2721)
- Data Service (T2750)
- Data Management Application (DMA) (T2749)
- Tape Service (T2722)

For more information on these SPRs, see the Interactive Upgrade Guide.

These Backup and Restore 2.0 SPRs that support OSS files are included on the G06.24 SUT:

- T2721AAB (BR 2 BRCOM)
- T2722AAB (BR 2 Tape Services)
- T2749AAB (BR 2 DMA & Cmd Stream Proc
- T2750AAB (BR 2 Data Services)
- T2826AAB (BR 2 OSS Agent)

To use Backup and Restore 2.0 for *SQL/MX tables*, you must apply these or superceding SPRs:

- T2721AAC (BR 2 BRCOM)
- T2722AAC (BR 2 Tape Services)
- T2749AAC (BR 2 DMA & Cmd Stream Proc)
- T2750AAC (BR 2 Data Services)

The AAC SPRs are not included on the G06.24 SUT. You must also install any co-requisite SPRs listed in the softdocs. For more information on the SPRs, see the Interactive Upgrade Guide. Information for backing up and restoring SQL/MX tables and OSS files is documented in the *Backup and Restore 2.0 Manual*.

C++ (G06.20)

The G06.20 RVU includes a fully ANSI 98-compliant C++ run-time library, designated as the C++ v3 run-time library (v3 RTL). Starting in G06.20, you have a choice of three different C++ language dialects: v1, v2, and v3. The default compiler dialect setting is changed from v1 to v3. The build file for any product that invokes a TNS/R native C++ must be examined and changed according to certain rules that are documented in the Interactive Upgrade Guide.

DP2 (G06.16, G06.23, G06.24)

If you set the AUDITTRAILBUFFER or the SQLMXBUFFER attribute to 128 or more, you need to reset these values to 0 before falling back to G06.16 or an earlier RVU. If you fail to do so, TMF might not start, or a disk volume might go offline. You can recover from this situation by using the SCF ALTER command. See the Interactive Upgrade Guide for details.

If you are planning to use SQL/MX Release 2.0, HP recommends that you apply one of these DP2 fallback SPRs on your current SYSnn before upgrading to G06.23 or G06.24:

- T9053AOY, if the system uses the online disk remirror feature
- T9053AOZ, if the system does not use the online disk remirror feature.

After installing the fallback SPR, test it sufficiently for production use. Then you can migrate to G06.23 or G06.24. If you are using SQL/MX Release 2.0 and you have to fall back to a previous RVU, and you have created SQL/MX objects or audit records, you must have this fallback SPR installed on your current SYS*nn*.

See the Interactive Upgrade Guide and support note S04057.

If you are planning on using the new TMF format 2 audit trail format, migration issues might apply for DP2. The T9053G11 PVU provides support for TMF large audit trails and two new disk attributes for REVIVE. See the softdoc T9053G11.

Gigabit Ethernet ServerNet Adapter (G06.16)

Any Gigabit Ethernet ServerNet adapters (GESAs) installed while migrating to G06.24 must be removed from the system during any fallback to an RVU prior to G06.16.

Minimum Memory Requirements (G06.16)

Beginning with the G06.16 RVU, NonStop S-series servers require a minimum 256 MB of main memory.

NonStop Kernel (NSK) Utilities (T9070AAK) (G06.22, 23, 24)

Under rare circumstances, the branch prediction logic of an NonStop S-series server can cause a hardware error freeze (HEF). The patch utility is applicable to only S74000/S7600 and S72000/S7400 processors. If you have S74000/S7600 processors, you can still continue to use T9070AAK. The utility is not needed for the newest processors S7800, S78000, and S88000. If you have S76000 or S86000 processors, read HS02830. For detailed information on the branch prediction logic utility, including its applicability to your environment, read HS02774 (HS02774F). Note that whenever the processor is reloaded, offline maintenance activities can make the patch inactive.

OSM Configuration and Fallback (G06.08 to G06.24)

For fallback issues, see the *OSM Migration Guide*. The guide covers OSM and TSM co-existence and fallback issues, such as:

- Comparison of OSM to TSM
- OSM hardware and software requirements
- Migrating an existing TSM system list to a new console for OSM use
- Co-existence issues for using both OSM and TSM
- Fallback instructions for changing configuration from OSM back to TSM

OSS (G06.12 through G06.24)

As of G06.12, the format of the records in the OSS configuration databases has changed. A special SPR, T8622AAH, ensures backward compatibility if you need to fall back to an RVU prior to G06.12.

Note. Note that T8622AAH cannot be applied to RVUs *prior to* G06.00. If you are migrating to G06.24 from an RVU prior to G06.00, you cannot fall back to your previous RVU unless you follow very strict guidelines.

These are additional considerations for OSS upgrade and configuration:

- Disk volumes that are accessed by the OSS environment, including the $SYSTEM volume where the OSS Monitor's configuration files are kept, must not be configured for administration by the HP NonStop Storage Management Foundation (SMF).
- Beginning with the G06.18 RVU, OSSMON is not dependent on $zsmp to be started. In earlier G-series and D-series RVUs, when you configured OSSMON to start automatically during the system load process, you had to configure the Safeguard security manager process $ZSMP to start automatically before OSSMON was started.

  For more information, see:
  - *Open System Services Installation Guide*
  - *Open System Services Management and Operations Guide*
  - Interactive Upgrade Guide
  - Support Note S01025

- Beginning with the G06.18 RVU, all OSS SUT-based products with `pax` files must have the A7CINFO file in their DSVs to be installed by DSM/SCM. Before installing the SUT:
  - Check the Interactive Upgrade Guide for DSM/SCM support and other new features and possible migration issues.
  - Check the appropriate softdoc for the OSS product.
  - Check that all OSS file sets used by DSM/SCM for OSS file installation are mounted and started.
- Beginning with the G06.23 RVU, you can use SCF to configure an OSS process as a persistent process under the persistence manager ($ZKRN). To configure OSS persistent processes, you must have *all* of these SPRs installed (available at G06.24 unless otherwise indicated):
  - T1084G06AAH
  - T1085G06AAL
  - T6586G07AAU
  - T5800G06AAP
  - T9082ACX (SCF)
  - T9082G02ACX
  - T8624G10AAM (now available, starting in August 2004)
  - T8397G00ABA (see your service provider for availability)

  OSS persistent processes can be used without SPRs T8624G10AAM and T8397G00ABA. If those SPRs are not installed, some OSS applications might fail at processor startup unless modified to include an initial delay (on the order of 10 seconds). This delay is not needed when you install those SPRs.

  Without T8624G10AAM and T8397G00ABA, when an OSS shell is launched immediately after a processor comes up, the shell needs to wait until processor components of the OSS environment such as the OSS pipe server finish initialization. The necessary delay can be achieved by adding an OSS `sleep 10` command either to the STARTUPMSG attribute or as the first entry in the script launched by the STARTUPMSG attribute.

  See the `sleep(1)` reference page either online or in the *Open System Services Shell and Utilities Reference Manual* for more information about the `sleep` command.

  For more information about the new attribute and considerations for its use, see the *SCF Reference Manual for the Kernel Subsystem.*
- Beginning with the G06.24 RVU, the OSS `gtacl` command has two more optional flags added to its command line. See the T8628AAJ softdoc for more information. If you have to fall back to a previous RVU, scripts that contain one or more of these `optional` flags must be revised because the function will not be available.

Open System Services (OSS) and DSM/SCM (T6031D46 PVU)

Starting with the G06.18 RVU, all OSS SUT-based products with `pax` files must have the A7CINFO file in their DSVs to be installed by DSM/SCM. Check the Interactive Upgrade Guide or the softdoc corresponding to the OSS products to ensure that the A7CINFO file is present.

If the OSS product is released *without* the A7CINFO file, you can still install the product by using PINSTALL or COPYOSS.

If the OSS product is released *with* the A7CINFO, do not use PINSTALL/COPYOSS to install those `pax` (archive) files; these files are installed and maintained by DSM/SCM.

The Receive Software activity for the OSS products with A7CINFO files in their DSVs can only be performed when the installation of the new product version (PVU) T6031D46 is complete on the Host. The T6031D46 PVU of DSM/SCM is required to process the A7CINFO files present in the DSVs of the OSS products.

When using DSM/SCM to receive the SUT and perform a Build/Apply, you must perform the following tasks:

1. When performing a DSM/SCM Receive Software activity on the Host, select the **Receive all files** option.
2. In the Planner Interface for the Target system, select the Manage OSS Files option.
3. Check that the OSS Root Name Server $ZPNS is running on the Target. The volume where the SYS*nn* is being placed must be up as $SYSTEM to install OSS files.
4. After you run ZPHIRNM, run the `merge_whatis` command.

Unautomated configuration and OSS startup is described in Appendix B in the *Open System Services Management and Operations Guide*.

DSM/SCM (T6031D46) Fallback

The FALLBACK macro is in the ZDSMSCM directory. Run the FALLBACK macro if DSM/SCM has been reverted back to a pre-T6031D46 version. The FALLBACK macro will not be available in the ZDSMSCM subvolume when you fall back to a prior G06.18 RVU. Thus, you must retrieve the FALLBACK macro from the SUT prior to falling back or use the FUP DUP command to copy it to a subvolume for use during fallback.

See the *DSM/SCM User's Guide* and online help for more information.

OSS EasySetup (T0585) (G06.16, G06.23)

The OSS EasySetup product (T0585) is available for automated setup, as described in the *Open System Services Installation Guide*. OSS EasySetup is a series of TACL scripts that assist a site when configuring and installing a minimal OSS subsystem for the first time or when starting, stopping, or removing an OSS subsystem. OSS EasySetup requires the process $NULL and the installation of SPI template files.

The product NULL (T6025) is included on each SUT even though for G06.23 and later, with new PARAMs introduced, $NULL and $ZSMP are no longer required to bring up the OSS Monitor. You no longer are forced to install them.

Starting in G06.23, EasySetup allows use of ZSPI definition files installed other than in the default location and allows use of a non-default ISV disk for OSS.

NonStop SQL/MP

In general, when migrating to a new version of NonStop SQL/MP software, you should be reasonably sure you do not want to revert to the previous version of the software before you perform any of the following actions:

- Create a NonStop SQL/MP catalog whose version is newer than the previous version of the NonStop SQL/MP software. This situation occurs automatically when you create a catalog on a node running the new version of the software.
- Create a NonStop SQL/MP table using new features that cause the version of the table to be newer than the previous version of NonStop SQL/MP software.
- Compile a program using the new version of the NonStop SQL/MP compiler.

NonStop SQL/MX Release 2.0 (G06.23 and G06.24)

Note. SQL/MX Release 2.0 requires processors that support IEEE floating-point functions. All processors in a node on which SQL/MX Release 2.0 is installed must be Model 1954 (S72000) or newer. A processor halt%005101 can result when one or more processors in a system do not meet the minimum hardware requirements for installing SQL/MX Release 2.0.

In addition to supporting IEEE floating-point functions, a NonStop system on which SQL/MX Release 2.0 is installed must support the SQL/MX minimum requirement of 1GB per processor. For more information about the SQL/MX hardware and memory requirements, see the *SQL/MX Installation and Management Guide*.

See the *G06.23 Release Version Update Compendium,* the Interactive Upgrade Guide, and the *SQL/MX Installation and Management Guide* for more information about migrating to SQL/MX Release 2.0. See also the *SQL/MX Comparison Guide for SQL/MP Users* and the T0650ABA softdoc, which is the master softdoc for software components included in SQL/MX Release 2.0.

SQL/MX Release 2.0 delivers the newly architected, standards-based SQL/MX tables for NonStop servers. SQL/MX Release 2.0 provides general availability support for operations against SQL/MP tables. Support for SQL/MX tables is *not* included in the G06.24 RVU. The function, when available, will be shipped as SPRs and is planned to be compatible with G06.23 and G06.24.

Migration Considerations for SQL/MX Release 2.0

Metadata tables created and used by SQL/MX Release 2.0 running on the G06.23 and G06.24 RVUs are different from those metadata tables used on prior SQL/MX releases, and the tables are very different from those used by SQL/MP. You must be on at least Release 1.8 to migrate to SQL/MX Release 2.0, and Release 1.8 is the only version of SQL/MX, which you can fall back to from Release 2.0.

Only the metadata from R1.8 should be migrated to the Release 2.0 format. To facilitate migrating *metadata*, a `migrate` utility is provided with Release 2.0.

Migration and fallback considerations do apply. See also TMF (G06.23 and G06.24) on page 1-38 and DP2 (G06.16, G06.23, G06.24). In multinode installations, where queries must access data on other nodes, all nodes must migrate to SQL/MX Release 2.0 at the same time. A mixture of nodes running SQL/MX Release 1.8 and SQL/MX Release 2.0 is not supported. Because SQL/MX Release 2.0 is an optional product, it can be un-installed after it has been installed on an S-series system. You must perform a system load, but you do not need to change your current RVU unless you want to use a previous release of SQL/MX.

A quick summary of fallback and migration considerations include:

- To fall back to SQL/MX Release 1.8, you must reinstall your previous RVU and certain versions of some pre- or co-requisite software product.
- Fallback to SQL/MX releases earlier than SQL/MX Release 1.8 is not supported. If you are using a SQL/MX release that preceded Release 1.8, you must migrate to an RVU that supports Release 1.8 (G06.18 through G06.22) before migrating to SQL/MX Release 2.0 (G06.23 or later).
- If you are migrating from an SQL/MP or SQL/MX Release 1.8 environment, do not delete your SQL/MP metadata tables until you are sure you do not need to fall back. (Deleting these tables will prevent a successful fallback.)
- SQL/MX Release 2.0 applications you have developed prior to fallback are not usable with the SQL/MX Release 1.8.
- To fall back to an SQL/MP database environment, you do not have to reinstall your previous RVU. (SQL/MP is included in the G06.23 and G06.24 RVUs.) To fall back to an Enscribe database environment, you do not have to reinstall your previous RVU. (Enscribe is included in the G06.23 and G06.24 RVUs.)
- Applications that you compiled with the SQL/MX Release 2.0 compiler need to be recompiled with the previous release of the SQL compiler after fallback.

- If you modify or create new SQL/MP aliases, defaults, or stored procedures in Java (SPJs) in the SQL/MX Release 2.0 environment, there are no automated tools for moving the associated SQL/MX metadata back to SQL/MP metadata tables. Moving metadata will require you to execute SQLCI commands such as CREATE MPALIAS, CREATE PROCEDURE, and INSERT INTO DEFAULTS after reinstalling SQL/MX Release 1.8. For information about these commands, see the *SQL/MX Reference Manual.*
- If you fall back to a database environment that does not support multienvironment SQL modules, any and all locally-placed modules must be converted to globally-placed before you fall back. You will be unable to fall back successfully if a naming conflict exists between locally-placed or globally-placed modules. For more information, see the *SQL/MX Installation and Management Guide.*
- *Before migrating* to SQL/MX Release 2.0, HP recommends that you install one of these DP2 fallback SPRs on the Release 1.8 system and test it sufficiently for production use:
  - T9053AOY, if the system uses the online disk remirror feature
  - T9053AOZ, if the node does not use the online disk remirror feature

  Then you can migrate to G06.24. If a fallback becomes necessary at a later time, you can fall back to the tested environment. For the steps to fall back from SQL/MX Release 2.0, see the *SQL/MX Installation and Management Guide*.

  Note. Note that a system load is required to install the DP2 fallback SPR.

- You should remove all SQL/MX Release 2.0 objects and their resource forks before attempting to fall back. SQL/MX objects are difficult to remove from a system with an RVU earlier than G06.23. Typically, you use the MXCI DROP command to drop all SQL/MX Release 2.0 objects. If you encounter problems using MXCI to drop SQL/MX Release 2.0 objects, you can use the mxtool `GOAWAY` command instead. (`GOAWAY` is an OSS command line utility.) For information about MXCI and mxtool commands, see the *SQL/MX Reference Manual*. After you fall back, the SQL/MX GOAWAY utility will not be available and SQL/MX objects will be much more difficult to remove.
- After falling back, if you have to remove any residual SQL/MX objects:

  1. Use the FUP INFO command to locate any SQL/MX files remaining on the system. Because SQL/MX objects reside in subvolumes that begin with the letters ZSD, use this command to find them:

     ```
     1>FUP INFO $*.ZSD*.*
     ```

  2. Use the DELETE command of the DIRCHECK disk utility to delete the files. For example:

```
2>$system.zutil.dircheck delete name $data08.zsdm819j.wdxhp600

System: \MOLE   PID: (0, 72)   8-Apr-2004 18:06:57

*WARNING*  SQL Catalog will not be updated when SQL labels are deleted.
*WARNING*  Extents are lost when file/table labels are deleted.
```

Note. When using DIRCHECK, remember:

- You must be the super ID (255,255).
- The DIRCHECK DELETE command deletes any internal labels associated with a specified file. Because of this, DIRCHECK indicates that multiple labels have been deleted after you delete one file.

To view online help for DIRCHECK, enter:

```
$system.zutil.dircheck help
```

To view online help for the DIRCHECK DELETE command, enter:

```
$system.zutil.dircheck help delete
```

---

3. Rebuild the disk free-space table by using the SCF CONTROL DISK $*volume*, REBUILDDFS command. For more information about CONTROL DISK, see the *SCF Reference Manual for the Storage Subsystem*.

Installing SQL/MX Release 2.0

Check that TMF is configured and running on the system node where you will install SQL/MX. See the *TMF Planning and Configuration Guide* for TMF installation guidelines. Note that all SQL/MX *objects* must reside on volumes audited by TMF. SQL/MX *program files* do not need to reside on audited volumes.

Before installing SQL/MX, review the *SQL/MX Installation and Management Guide*. Make sure that you have performed all pre-installation instructions as outlined in sections 1 and 2. Section 3 describes, in detail, how to install SQL/MX.

You install SQL/MX after performing a system load of the new RVU and performing other post-installation steps. (See Section 12, Resuming Normal Operations.)

NonStop Processor Multifunction (PMF) CRUs (G06.08 through G06.24)

If you upgrade to NonStop PMF CRUs while installing G06.24 and have to return to an RVU prior to G06.24, review Table 1-9 to see if you have to remove PMF CRUs:

Table 1-9. Upgrading to NonStop S-Series CRUs and Falling Back

NonStop PMF CRU	RVU	Action
S7400	G06.08	S7400 PMF CRUs must be removed; these PMF CRUs are supported in G06.08 and later RVUs only.
S74000	G06.08	S74000 PMF CRUs must be removed; these PMF CRUs are supported in G06.08 and later RVUs only.
S7600	G06.17	S7600 PMF CRUs must be removed. NonStop S7600 PMF CRUs are supported for G06.17 and later RVUs only.
S76000	G06.16	S76000 PMF CRUs must be removed. NonStop S76000 PMF CRUs are supported for G06.16 and later RVUs only.
S86000	G06.16	S86000 PMF CRUs must be removed. NonStop S86000 PMF CRUs are supported for G06.16 and later RVUs only.
S7800	G06.23	S7800 CRUs must be removed. NonStop S7800 CRUs are supported for G06.16 and later RVUs only. The correct OSM or TSM SPRs (for instance, TSM T7945ABL or later) must be installed. See the Interactive Upgrade Guide for details.
S78000	G06.24	S78000 CRUs must be removed. NonStop S78000 CRUs are supported for G06.16 and later RVUs only. The correct OSM or TSM SPRs (for instance, TSM T7945ABN or later) must be installed. See the Interactive Upgrade Guide for details.
S88000	G06.24	S88000 CRUs must be removed. NonStop S88000 CRUs are supported for G06.24 and later RVUs only. See the Interactive Upgrade Guide for details.

Spooler (G06.00 through G06.19)

If your current product version of spooler is T9101D41 ADM or later, you do not need to restore copies of both the control file and the collector data files if you must back out of the new RVU. All versions of T9101D41, starting with T9101D41 ADM, contain Version 5 of the spooler control file and are compatible with the T9101D46 and D48 product versions of spooler. However, it is always recommended that the spooler control file and collector data files be backed up prior to any migration or change in configuration.

Checking Current Version

To find out which version of the spooler you are currently running, enter a VPROC command for $SYSTEM.SYSTEM.SPOOLCOM. The following example shows that a D48 product version of the spooler is running:

```
$USER0 PRS 5> vproc $system.system.spoolcom
VPROC - T9617G03 - (30 AUG 2002) SYSTEM \IGATE    Date 08 JUL 2003,
21:16:17 Copyright Compaq Computer Corporation 1986 - 2002


$SYSTEM.SYSTEM.SPOOLCOM
   Binder timestamp:   08JUN2003 21:24:34
   Version procedure:  T9101D48^08AUG2003^IPM^T9101AEZ
   Target CPU:         UNSPECIFIED
```

Backing Up the Spooler Environment

Prior to backing up the spooler environment, use the SPOOLCOM;SPOOLER,DRAIN command to perform an orderly shutdown of the spooler. This strategy ensures that all spooler control files and collector data files are closed. Failure to drain the spooler prior to backing up the control file and collection files could cause problems while attempting to recover the spooler environment.

Prior to executing the SPOOLCOM;SPOOLER,DRAIN command:

- Use the SPOOLCOM;COLLECT $*collector-process*, LISTOPENS command to identify processes that currently have jobs open.
- Use the SPOOLCOM;JOB (STATE PRINT) command to determine which jobs are currently printing.

Take the appropriate action to ensure that these jobs either terminate when finished or are stopped.

△ **Caution.** To maintain the integrity of the spooler environment, wait until the spooler has finished draining rather than stop any spooler processes by using the TACL STOP command. The control file can be corrupted during the next warm start or rebuild.

Upon receipt of the SPOOLER DRAIN command, the supervisor stops accepting jobs for collection or printing (new opens are rejected with a file-system error 66—device downed). Each collector stops when it has no more open jobs. Each print process finishes printing any active jobs and then stops.

After all collectors and print processes have stopped, the supervisor process stops itself. The spooler enters the dormant state, ready to be warm started.

An example of backing up the spooler control files:

```
BACKUP/OUTSPLBKUP/$TAPE,($SYSTEM.SPOOLER.*,$DATA01.SPOOLER.DATA),LISTALL
```

See Support Notes S97057 (*T9101D41 Spooler Collector Data Files Have Changed Format*) and S99086 (*NSK Spooler—Migration and Draining Instructions*) for more information.

CSPOOL Set at HIGHPIN

Beginning with G06.19, a new Spooler SPR T9101D48^AEY is introduced. This PVU is installed by DSM/SCM with CSPOOL at HIGHPIN. If you do not want this setting, you can change CSPOOL to use LOWPIN by issuing the BINDER command:

```
CHANGE HIGHPIN OFF IN CSPOOL
```

Note. DSM/SCM automatically sets CSPOOL to HIGHPIN. DSM/SCM automatically overlays the current object file CSPOOL with the original from the SUT whenever a subsequent Build/Apply is performed. See Support Note S03006A.

SCF Storage Subsystem (Online Disk Remirroring) (G06.21)

OSM automatically recognizes online remirrored disks (ODR). However, if you use TSM, special steps are required before TSM can recognize online remirrored disks. Online reconfiguration of a mirror drive cannot be performed while TSM ($ZTSM) is running. Therefore, you must always stop the TSM server process before you implement online disk remirroring. After issuing SCF commands for online disk remirroring, restart the TSM server.

During the ODR operation when using TSM, error 00012 might appear. For cause and recovery information, see Appendix B in the *SCF Reference Manual for the Storage Subsystem*.

Detailed syntax and explanations for using SCF commands to configure ODR are documented in the *SCF Reference Manual for the Storage Subsystem*.

SWID (T9298D40^AAK) (G06.20)

SWID is the software identification tool invoked by the SYSGENR program that audits file identification information about your software. If you are currently on a post G06.19 RVU (G06.20 or G06.21 RVU), you do not need to restore and receive the new SWID PVU before you install the G06.24 SUT. If you are on a pre-G06.20 RVU, you must restore and receive the new SWID PVU *before* you install the G06.24 SUT. See Copy (RESTORE) the D46 DSM/SCM Product Version and SWID (Optional) to Disk on page B-6.

Tandem Failure Data System (TFDS)

Ensure that TFDS is configured properly on the system. (TFDS monitors processors in NonStop servers for software failure notifications.) The dump volume *should not be* protected by Safeguard, and should also be properly configured.

TNS/R CRE Heap Manager (G06.15)

The G06.15 RVU introduced a new heap manager, NSK CRE/RTL (T1269), an alternative to the Native CRE/RTL product (T8431). Either heap manager can be chosen during the creation of a system configuration revision. Consequently, the choice of which one to install is an independent decision for your system. See support note S02001 for migration considerations and S03104 for installation instructions.

Note that if you are installing and using OSM, HP recommends that the NSK CRE/RTL (T1269) product be installed on the system, as opposed to the Native CRE/RTL (T8431), which is the default. Refer to the support note S02001 for migration considerations for T1269.

△ **Caution.** You cannot simultaneously use both heap managers (T8431 and T1269) on the same system.

TSM Client and Server Software (G06.22, G06.23, G06.24)

Part of the G06.24 installation process may involve upgrading your system console to TSM client software Version 2003A.

Note. You must install and configure the latest TSM server SPR and client before updating processor bootcode firmware online.

If you have to fall back to an earlier RVU after installing G06.24, you can continue to use TSM client software Version 2003A on your system console.

TSM does not support or adequately support these new features, beginning with the G06.21 RVU:

- Online Disk Remirroring (FDR) (G06.21). Only OSM automatically recognizes online remirrored disks. TSM can recognize online remirrored disks only if $ZTSM is aborted and then restarted.
- HP NonStop ServerNet cluster (G06.21). HP recommends using the OSM Service Connection (rather than the TSM Service Application) for all systems that are part of an HP NonStop ServerNet cluster.
- HP Ultrium Linear Tape Open (LTO) Tape Drive (introduced in the G06.21 RVU).
- The new DAT (digital audio tape) drive for use on NonStop S-Series systems compatible with G06.23.
- The I/O Adapter Module (IOAM) enclosure (introduced in the G06.24 RVU) and its related components for use on S76000 NonStop S-Series systems and above.
- Enterprise Storage System (ESS).
- The CT9841FC-x tape drive (introduced in G06.24), which is a replacement for the CT9840FC-x tape products.

Service Processor (SP) Firmware (G06.08 through G06.24)

Before you update SP firmware, HP recommends that you download the SP firmware file to your system console. (See Download the SP Firmware File to the System Console on page 7-6). You can use either OSM or TSM, depending on which application you are currently using.

Normally, you use the TSM Service Application to update SP firmware, because it takes much longer to update SP firmware using the TSM Low-Level Link Application (approximately 30 minutes for each SP). However, you can use the TSM Low-Level Link Application to update and reset SP firmware if you are unable to perform a G06.24 system load. If you already have OSM installed and configured, use the OSM Low-Level Link in the same way if you cannot perform a G06.24 system load and need to update the firmware.

SCF for Data Alignment (G06.17)

Starting with the G06.17 RVU, three attributes are added to the ALTER SUBSYS command of the Subsystem Control Facility (SCF). These attributes are intended to help application programmers find and correct misaligned data in their programs. These data alignment errors might lead to incorrect or unpredictable results. The new SCF attributes provide for the detection and reporting of data alignment errors, using a new tracing facility, and for the control of program behavior when a misalignment is detected. The new attributes are:

- MISALIGNLOG

  Enables logging of data alignment errors.

- NATIVEATOMICMISALIGN

  Controls the behavior of TNS/R native programs when a data alignment error occurs.

- TNSMISALIGN

  Controls the behavior of TNS programs when a data alignment error occurs.

See the *SCF Reference Manual for the Kernel Subsystem* for details on these SCF attributes.

Note. Note that these three attributes are maintained system-wide; the settings affect all processors in the node. The misalignment events (if any) are viewed by using existing EMS event viewers (for example, Viewpoint, TSM, and OSM). The EMS subsystem identifier is GUARDLIB, and the event number is 108. For information on how to check EMS logs, see the *EMS Manua*l.

System Configuration Database

To ensure system configuration integrity, *always* save the current system configuration database (CONFIG) before installing software or making changes to your system configuration. You must load the G06.24 operating system before making changes to the configuration database.

△ **Caution.** Starting with the G06.06 RVU, the configuration file is automatically upgraded to alter records for all storage devices. Loading the system with an upgraded configuration file and a previous RVU causes a processor halt (disk-process error code%011500).

See Save the Current Configuration File (CONFxxyy) on page 4-1 for information on saving the current system configuration database.

NonStop TCP/IPv6 (G06.20, G06.22, G06.23, G06.24)

With the introduction of NonStop TCP/IPv6 in the G06.20 RVU, all NonStop TCP/IPv6 protocol files are located in $SYSTEM.ZTCPIP subvolume. If you are upgrading from a pre-G06.20 RVU, back up your NonStop TCP/IP configuration files *before* running ZPHIRNM. (HP recommends backing up your TCP/IP configuration files before running ZPHIRNM even if you are on a G06.20 or later RVU). If you have to restore information on network services and connections, you will need these files for the proper network information.

When resuming normal operations after a system load has been performed, you must have all the TCP/IP configuration files in your $SYSTEM.ZTCPIP subvolume. Otherwise, applications dependent on proper network connections will fail.

Note.

- For the DSM/SCM Planner Interface to be operational, the PORTCONF file must have the correct entry for DSM/SCM. The SERVICES file must have an entry that specifies DSM and its corresponding port number.
- Keep your current PROTOCOL file in your $SYSTEM.ZTCPIP subvolume. Update it with the new lines from the sample PROTOCOL file (SMPLPROT).

For complete installation instructions, see Back Up (Copy) Files in the $SYSTEM.ZTCPIP Subvolume on page 10-2 and Update TCP/IP Configuration Files on page 12-1.

TMF (G06.23 and G06.24)

TMF Migration Considerations for SQL/MX Release 2.0

If you install SQL/MX Release 2.0, fallback and migration concerns could apply if you have to fall back to a previous RVU. See the T8607AFH or later softdoc for detailed migration information for TMF. See also the *TMF Planning and Configuration Guide* and the *TMF Operations and Recovery Guide*.

If the Install SQL/MX Script has *not been run* on your system while running on the new RVU, and *no* native-format SQL/MX metadata tables (or their resource forks) or audit records for them have been created, there are *no* TMF fallback considerations. Otherwise, you must use the appropriate DP2 (T9053) fallback SPR if you have not performed a clean TMF shutdown.

HP strongly recommends that you successfully complete a clean TMF shutdown (with all audited disks up) before falling back to a prior RVU. This is particularly important whenever the RVU you are falling back from supports any new format files or objects or audit records for them, and the fallback RVU does not.

To establish complete TMF file recovery protection for your SQL/MX metadata tables, update your TMF online dump (and Backup) scripts to include the names of all SQL/MX metadata tables, including those that are SQL objects and their resource forks. The TMFCOM DUMP FILES and RECOVER FILES commands support all the new SQL/MX metadata tables (using their Guardian names).

TMF Migration Considerations for Format 2 Audit Trails

TMF provides the capability to create much larger audit-trail files with G06.24, but TMF must be stopped in a clean state to execute the TMFCOM command that enables this ability. If audit-trail files greater than 2GB are part of the long-term audit-trail configuration strategy, consider altering the audit-trail format at migration time, given that TMF is already stopped. If not done at this time, then altering the audit-trail configuration to enable format 2 audit-trail files will require a STOP TMF command at some later date.

TMF Fallback from G06.24

If no changes to the TMF audit-trail configuration are planned, then there are no issues related to fallback associated for TMF with G06.24. You should be able to migrate to G06.24 from a prior RVU and then fall back to that same RVU without issues related to TMF. However, if any changes to the audit-trail configuration are planned, such as altering the file size of a given trail or changing the audit-trail configuration to use format 2 files, then it becomes very important to understand the fallback issues.

After you execute either the ALTER AUDITTRAIL command with the new FILESIZE option, or the ALTER TMF command with the new ATFORMAT option, then the fallback to a prior RVU involves a series of steps that must be followed precisely. Executing a DELETE TMF command may also be one of the required steps if you alter the audit-trail format and then find it necessary to fallback.

Refer to the *HP NonStop TMF Supplement for Large Audit-Trail Files* for details related to falling back after using these new TMF command options in G06.24.

TNOS Server and TNOS Utility (G06.17 through G06.24)

The TNOS Server (T8666) and the TNOS Utility (T8667), two components of HP NonStop ODBC/MP, have been updated in G06.17 and later to correct data alignment problems. To avoid data alignment problems, users of the TNOS Server and TNOS Utility who are migrating to an RVU *before* G06.17 must also upgrade their TNOS Server and TNOS Utility to these new versions:

- T8666ACL or later (for TNOS Server)
- T8667ACL or later (for TNOS Utility)

The marketing ID for the new versions is SJ08V1, and the Independent Product (IP) name is NonStop ODBC Server and Client.

Post installation instructions can be found in the appropriate PVU softdoc. New EMS templates are required for the T8666D35 PVU.

See support note S02075B for details concerning TNOS and data alignment problems.

Visual Inspect (G06.20)

G06.20 includes the Inspect subsystem (T9226G06) and the Visual Inspect server (T9756AAH) that support PIC programs and DLLs. This version of the server requires version 2.4 of the Visual Inspect client (T7877AAD).

If you run client product version 2.3 with a G06.20 or later RVU, the client is connected automatically to the previous version of the server (T9756AAG), and you will not be able to debug or analyze snapshot dumps from a PIC process.

Unfortunately, client product version 2.4 is incompatible with earlier versions of the server. Therefore, it can be difficult to debug from the same workstation on multiple systems, where some systems run G06.20 or later RVUs and some run earlier RVUs. There are two ways to approach this problem:

- Install the newer server on the older NonStop systems, along with a compatible version of the Inspect subsystem. You can install Visual Inspect server SPR T9756AAH and Inspect subsystem SPR T9226AAK on an HP NonStop K-series server running the D45.00 or later RVU, or on a NonStop S-series server running G05.00 through G06.19 RVUs. See the T9756AAH softdoc.
- Install both Visual Inspect client product versions 2.3 and 2.4 on the workstation. However, you cannot run both at the same time, and version 2.3 can encounter problems after 2.4 has run.

Note. Note that the Visual Inspect client is an independent product and must be ordered separately. HP strongly recommends that you upgrade both the client and server products at the same time.

See all related softdocs for installation and configuration information.

WAN Wizard Pro (G06.21, G06.22, G06.23, G06.24)

The NonStop System Console Installer CD (S7X-SWV1, Update 3) includes the WAN Wizard Pro client version 4.00. This client version is compatible with G06.21 and later SUTs only. If you have to fall back to a pre-G06.21 RVU, you must de-install the previous WAN Wizard Pro and re-install the previous WAN Wizard Pro on your system console. See the WAN Wizard Pro Support Note S04064 for details.

X25AM

A new SCF line modifier, EMSFORFRMR, is provided so that an EMS message is displayed when a link reset occurs from a Frame Reject (FRMR) condition on an X25AM line. The modifier accepts values in the range from 0 to 200. Configure this SCF modifier with a nonzero value to enable the generation of an EMS message during an FRMR condition. (By default, the feature is disabled.)

See the *X25AM Configuration and Management Manual* and the *X25AM Management Programming Manual* for more information.

Because there are changes included in T1096 (WANX25LAPB), T0051 (CSSLAPB - X21DRIVER), and T9323 (X25 SCF-PM) for this new feature, provide the SPR requisites documented in the T9060AFM (X25AM) softdoc.

Part I. Upgrade Tasks

Part I describes the tasks for upgrading a single NonStop S-series server to the G06.23 RVU, as follows:

- Section 2, G06.24 Upgrade Checklists
- Section 3, Installing SPRs Before Upgrading to the G06.24 RVU
- Section 4, Preparing to Upgrade the Server Software
- Section 5, Installing the G06.24 RVU
- Section 6, Replacing the Disk Bootstrap Microcode (Pre-G06.06)
- Section 7, Updating Service Processor (SP) Firmware
- Section 8, Updating Processor Boot Code
- Section 9, Updating SCSI Boot Code (Pre-G06.08 RVU)
- Section 10, Running ZPHIRNM
- Section 11, Loading the G06.24 RVU
- Section 12, Resuming Normal Operations
- Appendix C, Updating SWAN Concentrator CLIP Firmware

2 G06.24 Upgrade Checklists

Use the checklist in Table 2-1 as you perform the tasks required to upgrade to the G06.24 RVU and the checklist in Table 2-2 to record the information needed when performing these tasks.

Task durations are included in Table 2-1. Most of these baseline durations were established on an NonStop S72002 server running the G06.12 RVU under minimal load (one user).

Note that these durations generally do not include operations such as starting a TSM Service application or performing a System Discovery in the TSM or OSM Low-Level Link Application.

If you use DSM/SCM to manage OSS files, the Build/Apply operation is longer (about an hour).

G06.24 Upgrade Checklist

Table 2-1. G06.24 Upgrade Checklist (page 1 of 3)

	Task Description	Minimum Duration	Documentation	Done ?
1.	Install the latest DSM/SCM SPR, SWID (if necessary)	40 minutes	Appendix B, Installing the Latest DSM/SCM SPRs and Client Software	
2.	Run Install^Templates macro	5 minutes	If Running INSTALL^TEMPLATES Is Required on page B-13.	
3.	Install the DSM/SCM client version	5 minutes	Install the DSM/SCM Client From ZDSMSCM on page B-18	
4.	Install required or recommended fallback or interoperability SPRs (if necessary).	0.0 minutes*	Section 3, Installing SPRs Before Upgrading to the G06.24 RVU Appendix A, Using DSM/SCM to Install SPRs	
5.	Save current system configuration file	<1 minute	Save the Current Configuration File (CONFxxyy) on page 4-1	
6.	Upgrade system console software	90 minutes	Upgrade the System Console Software on page 4-2	
7.	Verify system operations	15 minutes	Verify System Operations on page 4-3	
8.	Receive G06.24 RVU SUT into the DSM/SCM software archive	33 minutes (Full SUT -- all products)	Receive New Software Into the Archive on page 5-3 and follow Alerts on page 5-1.	
9.	Create G06.24 software configuration revision	1 minute	Create a New Software Revision on page 5-8	

Table 2-1. G06.24 Upgrade Checklist (page 2 of 3)

	Task Description	Minimum Duration	Documentation	Done ?
10.	Build and apply G06.24 software revision	2 hours with OSS files	Build and Apply the New Software Revision on page 5-13	
11.	Print the DSM/SCM Operator Instructions	<1 minute	Print Operator Instructions From the Target Interface (ZPHITI) on page 5-19	
12.	Install and configure the OSM SPRs or TSM SPRs (optional)	0.0 minutes**	See the *OSM Migration Guide* or TSM softdocs. See also support note S03133A.	
13.	Replace the disk bootstrap program (if necessary)	<1 minute	Section 6, Replacing the Disk Bootstrap Microcode (Pre-G06.06)	
14.	Update service processor (SP) firmware (if necessary)	9 minutes per SP	Section 7, Updating Service Processor (SP) Firmware	
15.	Update processor boot code	5 minutes **	Section 8, Updating Processor Boot Code	
16.	Run ZPHIRNM	12 minutes	Running ZPHIRNM on page 10-1	
17.	Update EMS template files (if necessary)	5 minutes	If Running INSTALL^TEMPLATES Is Required on page A-7	
18.	Halt processors	4 minutes	Halt the Processors on page 11-2	
19.	Load the system with the G06.24 RVU	10 minutes	System Load Using the TSM or OSM Low-Level Link on page 11-4	
20.	Update SCSI boot code (if necessary)	1 minute per controller	Section 9, Updating SCSI Boot Code (Pre-G06.08 RVU)	
21.	Recover the TCP/IP files (if necessary)	2 minutes	Update TCP/IP Configuration Files on page 12-1	
22.	Reconfigure TSM or OSM ND applications (if necessary)	0.0 minutes**	Reconfigure System Console Applications on page 12-4	
23.	Check processor status	<1 minute	Check Processor Status (Using TSM or OSM) on page 12-4	
24.	Configure WANMGR (if necessary)	20 minutes	Upgrade the WAN Manager (T8365), (Optional) on page 12-15	
25.	Update SWAN concentrator CLIP firmware (if necessary)	4 minutes per SWAN concentrator	Appendix C, Updating SWAN Concentrator CLIP Firmware	
26.	Update ServerNet/FX firmware (if necessary)	3 minutes per adapter	Update ServerNet/FX and ServerNet/FX2 Firmware (Overview) on page 12-6	

Table 2-1. G06.24 Upgrade Checklist (page 3 of 3)

	Task Description	Minimum Duration	Documentation	Done ?
27.	Configure the Spooler (if necessary)	2 minutes	Configure the Spooler on page 12-9	
28.	Start system and application software	11 minutes	Start User and System Applications on page 12-10	
29.	Reset and start the system mirror disk (if necessary)	2 minutes (not including the REVIVE)	Reset and Start the Mirror System Disk (If Necessary) on page 12-11	
30.	Configure OSS (if necessary)	20 minutes***	Configure OSS on page 12-13	
31.	Configure SMF (if necessary)	60 minutes	Configure SMF (Optional) on page 12-14	
32.	Configure RDF (if necessary)	5 minutes	Configure the Remote Duplicate Database Facility (RDF) on page 12-15	
33.	Install, and configure OSM client-based components and server (if not done in Step 12)	20 minutes**	See the *OSM Migration Guide* and support note S03133A.	
	* Duration is dependent upon the SPRs (if any) you need to install. **Duration is dependent upon selected TSM or OSM installation and configuration options. ***Duration of each remaining task dependent upon what products are installed on your system			

G06.24 Required Information Checklist

Table 2-2. G06.24 Required Information Checklist

Type of Information	Value
Volume where SYS*nn* subvolumes are located (usually $SYSTEM)	
Current SYS*nn* (before upgrading to G06.24)	
SYS*nn* created during G06.24 Build/Apply	
Volume where ZDSMSCM subvolume is located (by default, $DSMSCM)	
Volume where audit trails are located (by default, $AUDIT)	
Name of saved configuration file	
Service processor (SP) firmware version for current RVU (spcode9)	
SP firmware version for G06.24 RVU (spcode9)	
Processor boot code version for current RVU (cpucode8 or cpucode9)	
Processor boot code version for G06.24 RVU (cpucode8 or cpucode9)	
SCSI boot code version for current RVU (I1000 or IBOOT)	
Check for DSM/SCM product version (server and client)	
Check for TSM or OSM server and client versions	
Check for processor type if upgrading to a new NonStop S-series server. See Upgrading NonStop S-Series Servers on page 1-15.	

3

Installing SPRs Before Upgrading to the G06.24 RVU

This section describes the SPRs you should install on your current RVU *before* you upgrade to the G06.24 RVU. SPRs provide new features between RVUs or correct previous software problems.

Alerts

- Before installing an SPR:
  - Do not apply any SPR unless you verify that you can apply it to your current G-series RVU. Review the SPR Introduction Document (SID) for the SPR or use the Web-based Scout for NonStop Servers analysis tool to check the “Usable With RVUs” information for the SPR.
  - Do not install an SPR for products that are not supported for your current G-series RVU.
  - Check with your service provider or Scout to verify that you have the most current SPRs for your current G-series RVU and to see if any of the SPRs listed in this section have been superseded by newer SPRs.
  - Check the softdoc for each product for additional installation considerations.
- The G06.13 RVU introduced new NonStop SQL/MP features and support for Format 2 partitions. An upgrade to the G06.24 RVU from a pre-G06.13 RVU can be significant. For information on fallback SPRs, access Scout. For an overall explanation on fallback and installation, see the Interactive Upgrade Guide.
- The G06.23 and G06.24 RVUs introduce new NonStop SQL/MX features. An upgrade to the G06.24 RVU from a pre-G06.18 RVU can be significant. Fallback SPRs might be required. See the Interactive Upgrade Guide for more information.
- The G06.14 RVU introduced ServerNet Cluster release 3. Should you need to fall back to a previous RVU, you might be able acquire the functional equivalent by applying certain SPRs. See the *ServerNet Cluster Manual* for details.
- The TSM client version (2003A) is compatible with T7945AAG through T7945ABN.
- You must install and configure either the latest TSM or OSM SPRs if you want to use the online processor bootcode option and T7892ABD.

SPRs Required Before Upgrading

Depending on which RVU you are currently running, a number of SPRs must be installed on your current RVU before you upgrade to the G06.24 RVU:

- **D46 DSM/SCM**: At least a D46 DSM/SCM product version must be installed on the host system *before* the site update tape (SUT) can be received into the archive. Note that:
  - The D46 DSM/SCM client version enables you to manage Open System Services (OSS) files. To obtain the client D46 version, you must download DSM/SCM client from the ZDSMSCM subvolume after the T6031D46 server software has been activated.
  - The new DSM/SCM Planner Interface has been enhanced to provide installation and auditing functions for OSS files.
- You can still use the T6031 ABB client with the T6031D46 server version to manage Guardian files. However, you cannot use the T6031ABB client to manage and audit OSS files. Therefore, HP recommends that the DSM/SCM client be at the latest version (ABJ) and the server product version be T6031D46^ABJ.

△ **Caution.** Do not attempt to install a G05.00 or later RVU with a C32 product version of DSM/SCM. System outages will result**.**

- **Fallback:** If you encounter a problem that cannot be resolved while running the G06.24 RVU, you can fall back to a previous G-series RVU, provided that you have installed appropriate SPRs (referred to as fallback SPRs) on your system prior to installing the G06.24 RVU, as discussed under Fallback SPRs on page 3-6.
- **Interoperability:** SPRs might also be required to maintain interoperability when you migrate one or more nodes in a multinode environment to the G06.24 RVU, as discussed under Interoperability SPRs on page 3-7.
- You can also continue to use TSM client software Version 2003A on your system console if you have to fall back to your earlier RVU. See the softdocs for installation instructions. If OSM is not installed when migrating to the G06.24 RVU, use TSM to update the firmware and perform system loads, noting that TSM does not support new guided procedures, and tape and storage functions inherent in G06.21 an later RVUs. TSM does support the new processors: S7800, S78000, and S88000.
- **OSM Software Compatibility:** New OSM SPRs are available on the G06.24 SUT. However, always check Scout for NonStop Servers for any new SPRs that are released. The T1089 ABO or later SP firmware SPR is available on the G06.24 SUT and should be installed even if you have already installed T1089 ABK. If OSM is not installed when migrating to the G06.24 RVU, use TSM to update the firmware and perform system loads, noting that TSM does not support new guided procedures, tape and storage functions inherent in G06.21 and later RVUs. OSM does support the new processors: S7800, S78000, and S88000.

Summary of the SPR Installation Procedure

1. Use Scout to verify that you can apply the DSM/SCM SPR to your current G-series RVU.
2. Use DSM/SCM to install the required SPRs. For detailed instructions, see Appendix A, Using DSM/SCM to Install SPRs.
3. If necessary, use TSM to update firmware (DSM/SCM notifies you if firmware needs updating).
4. If needed, use the Install^Templates macro located in the TACLMACS file to install EMS template object files from SPRs on a running system if SYSGEN and system load are not required. This macro uses SCF.
5. Run ZPHIRNM.
6. Perform a system load if SYSGEN is required.

For DSM/SCM D46 and OSM SPRs, different instructions apply.

D46 SPR of DSM/SCM

The T6031D46 product version update (PVU) requires that you install both the client and the server-side version to manage OSS files. HP always recommends that you upgrade to the newest software product revision (SPR) of DSM/SCM. Apply the T6031D46^ABJ SPR of DSM/SCM before receiving the G06.24 SUT.

After you activate the T6031D46 ABJ or later server software, the ZDSMEXE file will be available to download from the ZDSMSCM subvolume so that you can update the client. (You do not need to update the DSM/SCM client to the D46 server side immediately to receive the G06.24 RVU successfully.)

However, HP recommends that, for your production environment, both the client and server side of DSM/SCM PVUs match.

△ **Caution.** Failure to install a D30 or later DSM/SCM product version causes G05.00 and later shared run-time libraries (SRL) products to be installed incorrectly. Incorrectly installed SRLs cause major system problems and prevent successful upgrades to new RVUs.

You must install the D46 client version of DSM/SCM to activate DSM/SCM management of OSS files for a target.

Appendix B, Installing the Latest DSM/SCM SPRs and Client Software contains instructions for installing a D46 SPR of DSM/SCM, including the client.

Determining Your Current DSM/SCM Version

To verify which version of DSM/SCM is currently installed on your system, use the VPROC command to determine the product version of TAEXE (Apply product of DSM/SCM) and CBEXE (Build product of DSM/SCM). At a TACL prompt, enter:

```
> volume $dsmscm_vol.ZDSMSCM
> vproc taexe
> vproc cbexe
```

The following examples show a D30 version of DSM/SCM with T6030D30^AAO and T6031D30^AAO:

```
8> volume $dsmscm.zdsmscm
9> vproc taexe

VPROC - T9617G03 - (30 MAR 1999) SYSTEM \ELI      Date 03 NOV 1999, 10:37:37
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$DSMSCM.ZDSMSCM.TAEXE
     Binder timestamp:  08JUN1999 17:13:38
    Version procedure:  S7032D20^15OCT97^SWARCCP^AAG
    Version procedure:  T6031D30_31MAR99_21MAY99AAO
           Target CPU:  UNSPECIFIED
      AXCEL timestamp:  08JUN1999 17:17:11

$DSMSCM ZDSMSCM 3> vproc cbexe
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \ELI      Date 03 NOV 1999, 10:37:48
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$DSMSCM.ZDSMSCM.CBEXE
     Binder timestamp:  08JUN1999 10:26:48
    Version procedure:  S7032D20^15OCT97^SWARCCP^AAG
    Version procedure:  T6030D30_31MAR99_05MAR99AAO
           Target CPU:  UNSPECIFIED
      AXCEL timestamp:  08JUN1999 10:29:03
```

The following shows the latest D46 product version of DSM/SCM after DSM/SCM has been activated:

```
$TDSV ZDSMSCM 8> vproc cbexe
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \TINY     Date 18 AUG 2004, 13:36:49
Copyright 2003 Hewlett-Packard Development Company, L.P.$TDSV.ZDSMSCM.CBEXE
     Binder timestamp:  20APR2004 03:37:46
    Version procedure:  S7032D20^27FEB04^SWARCCP^AAH
    Version procedure:  T6031D46_10MAY2004_19APR2004ABJ
           Target CPU:  UNSPECIFIED
      AXCEL timestamp:  20APR2004 03:40:33

$TDSV ZDSMSCM 7> vproc taexe
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \TINY     Date 18 AUG 2004, 13:36:39
Copyright 2003 Hewlett-Packard Development Company, L.P.

$TDSV.ZDSMSCM.TAEXE
     Binder timestamp:  20APR2004 04:34:37
    Version procedure:  S7032D20^27FEB04^SWARCCP^AAH
    Version procedure:  T6031D46_10MAY2004_19APR2004ABJ
           Target CPU:  UNSPECIFIED
      AXCEL timestamp:  20APR2004 04:38:09
```

DSM/SCM Client and Server Compatibility

The D46 DSM/SCM client is backward compatible with other DSM/SCM product versions (backward compatible to T6030D30/T6031D30 [AAO and later]).

Table 3-1. DSM/SCM Client and Server Compatibility

This version of the DSM/SCM Planner Interface...	With this version of DSM/SCM server software...	Results in...
T6030D30^AAT	T6030D30/T6031D30 (pre-AAO)	You can perform all DSM/SCM functions available with the DSM/SCM product version you are running.
T6030D30^AAT	T6030D30/T6031D30 (AAO and later), T6031D31, or T6031D46	● You do *not* get a version mismatch message when you log on to the Planner Interface. ● You can perform all pre-AAO DSM/SCM functions.* ● You cannot use the new options made available in the AAO and later SPRs. (See the appropriate softdoc and *DSM/SCM User's Guide*.)
T6031D46^ABF through ABJ	T6030D30/T6031D30 (pre AAO) T6030C32/T6031C32	● A version mismatch warning message appears when you log on to the Planner Interface. ● Limited DSM/SCM operation is available: you cannot perform a Build/Apply. ● An error message appears when you attempt to perform an unsupported operation.
T6031D46^ABF through ABJ	T6030D30/T6031D30 (AAO and later) or T6031D31	You cannot use the new OSS options to manage OSS files.
T6031D46^ABF through ABJ	T6031D46	You can use the new options made available with the T6031D46 product version. (See the appropriate softdoc and *DSM/SCM User's Guide*.)

* Although pre-AAO client software supports AAO and later server software, HP recommends that you run the same client/server versions.

Fallback SPRs

You must install fallback SPRs on your system before upgrading to the G06.24 RVU, or fallback is not possible.

NonStop SQL/MP Fallback SPRs

As of G06.13, the NonStop SQL/MP Format 2 partitions program provides the ability to extend the existing 2 GB partition limit up to a maximum of 1 terabyte (TB). No fallback SPRs are available to fall back to pre-G06.03 RVUs. Fallback SPRs are available for G06.03 through G06.13. See Scout for more information.

△ **Caution.** If you are running an RVU prior to G06.03, you cannot fall back to your current RVU. If you want to ensure that you can fall back from the G06.24 RVU, you must:

1. Upgrade to a G06.13 or later RVU, with all the appropriate fallback SPRs applied. Run on that RVU long enough to verify that your applications still function correctly.
2. Migrate to the G06.24 RVU.

For more information on the fallback support contained in the SPRs listed in Table 3-2, see the Interactive Upgrade Guide.

Table 3-2. SPRs Required for NonStop SQL/MP Fallback (pre-G06.13)

Product	SPR (or superseding)		Applicable RVUs
DP2 Fallback	T9053AMN		G06.03 through G06.07
	T9053AMQ		G06.08 through G06.10
	T9053AMO		G06.11 through G06.12
TMF Fallback	T2076ADR T8606ADZ T8607ADR T8608ADR T8609ADR T8652ADR	T8694ADR T8695ADR T8696ADR T8697ADN T8698ADR	G06.03 through G06.12
DSAP/DCOM	T9543AAT		G06.03 through G06.12
FUP	T6553ABT		G06.00 through G06.12 (No support for SQL/MP Format 2 partitions.)

Fallback SPRs might also be needed for SQL/MX Release 2.0, as listed in Table 3-3 on page 3-7. Note that you must be on SQL/MX Release 1.8 to migrate to 2.0.

Table 3-3. SPRs Required for NonStop SQL/MX Release 2.0 Fallback

Product	SPR (or Superseding)	Notes
DP2	T9053AOY or T9053AOZ	If applied, a system load is required before upgrading to the new RVU. The SPRs are applicable to RVUs G06.13 through G06.22. See DP2 (G06.16, G06.23, G06.24) on page 1-24.
SQL/MP	T9195AA*n*	To minimize the risks involved with falling back without a clean TMF shutdown, use the appropriate SQL GOAWAY utility to drop all SQL/MX objects and their resource forks. Before doing so, see Migration Considerations for SQL/MX Release 2.0 on page 1-29.
TMF	T8607AF*n*	No fallback SPRs are required if you are running on G06.18 through G06.23 or if a TMF clean shutdown is performed and other installation and fallback steps are taken for SQL/MX Release 2.0.

Interoperability SPRs

Node interoperability is the ability of the nodes (systems) in a network of NonStop Kernel operating system nodes to communicate and interact with each other.

See the Interactive Upgrade Guide for more details on maintaining interoperability for the RDF and NonStop SQL AUDSERV products.

RDF Interoperability SPRs

The SPRs listed in Table 3-4 enable RDF on a node running an RVU prior to G06.00 or D46.00 to interoperate with RDF on a node running a G06.00 or later or D46.00 or later RVU. The RDF interoperability SPR must be applied to the down-level node as a part of the migration of any other node in the RDF environment to a G06.00 or later G-series, or D46.00 or later, D-series RVU.

Note. Interoperability support exists in various earlier SPRs, but HP recommends that you use the most current SPRs, because they contain several important corrections to the interoperability support.

Table 3-4. RDF Interoperability SPRs

If a primary or backup node within the RDF environment is running this RVU...	And any other node in the RDF environment is upgraded to a G06.00 or later or D46.00 or later RVU, install this (or a superseding) SPR on the down-level node...
D32.00 through D39.00	T5864ABD
D42.00 through D45.00	T5864ABE
G02.00 through G05.00	T5864ABE

NonStop SQL AUDSERV Interoperability SPRs

NonStop SQL AUDSERV is the product that executes SQL Online DDL modification commands, such as MOVE (Partition) WITH SHARED ACCESS.

See the Interactive Upgrade Guide for migration issues regarding format 2 files, including any interoperability issues regarding SQL AUDSERV.

OSM Server and Client Compatibility SPRs

After you have performed a system load and run your system tests, you can, if you want, install and use OSM. However, if you have not done so already, make sure that your system consoles meet the minimum hardware requirements. See the *OSM Migration Guide* for more information.

You should use the OSM Service Connection (rather than the TSM Service Application) for all systems that are part of a ServerNet cluster, such as the new ServerNet switch hardware (6780). OSM suppresses generation of alarms and dial-outs on all nodes in the cluster when service actions are performed on a cluster from any node. This protection is not available if some nodes are being managed by OSM because it cannot communicate with TSM.

Check with Scout for NonStop Servers for the latest OSM server-based SPRs:

- T2723 (OSM Connection Library)
- T2724 (OSM Provider Interface Library)
- T2725 (OSM Configuration)
- T2726 (OSM XML API)
- T2727 (OSM CIMOM)
- T2728 (OSM Service Provider)
- T2730 (OSM Event Viewer)
- T2751 (OSM Web-based Suite)

Configuring OSM Server Settings

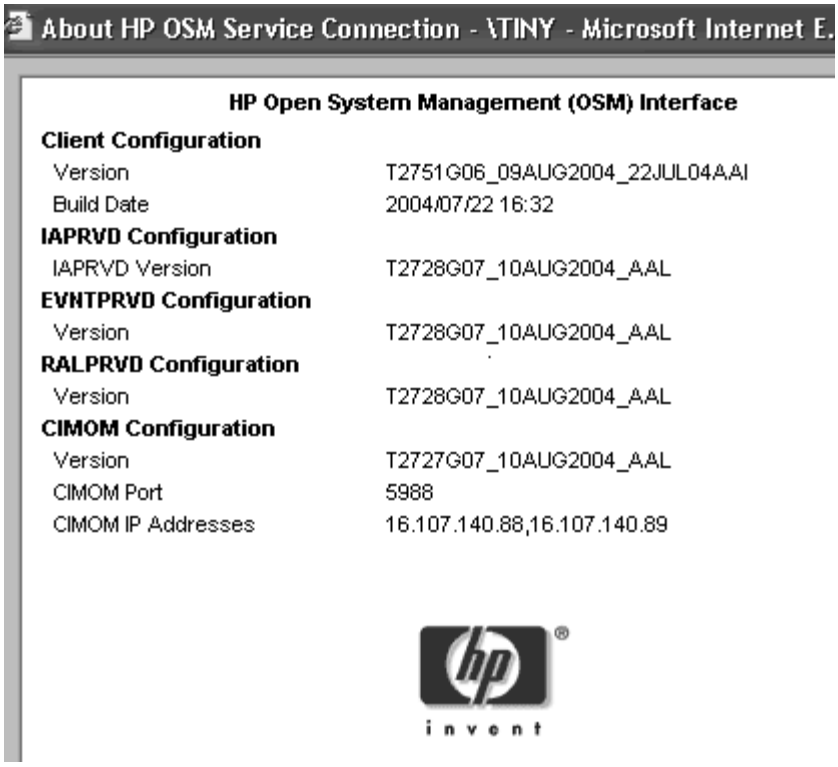
For detailed information about configuring OSM server processes, see the *OSM Migration Guide*.

Determining the Current Version of OSM

To determine the current product version of OSM for both the client portion and server, select **About OSM** from the OSM Service Connection Help menu. (You must be logged on to the OSM Service Connection.) Current product versions are:

- Client Configuration (T2751)
- IAPRVD Configuration (T2728)
- EVNTPRVD Configuration (T2728)
- RALPRVD Configuration (T2728)
- CIMON Configuration (T2727)

For example (SPRs might be different):



VST937.vsd

TSM Server and Client Compatibility SPRs

Note. Starting with the G06.24 RVU, the CSSI Web snapshot is no longer provided on the installer CD, but the CSSI website can be accessed from the NonStop Technical Library (NTL). See the *NonStop System Console Installer Guide* for more information.

The newest TSM server SPR is T7945ABN, and the TSM client version 2003A (T8154G07) is compatible with T7945AAG through T7945ABN. You must install T7945ABN or later when installing S7800, S78000, and S88000 PMF CRUs. You should always install the latest TSM SPR and corresponding client.

If you decide to use TSM to install the RVU and use TSM to monitor your system, HP recommends that you upgrade your system console to TSM client software Version 2003A (T8154G07^ABG) *before* you install the G06.24 RVU. Doing so enables you to use the latest TSM client software for G06.24 RVU upgrade tasks. It also enables you to continue using TSM client software Version 2003A on your system console even if you have to fall back to an earlier RVU.

Follow the installation instructions outlined in the softdoc, including preinstallation and post-installation steps.

Determining the Current Version of TSM Server Software

1. At the TACL prompt, enter:

   VPROC $SYSTEM.SYS*nn*.SRM

2. Read the **last line** of the VPROC information.

This example shows that T7945ABL (TSM Bind) has been installed on the system:

```
\itty $SYSTEM.STARTUP 1> vproc $system.sys23.srm
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \ITTY  Date 23 JUN 2004, 09:06:49
Copyright 2003 Hewlett-Packard Development Company, L.P.


    Version procedure:  T8432G05_15NOV97_CRTLMAIN
    Version procedure:  T8156G06_30AUG2002_19JUN02ABD
    Version procedure:  T8153G06_30AUG2002_10JUL02ABD__Fv
       .
       .
       .
    Version procedure:  T8159G06_22NOV2002_15NOV02ABE
    Version procedure:  T8146G06_19SEP2003_01SEP03ABJ
    Version procedure:  T8151G06_30AUG2002_19JUN02ABD
    Version procedure:  T7945G06_12MAY2004_28APR04ABL
          Native Mode:  runnable file
```

4

Preparing to Upgrade the Server Software

Use this section to perform these tasks before you upgrade your server software:

1. Save the Current Configuration File (CONFxxyy)
2. Upgrade the System Console Software
3. Verify System Operations
4. Record the Current SYSnn

Save the Current Configuration File (CONFxxyy)

A saved system configuration file contains a copy of the current configuration database CONFIG file, saved for future use. For fallback purposes, save a copy of the current CONFIG file by using a unique file name. *Do not omit this step*.

You can use the saved configuration file to return to an earlier, stable configuration. If you need to fall back to the previous RVU, you must load the system by using a saved configuration file and the SYS*nn* containing the previous operating system.

To save the current system configuration database CONFIG file, use the SCF SAVE command:

1. At a TACL prompt, start SCF:

   ```
   2> SCF
   ```

2. List the saved configuration files. At the SCF prompt, enter:

   ```
   -> FUP INFO $SYSTEM.ZSYSCONF.CONF*
   ```

3. Save the current configuration by using a unique file name. At the prompt, enter:

   ```
   -> SAVE CONFIGURATION xx.yy
   ```

   where *xx.yy* variable is a number from 0.0 through 99.99.

This example saves the current system configuration to the file $SYSTEM.ZSYSCONF.CONF1101:

```
-> SAVE CONFIGURATION 11.1
The configuration file $SYSTEM.ZSYSCONF.CONF1101 has been created.
```

If you specify a configuration file that already exists, SCF asks if you want to replace it. If you specify that you do not want to replace the existing file, SCF does not overwrite the file. You must enter another SAVE command to save the current configuration file.

In case of fallback (see Section 17, Loading the Previous RVU and Resuming Normal Operations), specify that this saved CONF*xxyy* file be used when you load the system from the original SYS*nn* (see Perform a System Load With the Previous SYSnn and CONFxxyy on page 17-3).

Upgrade the System Console Software

Starting with the G06.22 RVU, you must order the Installer CD separately from Scout for NonStop Servers.

The *NonStop System Console Installer Guide* describes how to upgrade a system console (formerly known as a TSM workstation) running the Windows 2000 Professional or the Windows XP Professional operating system to the set of applications delivered on the HP NonStop System Console Installer version S7X-SWV1, Upgrade 3. The contents of the Installer include:

- Microsoft Internet Explorer 6.0
- Acrobat Reader 6.0
- Service Pack 3 for Windows 2000 (SP3)
- OutsideView 7.1

Note. To install OutsideView32 Version 7.1, you need a serial number and license key. If you do not have a serial number and a license key for OutsideView32 Version 7.1, contact your service provider.

- Carbon Copy Version 5.7
- HP NonStop System Console Software Master Installer
- TSM Client 2003A, T8154G07^ABG
- OSM client-based components
- SP Tool version 2.8.
- WAN Wizard Pro Version 4.00

To install the DSM/SCM client software (T6031D46^ABJ), see Appendix B, Installing the Latest DSM/SCM SPRs and Client Software.

Starting with the G06.24 RVU, the CSSI Web snapshot is no longer provided on the installer CD, but the CSSI website can be accessed from the NonStop Technical Library (NTL).

To install Windows XP Professional, which is the recommended operating system for using OSM, see the *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional.*

Note. New system console requirements must be met if you decide to use OSM as your default client whether you migrate to Windows XP Professional. See the *OSM Migration Guide* or the *NonStop System Console Installer Guide* for more information.

HP recommends that you upgrade to Microsoft Windows XP Professional *first* before upgrading your NonStop system console. However, if you use the Installer CD first, and then migrate to Windows XP Professional, use the Installer CD again to make sure that all the applications are correctly installed.

If you want to use the OSM client-based components and server software before or after installing the G06.24 RVU, see the *OSM Migration Guide*.

Verify System Operations

Verify the integrity of your current system environment to ensure your system is operating normally before you install the G06.24 RVU by checking Table 4-1.

