

# Open System Management Framework (OSMF)

for HP-UX

Release 3.0

## Administrator's Guide

This guide provides information necessary to manage and maintain the HP 55452A open synchronization management framework (OSMF) hardware and software.

The information in this manual applies to OSMF software having the software version number listed below, unless accompanied by a "Manual Updating Changes" package indicating otherwise.

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#### Warning Symbols That May Be Used In This Book



Instruction manual symbol; the product will be marked with this symbol when it is necessary for the user to refer to the instruction manual.



Indicates hazardous voltages.



Indicates earth (ground) terminal.



or



Indicates terminal is connected to chassis when such connection is not apparent.



Indicates Alternating current.



Indicates Direct current.

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## 1.1 In This Guide

1.1.1 The 55452A open synchronization management framework (OSMF) System Administrator's Guide provides information necessary to manage and maintain the OSMF hardware and software. It makes the assumption you have HP-UX and HP OpenView experience.

1.1.2 This guide includes the following topics:

- Features supported in the current version of the software as well as a modular description of the software
- Responsibilities of the system administrator
- Basic system administration tasks, such as starting and stopping the software, and routine system maintenance
- System backup and recovery
- Installation of OSMF software and software upgrades
- Commissioning of SSUs

### 1.1.2.1 Naming Conventions Used in this Guide

This guide uses several names to refer to the same objects. The usage of multiple terms for the same object helps define the relationship between objects in different situations. To establish naming conventions, the objects and their corresponding names are listed in the following table:

Object	Names Used for the Object
55452A open synchronization management framework software	OSMF software for HP-UX, OSMF software, OSMF
HP-UX workstation	OSMF workstation, OSMF system, host system, element manager
55400A synchronization supply unit	SSU, NSU, network element, network object
55300A primary reference source	PRS, PRC, GPS, network element, network object

## 1.2 Description of the OSMF Software

1.2.1 The OSMF software provides an easy-to-use graphical user interface (GUI) for the management of SSUs that make up the synchronization network. SSUs are managed via a network connection between the host system and each SSU. Once this connection is established, the OSMF software can be used to modify the topology of the synchronization network, and manage the configuration of the individual SSUs in the network. Version 2.0 (and above) of the OSMF software also provides limited capacity to manage primary reference sources (GPSs) in the network.

### 1.2.1.1 Features of the OSMF Software - Version 1.X

The following features are included in version 1.X of the OSMF software:



- The ability to manage a synchronization network consisting of up to 1000 SSUs.
- Network communications with SSUs using the TCP/IP network protocol.
- Single-screen graphical representation of the synchronization network topology, with color coding to indicate the severity of alarms originating at SSU nodes within the network.
- An Alarm Viewer, which provides alarm/event sorting and filtering capabilities and the ability to obtain more detail on alarms or events emanating from SSUs.
- Alarm auto-synchronization tasks that ensure that the list of alarms displayed in the Alarm Viewer match the outstanding alarms in the SSUs.
- The ability to collect and graphically display performance data for a variety of SSU input channel measurement types, including the ability to set masks and measurement thresholds.
- The ability to produce formatted event reports that can be printed on a system printer.
- The ability to modify the configuration of any SSU that is actively being managed by the software.
- A heartbeat task, which provides automatic, periodic checking of the connectivity of the host system to all managed SSUs.
- An auto-alignment task which ensures that the SSU configuration information contained in the OSMF database is aligned with the actual configuration of the SSUs.

#### ***1.2.1.2 Features of the OSMF Software - Version 2.0***

The following features are included in version 2.0 of the OSMF software. These features are in addition to those features listed above for version 1.X:

- Limited capacity to manage primary reference sources (GPSs) in the network. GPSs can be symbolically represented on the topology maps, with color coding to indicate the severity of alarms originating from them. Alarms emanating from GPS nodes will also be viewable in the Alarm Viewer. The total number of network elements (GPSs *and* SSUs) that can be managed by the OSMF software is 1000.
- Communications with SSUs using the X.25 network protocol in addition to the TCP/IP protocol.
- A choice of either HP OpenView Windows (OVW) or OSMF status propagation rules to indicate changes in status of network elements at the lower levels of the containment hierarchy.
- Display of synchronization trails that represent the connectivity between network elements. If a problem exists with the signal path represented by the sync trail symbol, the color of the symbol will change to indicate the nature of the problem.
- A Network Element Status display, which can be used to remotely view the status of selected panel indicators on the various boards of a specified SSU.
- The ability to produce formatted performance reports that can be printed on a system printer.
- Inventory management, that allows for the management of a master database of the various hardware resources available in the network.
- The ability to manage multiple system users in three different user classes, which determine the level of capability that each user has when using the system.
- Management domains, which specify the network elements that a given user can access.