Table 4-1. Verify System Operations

Steps	Activity	Done?
1.	Check Processor Status (Using either TSM or OSM)	
	Using TSM	
	Using OSM	
2.	Check Critical System Processes	
	Using TSM	
	Using OSM	
3.	Check the Status of the ServerNet Addressable Controllers (SACs)	
4.	Check Disk Subsystem Status	
5.	Check the Swap File Configuration	
6.	Check the Status of the Spooler Collector	
7.	Check the Tape Drive Status	

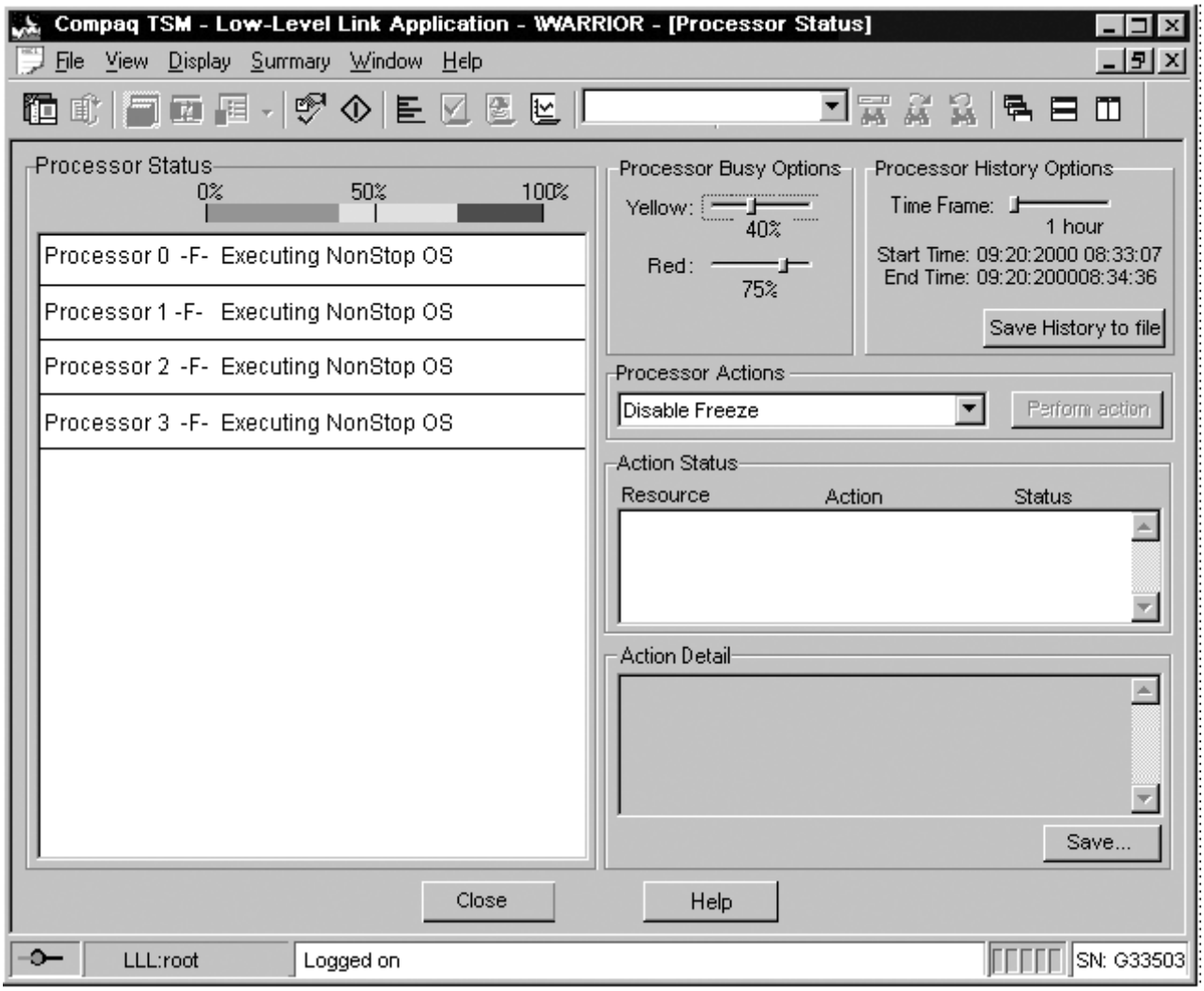
Check Processor Status (Using either TSM or OSM)

Check Processor Status (Using TSM)

Verify that the NonStop Kernel is running in all processors:

1. Log on to the TSM Low-Level Link Application and perform a **System Discovery**.
2. From the toolbar, click **Processor Status**.

   The **Processor Status** dialog box appears. The Processor Status for all processors should be *Executing NonStop OS*.



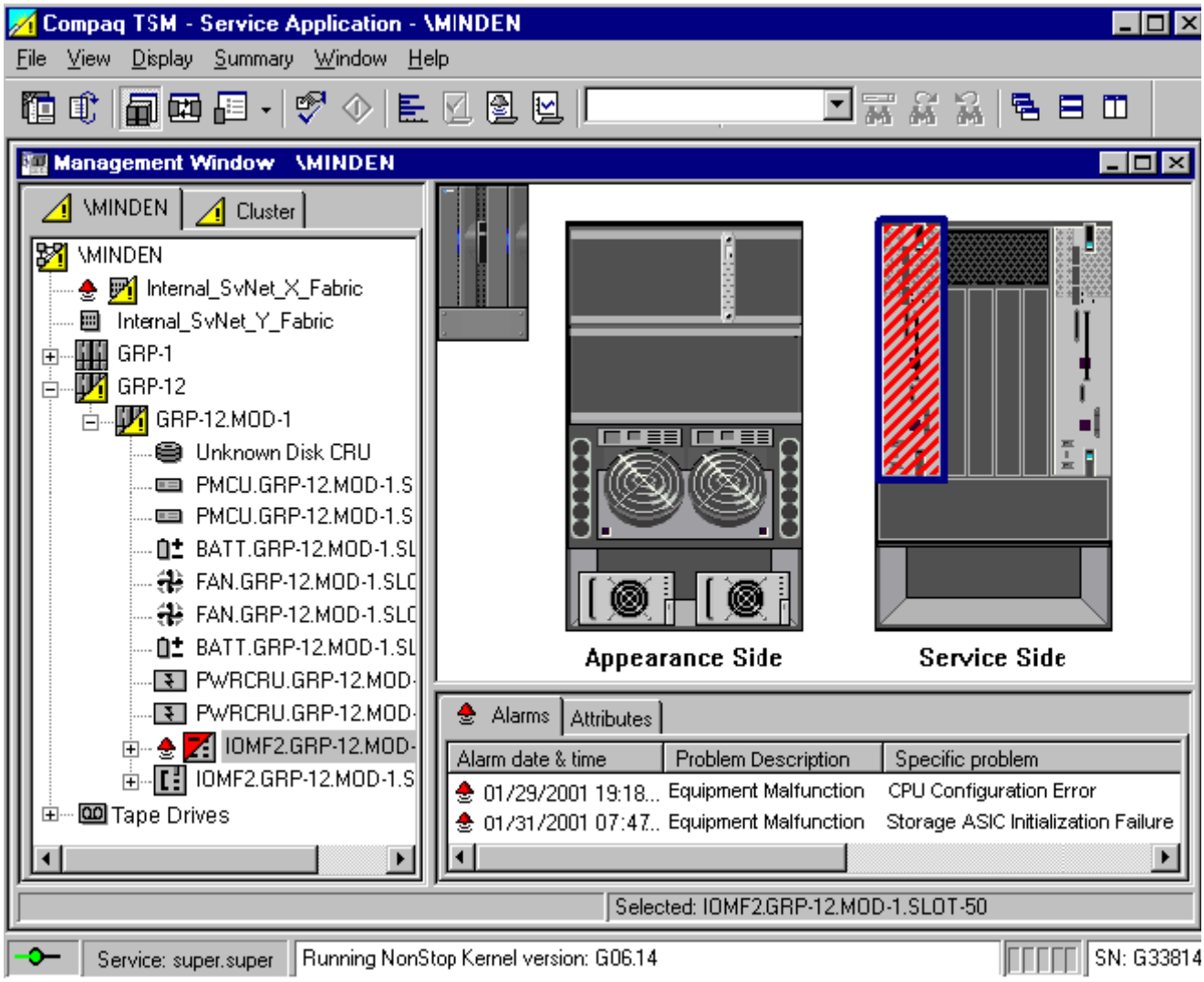
If a different status appears, determine the problem and correct it:

- Check EMS messages or messages at the TACL prompt.
- Check the halt codes appearing in the Processor Status box.

Check System Enclosure Components (Using TSM)

Verify the operational status of the components in each system enclosure:

1. Log on to the TSM Service Application.
2. Check for alarm conditions in the tree pane of the management window. For example:



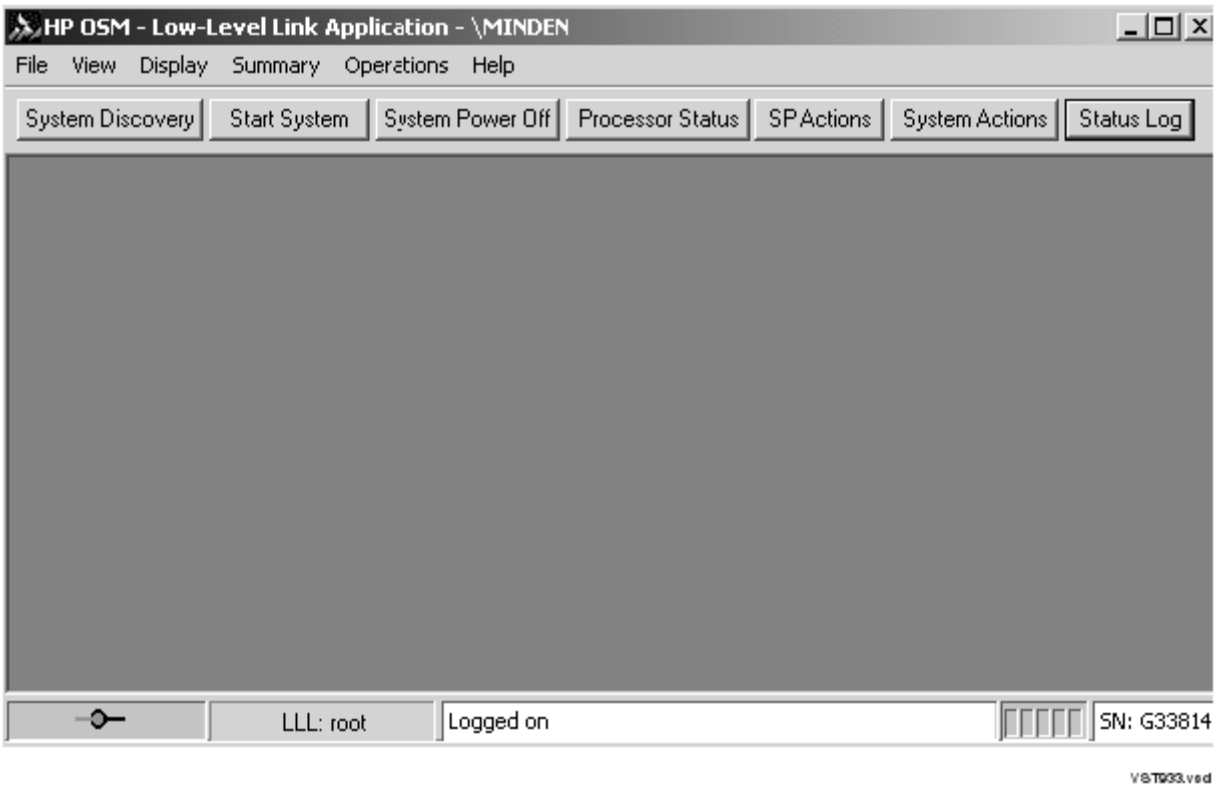
VST200.vsd

3. Select an item in the tree pane that shows alarm conditions, and then click the Alarms tab to view the alarms associated with the selected item.
   - If a yellow triangle appears over an enclosure diagram, determine the cause of the problem. Correct the problem if possible. Determine if you can proceed without affecting the installation of software. All processors, all service processors, the $SYSTEM volume, the $DSMSCM volume, and the $AUDIT volume must be working properly.
   - If a red triangle appears over an enclosure diagram, you have a severe system problem. Do not continue with the upgrade procedure. Contact your service provider.

Check Processor Status (Using OSM)

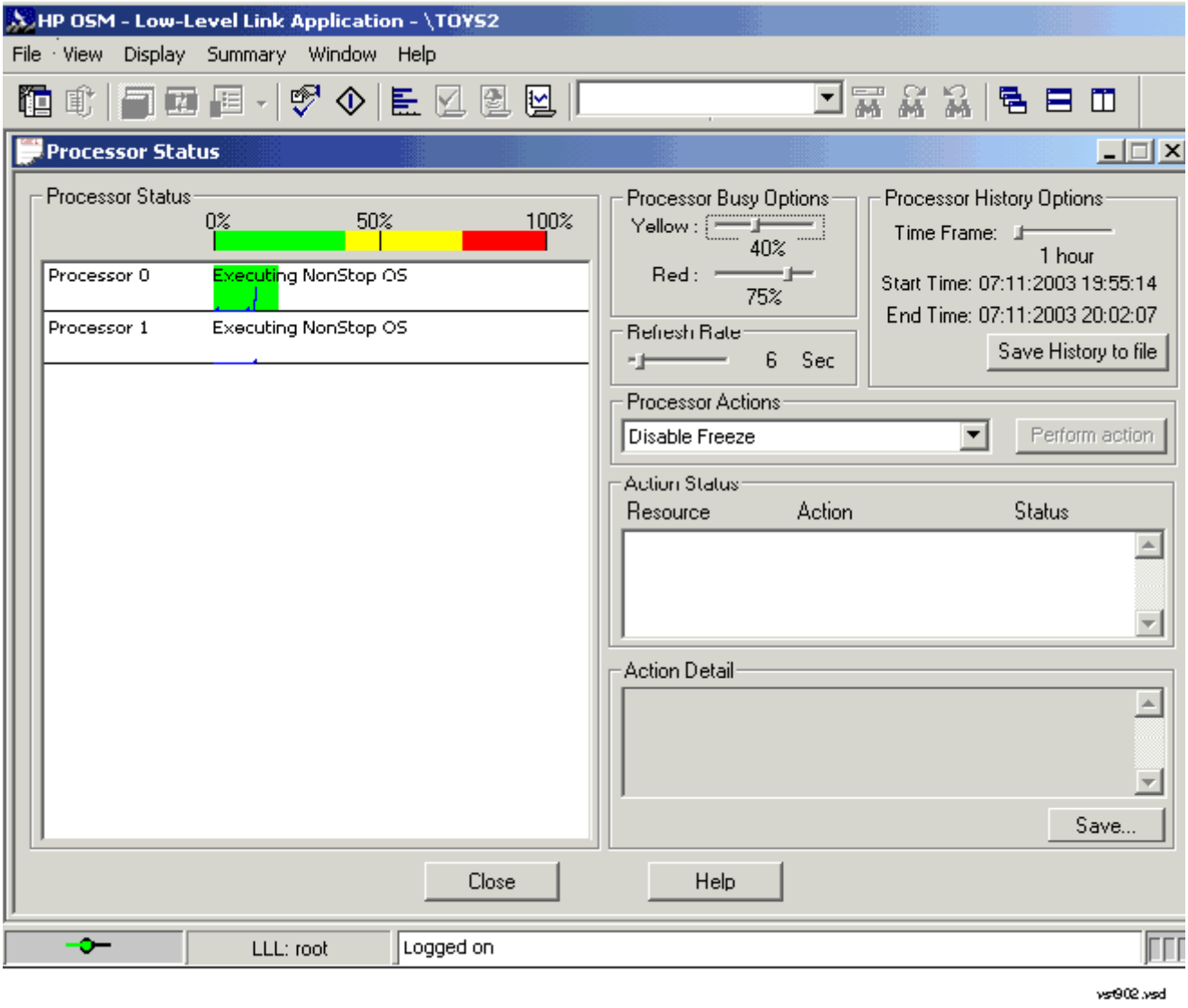
1. Log on to the OSM Low-Level Link.

   The OSM Low-Level Link Application appears.



2. Select **System Discovery**.
3. Select **Processor Status**.

   The **Processor Status** dialog box appears. The Processor Status for all processors should be *Executing NonStop OS*.



Check System Components (Using OSM)

Note. Do not launch the OSM Service Connection if you do not already have OSM server processes configured. If OSM is not installed, use TSM to migrate to the G06.24 RVU.

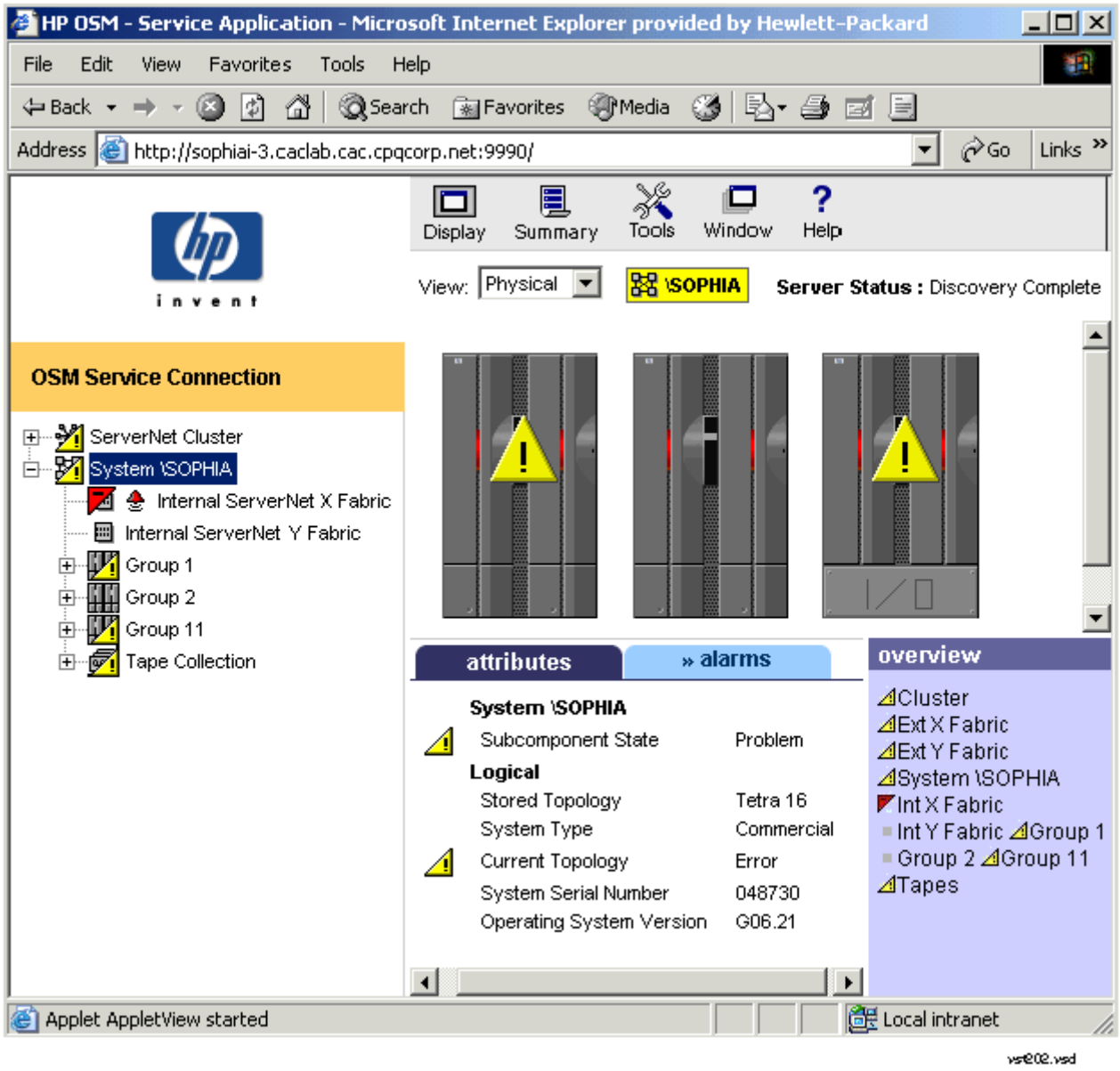
1. Log on to the OSM Service Connection.

   See the *OSM Migration Guide* if you have any problems accessing OSM.

   The T2752AAI or later OSM Service Connection browser session starts in a new browser window and eliminates the use of standard Internet Explorer buttons. (Clicking the Internet Explorer's **Refresh** ends your current OSM Service Connection session and forces you to open a new browser window to reestablish a new connection to the system you are monitoring.)

   - After the browser session begins, you can close the original IE window.

- If you are on an earlier OSM Service Connection version, remember to use the OSM **Refresh**, **Reanalyze**, or **Rediscover** actions for updating interface display for the desired resource objects.



2. The System Status window indicates the overall health of a system by the color of the system icon. Green indicates that the overall health is fine; yellow indicates a possible system problem. From the Summary menu, select **System Status**. For example:

3. Select an item in the tree pane that shows alarm conditions, and then click the Alarms tab to view the alarms associated with the selected item.
   - If a yellow triangle appears over an enclosure diagram, determine the cause of the problem. Expand the tree. Correct the problem if possible. Determine if you can proceed without affecting the installation of software. All processors, all service processors, the $SYSTEM volume, the $DSMSCM volume, and the $AUDIT volume must be working properly.
   - If a red triangle appears over an enclosure diagram, you have a severe system problem. Do not continue with the upgrade procedure. Contact your service provider.
   - To find out more about an item, select **Display>Alarms**. Click **Detail** on the Alarms screen for specific information on the resource and problem.

Check Critical System Processes

Verify the status of all software processes that are critical for your system to operate normally:

1. Make a list of all critical system processes for your system.
2. At a TACL prompt, start SCF and enter a LISTDEV command.
3. Verify that the LISTDEV display includes all critical processes. For example:

```
1> scf listdev
SCF - T9082G02 - (15APR98) (04MAR98) - 02/23/99 13:47:49 System \ELI
Copyright Tandem Computers Incorporated 1986 - 1998
LDev Name      PPID    BPID   Type    RSize Pri Program
  0  $0         0,5     1,5      ( 1,0 )   102 201 \ELI.$SYSTEM.SYS00.OSIMAGE
  3  $YMIOP     0,256   1,256    ( 6,4 )    80 205 \ELI.$SYSTEM.SYS00.OSIMAGE
  5  $Z0        0,7     1,7      ( 1,2 )   102 200 \ELI.$SYSTEM.SYS00.OSIMAGE
  6  $SYSTEM    0,257   1,257    ( 3,42)  4096 220 \ELI.$SYSTEM.SYS00.OSIMAGE
  7  $ZOPR      0,8     1,8      ( 1,0 )   102 201 \ELI.$SYSTEM.SYS00.OSIMAGE
 59  $ZZKRN     0,15    1,18     (66,0 )   132 180 \ELI.$SYSTEM.SYS00.OZKRN
 60  $ZZWAN     0,267   1,274    (50,3 )   132 180 \ELI.$SYSTEM.SYS00.WANMGR
 61  $ZZSTO     0,272   1,280    (65,0 )  4096 180 \ELI.$SYSTEM.SYS00.TZSTO
 62  $ZZLAN     0,14    1,15     (43,0 )   132 180 \ELI.$SYSTEM.SYS00.LANMAN
 66  $ZSNET     0,15    1,18     (66,0 )   132 180 \ELI.$SYSTEM.SYS00.OZKRN
 67  $ZNET      0,3     1,14     (50,63)  3900 175 \ELI.$SYSTEM.SYS00.SCP
 70  $ZM01      1,11    0,0      (45,0 )   132 201 \ELI.$SYSTEM.SYS00.QIOMON
 71  $ZM00      0,13    0,0      (45,0 )   132 201 \ELI.$SYSTEM.SYS00.QIOMON
 72  $ZLOG      0,285   0,0      ( 1,0 )  4024 150 \ELI.$SYSTEM.SYS00.EMSACOLL
 82  $TAPE0     0,277   1,272    ( 4,9 )  2048 200 \ELI.$SYSTEM.SYS00.OTPPROCP
 89  $DSMSCM    0,280   1,269    ( 3,41)  4096 220 \ELI.$SYSTEM.SYS00.TSYSDP2
 90  $DATA14    2,268   3,264    ( 3,41)  4096 220 \ELI.$SYSTEM.SYS00.TSYSDP2
 98  $AUDIT     0,279   1,270    ( 3,41)  4096 220 \ELI.$SYSTEM.SYS00.TSYSDP2
111  $ZTCP1     1,281   0,299    (48,0 ) 32000 200 \ELI.$SYSTEM.SYS00.TCPIP
112  $ZTCP0     0,288   1,278    (48,0 ) 32000 200 \ELI.$SYSTEM.SYS00.TCPIP
113  $ZTNT0     0,298   1,276    (46,0 )  6144 170 \ELI.$SYSTEM.SYS00.TELSERV
140  $ZTN20     2,287   3,273    (46,0 )  6144 170 \ELI.$SYSTEM.SYS00.TELSERV
142  $ZTC20     2,286   3,272    (48,0 ) 32000 200 \ELI.$SYSTEM.SYS00.TCPIP
196  $ZPHI      0,268   1,288    ( 1,0 )  4024 198 \ELI.$SYSTEM.SYS00.EMSACOLL
199  $Z14W      3,35    0,0      ( 1,30)   132 150 \ELI.$SYSTEM.SYS00.EMSDIST
205  $Z14X      2,23    0,0      ( 1,30)   132 150 \ELI.$SYSTEM.SYS00.EMSDIST
```

Check the Status of the ServerNet Addressable Controllers (SACs)

Check the status of the SACs in the ServerNet LAN Systems Access (SLSA) subsystem using SCF:

```
5> scf
SCF - T9082G02 - (15APR98) (04MAR98) - 02/23/99 14:11:31 System \ELI
Copyright Tandem Computers Incorporated 1986 - 1998
(Invoking \ELI.$SYSTEM.SUPER.SCFCSTM)
1-> assume $zzlan
$ZZLAN 2-> status sac *

SLSA Status SAC

Name                 Owner   State         Trace Status
$ZZLAN.MIOE0.0         0     STARTED       OFF
$ZZLAN.E0153.0         0     STARTED       OFF
$ZZLAN.E0153.1         0     STARTED       OFF
$ZZLAN.TR1.0           0     STARTED       OFF
```

The SACs must be in the STARTED state before continuing with the migration.

Check Disk Subsystem Status

Verify that these disk volumes are started:

- $SYSTEM (mirrored volume)
- The volume containing the DSM/SCM target subvolume (by default $DSMSCM)
- The DSM/SCM Archive volume (by default $AUDIT)

Note. See the *DSM/SCM User's* Guide for information on these DSM/SCM database volumes.

---

1. At a TACL prompt, enter:

   ```
   > SCF STATUS DISK $*, SUB magnetic
   ```

2. Verify that the STATUS DISK display includes all the disk subsystems shown in this example:

```
3> scf status disk $*, sub magnetic
SCF - T9082G02 - (15APR98) (04MAR98) - 02/23/99 14:23:59 System \ELI
Copyright Tandem Computers Incorporated 1986 - 1998

STORAGE - Status DISK \ELI.$SYSTEM
LDev   Primary    Backup     Mirror     MirrorBackup   Primary   Backup
                                                       PID       PID
   6  *STARTED    STARTED    *STARTED    STARTED       0,257     1,257


STORAGE - Status DISK \ELI.$DSMSCM
LDev   Primary    Backup     Mirror     MirrorBackup   Primary   Backup
                                                       PID       PID

 146  *STARTED    STARTED    *STARTED   STARTED        0,299     1,267

STORAGE - Status DISK \ELI.$AUDIT
LDev   Primary    Backup     Mirror     MirrorBackup   Primary   Backup
```

```
                                                                PID       PID
177  *STARTED    STARTED    *STARTED    STARTED                 0,291     1,276
```

3. If the $SYSTEM, DSM/SCM, and Archive volumes are not listed in the display, contact your service provider.
4. Verify that the primary path, backup paths, mirror path, and mirror backup path are started for the mirrored $SYSTEM volume. If any paths are stopped, start them.
5. Verify that the primary path and backup path are started for the $DSMSCM volume and the $AUDIT volume. If any paths are stopped, start them.

Check the Swap File Configuration

You must ensure that you have configured kernel-managed swap files of sufficient size for all your system and application software processes. The optimal amount of swap space varies, depending on the configuration of your system. The default swap files can allocate up to 128 megabytes (MB) per processor. However, many processes and applications require more swap space. Inadequate swap space can cause process-creation errors, abended processes, and halts.

To check the size of the configured swap files for each processor:

1. At a TACL prompt, start NSKCOM and enter an `INFO SWAPFILE *` command. For example:

```
3> nskcom info swapfile *
NSKCOM - T5838G05 BASE (04AUG98) - Jul 27 1998
Copyright (c) 1995, 1997  Tandem Computers Incorporated

$SYSTEM.SYSTEM.ZSYSCFG
KMS.SWAPFILE = 0 $AUDIT0.ZSYSSWAP.CPU0
KMS.SWAPFILE = 1 $AUDIT0.ZSYSSWAP.CPU1
KMS.SWAPFILE = 2 $AUDIT0.ZSYSSWAP.CPU2
KMS.SWAPFILE = 3 $AUDIT0.ZSYSSWAP.CPU3A
   .
   .
   .
$AUDIT0.ZSYSSWAP.CPU0
Extent Size     512 disk pages
MaxExtents      512
File Size       512  MB
CPU             0
Threshold       Default

$AUDIT0.ZSYSSWAP.CPU1
Extent Size     512 disk pages
MaxExtents      512
File Size       512  MB
CPU             1
Threshold       Default

$AUDIT0.ZSYSSWAP.CPU2
Extent Size     512 disk pages
MaxExtents      512
File Size       512  MB
CPU             2
Threshold       Default
```

```
$AUDIT0.ZSYSSWAP.CPU3A
Extent Size     128 disk pages
MaxExtents      128
File Size       32  MB
CPU             3
Threshold       Default
   .
   .
   .
```

2. Verify that each processor in the system has a configured swap file of at least 256 MB in the minimum for any G-series system. Depending on how many processes you have, your system configuration might require more swap space.

   For each processor, configure at least twice as much swap space as there is memory. For example, if you have 256 MB of memory for each processor, configure 512 MB of swap space. If you have 1 GB or 2 GB memory per processor, you might need additional swap space.

   Note. Configure swap files if necessary. See the *Kernel-Managed Swap Facility (KMSF) Manual* for information about how to configure swap files and for guidelines about how much swap space should be allocated per processor.

3. From NSKCOM, perform a STATUS to verify which swap files are in use. For example:

```
4> nskcom status swapfile *
NSKCOM - T5838G05 BASE (04AUG98) - Jul 27 1998
Copyright (c) 1995, 1997  Tandem Computers Incorporated

$SYSTEM.SYSTEM.ZSYSCFG
KMS.SWAPFILE = 0 $AUDIT0.ZSYSSWAP.CPU0
KMS.SWAPFILE = 1 $AUDIT0.ZSYSSWAP.CPU1
KMS.SWAPFILE = 2 $AUDIT0.ZSYSSWAP.CPU2
KMS.SWAPFILE = 3 $AUDIT0.ZSYSSWAP.CPU3A
   .
   .
   .

Status of $AUDIT0.ZSYSSWAP.CPU0
CPU 0
CPU Pages: Total 32768          Reserved 9038   Available 23730
Peak CPU Pages ever reserved 12869
Threshold 27852 CPU pages

Status of $AUDIT0.ZSYSSWAP.CPU1
CPU 1
CPU Pages: Total 32768          Reserved 5275   Available 27493
Peak CPU Pages ever reserved 10978
Threshold 27852 CPU pages

Status of $AUDIT0.ZSYSSWAP.CPU2
CPU 2
CPU Pages: Total 32768          Reserved 8541   Available 24227
Peak CPU Pages ever reserved 13228
Threshold 27852 CPU pages

Status of $AUDIT0.ZSYSSWAP.CPU3A
CPU 3
CPU Pages: Total 2048           Reserved 1541   Available 507
Peak CPU Pages ever reserved 1638
Threshold 1740 CPU pages
```

.
.

Check the Status of the Spooler Collector

Check that the spooler collector is active and not 100 percent full.

At a TACL prompt, start SPOOLCOM and issue a `COLLECT, STATUS` command. For example:

```
1> spoolcom $spls; collect, status

COLLECT   STATE           FLAGS  CPU   PRI  UNIT   DATA FILE        %FULL
$S        ACTIVE           3 ,   1     154  4      $OPS0.SPL.DATA   44
```

Check the Tape Drive Status

Check that the tape drive to be used to install the SUT is started and online:

1. At a TACL prompt, enter:

   ```
   > SCF STATUS TAPE $*
   ```

2. Verify that the STATUS TAPE display includes the tape subsystem you plan to use to load the SUT. For example:

   ```
   STORAGE - Status TAPE \ELI.$SILO2
   LDev   State      Primary   Backup   DeviceStatus
                     PID       PID
   138    STARTED    0,295     1,279    ONLINE
   ```

3. If the tape subsystem you plan to use is not listed, select another tape drive or add the tape drive to your system configuration. The state of that tape drive must be STARTED, and the device status must be ONLINE.

4. If the status of the tape drive is stopped or not ready, start the tape drive and put the tape drive online.

Record the Current SYS*nn*

Identify and record the current SYS*nn* subvolume on your system. You will have to specify this SYS*nn* subvolume if you need to fall back from the G06.24 RVU.

At a TACL prompt, issue the status command to determine the current SYS*nn* subvolume. For example:

```
3> status 0,0

System \ELI
Process        Pri  PFR %WT     Userid   Program file            Hometerm
               0,0  201 P R 000 255,255  $SYSTEM.SYS01.OSIMAGE $YMIOP.#CLCI
                         Swap File Name: $SYSTEM.#0
```

Back Up Important Files

Before you upgrade to the newest RVU, back up to tape critical host applications, such as the following:

- NonStop SQL/MP files

  HP recommends that you always have a current backup copy of the $SYSTEM.SYSTEM.ZZSQLCI2 file in case you need to initialize SQL later if you have problems with your new RVU during or after installation.

- NonStop SQL/MX files
- Spooler Control files
- TMF files

5 Installing the G06.24 RVU

Installing a new RVU involves these DSM/SCM tasks:

1. Receive New Software Into the Archive
2. Create a New Software Revision
3. Build and Apply the New Software Revision

Alerts

Do not use this procedure to upgrade more than one NonStop S-series server at a time or to install SPRs.

Before you install the G06.24 RVU, these requirements must be met:

- Always install the latest D46 software product version (SPR) of DSM/SCM and the DSM/SCM client before receiving the SUT. If you are using a pre-G06.20 RVU, use RESTORE and activate the SWID (T9298D40^AAK) product. See Appendix B, Installing the Latest DSM/SCM SPRs and Client Software before continuing.

  Note. Until the T6031ABE, or later, SPR of DSM/SCM is installed, you should select the **Receive-all-files** option on all inputs into the DSM/SCM Archive whether or not you want to manage OSS files. When the T6031ABE, or later, SPR is applied, you can then choose the **Receive-all-files** only if you want to manage OSS files.

- If you are managing OSS files with DSM/SCM, check that the OSS Root Name Server $ZPNS is started and running on the DSM/SCM Target. (See Create a New Software Revision on page 5-8.) The volume where the SYS*nn* is being placed must be activated as $SYSTEM to install the OSS files. See Appendix B in the *Open System Services Management and Operations Guide* or if using EasySetup, see Section 1 in the *Open System Services Installation Guide*.
- Install the appropriate TSM or OSM server SPRs, and upgrade the system console to the set of software delivered on the NonStop System Console Installer CD.
- Check that SPRs have been installed for SQL/MX, DP2, if needed. See Table 3-3, SPRs Required for NonStop SQL/MX Release 2.0 Fallback, on page 3-7
- Check that other SPRs required for falling back from the G06.24 RVU have been installed, including any SPRs for SQL/MX Release 2.0. (You cannot install SPRs required for fallback after you have installed the G06.24 RVU.) A special OSS SPR, T8622AAH, or later, ensures backward compatibility if you need to fall back to an RVU *prior to* G06.12.
- Save the configuration database.
- Verify system operations. Review Section 4, Preparing to Upgrade the Server Software.

- Obtain a user name and password authorized to use the DSM/SCM Planner Interface. See the *DSM/SCM User's Guide* for more information about configuring which users are allowed to use DSM/SCM and which tasks they are permitted to perform.
- Check that the OutsideView Startup TACL ($YMIOP.#CLCI) and EMS Event Stream windows are open. These windows must remain open while DSM/SCM is performing a Build/Apply; otherwise, Build/Apply errors result.
- Pause the hometerm configured for use by DSM/SCM Pathway servers and other processes when DSM/SCM is running. The default hometerm is $ZHOME. See the *DSM/SCM User's Guide* for more information about the hometerm used by DSM/SCM Pathway servers.
- If you are upgrading from the NonStop S7000 system (NSR-W), before you upgrade to NonStop S76000 (NSR-X) / S86000 (NSR-Y) / S7600 (NSR-E), NonStop S7800 (NSR-J), S78000 (NSR-H), S88000 (NSR-Z), change the processor type entry in the CONFTEXT file. In the CONFTEXT file, you can specify only one processor type. Neither NSR-D (S7400), nor NSR-W (S7000) can be in a system with mixed processor types. Failure to change the processor type will result in system instability and a backout to a previous RVU will be required.

  For processor model S70000 running G06.24 and later, you must change the processor type from NSR-G to NSR-C in the ALLPROCESSORS paragraph in the CONFTEXT file. Failure to change the processor type when loading the new SYS*nn* causes an immediate %100441 halt. All other references to NSR-G are still valid, which means that any query performed on the system will return NSR-G if the PMF is a model 1951 PMF CRU (S70000).

Back Up Important Files

If you are on a production system, make sure that important files have been backed up (such as, TMF, SQL/MP, SQL/MX, and so forth).

Drain the spooler and back up spooler control files.

Receive New Software Into the Archive

Receiving software into the Archive might take several hours.

To receive the SUT containing the G06.24 RVU into the DSM/SCM Archive:

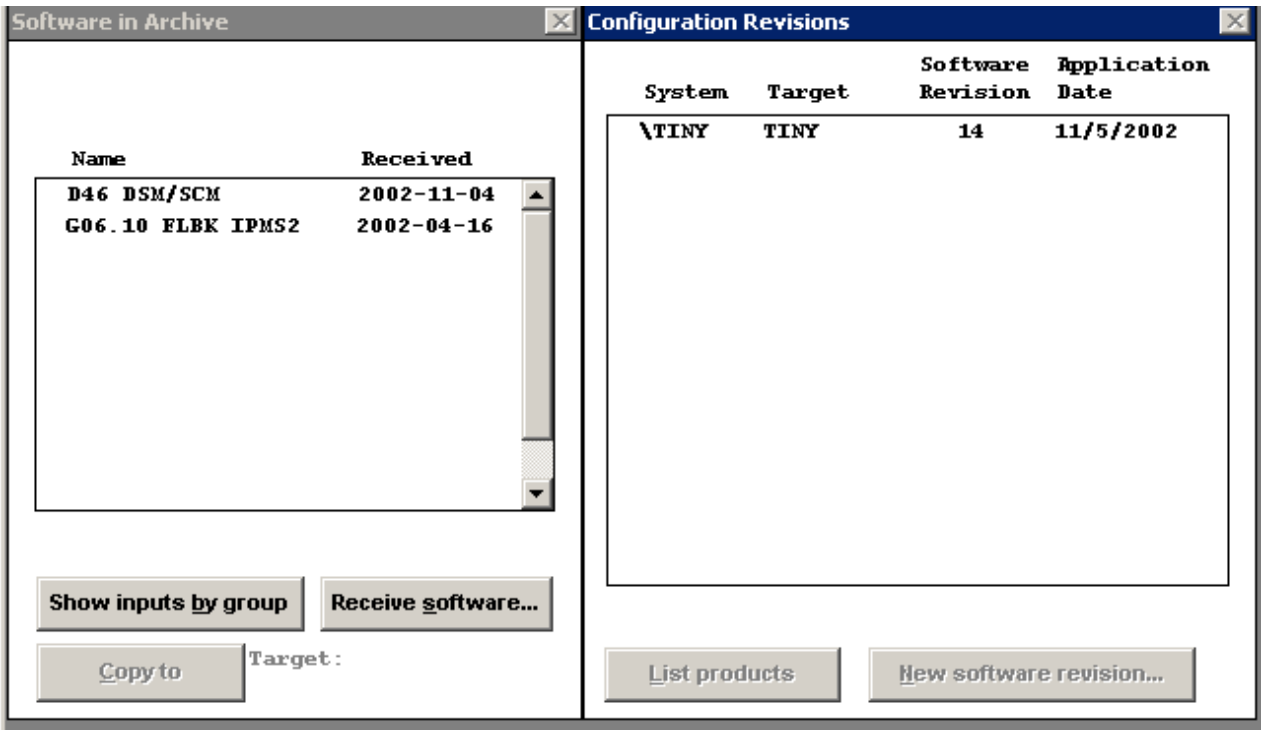
1. Start TMF and DSM/SCM if they are not already running. For example:

```
> TMFCOM START TMF
> VOLUME $dsmscm_vol.ZDSMSCM
> RUN STARTSCM

8> startscm

DSM/SCM Process Startup Function - STARTSCM - T6031D46 - (31MAR2003)
Copyright Hewlett Packard Development Company L.P. 1993-2003
NOTICE:   * If the hometerm chosen during INITENV, $zhome,
          * is not currently in a paused state, STARTSCM andDSM/SCM
          * server processes may hang indefinitely.  Be sure this
          * hometerm has been paused!

PATHWAY CONTROL FILE DATED: 21 APR 2003, 03:52:16
$Z03N: WARN   - *1079* SERVER CB-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER IS-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER MISERVER, NO STATIC SERVERS DEFINED
$Z03N: SERVER OM-001, STARTED
$Z03N: SERVER SM-001, STARTED
$Z03N: SERVER SM-T-001, STARTED
$Z03N: SERVER T9154-HELP-SERV, STARTED
$Z03N: WARN   - *1079* SERVER TA-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER TISERVER, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER US-001, NO STATIC SERVERS DEFINED
$Z03N: TCP TCP-H,STARTED
$Z03N: TCP  TCP-T,STARTED
```

2. Start the DSM/SCM Planner Interface (**Start>Programs>Dsm_scm>DSMSCM**).
3. When the Logon dialog box appears, enter the user ID and password and click **OK**.

   The Planner Interface screen displays two dialog boxes:

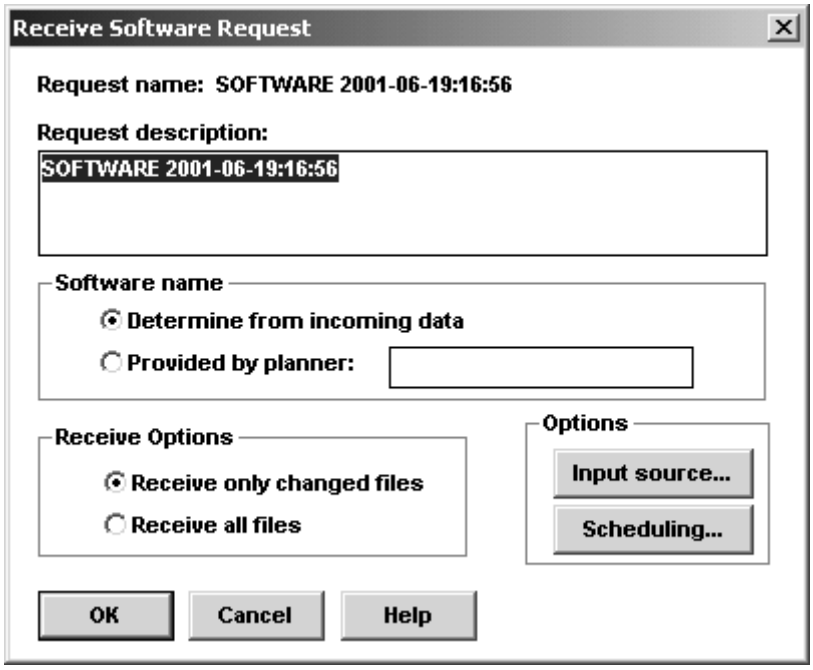
   - The Software in Archive dialog box lists the software that is currently in the DSM/SCM Archive.
   - The Configuration Revisions dialog box lists the current software revisions. For example:



vst500.vsd

4. In the **Software in Archive** dialog box, click **Receive software**.

   The Receive Software Request dialog box appears. For example:



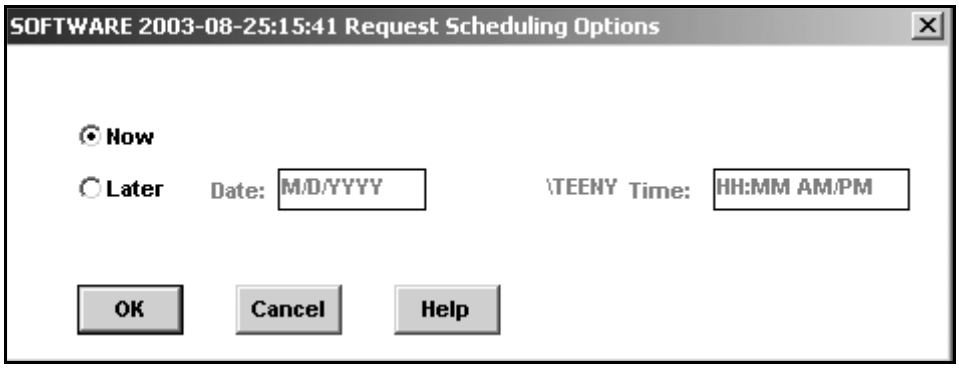
VST505.vsd

5. In the Receive Options group box, do the following, depending on your system environment:
   - Select **Receive only changed files** if you *do not want* to manage OSS files.
   - Select **Receive all files** if you want to manage OSS files. If this option is selected, the receive will take about an hour or two even if you have recently upgraded to a new RVU.
6. Under Software name, select **Provided by planner** and enter a name for the RVU.
7. In the Options group box, click **Input source**.

   The Request Source Options dialog box appears.
8. Select **Tape drive**.
9. From the list, select the tape drive that contains the SUT, and click **OK**.

   The Request Source Options dialog box closes.
10. (Optional) In the Options group box of the Receive Software Request dialog box, click **Scheduling**.

    The Request Scheduling Options dialog box appears. Make the appropriate selections and click **OK**.

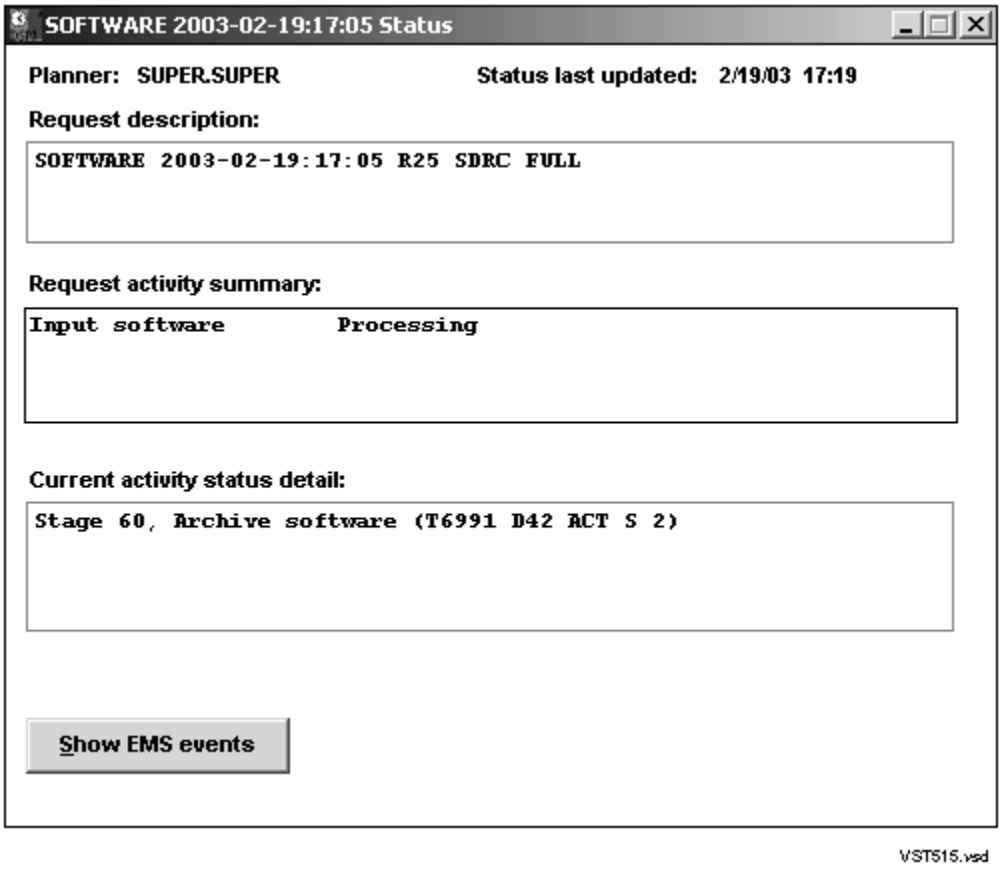


VST553.vsd

    The Request Scheduling Options dialog box closes.
11. In the Receive Software Request dialog box, click **OK**.

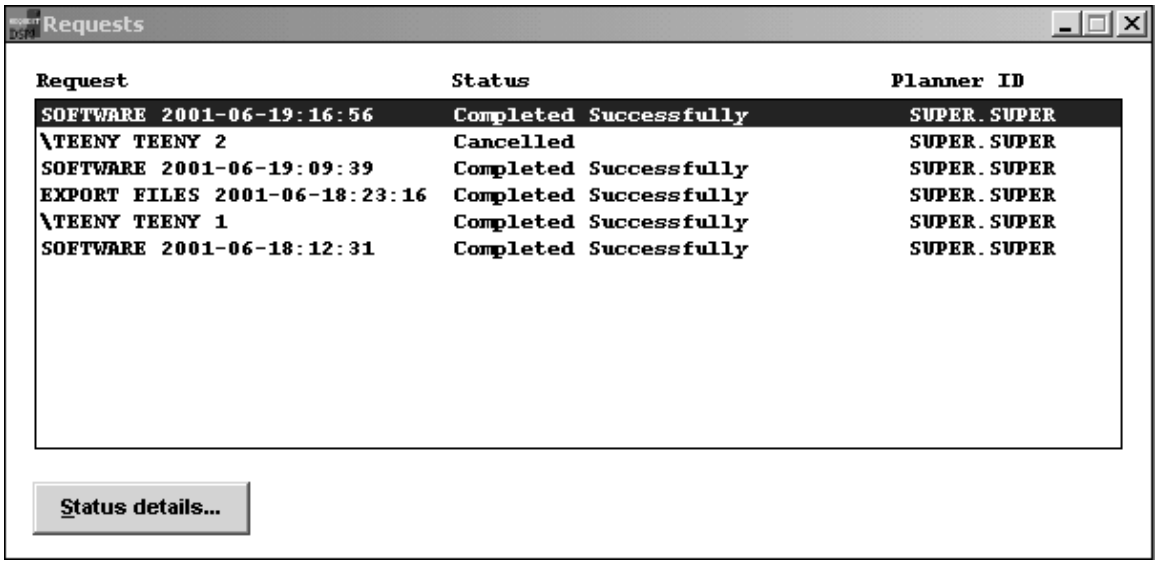
    A Status window appears and is updated automatically at regular intervals.

12. While waiting for the request to finish, check:
    - The status of the request in the Status window. For example:



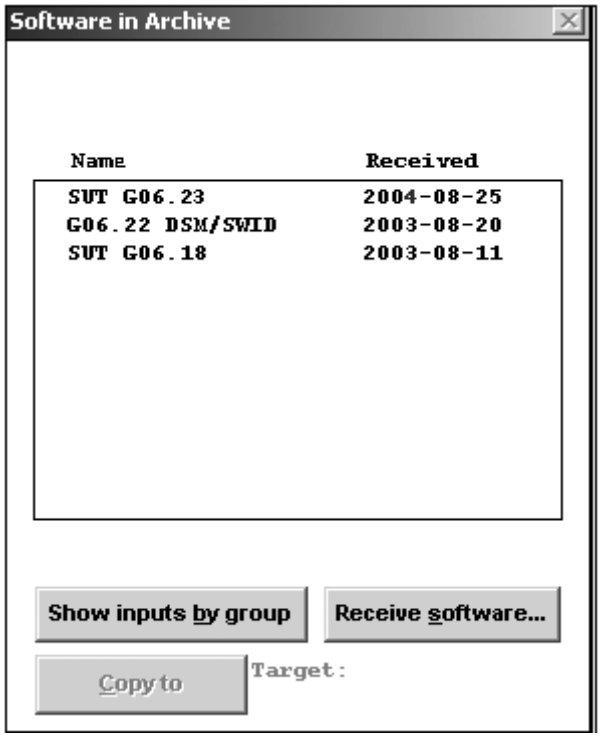
    - EMS event messages to see if a new reel (or cartridge on a nonautoloading drive) of the SUT needs to be mounted. EMS messages are displayed in the following windows:
        - The OutsideView EMS Event Stream window
        - The EMS Events window displayed by DSM/SCM when you click **Show EMS events** from the Status window

You can also check the Requests window to ensure that the request is finished. (Select **Requests>Requests list**). For example:



VST525.vsd

13. When the request is finished, close the Status and Requests windows.
14. Update the Software in Archive dialog box to show the newly received SUT. Select **Window>Refresh.** The new SUT appears in the window:



vst556.vsd

15. Keep the Planner Interface open for the next task.

Create a New Software Revision

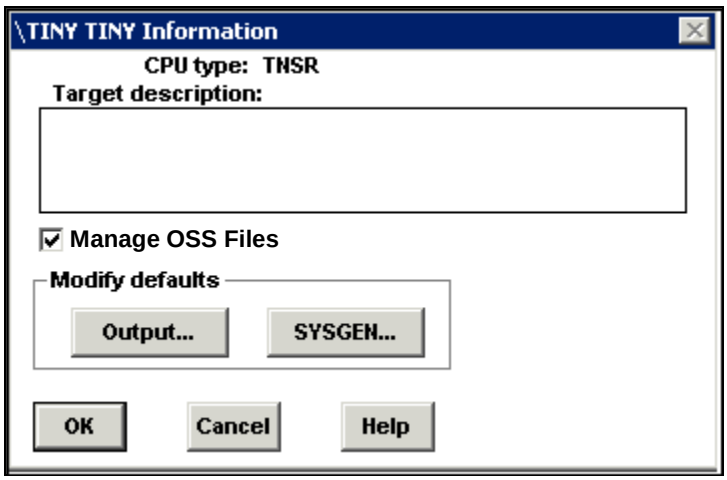
When you create a new software revision, DSM/SCM selects the products in the SUT that are licensed for your site and replaces any previous versions of the products.

The following steps assume that you are creating a new software revision that manages OSS files. If you are not, go to step 6 after you are in the Planner Interface Configuration Revisions window. These instructions also assume that you have installed OSS. To configure OSS for the first time, see the *Open System Services Installation Guide*. For details on modifying a DSM/SCM target, see the *DSM/SCM User's Guide*.

1. Check that the OSS Root Name Server $ZPNS is running on the Target. The volume where the SYS*nn* is being placed must be activated as $SYSTEM to install OSS files. To determine the server process, issue an SCF STATUS SERVER command or an SCF LISTDEV command. An example of the STATUS SERVER command is:

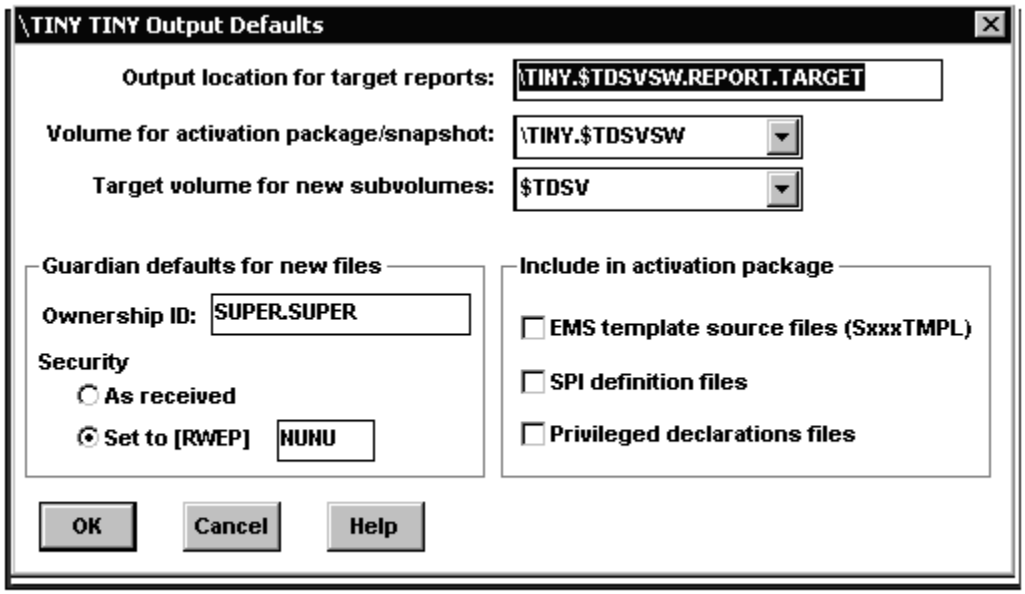
```
TACL>SCF STATUS SERVER $ZPMON.*

SCF - T9082G02 - (30APR03) (29JAN03) - 04/04/2003 14:39:49 System
\TINY

Copyright Compaq Computer Corporation 1986 - 2003


OSS Status SERVER \TINY.$ZPMON.*


ServerName                          State        LastError   ErrorDetail

#ZMSGQ                              STARTED          0           0
#ZPLS                               STARTED          0           0
#ZPNS                               STARTED          0           0
#ZTA00                              STARTED          0           0
#ZTA01                              STARTED          0           0
#ZTA02                              STARTED          0           0
#ZTA03                              STARTED          0           0
#ZTA04                              STOPPED          0           0
#ZTA05                              STOPPED          0           0
#ZTA06                              STOPPED          0           0
#ZTA07                              STOPPED          0           0
#ZTA08                              STOPPED          0           0
#ZTA09                              STOPPED          0           0
#ZTA10                              STOPPED          0           0
#ZTA11                              STOPPED          0           0
#ZTA12                              STOPPED          0           0
#ZTA13                              STOPPED          0           0
#ZTA14                              STOPPED          0           0
#ZTA15                              STOPPED          0           0

Total Errors = 0    Total Warnings = 0
```

2. In DSM/SCM, the Planner Interface, in the Configuration Revisions window, select the target configuration.
3. Select **Maintain>Target Maintenance>Modify**.
   a. Select the **Manage OSS Files** option.



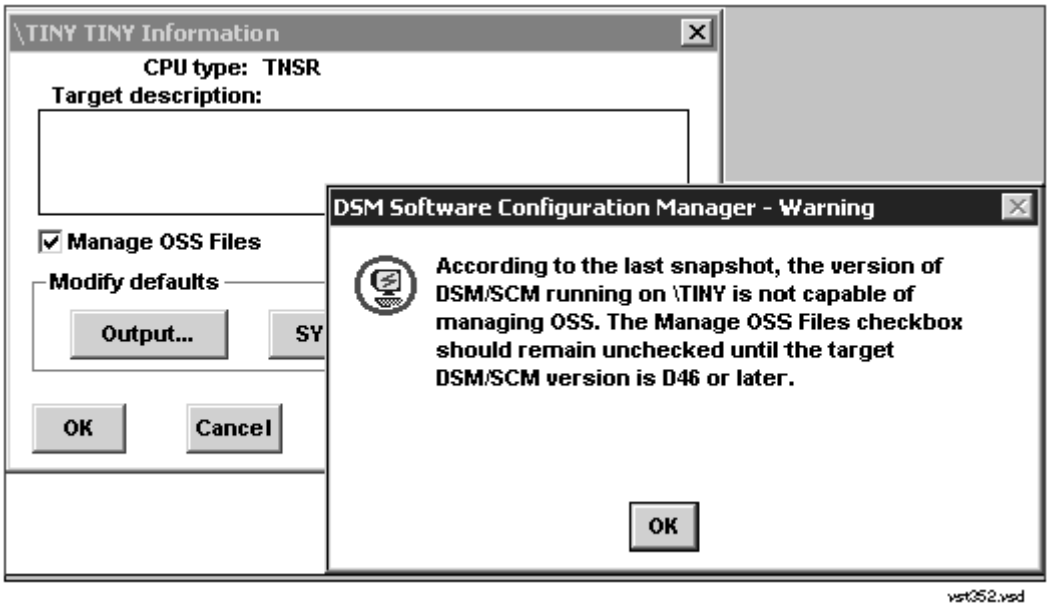
VST447.vsd

   b. Click **Output** to view the default ouput values.
   c. Enter default output values in the data fields as needed.



VST448.vsd

   d. Click **OK**.



Note. If you receive this error message stating that the current target is pre-D46, you can continue with the installation if you are certain that you have installed the DSM/SCM T6031D46 PVU or later SPR. To check the correct product version:

1. Use the following DSM/SCM VPROC commands:

```
> volume $dsmscm_vol.ZDSMSCM
> vproc taexe
> vproc cbexe
```

2. Log on to TI by running ZPHITI (page 5-19). The current target version appears.

```
> RUN ZPHITI
```

3. To continue with the installation, click **OK**.

If you have previously installed the D46 DSM/SCM PVU and created a snapshot, the error message does not appear.

DSM/SCM returns you to the Target Information dialog box.

4. Click **OK** to return to the Configuration Revisions dialog box.
5. Click **OK** to return to the Planner Interface.
6. Select **New software revision**.

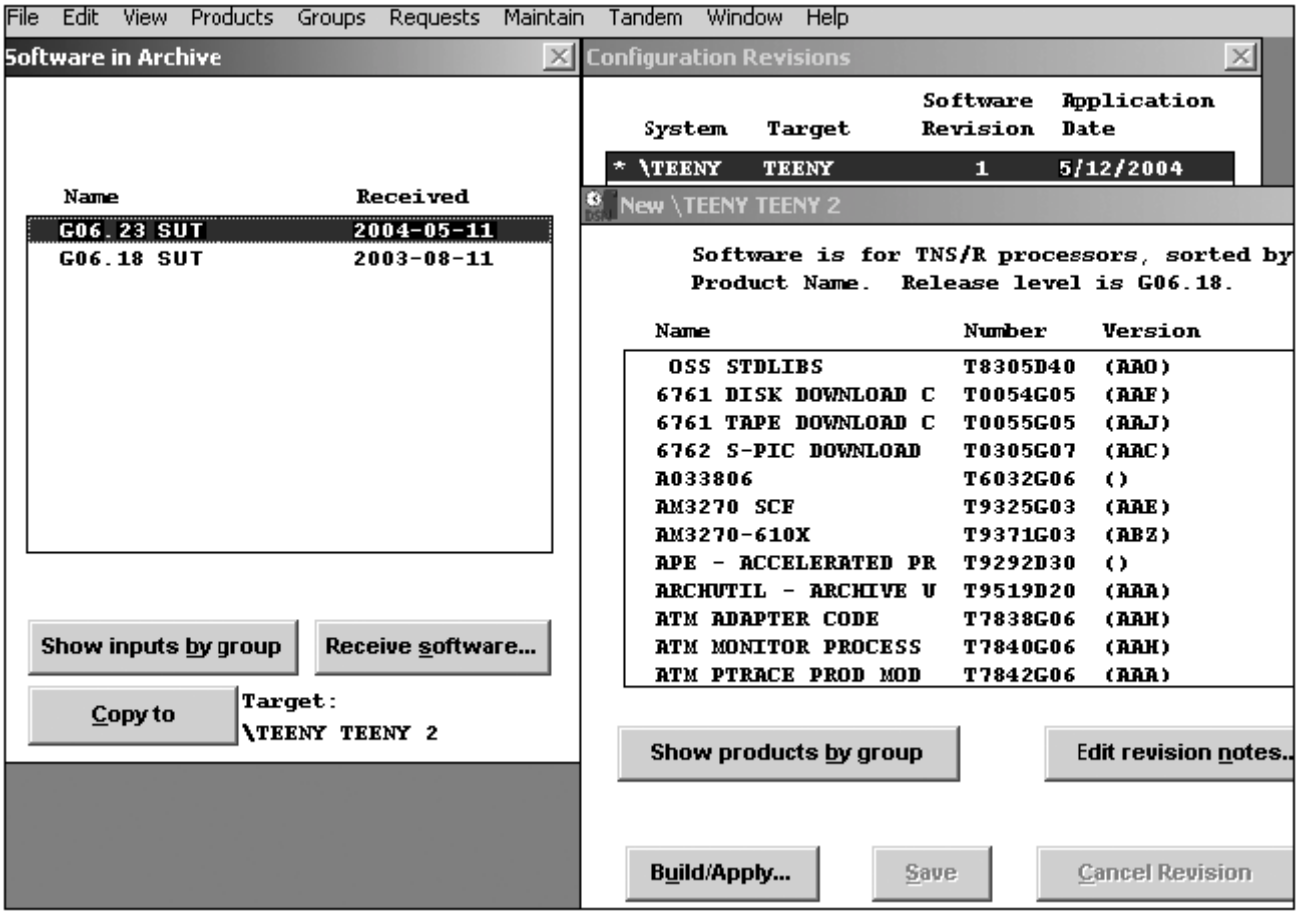
   DSM/SCM opens a New software revisions dialog box that shows the products in the last software revision that was built for the target system. It might take several minutes for the dialog box to appear.

   a. In the New software revision dialog box, click **Edit revision notes**.

      A Revision Notes text box containing existing revision notes appears.

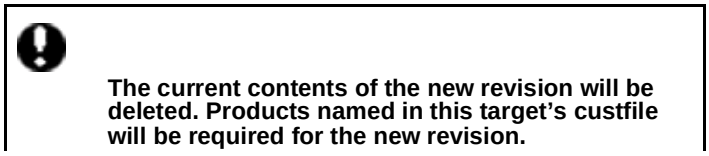
b. Add a description describing the new software revision (such as G06.24 SUT) and click **OK**.

c. On the Software in Archive window, select the G06.24 RVU that was just received into the archive and click **Copy to**.



VST559.vsd

7. Click **Continue** when the Confirmation message appears:



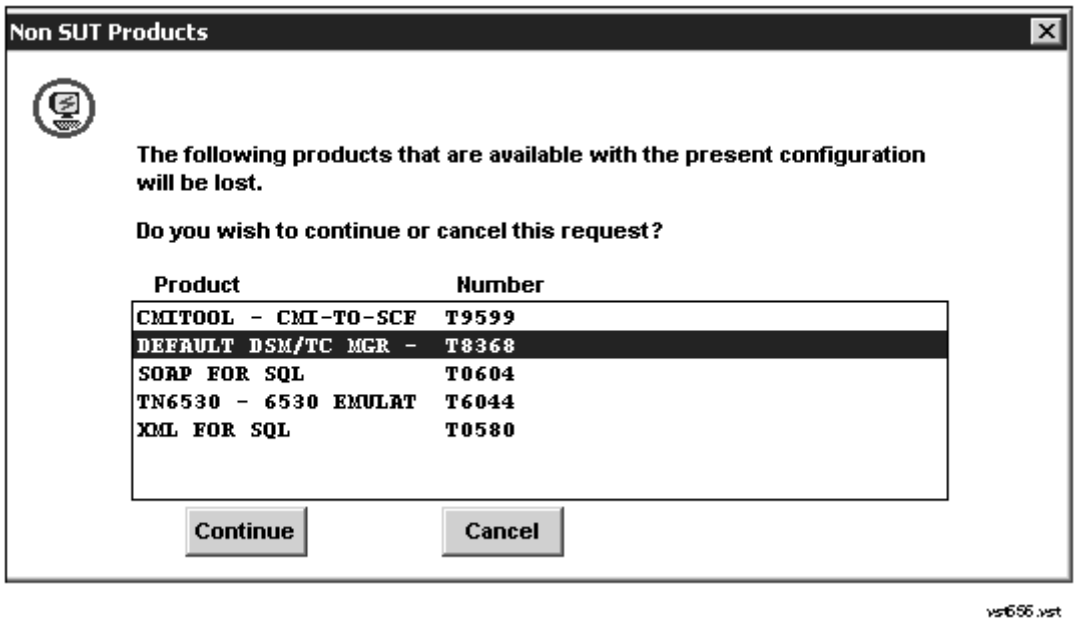
vst560.vsd

Note that if there are any discrepancies between the set of products included in the previous configuration and the set in your new configuration, a warning message appears listing any products missing in the current configuration that were present in the previous configuration. (These products are removed from the system by DSM/SCM during the Build/Apply of the new configuration.)

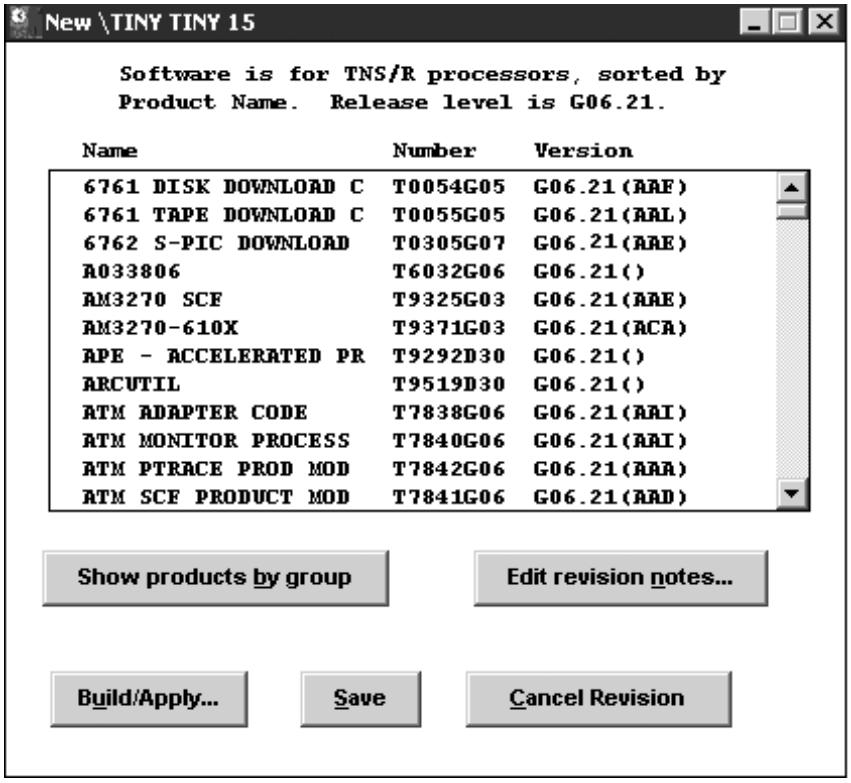
An example of a product version mismatch might occur when T9225D46 (TNS/R C++ Compiler) is installed using DSM/SCM. If you are not currently running TT9225D46, the Planner Interface displays a "Version Mismatch" message to indicate that the version of this SPR is different from the version of the base component. Click **Continue**.

Note also that for OSS files, the Activation Package contains installation instructions for the pax files for those OSS products that contain A7CINFO files in their distributed subvolumes. DSM/SCM will install only these pax (archive) files on the OSS file system. Other files will be delivered to the target in the ZOSSUTL subvolume, but will not be installed on the OSS file system. You might receive a warning that certain OSS products (such as T6035, T5893) are not DSM/SCM enabled. If this is the case, install them using PINSTALL/COPYOSS. See the appropriate OSS manuals for using PINSTALL and COPYOSS.

8. Click **Continue** if the Non SUT Products message appears. The message lists non-SUT products installed on the previous SYS*nn* that are not available on the new configuration. For example:



The New software revision list now displays the new RVU level. For example:



vst555.vsd

9. Keep the Planner Interface open for the next task.

Build and Apply the New Software Revision

The Build process creates an activation package containing all the products listed in the new software revision.

Note. The Activation Package contains installation instructions for the pax files of those OSS products that contain A7CINFO files in their distributed subvolumes.

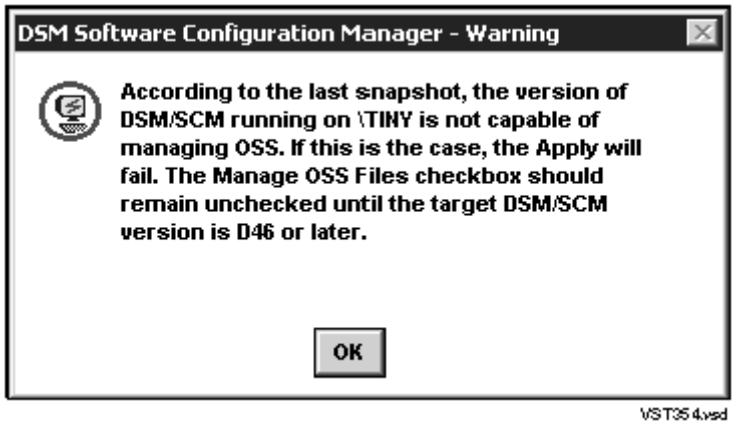
To avoid disrupting other system activity, schedule the Build to run at night and the Apply to run immediately after the Build. See the *DSM/SCM User's Guide* for information about scheduling the Build/Apply to run at different times.

To build and apply the new software revision:

1. In the New software revision dialog box, click **Build/Apply** to display the options for your Build/Apply.

   It might take several minutes for DSM/SCM to assemble the build information. During this time, the Build/Apply Request dialog box options and commands are dimmed and unavailable.

Note. You might receive this message:

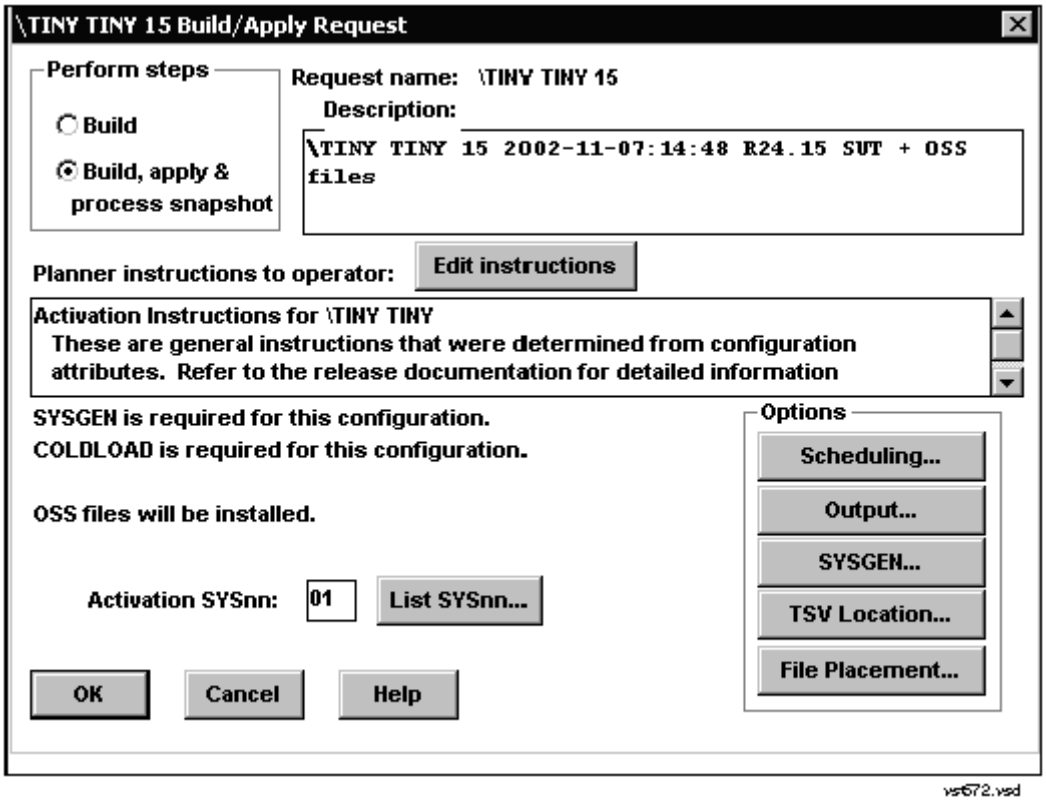


The message is warning you that the last DSM/SCM snapshot was created by a pre-T6031D46 version of DSM/SCM, which would be the case if you have not installed the T6031D46 product version. If you are certain that you are on a D46 PVU of DSM/SCM, ignore the message and continue with the G06.24 installation. If you are unsure of the DSM/SCM product version, logon to the Target Interface (TI) by running ZPHITI (page 5-19). The current version of TI appears on the logon screen.

If you know that you have activated the D46 DSM/SCM product version, click **OK** and continue with the installation.

If you have previously installed the D46 DSM/SCM PVU and created a snapshot, the error message does not appear.

When the Build information is assembled, the Build/Apply Request dialog box is refreshed. It displays default options and assigns a name to the Build/Apply request. For example:



2. Under Perform steps, select **Build, apply & process snapshot**.
3. In the Activation SYSnn: box, enter a unique number to create a new SYS*nn* subvolume. The value *nn* must be a two-digit octal number in the range%00...%77.

   You can issue a FILEINFO command at a TACL prompt to view the SYS*nn* subvolumes that are currently on your system. (For other ways to determine the SYS*nn*, see Determine the Current SYSnn on page A-3.)

   ```
   > fileinfo $system.*.osimage
   ```

4. Make a note of the new SYS*nn*. You will specify this SYS*nn* subvolume when:

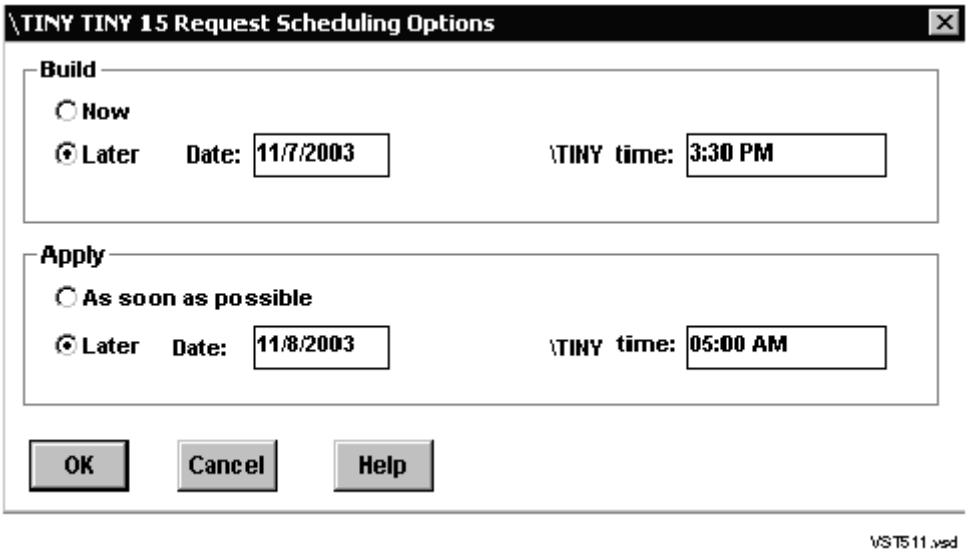
   - Using the VPROC command to verify the location and version of your firmware
   - Specifying the location of firmware for the new RVU
   - Running ZPHIRNM
   - Loading the G06.24 RVU

5. Click **Edit instructions** to display the Planner Instructions box.

6. Edit the instructions to provide the correct (new) SYS*nn* number, and then click **OK**.

   The Planner Instructions box closes.

7. Select the Scheduling, Output, SYSGEN, TSV Location, and File Placement options and configure as appropriate for your system. (See the *DSM/SCM User's Guide* or the online help for more information about Build/Apply Request options.) In particular, you might want to create a system image tape (SIT) during the Build/Apply. For example:

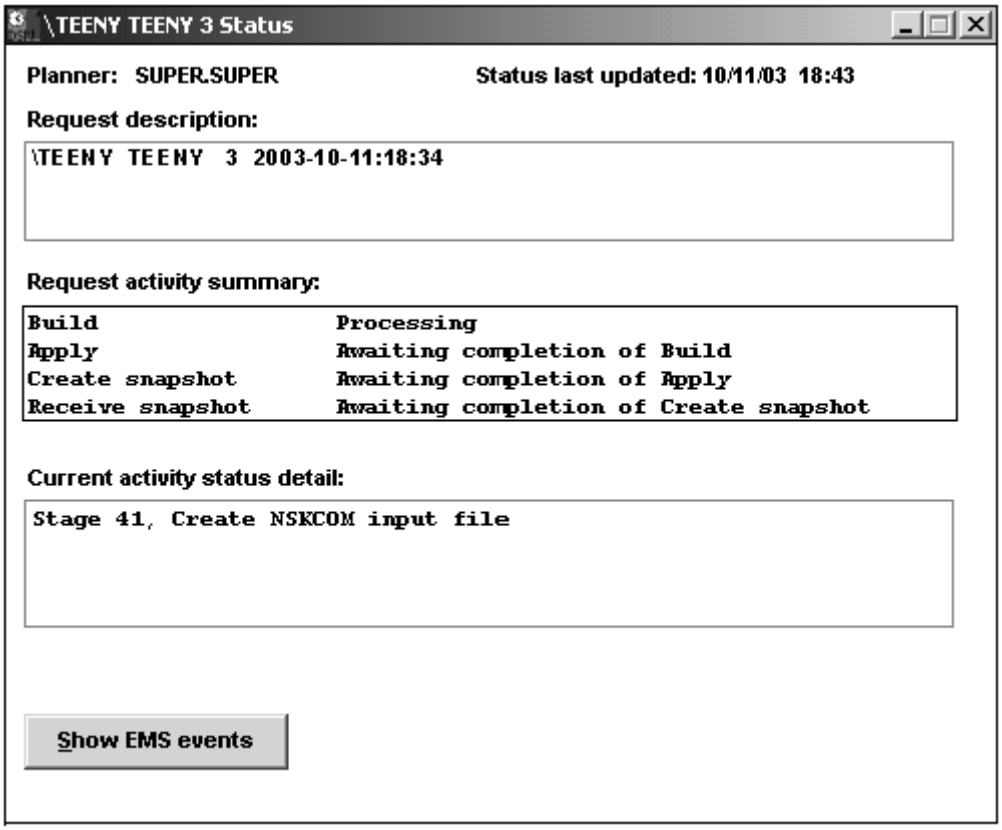


8. Confirm that the spooler is active and not 100 percent full before executing the Build/Apply request. At a TACL prompt, start SPOOLCOM and issue a COLLECT, STATUS command. For example:

```
12> spoolcom $spls; collect, status
COLLECT   STATE           FLAGS  CPU   PRI  UNIT   DATA FILE      %FULL
$S        ACTIVE             3 , 1     154  4     $OPS0.SPL.DATA    4
```

9. In the Build/Apply Request dialog box, click **OK**.

   DSM/SCM runs the Build and Apply steps and displays a Status window, which is automatically updated at regular intervals. For example:



10. Check EMS messages for more detailed information about your Build/Apply:

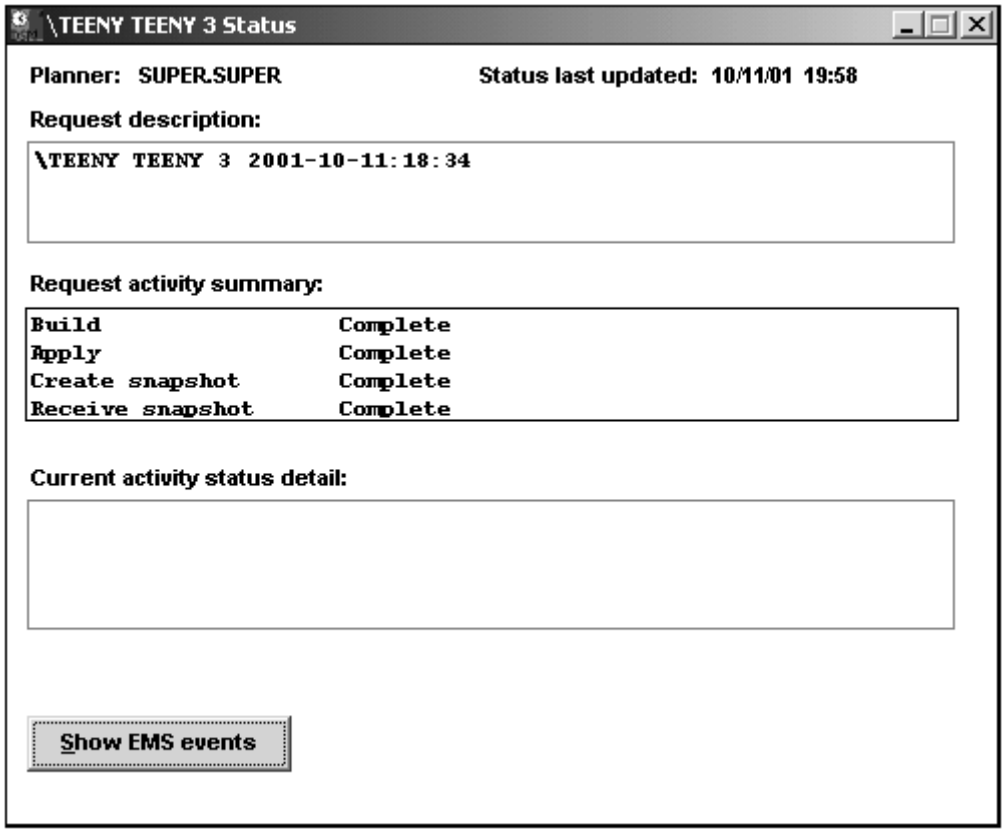
    a. In the Events window, click **Refresh** to see newer messages**.**

    b. When finished viewing, click **Close**.

Note. If you encounter any problems, see the *DSM/SCM User's Guide* or online help.

When the Build/Apply finishes successfully and a snapshot is received into the host database:

- The Request activity summary in the Status window shows that the Build, Apply, Create snapshot, and Receive snapshot activities finished. For example:



- The last message in the EMS Events window shows that the input snapshot finished successfully.
- The Requests window shows that the request is finished. (Select **Requests> Requests list**).

11. Close the EMS Events, Status, and Request windows.
12. Exit the DSM/SCM Planner Interface.

Print Operator Instructions From the Target Interface (ZPHITI)

Print the operator instructions that you edited in Step 6 on page 5-16.

1. Enter the following from the DSM/SCM subvolume to display the **TI Logon** screen:

   ```
   RUN ZPHITI
   ```

```
DSM Software Configuration Manager                                  TI Logon
================================================================================

     User ID:__________
    Password:__________

================================================================================

================================================================================
    This software is licensed by Hewlett Packard Development Company L.P. and
    is subject to restrictions on use, disclosure and copying and is Commercial
    Software. If a user is an entity of the United States Government, only
    LIMITED RIGHTS or RESTRICTED RIGHTS are granted.
                    HP and the HP logo are trademarks of
                    Hewlett Packard Development Company L.P.
                      T6031D46^ABJ 16JAN2004

                (c) Hewlett Packard Development Company L.P., 1994-2002
                           All Rights Reserved

================================================================================
F1-Logon                                                F8-Clear entry
                                          F15-Help                    SF16-Exit
 Ready
```

2. Enter your user ID and password and press **F1** to log on to the Target Interface.

   The **Main Menu** appears:

```
DSM Software Configuration Manager                                  Main Menu
================================================================================
\WARRIOR       Prior snapshot 2002-11-09:12:18:44

Selection number: 0

================================================================================
Choose an action by entering the selection number of an item from the list
below.
================================================================================
1  Create system report
2  Create system snapshot
3  Perform target activities
4  Perform audit
5  Perform database verify

9  Enable trace (for support use only)

================================================================================
F1-Select                               F4-Show Messages
                                        F15-Help     F16-Return     SF16-Exit
 Ready
```

3. From the ZPHITI **Main Menu**, enter **3** (Perform target activities) in the **Selection number** field, and press **F1** to display the **Target Menu - Select Target** screen.

```
DSM Software Configuration Manager                 Target Menu - Select Target
 ================================================================================
 \WARRIOR       Prior snapshot 2000-09-20:12:18:44

 Selection number:

 ================================================================================
 Choose a target selection number from the list below. Status information is
 shown for requests still in progress.
 ================================================================================
 1 NEW CONFIG
 2 DEFAULT
 3
 4
 5
 6
 7
 8
 9
 ============================More Targets PgDn/PgUp==============================
 F1-Select
                                          F15-Help     F16-Return     SF16-Exit
  Ready
```

4. In the **Selection number** field, enter the number corresponding to the logical target to which you applied the software (selection **2** in this example), and press **F1** to display the **Target Menu - Select Action** screen.

```
 DSM Software Configuration Manager                  Target Menu - Select Action
 ================================================================================
 \WARRIOR       Prior snapshot 2002-11-20:12:18:44
 DEFAULT        Last S/W applied on SYS 00 on 2002-11-22:12:17

 Selection number:

 ================================================================================
 Choose an action by entering the selection number of an item from the list
 below.
 ================================================================================
 1 Perform/Review apply request
 2 Perform backout to S/W Applied on SYS   01 on 2000-09-13:15:44
 3 Review operator instructions for the last apply completed.



 ================================================================================
 F1-Select
                                          F15-Help     F16-Return     SF16-Exit
  Ready
```

5. Enter **3** (Review operator instructions for the last apply completed) in the **Selection number** field, and press **F1** to display the operator instructions.
6. Enter a printer location in the **Print operator instructions** field, and press **F9** to print the operator instructions.

An example might look like this:

```
Activation Instructions for \WARRIOR DEFAULT
These are general instructions that were determined from configuration
attributes.  Refer to the release documentation for detailed information
on migrating to this software configuration.

1. Stop all applications. Keep OSS running.

2. Update FIRMWARE.
   Run TMDS (or TSM for S-Series) to check firmware and perform
   firmware updates.
   T7892 S70000 BOOT MILLICOD includes firmware changes.
   T1089 S-SERIES SP FW includes firmware changes.

3. RUN ZDSMSCM.ZPHIRNM SYSnn
   (Note: replace nn with correct number)

4. Check for $0 EMS messages.
   Correct any errors indicated in the $0 EMS messages.
   Do not proceed until this step has been successfully completed.

5. Coldload is required.

6. Run merge_whatis if ZPHIRNM indicates it is needed.

7. Restart all applications.
```

7. Press **SF16** to exit the Target Interface.

Note. If the operator instructions require you to run the INSTALL^TEMPLATES macro, see If Running INSTALL^TEMPLATES Is Required on page A-7 for detailed instructions.

In the Activation instructions, you might see information regarding the `merge_whatis` OSS command.

```
Run merge_whatis if zphirnm indicates it is needed.
```

When you finally run ZPHIRNM, the following lines are written to the log:

```
Note: merge_whatis needs to be run to update the man pages.
      Files in a whatis.frag directory have changed.
```

The `merge_whatis` is a shell script in `/bin`. It creates and updates the `whatis` database used by the OSS `shell man`, `apropos`, and `whatis` commands. You must run the `merge_whatis` command once against each directory that contains the man page files to be used.

You will run `merge_whatis` after using ZPHIRNM. Running the `merge_whatis` command is documented in Steps for Running ZPHIRNM on page 10-5.

Recovery for Problems Installing the G06.24 RVU

If you receive an error indication in the Requests, Status, or EMS Events windows, you might have to reinitiate the Build/Apply. See the *DSM/SCM Messages Manual* to determine the nature and severity of the problem.

Cancel Pending Build/Apply Requests

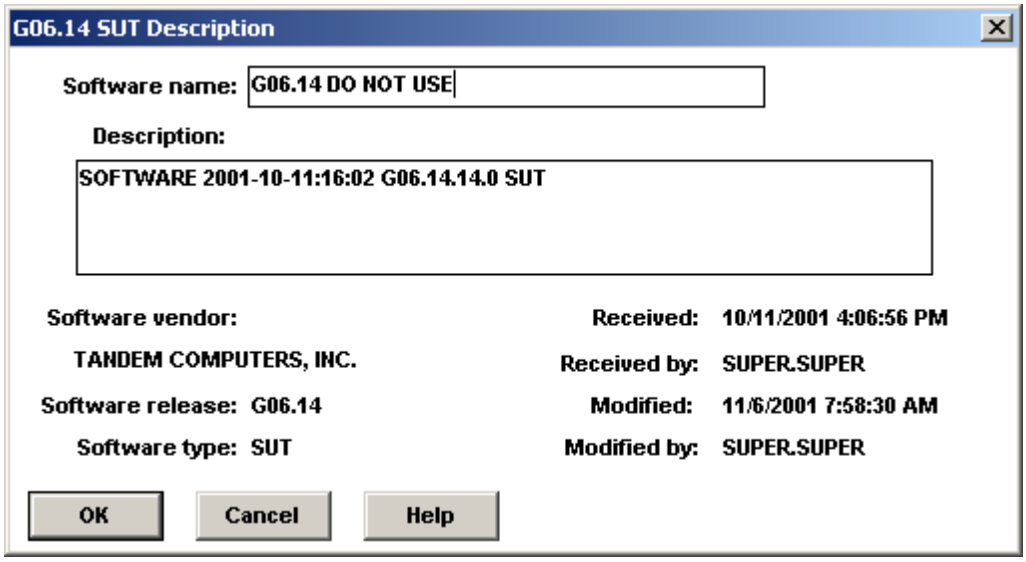
Note. If you inadvertently close the Status dialog box, reopen it by selecting **Requests> Requests list** and then double-clicking the request.

1. Select the request to be canceled.
2. Select **Requests>Cancel request**.

   The cancel request action takes a few minutes to finish.

   Note. If you cannot cancel the Build request through the DSM/SCM Planner Interface, use the DSM/SCM Target Interface (ZPHITI) to cancel the request. See the *DSM/SCM User's Guide* and online help for more information.

3. Using the Planner Interface, rename the old software inputs:
   a. In the Software in Archive dialog box, select the G06.24 RVU software input.
   b. Select **File>Show software input description** to display the SUT Description dialog box.
   c. In the Software name box, edit the software input name so that another operator will know it is a DSM/SCM input that should not be used to build a new software revision. For example:



VST583.vsd

d. Click **OK**.

You must always use the new software input instead of the previously received software input brought into the Archive.

6 Replacing the Disk Bootstrap Microcode (Pre-G06.06)

As of the G06.06 RVU, a new disk bootstrap program is available. If you are migrating to the G06.24 RVU from an RVU prior to G06.06, you must replace the existing disk bootstrap microcode with this new version, as described in this section. If you update the disk boot code, you must down the mirrored disk. The mirror should be revived as soon as possible after performing a system load.

In this procedure, you use the SCF CONTROL DISK, REPLACEBOOT command. See the *SCF Reference Manual for the Storage Subsystem* for detailed instructions and procedures that can help you recover if the SCF CONTROL DISK, REPLACEBOOT command fails or if the bootstrap program is unusable.

Note. In the next procedure, when you enter yes (**Y** or **y**) at an SCF prompt, the action occurs immediately. No confirmation prompt is given.

To replace the bootstrap program on the primary system disk named $SYSTEM:

1. From a TACL prompt, enter a SCF CONTROL DISK, REPLACEBOOT command. For example:

   ```
   1> scf
   SCF - T9082G02 - (24SEP99) (26JUL99) - 05/04/2000 13:28:33 System
   \ELI
   Copyright Compaq Computer Corporation 1986 - 1999
   (Invoking \ELI.$SCM.ZDSMSCM.SCFCSTM)
   1-> CONTROL DISK $SYSTEM, REPLACEBOOT $SYSTEM.SYSnn.SYSDISC
   ```

   where *nn* is the number specified during the Build/Apply phase of installing the G06.24 RVU.

   SCF asks if you are sure you want to replace the bootstrap on $SYSTEM.

2. Enter yes (**Y** or **y**) to continue.

   To facilitate recovery of a mirrored volume in the event of a failure, SCF asks whether the mirror system disk should be stopped.

3. Enter yes (**Y** or **y**) to place the mirror system disk in a STOPPED state, substate HARDDOWN.

   SCF replaces the bootstrap program on the disk that is in a STARTED state.

△ **Caution.** To avoid the potential outage of the system disk, do not start the stopped mirror system disk until *after* performing a system load with the disk that has the new bootstrap program (see Reset and Start the Mirror System Disk (If Necessary) on page 12-11).

Perform the system load using the updated primary $SYSTEM disk. Start the mirror system disk only *after* a successful system load.

---

7 Updating Service Processor (SP) Firmware

Note. Update SP firmware **only**:

- If instructed to do so by DSM/SCM
- If you are not replacing the PMF CRUs in your system while migrating to the G06.24 RVU

See TSM or OSM online help for information about updating SP firmware when replacing an I/O multifunction (IOMF) CRU or processor multifunction (PMF) CRU.

To update SP firmware using OSM, *if* it is installed and configured, see Updating SP Firmware Using the OSM Service Connection on page 7-20.

SP firmware performs vital functions for NonStop S-series servers. This section describes how to update the SP firmware to the proper version when upgrading to a new RVU. Table 7-1 provides an overview of firmware and SP components.

Table 7-1. Firmware Components and Associated CRUs

Component	Description	Exists on PMF CRUs	Exists on IOMF CRUs
SP firmware	Firmware that enables the SP to perform most of its functions	X	X
Processor boot code	Millicode that is used to load, reload, and dump the processor	X	
SCSI boot code	Firmware that is downloadable to the SCSI controllers	X	

Alerts

- When using the TSM Service Application to update the service processor firmware, use the Firmware Update dialog box. *Do not use* the Single SP Firmware dialog box unless instructed to do so to recover from a failed service processor update.
- Check that no other service processor firmware updates are in progress before updating service processor firmware.
- Depending on your current RVU, you might have to reset all service processors in each ServerNet fabric (X and Y) before you begin updating service processor firmware. Failure to do so could result in the loss of certain critical system resources.
- Update first the service processor firmware in the fabric (X or Y) containing the secondary master service processor (MSP).
- If the TSM service connection is lost, reconnect by using the TSM Service Application. If the OSM service connection is lost, reconnect using the OSM Service Application.
- If you have problems updating your SP firmware or resetting the SPs, see Recovery for Problems Updating SP Firmware (Using TSM) on page 7-15.
- Yellow caution symbols might appear on enclosure icons, both in the physical view and in the tree pane, during the SP firmware update. These caution symbols should disappear after the system is loaded with the G06.24 RVU.
- As a precaution, download the SP firmware file (spntcde9), as described under Download the SP Firmware File to the System Console on page 7-6. If you have trouble updating your service processor and you cannot obtain a TSM service connection, you can use the spntcde9 file with the TSM Low-Level Link Application to update your SP, as described under Updating Firmware Using the TSM Low-Level Link Application on page 7-17. If OSM is installed, you can also download the SP firmware file (spntcde9) to the c:\osm\bin directory. You then use the OSM Low-Level Link. See Using OSM and Downloading the SP Firmware File to the System Console (Optional) on page 7-28.
- Always check with Scout for the latest SP firmware SPRs.

Before You Begin

1. Verify that the system is up with at least one processor running the NonStop Kernel.	See Check Processor Status (Using either TSM or OSM) on page 4-4.
2. Verify that you know the SYS*nn* for the new RVU and for your current RVU.	• The SYS*nn* for your current RVU was determined in the Record the Current SYSnn procedure on 4-14. • The SYS*nn* for the G06.24 RVU was created during the Build and Apply the New Software Revision procedure on 5-13.
3. Verify that you know the correct version of the SP firmware for the new RVU and for your current RVU.	See Determine the Current and New Versions of SP Firmware on page 7-4.
4. Verify that each SP is running the correct SP version for your current RVU.	See Verify That Your Current RVU Is Running the Correct Version of SP Firmware (Using TSM) on page 7-5.
5. Reset each service processor.	See If Necessary, Reset the SPs Prior to Updating the SP Firmware on page 7-5. After the SPs have updated, either TSM or OSM asks you to reset the SP firmware.
6. Optionally, download the SP firmware file to the system console.	See Download the SP Firmware File to the System Console on page 7-6. For OSM, the procedure is the same. See Using OSM and Downloading the SP Firmware File to the System Console (Optional) on page 7-28.

Determine the Current and New Versions of SP Firmware

When updating SP firmware, you need:

- The SP firmware version for your current RVU to determine that the SPs are in a known, good state before you begin the SP firmware update
- The SP firmware version for the G06.24 RVU to verify that the SP firmware has successfully updated

You can also use this FILEINFO command to see all the firmware currently on all SYS*nn*'s:

```
TACL> FILEINFO $SYSTEM.SYS*.*CODE*
```

To determine the correct versions of SP firmware using the VPROC command:

1. At a TACL prompt, issue the VPROC command to verify the location and version of the SP firmware for the G06.24 RVU:

   VPROC $SYSTEM.SYS*nn*.SPCODE9

   where *nn* is the number specified during the Build/Apply phase of installing the G06.24 RVU. For example:

   Note. Version procedure dates might be different; these are examples only.

```
9> vproc spcode9
VPROC - T9617G03 - (01 MAY 2001) SYSTEM \TEENY    Date 26 AUG 2003,
11:27:55
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 2001


$SYSTEM.SYS02.SPCODE9
     Binder timestamp:  23JUL2003 03:45:04
    Version procedure:  T1089G06^26AUG03^23JUL03^ABK
    Version procedure:  T1088G06^26AUG03^23JUL03^ABK
```

2. Record the version of SP firmware.
3. Repeat Steps 1 and 2 by using the SYS*nn* for your current RVU. For example:

```
$SYSTEM SUPER 2> vproc $system.sys00.spcode9
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \WARRIOR  Date 21 SEP 2000,
11:39:58
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS01.SPCODE9
    Binder timestamp:  10AUG2000 17:44:06
    Version procedure: T1089G06^31MAY00^10AUG00^AAX
    Version procedure: T1088G06^31MAY00^10AUG00^AAX
```

Verify That Your Current RVU Is Running the Correct Version of SP Firmware (Using TSM)

1. Log on to the TSM Service Application.
2. Select **Display>SP Actions**.

   The Service Processor Actions dialog box appears. Wait for the firmware version of each SP to appear (this might take several minutes).
3. Verify that the correct version of SP firmware for your current RVU is displayed for each SP.

   If any SP has a different version of SP firmware, update that SP to the correct version for your current RVU:

   a. Select **Display>Firmware Update** to update the SP firmware to the proper version for your current RVU.

   b. Monitor the status of the firmware update by using the Firmware Update Action Summary:

   - If the firmware update finishes successfully, reset the SP, as described under Resetting an SP Using the TSM Low-Level Link on page 7-18.
   - If the firmware update fails, you might have a faulty SP or a down-rev customer-replaceable unit (CRU). Contact your service provider.

▲ **WARNING.** To avoid hardware damage, never reset an SP if the firmware update does not finish successfully.

If Necessary, Reset the SPs Prior to Updating the SP Firmware

After verifying that the SPs are running the correct version of SP firmware for your current RVU, and before you begin to update firmware, you might have to reset all SPs in both ServerNet fabrics (X and Y). Failure to do so could result in the loss of critical system resources. Each SP takes about two minutes to reset.

1. If necessary, log on to the TSM Service Application.
2. From the toolbar, select **SP Actions**, or select **Display> SP Actions** to display the Service Processor Actions dialog box.
3. Click **Select all Y Fabric SPs**.
4. From the Available Actions list, select **Reset** and then click **Perform action**.
5. Click **OK** in response to this message:

```
This action takes up to 2 minutes for the SP to complete the reset even if the action
appears to complete immediately.

This action will cause any current Firmware Update actions against this SP to abort.
Verify there are no Firmware Updates being performed on this SP before continuing.

Are you sure you want to reset this SP?
```

6. Verify that the SP reset finishes successfully. Wait until the display in the Action Status box shows that the reset is *Completed*.

   If the Action Status box shows that the reset has failed or if the completed status does not appear, contact your service provider.

7. Repeat Steps 3 through 6 for the X-fabric service processors.

Download the SP Firmware File to the System Console

SP firmware updates are normally performed through the TSM Service Application. However, if you need to use the TSM Low-Level Link Application to perform firmware updates on an SP, you must have access to `spntcde9`, the SP firmware file that runs on a system console. HP recommends that you download the SP firmware file (`spntcde9`) into the `\tsm\bin` directory, although you can use any directory you want.

1. If necessary, start an OutsideView session.
2. Select **Session>Receive file** to display the IXF Receive dialog box.
3. In the Host box enter the host system name, and the volume and subvolume where the firmware file resides, based on the SYS*nn* specified during the Build/Apply phase of installing the new RVU. For example:

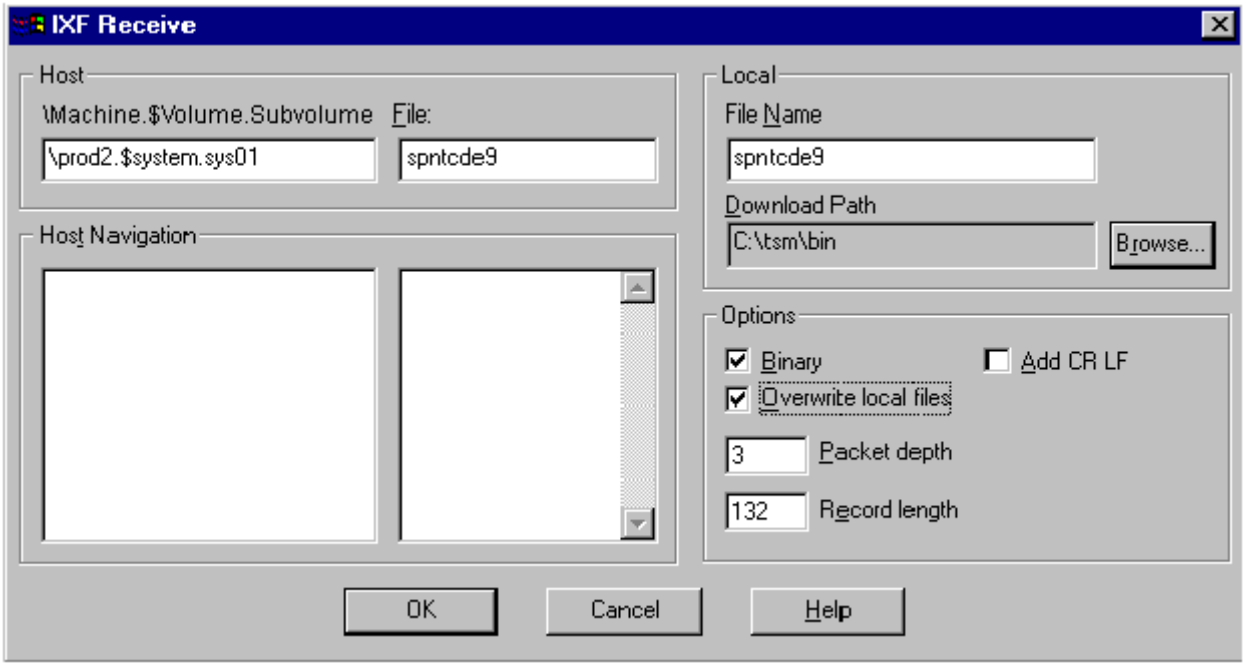
   ```
   \prod2.$system.sys01
   ```

4. In the File box, enter `spntcde9`.

   `spntcde9` appears in the Local area File Name box. For example:

5. Under Download Path, click **Browse** to locate and select the `\tsm\bin` directory. Under Options, verify that the Binary option is selected.

Note. If you have downloaded the spntcde9 file in previous RVU installations, verify that the Overwrite local files option is also selected.



vst642.vsd

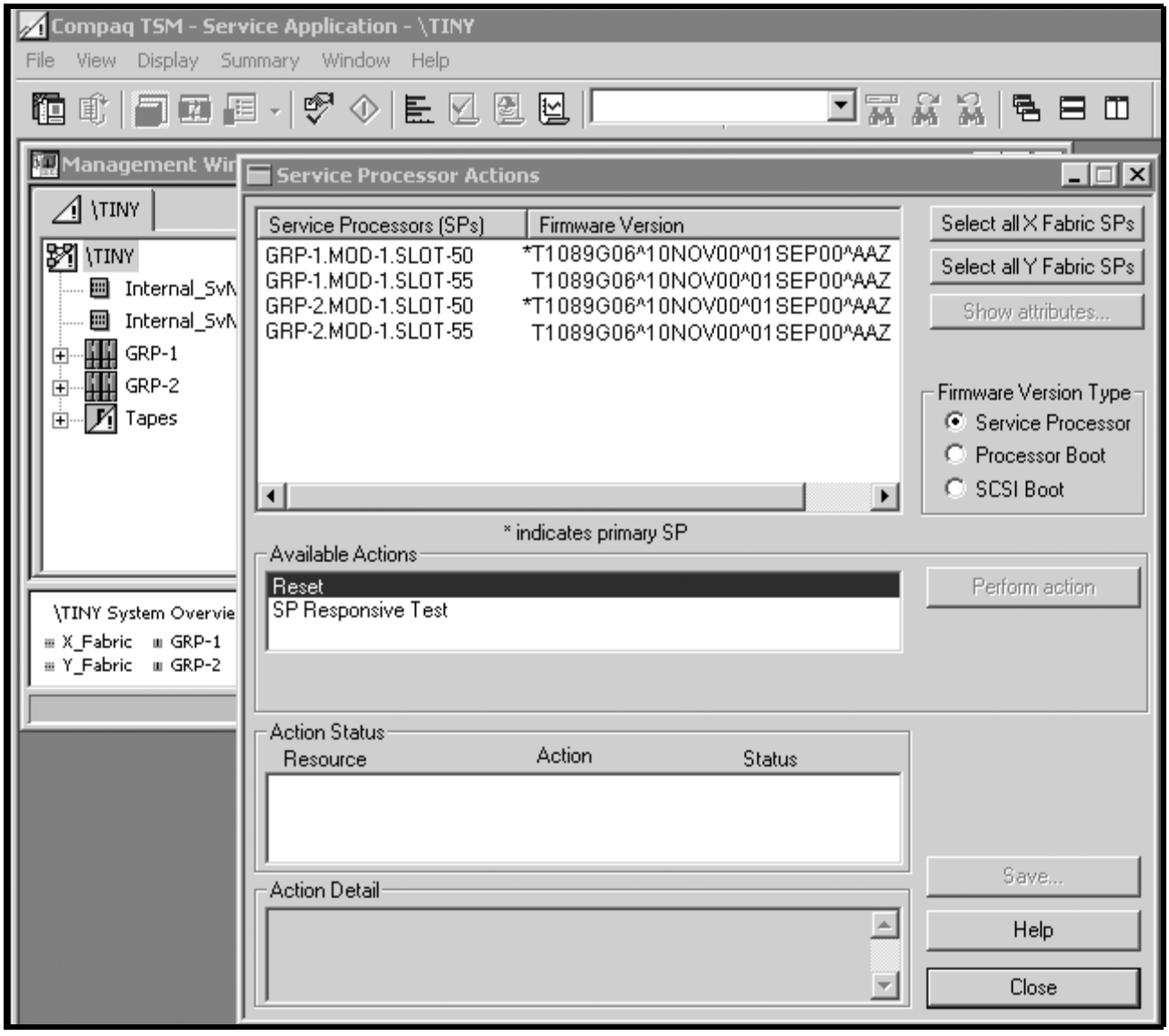
6. Click **OK**.

   The Browse window closes, and an IXF - Receive dialog box appears, showing the download progress of the `spntcde9` file. The download should take around 5 minutes.

7. When the IXF - Receive dialog box indicates that the transfer is finished, click **End Transfer**.

Update SP Firmware Using the TSM Service Application

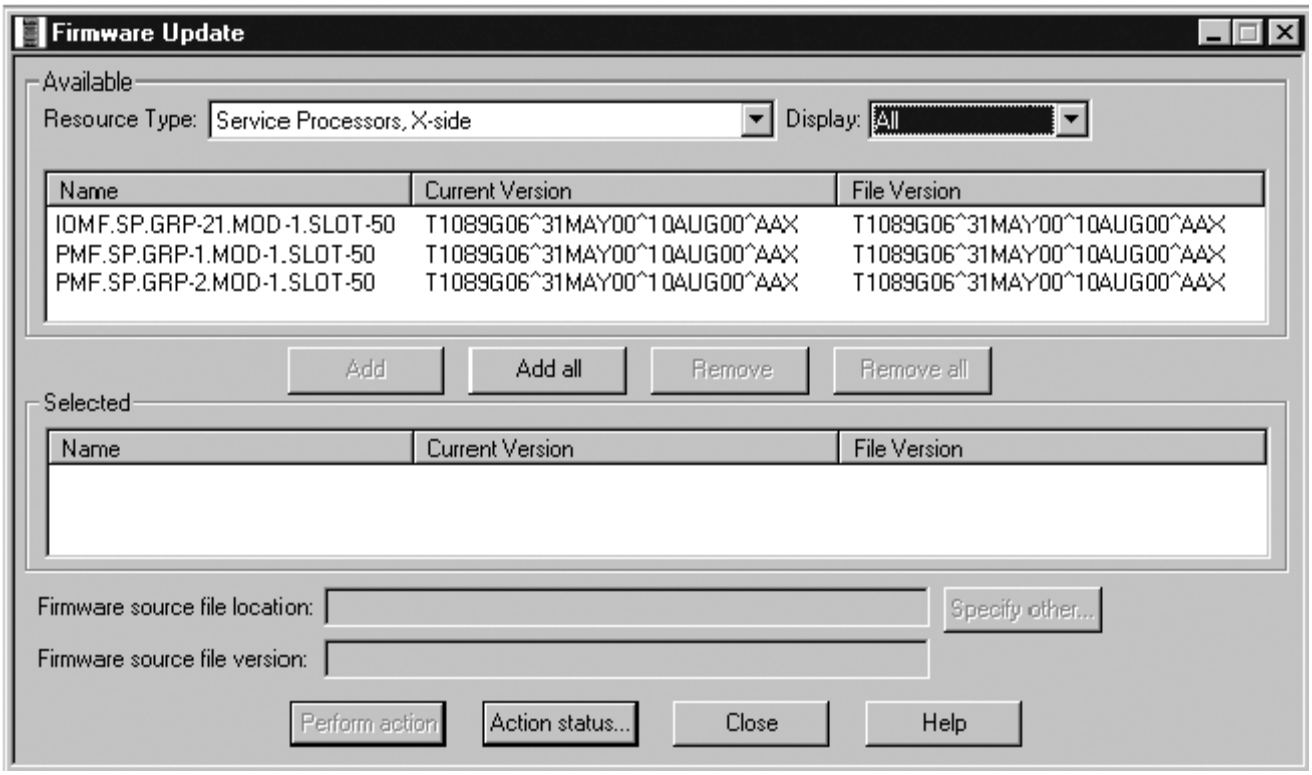
1. If necessary, log on to the TSM Service Application.
2. If necessary, display the Service Processor Actions dialog box, either by selecting **SP Actions** in the toolbar or by selecting **Display>SP Actions**.



vst630.vsd

3. Using the Service Processors (SPs) list, determine which fabric (X or Y) contains the secondary master service processor. (You must choose this fabric when you begin updating service processor firmware):
   - If an asterisk appears on the line for GRP-1.MOD-1.SLOT-50, then the Y fabric contains the secondary master service processor; choose the Y fabric for the remaining steps in this procedure.
   - If an asterisk appears on the line for GRP-1.MOD-1.SLOT-55, then the X fabric contains the secondary master service processor; choose the X fabric for the remaining steps in this procedure.
4. Select **Display>Firmware update**.

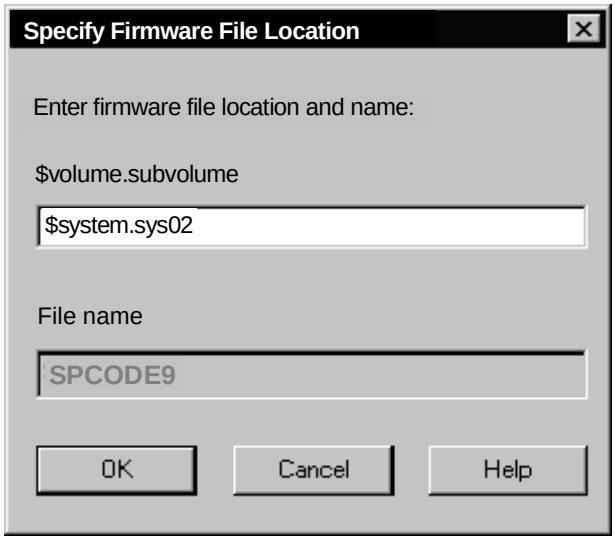
   The Firmware Update dialog box appears.
5. From the Resource Type list, select **Service Processors, Y-side** if you have chosen to update the service processors in the Y fabric, or **Service Processors, X-side** if you are updating the service processors in the X fabric.
6. From the Display list, select **All** to display the selected resources in the Available area.



VST645.vsd

7. Click **Add all** to move the resources to the Selected box.
8. Click **Specify other** to display the Specify Firmware File Location dialog box.

9. Enter the new file location. Use the $SYSTEM.SYS*nn* subvolume created during the most recent DSM/SCM Build/Apply. For example:



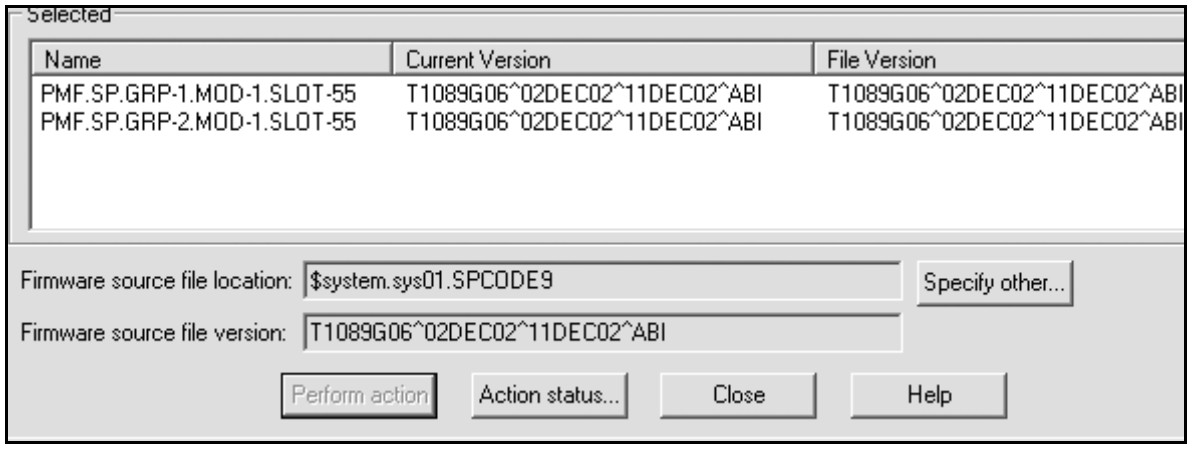
VST646.vsd

10. Click **OK**.
11. Click **Yes** when a message appears, warning that you have specified a nonstandard firmware file location.

```
You have specified a nonstandard firmware location.
Compaq TSM will try to get the firmware information. It may take a few seconds.
Do you want to use this nonstandard firmware location?
```

TSM retrieves firmware information, and the firmware source file version shows the new version in the Firmware Update dialog box. (Note that the following examples might not match the latest firmware version.) For example:

```
T1089G06^02DEC02^11DEC02^ABI
```



vst662.vsd

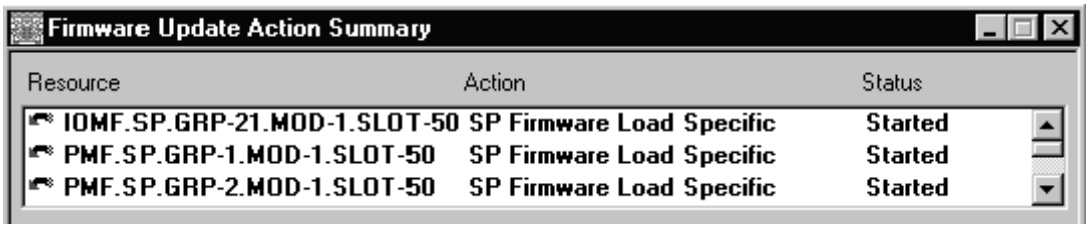
12. From the Firmware Update dialog box, click **Perform action**.

    The update starts, and the Firmware Update Action Summary dialog box appears.

```
Updating each service processor takes approximately ten
minutes, and updating a master service processor takes
approximately twenty minutes.
```

13. Monitor the status of the service processor firmware update in the Firmware Update Action Summary dialog box.

    a. Verify that the firmware update for every SP on the chosen fabric (X or Y) has started.



VST647.vsd

    b. Verify that the status of all SPs changes to *Completed*.

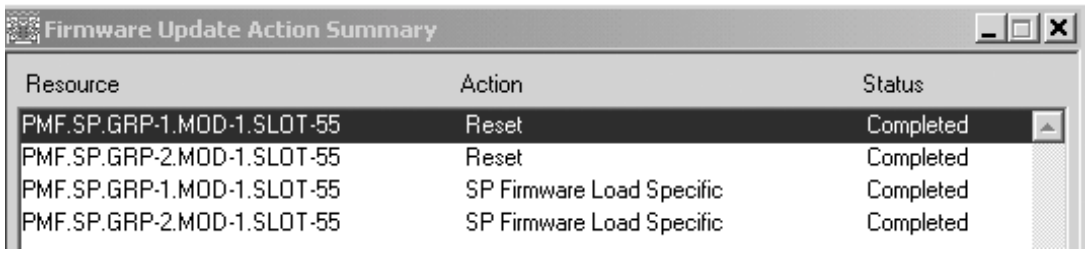
14. Click **Yes** when asked if you want to reset *all* SPs that were successfully updated.

```
All of the service processor (SP) firmware updates have completed successfully.
In order for the firmware to be used, a reset must be performed on each SP.
Answering “Yes” will automatically reset all successfully updated SPs in this group.
Answering “No” will require each SP to be individually reset.
If the master service processor (MSP) is reset, you might lose the Compaq TSM service
connection with the S-series server. Use the System “Session Responsive Test” action
to determine if your current service connection is active.
Do you want to automatically reset all successfully updated SPs in this group?
```

15. Click **OK** when you are notified that all the SPs have been successfully reset.

    All service processors (SPs) that had firmware updates applied have been reset successfully.

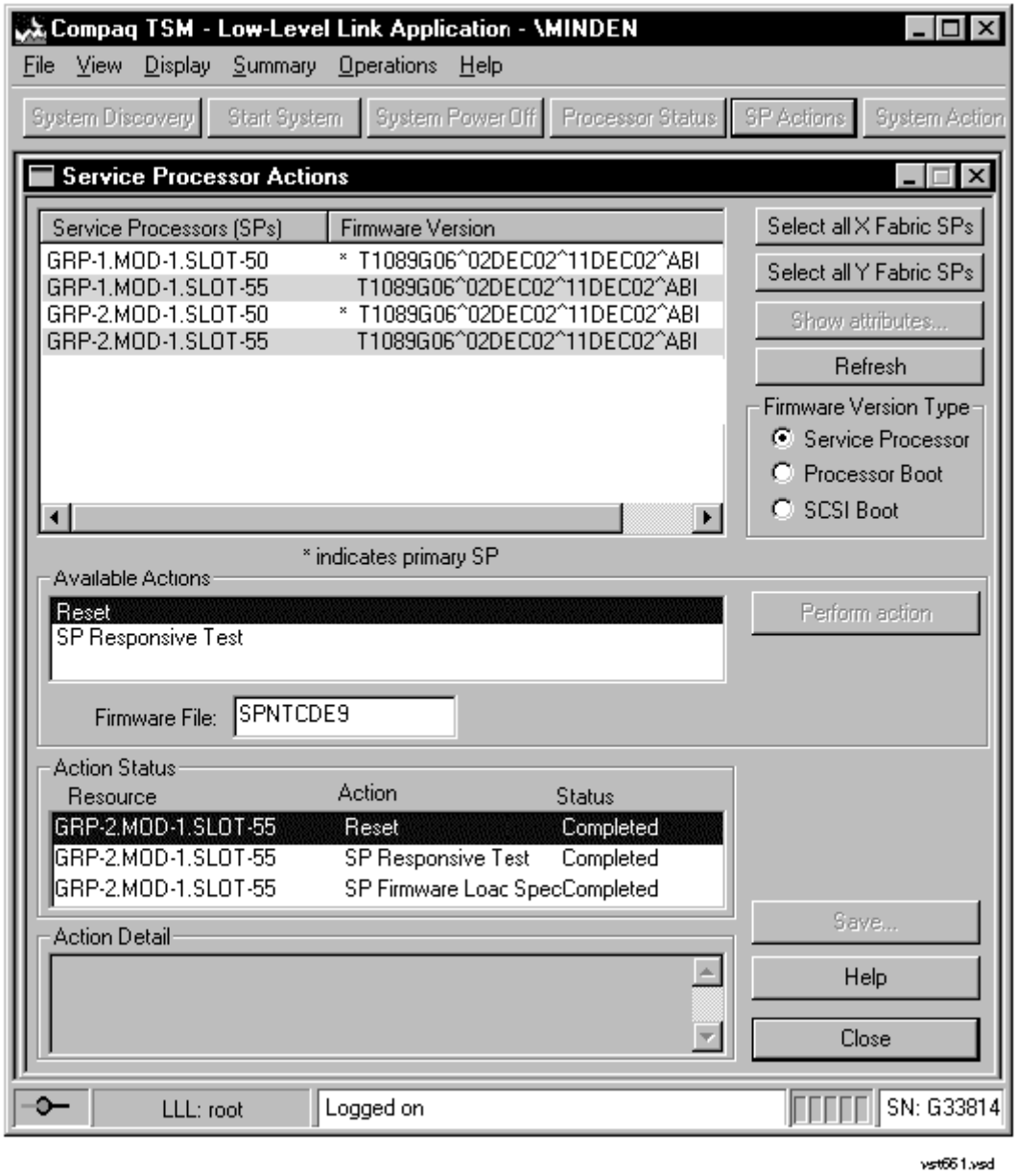
    The Firmware Update Action Summary dialog box confirms that the SPs have been reset. For example:



16. Verify that the correct firmware version is loaded for *each* SP:
    a. If necessary, log on to the TSM Low-Level Link Application and perform a System Discovery. (Do not log off the TSM Service Application.)
    b. Display the Service Processor Actions dialog box, either by clicking **SP Actions** in the toolbar or by selecting **Display>SP Actions**.
    c. Check that the firmware version and date appear in the Service Processors (SPs) list.
    d. Click **Refresh** to update the information in the Service Processors (SP) list. This step might take several minutes.
    e. Verify that the correct version of SP firmware is displayed in the Service Processors (SPs) list:
        - The service processor is successfully updated and reset if the firmware version and date for all SPs in the chosen fabric are exactly the same as the VPROC version of the SP firmware for the G06.24 RVU.
        - A service processor in the chosen fabric did not successfully update or reset if it has a firmware version and date that are not exactly the same as the VPROC version of the SP firmware for the G06.24 RVU.

          Follow the directions in Recovery for Problems Updating SP Firmware (Using TSM) on page 7-15 before you proceed to update the service processors in the other fabric. Every SP on the chosen fabric must be successfully updated and reset before updating the SPs on the other fabric. This step is necessary to ensure that the firmware is operating properly.
17. After you have verified that the correct version of SP firmware appears in the Service Processors (SP) list for the service processors in the chosen fabric, return to the TSM Service Application and repeat Steps 5 through 16 for the service processors in the other fabric.

    The firmware version for all SPs should now show the latest version. This example shows T1089G06^ABI:



If all SPs were updated successfully, you can skip to Section 8, Updating Processor Boot Code on page 8-1. Otherwise, continue with Determining If a Problem Has Occurred on page 7-14 to diagnose and correct problems you encountered.

Determining If a Problem Has Occurred

Note. Note that once the firmware update finishes and the SP is successfully reset, it can take up to 20 minutes before the Service Processor Firmware Version attribute is updated to display the new information.

Follow all the verification steps included in the SP firmware update procedure. Otherwise, you might not know that the firmware update or reset did not finish successfully.

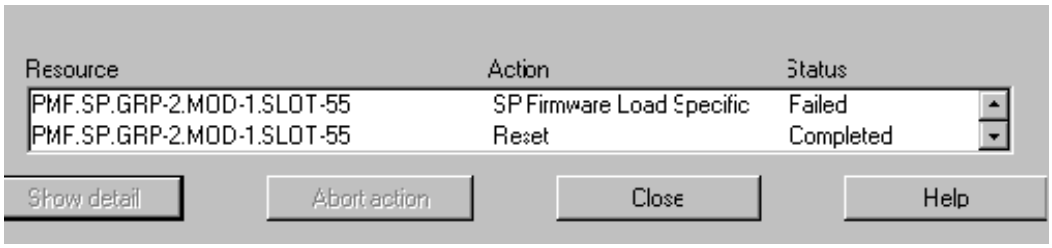
Verify the Firmware Updates (Using TSM)

1. Double-click the group containing the PMF or IOMF CRU containing the SP whose status you want to verify.
2. Right-click the PMF or IOMF CRU and choose **Attributes** from the shortcut menu. The Attributes dialog box appears.
3. From the Component/Subcomponent list, select **Service Processor**.
4. Under Attributes, scroll down to display the Service Processor State or Tandem State (depending on your version of client software). This state should be Updating, indicating that the firmware update is in progress for the SP.

Problems Updating SP Firmware (Using TSM)

A few indications that a problem has occurred when updating firmware are:

- The status indicates that the SP Firmware Load failed. For example:



VST680.vsd

- The SP Firmware Load for a service processor does not start, and no status is shown for that SP.
- The status indicates that the SP Firmware Load started, but the status has not changed to *Completed* within a reasonable amount of time.

Note. Updating a service processor takes about ten minutes, and updating a master service processor takes about twenty minutes.

- The status indicates that the SP Firmware Load is finished, but the correct version of SP firmware does not appear after that SP is reset.

If any of these problems occur, see Recovery for Problems Updating SP Firmware (Using TSM) on page 7-15.

Other Indications of SP Firmware Update Problems

These problem indicators, which might occur if you are having problems with your SP firmware updates, should disappear after you reload the new operating system:

- Yellow caution symbols on enclosure icons
- A degraded State in the Attributes pane

Problems Resetting an SP (Using TSM)

During the multiple firmware update procedure, you might see that an SP has updated, but has not reset automatically. In this case:

1. From the Firmware Update Actions Summary display, verify the SP has been reset. (The action *Reset* and status *Completed* should appear for the SP.)
2. If the Resource, Action, and Status indications remain missing for that SP after 25 minutes or so, try resetting the SP, as described under Resetting an SP Using the TSM Low-Level Link on page 7-18.

Recovery for Problems Updating SP Firmware (Using TSM)

If an SP Firmware Update Fails

▲ **WARNING.** To avoid hardware damage, never reset an SP if the firmware update does not finish successfully.

1. Verify that the SP is responding, as described under Checking the State of the Service Connection.
   - If the SP is not responding, contact your service provider.
   - If the SP is responding, continue with Step 2.
2. Try to update the firmware, as described under Correcting a Failed SP Firmware Update (Using TSM) on page 7-16.
3. If the SP is responding but the firmware update fails again, try updating the firmware, as described under Updating Firmware Using the TSM Low-Level Link Application on page 7-17.

Checking the State of the Service Connection

1. Using the TSM Service Application, open the Service Processor Actions dialog box, either by clicking **SP Actions** on the toolbar or by selecting **Display>SP Actions**.
2. From the Available Actions list, select **SP Responsive Test**.
3. Select the SP you want to test by clicking on it in the Service Processors (SPs) list.
4. Click **Perform action**.
5. Monitor the action in the Action Status box.
   - Your service connection is active if the SP Responsive Test finishes successfully.
   - If the SP Responsive Test fails, wait one minute and retry the SP Responsive Test action. If the SP Responsive Test fails again, you might have a hardware problem. Contact your service provider.

Correcting a Failed SP Firmware Update (Using TSM)

When an SP fails to update using the multiple firmware update, a TSM Service Application message appears. For example:

```
2 SP(s) successfully firmware updated. 1 SP(s) failed to complete firmware update. In
order for the firmware to be used, a reset must be performed on each SP. Answering
Yes will automatically reset all successfully updated SPs in this group. If the
master processor is reset, you might lose the TSM service connection....
```

1. Click **Yes** to automatically reset the SPs that updated successfully.
2. Select **Display>Single SP Firmware Update** facility to update each SP that failed or did not start.
3. Monitor the status of the firmware update in the Firmware Update Action Summary dialog box:
   - If the firmware update finishes successfully, reset the SP, as described under Resetting an SP Using the TSM Low-Level Link on page 7-18.
   - If the firmware update fails again, you might have a faulty SP or a down-rev customer-replaceable unit (CRU). Contact your service provider.

▲ **WARNING.** To avoid hardware damage, never reset an SP if the firmware update does not finish successfully.