### ***1.2.1.3 Features of the OSMF Software - Version 3.0***

The following features are included in version 3.0 of the OSMF software. These features are in addition to those features listed above for versions 1.X and 2.0:

- A transaction log, which includes a record of transactions between users and the system, as well as certain internal system transactions. The Security-class user has the ability to view the transaction log and produce formatted transaction log reports that can be printed on a printer.
- Additions to the Network Element Status display, which add remote Alarm Cutoff and ITH Card Force Active functionality to the display.
- The ability to create users, and set the date and time on SSUs, remotely from the OSMF workstation.
- Implementation of the Network Time Protocol (NTP), for improved accuracy of the OSMF workstation's time and date, and propagation of that time to SSUs.
- The ability to create and store one or more default SSU configurations. These default configurations, which are stored in the database, can then be downloaded to SSUs when the SSUs are managed or remanaged.
- The ability to download the configuration of a previously managed SSU to another SSU when that SSU is managed or remanaged.
- The ability to download firmware code from the OSMF workstation to the EPROMs within targeted SSUs.
- On-line help, which affords easy access to task, feature, and troubleshooting information via an on-screen display.

In addition, the following three features are introduced as options in version 3.0 of the software:

- Communication with SSUs using the TP4 network protocol in addition to the X.25 and TCP/IP protocols.
- A standards-based Q3 agent, which provides an interface between the OSMF system and higher-level telecommunications network management systems.
- Event Correlation Services (ECS), which use transient event filtering, redundant event elimination, and root cause analysis to produce Alarm Viewer and Event History Log displays that are more conducive to network troubleshooting.

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## **1.3 OSMF Software System Overview**

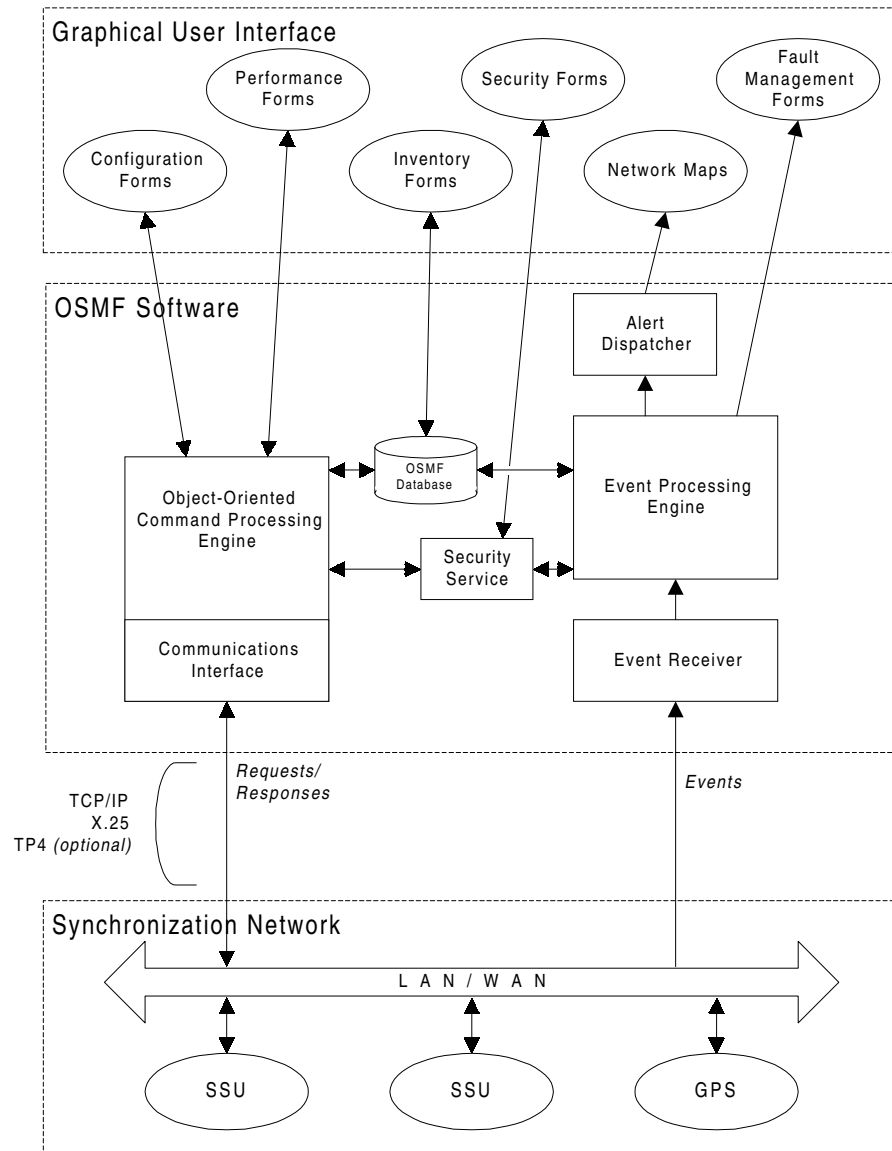
1.3.1 The OSMF software is integrated with the HP OpenView DM platform to present a graphical user interface (GUI) to the topology of the synchronization network as well as to the management of those elements (SSUs and GPSs) that comprise the network.