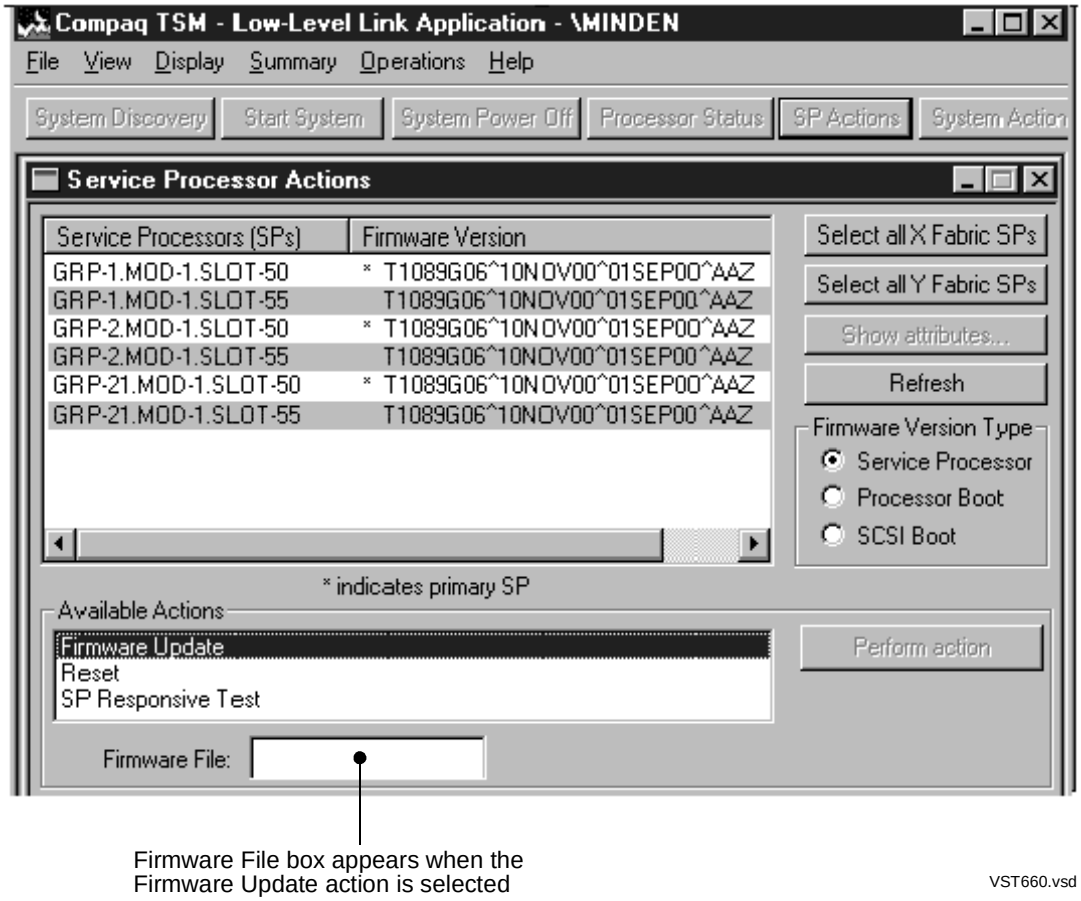
Updating Firmware Using the TSM Low-Level Link Application

If you are unable to use the TSM Service Application, you can still update each SP by using the TSM Low-Level Link Application, if you have downloaded the firmware file spntcde9, as described under Download the SP Firmware File to the System Console on page 7-6. This scenario might occur if you are unable to log on to the TSM Service Application because the NonStop Kernel operating system is not running on your system.

1. If necessary, log on to the TSM Low-Level Link Application and perform a System Discovery.
2. From the toolbar, click **SP Actions**, or select **Display>SP Actions**.

   The Service Processor Actions dialog box appears.
3. From the Available Actions list, select **Firmware Update**.

   The Firmware File box appears.



4. Select the SP to be updated in the Service Processors (SPs) list.
5. Click **Perform action**.

6. When the SP update finishes successfully, reset it, as described under Resetting an SP Using the TSM Low-Level Link on page 7-18.

▲ **WARNING.** To avoid hardware damage, never reset an SP if the firmware update does not finish successfully.

See the TSM Low-Level Link Application online help for more information.

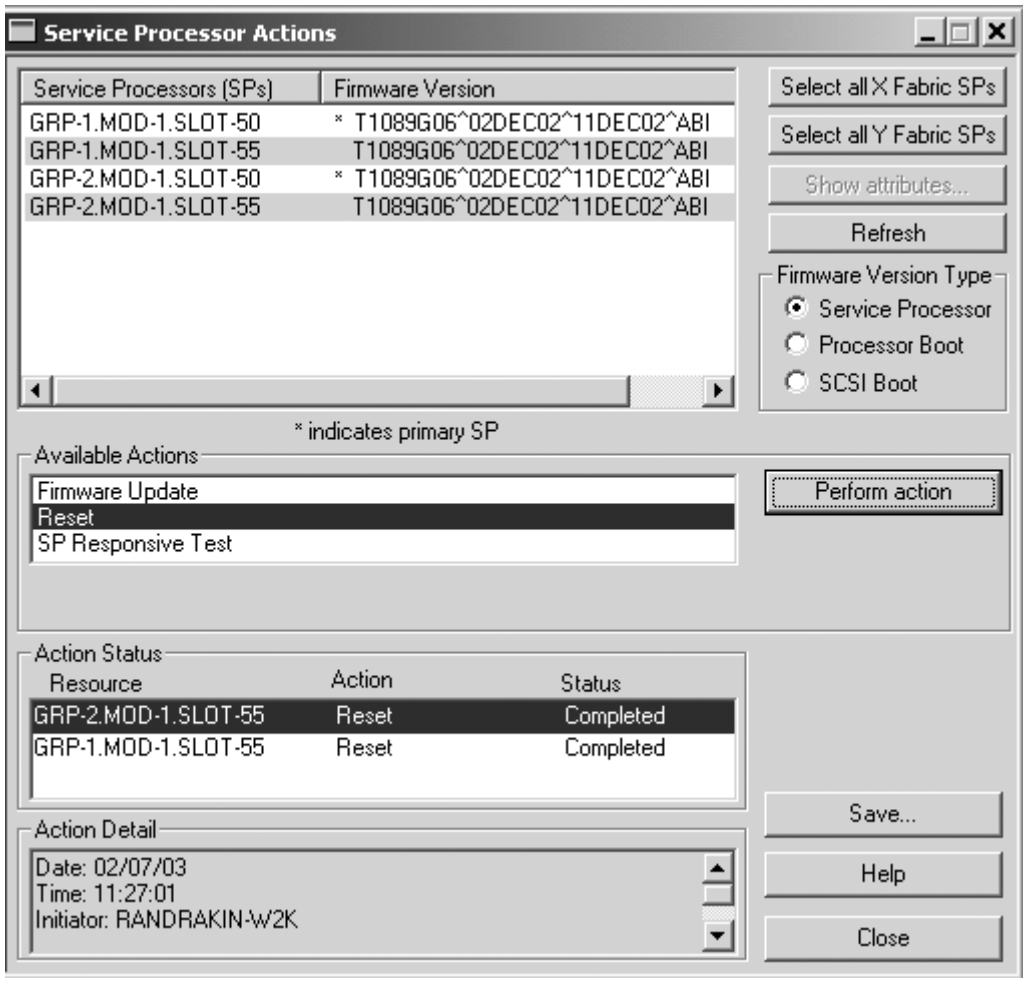
Resetting an SP Using the TSM Low-Level Link

To reset an SP, use the TSM Low-Level Link Application:

1. Log on to the TSM Low-Level Link Application and perform a System Discovery.
2. From the toolbar, click **SP Actions** to display the Service Processor Actions dialog box.
3. Select the service processor to be reset.
4. From the Available Actions list, select **Reset**.
5. Click **Perform Action**.
6. Click **OK** when the warning message appears**.**

```
This action takes up to 2 minutes for the SP to complete the reset even if the action
appears to complete immediately.
This action will cause any Firmware Update actions against this SP to abort.
Verify there are no Firmware Updates being performed on this SP before continuing.
Are you sure you want to reset this SP?
```

7. When the status of the reset action appears as *Completed* in the Action Status box, click **Refresh** to update the information in the Service Processors (SPs) list. For example:



8. Verify that the correct version of SP firmware appears in the Service Processors (SPs) list.
9. Click **Close**.

Updating SP Firmware Using the OSM Service Connection

Use this procedure only if OSM is installed and configured. If TSM is installed and is your default, use the TSM Service Connection to update your SP firmware.

Notes for Using OSM to Update SP Firmware

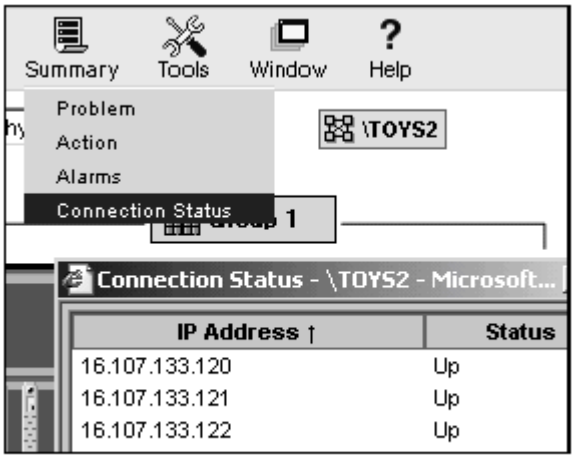
- The Multi-Resource Actions dialog box is used to update the SP firmware.
- After the SP firmware update is complete, you are asked to reset the SP.
- The T2752AAI or later OSM Service Connection browser session starts in a new browser window and eliminates the use of standard Internet Explorer buttons. After the browser session begins, you can close the original IE window. (Clicking the Internet Explorer's **Refresh** ends your current OSM Service Connection session and forces you to open a new browser window to reestablish a new connection to the system you are monitoring.) If you have a previous OSM Service Connection version, use OSM **Refresh**, **Reanalyze**, or **Rediscover** actions for updating interface display for the desired resource objects.
- (Optional) Before you begin updating your SP firmware, you should download the spntcode9 file. The procedure for downloading the spntcode is similar to the procedure documented in Download the SP Firmware File to the System Console on page 7-6. The entire path to the SP file (`spntcde9`) for OSM in the Firmware File box is:

  ```
  C:\osm\bin\spntcde9
  ```

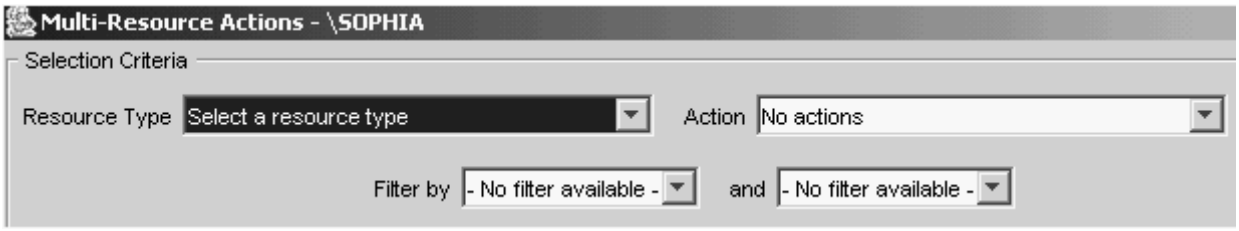
Firmware Update for Fabric Side-Y (Using OSM)

These instructions require that you have already installed and configured OSM and have previously logged on to the OSM Service Connection and initiated a server connection. If you have not, see the *OSM Migration Guide*.

1. Log on to the OSM Service Connection.
2. Before and after updating firmware, use the OSM Service Connection to check for connection status. From the Summary menu, select **Connection Status**. At least two IP addresses should be listed, and the Status should display *Up*.



3. Select **Display>Multi-Resource Actions**. The Multi-Resource Actions screen appears with unselected fields.



4. From the Resource Type list, select **SP**.
5. From the Action list, select **SP Firmware Update**.
6. In the Filter by list, select the appropriate filter, **Logical:Fabric Side-Y** first. For example:

It might take a minute or so, for the SPs appear to appear in the SP Firmware list. At this point in the update process, the Compare State displays “Same”. For instance, the current firmware version might display T1089G06^07NOV03^27OCT03^ABL. For example:

SP Firmware		
Default File Version	Version	Compare State
T1089G06^07NOV03^27OCT03^ABL	T1089G06^07NOV03^27OCT03^ABL	Same
T1089G06^07NOV03^27OCT03^ABL	T1089G06^07NOV03^27OCT03^ABL	Same

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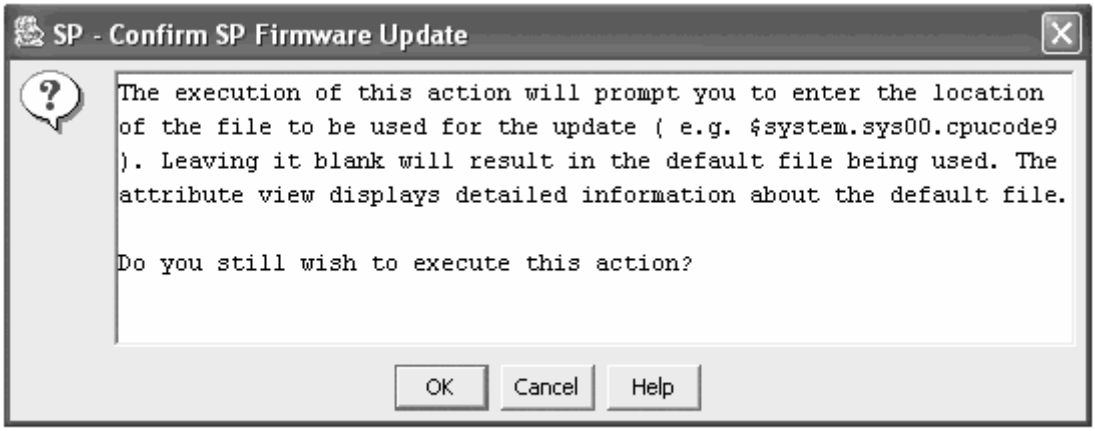
After the firmware update is complete with the SPs reset, the Compare State will display *Up-rev* and the firmware Version will display the new firmware file version.

7. Click **Add All** to add the SPs you want to update to the lower list.
8. Click **Perform action**.
9. Click **OK** when the SP-Confirm SP Firmware Update dialog box appears:



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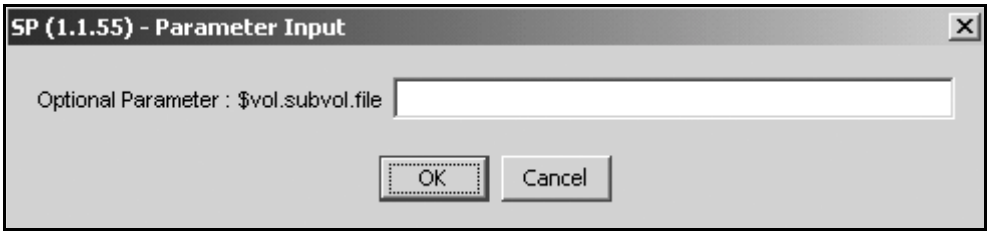
The SP - Parameter Input dialog box appears. For example:



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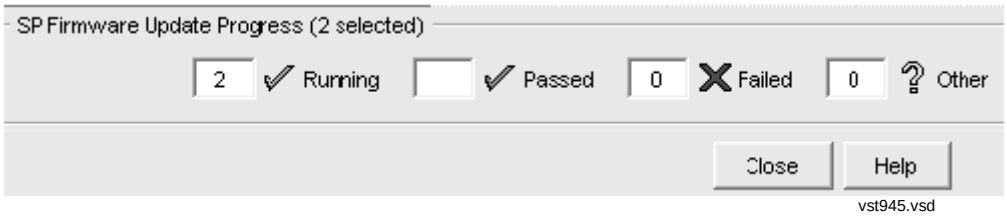
10. Enter the new file location. Use the *$volume.subvolume.filename* created during the most recent DSM/SCM Build/Apply and click **OK**. For example:

    ```
    $system.sys01.spcode9
    ```

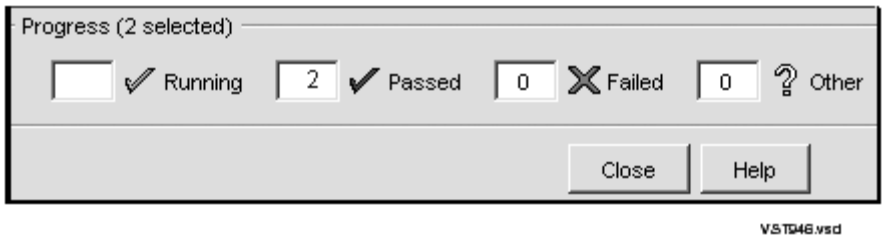
    After you click **OK**, the number of SPs that are currently being updated appear in the Running column under SP Firmware Update Progress. For example:



(Under Resource Name, the SP that has initially been updated displays a grey checkmark beside it. The other SP, awaiting update, displays a yellow question mark.)

11. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress.

    The SP Firmware Update Progress bar keeps track of the number of SPs that pass the firmware update. When all the selected SPs have completed the firmware update, the Passed column displays the number of SPs that are successfully updated.

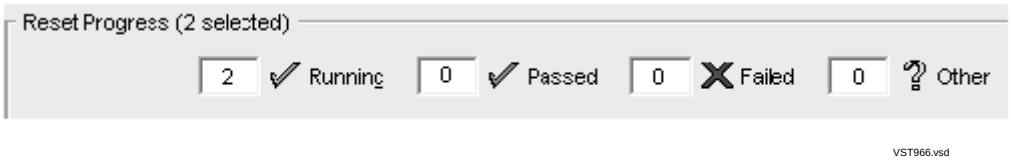


12. You are then asked to reset each SP. For example, to reset SP 2.1.55:

```
The firmware update needs to reset the Service Processor
to activate the updated firmware. Would you like to
reset the Service Processor?
```

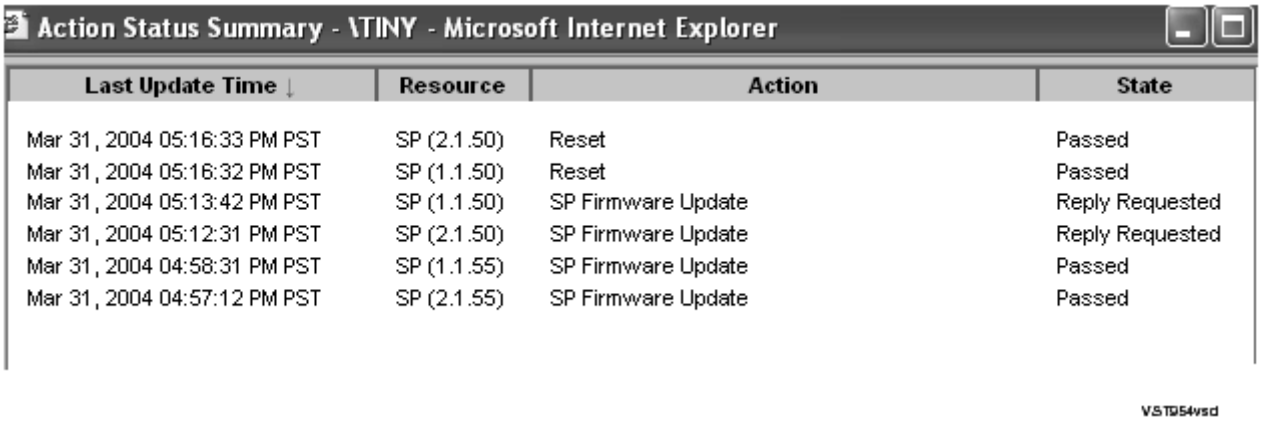
13. Select **Yes**.

    The number of SPs that are currently being updated appear in the Running column under SP Firmware Update Progress. For example:

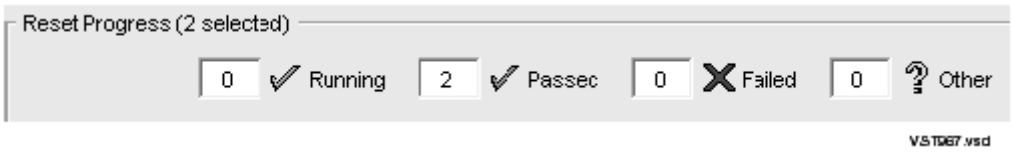


    The message is displayed for all SPs that must be reset.

14. To verify that firmware resets are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress. For example:



The Reset Progress bar keeps track of those SPs that pass the firmware reset. When all the selected SPs have completed the reset, the Passed column displays the number that are successfully reset. (A green checkmark replaces the grey checkmark by the SP under Resource Name in the SP Firmware resource list).



Firmware Update for Fabric Side-X (Using OSM)

Note. You can begin this procedure for updating the X-side by using **Remove All** to delete the resources for the Y-side update. All the steps are the same, except the change filter message is not displayed and Step 2 is unnecessary.)

1. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-X**. The following message appears:

   ```
   Changing a required filter results in your
   selections being cleared.

   Do you still wish to change the filter?
   ```

2. Click **OK**.
3. Click **Add All** to add the SPs you want to update to the lower list.
4. Click **Perform action**.
5. Click **OK** when the Confirm SP Firmware Update dialog box appears.

   The SP-Parameter Input dialog box appears.

6. Enter the new file location the SP - Parameter Input dialog box. Use the *$volume.subvolume.filename* created during the most recent DSM/SCM Build/Apply and click **OK**. For example:

   ```
   $system.sys01.spcode9
   ```

   After you click **OK**, the number of SPs that are currently being updated appear in the Running column under SP Firmware Update Progress.

7. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress.

   The SP Firmware Update Progress bar keeps track of the number of SPs that pass the firmware update. When all the selected SPs have completed the firmware update, the Passed column displays the number of SPs that are successfully updated.

   You are then asked to reset each SP.

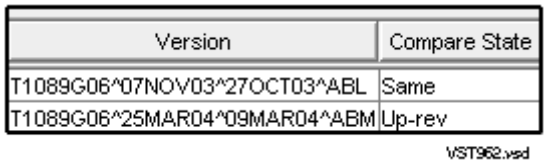
   ```
   The firmware update needs to reset the Service Processor
   to activate the updated firmware. Would you like to
   reset the Service Processor?
   ```

8. Select **Yes**.

9. To verify that firmware resets are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress.

   The Reset Progress bar keeps track of the number of SPs that pass the firmware reset. After a few minutes, the SP is reset. When all the selected SPs have completed the reset, the Passed column displays the number that are successfully reset. (A green checkmark replaces the grey checkmark by the SP under Resource Name.)

   After the firmware update is complete and the SPs reset, the Compare State displays “Up-rev” and the firmware Version displays the new firmware file, such as, `T1089^25MAR04^09MAR04^ABM`. For example:



Version	Compare State
T1089G06^07NOV03^27OCT03^ABL	Same
T1089G06^25MAR04^09MAR04^ABM	Up-rev

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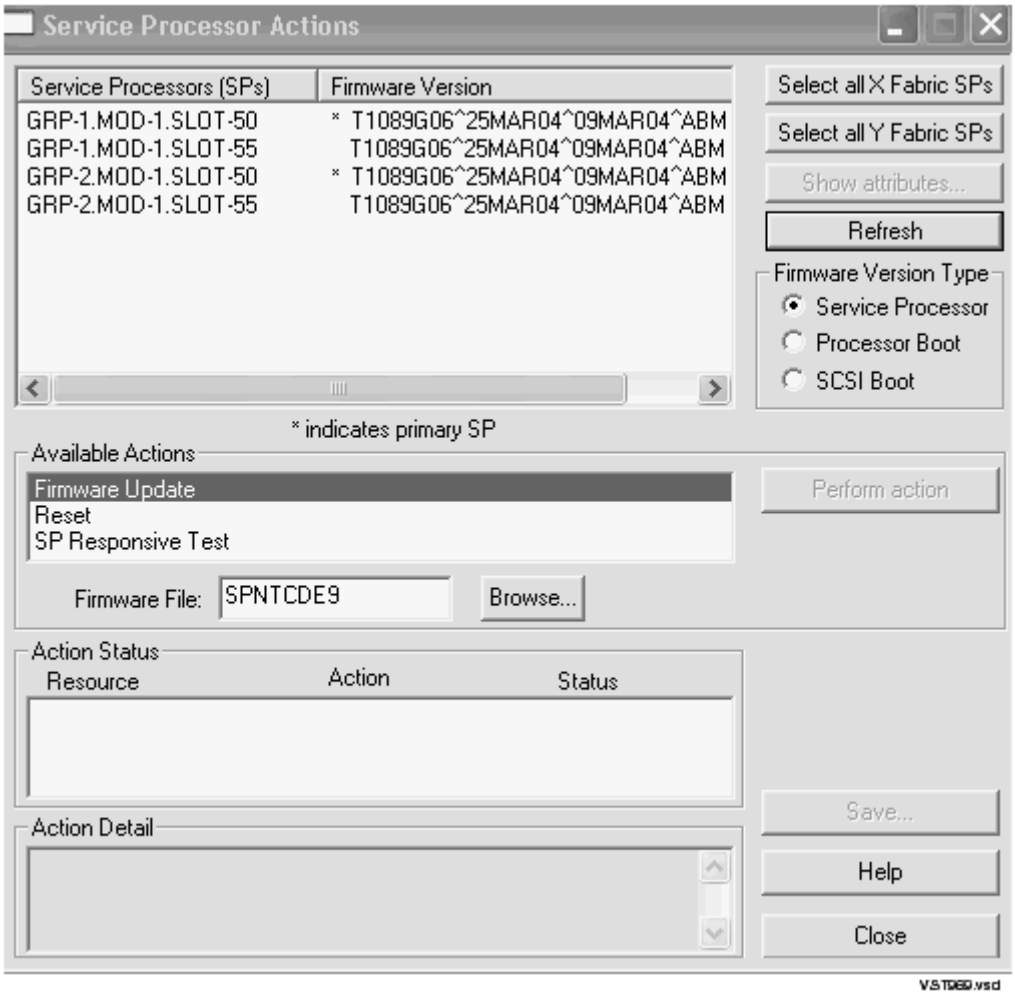
Verifying the SP Firmware Update (Using OSM)

1. In the OSM Service Connection, double-click the group containing the PMF or IOMF CRU containing the SP whose status you want to verify.
2. Right click the SP. Select **Attributes** from the menu.
3. The Compare State should display *Up-rev*.

You can also use the OSM Low Level Link Application to verify the firmware update:

1. Log on to the OSM Low-Level Link Application. (Keep the OSM Service Connection open.)
2. Display the Service Processor Actions dialog box, either by clicking **SP Actions** in the toolbar or by selecting **Display>SP Actions**.
3. Check that the firmware version and date appear in the Service Processors (SPs) list.
4. If desired, click either **Select all X Fabric SPs** or **Select all Y Fabric SPs.**
5. Select **Service Processor** from the Firmware Version Type.
6. Click **Refresh** to update the information in the Service Processors (SP) list. This step might take several minutes.
7. Verify that the correct version of SP firmware is displayed in the Service Processors (SPs) list:

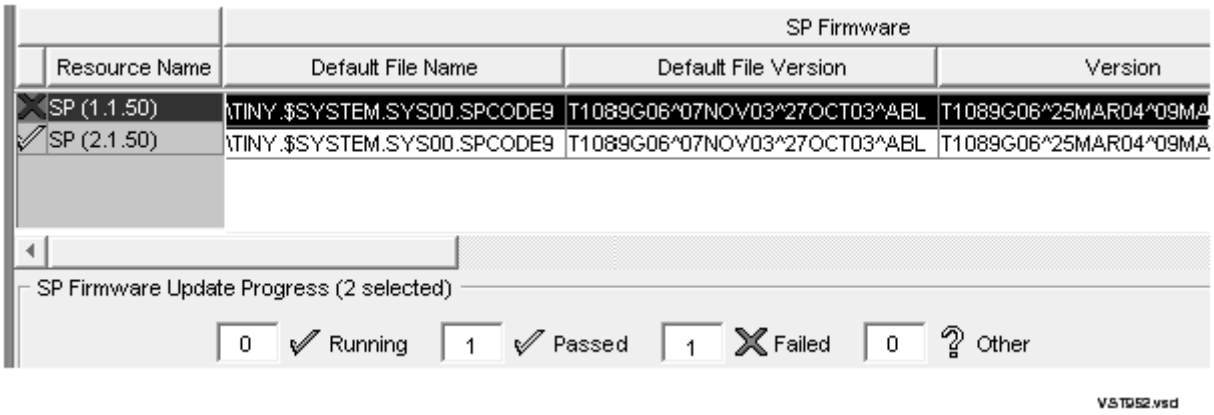


8. Click **Close**.

   If all SPs were updated successfully, you can skip to Section 8, Updating Processor Boot Code on page 8-1. Otherwise, continue with Correcting a Failed SP Firmware Update (Using the OSM Service Connection) on page 7-28 to diagnose and correct problems you encountered.

Correcting a Failed SP Firmware Update (Using the OSM Service Connection)

When an SP fails to update using the multiple firmware update, the number of failed SPs is displayed in the Failed column, and a red X appears by the SP that failed under Resource name in the SP Firmware resource list:



1. Select **Action Summary**.
   a. When the Action Summary screen appears, select the SP action that failed.
   b. Select **Details** from the Action Summary screen or right click on the SP resource to find out more details about the firmware failure.
2. Correct the problem. If you cannot update or reset an SP, call your service provider.

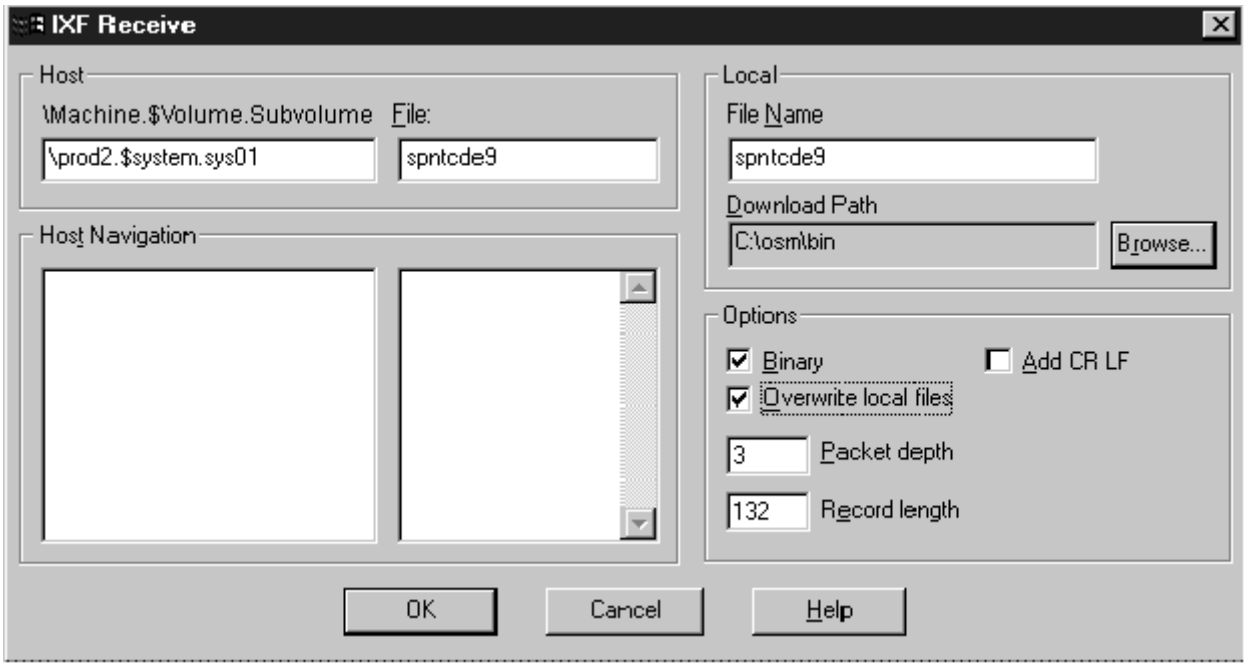
Using OSM and Downloading the SP Firmware File to the System Console (Optional)

SP firmware updates are normally performed through the OSM Service Connection. However, if you need to use the OSM Low-Level Link to perform firmware updates on an SP, you must have access to `spntcde9`, the SP firmware file that runs on a system console. HP recommends that you download the SP firmware file (`spntcde9`) into the `\osm\bin` directory, although you can use any directory you want.

1. If necessary, start an OutsideView session.
2. Select **Session>Receive file** to display the IXF Receive dialog box.
3. In the Host box enter the host system name, and the volume and subvolume where the firmware file resides, based on the SYS*nn* specified during the Build/Apply phase of installing the new RVU. For example:

   `\prod2.$system.sys01`
4. In the File box, enter `spntcde9`.

   `spntcde9` appears in the Local area File Name box. For example:



5. Under Download Path, click **Browse** to locate and select the `\osm\bin` directory. Under Options, verify that the Binary option is selected.

   Note. Verify that the Overwrite local files option is also selected.

6. Click **OK**.

   The Browse window closes, and an IXF - Receive dialog box appears, showing the download progress of the `spntcde9` file. The download should take around 5 minutes.

7. When the IXF - Receive dialog box indicates that the transfer is finished, click **End Transfer**.

8. See Updating Firmware Using the OSM Low-Level Link Application (Optional) on page 7-30.

Updating Firmware Using the OSM Low-Level Link Application (Optional)

If you are unable to use the OSM Service Connection, you can still update each SP by using the OSM Low-Level Link, if you have downloaded the firmware file `spntcde9`, as described under Using OSM and Downloading the SP Firmware File to the System Console (Optional) on page 7-28. This scenario might occur if you are unable to log on to the OSM Service Connection because the NonStop Kernel operating system is not running on your system. For more information, see the OSM online help.

1. Log onto the OSM Low-Level Link Application.
2. From the toolbar, click **Display>SP Actions**.

   The Service Processor Actions dialog box appears (similar to the TSM Service Processor Actions dialog box).
3. From the Resource Type list, select **Service Processors, Y-side** if you have chosen to update the service processors in the Y fabric, or **Service Processors, X-side** if you are updating the service processors in the X fabric.
4. Under Available Actions, select **Firmware Update**. The SP file (SPNTCDE9) appears in the Firmware File box.
5. Select the SP to be updated.
6. Click **Perform action**.
7. A message appears telling you that the “action may take up to 30 minutes” for each SP. Click **OK**.
8. When all the SP updates finish successfully, reset it, as described in the OSM online help.

▲ **WARNING.** To avoid hardware damage, never reset an SP if the firmware update does not finish successfully.

8 Updating Processor Boot Code

Processor boot code controls device boot and power-on diagnostic functions.

This section describes the two common methods for updating the processor boot code and how to use either the OSM Service Connection or TSM Service Application to update the processor boot code for each PMF CRU in your system. See Table 8-1.

Table 8-1. Processor Boot Code to Be Updated

Boot Code	Product Number	Description
S7000 boot millicode (cpucode8) S7x000, S8x000, S7800, S7400 S7600, S88000 boot millicode (cpucode9)	T8461 T7892	Processor boot code is the processor millicode that is used to load, reload, and dump each processor.
Always check Scout for the latest processor boot code SPRs (T8461 and T7892).		

Note. Update processor boot code **only**:

- If instructed to do so by DSM/SCM
- If you are not replacing the PMF CRUs in your system while migrating to the G06.24 RVU

△ **Caution.** Before using the online boot code option for upgrading boot millicode to T7892ABD or later, you must have the G06.24 or later version of either TSM server (T7945ABN) or *all* G06.24 OSM server-based SPRs (along with their prerequisites) installed and configured. Otherwise, a processor halt will result.

Read HS02865 for background information and recommended upgrade options.

With the introduction of the G06.24 RVU and the new boot code firmware (T7892ABD) needed for the S88000 processor, potential system problems can result if you upgrade the boot millicode and you:

- Use the explicit online command option from either the Resource Type menu in TSM or the Action menu in OSM and
- *Do not* have the G06.24 or later OSM and their prerequisite SPRs or TSM SPRs installed and started. (See HS02865, OPN T7892G07 ABD Online Boot Code Upgrade Warning.) For a list of OSM SPRs for G06.24, see OSM Server and Client Compatibility SPRs on page 3-8.

Even if you are not installing new S88000s, if use the explicit online boot code option and try to update to the T7892ABD boot millicode for other NonStop S-series processors, such as S74000, S78000, and so forth, a processor halt will occur.

As documented in HS02865, there are at least three strategies for updating processor boot code firmware with subsequent methods for reloading the processors. See HS02865 for further details.

This section combines the three Hotstuff strategies into two major methods:

- Method 1: Using G06.24 OSM or TSM SPRs, Update Processor Boot Code Using the Online Option on page 8-4

  With this method, it is assumed that you have at least the G06.24 OSM and TSM SPRs installed on your client and server. If this is the case, you can use the explicit online boot code update available in either TSM or OSM. Note that if you are on an S7000, the online update option does not appear.

  It is possible that you can update your OSM and TSM SPRs to the latest versions, and still decide, based on previous adhered-to practices, not to update the processor millicode using the explicit online option. Follow the steps described in Method 2.

- Method 2: Using Your Current Pre-G06.24 OSM or TSM SPRs, Update the Processor Boot Code and Issue a Hard Reset or Equivalent on page 8-10

  With this method, it is assumed that you have down-rev G06.24 SPRs installed on your client and server. If this is the case, you cannot use the explicit online boot code update. It will cause a processor halt.

  It is possible that you can update your OSM and TSM SPRs to the latest versions and still decide not to update the processor millicode using the explicit online option available in either TSM or OSM. In that case, you must issue a Hard Reset action or a Reload. The Hard Reset or Reload action can be performed during the system load procedure.

Before You Begin Updating the Boot Millicode

Check Processor Status

Before you update your firmware, verify that the system is up with at least one processor running a G06.00 or later version of the NonStop operating system:

1. If necessary, log on to the OSM or TSM Low-Level Link Application.
2. From the TSM or OSM toolbar, click **Processor Status**.

   Processor status should be *Executing NonStop OS*.

Verify Your TSM and OSM Versions

See Determining the Current Version of OSM on page 3-9 and Determining the Current Version of TSM Server Software on page 3-10.

Verify Location and Version of Processor Boot Code

1. At a TACL prompt, issue the VPROC command to verify the location and version of the processor boot code for the G06.24 RVU:

   - For processor boot code for the NonStop Server S7000, enter:

     >VPROC $SYSTEM.SYS*nn*.CPUCODE8

   - For processor boot code for NonStop servers S7x000, S8x000, S7400, S7600, S7800, or S78000, enter:

     >VPROC $SYSTEM.SYS*nn*.CPUCODE9

   where *nn* is the number specified during the Build/Apply phase when you installed the G06.24 RVU.

Note. Version procedure dates might be different; these are examples only. Bold lettering is used to emphasize the `vproc` command and corresponding results.

```
(\itty $SYSTEM.SYS05 7> vproc cpucode9
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \ITTY  Date 16 NOV 2004, 17:07:52
Copyright 2003 Hewlett-Packard Development Company, L.P.

$SYSTEM.SYS02.CPUCODE9
     Binder timestamp:  24AUG2004 10:22:35
    Version procedure:  T7892G07^23AUG04^ABD^24Aug04^

\itty $SYSTEM.SYS10 6> vproc cpucode8
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \ITTY  Date 16 NOV 2004, 17:07:41
Copyright 2003 Hewlett-Packard Development Company, L.P.

$SYSTEM.SYS10.CPUCODE8
     Binder timestamp:  13OCT2000 10:23:06
    Version procedure:  T8461G05^12OCT00^12Oct00
```

2. Record the version of the processor boot code.
3. Repeat Steps 1 and 2 by using the SYS*nn* for your *current* RVU. For example:

```
$SYSTEM SUPER 7> vproc $system.sys01.cpucode8
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \WARRIOR  Date 21 SEP
2000, 11:49:55
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS01.CPUCODE8
     Binder timestamp:  25AUG1999 16:03:25
    Version procedure:  T8461G05^03SEP99^25Aug99

$SYSTEM SUPER 10> vproc $system.sys01.cpucode9
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \WARRIOR  Date 21 SEP 2000,
11:53:30
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS01.CPUCODE9
     Binder timestamp:   17JUL2000 12:45:44
     Version procedure:  T7892G06^23JUL00^AAJ^14Jul00^
```

Method 1: Using G06.24 OSM or TSM SPRs, Update Processor Boot Code Using the Online Option

△ **Caution:** Before using the online boot code option for upgrading boot millicode to T7892ABD or later, you must have the G06.24 or later version of either TSM server (T7945ABN) or *all* OSM server-based SPRs (along with their prerequisites) installed and configured. Otherwise, a processor halt will result.

Read HS02865 for detailed background information and upgrade options.

This method allows you to update the processor boot code without resetting the processors on completion of the update. You can use either TSM or OSM to update the processor boot code using the online command option:

- Using TSM, Update Processor Boot Code Using the Online Option and G06.24 or Later TSM SPRs on page 8-5
- Using OSM, Update Processor Boot Code Using the Online Option and G06.24 or Later OSM SPRs on page 8-7

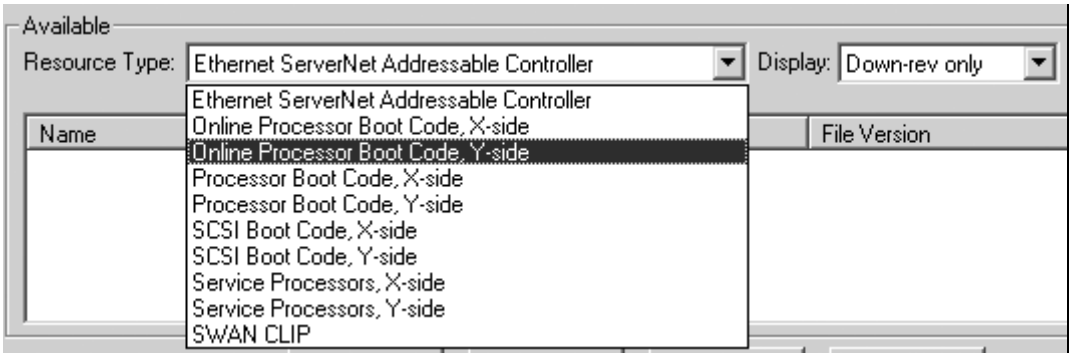
Using TSM, Update Processor Boot Code Using the Online Option and G06.24 or Later TSM SPRs

Beginning with TSM 2001D (client and server versions) in G06.14, you can update the processor boot code for NonStop S-series servers (S70000, S7x000, S7600, S7800, S7400, S8x000) without taking the processor down for a hard reset action (or prime for reload action). The online firmware update actions do not appear *if* the system is an S7000.

△ **Caution.** To use TSM to update processor boot code online, you must have already installed and configured T7945ABN or later. Otherwise, a processor halt will result. If you have not configured the latest TSM server side components, follow the instructions in Using TSM, Update the Processor Boot Code and Issue a Hard Reset or Equivalent on page 8-10.

1. Log on to the TSM Service Application.
2. Select **Display>Firmware Update**.

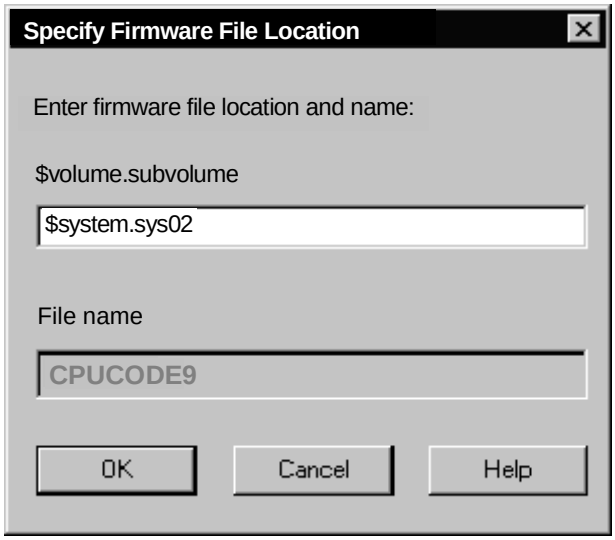
   The Firmware Update dialog box appears.
3. From the Resource Type list, select **Online Processor Boot Code, Y-side**. For example:



VST962.vsd

4. From the Display list, select **All** to list the selected resources in the Available box.
5. Click **Add all** to move the resources to the Selected box.

6. Click **Specify other** to display the Specify Firmware File Location dialog box.

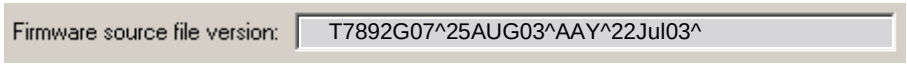


VST654.vsd

7. Enter the volume and subvolume where the file to use as the source for the update resides. Use the $SYSTEM.SYS*nn* created during the most recent DSM/SCM Build/Apply.
8. Click **OK**.
9. Click **Yes** when this message appears:

```
You have specified a nonstandard firmware location.
Compaq TSM will try to get the firmware information. It may take a few seconds.
Do you want to use this nonstandard firmware location?
```

   TSM retrieves firmware information, and the firmware source file version shows the new RVU version:



VST728.vsd

10. From the Firmware Update dialog box, click **Perform action**.

    The update starts, and the Firmware Update Action Summary dialog box appears.

11. Monitor the status of the processor boot code update in the Firmware Update Action Summary dialog box. For example:

Resource	Action	Status
PROCESSOR-1	Online Firmware Load	Completed
PROCESSOR-3	Online Firmware Load	Completed

VST964.vsd

    When the action status appears as *Completed*, the processor boot code update is finished.

12. Repeat Steps 2 through 10 to update the boot code using the TSM **Online Processor Boot Code, X-side** option.

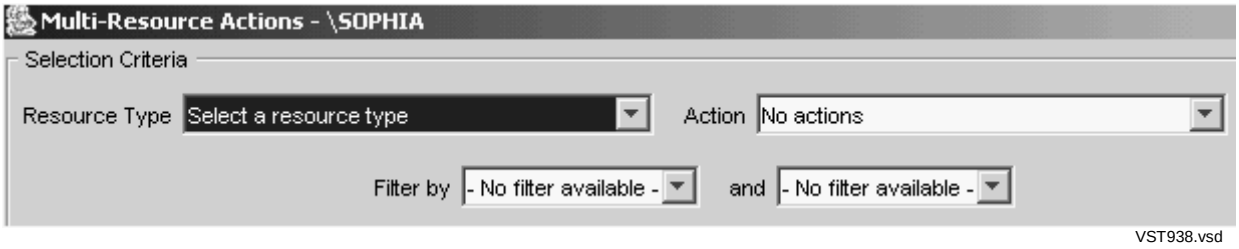
13. Close the Firmware Update and Firmware Update Action Summary dialog boxes.

Using OSM, Update Processor Boot Code Using the Online Option and G06.24 or Later OSM SPRs

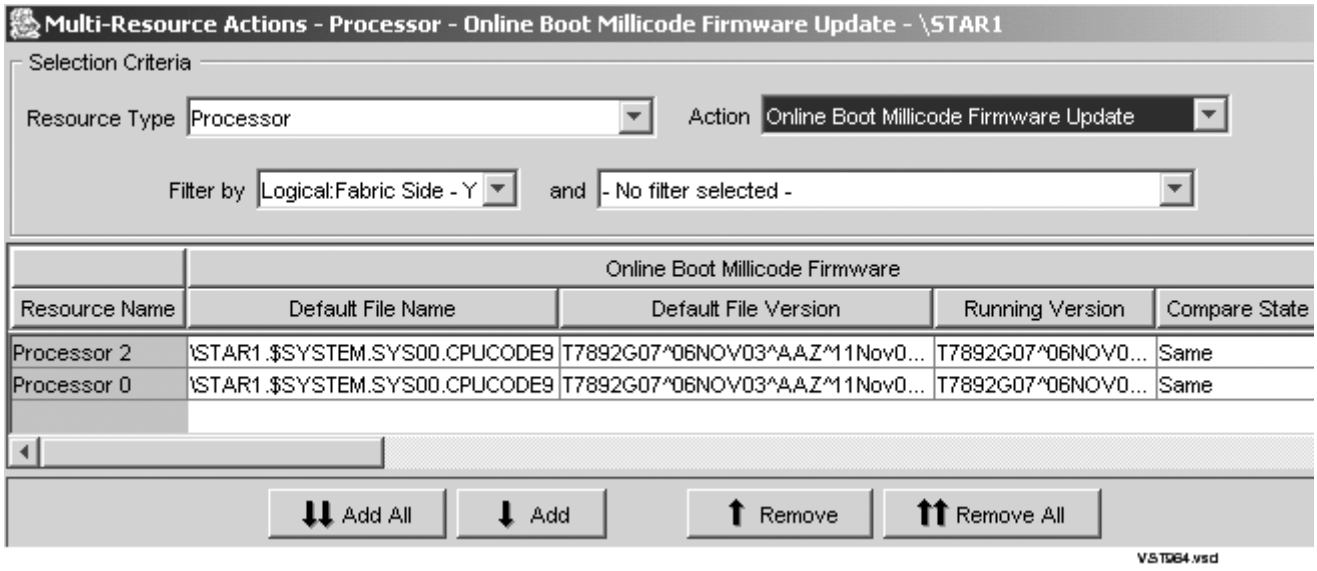
If you have at least the G06.24 OSM client and SPRS installed and configured, HP recommends use of the explicit online option because it enables you to update the processor boot code without resetting the processors on completion of the update. You can update the processor boot code for NonStop S-series servers (S70000, S7x000, S7600, S7800, S7400, and S8x000) without taking the processor down for a hard reset. The online firmware update actions do not appear *if* the system is an S7000.

△ **Caution.** To use OSM to update processor boot code online, you must have already installed and configured T2728AAL. Otherwise, a processor halt will result. If you have not configured the G06.24 or later OSM server side components, follow the instructions to update boot code in Using OSM, Update the Processor Boot Code and Issue a Hard Reset or Equivalent on page 8-14.

1. Log on to the OSM Service Connection.
2. Select **Display> Multi-Resource Actions**. The Multi-Resource Actions dialog box appears with unselected fields.



3. From the Resource Type list, select **Processor**.
4. From the Action list, select **Online Boot Millicode Firmware Update**.
5. From the Filter by list, select **Logical: Fabric Side-Y**. For example:

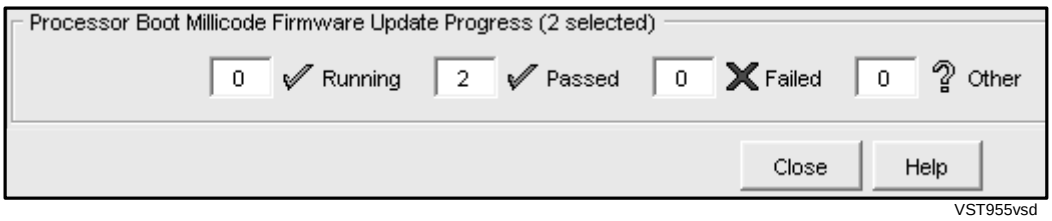


6. Click **Add All** to move the selected resources to update the lower list.
7. Click **Perform Action**.
8. Click **OK** when the Confirm Processor Boot Millicode Firmware Update dialog box appears.

   The Processor-Parameter Input dialog box appears.
9. Enter the file location. Use the *`$volume.subvolume.filename`* ($SYSTEM.SYS*nn*) subvolume created during the most recent DSM/SCM Build/Apply and click **OK**. For example:

   `$system.sys01.cpucode9`

   As the firmware update is performed, information about it appears in the Progress List.



10. To verify that firmware resets are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and overall progress.
11. Update the X-fabric for the processor boot code. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-X**.

    When you change the Filter by list from Y-side to X-side, this message appears:

    ```
    Changing a required filter results in your
    selections being cleared.

    Do you still wish to change the filter?
    ```

12. Click **OK**.
13. Click **Add All** or **Add** to add the SPs you want to update to the lower resource list.
14. Click **Perform Action**.
15. Click **OK** when the Confirm Processor Boot Millicode Firmware Update dialog box appears.

    The Processor Parameter Input dialog box appears.

16. Enter the file location. Use the *$volume.subvolume.filename* ($SYSTEM.SYS*nn*) subvolume created during the most recent DSM/SCM Build/Apply and click **OK**. For example:

    ```
    $system.sys01.cpucode9
    ```

    As the firmware update is performed, information about it appears in the Progress List.

17. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and overall progress.

Method 2: Using Your Current Pre-G06.24 OSM or TSM SPRs, Update the Processor Boot Code and Issue a Hard Reset or Equivalent

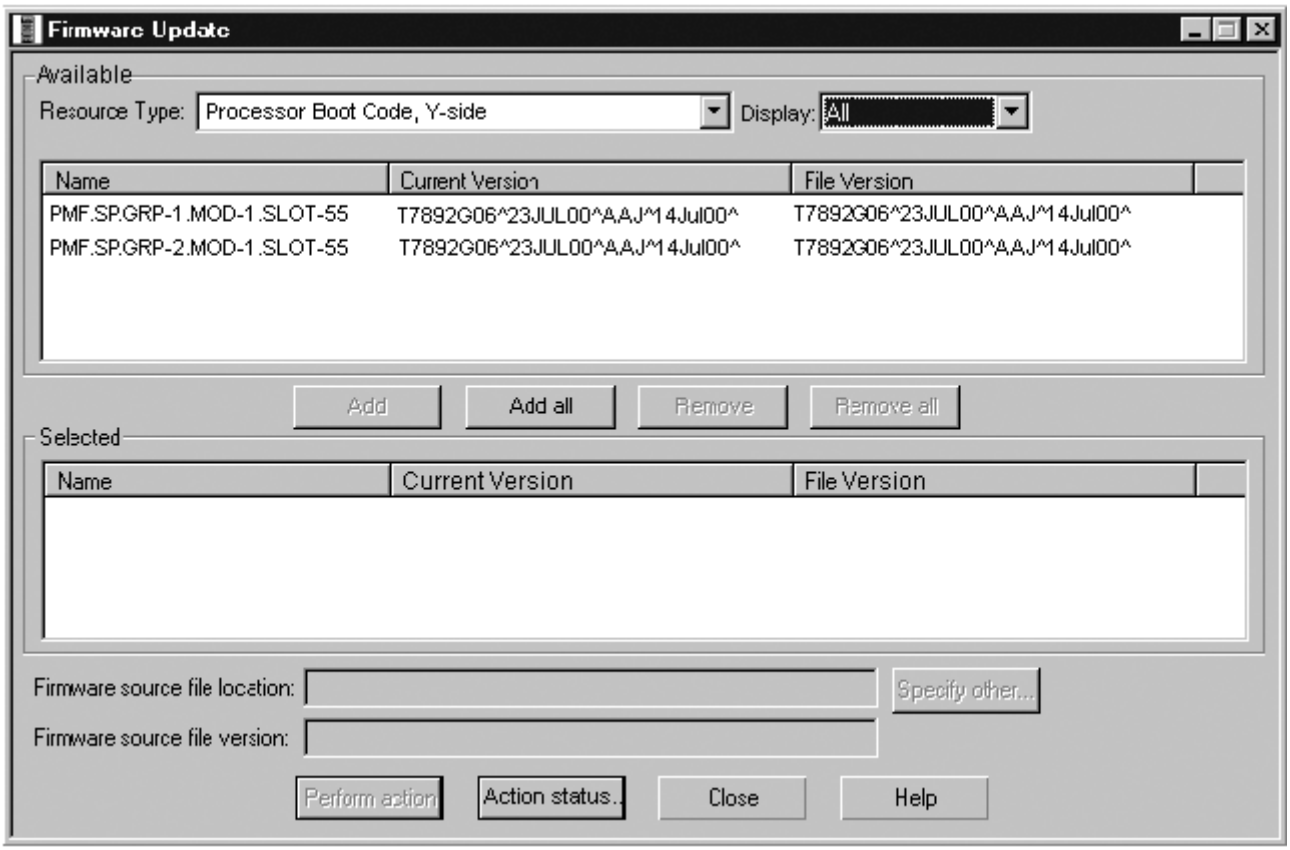
Note. You can also perform a hard reset using the TSM or OSM Low-Level Link on all processors when you perform a system load instead of using the Reset action. See The Reset Operation on page 11-8.

Using TSM, Update the Processor Boot Code and Issue a Hard Reset or Equivalent

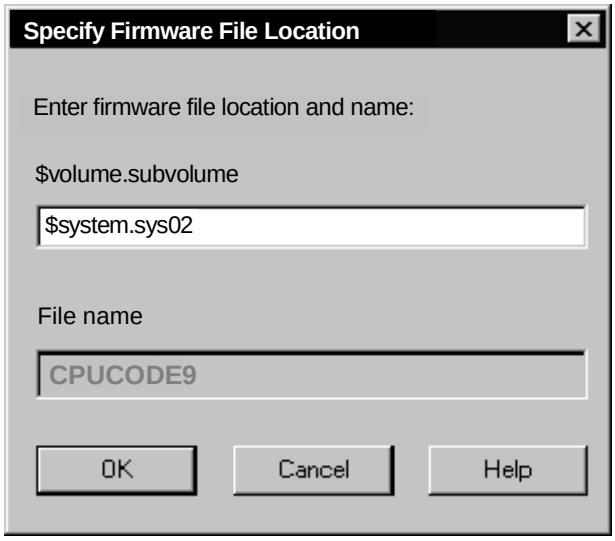
From the TSM Service Application, use the Firmware Update dialog box to update the processor boot code offline for each PMF CRU in your system:

1. Log on to the TSM Service Application.
2. Select **Display>Firmware Update**.

   The Firmware Update dialog box appears.
3. From the Resource Type list, select **Processor Boot Code, Y-side**.
4. From the Display list, select **All** to list the selected resources in the Available box:



5. Click **Add all** to move the resources to the Selected box.
6. Click **Specify other** to display the Specify Firmware File Location dialog box.
7. Enter the volume and subvolume where the file to use as the source for the update resides. Use the $SYSTEM.SYS*nn* created during the most recent DSM/SCM Build/Apply:

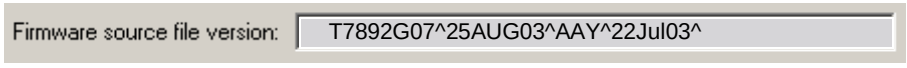


VST654.vsd

8. Click **OK**.
9. Click **Yes** when this message appears:

```
You have specified a nonstandard firmware location.
Compaq TSM will try to get the firmware information. It may take a few seconds.
Do you want to use this nonstandard firmware location?
```

   TSM retrieves firmware information, and the firmware source file version shows the new RVU version:

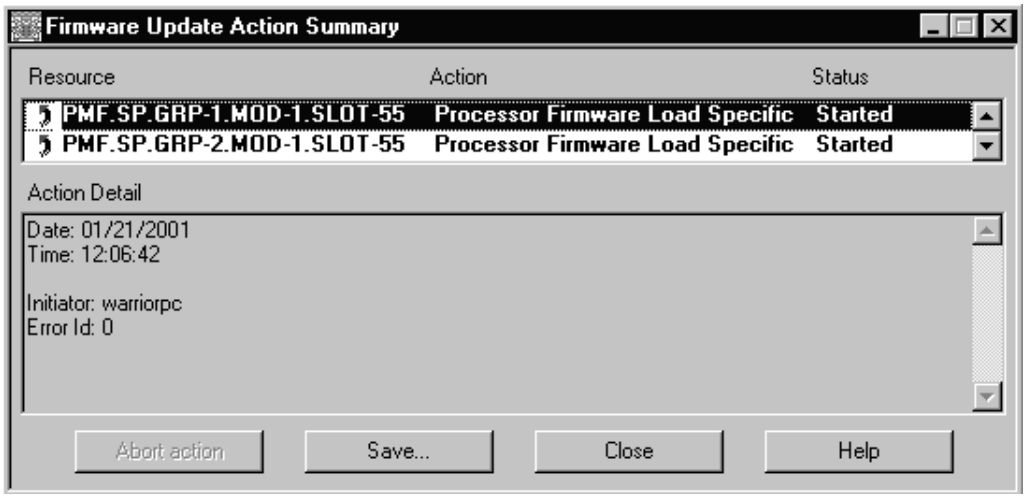


VST728.vsd

10. From the Firmware Update dialog box, click **Perform action**.

    The update starts, and the Firmware Update Action Summary dialog box appears.

11. Monitor the status of the processor boot code update in the Firmware Update Action Summary dialog box. For example:

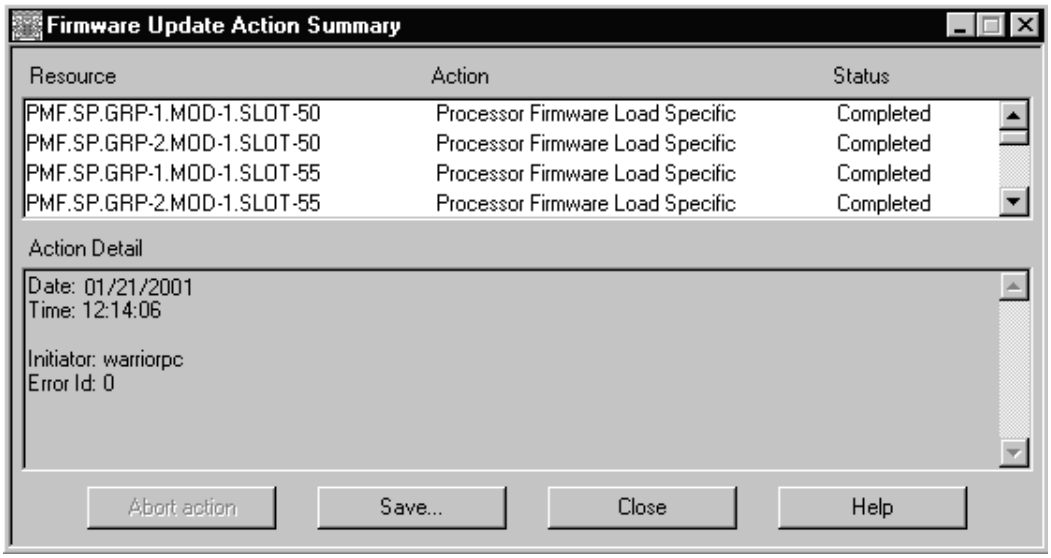


VST729.vsd

When the action status appears as *Completed*, the processor boot code update is finished.

12. Repeat Steps 2 through 11 to update the **Processor Boot Code, X-side**.

    The Firmware Update Action Summary dialog box should confirm that all processor boot millicode for all PMF CRUs has been updated successfully. For example:



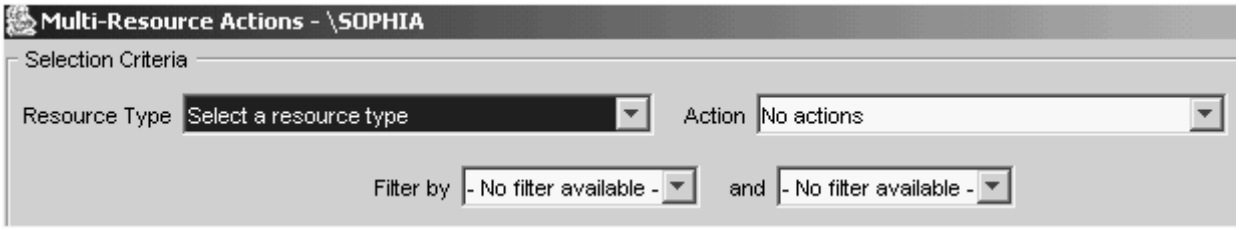
VST740.vsd

13. Close the Firmware Update and Firmware Update Action Summary dialog boxes.
14. You must now reset the processors. See Reset the Processors To Complete Updating the Processor Boot Code (Both for OSM and TSM) on page 8-16.

Using OSM, Update the Processor Boot Code and Issue a Hard Reset or Equivalent

You can use OSM to update processor boot code, provided that you use the Hard Reset or Prime for Reload action option. This action can be done at the end of the procedure or when performing a system load.

1. Log on to the OSM Service Connection.
2. Select **Display> Multi-Resource Actions**. The Multi-Resource Actions dialog box appears with unselected fields.



VST938.vsd

3. From the Resource Type list, select **SP**.
4. From the Action list, select **Processor Boot Millicode Firmware Update**.
5. From the Filter by list, select **Logical: Fabric Side-Y**:

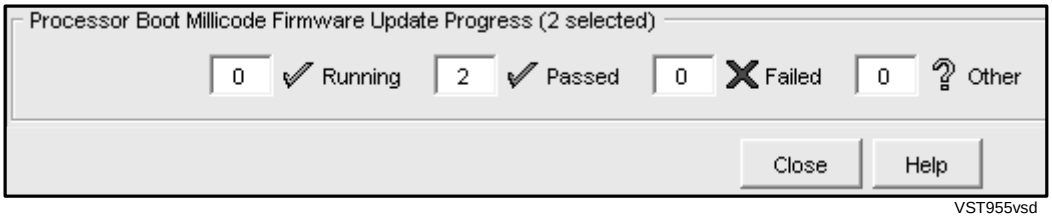
VST956.vsd

6. Click **Add All** to move the selected resources to update the lower list.
7. Click **Perform Action**.
8. Click **OK** when the Confirm Processor Boot Millicode Firmware Update dialog box appears.

   The Processor Parameter Input dialog box appears.
9. Enter the file location. Use the *`$volume.subvolume.filename`* ($SYSTEM.SYS*nn*) subvolume created during the most recent DSM/SCM Build/Apply and click **OK**. For example:

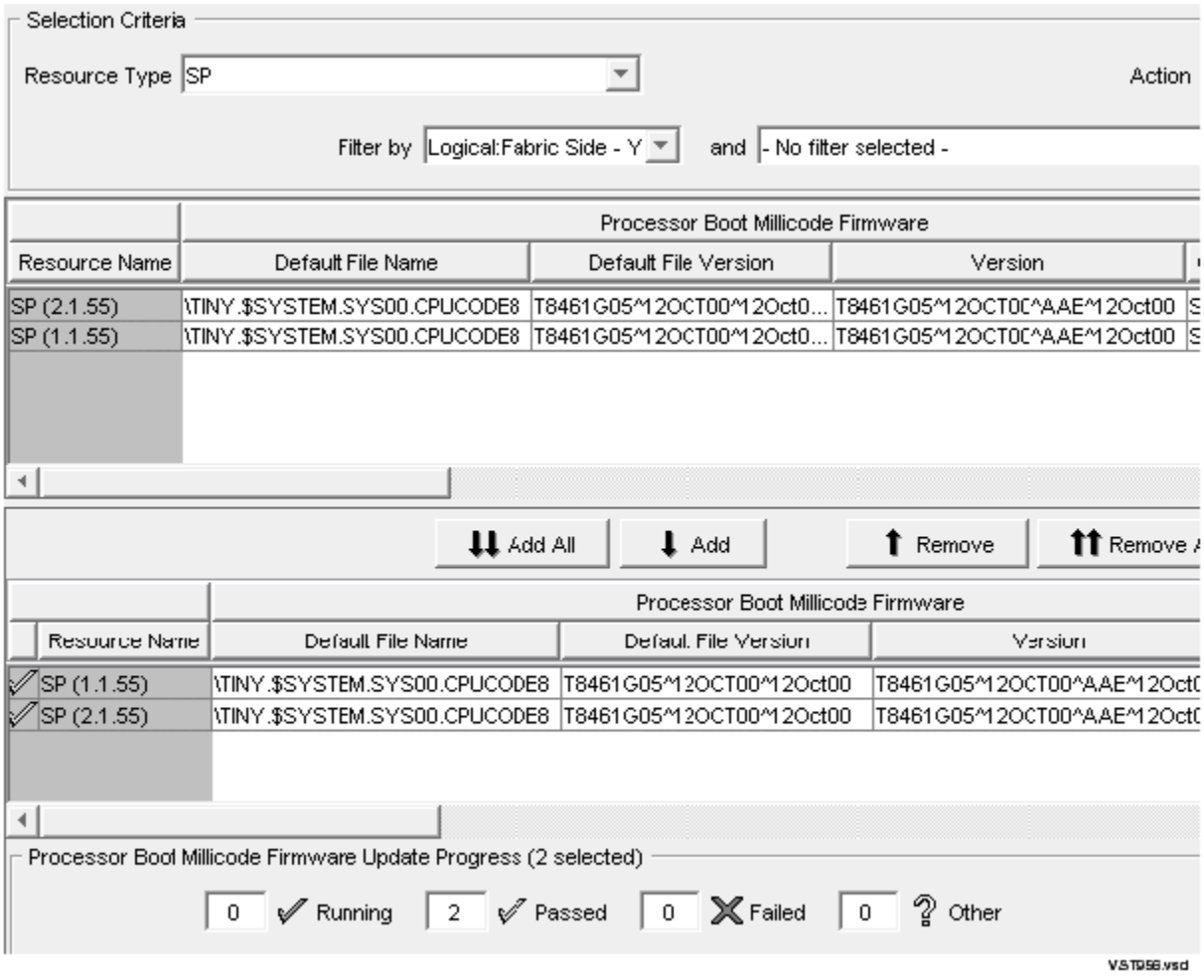
   `$system.sys02.cpucode9`

   As the firmware update is performed, information about it appears in the Progress List.



10. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and overall progress.

    A successful update (partial screen) for the Y-fabric of the processor boot code:



11. Update the X-fabric for the processor boot code. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-X**.

Note. You can begin this sequence of steps by using **Remove All** to delete the resources for the Y-side update. All the steps are the same, except the change filter message is not displayed and Step 12 is unnecessary.)

When you change the Filter by list from Y-side to X-side, this message appears:

```
Changing a required filter results in your
selections being cleared.

Do you still wish to change the filter?
```

12. Click **OK**.
13. Click **Add All** to add the SPs you want to update to the Processor Boot Millicode Firmware lower list.
14. Click **Perform Action**.
15. Click **OK** when the Confirm Processor Boot Millicode Firmware Update dialog box appears.

    The Processor Parameter Input dialog box appears.
16. Enter the file location. Use the *$volume.subvolume.filename* ($SYSTEM.SYS*nn*) subvolume created during the most recent DSM/SCM Build/Apply and click **OK**. For example:

    ```
    $system.sys02.cpucode9
    ```

    As the firmware update is performed, information about it appears in the Progress List.
17. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and overall progress.

You must now reset the processors. See Reset the Processors To Complete Updating the Processor Boot Code (Both for OSM and TSM)

Reset the Processors To Complete Updating the Processor Boot Code (Both for OSM and TSM)

You must perform a Hard Reset action or equivalent (reload) of the processors *after* you have updated the processor boot code and if you did not use the explicit online boot code option in either TSM or OSM. Use the Hard Reset action (or Prime for Reload action) action from either the OSM or TSM LLL to terminate all processes running on a processor, stop the processor, clear the processor's memory, and reset the processor's internal mapping tables.

Note. You can also perform a hard reset using the TSM or OSM Low-Level Link on all processors when you perform a system load instead of using the Reset action. See The Reset Operation on page 11-8.

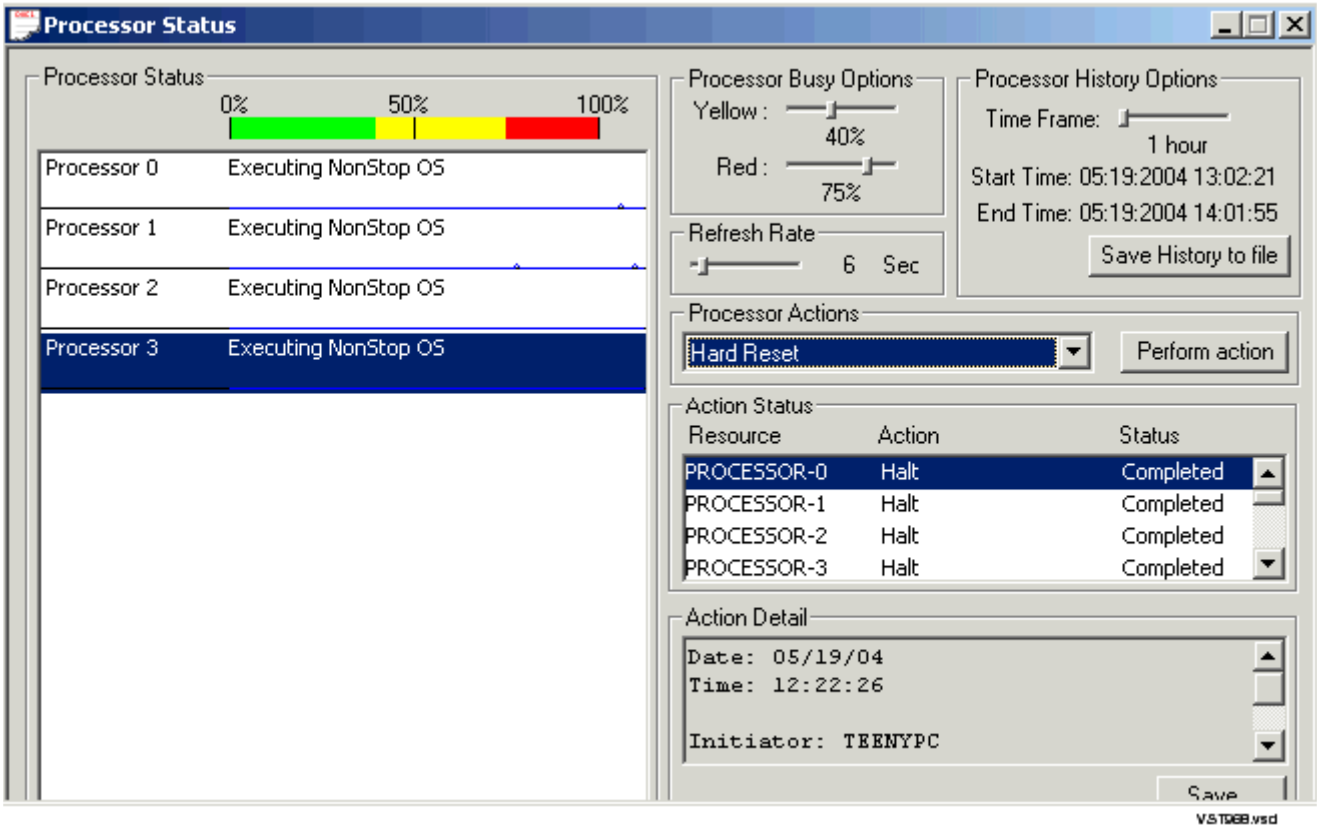
---

1. Log on to the server using the OSM Low-Level Link or TSM Low-Level Link Application.
2. On the toolbar, click **Processor Status**.

   The Processor Status dialog box appears.

3. Select the processor(s) that you want to halt.
4. From the Processor Actions list, select **Halt**.
5. Click **Perform action**.
6. Monitor status of the halt action. After the halt action has successfully finished, a completed message appears.
7. From the Processor Actions list, select **Hard Reset** and click **Perform Action**. For example:

△ **Caution.** *Do not* proceed until the Hard Reset action is completed because that could prevent the update from taking effect.



8. Reload the processor from the TACL prompt. See Reload the Remaining Processors (If Necessary) on page 11-6.
9. Repeat all steps for each processor in the system.

9

Updating SCSI Boot Code (Pre-G06.08 RVU)

This section describes how to check and, if necessary, update SCSI boot code for each PMF CRU in your system.

Note. Update SCSI boot code **only**:

- If instructed to do so by DSM/SCM
- If you are not replacing the PMF CRUs in your system while migrating to the G06.24 RVU.

Note. If you are migrating to the G06.24 RVU from an RVU *prior* to G06.08, you must update SCSI boot code *after* you perform the system load of the G06.24 RVU so that the TSM server software uses the default ISP firmware file IBOOT (introduced with the G06.08 RVU).

OSM can be installed only on G06.08 RVUs or later.Therefore, the IBOOT (T0503) file should already be installed. Instructions are provided when a new firmware file is introduced.

SCSI Boot Code Product Numbers

Use these SCSI boot code product numbers for the PMF CRUs to verify that the update to the new version is successful:

RVU	Released Product Number	Object Product Number	File Name
G06.07 and earlier	T1067	T1067	I1000
G06.08 and later	T0503	T1067 and T0480	IBOOT

Using TSM to Update SCSI Boot Code (If Necessary)

Before you update your firmware, verify that the system is up and running the G06.24 version of the NonStop Kernel operating system. This step is important if you are coming from a pre-G06.08 RVU.

1. If necessary, log on to the TSM Low-Level Link Application.
2. On the toolbar, click **Processor Status**.
3. The Processor Status should be *Executing NonStop OS*.
4. At a TACL prompt, use the VPROC command to verify and record the location and version of the SCSI boot code for the G06.24 RVU:

   Note. Version procedure dates might be different; these are examples only.

   >VPROC $SYSTEM.SYS*nn*.IBOOT

   where *nn* is the new operating system image subvolume. For example:

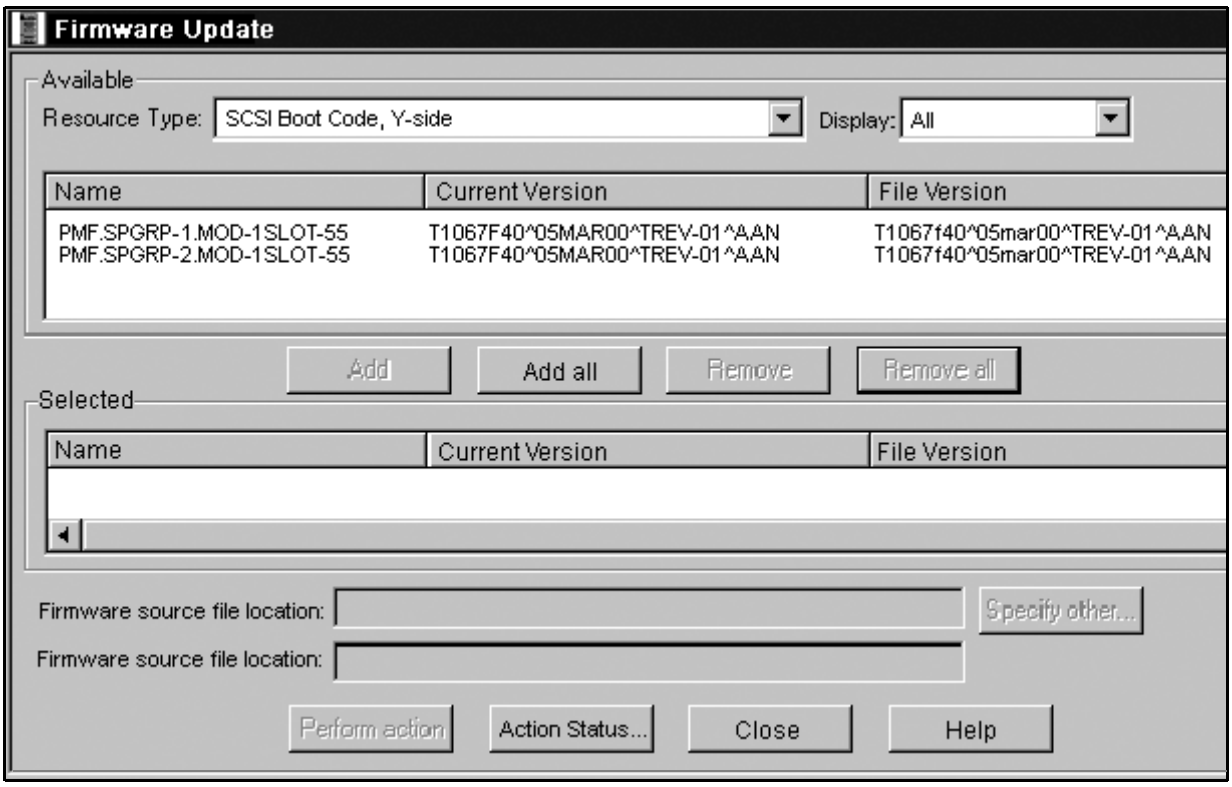
```
$SYSTEM SUPER 1> vproc $system.sys02.iboot
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \WARRIOR Date 21 SEP 2000, 13:50:43
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS02.IBOOT
     Binder timestamp:  11MAY2000 13:22:07
    Version procedure:  T1067F40^05MAR00^TREV=01^AAN
    Version procedure:  T0480G06^11MAY00^TREV=01^AAA
```

Note that the version procedures for I1000, I1040, and IBOOT do not have to match.

From the TSM Service Application, use the Firmware Update dialog box to update the SCSI boot code for each processor multifunction (PMF) customer-replaceable unit (CRU) in your system.

1. Select **Display>Firmware update** to display the Firmware Update dialog box.
2. From the Resource Type list, select **SCSI Boot Code, Y-side**.
3. From the Display list, select **All** to list the selected resources in the Available box. For example:



vst900.vsd

4. Select all resources that have a current version different from the file version recorded in SCSI Boot Code Product Numbers on page 9-1, and then click **Add** to move selected resources to the Selected box.

   If all firmware versions match, you do not need to perform the update for the selected fabric (X or Y). If you have not yet checked the firmware in the other fabric, repeat Steps 2 through 6. Otherwise, close the Firmware Update and Firmware Update Action Summary dialog boxes and resume the upgrade procedure as described in Section 12, Resuming Normal Operations.

5. Click **Perform action**.

   The update starts, and the Firmware Update Action Summary dialog box appears.

6. Monitor the status of the processor boot code update in the Firmware Update Action Summary dialog box.

   When the action status appears as *Completed*, the SCSI boot code update is finished.

7. Repeat Steps 2 through 6 to update the SCSI Boot Code, X-side.

   The Firmware Update Action Summary dialog box should confirm that all SCSI boot code for all PMF CRUs has been updated successfully.

8. Close the Firmware Update and Firmware Update Action Summary dialog boxes.

Using OSM to Update SCSI Boot Code (If Necessary)

Note. OSM can only be installed on G06.08 RVUs or later; thus the IBOOT (T0503) file should already be installed. Instructions are provided in case a new firmware file is introduced after the most current RVU is initially released.

1. Before you update your firmware, verify that the system is up and running the G06.24 version of the NonStop Kernel operating system:
2. If necessary, log on to the OSM Low-Level Link and select **Processor Status**.
3. Log on to the OSM Service Connection. Select **Display> Multi-Resource Actions**.
4. From the Resource Type list, select the appropriate resource.
5. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-Y**.
6. Select **Add All** or **Add** to add the SPs you want to update to the lower list.
7. Click **Perform action**.
8. Click **OK** when the Confirm SCSI Boot Code firmware Update dialog box appears.

   The SCSI Parameter Input dialog box appears.
9. Enter the new file location. Use the *$volume.subvolume.filename* created during the most recent DSM/SCM Build/Apply and click **OK**.

   As the firmware update is performed, information about it appears in the Progress list.
10. (Optional) Select **Action Summary** if a firmware update fails.
    a. Select the action that failed.
    b. Select **Details**
11. Repeat Steps 2 through 10 to update the SCSI Boot Code, X-side.

10 Running ZPHIRNM

During the Build/Apply phase, DSM/SCM places product files in their subvolumes with temporary (fabricated) file names so that the new file names do not conflict with the file names of currently running programs.

This section describes how to run the ZPHIRNM program on the target system to:

- Rename the files that currently have actual file names with fabricated names. These files become obsolete when the new files are renamed.
- Rename the new files, which have fabricated names, with their actual names.

Warning, error, and completion messages are written to a log file if you choose to create one. Error and completion messages are also displayed in the terminal-emulation window.

Alerts

- If you are upgrading to the G06.24 RVU, back up copies of TCP/IP configuration files in the ZTCPIP subvolume before running ZPHIRNM. (See Back Up (Copy) Files in the $SYSTEM.ZTCPIP Subvolume on page 10-2.)
- Applications that use files that are being replaced should not be running. To avoid any possibility of conflict, stop all applications, *except for the TMF* subsystem before running ZPHIRNM.
- You must have rename (purge) access to all files being renamed. Run ZPHIRNM as the super ID (255,255).
- If you are connected to an Expand network, you might see a message stating that the NonStop SQL file, ZZSQLCI2, was not renamed during ZPHIRNM. However, on further examination of the log file, you might find that ZPHIRNM did finally rename the file, in which case you can ignore the error message and continue.
- If you are using DSM/SCM to manage OSS files, ZPHIRNM notifies you if and when to run the `merge_whatis` command.

Back Up (Copy) Files in the $SYSTEM.ZTCPIP Subvolume

If you are upgrading to the G06.24 RVU, you *must* make backup copies of these files in the $SYSTEM.ZTCPIP subvolume before running ZPHIRNM, which overwrites them with sample versions.

You might need your previous versions for reference or for fallback:

- DNSBAK
- DNSBOOT
- DNSCACHE
- DNSHOSTS
- DNSLOCAL
- DNSREV
- DNREVBAK
- HOSTS
- NETWORKS
- PORTCONF
- PROTOCOL
- RESCONF
- SERVICES
- SMTPCONF

The file names of NonStop TCP/IPv6 that reside on the G06.24 SUT are:

- ztcpip.smplhost
- ztcpip.smplprot
- ztcpip.smplnetw
- ztcpip.smplport
- ztcpip.smplresc
- ztcpip.smplserv

Stop All Applications

Before running ZPHIRNM:

1. Stop DSM/SCM if it is still running. For example:

```
> VOLUME $dsmscm_vol.ZDSMSCM
> Run STOPSCM
STOP CNFGINFO server process $ZPHC
STOP DSM/SCM Pathway system $YPHI
PATHCOM $YPHI;SHUTDOWN !,WAIT
$Z02H: TCP TCP-H, STOPPED
$Z02H: TCP TCP-T, STOPPED
STOP DSM/SCM Alternate EMS Collector $ZPHI
```

   where $*dsmscm_vol* is the DSM/SCM volume.

2. Stop all other applications, *except* for TMF and the OSS file system.

The *NonStop Server S-Series Operations Guide* contains detailed information on stopping applications, devices, and processes in an orderly fashion.

Note. Your site might have macros or OSS shell scripts set up to start and stop applications, devices, and processes.

Drain the Spooler

Always use the SPOOLCOM;SPOOLER,DRAIN command to perform an orderly shutdown of the spooler. Failure to do so can cause problems during a warm start of the spooler.

Before executing the SPOOLCOM;SPOOLER,DRAIN command:

1. Use the `SPOOLCOM;COLLECT $collector-process, LISTOPENS` command to identify processes that currently have jobs open.
2. Use the `SPOOLCOM;JOB (STATE PRINT)` command to determine which jobs are currently printing.

Take the appropriate action to ensure that these jobs either terminate when finished or are stopped.

After receiving the SPOOLER DRAIN command, the supervisor stops accepting jobs for collection or printing (new opens are rejected with a file-system error 66—device downed). Each collector stops when it has no more open jobs. Each print process finishes printing any active jobs and then stops.

After all collectors and print processes have stopped, the supervisor process stops itself. The spooler enters the dormant state, ready to be warm started.

△ **Caution.** Never use the TACL STOP command to halt the spooler. The control file can be corrupted during the next warmstart or rebuild.

See Support Note S99086, *NSK Spooler—Migration and Draining Instructions*, for more information. You can also review Section 1 and Appendix H in the *Spooler Utilities Reference Manual*.

Back Up the Spooler Control Files

While the spooler environment is closed, back up the spooler control files. Backing up the spooler will render a known database from which you recover in case of a catastrophic spooler failure. Make sure that you Drain the Spooler on page 10-3.

```
BACKUP/OUTSPLBKUP/$TAPE,($SYSTEM.SPOOLER.*,$DATA01.SPOOLER.DATA),LISTALL
```

ZPHIRNM

During the Build/Apply phase, DSM/SCM places product files in their subvolumes with temporary (fabricated) file names so that the new file names do not conflict with the file names of currently running programs. The ZPHIRNM program renames files that currently have actual file names with fabricated names and renames new files, which have fabricated names, with their actual names. ZPHIRNM is run from the DSM/SCM subvolume.

Using ZPHIRNM PREVIEW Mode

You can do a preview run of ZPHIRNM to check that the target subvolumes (TSVs) and associated map files are consistent. Running ZPHIRNM in PREVIEW mode simulates the ZPHIRNM process without actually updating files or activating the configuration. In PREVIEW mode, ZPHIRNM indicates whether or not TMF needs to be up when running ZPHIRNM. For example, if no SQL program files need running, TMF is not required to be running along with the ZPHIRNM program. For example:

```
Total Number of files to be renamed.........................827
Number of files to be renamed back during undo processing....0
Process Time:
    Start........  1/20/01  8:18:56
    End .........  1/20/01  8:20:09
    Elapsed .....           0:01:14
Errors & Warnings:
  Total Errors .....       0
  Total Warnings ...       0
ZPHIRNM Preview for $SYSTEM.SYS00 finished successfully.
Note: TMF is not required to be running during the real ZPHIRNM
because no SQL program files need to be renamed.
```

PREVIEW mode also reveals most errors that ZPHIRNM would encounter if it were run. If errors are revealed, you can evaluate and correct them interactively.

The syntax for running ZPHIRNM in PREVIEW mode is (from the DSM/SCM subvolume):

```
> RUN ZPHIRNM [$vol.]SYSnn , PREVIEW [STRICT] [,option] ...
```

If you enter a RUN ZPHIRNM command with no arguments, ZPHIRNM help text displays information about PREVIEW mode. For more information, see the *DSM/SCM User's Guide*.

Steps for Running ZPHIRNM

1. At a TACL prompt, enter this command from the DSM/SCM subvolume:

   ```
   > RUN ZPHIRNM $vol.SYSnn
   ```

   where:

   - *$vol* specifies the default current system load volume, usually $SYSTEM.
   - SYS*nn* specifies the subvolume to which you just applied software. The SYS*nn* subvolume must match the activation SYS*nn* that you specified earlier during the Build/Apply phase.

2. When asked if you want to use a log file with the session, enter **Y**.
3. When prompted, enter a file name for the log file.

   For example:

   ```
   6> run zphirnm $system.sys00

   DSM/SCM Utility - ZPHIRNM - T6031D31 - (31MAY2001)
   Copyright Compaq Computer Corporation 1993-2001

   Do you want to use a log file with this session? (Y/N): y

   You may use any file for logging.  If you request to use a disk
   file that doesn't exist, it will be created as an edit file.

   Please enter a filename: elist00

   Log file is open, Zphirnm will now begin processing.
   ```

   ZPHIRNM begins processing and provides status of its progress.

For managing OSS files, you might see a display similar to:

```
OSS:


 Directories:


   Directories in new configuration ..................      110
   Directories in old configuration ..................      110

   Directories in new configuration only .............        0
   Directories in old configuration only .............        0
   Directories shared by new and old configurations ..      110

   Directories processed in new config ...............      110
   Directories processed in old config (obsolete) ....        0

 OSS files Processed:

   Files processed in new configuration ...................      2144
   Files processed in new configuration only .....................2144
   Files processed in old configuration only .....................   0
   Files processed that are shared by new and old configuration .   0
   Files processed & unchanged between new and old configuration    0
   Files processed in obsolete TDLs ..............................  0


   Files renamed from real name to fabricated name ..............   0
   Files renamed from fabricated name to real name ..............  441
   Files renamed from real name to fabricated (ZPG) name ........  381
   Files renamed from fabricated name to fabricated (ZPG) name ..   0


                                                                  -------
   Total Number of files renamed ................................  822


   Number of files renamed back during undo processing ..........    0

  Process Time:


    Start ....... 11/11/02 17:34:36

    End ......... 11/11/02 17:41:14

    Elapsed .....           0:06:38

Errors & Warnings:


  Total Errors .....       0

  Total Warnings ...       0


Note: merge_whatis needs to be run to update the man pages.  Files in a
      whatis.frag directory have changed.

ZPHIRNM for $SYSTEM($WHIT4).SYS01 finished successfully.
```

4. Run the OSS `merge_whatis` command. (The `merge_whatis` command is a shell script in `/bin` that creates and updates the `whatis` database used by the OSS `shell man`, `apropos`, and `whatis` commands.) You might have a shell script that runs either one or both of the following, depending on your OSS environment:

   ```
   /bin/merge_whatis
   ```

   ```
   /bin/merge_whatis /nonnative/usr/share/man
   ```

   The CISC version of the c89(1) man page resides in the `/nonnative` directory.

Note. You can run the Pcleanup utility on any file that is managed and audited by DSM/SCM before running the `merge_whatis` command. However, the OSS utility, Pcleanup cleans up OSS files, *but not* DSM/SCM files in the OSS file system. Only the DSM/SCM CLEANOSS macro cleans up DSM/SCM files in the OSS file system. The CLEANOSS macro is run only if you fall back and then migrate *again* to a T6031D46 product version. During a Build/Applly, DSM/SCM automatically prompts you to run the CLEANOSS macro.

---

   a. Log on to OSS as the super ID (255,255).

      ```
      Current volume is $SYSTEM.STARTUP
      $SYSTEM STARTUP 1> osh
      ```

   b. Change directory using the `cd` command. For example:

      ```
      /G/SYSTEM/STARTUP: cd /usr/share/man
      ```

   c. Run the `merge_whatis` command:

      ```
      /usr/share/man: merge_whatis
      ```

   d. Enter the list (`ls`) command. For example:

      ```
      /usr/share/man: ls
      cat1            cat4            cat7            whatis.frag
      cat2            cat5            cat8            whatis_old
      cat3            cat6            whatis
      /usr/share/man:
      ```

      After you run `merge_whatis`, the directory will contain a file named `whatis`, containing the database. If you have previously installed OSS, a file named `whatis_old` is present, containing the previous version of the database.

5. If necessary, you can compare the creation dates of the `whatis` file to the `whatis_old` file to see if any changes occurred:

   a. Run the `more` command against the `whatis` file:

      ```
      more  /usr/share/man/whatis
      ```

   b. After reviewing the displayed file, exit by entering q at the percentage (%) prompt.

c. Repeat Steps a. and b. for the `whatis_old` file.

Verify That ZPHIRNM Ran Successfully

1. Review the log file.
2. If ZPHIRNM did not run successfully, correct whatever problems occurred and run it again.

   Two types of error and warning messages are issued during the renaming process:

   - If a **fatal** error occurs, ZPHIRNM immediately issues an error message and stops.
   - A **nonfatal** error is one that affects processing only for a single subvolume. If a nonfatal error occurs, ZPHIRNM issues an error message and attempts to restore the subvolume it is currently processing to its original state.
     - If the subvolume is successfully restored, ZPHIRNM continues with the next subvolume.
     - If the subvolume cannot be restored, ZPHIRNM issues an additional error message and continues with the next subvolume.
     - If the subvolume was successfully processed, you can ignore warning messages.

   See the *DSM/SCM User's Guide* for troubleshooting procedures and the *DSM/SCM Messages Manual* for a complete list of ZPHIRNM messages.

11 Loading the G06.24 RVU

This section describes how to load the G06.24 version of the NonStop Kernel operating system into the memory of each processor in a NonStop S-series server.

Unless OSM is installed and configured, TSM is used to load the system processors.

Alerts

Before performing a system load:

- Before halting the processors, stop any applications that are still running, including TMF.

  Note. To stop TMF, at a TACL prompt, enter:

  ```
  5> TMFCOM STOP TMF
  ```

  The *NonStop S-Series Operations Guide* contains detailed information on the best methods for stopping applications, devices, and processes.

- Do not close the System Startup dialog box while startup is in progress. If you attempt to close the dialog box, a message dialog box appears to alert you that the system startup process will be stopped if you continue.
- If you stop a system startup before it has finished, the state of your system will be unpredictable. You might need to perform another system startup to enable the system to resume normal operation.
- If you must stop the system startup process, click **Abort**. (The abort process should take effect within 30 seconds.)
- If OSM is installed and configured, use OSM to load the G06.24 RVU.
- Load the G06.24 RVU only on the primary disk in case there is something wrong with the disk bootstrap code.
- Before a system load, you might have to run the SCF ALTER command for correct placement of EMS templates:

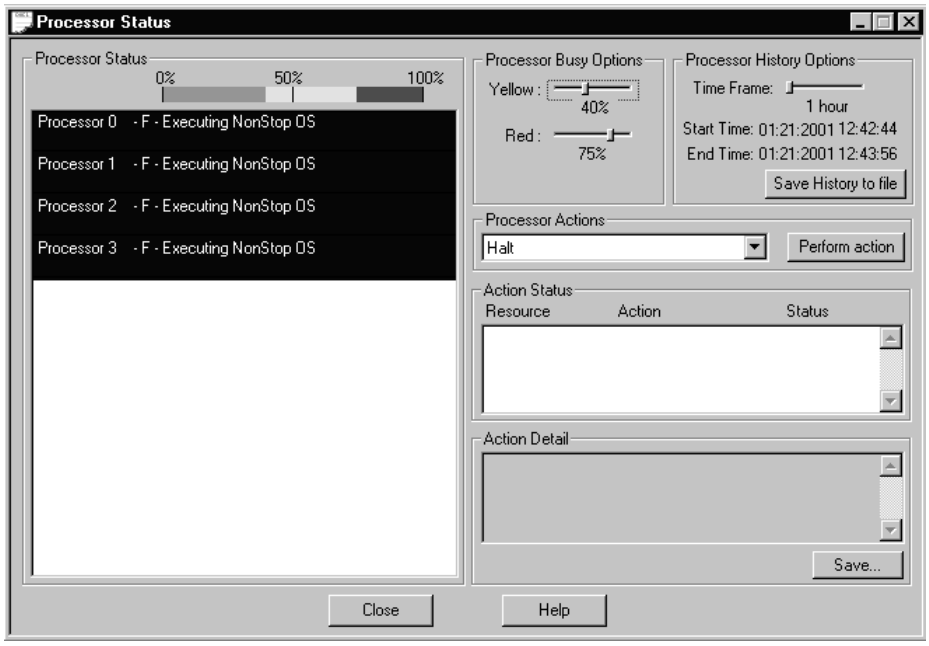
  ```
  -> ASSUME SUBSYS $ZZKRN
  -> ALTER, RESIDENT_TEMPLATES $SYSTEM.SYSTEM.RTMPLATE, &
     NONRESIDENT_TEMPLATES $SYSTEM.SYSTEM.TEMPLATE
  ```

Halt the Processors

1. If necessary, log on to the TSM Low-Level Link Application or the OSM Low-Level Link.

   The following steps are similar whether you are using the TSM or OSM Low-Level Link:

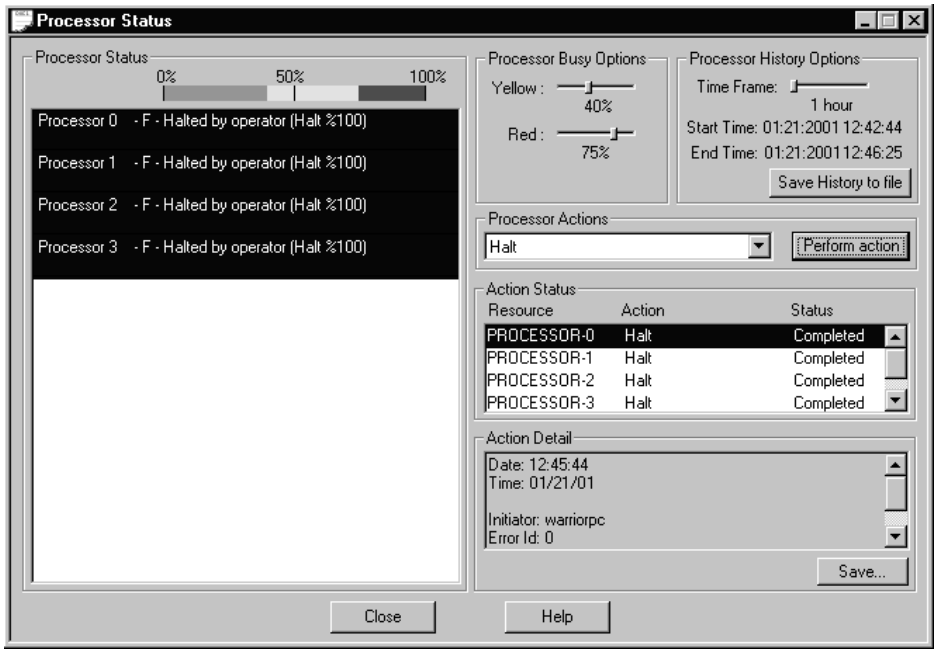
2. On the toolbar, click **Processor Status** to display the Processor Status dialog box.
3. In the Processor Status box, select all processors.
4. From the Processor Actions list, select **Halt**. For example:



VST800.vsd

5. Click **Perform action**.
6. Click **OK** when asked “Are you sure you want to do Halts?”

7. When the Action Status box confirms that all processors have halted, close the Processor Status dialog box. For example:



VST830.vsd

8. Close the OSM Service Connection or TSM Service Application window and any OutsideView windows, but do not log off of the OSM or TSM Low-Level Link Application; you will use it to perform a system load in the next procedure.

Replace Processor or Other System CRUs

Note. If you are using TSM as the default, guided procedures for CRU replacement will not perform correctly during online disk remirroring (ODR). However, when you stop $ZTSM and restart it, TSM will rediscover the entire system (including the disk pair on which ODR was run). TSM then displays correctly the current system information.

After you halt all the processors in the system, you have an opportunity to replace or upgrade CRUs in your system (for example, replacing existing PMF CRUs with NonStop S78000 or S88000 PMF CRUs).

System Load Using the TSM or OSM Low-Level Link

The operating system is loaded from disk into the memory of one processor. (This operation is sometimes also called a device load or cold load.) All possible paths to processor 0 are tried. If these fail, all possible paths to processor 1 are tried.

The remaining processors are loaded by commands in the CIIN file. The initial TACL process stops after executing the CIIN file.

1. If necessary, log on to the Low-Level Link.
2. Start the system by clicking **Start System**.

   The System Startup dialog box appears.
3. In the **SYSnn** text box, enter the number of the system subvolume containing the version of the operating system that you want to load.

   The number of the SYS*nn* last used to start the system is displayed as the default. Enter the correct two-digit number to load the new version of software stored in the SYS*nn* subvolume on the system disk.

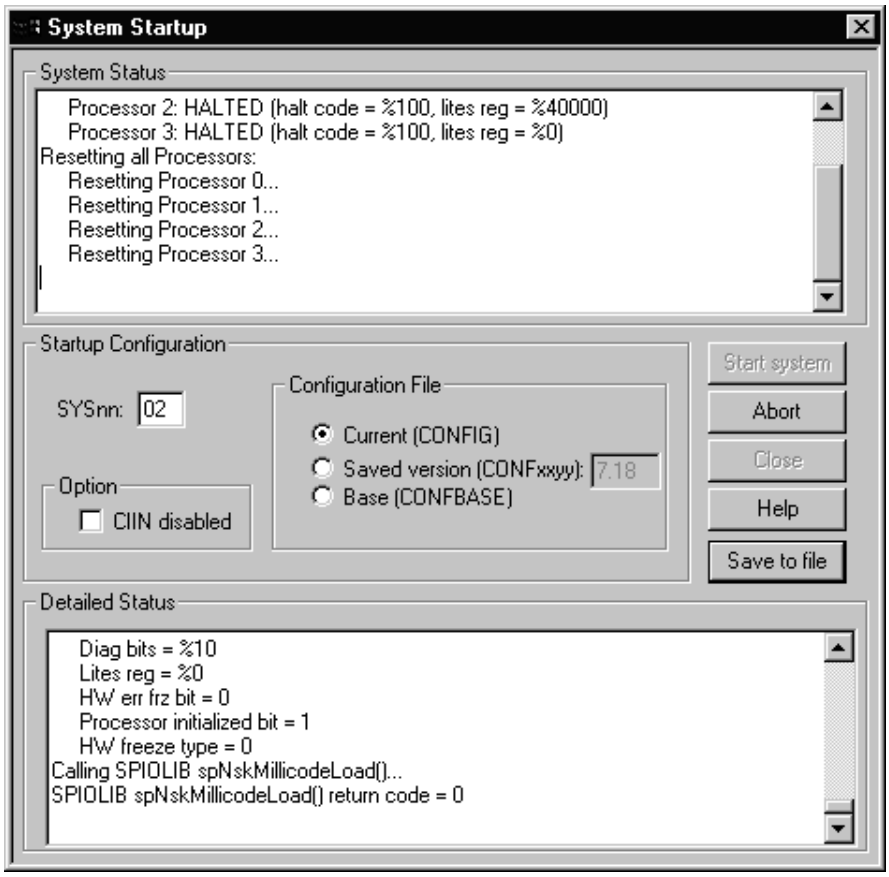
   Note. The System Startup dialog box requires that the primary and mirror system disks ($SYSTEM) are installed in Group 01, Module 01, slots 11 and 12. If the system load fails along one load path, another load path is tried until the system load is successful. To start your system with a system disk in disk slots other than 11 and 12, use the Processor Status dialog box, Load action, to access the Load Processor-*n* from Disk dialog box. This dialog box allows you to type the group, module, and slot number of the disk from which you want to load. (It does not try alternate paths or alternate disk slots.) See the *NonStop S-Series Operations Guide* for more information.

   ---
4. Under Configuration File, select **Current (CONFIG)**.

   Current (CONFIG) is the default configuration and represents the last running configuration.
5. Verify that the **CIIN disabled** option is *not* selected.
6. Click **Start system**.

   During system load, two startup event stream windows and two startup TACL windows are automatically launched on the system console configured to receive them.

7. Monitor the System Status (which contains initial high-level messages) and Detailed Status (which contains low-level messages) boxes. For example, as shown in TSM:



VST810.vsd

Messages indicate the progress and completion of the system load and the reload of any processors configured in the CIIN file to start. When the processors are reset and primed, and the system load of the first processor is finished, this message appears:

```
SYSTEM STARTUP COMPLETE, NSK RUNNING ON PROCESSOR n
```

8. Close the System Startup dialog box.

Reload the Remaining Processors (If Necessary)

After the first processor is loaded, the initial TACL process automatically invokes the CIIN file unless the CIIN file is disabled. The CIIN file contains commands that establish the permanent TACL process pair for the system console. The CIIN file might also contain commands to reload all processors.

The reload operation copies the operating system into other processors in the system after the first processor has been successfully loaded from disk (by the system load).

If the CIIN file does not contain the commands to reload all processors, after processor 0 or processor 1 is successfully running the G06.24 NonStop Kernel, use the RELOAD command to reload the remaining processors in the system.

At a TACL prompt on the system console OutsideView session window, log on to the system as a super-group user (255,*n*) and enter:

```
RELOAD nn
```

where *nn* is the number of the processor(s) you want to reload.

If the reload is initiated successfully, this message appears:

```
PROCESSOR RELOAD: nn
```

This example shows the RELOAD command for a four-processor system:

```
9> reload (1,2,3)

NONSTOP OS  PROCESSOR RELOAD - T9050G06 - (01MAY98)

Reload 1: Fabric: 0 (X)
Reload 2: Fabric: 0 (X)
Reload 3: Fabric: 0 (X)
Checking reloadee cpu(s) state.
Sent reload start-up packet to cpu 1
Sent reload start-up packet to cpu 2

Sent reload start-up packet to cpu 3
Sending OSIMAGE pages to Reloadee(s)
Integrating cpu 1
Starting system services on cpu 1
PROCESSOR RELOAD: 1
Services started successfully
Integrating cpu 2
Starting system services on cpu 2
PROCESSOR RELOAD: 2
Services started successfully
Integrating cpu 3
Starting system services on cpu 3
PROCESSOR RELOAD: 3
Services started successfully
```

```
CPU 1: reloaded.
CPU 2: reloaded.
CPU 3:  reloaded.
```

Check the Status of the Processors

1. Check the status of the processors to verify that they are all executing the NonStop Kernel.
2. From the OSM Low-Level Link or the TSM Low-Level Link window toolbar, click **Processor Status** to display the Processor Status dialog box.
3. When all processors are executing the NonStop Kernel, continue with the upgrade procedure.

Recovery Operations for System Load

If the system load operation from the newly updated disk fails in any way:

1. Use the halt codes that appear in the OSM Low-Level Link or TSM Low-Level Link System Startup dialog box to determine how to proceed.

   For descriptions of these halt codes, see the *Processor Halt Codes Manual*.
2. If you still cannot perform a system load after following the halt code instructions, try using the unchanged mirrored system disk to load the system.

Note. The *NonStop S-Series Operations Guide* contains additional instructions on troubleshooting and recovery operations if the following problems occur when you start a system:

- Startup event stream and TACL windows do not appear.
- The CIIN file is not invoked during system startup.
- Processor reload fail.
- System load fails.

Performing a System Load From the Mirror System Disk

1. Through the OSM Low-Level Link or the TSM Low-Level Link Application, power off the primary system disk drive.
2. Check that the green power-on LED on the primary system disk drive is not lit.
3. Continue with the steps under System Load Using the TSM or OSM Low-Level Link on page 11-4.

Because the primary system disk is powered off, the system load is forced to use the mirror disk half (normally, the disk with the latest disk label timestamp is used, and the other disk half is placed in a STOPPED state). The system load uses the mirror disk regardless of its state when the system was stopped.

Note. If you are loading your system with a system disk in disk slots other than Group 01, Module 01, slots 11 and 12, you must go through the Processor Status dialog box, Load action, to access the Load Processor-*n* from Disk dialog box. Type the group, module, and slot number of the mirror disk half from which you want to load. See the *NonStop S-Series Operations Guide* for more information.

The Reset Operation

The Reset operation terminates all processes running on a processor, stops the processor, and places the processor in a known state, ready for a Prime for Reload or Load action.

1. If necessary, log on to the OSM Low-Level Link or the TSM Low-Level Link Application.
2. From the toolbar, click **Processor Status** to display the Processor Status dialog box.
3. From the Processor Status list, select the processors you want to reset.
4. From the Processor Actions list, select **Reset**.
5. Click **Perform action**.
6. From the Action Status display, monitor the status of the Reset action. After the reset has finished successfully, a completed message appears.

If the reset fails, retry the action. If the action fails a second time, try the Hard Reset action first. Use the Hard Reset action *only if* the Reset action fails.

△ **Caution.** Performing a hard reset on a processor results in an unrecoverable loss of data. Use the Hard Reset action only to prepare for reloading the processors**.**

If the hard reset fails, contact your service provider or the Global Customer Support Center (GCSC).

12 Resuming Normal Operations

Several tasks must be performed after system load before you can resume normal system operations, as described in this section.

- Update TCP/IP Configuration Files
- Check Processor Status (Using TSM or OSM)
- Perform Other Firmware Updates
- Configure the Spooler
- Start User and System Applications
- Reset and Start the Mirror System Disk (If Necessary)
- Configure Specific Products (Post-System Load)

Update TCP/IP Configuration Files

Note. You must have all the TCP/IP configuration files in your $SYSTEM.ZTCPIP subvolume. Otherwise, applications dependent on proper network connections will fail.

Alerts:

- See Back Up (Copy) Files in the $SYSTEM.ZTCPIP Subvolume on page 10-2.
- For the DSM/SCM Planner Interface to be operational, the PORTCONF file must have the correct entry for DSM/SCM. The SERVICES file must have an entry that specifies DSM and its corresponding port number.
- Keep your current PROTOCOL file in your $SYSTEM.ZTCPIP subvolume. Update it with the new lines from the sample PROTOCOL file (SMPLPROT).

Step 1: Copy the Sample TCP/IP Files into $SYSTEM.ZTCPIP (Optional)

You need to copy the sample files *if you do not have* any of the following TCP/IP configuration files in your $SYSTEM.ZTCPIP subvolume:

- HOSTS
- PROTOCOL
- NETWORKS
- PORTCONF
- RESCONF
- SERVICES

Perform a FUP DUP operation to rename the sample configuration files from the G06.24 SUT to the real file name.

Note. Only copy these configuration files *if* you do not already have versions of these files.

Depending on your applications, if you copy the configuration files, you might have to insert previous network port information into each individually copied file.

The sample configuration files are named:

- SMPLHOST
- SMPLPROT
- SMPLNETW
- SMPLPORT
- SMPLRESC
- SMPLSERV

To copy the sample files:

```
>FUP DUP $SYSTEM.ZTCPIP.SMPLHOST, $SYSTEM.ZTCPIP.HOSTS
>FUP DUP $SYSTEM.ZTCPIP.SMPLPROT, $SYSTEM.ZTCPIP.PROTOCOL
>FUP DUP $SYSTEM.ZTCPIP.SMPLNETW, $SYSTEM.ZTCPIP.NETWORKS
>FUP DUP $SYSTEM.ZTCPIP.SMPLPORT, $SYSTEM.ZTCPIP.PORTCONF
>FUP DUP $SYSTEM.ZTCPIP.SMPLRESC, $SYSTEM.ZTCPIP.RESCONF
>FUP DUP $SYSTEM.ZTCPIP.SMPLSERV, $SYSTEM.ZTCPIP.SERVICES
```

Step 2: Check the PROTOCOL File

△ **Caution.** Even if you are running TCP/IPv6 in IPv4 or conventional TCP/IP mode, you must make sure that the PROTOCOL file contains ipv6 and icmpv6 entries. If these entries are absent, a network failure might occur because the new socket routines present in TELSERV, LISTNER, and FTP access the entries in the PROTOCOL file.

If the PROTOCOL configuration file exists in $SYSTEM.ZTCPIP, you must add two lines from the sample PROTOCOL file (SMPLPROT). Find the lines in SMPLPROT from the SUT that refer to IPV6 and ICMPV6 and copy those lines into your $SYSTEM.ZTCPIP.PROTOCOL file. For example:

```
12> TYPE SMPLPROT
#
# @(#)protocols 1.1 Tandem
#
# Internet (IP) protocols
# This file is never consulted when the yellow pages are running
#
ip              0        IP      # internet protocol, pseudo protocol
number
icmp          1        ICMP    internet control message protocol
ggp           3        GGP     gateway-gateway protocol
tcp           6        TCP     transmission control protocol
pup           12       PUP     PARC universal packet protocol
udp           17       UDP     user datagram protocol
```

```
ipv6          41        IP       internet protocol for v6
icmpv6        58        ICMP     internet control message protocol for v6
```

Step 3: Ensure That PORTCONF and SERVICES Files Are Complete

The PORTCONF file specifies the ports that the LISTNER process listens to and the corresponding server program it invokes when the request comes in.

If you copied files as documented in Step 1, for the DSM/SCM Planner Interface to work, you must add a services line corresponding to DSM/SCM in the PORTCONF file (shown in bold lettering) and save the file. If you did not copy the files as documented in Step 1, no action is necessary. An example of the PORTCONF file:

```
58> type portconf
#
# This file tells the listner program which ports to
# listen to, and what programs to run
# Telnet is directly, and does not use the listner's
# services.
# To run the listner use:
#       $system.ztcpip.listner / name.../ [config-file-name]
#  where config-file-name is this file.
#

ftp       $system.ztcpip.ftpserv
finger    $system.ztcpip.fingserv
          $system.ztcpip.echoserv
phiwsock  $tdsv.zdsmscm.pdpexe
```

Applications use the SERVICES file to retrieve the service port numbers and service names. If you copied files as documented in Step 1, check that the last lines of the SERVICES file have an entry similar to the following:

```
phiwsock        1089/tcp                #DSM/SCM Planner Interface
```

For DSM/SCM, the port number is user-definable. The setup default is 1089. In the ZDSMSCM subvolume, you can check the INITSTAT file for the recently configured TCP/IP port number. INITSTAT is created by DSM/SCM when INITENV is run.

Reconfigure System Console Applications

Note. You can have both the TSM client and the OSM client-based components on your system consoles. However, to avoid duplicate dial-outs, use either the OSM Notification Director (ND) or TSM Notification Director, but *not* both.

Using TSM to Reconfigure Primary and Backup Dial-Out Points

See the TSM client software online *TSM Configuration Guide* or the TSM Notification Director Application online help for information on reconfiguring the primary and backup dial-out points.

Using TSM to Reconfigure Your Site Contact Information

Use the TSM Notification Director Application to configure your site contact information. See the *TSM Configuration Guide* or the TSM Notification Director Application online help for more information.

Using OSM (If Installed) to Reconfigure Site Contact Information and Backup Dial-Out Points

Perform this step if you want to use OSM when it is already installed and configured on both the server and client side. See the OSM Notification Director online help for more information.

Check Processor Status (Using TSM or OSM)

Before you update firmware, verify that all processors in the system are up and running the G06.24 version of the NonStop Kernel operating system:

1. If necessary, log on to the TSM Low-Level Link or the OSM Low-Level Link Application.
2. Check processor status by selecting **Processor Status**.

   The Processor Status should be *Executing NonStop OS*.

Perform Other Firmware Updates

Update SWAN and SWAN 2 CLIP Firmware

If you have a ServerNet wide area network (SWAN) concentrator connected to your NonStop S-series server, follow the instructions in Appendix C, Updating SWAN Concentrator CLIP Firmware, to update the CLIP firmware after doing a system load of the G06.24 RVU.

If you have a SWAN connected to your NonStop S-series server, you can update CLIP firmware in either of two ways:

- Use the SWAN Fast Firmware Update guided procedure. (HP recommends this method if you are using TSM.)

  Note. The SWAN Fast Firmware Update guided procedure is supported only on G06.13 and subsequent RVUs. You can use it for both SWAN and SWAN 2s. However, OSM does not support the SWAN Fast Firmware Update procedure.

- Use the Firmware Update dialog box in the TSM Service Application or use the Multi-Resource Actions dialog box in the OSM Service Connection.

Note. If you have to fall back to a previous G-series RVU, do not revert back to previous versions of SWAN CLIP firmware. If you must fall back, keep the firmware change.

Update NonStop ServerNet Switch Firmware

If you have a 6780 ServerNet Switch in your system, you must use OSM to update the firmware ServerNet Switch. For up-to-date SPRs, see Scout for NonStop Servers. For information on the 6780 ServerNet switch installation, see the *ServerNet Cluster 6780 Planning and Installation Guide.*

Update ServerNet Adapter Firmware

Updateable firmware in most ServerNet adapters can be managed automatically by higher-level system software, if the corresponding “autofirmup” attribute is set to “on” using SCF (the default when a ServerNet adapter is added to a system). If you choose to disable the autofirmup attribute of these adapters, then you must use either the TSM Service Application or the OSM Service Connection to manage them yourself:

- ATM 3 ServerNet adapter (ATM3SA)
- Ethernet 4-Port ServerNet adapter (E4SA)
- Fast Ethernet ServerNet adapter (FESA)
- Gigabit Ethernet ServerNet adapter (GESA-C and GESA-F)
- Token-Ring ServerNet adapter (TRSA)
- 6763 Common Communication ServerNet adapter (CCSA)
- Gigabit Ethernet 4-Port adapter (G4SA)

- Fibre Channel ServerNet adapter (FCSA)

Note that the ServerNet/FX and ServerNet/FX 2 adapters do not have the autofirmup feature. Use either the TSM Service Application, or if installed, the OSM Service Connection. Only an HP service provider is authorized to install and configure an FCSA and G4SA.

Update ServerNet/FX and ServerNet/FX2 Firmware (Overview)

ServerNet/FX and ServerNet/FX 2 adapters cannot be managed automatically through the autofirmup feature.

The FOX ring consists of two fiber-optic rings for fault tolerance. In each NonStop S-series server, two ServerNet/FX (FXSA) or ServerNet/FX 2 adapter (FXSA2) field-replaceable units (FRUs) are installed:

- The FOX-X controller connects to the FOX-X ring.
- The FOX-Y controller connects to the FOX-Y ring.

On the ServerNet side, one FXSA/FXSA2 FRU connects to the ServerNet X fabric, and the other FXSA FRU connects to the ServerNet Y fabric. The ServerNet/FX is considered a field-replaceable unit because of the necessary fiber-optic cable connection.

If you are currently running a T0059AAB version (released in G05.00) of ServerNet/FX firmware (**`T0059G05^19MAR98^04MAR98`**), you do not need to upgrade ServerNet/FX FRUs.

To Load the FXSA or FX2SA Firmware (Using TSM)

1. Use SCF to stop the FXSA or FXSA2 FRU.
2. Log on to the TSM Service Application.
3. Select **Display> Firmware Update**.
4. From the Resource Type list, select **ServerNet/FX FRU**.
5. From the Display list, select **All** and then click **Add All**.
6. Click **Specify other** to specify the firmware source file location.
7. Click **Perform action** to start the firmware update process.

When the process is finished, the TSM Action dialog displays *Completed* and confirms that FOX firmware is updated.

To Set a Cluster Number (Using TSM)

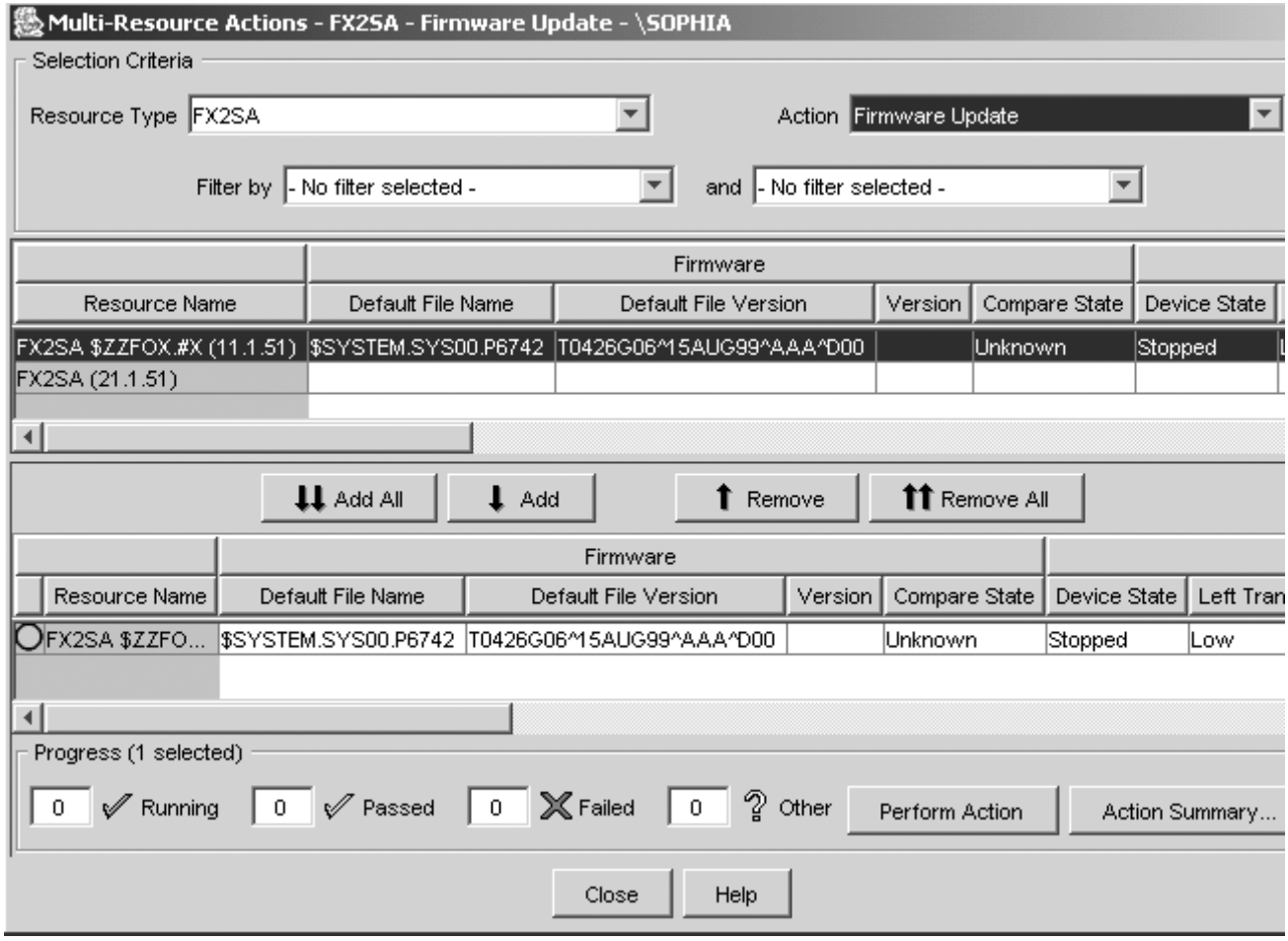
1. In the TSM Management window, select the FXSA FRU.
2. Select **Display> Actions** to display the TSM Actions dialog box.
3. Select **Set FOX Cluster Number** and then click **Perform Action**.
4. Select an integer number from 1 through 14 for a new cluster number, making sure that it is different from the current cluster number.
5. To start the FXSA FRU, click **Start** and then click **Perform Action**.
6. When the process is finished, the TSM Action dialog box displays *Completed,* and the new cluster number appears in the Attributes box.

For detailed instructions, see the *ServerNet/FX Adapter Configuration and Management Manual*.

To Load the FXSA or FX2SA Firmware (Using OSM)

1. Log on to the OSM Service Connection.
2. Select **Display>Multi-Resource Actions**.
3. In the Multi-Resource Actions dialog box, select **FXSA** or **FX2SA** from the Resource Type list.
4. If any of the FXSA or FX2SA FRUs are down-rev, check the Device State attribute for those FRUs. If any of them need to be stopped, select **Stop** from the Action list. (You can also use SCF to stop FXSA or FX2SA FRUs).

5. Click to highlight (shift-select to highlight multiple) FRUs to be stopped and click **Add** to move them to the lower resource list. For example:



VST450.vsd

6. After moving all FXSA or FX2SA FRUs to be stopped to the lower resource list, click **Perform Action**.

   Note. The associated LBU is also stopped.

7. When the FRUs are in the Stopped state, select **Firmware Update** from the Action list and click **Perform Action** to update the firmware for any FRUs listed in the lower resource list.

Confirmation dialog boxes prompt you to enter an (optional) alternative to the default file location. The Progress bar at the bottom of the Multi-Resource Actions dialog box tracks the success or failure of each action. (Click **Action Summary** to get details on failed actions).

8. Upon successful completion of the firmware updates, select **Start** from the Action list to start selected FRUs (and their associated LBUs).
9. Use the Actions dialog box or the Multi-Resource Actions dialog box to set the FOX cluster number.

Configure the Spooler

Depending on the RVU from which you are upgrading, the spooler might require some configuration. (Starting with the G06.00 RVU, a new control file was introduced in T9101D46. Although it is still a type 128 file, internally it is considerably different from the format of product versions released prior to T9101ADM). To ensure that you can use a previous version of spooler, always back up the control files and the collector files for that version before warm starting the new product version of spooler (see Spooler (G06.00 through G06.19) on page 1-33).

Note. See Hotstuff HS02440 for information on warm starting the spooler after migration from a product version prior to D41 to a D46 product version of the spooler if you are unable to delete old jobs from the spooler subsystem.

For detailed instructions on configuring the spooler, see the *Spooler Utilities Reference Manual*, Appendix H.

Starting with G06.19, the spooler SPR T9101AEY or later is installed by DSM/SCM with CSPOOL set to HIGHPIN ON. If you want spooler to run at LOWPIN, set HIGHPIN to OFF by using the BINDER command:

```
CHANGE HIGHPIN OFF IN CSPOOL
```

See Support Note S03006A.

Start User and System Applications

You can now start your application software. Follow your site's procedures for executing the system configuration and startup (command) files to accomplish this.

DSM/SCM is often started automatically by a system command file. If not, you must start it manually as described next.

Before Starting DSM/SCM

Initialize SQL

1. Check that TMF is started:

   ```
   > TMFCOM STATUS TMF
   ```

2. Save a copy of the existing ZZSQLCI2 file on the $SYSTEM disk. For example:

   ```
   > FUP DUP $SYSTEM.SYSTEM.ZZSQLCI2,$SYSTEM.BKUPZSQL.*, SAVEALL
   ```

3. Enter:

   ```
   > SQLCI INITIALIZE SQL; EXIT;
   ```

4. Copy the ZZSQLCI2 file saved previously back to the $SYSTEM disk. For example:

   ```
   > FUP DUP $SYSTEM.BKUPZSQL.ZZSQLCI2, $SYSTEM.SYSTEM.*, SAVEALL
   ```

Note. ZZSQLCI2 is a temporary file that contains the SQLCI2 program. SQLCI2 is the process through which the NonStop SQL/MP conversational interface (SQLCI) communicates with the NonStop SQL/MP executor to request various functions. After SQL initialization is complete, ZZSQLCI2 is renamed and becomes the permanent SQLCI2 program.

HP recommends that you always have a current backup copy of the $SYSTEM.SYSTEM.ZZSQLCI2 file in case you need to initialize SQL later for some reason. If you cannot find a copy of ZZSQLCI2 on the $SYSTEM disk, use DSM/SCM to Export the file from the software archive. (ZZSQLCI2 is a component file of the TSQLCI2 product, T9198.)

For more information, see the *SQL/MP Installation and Management Guide*. For information on exporting the file from the Archive, see the DSM/SCM online help.

Cold Start the Pathway Configuration

1. Verify your current configuration against the cold start configuration in PATHHOST (or PATHTARG) to check that the current configuration reflects all changes you have made.
2. Run the PATHCOLD macro from the ZDSMSCM subvolume to cold start the Pathway configuration.

Start DSM/SCM

1. Run the STARTSCM macro from the ZDSM/SCM subvolume to start DSM/SCM:

```
> RUN STARTSCM
```

These messages appear:

```
8> startscm
DSM/SCM Process Startup Function - STARTSCM - T6031D46 - (31MAR2003)
Copyright Hewlett Packard Development Company L.P. 1993-2003


NOTICE:     * If the hometerm chosen during INITENV, $zhome,
            * is not currently in a paused state, STARTSCM and DSM/SCM
            * server processes may hang indefinitely.  Be sure this
            * hometerm has been paused!

PATHWAY CONTROL FILE DATED: 21 APR 2003, 03:52:16
$Z03N: WARN   - *1079* SERVER CB-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER IS-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER MISERVER, NO STATIC SERVERS DEFINED
$Z03N: SERVER OM-001, STARTED
$Z03N: SERVER SM-001, STARTED
$Z03N: SERVER SM-T-001, STARTED
$Z03N: SERVER T9154-HELP-SERV, STARTED
$Z03N: WARN   - *1079* SERVER TA-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER TISERVER, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER US-001, NO STATIC SERVERS DEFINED
$Z03N: TCP TCP-H, STARTED
$Z03N: TCP TCP-T, STARTED
```

Because the $ZHOME reliable home-term process is not an interactive process and is always paused, no action is necessary.

2. Press **Enter** to have STARTSCM run the IP6031 TACL macro automatically. This step takes several minutes.

Reset and Start the Mirror System Disk (If Necessary)

△ **Caution.** If you updated the disk boot code, you downed the mirrored disk. Revive the mirrored disk as soon as possible after performing a system load. Failure to do so, can cause data loss.

This procedure is necessary only if you are migrating from a pre-G06.06 RVU to the G06.24 RVU and had to replace the disk system load bootstrap program, as described in Section 6, Replacing the Disk Bootstrap Microcode (Pre-G06.06).

After you have verified that the new disk bootstrap program is functional, reset and start the unchanged mirror system disk (which is in the STOPPED state, substate HARDDOWN) by using the SCF RESET and START commands. The SCF RESET command moves the disk into the STOPPED state, substate DOWN, from which it can be started.

For example:

```
> scf

SCF - T9082G02 - (14JAN02) (03JAN02) - 04/28/2003 10:54:23 System
\TEENY

Copyright Compaq Computer Corporation 1986 - 2002

(Invoking \TEENY.$SYSTEM.STARTUP.SCFCSTM)
1-> reset disk $system
2-> start disk $system
STORAGE W01001 To START the disk, SCF must revive the information on
               \TEENY.$SYSTEM. This operation might IMPACT system
               performance, especially users of $SYSTEM.
Do you want to start a disk revive on \TEENY.$SYSTEM (Y/[N])y
3-> status disk $system

STORAGE - Status DISK \TEENY.$SYSTEM
LDev   Primary    Backup     Mirror     MirrorBackup   Primary
Backup
                                                      PID       PID
   6  *STARTED    STARTED   *STARTING   STARTING       0,257     1,257


4-> status disk $system
STORAGE - Status DISK \TEENY.$SYSTEM
LDev   Primary    Backup     Mirror     MirrorBackup   Primary  Backup
                                                      PID       PID
   6  *STARTED    STARTED   *STARTED    STARTED        0,257     1,257
```

SCF automatically revives the unchanged mirror disk, updating the old disk bootstrap program from the new version copied earlier to the primary disk.

Note. The SCF RESET DISK command does not touch paths that are in a STARTED state. You could also issue a RESET DISK command for the $SYSTEM-M path and the $SYSTEM-MB path.

Configure Specific Products (Post-System Load)

This subsection contains information about the configuration of various products such as Expand, OSS, and SMF. See product-specific documentation for more information.

Configure Expand and New Profiles

Note. Always check Scout for NonStop Servers for the most up-to-date SPRs for Expand. Also, review all softdocs for up-to-date installation instructions for the profiles.

Expand had significant changes starting in the G06.20 RVU (SPR T9057 AFK) that were also released in SPR T9057AFL as a time-critical fix. The details of many of the changes and all defect repair changes are described in the T9057G06^AFQ or later softdoc.

In summary, the latest Expand T9057 SPRs remove the use of Super Timefactors in Expand routing. The original time factor method of routing used before T9057G06^AEM (G06.08 RVU) is now used starting with SPR T9057AFL and G06.20.

SPEEDK is now mapped to a time factor, and values of SPEEDK for FOX networks or faster are mapped to a time factor of 1. As a result, review settings for SPEEDK, SPEED, and RSIZE to verify that the proper routing is maintained. (For example, if both ServerNet and FOX exist between two adjacent nodes, set the time factor for the preferred line to 1 and the less preferred line to either 2 or 3.)

A new LINETF modifier is provided and recommended to set the time factor of lines directly. Neither SPEED nor SPEEDK is recommended.

In larger networks, incremental installation of the latest T9057G06^AFL SPR can precipitate connection instability on nodes that are running earlier versions of Expand. (Contact your service representative for assistance in using specific tools to resolve network routing problems.)

The SPRs T0533G06^AEE, T0532G06^AAD and T0509G06^AAD, or later, have new modifiers to set time factors directly and to allow some parameters to be set persistently. SPR T0533G06^AEE, or later, has new modifiers to support IPv6 addresses. The default values of some parameters have been changed. See the softdoc for any installation details and the *Expand Configuration and Management Manual* for information on the new modifiers.

See support note S03040 for more information on changes to Expand routing.

Note. Always check the Interactive Upgrade Guide and Expand softdocs for changes to Expand profiles. General configuration instructions are presented. For complete descriptions of Expand profiles, modifiers, and attributes, see the *Expand Configuration and Management Manual*.

Configure OSS

See the *Open System Services Management and Operations Guide* and the *Open System Services Installation Guide* for information about updating and maintaining OSS database files. See the Interactive Upgrade Guide for new OSS features and for a summary of migration or installation issues.

Also note these general OSS alerts and considerations:

- Disk volumes that are accessed by the OSS environment, including the $SYSTEM volume where the OSS Monitor’s configuration files are kept, must not be configured for administration by SMF.
- For the OSS environment, certain configuration files require symbolic links from the OSS file system. For more information, see the *OSS Management and Operations Guide* for details.

The `inetd` process should be run immediately *after* loading the OSS product files into the OSS environment. The `inetd` process listens for connections on certain Internet sockets. When a connection is found on one of its sockets, `inetd` determines what service the socket corresponds to and invokes a program to service the request.