The software can be thought of as having two main duties: transaction handling and event handling. Transaction handling involves the processing of command transactions (request-and-response actions) between the OSMF application and the SSUs in the synchronization network. Event handling involves the processing of alarms and other events from the SSUs and GPSs.

Following is a block diagram and brief description of the OSMF software. Note that the software modules described do not necessarily represent actual software processes.

**NOTE**

Options to the OSMF software do not appear in the following block diagram and are not explained in the following system overview. Option-specific information can be found in the *System Administrator's Guide* for the option.



The software modules involved in Event Handling include the Event Receiver, Event Processing Engine, Alert Dispatcher, Fault Management Forms, and Network Map. The following describes the function of each of these modules.

- **Event Receiver** - The Event Receiver receives events from the managed SSUs and GPSs in the synchronization network and forwards valid events to the Event Processing Engine.
- **Event Processing Engine** - The Event Processing Engine receives events from the Event Receiver and determines their status and type. Depending on the status and type of an event, the Event Processing Engine logs the event into the appropriate event database table and if necessary sends an alert message to the Alert Dispatcher (alert messages result from events that signal a change of status in SSUs or GPSs).
- **Alert Dispatcher** - The Alert Dispatcher receives alert messages from the Event Processing Engine. It then sends messages as appropriate to the Network Maps in each registered session of OSMF software.
- **Network Maps** - These are graphical representations of the synchronization network. Network Maps are created using the OSMF software and are comprised of either actively managed or unmanaged SSU and GPS objects (icons).
- **Fault Management Forms** - These are the user interfaces to the fault management functions of the OSMF software. The fault management forms are the Network Element Status, Alarm Viewer, Event History Log, and Transaction Log forms. Since there can be several registered sessions of the OSMF software, there can be multiple active fault management forms. Specifically, there can be up to two Alarm Viewers or Event History Logs open per OVW session (note that the Alarm Viewer can be invoked via the Network Element Status form). There is no limit on the number of Network Element Status forms open per OVW session, however, no more than one per SSU is recommended.

The software modules involved in Transaction Handling include the Communications Interface, Object-Oriented Command Processing Engine, Security Service, Security Forms, Configuration Forms, Performance Forms, and Inventory Forms. The following describes the function of each of these modules.

- **Communications Interface** - The Communications Interface handles the connection and message transport operations between the OSMF platform and the remote interface of the SSUs. It receives TL1 requests from the Command Processing Engine and sends them to the SSUs as well as receives TL1 response from the SSUs and sends them to the Command Processing Engine.
- **Object-Oriented Command Processing Engine** - The Command Processing Engine handles transactions (request/response actions) between OSMF software processes and SSUs. Depending on the nature of the transaction, the Command Processing Engine might interface with the configuration database, or directly with the SSU. As an example, if an OSMF software process requests the current configuration of an SSU, the Command Processing Engine will extract the necessary information from the database if it's available, or it will generate and pass the necessary TL1 commands to the Communications Interface in order to retrieve the configuration information from the SSU. When handling a response, the Command Processing Engine receives the TL1 response from the Communications Interface, extracts the necessary information, and appropriately processes it (passes the response data to the requesting process, updates the database, etc.).
- **Security Service** - Provides security management functions for the OSMF software.
- **Security Forms** - These are the user interfaces to the security management functions of the OSMF software. The current software release contains one security form, called the Man-

agement Domain form. There can be no more than one Management Domain form open per OVW session.