See the inetd(8) reference page in the *Open System Services Shell and Utilities Reference Manual* for more information. For installation instructions, see T9660G07^AAG, or later, softdoc.

OSS Unautomated Configuration and Startup

Unautomated configuration and startup is described in Appendix B in the *Open System Services Management and Operations Guide.*

OSS EasySetup (T0585)

The OSS EasySetup product (T0585) is available for automated setup, as described in the *Open System Services Installation Guide.* OSS EasySetup is a series of TACL scripts that assist a site when configuring and installing a minimal OSS subsystem for the first time or when starting, stopping, or removing an OSS subsystem. For setup and fallback purposes, OSS EasySetup provides:

- A journal file of all installation and configuration actions
- A file that records the directory structure of the initial OSS file installation
- A configuration file to partially automate restarting the OSS subsystem. This file can be edited as needed when the configuration changes.

OSS EasySetup requires the process $NULL and the installation of SPI template files. The product NULL (T6025) is included on each SUT.

Configure SMF (Optional)

If you plan to configure SMF, an optional product, note:

- Migration of data from direct volumes to SMF logical volumes is documented in the *Storage Management Foundation User's Guide*.
- Performance-critical applications that optimize the physical location of their data might need to specify the PHYSVOL option when creating data files, instead of relying on the SMF file-placement algorithm.
- NonStop SQL/MP 3.x must be up and running before you start SMF.

△ **Caution.** To maintain data integrity, do not place:

- SWAP files on a virtual disk process (VDP)
- TMF audit data on a VDP.
- DSM/SCM files on a VDP.

To ensure system configuration integrity, always:

1. Save the system configuration after SMF configuration changes are made.
2. Reload the system from the current system configuration file or the latest version with SMF changes.

If remote access to files supported by SMF is needed, the remote system must be running one of these RVUs:

- Any G-series RVU
- D43.02 or later D4*n.nn* D-series RVUs
- D35.00, plus an additional set of D3*n.nn* SPRs, including:
  - T9055ACR
  - T9194ABQ
  - T9196ACE
  - T9197ABO

See the softdoc T8472ACK or later for interoperability considerations, including information on SMF configuration.

Configure the Remote Duplicate Database Facility (RDF)

The AUDITTRAILBUFFER parameter is a modifier to DP2, which improves the performance of RDF. Ensure that an appropriate value is specified for the AUDITTRAILBUFFER modifier for the master audit-trail disk process. The AUDITTRAILBUFFER parameter allows you to specify how many megabytes of buffer space to allocate for the audit-trail buffers. See the *SCF Reference Manual for the Storage Subsystem* for information on configuring the buffer size.

Upgrade the WAN Manager (T8365), (Optional)

The version of WAN Manager (WANMGR) delivered in the G06.07 and later RVUs removes the limitation of configuring 100 SWAN adapters. Starting with the G06.07 RVU, the number of adapters you can configure is determined by the amount of memory available to the WAN manager. See the T8365 softdoc for information on the default WANMGR startup configuration and how to use SCF to increase it.

Before updating the SWAN or SWAN 2 firmware (Appendix C, Updating SWAN Concentrator CLIP Firmware), first configure the WAN Manager.

Upgrade the TNOS Server and TNOS Utility (Optional)

A miscoded TNS (non-native) program can erroneously generate operand addresses that are not adequately aligned for the TNS instruction set architecture. The program can then get unpredictable results when referencing those memory operands, on both TNS and TNS/R systems, whether accelerated or not. The program might silently corrupt adjacent data, compute wrong answers, or make wrong decisions.

Upgrade the TNOS Server and TNOS Utility to at least these versions:

- T8666ACL or later (for TNOS Server)
- T8667ACL or later (for TNOS Utility)

To obtain these new versions, contact your service provider. The marketing ID for the new versions is SJ08V1, and the IP name is NonStop ODBC Server and Client. See Support Note S02075B for details.

Part II. Fallback Tasks

Part II describes the tasks for falling back from the G06.24 RVU to a G06.06 or later RVU.

If you encounter a problem that cannot be resolved while running G06.24, you can fall back to your previous G-series RVU, provided you have already installed the appropriate fallback SPRs for your system.

These sections describe the tasks for falling back to your previous RVU from G06.24 RVU:

13 Preparing to Fall Back

If you encounter a problem that cannot be resolved while running the G06.24 RVU, you can fall back to a G06.06 or later G-series RVU, provided that you have already installed the appropriate fallback SPRs, as described in Section 3, Installing SPRs Before Upgrading to the G06.24 RVU. If you did not install the appropriate fallback SPRs before installing the G06.24 RVU, contact your service provider.

Alerts

Before falling back from the G06.24 RVU:

- Review G06.24 Installation and Fallback Alerts for Products on page 1-21.
- Verify that you have a saved configuration database (see Save the Current Configuration File (CONFxxyy) on page 4-1).
- It is not necessary to return SP firmware (unless pre-G06.08) or SCSI boot code back to the previous versions when falling back to an earlier RVU. However, if you want to do so, HP recommends that you update the firmware before performing the system load of the previous RVU.

  Note. Do not revert back to pre-T7953AAG versions of SWAN concentrator firmware. The T7953AAG and later versions are compatible with the earliest G-series RVUs and contain important fixes and enhancements.

- If you are falling back to an RVU prior to G06.13, you will not be able to access any NonStop SQL/MP Format 2 partitions you might have created.
- If you are falling back to an RVU prior to G06.08 and you upgraded to NonStop S7400 and S74000 PMF CRUs after installing G06.24, these PMF CRUs must be removed. If you are falling back to a pre-G06.16 and you upgraded to NonStop S7600, S76000, S86000, S7800, or S78000 PMF CRUs after installing G06.24, these PMF CRUs must be removed. If you are falling back to any RVU prior to G06.24, you must remove the S88000 PMF CRUs. You can generally retain TSM and OSM software because they are compatible with earlier software. OSM requires the SP firmware file T1089ABK or later.
- If you are falling back to an RVU prior to G06.16, you must return processor boot code back to the previous version before performing a system load of the previous RVU. HP recommends that you update the firmware before performing the system load of the previous RVU.
- If you have to fall back to a pre-G06.21 RVU, you must deinstall the previous WAN Wizard Pro and reinstall the previous WAN Wizard Pro on your system console.

- Starting with the G06.23 RVU, there are fallback considerations regarding NonStop SQL/MX Release 2.0. See NonStop SQL/MX Release 2.0 (G06.23 and G06.24) on page 1-28. For SQL/MX Release 2.0: *Before falling back*, to minimize the risks involved with falling back without a clean TMF shutdown, use the appropriate SQL (MX or special MP) GOAWAY utility to delete all native-format SQL/MX objects and their resource forks. Do this *before* entering the first START TMF after you have performed a system load with the previous RVU.
- If you installed the DSM/SCM D46 client version, you do not need to deinstall it. However, you need to run the FALLBACK macro to convert both the Host and Target database for use by the pre-T6031D46 version. You must run the macro *before* you start DSM/SCM.

Note. The FALLBACK macro can be retrieved from a D6031D46 distributed subvolume on any G06.18 or later SUT. If the SUT is in the DSM/SCM archive, the FALLBACK macro can be exported from the DSM/SCM archive.

Summary of Fallback Tasks

1. Backing out the revision (DSM/SCM)
2. Replacing the bootstrap program on the primary system disk
3. Returning firmware to the previous versions (if needed)
4. Running ZPHIRNM
5. Halting the system processors
6. Removing any hardware not supported by your previous RVU
7. Loading the system from the previous operating system image
8. Starting the applications

Fallback Considerations for Specific Products

You might need to perform additional tasks for these products:

- DP2
- DLL (Dynamic-Link Libraries)
- DSM/SCM
- Spooler
- Open System Services (OSS)
- OSM and TSM
- SMF
- SQL/MX 2.0
- TMF
- WAN Manager (T8365)

DP2

If you have set the AUDITTRAILBUFFER or the SQLMXBUFFER attribute to 128 or more, you need to reset the value to 0 before falling back to G06.16 or earlier RVU. If you fail to do so, TMF might not start, or a disk volume could go offline. You can recover from this situation after the fallback by using the SCF ALTER command. See the Interactive Upgrade Guide for details.

If you are planning on using NonStop SQL/MX for the first time, it is recommended that you perform a clean TMF shutdown. (A clean TMF shutdown is always recommended in any case.) You can also apply the DP2 (T9053) fallback SPR on your current SYS*nn* before upgrading to G06.24 if you are migrating from a pre-G06.23 RVU. If you are using NonStop SQL/MX introduced in G06.23 and you have to fall back to a previous RVU before G06.23, and have created native-format SQL/MX metadata tables or audit records, you need the DP2 (T9053) fallback SPR on your current SYS*nn*. A SYSGEN is required.

DLL (Dynamic-Link Libraries)

The G06.20 RVU provides programming and system tools to create position-independent code (PIC) that can be used to create your own dynamic-link libraries (DLLs) to run on NonStop S-series servers (G06.20 RVU only). The run-time libraries on the SUT have changes to the mechanism for registering the programming destructors for objects declared statically in C++ Version 2 and beyond.

If you install the DLL programming tools and you encounter system or application problems that do not use PIC, fall back to your previous RVU. However, if you install the DLL tools, and system problems occur because applications are trying to use PIC, you can stop converting a program or library to DLLs by using the PIC compiler options to recompile the program or library and the PIC linker to relink it.

See the appropriate programming documentation for details on C++ and compilers. For a list of participating products, see the Interactive Upgrade Guide.

DSM/SCM

If you have to fall back to a pre-G06.18 RVU and a pre-D46 T6031 product version of DSM/SCM, run the FALLBACK macro to convert both the Host and Target database for use by a pre-T6031D46 DSM/SCM product version. You must run the FALLBACK macro *before* starting DSM/SCM. If you fall back to a pre-D46 product version and then migrate to a G06.18 or later RVU, DSM/SCM might notify you during the Apply that the CLEANOSS macro must be run. You must cancel the Apply, and then run the CLEANOSS macro. For detailed information on the FALLBACK and CLEANOSS macros, see the *DSM/SCM User's Guide* and Notes on the CLEANOSS Macro on page 1-18.

The D46 DSM/SCM client software is backwards compatible with most DSM/SCM server versions (AAO).

Spooler

If you have to fall back to an RVU prior to G06.00 and the spooler control file format is from a spooler version prior to T9101ADM, you must restore copies of both the control file and the collection files that were in use.

If your previous product version of spooler was T9101D41 SPR ADM or later, you do not need to restore copies of both the control file and the collector data files if you back out of your G06.24 RVU. All versions of T9101D41, starting with T9101D41 SPR ADM, contain Version 5 of the spooler control file and are compatible with T9101D46 and D48 product versions of spooler. However, it is always recommended that you back up the spooler control file and collector data files before migrating or applying spooler SPRs.

See Support Notes S97057 (*T9101D41 Spooler Collector Data Files Have Changed Format*) and S99086 (*NSK Spooler — Migration and Draining Instructions*) for more information.

Open System Services (OSS)

Back up the OSS configuration database files before falling back. See the *Open System Services Management and Operations Guide* for more information.

OSM and TSM

See the *OSM Migration Guide* for complete information. If you installed OSM after installing the G06.24 RVU, and you want to fall back to a newer SPR of TSM, see TSM Server and Client Compatibility SPRs on page 3-10 and the Interactive Upgrade Guide.

SMF

The record format of the system configuration database sometimes changes between RVUs and is automatically converted to the new format the first time the system is loaded. To ensure system configuration integrity, always:

1. Save the system configuration after SMF configuration changes are made.
2. Reload the system from the current system configuration file or the latest version with SMF changes.

△ **Caution.** Create a saved version of the configuration before loading a new RVU. If this step is omitted, you cannot fall back to a previous RVU.

See the *Storage Management Foundation User's Guide* for more information.

SQL/MX 2.0

Metadata tables created and used by SQL/MX Release 2.0 running on or after G06.23 are different than those metadata tables used on prior SQL/MX releases, and the tables are very different than those used by SQL/MP. You must be on at least Release 1.8 to migrate or to fall back. Migration and fallback considerations do apply. See TMF (G06.23 and G06.24) on page 1-38 and DP2.

Before attempting to fall back, you should remove all SQL/MX objects and their resource forks by using the SQL/MX GOAWAY utility. (GOAWAY is an OSS command line utility run from `mxtool`.) After you fall back, the SQL/MX GOAWAY utility is not available, and SQL/MX objects are much more difficult to remove. See NonStop SQL/MX Release 2.0 (G06.23 and G06.24) on page 1-28.

TMF

Falling back to other RVUs, prior to G06.24, with format 2 audit trails, will cause serious audit trail problems and requires a DELETE TMF, as well as other steps.

Fallback steps depend on whether you chose to alter the audit trail file size or format, or both. If you do not alter the audit trail filesize or format, there are no fallback issues with TMF for G06.24. If the audit trail file size is altered, but still within the 2,047 megabyte limit, fallback is still not a major issue, but you must take steps, before or after fallback, to prevent deterioration in some algorithms. See TMF (G06.23 and G06.24) on page 1-38 and DP2.

WAN Manager (T8365)

The version of WAN Manager (WANMGR) delivered in G06.07 and later RVUs includes an SPR (first introduced by T8365AAJ) that removes the limitation of configuring a maximum of 100 SWAN adapters. Starting with the G06.07 RVU, the number of adapters that you can configure is determined by the amount of memory available to the WAN manager.

If you have installed more than 100 SWAN adapters and have to fall back to a pre-G06.07 RVU, after falling back, you must reinstall T8365AAN and its requisite SPRs to continue using all the configured SWAN adapters. If you do not, the older version of the WAN manager will not recognize the additional adapters or associated entities. (EMS messages indicate storage has been exhausted.)

See the T8365AAN or later softdoc for more information.

14

Backing Out the DSM/SCM Revision

This section describes how to submit a DSM/SCM backout request to return from G06.24 to your previous RVU.

If you selected DSM/SCM to manage OSS files and you need to fall back to a pre-D46 DSM/SCM PVU, you must run the DSM/SCM FALLBACK macro from the ZDSMSCM subvolume. The FALLBACK macro can be exported from any D46 PVU in the DSM/SCM archive, and then placed in the ZDSMSCM subvolume.

Before Backing Out the Revision

1. Confirm that the spooler is active and *not* 100 percent full.
   a. At a TACL prompt, start SPOOLCOM and issue a COLLECT, STATUS command. For example:

```
12> spoolcom $spls; collect, status
COLLECT   STATE           FLAGS  CPU   PRI  UNIT   DATA FILE        %FULL
$S        ACTIVE             3 , 1     154  4     $OPS0.SPL.DATA    4
```

   b. If the spooler is not active, start the spooler.

      You will use the spooler to print out operator instructions when backing out the revision.

2. Start the TMF subsystem and DSM/SCM if they are not already running. For example:

```
4> TMFCOM START TMF
5> volume $dsmscm_vol.ZDSMSCM
6> RUN STARTSCM
```

   where $*dsmscm_vol* is the DSM/SCM volume.

Start the Target Interface (ZPHITI)

1. From the DSM/SCM subvolume, enter:

   ```
   RUN ZPHITI
   ```

   The TI Logon screen appears:

```
 DSM Software Configuration Manager                                    TI
Logon
 ================================================================================

      User ID:____________
     Password:____________

 ================================================================================

 ================================================================================
     This software is licensed by Hewlett Packard Development Company L.P. and
     is subject to restrictions on use, disclosure and copying and is Commercial
     Software. If a user is an entity of the United States Government, only
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                     Hewlett Packard Development Company L.P.
                        T6031D46^ABJ 16JAN2004

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                           All Rights Reserved

================================================================================
 F1-Logon                                          F8-Clear entry
                                      F15-Help                    SF16-Exit
  Ready
```

2. Enter your user ID and password and press **F1** to log on to the Target Interface.

   The Main Menu appears:

```
 DSM Software Configuration Manager                              Main Menu
 ================================================================================
 \ELI           Prior snapshot 2002-04-14:18:03:03

 Selection number: 0

 ================================================================================
 Choose an action by entering the selection number of an item from the list
 below.
 ================================================================================
 1  Create system report
 2  Create system snapshot
 3  Perform target activities
 4  Perform audit
 5  Perform database verify

 9  Enable trace (for support use only)

 ================================================================================
 F1-Select                                F4-Show Messages
                                          F15-Help     F16-Return     SF16-Exit
  Ready
```

Submit a Backout Request

1. From the ZPHITI Main Menu, enter **3** (Perform target activities) in the Selection number field, and press **F1**.

   The Target Menu - Select Target screen appears:

```
DSM Software Configuration Manager                 Target Menu - Select Target
================================================================================
\ELI           Prior snapshot 2002-04-14:18:03:03

Selection number:

================================================================================
Choose a target selection number from the list below. Status information is
shown for requests still in progress.
================================================================================
1 NEW CONFIG
2 DEFAULT
3
4
5
6
7
8
9
============================More Targets PgDn/PgUp==============================
F1-Select
                                          F15-Help     F16-Return     SF16-Exit
 Ready
```

2. In the Selection number field, enter the number corresponding to the logical target that you want to back out of (selection **2** in this example), and press **F1**.

   The Target Menu - Select Action screen appears:

```
DSM Software Configuration Manager                Target Menu - Select Action
================================================================================
\ELI           Prior snapshot 2002-04-14:18:03:03
DEFAULT        Last S/W applied on SYS 00 on 2000-04-14:18:01

Selection number:

================================================================================
Choose an action by entering the selection number of an item from the list
below.
================================================================================
1 Perform/Review apply request
2 Perform backout to S/W Applied on SYS   03 on 2000-04-14:15:41
3 Review operator instructions for the last apply completed.



================================================================================
F1-Select
                                       F15-Help     F16-Return     SF16-Exit
 Ready
```

3. In the Selection number field, enter **2** (Perform backout to S/W), and press **F1**.

   The Backout - Verify Request screen appears, which shows:

   - The SYS*nn*, date, and timestamp of the current software revision and of the previous revision, which becomes the current revision when the backout request finishes
   - The location where DSM/SCM will place the snapshot
   - A warning that the request makes the last software applied on this target inaccessible

```
DSM Software Configuration Manager                    Backout - Verify Request
================================================================================
\ELI           Prior snapshot 2002-04-14:18:03:03
DEFAULT        Last S/W applied on SYS 00 on 2000-04-14:18:01

Snapshot location: \ELI.$SPR09

================================================================================
ATTENTION - This request is not reversible. Once the current configuration
for this target is backed out, it cannot be made current again.
================================================================================

Backout target revision will be performed:

    From: SYS 02 applied on 2002-04-14:18:01
      To: SYS 01 applied on 2002-04-17:15:41


================================================================================
F1-Submit request
                                          F15-Help     F16-Return     SF16-Exit
 Ready
```

4. Press **F1** to submit the backout request.

   DSM/SCM automatically reapplies the previous software revision.

   While the backout request is processing, DSM/SCM displays the Backout - Processing Backout screen, which gives a description of the request, its processing status, and the location of the previous SYS*nn* software affected by the request. The screen is updated with current status information approximately every 15 seconds, as in these examples:

```
 DSM Software Configuration Manager                Backout - Processing Backout
================================================================================
\ELI           Prior snapshot 2002-04-14:18:03:03
DEFAULT        Last S/W applied on SYS00 on 2000-04-14:18:01
Backout 2000-04-18:10:59:34

================================================================================
Request is being processed. Status information will appear below indicating
progress.
================================================================================


Backout Awaiting start.                                  2000-04-18:10:59:34



================================================================================
F3-Restart                   F4-Show messages          F6-Cancel request
                                          F15-Help     F16-Return     SF16-Exit


DSM Software Configuration Manager                Backout - Processing Backout
================================================================================
\ELI           Prior snapshot 2002-04-14:18:03:03
DEFAULT        Last S/W applied on SYS00 on 2002-04-14:18:01
Backout 2000-04-18:11:00:39

================================================================================
Request is being processed. Status information will appear below indicating
progress.
================================================================================


Backout Processing.                                      2000-04-18:11:00:39


================================================================================
F3-Restart                   F4-Show messages          F6-Cancel request
                                          F15-Help     F16-Return     SF16-Exit
```

After the software backout is finished, the Backout - Complete Backout screen appears with operator instructions.

A complete set of operator instructions might look like this:

```
 DSM Software Configuration Manager                  Backout - Complete Backout
================================================================================
\ELI           Prior snapshot 2002-04-14:18:03:03
DEFAULT        Last S/W applied on SYS    on 2000-04-14:18:01

Print operator instructions on:
================================================================================
Placement of files for this Backout is complete. To activate the software
that has been placed follow the operator instructions displayed below.

================================================================================
Activation Instructions for \ELI DEFAULT
  These are general instructions that were determined from configuration
  attributes.  Refer to the release documentation for detailed information
  on migrating to this software configuration.

1. Stop all applications.

2. PUP REPLACEBOOT $<SYS00 VOLUME NAME>, $<SYS00 VOLUME NAME>.SYS00.SYSDISC
       OR for S-Series:

   SCF CONTROL DISK $<SYS00 VOLUME NAME>,
     REPLACEBOOT $<SYS00 VOLUME NAME>.SYSNN.SYSDISC

3. Update FIRMWARE.
   Run TMDS (or TSM for S-Series) to check firmware and perform
   firmware updates.
   T1089 S-SERIES SP FW includes firmware changes.
   T1067 ISP1000 CODE includes firmware changes.
   T8461 S7000 PROM MILLICODE includes firmware changes.
   T7892 S70000 BOOT MILLICOD includes firmware changes.

4. RUN ZDSMSCM.ZPHIRNM SYS00
   (Note: replace nn with correct number)

5. Check for $0 EMS messages.
   Correct any errors indicated in the $0 EMS messages.
   Do not proceed until this step has been successfully completed.

6. Coldload is required.

7. Restart all applications.
 ================================================================================
                                        F4-Show Messages
 F9-Print operator instructions         F15-Help     F16-Return     SF16-Exit
  Task completed successfully.
```

5. Enter a printer location and press **F9** to print the operator instructions. You might need to modify these instructions before returning to the previous RVU. For instance, you might not need to change the firmware unless you have to replace hardware that can be supported only by the new RVU.
6. Press **SF16** to exit the Target Interface.

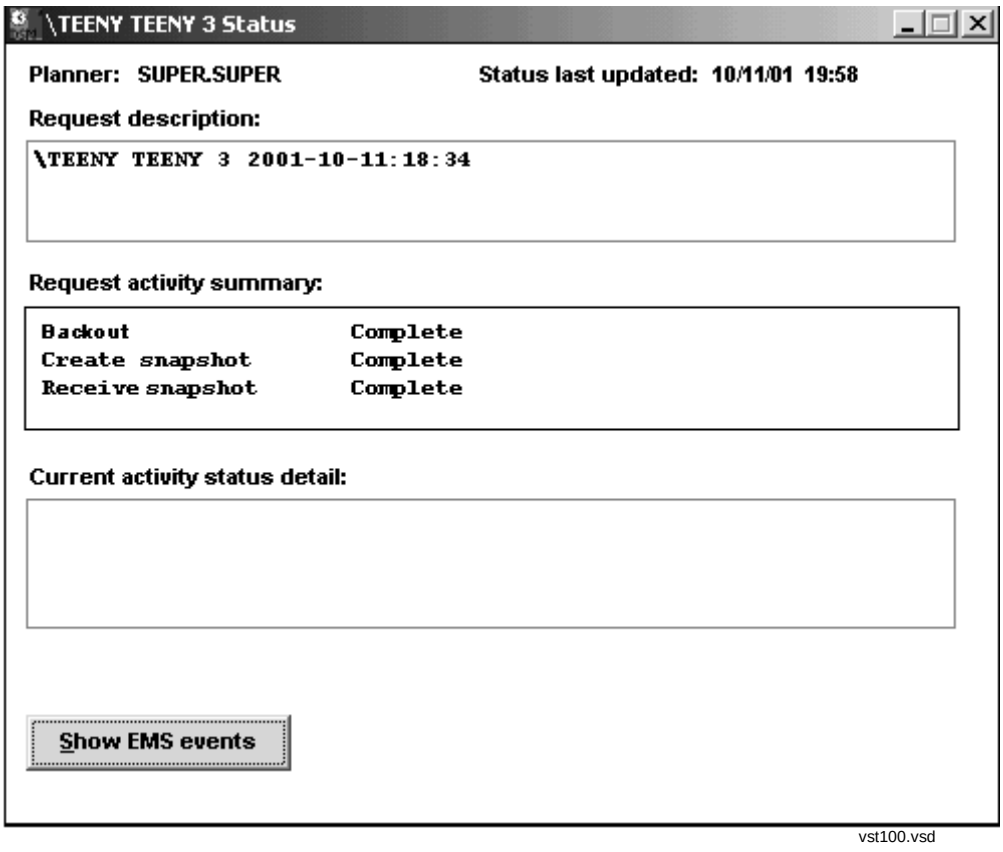
Monitor the Backout Process

1. Log on to DSM/SCM (**Start>Programs>Dsm_scm>DSMSCM**).
2. Select **Requests> Requests list**.

   The Requests dialog box appears, showing the type and status of various DSM/SCM requests.
3. From the Request list, double-click your backout request.

   The Status dialog box displays detailed information about your backout request.

   This example indicates that the backout request finished successfully:



15

Returning Firmware to Previous Versions

This section describes how to return processor boot code, SP firmware, and SCSI boot code back to the earlier product versions before loading the previous operating system image.

Alerts

Processor Boot Code

If you are returning to an RVU prior to the G06.16 RVU, you must return processor boot code back to the earlier PVU before performing a system load of your previous RVU. If you are returning to a G06.16 or later RVU, it is not necessary to return processor boot code back to the previous version.

SP Firmware and SCSI Boot Code

It is not necessary to return SP firmware or SCSI boot code back to the earlier product update versions when falling back to your previous RVU. (See the T1089 softdoc for compatible RVUs.) However, if you want to, HP recommends that you update the firmware before performing a system load of the previous RVU. OSM requires T1089ABK or later.

Returning Processor Boot Code to the Previous Version (Using TSM)

To install the previous version of the processor boot code:

1. Determine the Correct Version of the Previous Processor Boot Code.
2. Return the Processor Boot Code to the Previous Version on page 15-2.

Determine the Correct Version of the Previous Processor Boot Code

To determine the previous processor boot code version with the VPROC command, see Verify Location and Version of Processor Boot Code on page 8-3.

For example:

```
$SYSTEM SUPER 8> vproc $system.sys01.cpucode9
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \ELI      Date 21 MAR
2000, 11:30:35
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS01.CPUCODE9
     Binder timestamp:    25AUG1999 13:42:26
    Version procedure:    T7892G05^03SEP99^25Aug99^
```

where SYS01 is the previous operating system image subvolume.

Use this information to verify that the update to the previous version was successful.

Return the Processor Boot Code to the Previous Version

If you are using TSM, follow the instructions under Using TSM, Update the Processor Boot Code and Issue a Hard Reset or Equivalent on page 8-10 to return the processor boot code back to the previous version, except in Step 6, enter the volume and subvolume containing the previous operating system image. For example:

```
$system.sys01
```

If you are using OSM, follow the instructions in Returning Bootcode Firmware to the Previous Version (Using OSM) on page 15-6.

Returning SP Firmware to the Previous Version (Using TSM)

This subsection provides instructions for installing the previous version of the SP firmware. Generally, you can keep your currently installed SP firmware. See Scout for NonStop Servers for backwards compatibility.

Determine the Correct Version of the Previous SP Firmware

To determine the previous SP firmware version with the VPROC command, see Determine the Current and New Versions of SP Firmware on page 7-4.

For example:

```
$SYSTEM SUPER 2> vproc $system.sys01.spcode9
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \ELI      Date 21 MAR
2000, 11:27:03
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS01.SPCODE9
     Binder timestamp:  20JUL1999 14:11:43
    Version procedure:  T1089G05^25JUN99^20JUL99^AAS
    Version procedure:  T1088G05^25JUN99^20JUL99^AAS
```

where SYS01 is the previous operating system image subvolume.

Use this information to verify that the update to the previous version was successful.

Download the Previous SP Firmware File to the System Console

Download the previous SP firmware file into the `spcode9` directory on the hard drive of your system console in the event you encounter problems when updating the SP firmware.

Follow the instructions under Download the SP Firmware File to the System Console on page 7-6, except in Step 3, enter the system, volume, and subvolume containing the *previous* operating system image. For example:

```
$\prod2.system.sys01
```

Return the SP Firmware to the Previous Version

Follow the instructions under Update SP Firmware Using the TSM Service Application on page 7-8 to return the SP firmware back to the previous version, except in Step 9, enter the volume and subvolume containing the previous operating system image. For example:

```
$system.sys01
```

Returning SCSI Boot Code to the Previous Version (Using TSM)

This subsection provides instructions for installing the previous version of the SCSI boot code.

Determine the Correct Version of the Previous SCSI Boot Code

At a TACL prompt, use the VPROC command to verify the location and version of the SCSI boot code for the previous RVU.

Note. For pre-G06.08 RVUs, SCSI boot code is located in `$system.sys`*nn*`.I1000`. For post-G06.08 RVUs, the SCSI boot code is located in `$system.sys`*nn*`.IBOOT`.

```
>VPROC $SYSTEM.SYSnn.I1000
```

where *nn* is the previous operating system image subvolume. For example:

```
$SYSTEM SUPER 7> vproc $system.sys01.i1000
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \ELI      Date 21 MAR
2000, 12:39:29
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.SYS01.I1000
     Binder timestamp:  12FEB1998 17:27:36
      Version procedure:  T1067F40^15JAN98^TREV=01^AAK
```

`SYS01` is the previous operating system image subvolume.

To check the new version of SCSI boot code, enter:

```
>VPROC $SYSTEM.SYSnn.IBOOT
```

Use this information from the VPROCs to verify that the update to the previous version was successful.

Return the SCSI Boot Code to the Previous Version (Using TSM)

From the TSM Service Application, use the Firmware Update dialog box to update the SCSI boot code for each PMF customer-replaceable unit (CRU) in your system.

1. Select **Display>Firmware update** to display the Firmware Update dialog box.
2. From the Resource Type list, select **SCSI Boot Code, Y-side**.
3. From the Display list, select **All** to list the selected resources in the Available box.
4. Click **Add all** to move the resources to the Selected box.
5. Click **Specify other** to display the Specify Firmware File Location dialog box.
6. Enter the volume and subvolume where the file to use as the source for the update resides. Use the $SYSTEM.SYS*nn* created for the previous operating system image.
7. Click **OK**.
8. Click **Yes** when asked if you want to use a nonstandard firmware location.
9. From the Firmware Update dialog box, click **Perform action**.

   The update starts, and the Firmware Update Action Summary dialog box appears.
10. Monitor the status of the SCSI boot code update in the Firmware Update Action Summary dialog box.

    When the action status appears as *Completed*, the SCSI boot code update is finished.
11. Repeat Steps 2 through 10 to update the **SCSI Boot Code, X-side**.

    When the SCSI boot code for all PMF CRUs has updated successfully, the Firmware Update Action Summary dialog box should confirm that all SCSI firmware has been updated.

Returning SP Firmware to the Previous Version (Using OSM)

1. Select **Display>Multi-Resource Actions**. The Multi-Resource Actions dialog box appears with unselected fields.
2. From the Resource Type list, select **SP.**
3. From the Action list, select **SP Firmware Update**.
4. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-Y** first.
5. Click **Add All** or **Add** to add the SPs you want to update to the lower list.
6. Click **Perform action**.
7. Click **OK** when the Confirm SP Firmware Update dialog box appears.

   The SP - Parameter Input dialog box appears.
8. Enter the previous file location. Use the *$volume.subvolume.filename* and select **OK**.

   As the firmware update is performed, information about it appears in the Progress list.
9. You are then asked to reset the SP. Click **OK**.

   ```
   The firmware update needs to reset the Service Processor
   to activate the updated firmware. Would you like to
   reset the Service Processor?
   ```

   The Reset Progress bar keeps track of the number of SPs that pass the firmware reset. After a few minutes, the SP is reset.
10. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and overall progress.
11. (Optional) Select **Action Summary** if a firmware update or reset fails.
    a. Select the action that failed.
    b. Select **Details**.
12. Update the X-fabric for the SP code. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-X**.

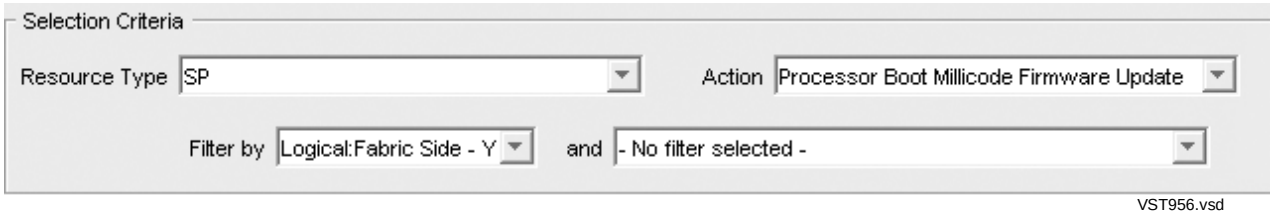
    When you change the filter from Y-side to X-side, the following message appears:

    ```
    Changing a required filter results in your
    selections being cleared.

    Do you still wish to change the filter?
    ```
13. Click **OK**.
14. Repeat Steps 5 through 10 to update the SP firmware, X-side.

15. Check that all SPs have completed successfully.

Returning Bootcode Firmware to the Previous Version (Using OSM)

1. Log on to the OSM Service Connection.
2. Select **Display> Multi-Resource Actions**. The Multi-Resource Actions dialog box appears with unselected fields.
3. From the Resource Type list, select **SP**.
4. From the Action list, select **Processor Boot Millicode Firmware Update**.
5. From the Filter by list, select **Logical: Fabric Side-Y**.



6. Click **Add All** to move the selected resources to update the lower list.
7. Click **Perform Action**.
8. Click **OK** when the Confirm Processor Boot Millicode Firmware Update dialog box appears.

   The Processor Parameter Input dialog box appears.
9. Enter the *previous* file location. Use the *`$volume.subvolume.filename`* ($SYSTEM.SYS*nn*) subvolume created during the most recent DSM/SCM Build/Apply. For example:

   ```
   $system.sys02.cpucode9
   ```

   As the firmware update is performed, information about it appears in the Progress List.
10. To verify that firmware resets are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress.
11. Update the X-fabric for the processor boot code. From the Filter by list, select the appropriate filter, **Logical:Fabric Side-X**.

When you change the filter from Y-side to X-side, this message appears:

```
Changing a required filter results in your
selections being cleared.

Do you still wish to change the filter?
```

12. Click **OK**.
13. Click **Add All** to add the SPs you want to update to the lower list.
14. Click **Perform Action**.
15. Click **OK** when the Confirm Processor Boot Millicode Firmware Update dialog box appears.

    The Processor Parameter Input dialog box appears.

16. Enter the *previous* file location. Use the *$volume.subvolume.filename* ($SYSTEM.SYS*nn*) subvolume created during the most recent DSM/SCM Build/Apply. For example:

    ```
    $system.sys02.cpucode9
    ```

    As the firmware update is performed, information about it appears in the Progress List.

17. To verify that firmware updates are in progress, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress.
18. Close the Multi-Resource Actions dialog box.

16

Running ZPHIRNM to Reactivate the Previous Software Revision

This section describes how to run the ZPHIRNM program again to change the temporary names of the previous product files back to their actual names.

Alerts

Before running ZPHIRNM:

- Applications that use files that are being replaced should not be running. To avoid any possibility of conflict, stop all applications, except for the TMF subsystem, before running ZPHIRNM.
- You must have rename (purge) access to all files being renamed. You can ensure this access by running ZPHIRNM as the super ID (255,255).
- If you are connected to an Expand network, you might see a message stating that the NonStop SQL file, ZZSQLCI2, was not renamed during ZPHIRNM. However, on further examination of the log file, you may find that ZPHIRNM did finally rename the file, in which case you can ignore the error message and continue.
- Make sure that you drain the spooler before running ZPHIRNM. If you drain the spooler *after* running ZPHIRNM, an error message is displayed indicating that the spooler program and library versions are different, and spooler terminates with errors.

Drain the Spooler

Before executing the SPOOLCOM;SPOOLER,DRAIN command:

- Use the `SPOOLCOM;COLLECT $collector-process, LISTOPENS` command to identify processes that currently have jobs open.
- Use the `SPOOLCOM;JOB (STATE PRINT)` command to determine which jobs are currently printing.

1. Take the appropriate action to ensure that these jobs either terminate when finished or are stopped.
2. Drain the spooler. To drain the spooler, log on as a super group user (255,n), access SPOOLCOM, and enter the following command:

   ```
   SPOOLCOM> SPOOLER, DRAIN
   ```

This command causes the spooler to move from the active to the dormant state.

△ **Caution.** Do not use the TACL STOP command to drain or stop the spooler. Also, do not issue the TACL STOP command after you have issued the SPOOLCOM DRAIN command. The control file can be corrupted during the next warmstart or rebuild.

For more information on draining the spooler and recovery, see Section 1 in the *Spooler Utilities Reference Manual.*

Run ZPHIRNM

Using PREVIEW Mode

You can do a preview run of ZPHIRNM to check that the target subvolumes (TSVs) and associated map files are consistent. Running ZPHIRNM in PREVIEW mode simulates the ZPHIRNM process without actually updating files or activating the configuration. In PREVIEW mode, ZPHIRNM indicates whether or not TMF needs to be up when running ZPHIRNM. See ZPHIRNM on page 10-4 for more information.

Run ZPHIRNM

1. At a TACL prompt, enter the following command from the DSM/SCM subvolume:

   ```
   > RUN ZPHIRNM $vol.SYSnn
   ```

   where:

   - *$vol* specifies the default current system load volume, usually $SYSTEM.
   - SYS*nn* specifies the SYS*nn* subvolume named previously in the backout request. (See Submit a Backout Request on page 14-3, Step 3 on page 14-4, which explains the entries in the Backout - Verify Request screen.)

   For example:

   ```
   > RUN ZPHIRNM $system.SYS00
   ```

2. When asked if you want to use a log file with the session, type **Y** and press Enter.
3. When prompted, type a file name for the log file, and press Enter.
4. ZPHIRNM issues the following message and begins processing:

   ```
   Log file, <filename>, was successfully created.
   ```

Verify That ZPHIRNM Ran Successfully

1. Review the log file.
2. If ZPHIRNM did not run successfully, correct the problem and rerun.

   Two types of error and warning messages are issued during the renaming process:

   - If a fatal error occurs, ZPHIRNM immediately issues an error message and stops.
   - A nonfatal error is one that affects processing only for a single subvolume. If a nonfatal error occurs, ZPHIRNM issues an error message and attempts to restore the subvolume it is currently processing to its original state.
     - If the subvolume is successfully restored, ZPHIRNM continues with the next subvolume.
     - If the subvolume cannot be restored, ZPHIRNM issues an additional error message and continues with the next subvolume.
     - If the subvolume was successfully processed, you can ignore warning messages.

   See the *DSM/SCM User's Guide* for troubleshooting procedures and the *DSM/SCM Messages Manual* for a complete list of ZPHIRNM messages.

17

Loading the Previous RVU and Resuming Normal Operations

This section describes how to load the previous RVU back into the memory of each processor in the server and resume normal operations.

Alerts

Before performing a system load, note:

- If you are returning to an RVU *prior* to the G06.06 RVU, check that you have replaced the bootstrap program on the primary system disk named $SYSTEM to the earlier version by following the instructions in Section 6, Replacing the Disk Bootstrap Microcode (Pre-G06.06) (specifying the previous SYS*nn*).
- Do not close the System Startup dialog box while startup is in progress. If you attempt to close the dialog box, a TSM message dialog box appears, indicating that the system startup process will be stopped if you continue.
- If you stop a system startup before it has finished, the state of your system becomes unpredictable. You might need to perform another system startup to enable the system to resume normal operation.
- If you must stop the system startup process, click **Abort** (the process should take effect within 30 seconds).
- If you fall back and then try to migrate again to a G06.18 or later RVU, DSM/SCM might notify you during the Apply that the CLEANOSS macro must be run. The current OSS environment is being managed by a logical target other than the one trying to manage OSS files with the current DSM/SCM Build/Apply. You must cancel the Apply, and then run the CLEANOSS macro. See DSM/SCM (T6031D46) Fallback on page 1-27.
- Before falling back, to minimize the risks involved with falling back without a clean TMF shutdown, use the appropriate SQL (MX or special MP) utility to delete all native-format SQL/MX objects and their resource forks. This step must be done *before* entering the first START TMF after you have performed a system load with the previous RVU. See NonStop SQL/MX Release 2.0 (G06.23 and G06.24) on page 1-28 before continuing.

Prepare to Stop the System

Before halting the processors:

1. Stop all user applications.
2. Stop TMF and DSM/SCM. For example:

```
5> TMFCOM STOP TMF
6> VOLUME $dsmscm_vol.ZDSMSCM
7> RUN STOPSCM
```

Halt the Processors

Halt all processors from the TSM Low-Level Link Application or from the OSM Low-Level Link.

Remove Hardware Installed During Migration

If you installed or replaced hardware during your migration to the G06.24 RVU, you might have to remove it before loading your previous RVU. For example:

- NonStop S74000 processors are not supported prior to the G06.08 RVU.
- NonStop S76000 and S86000 processors are not supported prior to the G06.16 RVU.
- NonStop S7800 and S78000 processors are not supported prior to the G06.16 RVU.
- NonStop 88000 processors are not supported prior to the G06.24 RVU.
- GESAs are not supported prior to the G06.16 RVU.
- SWAN 2 servers are not supported prior to the G06.16 RVU.
- Disconnect the IOAM and its components, which are supported only on G06.24 and later RVUs.

See the appropriate RVU-specific hardware documentation for additional information.

Perform a System Load With the Previous SYS*nn* and CONF*xxyy*

Perform a system load, except in Step 3, enter the SYS*nn* of your previous operating system image subvolume, and in Step 4, select the **Saved version** of the CONF*xxyy* configuration file that you created under Save the Current Configuration File (CONFxxyy) on page 4-1.

△ **Caution.** Starting with the G06.06 RVU, the configuration file is automatically upgraded to alter records for all storage devices. Loading the system with an upgraded configuration file and a previous RVU causes a processor halt (disk-process error code%011500).

Reload the Remaining Processors

Use the TACL RELOAD command to load the operating system into the remaining processors.

You are now back to your previous RVU. You can start your applications, including TMF.

Resume Normal Operations

Resume normal operations by invoking the proper startup files to start system processes and user applications after falling back to the previous RVU.

Note. If you receive this error message when you attempt to start DSM/SCM:

```
ERROR: *1081* PATHCTL FILE IS INCOMPATIBLE <COLD START REQUIRED>
```

1. Stop the $YPHI PATHMON process:

   ```
   > VOLUME $dsmscm_vol.ZDSMSCM
   > STOP $YPHI
   ```

2. Run the PATHCOLD macro:

   ```
   > PATHCOLD
   ```

3. Start TMF:

   ```
   TMFCOM>START TMF
   ```

   If TMF is not started or running, a TACL error appears.

4. If needed, run the DSM/SCM FALLBACK macro:

   a. Stop DSM/SCM if it is not already in the stopped state:

   ```
   > RUN STOPSCM
   ```

   b. Run the FALLBACK macro:

   ```
   > RUN FALLBACK
   ```

   The FALLBACK macro is interactive and extensive. Answer the prompts accordingly.

5. Start DSM/SCM:

   ```
   > RUN STARTSCM
   ```

Configure Spooler

RVUs for G06.00 and later RVUs contain spooler product version T9101D46, which introduced a spooler control file in a new format. Although it is still a type 128 file, internally it is considerably different from the format used in the base T9101D41 spooler. For this reason, it is not possible to warm start a version of the spooler prior to T9101ADI with a control file produced by the T9101D46 or D48 product version of the spooler. You must save the control files and collection data files before warm starting the new version of the spooler.

In G06.03, T9101D48 was introduced and its control file is the same as the D46 version.

To return to the previous version of spooler:

1. Restore the control files.
2. Restore the collector files.
3. Warm start the previous version.

For detailed instructions on warm starting the spooler, see the *Spooler Utilities Reference Manual*. See also Support Note S03006.

A

Using DSM/SCM to Install SPRs

SPRs provide new features between RVUs or correct software problems from a previous RVU. This appendix describes tools available for investigating SPRs and instructions on how to install SPRs.

△ **Caution.** Do not apply any SPR to an RVU without first verifying (using Scout for NonStop Servers, for example) that the SPR can be installed on that specific G-series RVU.

See the *G06.24 Release Version Update Compendium*, the Interactive Upgrade Guide, and Section 3, Installing SPRs Before Upgrading to the G06.24 RVU of this guide for information on SPRs that you might need to apply to your current RVU before upgrading to the G06.24 RVU.

Tools for Managing SPRs

Always keep an SPR log file that lists which SPRs have been reviewed, selected, and installed on your system:

- Update the SPR log regularly to maintain accurate and current information about the SPRs installed on your system.
- Document the reasons for a decision not to install SPRs that have been issued for products you run on your system.

Scout for NonStop Servers

Using Scout for NonStop Servers, you can display detailed information about RVUs, SPRs, and prerequisites for SPRs. You can also access:

- Outage Prevention Notifications (OPNs)
- Hotstuff messages
- Support Notes
- RVU (softdocs) and softdoc addendums

After researching available SPRs, you can download those you consider appropriate for your system directly to your workstation and then use FTP to transfer downloaded SPRs to your server, or you can request tape delivery.

DSM/SCM

DSM/SCM has automatic features that can help you keep records of SPRs. You can use the DSM/SCM Planner Interface to generate a number of prepackaged reports, including reports that list:

- The products on a system and the SPRs applied to those products
- The SPRs that have been replaced by a specific SPR
- The requisite SPRs for a selected SPR

You can also use the DSM/SCM Archive to export SPRs to different SYS*nn*s.

See the *DSM/SCM User's Guide* for more information.

SPRNOTES

You can use SPRNOTES to research an SPR before installing it. Read the installation instructions and considerations documented in the SPRNOTE, which includes:

- A summary of SPR contents
- Lists of SPRs required for this SPR
- Installation considerations, including tasks to perform before and after running DSM/SCM
- A summary of problems corrected
- A summary of known problems remaining

Keep a copy of each SPRNOTE and record the status of the related SPR. For example, record whether the SPR is not applicable, is already installed, or needs to be installed.

Install SPRs With DSM/SCM

The steps for using DSM/SCM to install SPRs are basically the same as those for installing a SUT.

Save the Current Configuration

First, save the current system configuration database CONFIG file. Use the SCF SAVE command:

1. At a TACL prompt, start SCF:

   ```
   2> SCF
   ```

2. List the saved configuration files. At the SCF prompt, enter:

   ```
   -> FUP INFO $SYSTEM.ZSYSCONF.CONF*
   ```

3. Save the current configuration by using a unique file name. At the SCF prompt, enter:

   ```
   -> SAVE CONFIGURATION xx.yy
   ```

   where *xx.yy* variable is a number from 0.0 through 99.99.

This example saves the current system configuration to the file $SYSTEM.ZSYSCONF.CONF1101:

```
-> SAVE CONFIGURATION 11.1
The configuration file $SYSTEM.ZSYSCONF.CONF1101 has been created.
```

If you specify a configuration file that already exists, SCF asks you if you want to replace it. If you specify that you do not want to replace the existing file, SCF does not overwrite the file. You must type another SAVE command to save the current configuration file.

Determine the Current SYSnn

There are several ways to record the current SYS*nn* subvolume on your system.

You must use the current SYS*nn* subvolume if you need to fall back to your current RVU. You must use a different SYS*nn* subvolume to create a new software revision.

1. At a TACL prompt, enter:

```
$SYSTEM SUPER 6> sysinfo

SYSINFO - T9268D37 - (27 Nov 97)  SYSTEM \ELI  Date 27 Mar 2000,
22:00:18
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1985, 1987-1997

         System name    \ELI
  EXPAND node number    033
       Current SYSnn    SYS01
       System number    000000
  Software release ID   G06.06
```

2. Issue a TACL FILEINFO command on `$system.*.osimage` to list the SYS*nn* subvolumes on your system and determine which one is open:

```
$SYSTEM.SYS00
               CODE  EOF      LAST MODIFIED  OWNER    RWEP   PExt  SExt
OSIMAGE           0  57354240 15DEC1999 9:57 255,255  NUNU   200   200

$SYSTEM.SYS01
               CODE  EOF      LAST MODIFIED    OWNER   RWEP   PExt SExt
OSIMAGE           0  57393152 05APR2000  8:56  255,255 NUNU   200  200
```

3. At a TACL prompt, enter a STATUS 0,0 command to see which SYS*nn* subvolume is currently being used:

```
3> status 0,0

System \ELI

Process       Pri PFR %WT     Userid  Program file  Hometerm
              0,0 201 P R 000 255,255 $SYSTEM.SYS01.OSIMAGE
$YMIOP.#CLCI
                          Swap File Name: $SYSTEM.#0
```

Note. DSM/SCM notifies you in the Build/Apply Request dialog box if a SYSGEN is required and then runs SYSGEN automatically**.**

Receive the SPR Into the DSM/SCM Archive

Before Starting DSM/SCM

1. Verify that both OutsideView Startup TACL windows ($YMIOP.#CLCI) are open. If these windows are closed, DSM/SCM cannot complete the Build/Apply without errors. You will have to start the Build/Apply from the beginning.
2. Start TMF if it is not already running:

```
> TMFCOM START TMF
```

Bring the SPR Into the DSM/SCM Archive

1. Start DSM/SCM if it is not already running:

```
> volume $dsmscm_vol.ZDSMSCM
> RUN STARTSCM
```

2. Log on to the DSM/SCM Planner Interface.
3. In the Software in Archive dialog box, click **Receive software**.

   The Receive Software Request dialog box appears and DSM/SCM automatically assigns the software input a name based on information received from the SPR input. You can enter a new name if you want.
4. In the Receive Software Request dialog box, click **Input source** to display the Request Source Options dialog box.
5. If the SPR has been received on disk or has been restored from tape to disk, click **Volume.subvolume**.
6. Enter the name of the distribution subvolume containing the SPR, and then click **Add.**

   If the SPR was received on tape, click **Tape drive** and select a tape drive from the list.
7. Click **OK**.

8. In the Receive Software Request dialog box, click **Scheduling**.
9. Enter the time you want your Receive Software Request to run. The default option is for the request to run immediately. If this is what you want, click **OK**.

Create a New Software Configuration That Includes the SPR

After the SPR has been received into the Archive, you can copy it. To create a new software configuration that includes the SPR:

1. In the Configuration Revisions dialog box, select the configuration you are updating, and click **New Software Revision.**

   The New software revision dialog box appears.
2. In the Software in Archive dialog box, select SPRs to be added to the current configuration and click **Copy to**.

Build the New Revision

After you have created a new software revision, prepare to install it on your target systems by building it into an executable form:

1. In the New software revision dialog box, click **Build/Apply** to list options for your Build/Apply.

   The Build/Apply Request dialog box appears with all selections dimmed and unavailable.

   In a few minutes, the dialog box is refreshed with defaults selected.
2. Select **Build** (if not connected to an Expand network) or **Build, apply & process snapshot** (if connected to an Expand network).
3. Include in the activation package either only changed files or all files.
4. In the Activation SYS*nn*: box, enter the current SYS*nn* (if no SYSGEN is required) or the new SYS*nn* (if SYSGEN is required).

   Note. If the Build/Apply Request dialog box informs you that SYSGEN is required, make sure the spooler is active and not 100 percent full before executing the Build/Apply request. At a TACL prompt, start SPOOLCOM and issue a COLLECT, STATUS command.

   ---
5. Select **Scheduling, Output, SYSGEN, TSV Location**, and **File Placement** options and configure as appropriate for your system. See the *DSM/SCM User's Guide* or the online help (*Building and Applying a New Configuration* topic) for more information about these Build/Apply Request options.
6. In the **Build/Apply Request** dialog box, click **OK**.
7. When the Status window indicates that the request is done, select **Window >Refresh**.

This step updates the Software in Archive window to show the newly received software.

8. Exit the DSM/SCM Planner Interface.

Print Operator Instructions From the Target Interface (ZPHITI)

1. Make sure that spooler is active.
2. On the DSM/SCM subvolume, type:

   ```
   RUN ZPHITI
   ```

   The TI Logon screen appears.
3. Type your user ID and password and press **F1** to log on to the Target Interface.

   The Main Menu appears.
4. Type **3** (Perform target activities) in the Selection number field and press F1.

   The Target Menu - Select Target screen appears.
5. In the Selection number field, type the number corresponding to the logical target on which the new software was applied and press **F1**.

   The Target Menu - Select Action screen appears.
6. In the Selection number field, type **3** (Review operator instructions for the last apply completed) and press **F1** to display the operator instructions.
7. Type a printer location in the Print operator instructions field and press **F9** to print the operator instructions.

Run ZPHIRNM

During the Build/Apply phase, DSM/SCM places product files in their subvolumes with temporary (fabricated) file names so that the new files do not conflict with the file names of currently running programs. After the Build/Apply finishes, run the ZPHIRNM program on the target system to:

- Rename the files that currently have actual file names with fabricated names. These files become obsolete when the new files are renamed.
- Rename the new files, which have fabricated names, with their actual names.

1. At a TACL prompt, enter the following command from the DSM/SCM subvolume:

   ```
   > RUN ZPHIRNM $vol.SYSnn
   ```

   where:

- *$vol* specifies the default current system load volume, usually $SYSTEM.
- SYS*nn* specifies the current or new (depending on whether SYSGEN was required) SYS*nn* subvolume.

For example:

```
> RUN ZPHIRNM $system.SYS00
```

2. When asked if you want to use a log file with the session, type **Y** and press **Enter**.
3. When prompted, type a file name for the log file and press **Enter**.

   ZPHIRNM issues this message and begins processing:

   ```
   Log file is open, Zphirnm will now begin processing.
   ```
4. Verify that ZPHIRNM ran successfully by reviewing the log file.
5. If ZPHIRNM did not run successfully, correct the problem and rerun.

   See the *DSM/SCM User's Guide* for troubleshooting procedures and the *DSM/SCM Messages Manual* for a complete list of ZPHIRNM messages.

If Running INSTALL^TEMPLATES Is Required

If the operator instructions state that you should run INSTALL^TEMPLATES to update EMS template files, you must be logged on as the super ID (255,255) user to run the INSTALL^TEMPLATES macro. This macro cannot be run with the NOWAIT option and takes approximately ten minutes to finish.

Since the G06.10 RVU, if there is a resident template file in any of the input subvolumes, the INSTALL^TEMPLATES macro displays this error:

```
Invalid nonresident template file -- not key sequenced:
$SYSTEM.ZTEMPL.NEWRES

*** INSTALL^TEMPLATES: Terminated due to error ***
```

HP recommends that you designate another subvolume (for example, $SYSTEM.TEMPLATE) to contain the output from INSTALL^TEMPLATES. When you specify this location, a non-resident template file is not present in ZTEMPL, and the error does not appear.

1. Set the volume and subvolume to $SYSTEM.ZINSAIDS:

   ```
   -> volume $system.zinsaids
   ```
2. Load the TACLMACS file:

   ```
   -> load /keep 1/ TACLMACS
   ```

Note. If you run the INSTALL^TEMPLATES macro with no arguments, you are prompted to provide required information.

For information on the INSTALL^TEMPLATES arguments, print the usage notes:

```
-> volume $system.zinsaids
-> load /keep 1/ TACLMACS
-> install^templates /out outdev/ help
```

where *outdev* is the name of the desired output device.

3. Choose a location on $SYSTEM to keep updated template files:

```
tacl>volume $system.template
```

4. Rename any existing templates:

```
tacl> rename newres, oldres
tacl> rename newnres, oldnres
```

5. Run INSTALL^TEMPLATES to create updated template files:

```
tacl>install^templates newres newnres $system.ztempl
```

Note. Running this macro on G-series systems permanently changes the location of the EMS template files. DSM/SCM creates new EMS templates when it creates a new SYS*nn*. However, when the new system is loaded, the old template files named in the last execution of INSTALL^TEMPLATES are opened instead of the new files. To use the new RTMPLATE and TEMPLATE EMS files created by DSM/SCM, use the SCF ALTER command:

```
-> ASSUME SUBSYS $ZZKRN
-> ALTER, RESIDENT_TEMPLATES $SYSTEM.SYSTEM.RTMPLATE, &
   NONRESIDENT_TEMPLATES $SYSTEM.SYSTEM.TEMPLATE
```

The files newres and newnres are meant to be used as temporary names until the next SYSGEN and system load.

The following error message might occur when running the INSTALL^TEMPLATES macro:

```
>$SYSTEM.SYSTEM.SCF /NAME $Z019,INV :INBUF.1,OUTV :OUTBUF.1/
Current Nonresident template file is: $SYSTEM.TEMPLATE.NEWNRES
TEMPLATE and NONRESIDENT files must be different:
$SYSTEM.TEMPLATE.NEWNRES
*** INSTALL^TEMPLATES: Terminated due to error ***
```

The message indicates that the template and nonresident files specified in the INSTALL^TEMPLATES command are identical to those on the current subvolume. The INSTALL^TEMPLATES macro tries to create the newres and newnres files, but stops when it finds that these template files already exist.

To correct the problem:

1. Rename the current files:

```
tacl> rename newres, oldres
tacl> rename newnres, oldnres
```

2. Run the INSTALL^TEMPLATES macro again and use the file names `newres` and `newnres`.

   The following message indicates that the templates are successfully installed:

```
>$SYSTEM.SYS00.FUP /NAME $Z03M,INV :INBUF.1,OUTV :OUTBUF.1/
File Utility Program - T6553D45 - (14APR2000)  System  \TINY
Copyright Tandem Computers Incorporated 1981, 1983, 1985-2000
SECURE
($SYSTEM.TEMPLATE.NEWRES,$SYSTEM.TEMPLATE.NEWNRES),"NUNU"
*** INSTALL^TEMPLATES: Completed sucessfully ***
```

If a System Load Is Required

If OSM is installed and configured, you can use these instructions to load your RVU.

Halt the Processors

1. If necessary, log on to the TSM Low-Level Link Application. If you are using OSM, log on to the OSM Low-Level Link.
2. On the toolbar, select **Processor Status** to open the Processor Status dialog box. Select the processors to be halted.
3. From the Processor Actions list, select **Halt**.
4. Click **Perform action**.
5. Click **OK** when asked if you are sure you want to halt.
6. When the Action Status box confirms that all the processors have been halted, close the Processor Status dialog box.

Do not log off the OSM Low-Level Link or TSM Low-Level Link Application.

Perform a System Load

When you perform a system load, the operating system is loaded from disk into the memory of one processor. (This operation is sometimes called a device load or cold load.) All possible paths to processor 0 are tried; if these fail, all possible paths to processor 1 are tried. The remaining processors are loaded by commands in the CIIN file. The initial TACL process stops after executing the CIIN file.

1. Using the OSM Low-Level Link or TSM Low-Level Link Application, click **Start System**.

   The System Startup dialog box appears.

2. In the **System Startup** dialog box:

   - In the SYS*nn* box, enter the number of the system subvolume containing the version of the operating system that you want to load. The value *nn* must be a two-digit octal number in the range %00...%77.

     Note. The number of the SYS*nn* last used to start the system appears as the default. Type over it with a new two-digit number to change to a different version of software stored in the SYS*nn* subvolume on the system disk**.**

     Note. The System Startup dialog box requires the primary and mirror system disks ($SYSTEM) to be installed in Group 01, Module 01, slots 11 and 12. It first tries slot 1.1.11 and then 1.1.12. Starting with the G06.06 RVU, you can install the system disk in any two disk slots in Group 01.

     To start your system with a system disk in disk slots other than 11 and 12, you must go through the Processor Status dialog box, Load action, to access the Load Processor-n from Disk dialog box. This dialog box enables you to enter the group, module, and slot number of the disk from which you want to load; it does not try alternate paths or alternate disk slots. See the *NonStop S-Series Operations Guide* for more information.

   - In the Configuration File area, select **Current (CONFIG)**.
   - Make sure that the CIIN disabled option is *not* selected.

3. Click **Start System**.

△ **Caution.** If you want to stop the system startup process, click **Abort** (the process takes effect within 30 seconds). If you stop a system startup before it has finished, the state of your system cannot be predicted. You might need to perform another system startup to enable the system to resume normal operation.

Do not close the Start System dialog box; otherwise, your system will not load.

When the system load has successfully initiated (the operating system loaded into the memory of processor 0 or processor 1), the System Status box in the System Startup dialog box shows:

```
SYSTEM STARTUP COMPLETE, NSK RUNNING ON PROCESSOR n
```

The other processors are now primed for reload.

4. On the toolbar of the OSM Low-Level Link or TSM Low-Level Link Application window, select **Processor Status**.

   The Processor Status dialog box should show *Executing NonStop OS*.

   EMS event stream and startup TACL windows are automatically launched on the system console. The process might take a few seconds.

   Note. The startup TACL window might launch directly on top of the EMS event stream window. Drag the startup TACL OutsideView window to the side to see the EMS event stream window. You can also use the OutsideView buttons on the bottom bar of the system console to toggle between the windows.

5. If the EMS event stream window and the startup TACL window have not launched on the system console or remain empty for more than a few minutes after the system startup completion message appears, start alternate EMS event stream and startup TACL windows. (Allow approximately 5 minutes.)
6. Close the **System Startup** dialog box. The Start System Status window closes automatically.

Reload the Processors (If Necessary)

When CPU0 is running the NonStop Kernel operating system, you can reload the processors by issuing the RELOAD command from a TACL prompt. (Depending on your configuration, you might not need to reload the processors explicitly.) After processor 0 or processor 1 is successfully running the NonStop Kernel operating system, reload any remaining processors in the system.

Start Your Applications and Processes

After you have reloaded the processors and the Processor Status screen shows all processors executing the NonStop Kernel operating system, you can start your applications and processes.

Verify that your system is up and running.

B

Installing the Latest DSM/SCM SPRs and Client Software

Before You Begin Installing DSM/SCM and Client SPRs

Note.

- If you want DSM/SCM to manage OSS files, you *must install* both the D46 DSM/SCM SPR and the client version *before* you receive the SUT. You can install the D46 client version (T6031D46^ABJ) either before or after installing the D46 T6031^ABJ SPR. However, this appendix describes installing the D46 SPR first on the server side and then on the client side.
- If you are on a D31 product version of DSM/SCM and you *do not need* to manage new OSS files, HP recommends that you always upgrade to the newest D46 DSM/SCM SPR and client before installing the G06.24 RVU.
- The latest DSM/SCM client version (T6031D46^ABJ) is available *only* on the SUT unless you have ordered new system consoles.

Table B-1 on page B-1 describes all of the DSM/SCM versions introduced on G-series RVUs.

Table B-1. G-Series DSM/SCM PVUs and SPRs

PVU	SPR	RVU	Description (Major changes)*
C32		G03 through G04	Used for RVUs G03 through G04.Uses the AC0INFO file.
D30		G05.00 through G06.08	Used to manage the new SRLs introduced in G05.00. New AC1INFO file is introduced.
T6031D31	AAR	G06.09 through G06.17	Merges four formerly separate product numbers (T6029 [the CNFGINFO tool]), T6030 (Host/Planner components), T6031 (Target components), and T6033 (S-series Utility Package) into one product. The T6031D31 product version of DSM/SCM is identical to the D30-based T6030AAR (DSM/SCM host/planner components) and T6031AAR (DSM/SCM target components) versions, which were introduced in the G06.08 RVU.
T6031D46		G06.18	Manages and audits OSS files. New AC7INFO file is introduced.

Table B-1. G-Series DSM/SCM PVUs and SPRs (continued)

PVU	SPR	RVU	Description (Major changes)*
T6031D46	ABE	G06.19	Provides an updated version of the DSM/SCM CNFGINFO tool. OSS developers can use this tool to create A7CINFO files in their products' DSVs. A7CINFO files are required by DSM/SCM for automated OSS file management.
T6031D46	ABF	G06.20	DSM/SCM is enhanced so that changing the alternate name of $SYSTEM disk does not display an error.
T6031D46	ABG	G06.21	Compatible with client software version T6031D46^ABF. DSM/SCM is enhanced so that the FALLBACK macro does not fail when rerun.
T6031D46	ABH	G06.22	Compatible with client software version T6031D46^ABH. Verify Database deletes fabricated files for an unmanaged TSV. The CNFGINFO tool validates correctly the TACL directory name.
T6031D46	ABI	G06.23	Compatible with client software version T6031D46^ABI. DSM/SCM now creates the softdoc file on the specified subvolume location with the standard file name T*nnnn*V*nn*.The Build/Apply process now completes without warnings when products T6035PAX, T5893PAX are not OSS-enabled. These new OSS files are placed under the ownership of the Planner Interface.
T6031D46	ABJ	G06.24	Compatible with client software version T6031D46^ABJ. DSM/SCM no longer replaces the customized RTMPLATE file on the active SYS*nn*; the Configuration Products report (ZPHIR10) no longer lists duplicate entries.
* Always review the T6031D46 softdoc.			

Before You Begin Installing the Software Identification (SWID) SPR

If you are upgrading from a pre-G06.20 RVU, besides restoring T6030D31 and T6031D46, you must also upgrade the Software Identification (SWID) (T9298D40AAK) product at the same time to avoid a problem with ZPHIRNM renaming *hybrid* SRLs to fabricated names. (With the introduction of dynamic-link libraries (DLLs) for TNS/R systems in G06.20, NSKCOM (T5838) provides new commands to NLD (T6017) so that public SRLs are built as *hybrid DLL-SRL* objects.)

Note. If you do not restore SWID, and you are run the G06.24 RVU and perform another Build/Apply with the previous pre-G06.20 SWID that was used to build the hybrid SRLs, and you do not require a system load, the DSM/SCM *fingerprint* file will be different. As a result:

- A new set of SRLs is created.
- When the ZPHIRNM is complete, the open SRLs are renamed to fabricated names.

If you are on a G06.20 RVU or later, you do not need to restore the SWID product before receiving the SUT. See Alerts in this appendix.

Alerts

- If you are on a pre-G06.20 RVU, besides restoring R6030D31 and R6031D46, you must also receive R9298D40 in the DSMSCM Archive when you build the new configuration. A new SWID SPR (T9298AAK) is introduced in G06.24, but you do not need to restore and receive the SWID SPR if you are running a G06.20 RVU or later. See Verify That SWID Is Installed on page B-17.

  Note. Until the T6031ABE, or later, SPR of DSM/SCM is installed, you must select the **Receive-all-files** option on *all* software inputs into the DSM/SCM Archive whether or not you want to manage OSS files. When the T6031ABE, or later, SPR is applied, you can then choose the **Receive-all-files** *only if* you want to manage OSS files.

- Determine the Product Version of DSM/SCM on the Host System and Determine the Product Version of DSM/SCM on the Client.
- Save the current configuration database (see Save the Current Configuration File (CONFxxyy) on page 4-1).
- Keep the startup TACL windows, the EMS Event Stream window, and the DSM/SCM client interface windows open whenever you are performing a Build/Apply. Otherwise, Build/Apply errors will result.
- If you receive an error indication in the Request Status window, you might have to reinitiate the Build/Apply. See the *DSM/SCM Messages Manual* to learn the nature and severity of the problem.

Determine the Product Version of DSM/SCM on the Host System

To determine which product version of DSM/SCM is currently installed on your system, use the VPROC command to determine the product version of TAEXE (Apply product of DSM/SCM) and CBEXE (Build product of DSM/SCM).

At a TACL prompt, enter:

```
> volume $dsmscm_vol.ZDSMSCM
> vproc taexe
> vproc cbexe
```

If your VPROC commands do not display the following versions, install the latest D46 DSM/SCM product version as described in Copy (RESTORE) the D46 DSM/SCM Product Version and SWID (Optional) to Disk on page B-6:

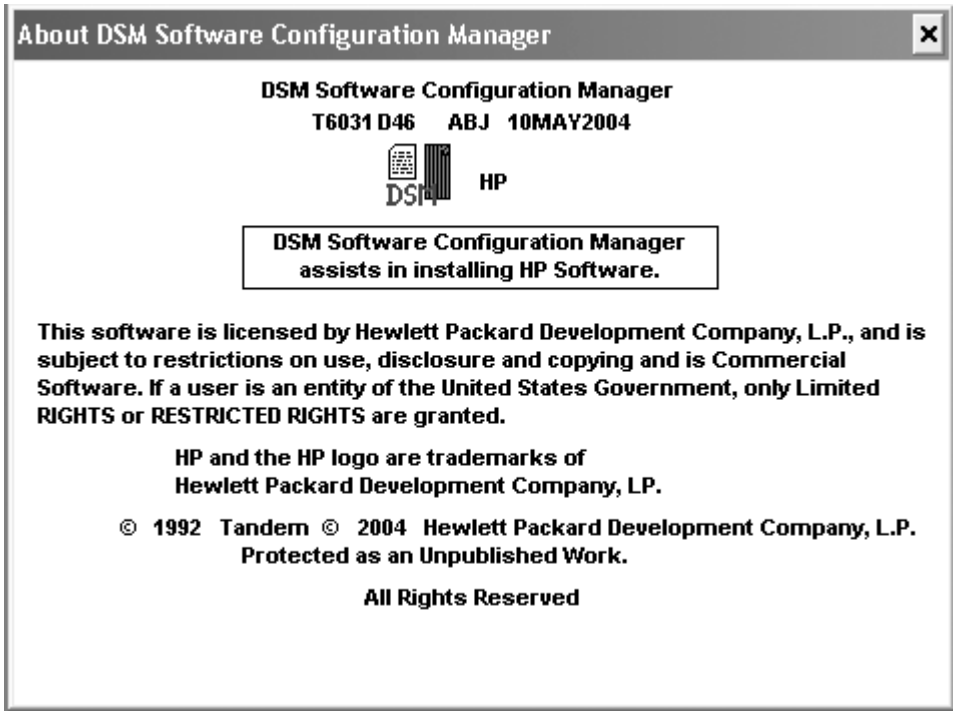
The following shows the latest D46 product version of DSM/SCM after DSM/SCM has been activated. (Bold lettering is used to show the vproc command and the latest version):

```
$TDSV ZDSMSCM 8> vproc cbexe
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \TINY     Date 18 AUG 2004, 13:36:49
Copyright 2003 Hewlett-Packard Development Company, L.P.$TDSV.ZDSMSCM.CBEXE
     Binder timestamp:  20APR2004 03:37:46
    Version procedure:  S7032D20^27FEB04^SWARCCP^AAH
    Version procedure:  T6031D46_10MAY2004_19APR2004ABJ
           Target CPU:  UNSPECIFIED
      AXCEL timestamp:  20APR2004 03:40:33

$TDSV ZDSMSCM 7> vproc taexe
VPROC - T9617G03 - (07 AUG 2003) SYSTEM \TINY     Date 18 AUG 2004, 13:36:39
Copyright 2003 Hewlett-Packard Development Company, L.P.

$TDSV.ZDSMSCM.TAEXE
     Binder timestamp:  20APR2004 04:34:37
    Version procedure:  S7032D20^27FEB04^SWARCCP^AAH
    Version procedure:  T6031D46_10MAY2004_19APR2004ABJ
           Target CPU:  UNSPECIFIED
      AXCEL timestamp:  20APR2004 04:38:09
```

Determine the Product Version of DSM/SCM on the Client

To determine which product version of DSM/SCM client software is installed, start the DSM/SCM Planner Interface. Before prompting you to log on, the About DSM/SCM window briefly displays version information.

The latest DSM/SCM client version for the G06.24 RVU is:



VST004.vsd

To install the DSM/SCM client, see Install the DSM/SCM Client From ZDSMSCM on page B-18.

Copy (RESTORE) the D46 DSM/SCM Product Version and SWID (Optional) to Disk

To copy the D46 product version of DSM/SCM and the SWID product (optional, depending on your current RVU) from the G06.24 RVU to disk, at a TACL prompt, enter the RESTORE command:

```
>RESTORE/OUT $S.#nnn.DSM/$tape, ($*.R6030D31.*,$*.R6031D46.*,$*.R9298D40.*),
VOL $DSMSCM, LISTALL
```

where *nnn* is the RVU number (G06) and where $*tape* is the name of the tape drive containing the G06.24 RVU.

If you are already on a G06.20 RVU, enter:

```
>RESTORE/OUT $S.#nnn.DSM/$tape, ($*.R6030D31.*,$*.R6031D46.*), VOL $DSMSCM,
LISTALL
```

If you are currently on a G06.08 RVU or later and all files are restored without error, you might see a display for DSM/SCM similar to:

```
$TDSV.R6030D31

 A0CINFO       963     3072    14Jul2000 9:59  255,0  A0A0  K   212 1
 T6030D31      101     40888   14Jul2000 9:59  255,0  A0A0


$TDSV.R6031D46

 A0CINFO       963     27648   14Oct2002 15:38 255,0 A0A0   K   212 1
 CBEXE         100     3303424 28Jul2004 19:54 255,0 A0A0
 CLEANOSS      101     1576    11Jun2002 10:43 255,0 A0A0
 CNFGC         101     81740   4Oct2002  11:52 255,0 A0A0
 CNFGCOB       101     81752   4Oct2002  11:52 255,0 A0A0
 CNFGINFO      100     75776   8Oct2002  19:54 255,0 A0A0
 .
 .
```

Receive the D46 SPRs for DSM/SCM

1. Start TMF and DSM/SCM if they are not already running:

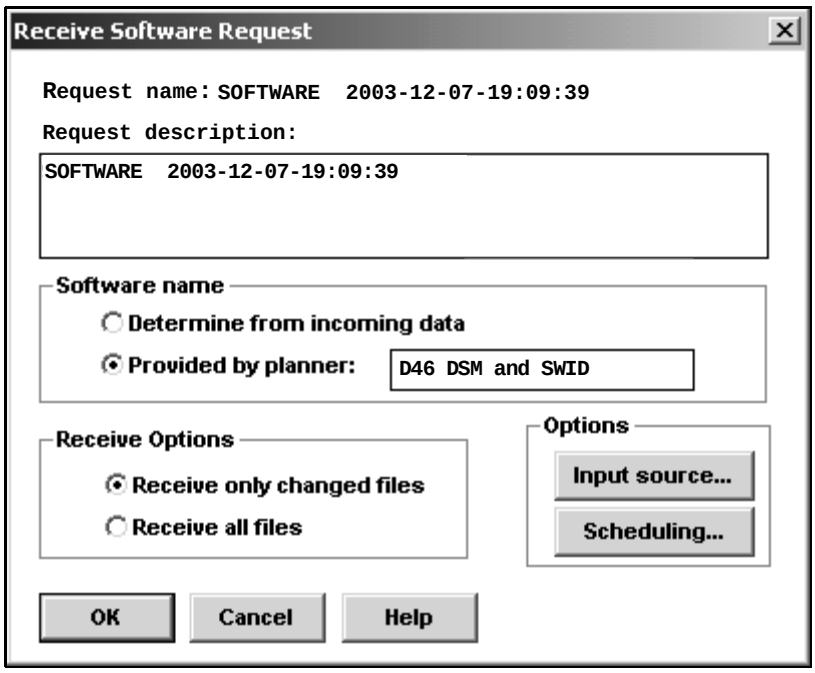
   ```
   > TMFCOM START TMF
   > VOLUME $dsmscm_vol.ZDSMSCM
   > RUN STARTSCM
   ```

2. Log on to the DSM/SCM Planner Interface (**Start>Programs>Dsm_scm>DSMSCM**).

3. In the Software in Archive dialog box, select **Receive software**.

   DSM/SCM displays the Receive Software Request dialog box.

4. Under Software name, select **Provided by planner** and enter a name for the D46 DSM/SCM product version and SWID. (This field is 17 characters.) For example:



VST353.vsd

5. Under Options, click **Input source**.

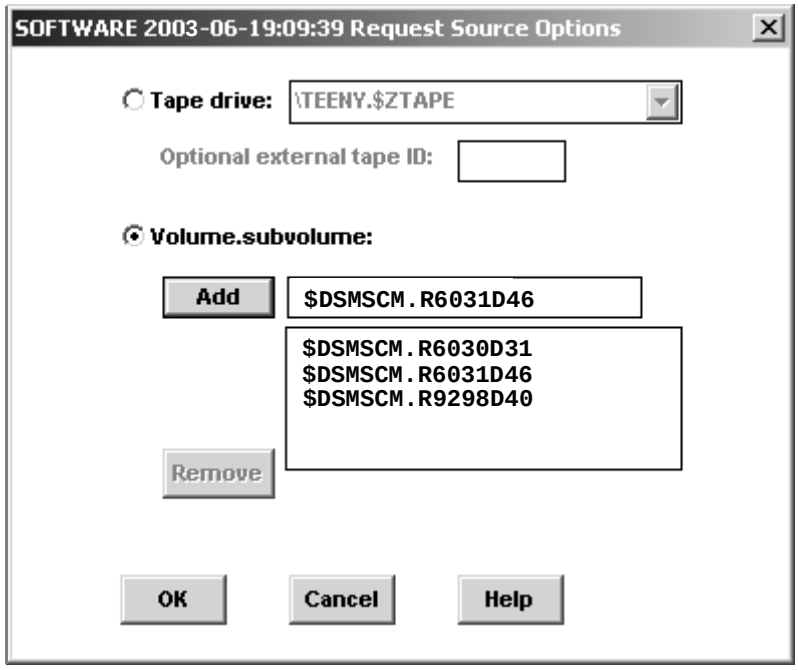
   DSM/SCM displays the Request Source Options dialog box.

6. Select **Volume.subvolume.**

7. In the **Add** text box, enter each distribution subvolume for the DSM/SCM files that you specified earlier in the RESTORE command:

   ```
   $DSMSCM.R6030D31
   $DSMSCM.R6031D46
   $DSMSCM.R9298D40
   ```

   Your Request Source Options dialog box should look similar to this:



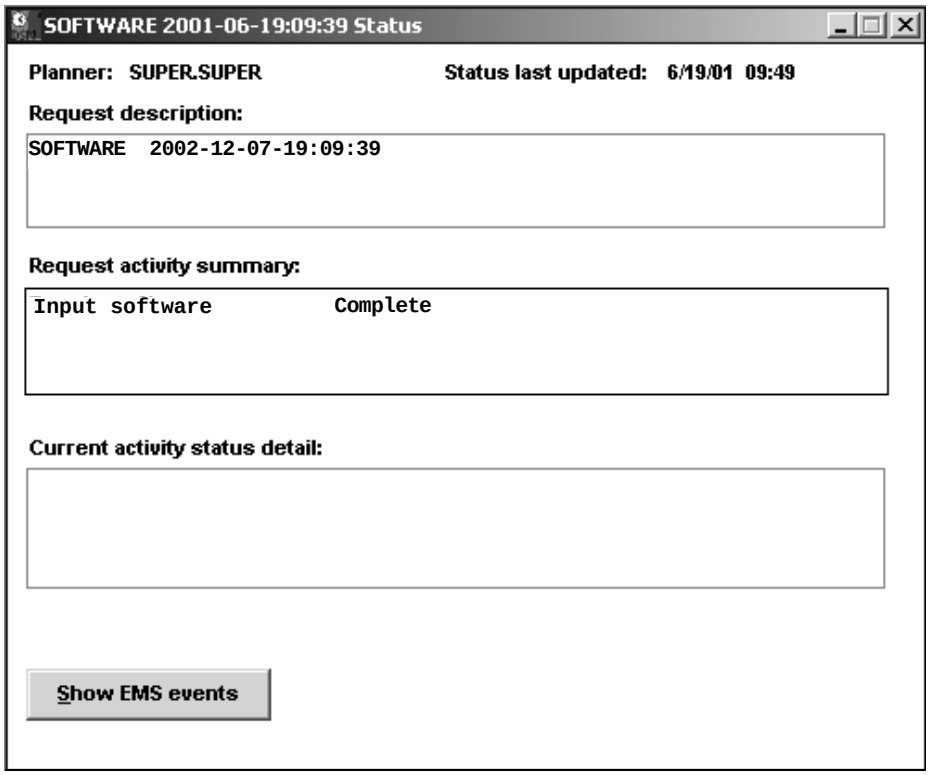
VST350.vsd

8. Click **OK**.

   You are returned to the Receive Software Request dialog box.

9. Click **OK** to run the request immediately. (The request takes approximately 15 minutes to finish.)

The Status dialog box appears. Wait until the display for the Request activity summary appears as *Complete*, and then close the Status window. For example:



VST351.vsd

10. Select **Window>Refresh** to update the Software in Archive dialog box to include the received software.

Create a New Software Revision for DSM/SCM D46 SPR and SWID

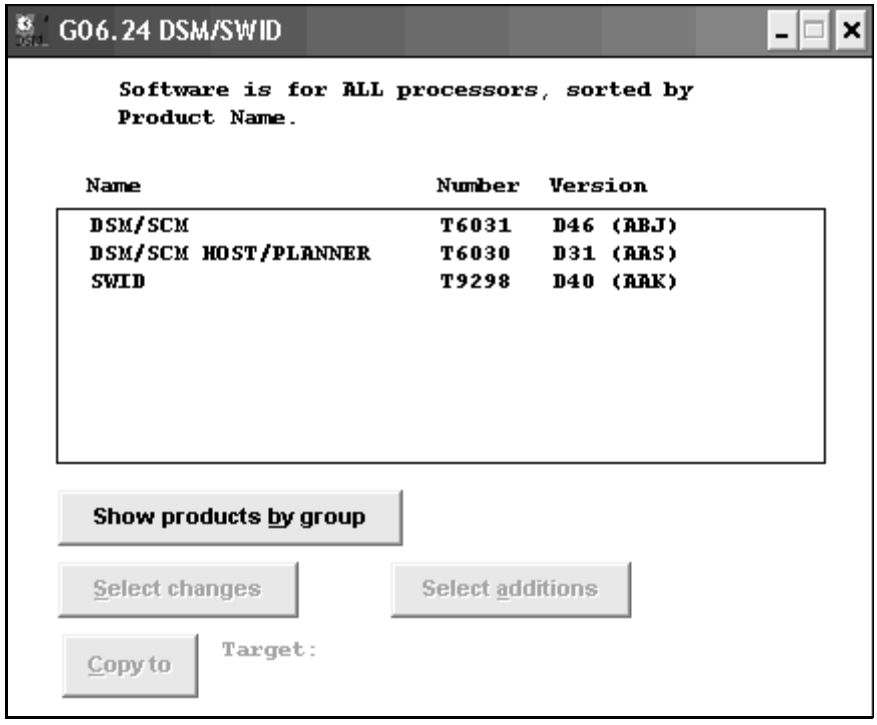
1. In the Configuration Revisions dialog box, select the target system being upgraded and the current revision of the system being upgraded. Select **New software revision**.

   DSM/SCM opens the New dialog box listing the products in the last software revision that was built for the target. Allow several minutes for the dialog box to appear.

2. In the Software in Archive dialog box, select the DSM/SCM software you just received and click **Copy to**.

   The DSM/SCM files are copied from the Archive to the new software revision.

3. From the New software revision dialog box, verify that the new version of DSM/SCM and SWID (optional, depending on current RVU) are included in the new software revision. For example:



vst557.vsd

4. Edit the revision notes for the new revision:

   a. Click **Edit revision notes**.

      The Revision Notes box appears, containing the existing revision notes.

b. Enter a description of the changes to the existing text. For example, if you are migrating from a pre-G06.20 RVU, you might enter:

```
Added 05/07/2004: G06.24DSM/SWID
```

c. Click **OK** to add a written history of revisions to existing notes.

Build and Apply the DSM/SCM D46 Software Revision

The Build process creates an activation package of products contained in the new software revision. During the Apply process, the activation package is transferred to the target system. When the Apply request is finished, a snapshot is automatically created and returned to the host. Because you are building and applying only a few files, it should take less than an hour before the Build and Apply requests are finished and the snapshot is returned. When the Build and Apply requests are finished, the new software is placed in the current SYS*nn* subvolume.

1. In the New software revision dialog box, click **Build/Apply** to display the options for your Build/Apply.

   It might take several minutes for DSM/SCM to assemble the build information. During this time, the Build/Apply Request dialog box appears with all selections dimmed and unavailable.

   In a few minutes, the dialog box is refreshed with defaults selected. The name assigned to the Build/Apply request appears after Request name.

2. Click **Edit instructions** to display the Planner Instructions box.

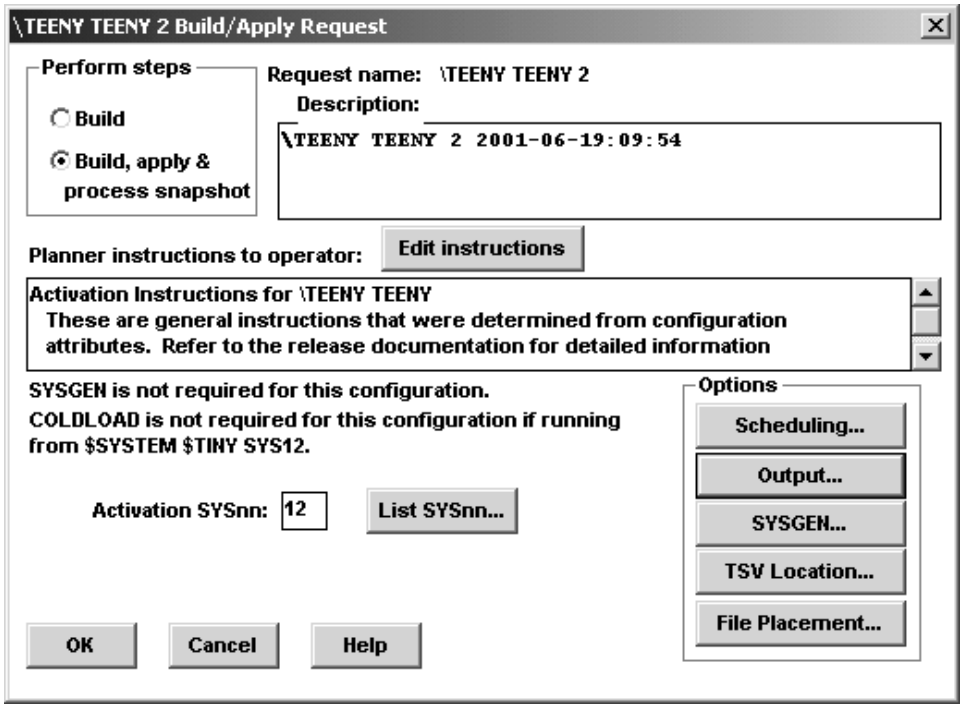
3. Edit the instructions to provide the current SYS*nn* number, and then click **OK**.

4. Complete the **Build/Apply Request** dialog box:

   a. Under Perform steps, select **Build, apply & process snapshot**.

   b. Type the current SYS*nn* in the **Activation SYS*nn*** text box (because no SYSGEN is required).

c. Click **OK**.



VST254.vsd

DSM/SCM runs the Build/Apply requests and displays a **Status** dialog box that is automatically updated at regular intervals.

5. Check EMS messages for more detailed information about your Build/Apply:
   - From the Status window, click **Show EMS events**.
   - In the EMS Events window, click **Refresh** to see newer messages**.**
   - When finished viewing, click **Close**.
6. To confirm that the Build and Apply tasks finish successfully and that a snapshot has been received into the host database, wait until the status shows that all requests are complete.
7. Select **Window>Refresh**.

   The Configurations Revision dialog box is refreshed and shows the new software configuration revision containing the D46 DSM/SCM SPR.

Rename the Applied DSM/SCM D46 Files

1. Stop DSM/SCM:

   ```
   > VOLUME $dsmscm_vol.ZDSMSCM
   > RUN STOPSCM
   ```

   where $*dsmscm_vol* is the DSM/SCM volume.

2. Run ZPHIRNM:

   ```
   > RUN ZPHIRNM $volume.SYSnn
   ```

   where SYS*nn* is the current SYS*nn* (because no SYSGEN or system load is required).

3. When asked if you want to use a log file with the session, enter **Y**.

4. When prompted, enter a file name for the log file.

   ZPHIRNM displays this message:

   ```
   Log file, filename, was successfully created.
   ```

   ZPHIRNM processes the file renaming.

5. Verify that ZPHIRNM ran successfully by reviewing the specified log file.

If Running INSTALL^TEMPLATES Is Required

If the operator instructions state that you should run INSTALL^TEMPLATES to update EMS template files, you must be logged on as the super ID (255,255) user to run the INSTALL^TEMPLATES macro. This macro cannot be run with the NOWAIT option and takes approximately ten minutes to finish.

Since the G06.10 RVU, if there is a resident template file in any of the input subvolumes, the INSTALL^TEMPLATES macro displays this error:

```
Invalid nonresident template file -- not key sequenced:
$SYSTEM.ZTEMPL.NEWRES

*** INSTALL^TEMPLATES: Terminated due to error ***
```

HP recommends that you designate another subvolume (for example, $SYSTEM.TEMPLATE) to contain the output from INSTALL^TEMPLATES. When you specify this location, a non-resident template file is not present in ZTEMPL, and the error does not appear.

1. Set the volume and subvolume to $SYSTEM.ZINSAIDS:

   ```
   -> volume $system.zinsaids
   ```

2. Load the TACLMACS file:

   ```
   -> load /keep 1/ TACLMACS
   ```

Note. If you run the INSTALL^TEMPLATES macro with no arguments, you are prompted to provide required information.

For information on the INSTALL^TEMPLATES arguments, print the usage notes:

```
-> volume $system.zinsaids
-> load /keep 1/ TACLMACS
-> install^templates /out outdev/ help
```

where *outdev* is the name of the desired output device.

3. Choose a location on $SYSTEM to keep updated template files:

```
->volume $system.template
```

4. Rename any existing templates:

```
-> rename newres, oldres
-> rename newnres, oldnres
```

5. Run INSTALL^TEMPLATES to create updated template files:

```
->install^templates newres newnres $system.ztempl
```

Note. Running this macro on G-series systems permanently changes the location of the EMS template files. DSM/SCM creates new EMS templates when it creates a new SYS*nn*. However, when the new system is loaded, the old template files named in the last execution of INSTALL^TEMPLATES are opened instead of the new files. To use the new RTMPLATE and TEMPLATE EMS files created by DSM/SCM, use the SCF ALTER command:

```
-> ASSUME SUBSYS $ZZKRN
-> ALTER, RESIDENT_TEMPLATES $SYSTEM.SYSTEM.RTMPLATE, &
   NONRESIDENT_TEMPLATES $SYSTEM.SYSTEM.TEMPLATE
```

The files newres and newnres are meant to be used as temporary names until the next SYSGEN and system load.

The following error message might occur when running the INSTALL^TEMPLATES macro:

```
>$SYSTEM.SYSTEM.SCF /NAME $Z019,INV :INBUF.1,OUTV :OUTBUF.1/
Current Nonresident template file is: $SYSTEM.TEMPLATE.NEWNRES
TEMPLATE and NONRESIDENT files must be different:
$SYSTEM.TEMPLATE.NEWNRES
*** INSTALL^TEMPLATES: Terminated due to error ***
```

The message indicates that the template and nonresident files specified in the INSTALL^TEMPLATES command are identical to those on the current subvolume. The INSTALL^TEMPLATES macro tries to create the newres and newnres files, but stops when it finds that these template files already exist.

To correct the problem:

1. Rename the current files:

```
-> rename newres, oldres
-> rename newnres, oldnres
```

2. Run the INSTALL^TEMPLATES macro again and use the file names `newres` and `newnres`.

   The following message indicates that the templates are successfully installed:

```
>$SYSTEM.SYS00.FUP /NAME $Z03M,INV :INBUF.1,OUTV :OUTBUF.1/
File Utility Program - T6553D45 - (14APR2000)  System  \TINY
Copyright Tandem Computers Incorporated 1981, 1983, 1985-2000
SECURE
($SYSTEM.TEMPLATE.NEWRES,$SYSTEM.TEMPLATE.NEWNRES),"NUNU"
*** INSTALL^TEMPLATES: Completed sucessfully ***
```

Restart Applications

You can now start your application software. Follow your site's procedures for executing the system configuration and startup (command) files to accomplish this.

DSM/SCM is often started automatically by a system command file; if not, you must start it manually as described next.

Before Starting DSM/SCM

Depending on your RVU, DSM/SCM will not work properly if SQLCI2 has changed and DSM/SCM is still using the old version.

1. Check that TMF is started:

```
> TMFCOM STATUS TMF
```

2. Verify your current configuration against the cold start configuration in PATHHOST (or PATHTARG) to check that the current configuration reflects all changes you have made.
3. Run the PATHCOLD macro from the ZDSMSCM subvolume to cold start the Pathway configuration.

Start DSM/SCM

1. Run the STARTSCM macro from the ZDSM/SCM subvolume to start DSM/SCM:

```
> RUN STARTSCM
```

These messages appear:

```
8> startscm
DSM/SCM Process Startup Function - STARTSCM - T6031D46 - (31MAR2003)
Copyright Hewlett Packard Development Company L.P. 1993-2003


NOTICE:* If the hometerm chosen during INITENV, $zhome,
        * is not currently in a paused state, STARTSCM and DSM/SCM
        * server processes may hang indefinitely.  Be sure this
        * hometerm has been paused!
```

Because the $ZHOME reliable home-term process is not an interactive process and is always paused, no action is necessary.

```
PATHWAY CONTROL FILE DATED: 21 APR 2003, 03:52:16
$Z03N: WARN   - *1079* SERVER CB-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER IS-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER MISERVER, NO STATIC SERVERS DEFINED
$Z03N: SERVER OM-001, STARTED
$Z03N: SERVER SM-001, STARTED
$Z03N: SERVER SM-T-001, STARTED

$Z03N: SERVER T9154-HELP-SERV, STARTED
$Z03N: WARN   - *1079* SERVER TA-001, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER TISERVER, NO STATIC SERVERS DEFINED
$Z03N: WARN   - *1079* SERVER US-001, NO STATIC SERVERS DEFINED
$Z03N: TCP TCP-H, STARTED
$Z03N: TCP TCP-T, STARTED
```

2. If necessary, press Enter to have STARTSCM run the PM6031 TACL macro automatically. This step takes several minutes.

```
STARTSCM: A new version of DSM/SCM has been installed and IPM6031 needs to
be run. You can either exit and run IPM6031
manually or continue and IPM6031 will be run for you.
Enter <CR> to continue or BREAK to exit.
```

Verify That the D46 Product Version of DSM/SCM Is Installed

To verify that the latest D46 product version of DSM/SCM is currently installed on your system, use the VPROC command to display the product version of TAEXE (Apply product of DSM/SCM) and CBEXE (Build product of DSM/SCM). At a TACL prompt, enter:

```
> volume $dsmscm_vol.ZDSMSCM
> vproc taexe
> vproc cbexe
```

The following shows a D46 product version of DSM/SCM after DSM/SCM has been activated:

```
\FOXII $GREECE.T6031ABJ 8> vproc cbexe
VPROC - T9617D42 - (20 DEC 2000) SYSTEM \FOXII    Date 24 JAN 2004, 04:47:11
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 2000


$GREECE.T6031ABJ.CBEXE
     Binder timestamp:  16JAN2004 04:10:20
    Version procedure:  S7032D20^27FEB04^SWARCCP^AAH
    Version procedure:  T6031D46_13JAN2004_16JAN2004ABJ
           Target CPU:  UNSPECIFIED
\FOXII $GREECE.T6031ABJ 9>

\FOXII $GREECE.T6031ABJ 9> vproc taexe
VPROC - T9617D42 - (20 DEC 2000) SYSTEM \FOXII    Date 24 JAN 2004, 04:49:15

COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 2000


$GREECE.T6031ABJ.TAEXE
     Binder timestamp:  11JAN2004 02:38:21
    Version procedure:  S7032D20^27FEB04^SWARCCP^AAH
    Version procedure:  T6031D46_13JAN2004_10JAN2004ABJ
           Target CPU:  UNSPECIFIED
\FOXII $GREECE.T6031ABJ 10>
```

Verify That SWID Is Installed

If the AAI SPR is already installed on your SYS*nn*, you do not need to restore the latest SWID SPR from tape and activate it.

This is an example of a previous SWID SPR (for G06.20 and G06.21 RVU):

```
   $system.system.swid
      Binder timestamp:    24JAN2003 13:51:31
     Version procedure:    T9298D40_29NOV2002_24JAN2003AAJ
            Target CPU:    TNS, TNS/R
```

Here is the latest SWID SPR:

```
$SYSTEM.SYSTEM.SWID
     Binder timestamp:  13APR2004 23:11:20
    Version procedure:  T9298D40_04MAY2004_14APR2004AAK
           Target CPU:  TNS, TNS/R
      AXCEL timestamp:  13APR2004 23:14:01
```

Recovery for Problems While Installing the D46 Version of DSM/SCM

If you encounter problems while installing the D46 version of DSM/SCM, see the following information and the *DSM/SCM User's Guide*.

If NonStop Errors Are Displayed

If you are on an earlier RVU (G05 or earlier), and receive NonStop SQL errors when you try to install the D46 product version of DSM/SCM, you might need to run the IPM6031 TACL macro:

```
$DSMSCM ZDSMSCM>IPM6031
```

Starting with the D30 PVU of DSM/SCM, the IPM6031 TACL macro is run automatically during STARTSCM when DCSM/SCM detects that the DSM/SCM servers or database managers have changed. The IPM6031 TACL macro also ensures that the TAEXE and CBEXE programs are secured correctly.

Thus, if you are migrating from the T6031^ABB SPR to the T6031D46 PVU or from a recent T6031D46^ABE SPR to T6031D46^AFB, STARTSCM automatically runs IPM6031.

Install the DSM/SCM Client From ZDSMSCM

Starting with the G06.18 RVU, the D46 DSM/SCM client software is shipped only on the SUT and not on the Installer CD. The ZDSMEXE file that is in ZDSMSCM subvolume is the client version that is an exact match to the server software in ZDSMSCM.

If you are using DSM/SCM to manage OSS file options, you must install the DSM/SCM client software.

Note. Before you begin, back up your current DSM/SCM folder to save the configuration information and the Planner Interface version.

Check that unnecessary PC programs are not running before you begin the DSM/SCM client installation and that no DSM/SCM Build or Applies are in progress.

DSM/SCM T6031D46^ABJ client software supports all T6030/T6031D30^AAO and later DSM/SCM server software (including T6031D31). If you have to fall back, you can still use the newly installed ABJ client software.

Alert (DSM/SCM T6031D46^ABJ Client)

Do not attempt to use DSM/SCM T6031D46^ABJ client software until you have first installed T6030/T6031D30^AAO or later software product revisions (SPRs) or the T6031D46 PVU on your host system. See Table 3-1, DSM/SCM Client and Server Compatibility, on page 3-5.

Limited DSM/SCM operation is available if you run T6031D46^ABJ client software with pre-AAO server software. HP recommends that both the DSM/SCM product version and DSM/SCM client be at the same version level at all times.

Determine Your DSM/SCM Client Software Version

To determine which version of DSM/SCM client software is installed, start the DSM/SCM Planner Interface. Before prompting you to log on, the About DSM/SCM window briefly displays version information.

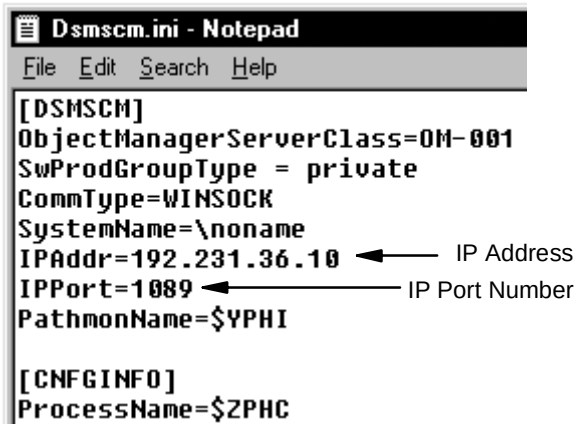
Determine the Current IP Address and Port Number

When you install DSM/SCM client software, you are prompted to enter the IP address of the host system with which DSM/SCM communicates and the IP port number for the DSM/SCM Winsock service.

If the DSM/SCM client software on your system console is configured to communicate with a host system, determine the configured IP address and port number:

1. Start Windows Explorer. Open **My Computer** if not already open.
2. Double-click the hard drive icon to display its contents.
3. Open the DsmScm folder to display its contents.
4. In the Contents pane, double-click **dsmscm.ini**.

   Notepad opens the DSM/SCM initialization file. For example:



VST005.vsd

5. Make a note of the IP address and port number.
6. Close the dsmscm.ini file.

Copy the ZDSMSCM Client File From the Host

Note. If you are not using OutSideView on the PC that manages DSM/SCM:

1. On the NonStop Kernel host system, make $volume.ZDSMSCM the current subvolume.
2. Use the file transfer protocol (FTP) to download the ZDSMEXE file from the ZDSMSCM subvolume on the NonStop Kernel host system to the DSMSCM directory on the PC.
3. Go to step 9 and complete the download process.

1. If you are using OutSideView, start an OutsideView session.
2. Select **Session>Receive file** to display the IXF Receive dialog box.
3. In the Host box, enter the host system name, and the volume and subvolume where the file resides. Make $*volume*.ZDSMSCM the current subvolume.
4. In the File box, enter `zdsmexe`. (Or, you can type `zdsm.exe`, and ignore step 9.)

   `zdsmexe` appears in the Local area File Name box.
5. Under Download Path, click **Browse**, and locate and select the `c:\dsmscm` directory. Select **OK**. Under Options, verify that Binary is selected.
6. Verify that **Overwrite local files** is selected.
7. Click **OK**.

   The download should take approximately 2 minutes.
8. When the IXF - Receive dialog box indicates that the transfer is finished, click **End Transfer**.
9. Using Windows Explorer, rename the file from `zdsmexe` to `zdsm.exe`.
10. Double-click the `zdsm.exe` file to decompress the DSM/SCM client files.
11. Press any key to continue the setup.
12. If you are asked whether to overwrite the existing files, type **Y** for YES and press Enter.

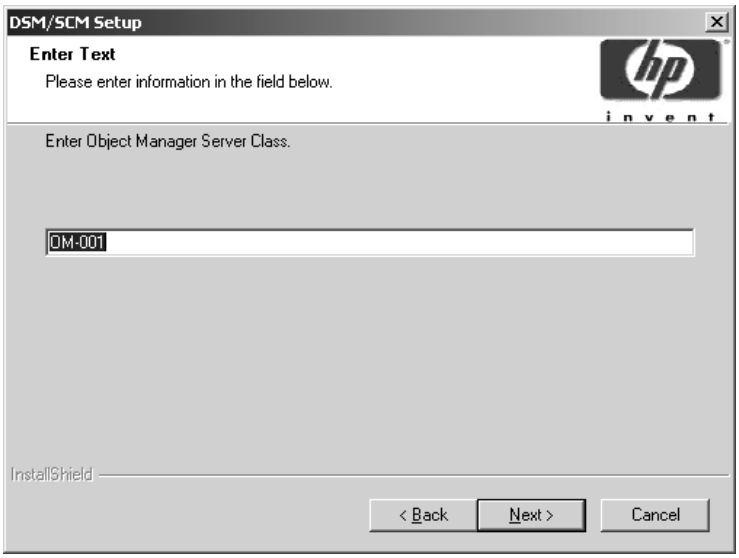
    (To overwrite all the files, type **A** for ALL.)

    After the setup program copies DSM/SCM files to your hard drive, your workstation is ready for DSM/SCM client software installation.

Install the DSM/SCM Client Software

1. Using Windows Explorer, double-click **Setup.exe**.

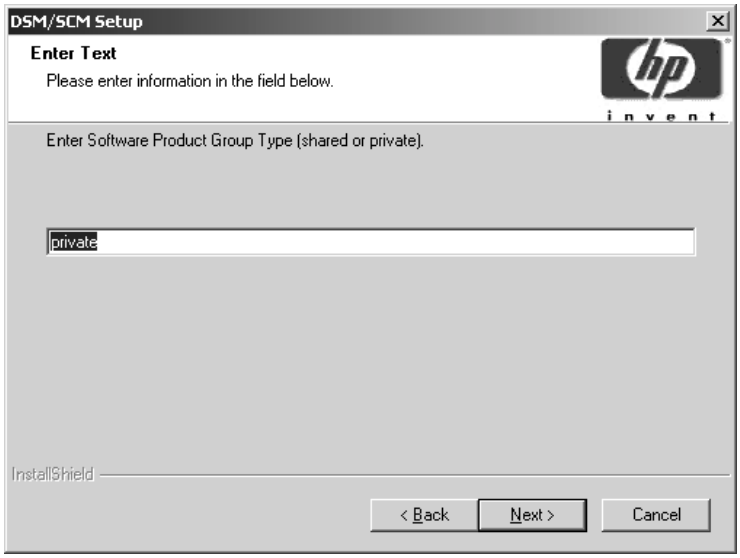
   A DSM/SCM Setup screen appears, and an Enter Object Manager Server Class dialog box appears with the default OM-001.



VST010.vsd

2. Click **Next** to accept the default.

   The Enter Software Product Group Type (shared or private) dialog box appears.



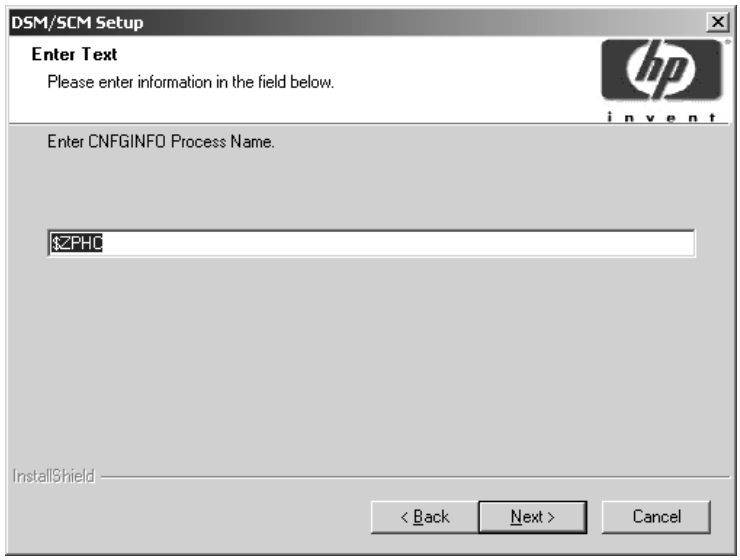
VST021.vsd

3. Click **Next** to accept the default (*private*) or type in *shared* and click **Next.**

Note. Private software product groups can be used only by the planner who creates the grouping. Shared software product groups can be used by other planners. For more information on these options, see the *DSM/SCM User's Guide*.

---

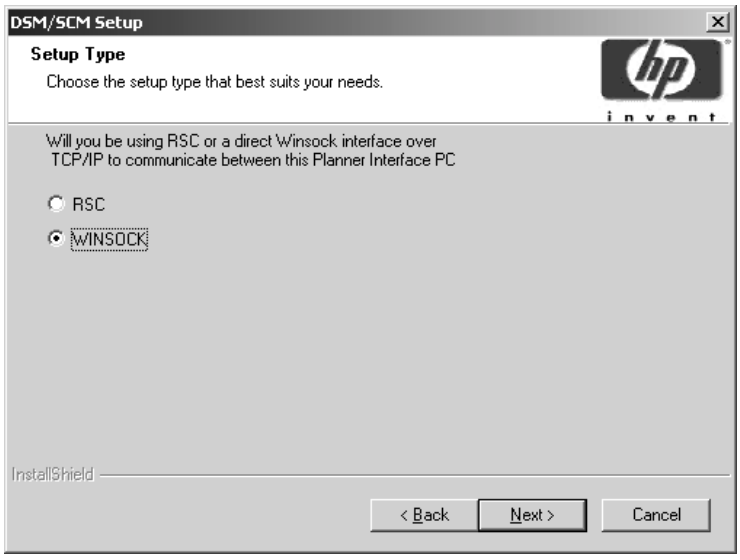
4. The Enter CNFGINFO Process Name dialog box appears with the default name $ZPHC.



VST015.vsd

5. Click **Next** to accept the default.

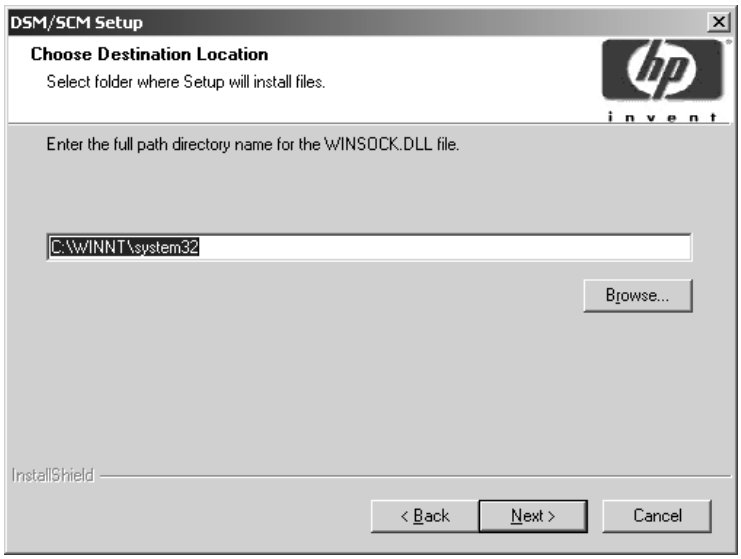
   The Setup Type dialog box appears.



VST020.vsd

6. Check that **WINSOCK** is selected. Click **Next**.

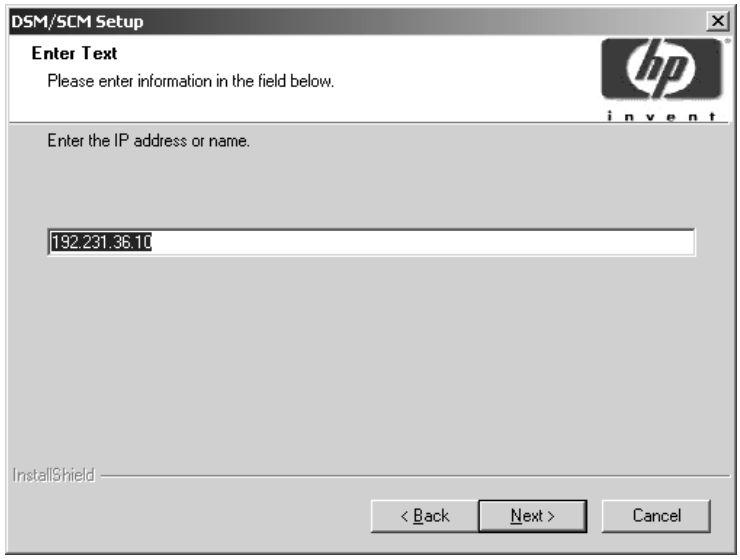
The Choose Destination Location dialog box appears with the default path displayed, based on your operating system (either Windows 2000 or Windows XP Professional):



VST025.vsd

7. Click **Next** to accept the default.

   You are now prompted to enter an IP address.

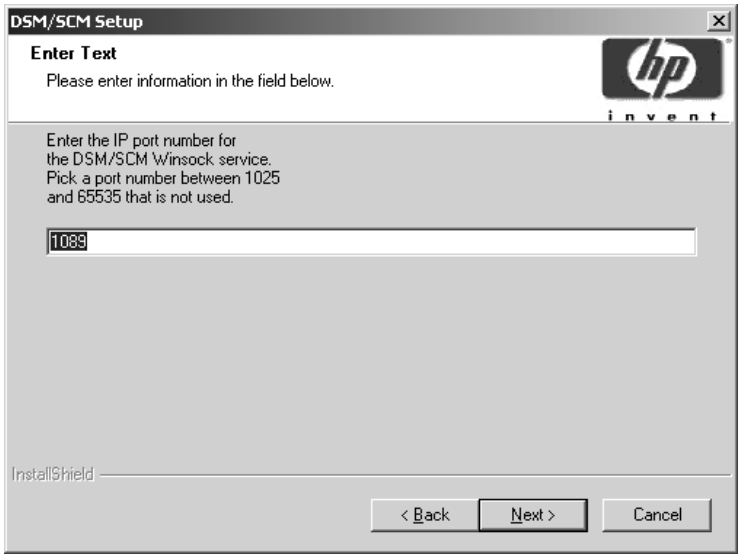


VST030.vsd

8. Type the IP address for the host system with which DSM/SCM communicates (see Determine the Current IP Address and Port Number on page B-19), and click **Next**.

Note. If DSM/SCM is not currently configured to communicate with a host system, accept the default IP address. You can always change this value later by editing the dsmscm.ini file.

You are now prompted to enter an IP port number.

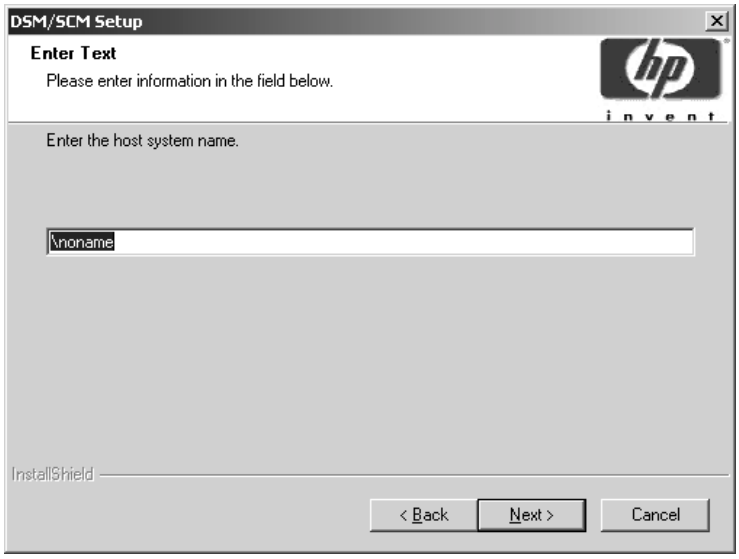


VST035.vsd

9. Type the IP port number for the Winsock service (see Determine the Current IP Address and Port Number on page B-19), and click **Next**.

Note. If DSM/SCM is not currently configured to communicate with a host system, accept the default IP port number. You can always change this value later by editing the dsmscm.ini file.

You are now prompted to enter the host system name.



VST040.vsd

10. Type the host system name (or \noname if DSM/SCM is not currently configured to communicate with a host system), and click **Next** to continue.

You are asked if you would like to run DSM/SCM.

VST045.vsd

11. Click **No** and go to Create an Emergency Repair Disk (ERD) on page B-25.

The setup program adds the DSM/SCM client software to the Windows Start>Programs menu. You can start the DSM/SCM Planner Interface or CNFGINFO tool from the **Start>Programs>DSM_SCM** submenu. For example:

VST130.vsd

Create an Emergency Repair Disk (ERD)

HP recommends that you create an Emergency Repair Disk (ERD) after upgrading system console software. The ERD saves repair information that can be used to reconstruct Windows system files, system configuration, and startup environment variables if they become corrupted.

You might need two disks for the following procedure (in which case you will be prompted when you need to insert the second disk).

To create a new ERD or to update an existing ERD:

1. Select **Start>Programs>Accessories>System Tools >Backup**.
2. If you are running Windows XP:
   - If the Backup utility is set on Wizard Mode, the Backup or Restore Wizard dialog box appears. Follow the instructions on the screen to back up files and settings and create an ERD.
   - If the Backup utility is set on Advanced Mode, click **Automated System Recovery Wizard** and follow the instructions on the screen to back up files and settings and create an ERD.

3. If you are running Windows 2000:
    a. The Backup utility appears. Click **Emergency Repair Disk**.
    b. You are prompted to insert a disk into drive A.
    c. Label a disk *Emergency Repair Disk* and insert it into drive A. Click **OK**.
    d. The Emergency Repair Disk utility copies repair information to the disk. When this process finishes, you are informed that the repair information was saved successfully.
    e. Click **OK** to quit the Backup utility.

You have created an ERD. Remove the disk from the drive and store it in a secure location.

C

Updating SWAN Concentrator CLIP Firmware

If necessary, you can update the SWAN or SWAN 2 concentrator CLIP firmware after you have completed a system load of the new RVU. You can use either the OSM Service Connection or TSM, depending on which one you have installed. TSM provides a guided procedure for updating firmware for both SWAN and SWAN 2. OSM provides a Multi-Resource Actions dialog box. If you have a SWAN or SWAN 2 concentrator connected to your NonStop S-series server, you can update CLIP firmware in one of three ways:

- Using the SWAN Fast Firmware Update Guided Procedure (Recommended if Using TSM) on page C-2. (Released in the G06.13 RVU, HP recommends this method if using TSM.) This procedure, accessed through the TSM Service Application, automates many of the required tasks involved in updating SWAN CLIP firmware. The guided procedure:
  - Automatically stops all CLIPs before updating the firmware
  - Updates all or a specified collection of CLIPs simultaneously
  - Restarts (optional) all CLIPs after the firmware update completes.

Note. If the SWAN Fast Firmware Update Guided Procedure fails, try updating the firmware by Using the TSM Firmware Update Dialog Box to Update SWAN Firmware on page C-8.

(The SWAN Fast Firmware Update Guided procedure essentially performs all steps documented starting with Using the TSM Firmware Update Dialog Box to Update SWAN Firmware on page C-8.)

△ **Caution.** When using the SWAN Fast Firmware Update, T7945AAX must be resident or WAN problems can result. T7945ABB is needed if using SWAN 2. To avoid possible path down and post failure false dial-outs for SWAN or SWAN 2, T7953AAL, or later, is also necessary.

- Using the TSM Firmware Update Dialog Box to Update SWAN Firmware on page C-8.

Note. If you have to fall back to a previous G-series RVU, do not revert back to previous versions of SWAN CLIP firmware. If you must fall back, keep the firmware change**.**

- Using the OSM Multi-Resource Actions Dialog Box to Update SWAN and SWAN 2 Firmware on page C-18. If you have OSM installed and configured, you can update SWAN and SWAN 2 CLIP firmware by using the Multi-Resource Actions dialog box.

For troubleshooting information on SWAN or SWAN 2, see the *SWAN Concentrator and WAN Subsystem Troubleshooting Guide*, Section 4.

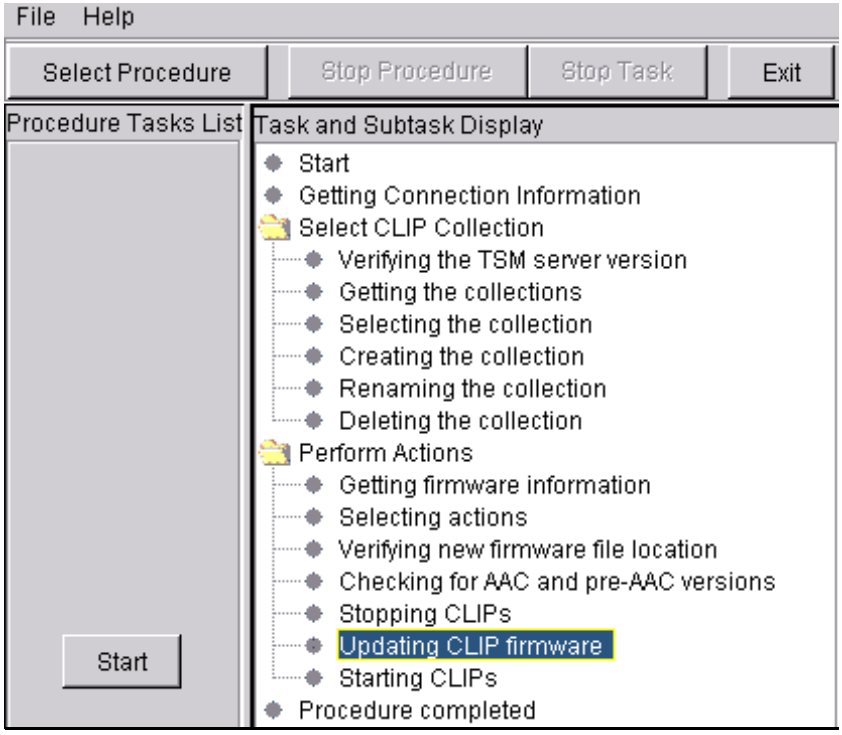
Yellow caution symbols might appear on enclosure icons and on SWANs during the firmware update. These caution symbols should disappear after you have completed the SWAN update.

Using the SWAN Fast Firmware Update Guided Procedure (Recommended if Using TSM)

Follow the instructions in the guided procedure. For online help, open the Help menu or click **Help** in any of the procedure's dialog boxes. Before beginning, see Support Note S04029.

1. Log on to the TSM Service Application.
2. Do *one* of the following:
   - Select **Display >SWAN Fast Firmware Update**.
   - Use the Actions dialog box:
     a. Right-click the SWAN collection in the tree pane and select **Actions** from the shortcut menu.
     b. In the Actions dialog box, select the **Fast Firmware Update** action for the SWAN collection object.
     c. Click **Perform action**.

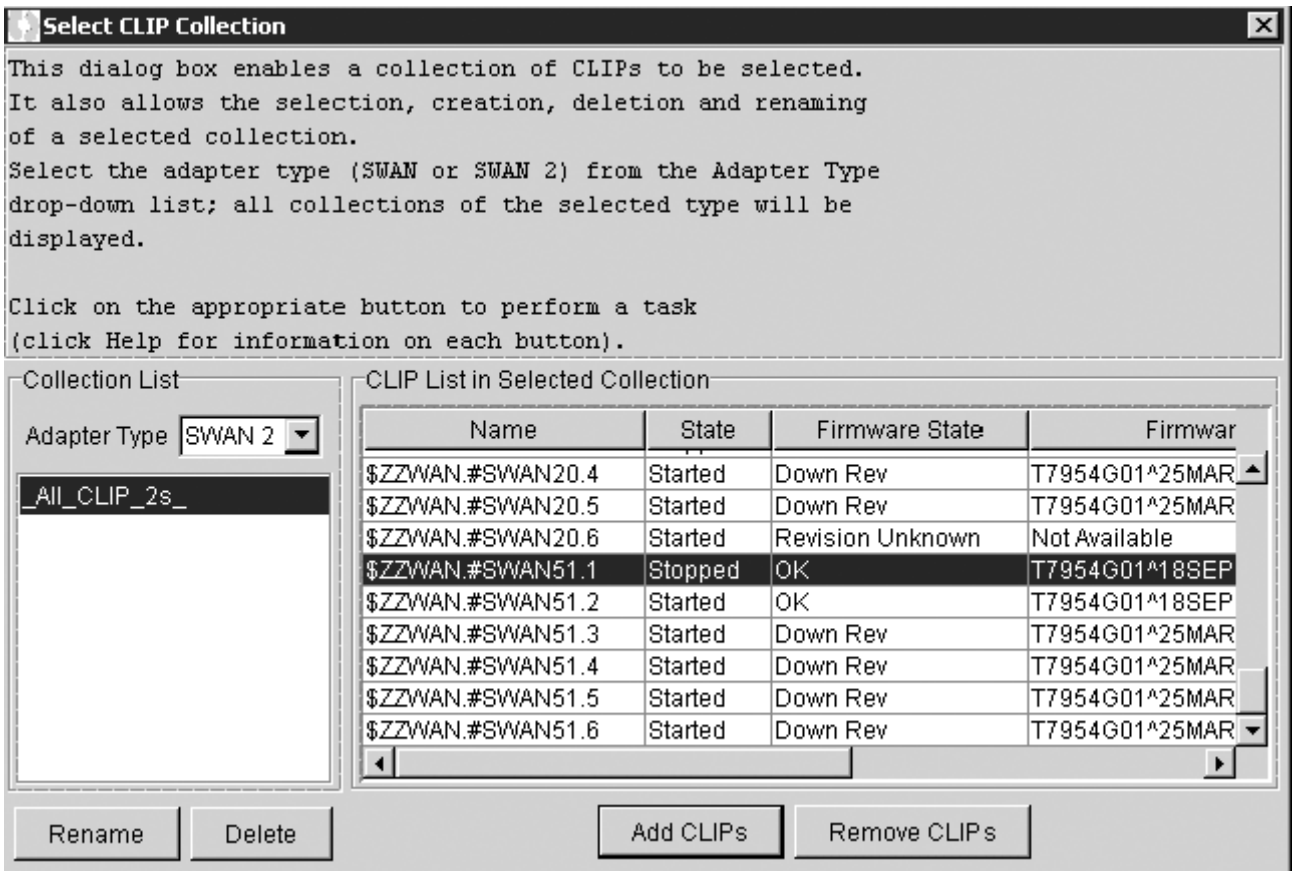
   The SWAN Fast Firmware Update guided procedure is launched. For example:



vst832.vsd

3. Select **Updating CLIP firmware**.
4. Click **Start**.

   The Select CLIP Collection dialog box appears. For example:

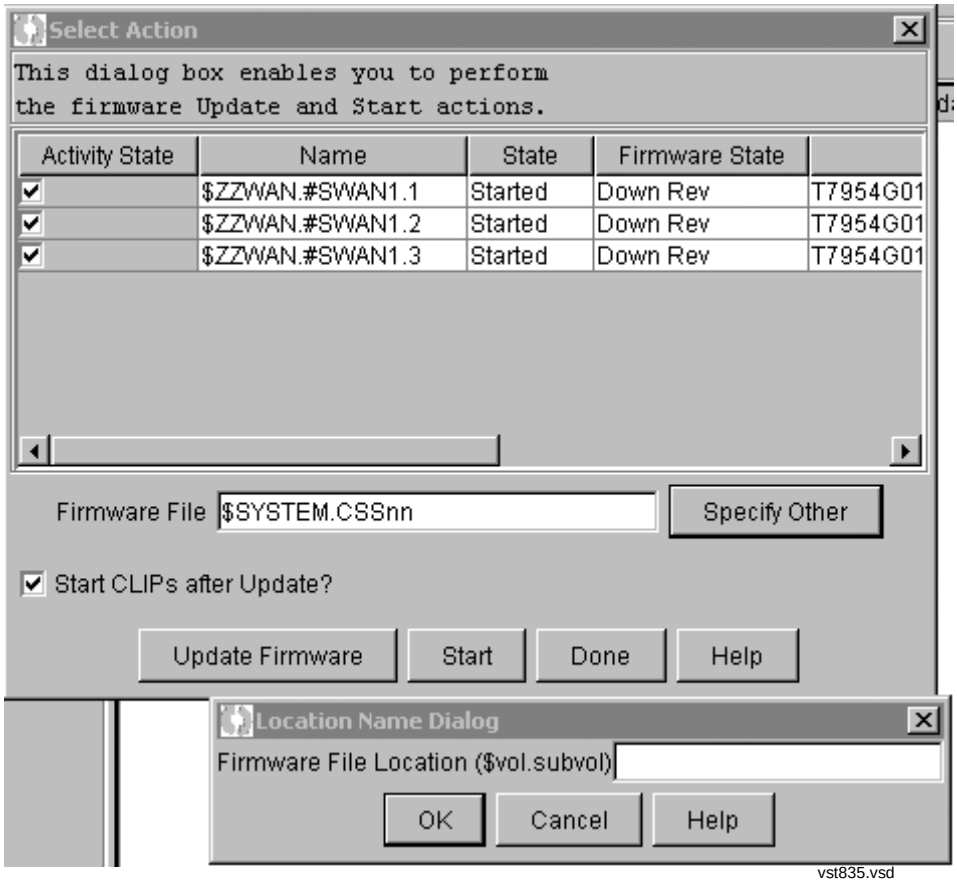


vst864.vsd

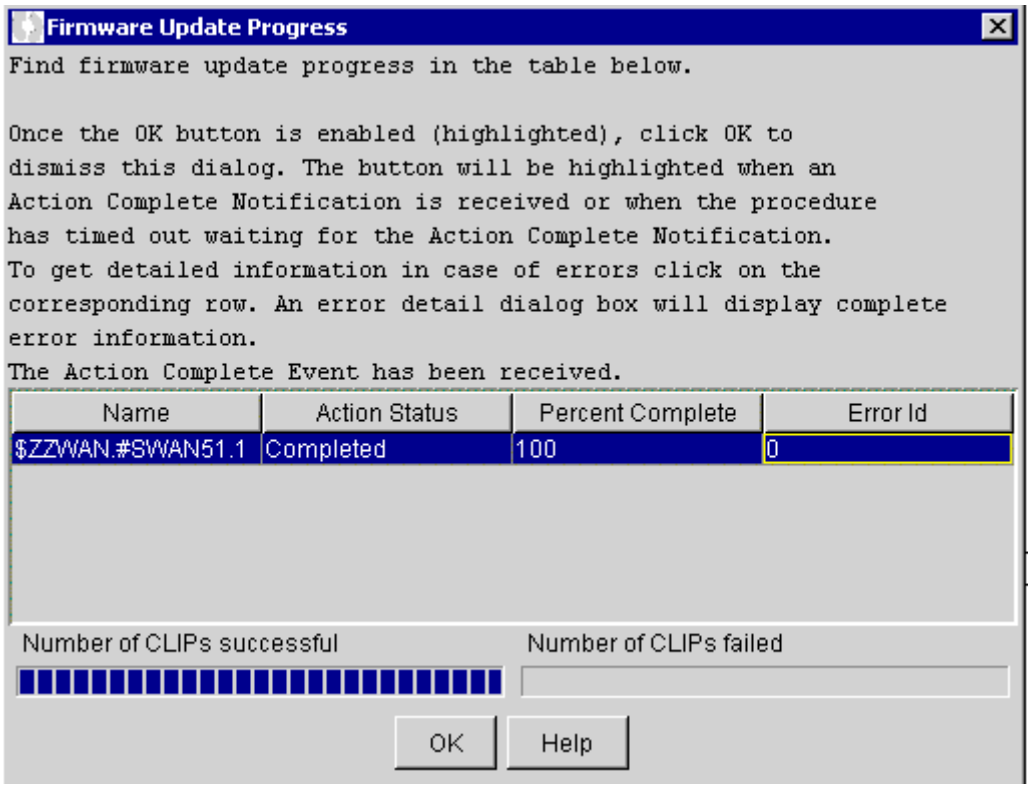
5. In the Select CLIP Collection dialog box, select the CLIPs to be updated:
   a. From the Adapter Type list, select either **SWAN** or **SWAN2**.
   b. Select **_All_CLIP_2s_**if adapter is SWAN2 or **_All_CLIP_s** if adapter is SWAN.
   c. From the CLIP List in Selected Collection, select the required CLIPs and click **Add CLIPs**.
   d. Click **Use**.

      The Select Action dialog box appears.
6. When the Select Action dialog box appears, select the CLIPs whose progress should be monitored by selecting **Activity state** options.

   The firmware file is automatically selected from $SYSTEM.CSS*nn*. Leave the default (blank) if you have installed the new RVU.
7. To access SWAN firmware located in another subvolume, click **Specify Other** as shown and type in the correct firmware location and click **OK**. For example:



8. If you want to start the CLIPs after firmware, select **Start CLIPs after Update?** Otherwise, click **Start** after the SWAN CLIP firmware update is complete.
9. Click **Update Firmware**. TSM stops the SERVER objects and initiates a firmup of the CLIPs. The Firmware Update Progress Dialog box appears.
10. In the Firmware Update Progress dialog box, monitor the SWAN CLIP update progress.The Action Event dialog box displays the successful completion:



11. When you have finished updating firmware, select **OK**.

If you have problems with the Fast Firmware Update, see If the SWAN Fast Firmware Update Fails on page C-7.

If the SWAN Fast Firmware Update Fails

If any CLIPs fail, you are notified in the Firmware Update Progress dialog box:

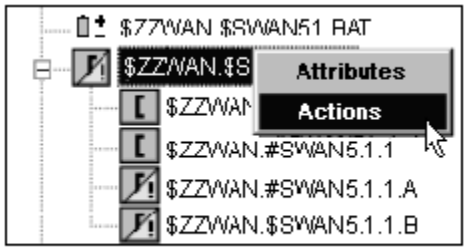
Name	Action Status
$ZZWAN.#SWAN1.1	Failed
$ZZWAN.#SWAN1.2	Failed
$ZZWAN.#SWAN1.3	Completed

vst903.vsd

1. To review the reason for the failure, select the corresponding row. A message similar to the following might appear:

```
Object Name:          $ZZWAN.#SWAN1.2
Action State:         Failed
Error Id:             1083
Error Description:    Problem: A non-path error occurred.
Error Id: 1083.
Error Description :   CLIP in STARTED state.
Recovery: None.

Object Name:          $ZZWAN.#SWAN1.1
Action State:         Failed
Error Id:             1083
Error Description:    Problem: A non-path error occurred.
Error Id: 1083.
Error Description :   CLIP in STARTED state.
Recovery: None.
```

2. Using the Error Id number, check online help for recovery information.
3. Reissue the Fast Firmware Update only for those CLIPs for which the firmware update failed by selecting the **Down Rev** option from the FFU procedure
4. If the update fails again, before initiating the Fast Firmware Update guided procedure again, use SCF or TSM to stop the SWAN adapter:
   a. In TSM, right-click the SWAN collection in the tree pane and select **Actions** from the shortcut menu. For example:



vst919.vsd

   b. In the Actions dialog box, select **Stop** and click **Perform action**. The SWAN adapter object is stopped.

To stop the SWAN adapter object, you can also enter the SCF STOP command. For example:

```
12> SCF STOP ADAPTER $ZZWAN.#51, SUB ALL
```

c. Check if the SWAN adapter is stopped in TSM or use the SCF STATUS SERVER command:

```
13> SCF STATUS SERVER $ZZWAN.#51.*
```

5. After the SWAN objects are stopped, try to update the SWAN CLIPs again.

   If you are still having trouble stopping the SWAN object, see Support Note S04029 and the *SWAN Concentrator and WAN Subsystem Troubleshooting Guide*, topic "Correcting SWAN Concentrator Hardware Problems."

If you still have trouble using the guided procedure, see the Step 3: Initiate the Firmware Update Using TSM on page C-16 to update your SWAN firmware.

Using the TSM Firmware Update Dialog Box to Update SWAN Firmware

Note. The instructions in this appendix require that you have performed a system load of the G06.24 RVU and, as a result, are running the latest version of the WANBoot process (T7909) and its requisites (WANMgr [T8365], WAN SCF Product Module [T7925], and ConMgr [T7922]).

The firmware version format of SWAN CLIPs running T7953AAN is:

```
T7954Vnn^ddmmmyyyy^AAN
```

Alert

If you need to fall back to a previous G-series RVU, *do not revert* back to pre-T7953AAG versions of SWAN CLIP firmware or a pre-T7909AAK version of the WANBOOT product. The newer product versions are compatible with the earliest G-series RVUs and contain important fixes and enhancements.

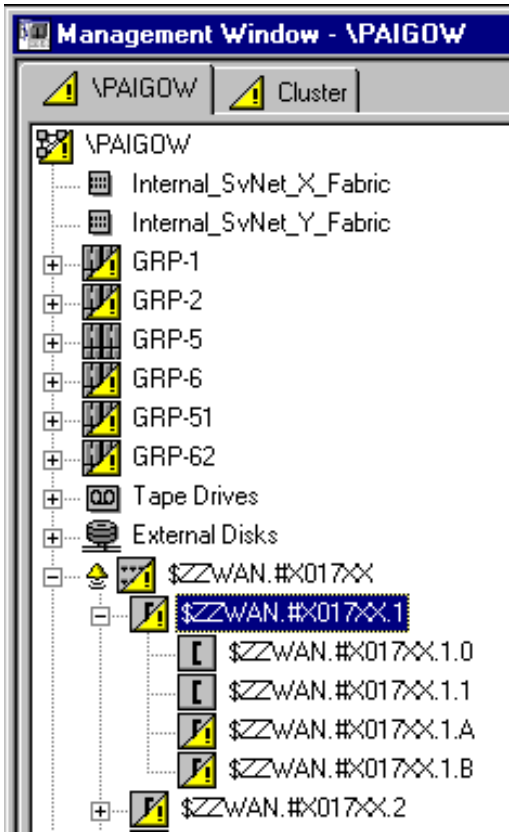
Before Updating SWAN CLIP Firmware

1. List the Names of the SWAN Concentrators and CLIPs.
2. Check Location and Version of New SWAN CLIP Firmware.
3. Check Firmware Version Currently Running in SWAN CLIPs.

List the Names of the SWAN Concentrators and CLIPs

Use the TSM Service Application or SCF to list the names of the SWAN concentrators and CLIPs in your system:

- Using the TSM Service Application:



VST410.vsd

- Or (using SCF) enter:

```
4> scf names adapter $zzwan.#*
SCF - T9082G02 - (16OCT98) (25SEP98) - 09/08/1999 15:53:26 System \ELI
Copyright Tandem Computers Incorporated 1986 - 1998

WANMgr Names  ADAPTER $ZZWAN.#*

ADAPTER
$ZZWAN.#S00
$ZZWAN.#S01
```

Check Location and Version of New SWAN CLIP Firmware

The SWAN firmware object code file is a 510 disk file that resides on a NonStop S-series server and is downloaded to the SWAN concentrator CLIP.

Check the location and version of the SWAN firmware object code file for the G06.24 RVU. At a TACL prompt, enter the VPROC command:

```
VPROC $SYSTEM.CSSnn.C7953P00
```

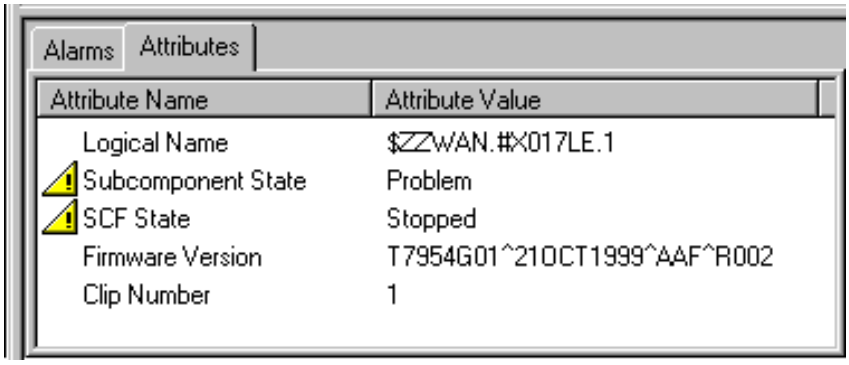
where *nn* is the number specified during the Build/Apply phase of installing the G06.24 RVU. For example:

```
9> vproc $system.css04.c7953p00
VPROC - T9617G03 - (30 MAR 1999) SYSTEM \ELI      Date 22 SEP 2000, 22:47:24
COPYRIGHT TANDEM COMPUTERS INCORPORATED 1986 - 1995

$SYSTEM.CSS04.C7953P00
    Binder timestamp:  23JUL2000 17:04:56
    Version procedure:  T7954G01^28JUN2000^AAI^R004
    Version procedure:  T7953G01^28JUN2000^AAI^R004
    Version procedure:  T5814G01^28JUN2000^AAI^R004
    Version procedure:  T7955F40^28JUN2000^AAI^R004
    Version procedure:  T7848F40^28JUN2000^AAI^R004
```

Check Firmware Version Currently Running in SWAN CLIPs

Determine the firmware version currently running in each SWAN CLIP in one of these ways:

- Use the TSM Service Application to show the attributes of each CLIP. For example:



VST400.vsd

- Use the SCF STATUS SERVER $ZZWAN.#*conc-name.clip-num*, DETAIL command. For example:

```
$SYSTEM ZWANTOOL 14> scf status server $zzwan.#s01.3, detail
SCF - T9082G02 - (12JUL99) (15JUN99) - 11/17/1999 09:19:28 System \ELI
Copyright Compaq Computer Corporation 1986 - 1999

WAN Manager STATUS SERVER for CLIP  \ELI.$ZZWAN.#S01.3
  State :......... STARTED

  Path A.........: CONFIGURED
  Path B.........: CONFIGURED

  Number of lines. 2

  Line............ 0    : FREE
  Line............ 1    : $X25131

Clip VPROC........ T7954G01^21OCT1999^AAF^R002

PATH A DETAILS :
 Last BOOTP Time  :17 Nov 1999, 8:18:52.179
 Status :......... UP
 Status changed at:17 Nov 1999, 8:21:25.996
   .
   .
```

- Use the WANLNCK utility (part of the SWAN Tools product placed in the ZWANTOOL subvolume). A DEVICE must be configured and in the STARTED state on the CLIP for this purpose. For example:

```
$SYSTEM ZWANTOOL 12> run wanlnck line $x25131,diag $system.css04.d8155p00

-- Configuration Summary for LINE: \ELI.$X25131 --
WANMgr Obj Name: $ZZWAN.#X25131
LINE Name      : $X25131
DEVICE State   : Started
   .
   .
ADAPTER Name   :  $ZZWAN.#S01
TRACKID        : X017KK
CLIP Number    : 3, Line Number  : 1
KERNELCode     : \ELI.$SYSTEM.CSS04.C7953P00
VPROC from File: T7954G01^21OCT99^AAF^R002, EOF: 556032, SECURITY: NUNU
SNMPCode       : \ELI.$SYSTEM.CSS04.C7849P00
VPROC from File: T7849F40^15APR97^31MAR97, EOF: 109568, SECURITY: NUNU
ADAPTER State  : Started
SERVER State   : Started
TASK State     : Started
   .
   .
VPROC from CLIP: T7954G01^21OCT99^AAF^R002
   .
   .
```

Summary of SWAN Concentrator CLIP Firmware Update Steps (Using TSM)

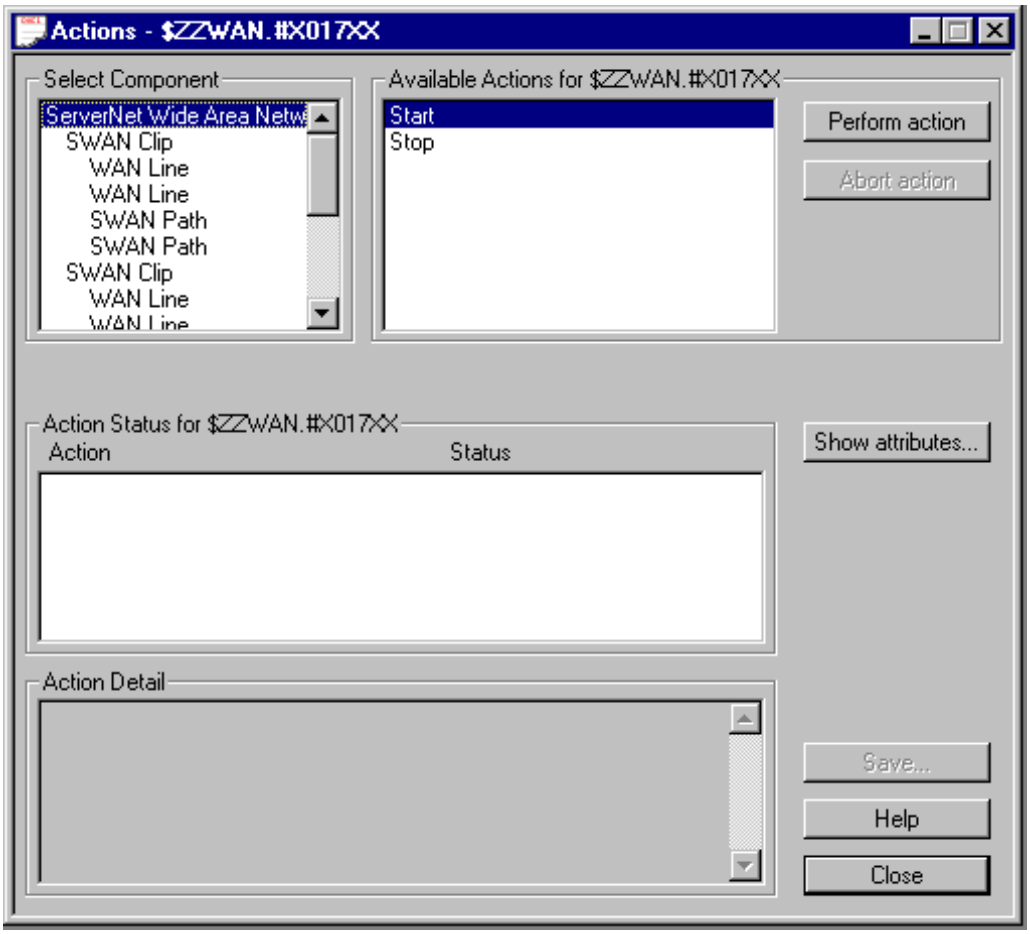
Required for Upgrading From T7953AAG and Later Firmware Versions

For information on starting and stopping devices, displaying attributes, and updating firmware through TSM, see the TSM Service Application online help.

For complete SCF command syntax for the WAN subsystem, see the *WAN Subsystem Configuration and Management Manual*.

Step 1: Stop the SWAN Concentrator and CLIPs

Use the TSM Service Application or SCF to stop the SWAN concentrators and terminate operation of all CLIPs. For example:



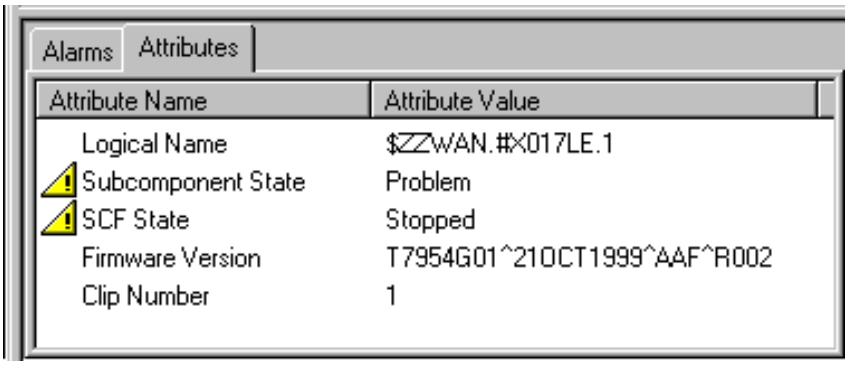
VST420.vsd

Or (using SCF), enter:

```
5> SCF STOP ADAPTER $ZZWAN.#S01, SUB ALL
```

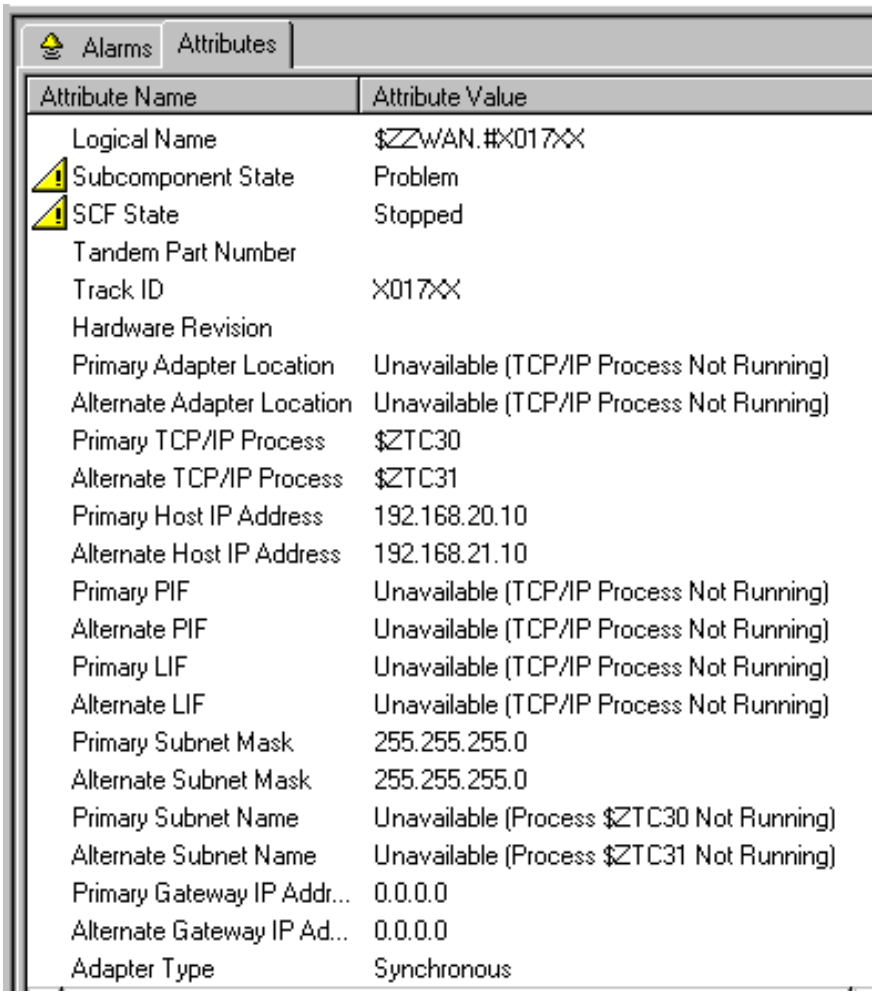
Verify That CLIPs Are Stopped

Use the TSM Service Application or SCF to check that SWAN concentrators and CLIPs are in the STOPPED state. For example, to see the state of the SWAN CLIPs:



VST400.vsd

To see the state of the SWAN concentrators:



VST422.vsd

Or (using SCF), enter:

```
2-> status server $zzwan.#s01.*

WAN Manager STATUS SERVER for CLIP  \ELI.$ZZWAN.#S01.1
  State :......... STOPPED
     .
     .
WAN Manager STATUS SERVER for CLIP  \ELI.$ZZWAN.#S01.2
  State :......... STOPPED
     .
     .
WAN Manager STATUS SERVER for CLIP  \ELI.$ZZWAN.#S01.3
  State :......... STOPPED
     .
     .
```

Step 2: Point SWAN Concentrators to the New Firmware Object Code File

Change the default location for the SWAN firmware object code file with the SCF ALTER ADAPTER, KERNELCODE command:

```
-> SCF ALTER ADAPTER $ZZWAN.#conc-name,
   KERNELCODE swan-kernel-micode-file-name
```

By default, the SWAN firmware object file (C7953P00) resides in the $SYSTEM.CSS*nn* subvolume (*nn* is the number of the $SYSTEM.SYS*nn* where the new operating system image resides).

For example, to specify SYS04 in the DSM/SCM Build/Apply request for G06.24, enter:

```
SCF ALTER ADAPTER $ZZWAN.#S01, KERNELCODE $SYSTEM.CSS04.C7953P00
```

Note. The SWAN concentrators (ADAPTER object) must be in the STOPPED state (as performed in Step 5) for this command to work.

The SCF ALTER ADAPTER, KERNELCODE command changes the firmware file location for all CLIPs associated with a SWAN concentrator.

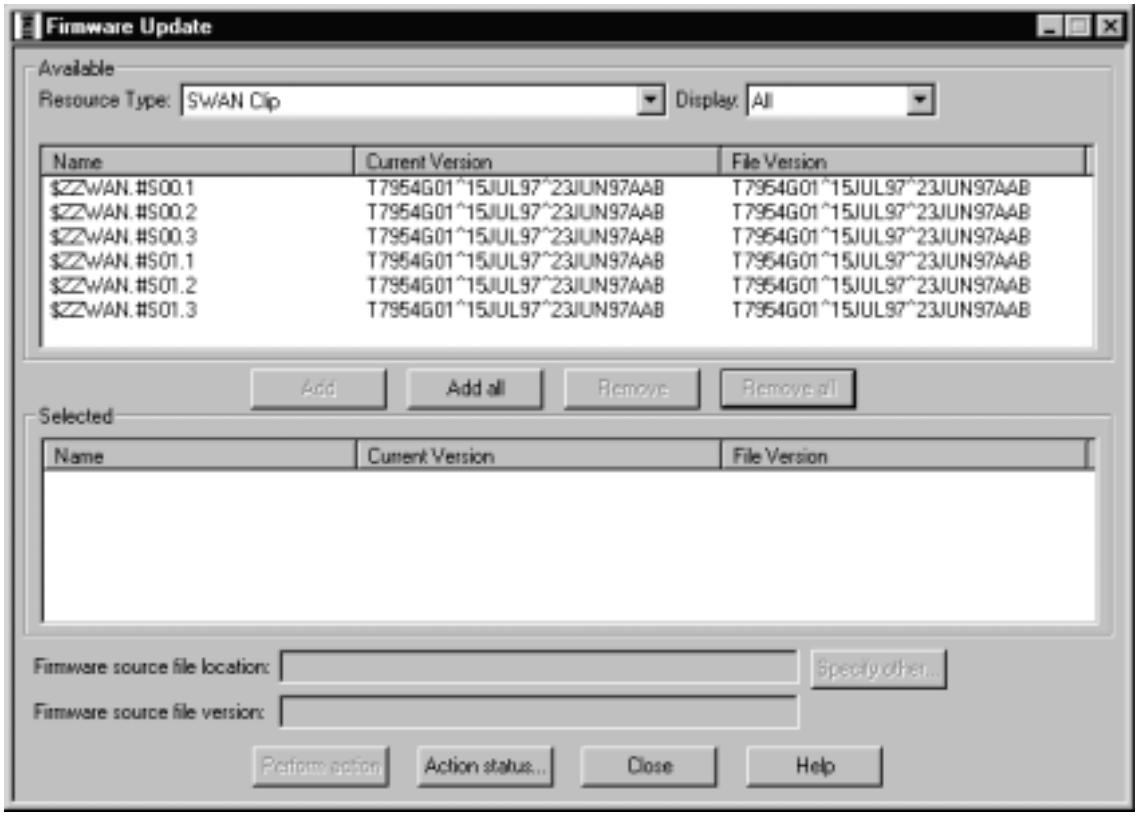
Note. When you specify an alternate firmware file location from the TSM Service Application **Specify Firmware File Location** dialog box (see Step 8 on page C-17), the location is changed only for those CLIPs being updated at the time.

Step 3: Initiate the Firmware Update Using TSM

1. Log on to the TSM Service Application.
2. Select **Display> Firmware update**.

   The Firmware Update dialog box appears.
3. From the Resource Type list, select **SWAN Clip**.
4. From the Display list, select **All**.

   The SWAN CLIPs are listed in the Available box:



VST425.vsd

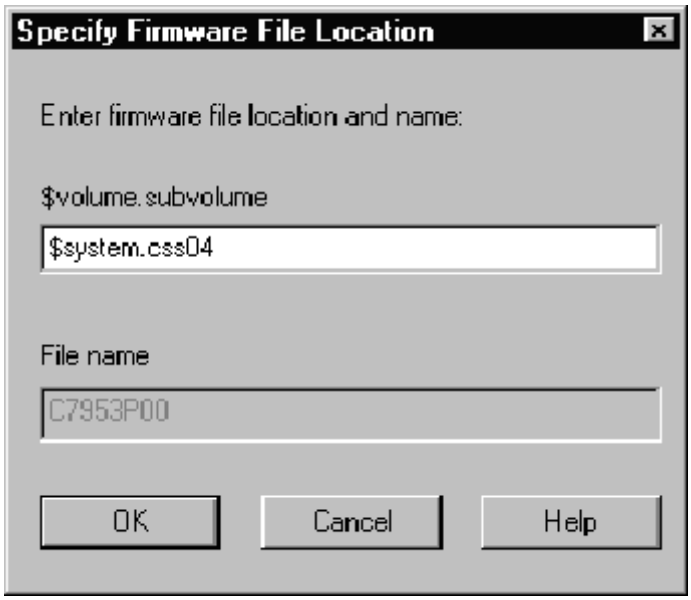
5. Select all SWAN CLIPs with a current file version that does not match the T7953AAN version (**`T7954Vnn^ddmmmyyyy^AAN`**).

△ **Caution.** If you are updating from a pre-T7953AAG firmware version, you must perform a firmware update for all CLIPs on each SWAN concentrator. The firmware update should be performed in parallel for a maximum of six SWAN CLIPs for each NonStop TCP/IP pair.

6. Click **Add** to move the CLIPs to the Selected box.
7. Click **Specify other**.

   The Specify Firmware File Location dialog box appears.

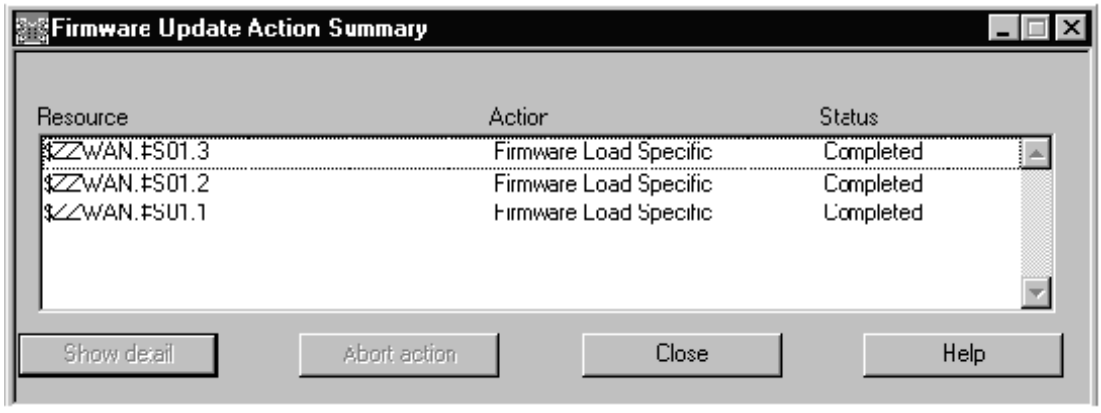
8. In the $volume.subvolume box, enter the new firmware file location (the value you entered in the SCF ALTER ADAPTER, KERNELCODE command in Step 2: Point SWAN Concentrators to the New Firmware Object Code File). For example:



VST430.vsd

9. Click **OK**.
10. Click **Yes** when a message appears, warning that you have specified a nonstandard firmware file location.
11. In the Firmware Update dialog box, click **Perform action**.

    The Firmware Update Action Summary dialog box appears and displays *Completed* when the SWAN CLIPs have been updated. For example:



VST440.vsd

12. When all SWAN CLIPs have been successfully updated, close the Firmware Update Action Summary and Firmware Update dialog boxes.

Step 4: Start the SWAN Concentrator and CLIPs

After the SWAN CLIP firmware has been updated, use the TSM Service Application or SCF to start the updated SWAN concentrator and CLIPs.

Step 5: Verify That the SWAN CLIPs Are Running the Latest Firmware

Verify that the updated SWAN CLIPs are in fact running at least the firmware version by using one of the methods described under Check Firmware Version Currently Running in SWAN CLIPs on page C-10.

Step 6: Start Stopped Lines (If Necessary)

Starting the SWAN concentrators in Step 4: Start the SWAN Concentrator and CLIPs should bring all lines into the STARTED state. Check the status of the lines and, if necessary, start any stopped lines on the started CLIPs for each SWAN concentrator.

Using the OSM Multi-Resource Actions Dialog Box to Update SWAN and SWAN 2 Firmware

For SWAN firmware, you can use the OSM Multi-Resource Actions dialog box to select any or all CLIPs. Then, you can stop all selected CLIPs, update their firmware, then start them again. You can also right-click on the CLIP, select **Actions**, and select Firmware Update from the Action list.

You must be running a G06.08 or later RVU, have already installed the SWAN firmware version T7953AAG or later, and have installed and configured OSM.

For troubleshooting information on SWAN or SWAN 2, see section 4, “Correcting SWAN Concentrator Hardware Problems” in the *SWAN Concentrator and WAN Subsystem Troubleshooting Guide*.

Summary of Steps for Upgrading From T7953AAG and Later SWAN Firmware Versions (Using OSM)

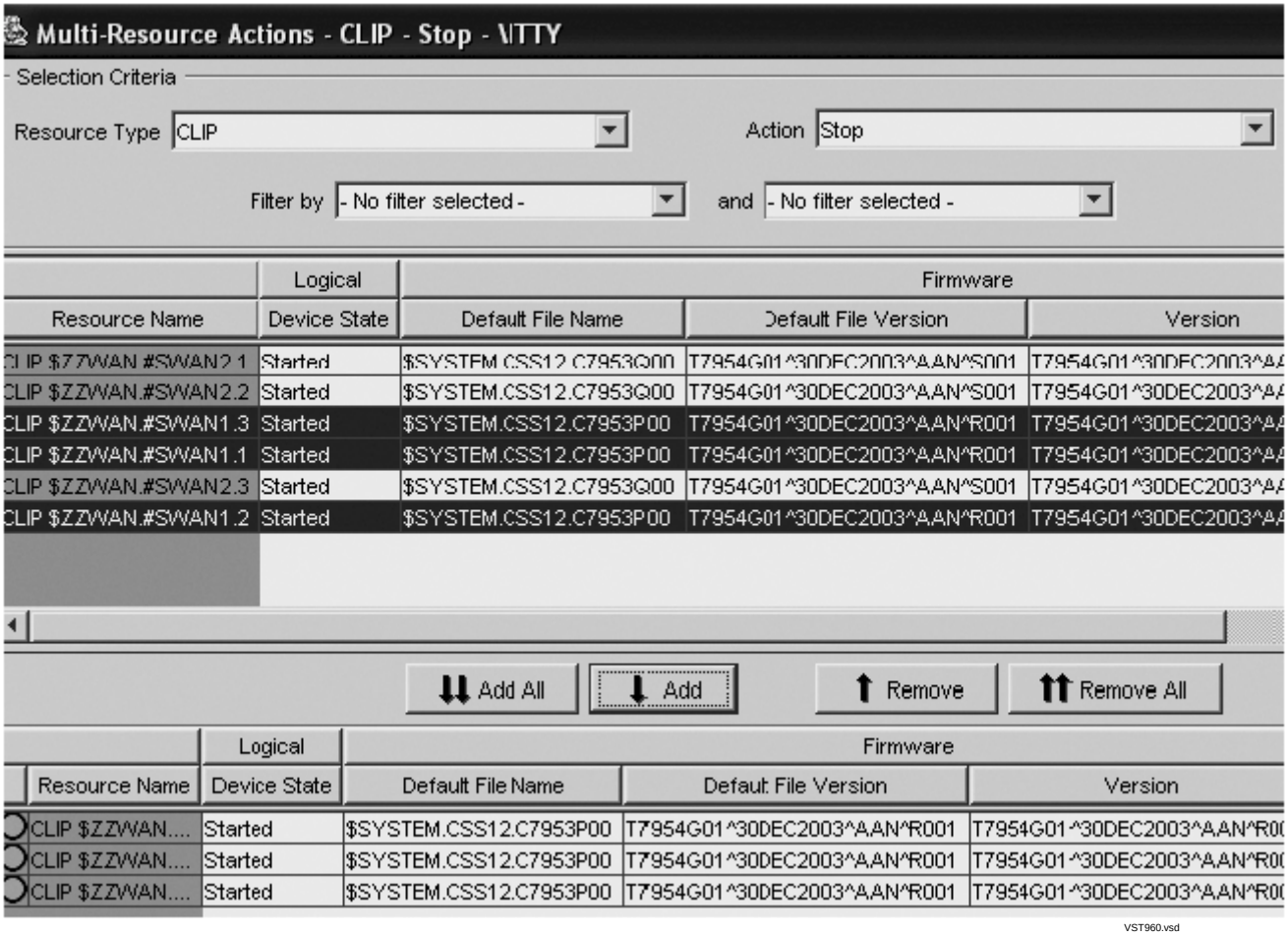
You cannot update the SWAN concentrator firmware unless you have installed and configured OSM.

- Step 1: Stop the SWAN Concentrator and CLIPs
- Step 2: Check the Location and Version of the SWAN Firmware
- Step 3: Initiate the Firmware Update
- Step 4: Start the SWAN Concentrator and CLIPs

For information on starting and stopping devices, displaying attributes, see the OSM Service Connection online help.

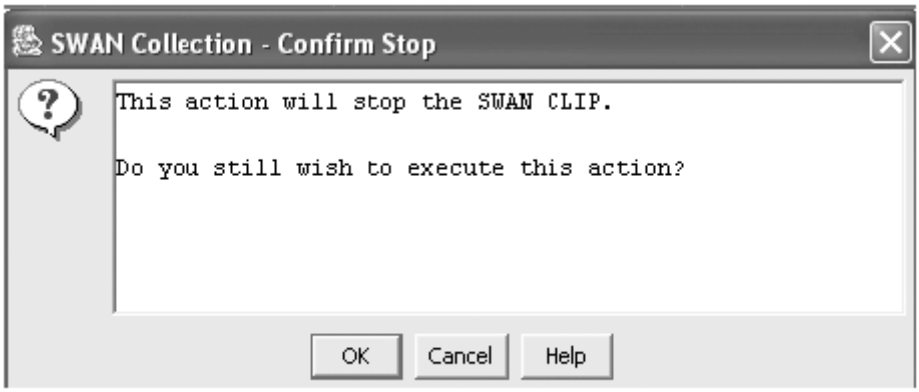
Step 1: Stop the SWAN Concentrator and CLIPs

1. Select **Display>Multi-Resource Actions**. The Multi-Resource Actions dialog box appears.
2. From the Resource Type list, select **CLIP**.
3. From the Actions menu, select **Stop**.
4. Select the SWAN CLIPS you want to stop and click **Add** or **Add all**. The selected CLIPs are added. Note that they are still in the Started state.



5. Click **Perform action**.

   This message appears:



6. Select **OK**.
7. The Progress list shows the status of the CLIP action. Wait until all the CLIPs are stopped before proceeding.

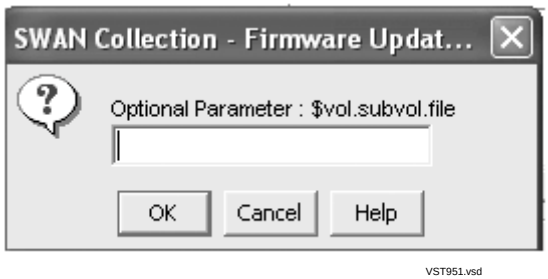
Step 2: Check the Location and Version of the SWAN Firmware

In the OSM Service Connection, look under the Firmware heading in the Attribute pane for SWAN CLIPS. The location and the version of the SWAN firmware is displayed. The location and version of the SWAN firmware object code file for the G06.24 RVU is:

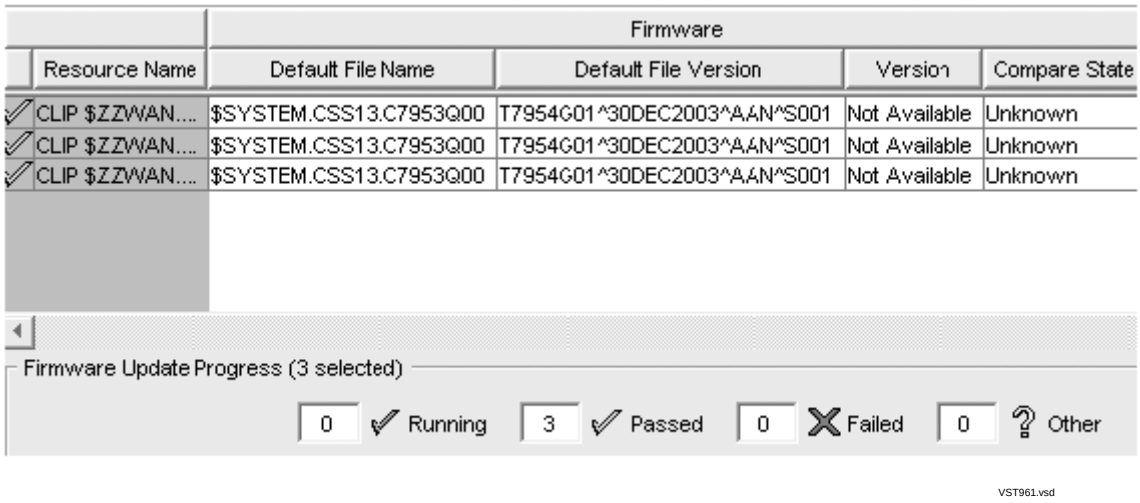
`$SYSTEM.CSS`*`nn`*`.C7953P00`

Step 3: Initiate the Firmware Update

1. From the Actions menu, select **Firmware Update**.
2. Click **Add** or **Add all**.
3. Click **Perform Action**.
4. Select **OK** when the SWAN Firmware Update Dialog box appears.



5. Use the $SYSTEM.CSS*nn* subvolume and filename (CP7953P00) created during the most recent DSM/SCM Build/Apply. Because you have just loaded the new RVU, the SWAN firmware location should point to the correct subvolume and file version. Click **OK**. However, if you have performed a Build/Apply for a new SWAN firmware SPR, specify that location and select **OK**.
6. The Progress bar shows the number of CLIPs running and the number of CLIPs that have been updated (passed). Any CLIPs that fail are also noted. Select **Help** for more information. Under Resource Name, a green checkmark appears besides all of those CLIPS that have been successfully updated. At this point, the CLIP Firmware Version might display “Not Available” and the Compare State might display “Unknown”.



7. If the Failed column displays a failed action on a CLIP, select **Action Summary**. The Action Status Summary window appears with information about recent actions, including their status and their overall progress
   a. Select the CLIP action that failed.
   b. Select **Details** or right click.
   c. Correct the problem. See If a CLIP Fails to Update (Using OSM) on page C-22. If you still have problems with the SWAN CLIP updating, see *the WAN Concentrator and WAN Subsystem Troubleshooting Manua*l, section 4.

When the SWAN CLIPs have been updated, you can then start them. See Step 4: Start the SWAN Concentrator and CLIPs on page C-22.

Step 4: Start the SWAN Concentrator and CLIPs

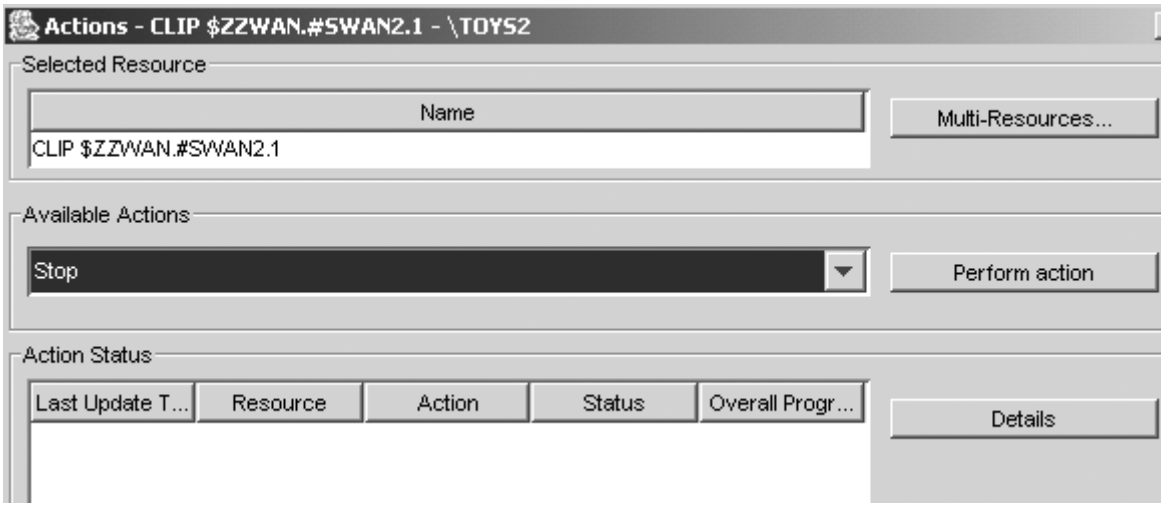
1. With the Multi-Resource Actions dialog box still open, from the Action list, select **Start**.
2. Click **Add** or **Add all**.
3. Click **Perform Action**.

The SWAN CLIPs should start. If they do not, see the *SWAN Concentrator and WAN Subsystem Troubleshooting Guide*, section 4. You can also use SCF to start the CLIP or use the Actions - CLIP dialog box.

If a CLIP Fails to Update (Using OSM)

Use the Actions dialog box to update an individual CLIP.

1. In OSM, right-click the SWAN collection and select **Actions** from the shortcut menu.
2. From the Available Actions list, select **Stop** to stop the CLIP.
3. Select **Perform action**.
4. Click **OK** when the “Are you sure you want to do a stop?” message appears.
5. Monitor the progress in the Action Status menu.



a. If the CLIP is *still* in a Started state, use the SCF STATUS SERVER command to verify status of the CLIP. For example:

```
13> SCF STATUS SERVER $ZZWAN.#SWAN2.1*
```

b. Enter the SCF STOP command similar to the following to stop the SWAN adapter object:

```
3> SCF STOP ADAPTER $ZZWAN.#SWAN2.1, SUB ALL
```

c. Use the SCF STATUS SERVER command again to make sure that the SWAN adapter object is stopped.

6. In the Available Actions list, select **Firmware Update** to update the firmware for that particular CLIP.
7. Select **Perform action**.
8. Monitor the progress in the Action Status menu. To view details of the action, select **Details**.
9. To start the individual CLIP, select **Start** from the Available Actions list and select **Perform action**.
10. Monitor the progress in the Action Status menu. To view details of the action, select **Details**.

Glossary

A0CINFO file. A distribution subvolume (DSV) file that contains information about a product and each of its files, including product and file dependencies, how the files are used and where they are placed, and on which type of processor the product runs. Every product and SPR to be managed by the Distributed Systems Management/Software Configuration Manager (DSM/SCM) is distributed in a subvolume, and that subvolume must contain the product's A0CINFO file.

A1CINFO file. A DSV file distributed with an SRL product that contains information about a product and each of its files, including product and file dependencies, how the files are used and where they are placed, and which type of processor the product runs on. Every SRL product and SPR to be managed by DSM/SCM is distributed in a subvolume, and that subvolume must contain the product's A1CINFO file. A1CINFO files can only be received using a D30 or later product version of DSM/SCM.

A7CINFO file. A configuration file distributed with OSS products that contains information about the contents of all `pax` (archive) files of an OSS DSV.

ALLPROCESSORS paragraph. A required paragraph in the CONFTEXT configuration file that contains attributes defining the HP NonStop Kernel operating system image for all system processors. The ALLPROCESSORS paragraph follows the optional DEFINES paragraph.

Apply. The Distributed Systems Management/Software Configuration Manager (DSM/SCM) action of executing the instructions contained in an activation package, such as placing new software on the target system and taking a snapshot of the new target system.

Archive. A set of unstructured files used to collect the software received onto the host system. Files received as input are placed in the Archive, and attributes of the files are stored in the host database. The planner specifies the Archive location in the Configuration Manager profile, using the Archive and Database Maintenance Interface.

Archive and Database Maintenance Interface. A block-mode interface run by a database or system administrator at both the host system and target systems to perform Distributed Systems Management/Software Configuration Manager (DSM/SCM) maintenance functions.

Build. The Distributed Systems Management/Software Configuration Manager (DSM/SCM) action of constructing the activation package, including the running of SYSGEN if necessary. The inputs to the build are a software revision list of product versions, the configuration file (CONFTEXT), the latest snapshot of the target system, and the applicable DSM/SCM profiles.

CIIN. A command file in the SYS*nn* subvolume that is read and executed by the startup HP Tandem Advanced Command Language (TACL) process after system load if the CIIN file is specified in the CONFTEXT file and enabled in the TSM client software.

CLIP. See communications line interface processor (CLIP).

cluster switch. See HP NonStop™ Cluster Switch (model 6770) and HP NonStop™ ServerNet Switch (model 6780).

cold load. A synonym for system load or load (in the case of single processor load). System load or load is the preferred term in this and other HP NonStop server system manuals. See system load and load.

communications line interface processor (CLIP). The major programmable device within the *ServerNet* wide area network (SWAN) concentrator, providing link-level protocol and a software interface to the host. The CLIP stores and implements specific communications protocols.

Compaq TSM client software. The component of the TSM package that runs on a system console. The TSM client software consists of the TSM Low-Level Link Application, the TSM Service Application, the TSM Notification Director Application, and the TSM EMS Event Viewer Application.

Compaq TSM Low-Level Link Application. A component of the TSM client software. The TSM Low-Level Link Application enables you to communicate with a NonStop S-series server even when the HP NonStop Kernel operating system is not running. When the operating system is running, you usually communicate with the server using the TSM Service Application. See also Compaq TSM Service Application.

Compaq TSM Notification Director Application. A component of the TSM client software. The TSM Notification Director Application receives notifications and incident reports from an HP NonStop S-series server, displays them, and allows you to take action or forward the incident reports to your service provider for resolution. The TSM Notification Director Application can be configured to run on a system console at all times, even when other TSM applications are not being used.

Compaq TSM server software. The component of the TSM package that runs on a NonStop S-series server. When the NonStop Kernel operating system is running, the TSM client software on a system console communicates with a server through the TSM server software.

Compaq TSM Service Application. A component of the TSM client software. The TSM Service Application enables you to communicate with a NonStop S-series server when the NonStop Kernel operating system is running. When the operating system is not running, communication must take place using the TSM Low-Level Link Application. See also Compaq TSM Low-Level Link Application.

Dynamic Host Configuration Protocol (DHCP). An Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can automatically assign IP addresses, deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and provide other configuration information such as the addresses for printer, time, and news servers.

dynamic-link library (DLL). A collection of procedures whose code and data can be loaded and executed at any virtual memory address, with run-time resolution of links to and from the main program and other independent libraries. The same DLL can be used by more than one process. Each process gets its own copy of DLL static data. Contrast with shared run-time library (SRL).

dynamic loading. Loading and opening dynamic-link libraries under programmatic control after the program is loaded and execution has begun.

Compaq TSM. Identifies a client or server software component used to manage or service HP NonStop S-series servers.

CONFBASE file. In G-series RVUs, the basic system configuration database file, which is stored on the $SYSTEM.SYS*nn* subvolume. See also configuration file.

CONFIG file. In G-series RVUs, the current system configuration database file, which is stored on the $SYSTEM. ZSYSCONF subvolume. See also configuration file.

configuration file. In G-series RVUs, one of the following files: CONFBASE, CONFIG, one or more saved configuration files named CONF*xxyy* and CONFSAVE. In RVUs prior to G-series RVUs, the configuration file is either the OSCONFIG file used by the Configuration Utility Program (COUP) or the CONFTEXT file used by SYSGENR.

configuration revision. A planner-defined set of software products and related configuration information that the Distributed Systems Management/Software Configuration Manager (DSM/SCM) can activate on a target system. Multiple configuration revisions might exist on a target system. A configuration revision is made up of the product versions named in its software revision list, its HP NonStop Kernel operating system image, and the relevant profile items, such as the location of the target subvolumes on the target system. It is created by a Build request and is included in the activation package sent to the target system.

CONF*xxyy* file. In G-series RVUs, a saved configuration database file created by the Subsystem Control Facility (SCF) and stored in the $SYSTEM.ZSYSCONF subvolume. *xxyy* is the number you entered based on the version you entered as *x.y* in SCF (*xx* indicates the base version and *yy* indicates the subversion). See also configuration file.

CUSTFILE. An EDIT file included on every site update tape (SUT) as $SYSTEM.A*nnnnnn*.CUSTFILE, where *nnnnnn* is the system serial number of the target system. The CUSTFILE contains information on the software products on the SUT, their related files, and the destination and use of each file. HP customizes information in the CUSTFILE for each customer's system.

dial-out point. A system console from which incident reports are sent to a service provider. Incident reports are sent only from the system consoles defined as the primary and backup dial-out points (the primary and backup system consoles).

discovery. For the SM package, the process of identifying the resources that exist on a NonStop S-series server. See also incremental discovery and initial discovery.

Distributed Systems Management/Software Configuration Manager (DSM/SCM). A graphical user interface (GUI)-based program that installs new software and creates a new HP NonStop Kernel operating system. DSM/SCM creates a new software revision and activates the new software on the target system.

DSM/SCM. See Distributed Systems Management/Software Configuration Manager (DSM/SCM).

Enterprise Storage System (ESS). A collection of magnetic disks, their controllers, and the disk cache in a stand-alone cabinet or cabinets. These disks are configured by an attached console and presented to the attached server as logical volumes that can be a fraction of a physical volume or can span volumes.

Event Management Service (EMS). A Distributed Systems Management (DSM) product that provides event collection, event logging, and event distribution facilities. EMS provides different event descriptions for interactive and programmatic interfaces, lets an operator or an application select specific event-message data, and allows for flexible distribution of event messages within a system or network.

Fibre Channel ServerNet adapter (FCSA). A ServerNet adapter that transmits data between an HP NonStop™ S-series server and Fibre Channel storage devices. This ServerNet adapter is installed in an IOAM enclosure.

Fibre Channel switch (FC switch). Networking hardware that can connect an Enterprise Storage System and an HP NonStop™ S-series server. This switch allows any-to-any connectivity.

firmware. Code in memory that is necessary for the power-up initialization and communication with a host or device. The software for components of the ServerNet architecture (for example, an adapter) is called firmware. Some firmware for ServerNet components is downloaded when the system or component is loaded.

GCSC. See Global Customer Support Center (GCSC).

Gigabit Ethernet ServerNet adapter (GESA). A single-port ServerNet adapter that provides 1000 megabits/second (Mbps) data transfer rates between HP NonStop™ S-series systems and Ethernet LANs. A GESA can be directly installed in slots 51 through 54 of an I/O enclosure and slots 53 and 54 of a processor enclosure.

Two versions of the GESA are available:

- 3865 GESA-C (T523572): a single-port copper version compliant with the 1000 Base-T standard (802.3ab)
- 3865 GESA-F (T523572): a single-port fiber version compliant with the 1000 Base-SX standard (802.z)

Gigabit Ethernet 4-Port ServerNet adapter (G4SA). A multiport ServerNet adapter that provides 1000 megabits/second (Mbps) data transfer rates between HP NonStop™ S-series systems and Ethernet LANs.

Global Customer Support Center (GCSC). A support organization that provides telephone and remote diagnostic support for HP customers. There are GCSCs located all over the world. See also Online Support Center (OSC).

halt. To stop a processor, terminating all processes running in it. Halt is a processor action available in the TSM Service Application and the TSM Low-Level Link Application. Halting a processor does not affect any other processors in the system unless they are freeze-enabled.

An error that stops a processor, terminating all processes running in it. If a processor halts on its own, the TSM server software issues an alarm such as CPU Software Halt.

hard reset. Use the hard reset action to terminate all processes running on a processor, stop the processor, clear the processor's memory, and reset the processor's internal mapping tables. Hard Reset is a processor action available in the TSM and OSM Low-Level Link Application.

Caution: Performing a hard reset on a processor results in an unrecoverable loss of data. Use the Hard Reset action only to prepare the processor for a Prime for Reload or a Reload action.

HP NonStop™ S7000 server. The first mid-range server in a product line of HP NonStop S-series servers that implements the ServerNet architecture and runs the HP NonStop Kernel operating system.

HP NonStop™ S7400 server. A mid-range HP NonStop S-series server that provides an upgrade option for migrating from an HP NonStop K-series server or a NonStop S7000 server. The NonStop S7400 server is based on the NonStop S72000 technology and supports all NonStop S-series hardware products that are compatible with the NonStop S72000 servers.

HP NonStop™ S7600 server. A mid-range HP NonStop S-series server that is based on the NonStop S74000 technology and supports all NonStop S-series hardware products that are compatible with the NonStop S74000 servers.

HP NonStop™ S7800 server. A mid-range HP NonStop S-series server that is based on the NonStop S76000 technology and supports all NonStop S-series hardware products that are compatible with the NonStop S76000 servers.

HP NonStop™ S70000 server. The first high-performance server in a product line of HP NonStop S-series servers that implements the ServerNet architecture and runs the HP NonStop Kernel operating system.

HP NonStop™ S72000 server. The high-performance successor of the NonStop S70000 line of HP NonStop S-series servers.

HP NonStop™ S74000 server. The high-performance successor of the NonStop S72000 line of HP NonStop S-series servers.

HP NonStop™ S76000 server. The high-performance successor of the NonStop S74000 line of HP NonStop S-series servers.

HP NonStop™ S78000 server. The high-performance successor of the NonStop S76000 line of HP NonStop S-series servers.

HP NonStop™ S86000 server. The first premium high-performance server in a product line of HP NonStop S-series servers that implements the ServerNet architecture and runs the HP NonStop Kernel operating system.

HP NonStop™ S88000 server. The premium high-performance successor of the NonStop S86000 line of HP NonStop S-series servers.

HP NonStop™ Sxx000 server. Any server in a family of high-performance or premium high-performance HP NonStop S-series servers. This family includes the NonStop S70000, S72000, S74000, S76000, S78000, S86000, and S88000 servers.

HP NonStop™ ServerNet Cluster (ServerNet Cluster). The product name for the collection of hardware and software components that constitute a ServerNet cluster.

HP NonStop™ ServerNet Switch (model 6780). The cluster switch used in the layered topology. The 6780 switch consists of a switch logic board, a midplane, plug-in cards, power supplies, and fans.

HP NonStop™ S-series servers. The HP NonStop servers having product numbers beginning with the letter *S*. These servers implement the ServerNet architecture and run the HP NonStop Kernel operating system.

HP NonStop™ Storage Management Foundation (SMF). A subsystem used by the storage subsystem that facilitates automation of storage management tasks by providing location-independent naming, storage pools, and virtual disks on HP NonStop™ S-series systems.

HP NonStop™ System RISC Model D processor (NSR-D processor). The model designation for the TNS/R processor used in the HP NonStop S7400 server.

HP NonStop™ System RISC Model E processor (NSR-E processor). The model designation for the TNS/R processor used in the HP NonStop S7600 server.

HP NonStop™ System RISC Model G processor (NSR-G processor). The model designation for the TNS/R processor used in the HP NonStop S70000 server.

HP NonStop™ System RISC Model H processor (NSR-H processor). The model designation for the TNS/R processor used in the HP NonStop S78000 server.

HP NonStop™ System RISC Model J processor (NSR-J processor). The model designation for the TNS/R processor used in the HP NonStop S7800 server.

HP NonStop™ System RISC Model T processor (NSR-T processor). The model designation for the TNS/R processor used in the HP NonStop S72000 server.

HP NonStop™ System RISC Model V processor (NSR-V processor). The model designation for the TNS/R processor used in the HP NonStop S74000 server.

HP NonStop™ System RISC Model W processor (NSR-W processor). The model designation for the TNS/R processor used in the HP NonStop S7000 server.

HP NonStop™ System RISC Model X processor (NSR-X processor). The model designation for the TNS/R processor used in the HP NonStop S76000 server.

HP NonStop™ System RISC Model Y processor (NSR-Y processor). The model designation for the TNS/R processor used in the HP NonStop S86000 server.

HP NonStop™ System RISC Model Z processor (NSR-Z processor). The model designation for the TNS/R processor used in the HP NonStop S88000 server.

HP NonStop™ TCP/IP process. An HP product that supports the Transmission Control Protocol/Internet Protocol (TCP/IP) layers. TCP/IP processes are used together with the communications line interface processor (CLIP) pNA+ to provide the transport layer between wide area network (WAN) I/O processes and data link control (DLC) tasks, between ConMgr and the Simple Network Management Protocol (SNMP) task, between the WANBoot process and BOOTP tasks, and between an OSM or TSM process and a DIAG task.

HP NonStop™ TCP/IP subsystem. A subsystem that allows the use of HP NonStop TCP/IP to access an HP NonStop S-series host from Macintosh computers, personal computers, and UNIX workstations. Applications running on a NonStop S-series system or in an Expand network can transparently exchange data with NonStop TCP/IP devices.

HP NonStop™ TCP/IPv6. An HP product that adds IP version 6 (IPv6) functionality to the parallel library TCP/IP product. IPv6 is a TCP/IP protocol that extends the IP version 4 (IPv4) of 32 bits to 128 bits. NonStop TCP/IPv6 can be run in three modes: INET (only IPv4 and is a direct replacement for parallel library TCP/IP), INET 6 (only IPv6), and Dual (both IPv4 and IPv6 communications).

HP NonStop™ Technical Library (NTL). The application for accessing, searching, and viewing technical publications and support information for the HP NonStop server. NTL replaces Total Information Manager (TIM).

HP NonStop™ Cluster Switch (model 6770). An assembly that routes ServerNet messages across an external fabric of a ServerNet cluster. The cluster switch consists of a ServerNet II Switch, an uninterruptible power supply (UPS), and AC transfer switch, and it can be packaged in a switch enclosure or in a 19-inch rack. The cluster

switch is used with star, split-star, and tri-star topologies. See also HP NonStop™ ServerNet Switch (model 6780).

HP NonStop™ ServerNet Switch (model 6780). The cluster switch used in the layered topology. The 6780 switch consists of a switch logic board, a midplane, plug-in cards, power supplies, and fans.

HP NonStop Open System Management (OSM) Interface. Replacement for TSM as the system management tool of choice for NonStop S-series servers. OSM provides the same functionality as TSM while overcoming limitations of TSM. OSM is required for support of new functionality released in G06.22 and later.

HP NonStop servers. The entire line of HP NonStop servers, including NonStop K-series and NonStop S-series servers.

hybrid shared run-time library (hybrid SRL). A shared run-time library (SRL) that has been augmented by the addition of a dynamic section that exports the SRL's symbols in a form that can be used by position independent code (PIC) clients. A hybrid SRL looks like a dynamic-link library (DLL) to PIC clients (except it cannot be loaded at other addresses and cannot itself link to DLLs). The code and data in the SRL are no different in a hybrid SRL, and its semantics for non-PIC clients are unchanged.

incremental discovery. Discovery of a NonStop S-series server when the TSM client software has locally saved information but where there have been configuration changes on the server since that information was saved.

initial discovery. Discovery of a NonStop S-series server with which the TSM client software has had no prior contact and for which the TSM client software has no locally saved information.

installation subvolume (ISV). A subvolume containing files that perform a specific function during the installation process, such as organizing documentation in a specific location, providing the components of the HP NonStop™ Kernel operating system image (OSIMAGE), and containing files that are used after the installation process.

I/O adapter module (IOAM). A collection of modular components that provides I/O connectivity and can include ServerNet switch boards, Fibre Channel ServerNet adapters (FCSAs), fans, and power supplies. In the IOAM, each module is a logical entity that represents a single service domain.

I/O adapter module enclosure (IOAM enclosure). The sheet-metal carrier that is installed in a standard 19-inch rack and contains the IOAM components.

IOMF CRU. See I/O multifunction (IOMF) CRU.

IOMF 2 CRU. See I/O multifunction (IOMF) 2 CRU.

I/O multifunction (IOMF) CRU. (1) A NonStop S-series server customer-replaceable unit (CRU) that connects the I/O enclosure to a processor enclosure, using a ServerNet cable, and that supplies power to the components within the IOMF CRU, as well as redundantly to the disk drives, SCSI terminators, and ServerNet adapters in that enclosure. The IOMF CRU contains a power supply, a service processor, a ServerNet router, an Ethernet controller, an external ServerNet port, and three SCSI ServerNet addressable controllers (SACs) in a single unit. (2) A collective term for an IOMF CRU and IOMF 2 CRU where a distinction between the two types of CRUs is not required.

I/O multifunction (IOMF) 2 CRU. An HP NonStop™ S-series customer-replaceable unit (CRU) that connects an I/O enclosure to a processor enclosure through a ServerNet cable and supplies power to the components within the IOMF 2 CRU as well as redundantly to the disk drives, SCSI terminators, and ServerNet adapters in that enclosure. The IOMF 2 CRU contains a power supply, a service processor (SP), a ServerNet router 2, an Ethernet controller, three configurable ServerNet ports, and three SCSI ServerNet addressable controllers (S-SACs) in a single unit. IOMF 2 CRUs are supported on G06.10 and later software release version updates (RVUs).

load. (1) To transfer the HP NonStop Kernel operating system image or a program from disk into a computer's memory so that the operating system or program can run. (2) To insert a tape into a tape drive, which prepares it for a tape operation (read or write).

low-level link. A connection between the TSM client software running on a system console and the master service processors (MSPs) on a NonStop S-series server. When the NonStop Kernel operating system is not running, communication must take place over a low-level link. You can also communicate with a NonStop S-series server over a low-level link when the operating system is running. See also service connection.

multifunction I/O board (MFIOB). A *ServerNet* adapter that contains ServerNet addressable controllers (SACs) for SCSI and Ethernet; a service processor; ServerNet links to the processor, to the two ServerNet adapter slots, and to one of the ServerNet expansion board (SEB) slots; and connections to the serial maintenance bus (SMB), which connects components within an enclosure to the service processor.

Online Support Center (OSC). The group of support specialists within the HP Global Customer Support Center (GCSC) who respond to telephone calls regarding system problems and diagnose malfunctioning systems using remote diagnostic links. See also Global Customer Support Center (GCSC).

operating system image. See OSIMAGE.

OSIMAGE. A file built by the SYSGENR program and Subsystem Control Facility (SCF) that contains the complete image of the NonStop Kernel operating system that runs in each processor in the system.

Physical view. One of several views of a server available in the view pane of the Management window of the OSM Service Connection, TSM Service Application, and OSM and TSM Low-Level Link. A Physical view of a server is a view of all the enclosures and is intended to represent the actual floor plan at the site. A Physical view of an enclosure is a visual representation of the physical placement of supported resources inside the enclosure.

Planner Interface. A graphical user interface (GUI) to the Distributed Systems Management/Software Configuration Manager (DSM/SCM) that runs on the host system. It provides an interface to all the host DSM/SCM planner functions.

position-independent code (PIC). Executable program or library code that is designed to be loaded and executed at any virtual memory address, without any modification. Addresses that can be modified by the loader do not appear in PIC code, only in data that can be modified by the loader.

processor multifunction (PMF) CRU. (1) A NonStop S-series server customer-replaceable unit (CRU) that contains a power supply, service processor (SP), *ServerNet* router 1, Ethernet controller, three ServerNet addressable controllers (SACs), and a processor and memory system in a single unit. The PMF CRU consists of three subassemblies: the processor and memory board (PMB), the multifunction I/O board (MFIOB), and the power supply subassembly. (2) A collective term for a PMF CRU and PMF 2 CRU where a distinction between the two types of CRUs is not required.

processor multifunction (PMF) 2 CRU. a NonStop S-series server customer-replaceable unit (CRU) that contains a power supply, service processor (SP), *ServerNet* router 2, Ethernet controller, three ServerNet addressable controllers (SACs), and a processor and memory system in a single unit. The PMF 2 CRU consists of three subassemblies: the processor and memory board (PMB), the multifunction I/O board (MFIOB), and the power supply subassembly.

RELOAD. an HP Tandem Advanced Command Language (TACL) command to load from disk (over the *ServerNet* system area network [ServerNet SAN]) the HP NonStop Kernel operating system image into the memory of the processor.

SCSI. See small computer system interface (SCSI).

ServerNet cluster. A network of servers (nodes) connected together using the ServerNet protocol for interprocessor communication across a cluster and within its nodes. A ServerNet cluster offers linear system expansion beyond the 8-processor or 16-processor limits of a single server, achieving comparable speeds for internal and external ServerNet communication.

ServerNet expansion board (SEB). (1) A connector board that plugs in to the backplane to allow one or more ServerNet cables to exit the rear of the enclosure. The SEBs and ServerNet cables allow processors in one group to communicate with processors in another group. Each SEB provides either the ServerNet X fabric or the ServerNet Y

fabric for a group. (2) A collective term for both SEBs and modular SEBs (MSEBs) when a distinction between the two types of SEBs is not required.

ServerNet/FX adapter. A ServerNet adapter that logically extends the ServerNet X and Y fabrics to other clusters in a Fiber Optic Extension (FOX) ring by using fiber-optic lines. Two 6740 ServerNet/FX adapters are used, one for the X ring and one for the Y ring.

ServerNet/FX 2 adapter. A ServerNet adapter that logically extends the ServerNet X and Y fabrics to other clusters in a Fiber Optic Extension (FOX) ring by using fiber-optic lines. Two 6742 ServerNet/FX 2 adapters are used, one for the X ring and one for the Y ring.

ServerNet LAN Systems Access (SLSA) subsystem. A subsystem of the HP NonStop™ Kernel operating system for configuration and management of ServerNet local area network (LAN) objects in G-series release version updates (RVUs).

ServerNet wide area network (SWAN) concentrator. an HP data communications peripheral that provides connectivity to a NonStop S-series server. The SWAN concentrator supports both synchronous and asynchronous data over RS-232, RS-449, X.21, and V.35 electrical and physical interfaces.

service connection. A connection between the TSM client software running on a system console and the TSM server software running on an HP NonStop S-series server. A service connection can be used only to communicate with the server when the HP NonStop Kernel operating system is running. A service connection provides a comprehensive service and maintenance picture of the server and is used to perform most service management tasks. See also low-level link.

service processor (SP). A physical component of the processor multifunction (PMF) customer-replaceable unit (CRU) or I/O multifunction (IOMF) CRU that controls environmental and maintenance functions (including system load functions) in the enclosure. SPs operate in pairs to provide fault tolerance. The two SPs in group 01 are designated the master service processors (MSPs). Other pairs of SPs within a system are called expansion service processors (ESPs).

service provider. (1) A person trained and qualified to service field-replaceable units (FRUs). (2) An organization, such as the Global Customer Support Center (GCSC), that helps you resolve problems with your NonStop S-series server. The TSM package allows you to use the help of a service provider by configuring TSM to support remote notification and remote access.

shared run-time library (SRL). A collection of procedures whose code and data can be loaded and executed only at a specific assigned virtual memory address (the same address in all processes). SRLs use direct addressing and do not have run-time resolution of links to and from the main program and other independent libraries. Contrast with dynamic-link library (DLL).

shell. In the Open System Services (OSS) environment, a program that interprets sequences of text input as commands. A shell can operate on an input stream, or it can interactively prompt and read commands from a terminal.

site update tape (SUT). One or more tapes that contain each target system's site-specific subvolume and various products. Each product contains a softdoc and a complete set of files. A SUT is delivered with every new NonStop S-series server and can be ordered whenever a new RVU of the system software is available. A full SUT contains the current RVU of the HP NonStop Kernel operating system and all product software that has been ordered with it. A partial SUT contains a subset of products for the current RVU.

small computer system interface (SCSI). An ANSI-standard protocol used by a controller to access a device.

snapshot. (1) A file that can be created by OSM and TSM client software to record information about the status of an HP NonStop™ S-series server, including the attributes values of all system resources, at the time it was created. The file can be forwarded to your service provider to help with troubleshooting problems. (2) For Distributed Systems Management/Software Configuration Manager (DSM/SCM), a list of the target system tape and disk locations, file fingerprints for files managed by DSM/SCM, and DSM/SCM target information. The snapshot is compiled on the target system from the target database and sent to the host system to store in the host database. An instruction to create a snapshot is part of every activation package sent from the host and can also be requested independently through the Target Interface.

software product revision (SPR). The method of releasing incremental software updates on HP NonStop™ S-series systems. An SPR can include one or more corrections to code, or it can contain code that adds new function to a software product.

SP. See service processor (SP).

Storage Management Foundation (SMF). A subsystem used by the storage subsystem that facilitates automation of storage management tasks by providing location-independent naming, storage pools, and virtual disks on NonStop S-series servers.

Subsystem Control Facility (SCF). An interactive interface for configuring, controlling, and collecting information from SCF subsystems and objects. SCF enables you to configure and reconfigure devices, processes, and some system variables without having to take down your NonStop S-series server.

SUT. See site update tape (SUT).

SWAN concentrator. See ServerNet wide area network (SWAN) concentrator.

SWID. The software identification tool invoked by the SYSGENR program that audits file identification information about your software.

SYS*nn* subvolume. A subvolume on the $SYSTEM volume where the new version of the NonStop Kernel operating system image is located. Also located on the SYS*nn* subvolume is system-dependent and RVU-dependent software. *nn* is an octal number in the range %00 through %77.

system console. A PC-compatible workstation on which the TSM or OSM Application Suite or web-based software is running. The system consoles configured as the primary and backup dial-out points are referred to as the primary and backup system consoles.

system load. (1) To start the system; to load the HP NonStop Kernel operating system image into the memory of a processor. (2) RELOAD. (3) The process of loading the operating system. A system load changes a system from an inactive to an active (or operational) state by loading software that establishes communication between the operating system and configured system peripherals.

system resource model (SRM). A collection of C++ objects that model the diagnostic and serviceability state behavior of the system resources discovered and managed by the Compaq TSM package. The SRM has the following attributes:

Generic process name	$ZZKRN.#TSM-SRM
Process name	$ZTSM
Program file name	$SYSTEM.SYS*nn*.SRM

Trivial File Transfer Protocol (TFTP). A protocol defined by Request for Comments (RFC) 1350. TFTP is used as a data link control (DLC) and diagnostic task.

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