- **Configuration Forms** - These are the user interfaces to the configuration management functions of the OSMF software. The configuration forms include the current SSU configuration forms, the default configuration management forms, and the Firmware Download form.

Current SSU configuration modifications made using the Configuration:Modify form take priority over modifications made via a local interface, which is to say that the local user will be logged off if modifications are initiated via the Configuration:Modify form. Since there can be several registered sessions of the OSMF software, there can be multiple active Configuration forms. Specifically, there can be no more than one Configuration:Modify form open per SSU (no more than two per OVW session is recommended). No more than two Configuration:View forms per OVW session is recommended.

- **Performance Forms** - This is the user interface to the performance management functions of the OSMF software, called the Performance Monitor. Since there can be several registered sessions of the OSMF software, there can be multiple active Performance forms. Specifically, there should be no more than one Performance Monitor form open per SSU (no more than two per OVW session is recommended).
- **Inventory Forms** - These are the user interfaces to the inventory management functions of the OSMF software. The inventory forms include the Inventory, Output Card Inventory, and Rack Inventory form. Since there can be several registered sessions of the OSMF software, there can be multiple active Inventory forms. Specifically, it is recommended that there be no more than two Inventory forms open per OVW session (note that the Rack Inventory form can be invoked via the Configuration forms).

### 1.3.1.1 Configuration Synchronization Processes

One of the key functionalities of the OSMF software is the continued assurance that the SSU and GPS information as stored in the OSMF database is synchronized with the relevant information in the SSUs and GPSs that comprise the synchronization network. The OSMF software uses several software processes to assure that this synchronization is maintained. These processes ensure synchronization is maintained by monitoring the four flags described below:

Flag	Description
available	This flag is set to TRUE when the OSMF software's Heartbeat Daemon (explained below) is able to send a command to and receive a response from the SSU or GPS. (If an SSU or GPS is found to be unavailable, it is also assumed that it is unaligned, and both the "available" and "aligned" flags are set to FALSE.)
managed	This flag is set to TRUE when the OSMF software is currently managing the SSU or GPS. Network elements are managed and unmanaged from the "OSMF" menu.
aligned	This flag is set to TRUE when the SSU's configuration information is aligned with its configuration information as stored in the OSMF database.
hw_aligned	This flag is set to TRUE when the hardware configuration of the SSU is aligned with its hardware configuration as stored in the OSMF database

The following paragraphs explain the configuration synchronization processes used by the OSMF software:

### **Heartbeat Daemon**

A Heartbeat task, also known as the *Heartbeat daemon*, periodically checks each network element, that is each SSU and GPS, to determine the following:

- Whether or not the SSU or GPS is available.
- For SSUs, whether or not the hardware configuration of the SSU is aligned with its hardware configuration as stored in the database.
- For SSUs, whether or not the SSU's configuration information is aligned with its configuration information as stored in the database.

In operation, the Heartbeat task sequentially goes through the list of managed network elements (NEs) in the OSMF database and performs the following functions on each NE in sequence:

- 1** If the NE is an SSU, the Heartbeat task *first* checks whether or not the “hw\_aligned” flag for the SSU is set to TRUE. If the flag is set to TRUE, it continues on with step 2 (below) for the *same* SSU. If it discovers that the “hw\_aligned” flag is set to FALSE, it invokes a process called “check\_hw\_align” (refer to *Hardware Alignment*, below), then performs step 1 for the *next* NE record stored in the database.

If the NE is a GPS, the Heartbeat task sends it the “RTRV-HDR” TL1 command to determine if it is available. If the GPS responds to the “RTRV-HDR” command, the Heartbeat task sets the “available” flag in the database for the GPS to TRUE, then performs step 1 for the *next* NE record in the database. If the GPS does not respond to the “RTRV-HDR” command, the Heartbeat task sets the “available” flag in the database for the GPS to FALSE, then performs step 1 for the *next* NE record in the database.

- 2** If the “hw\_aligned” flag for the SSU is set to TRUE, the Heartbeat task attempts to retrieve the time that the SSU was last configured (the last\_config\_time) from the SSU. If it is successful in retrieving the last\_config\_time, it then compares this value to the last\_config\_time that is stored

in the database for the SSU. The following table explains the SSU condition ascertained by the Heartbeat task from the comparison, as well as the action taken by the Heartbeat task:

Heartbeat Task can Retrieve last_config_time from the SSU?	The last_config_time in Database Matches last_config_time from the SSU?	Condition and Action
Yes	Yes	<i>Network Element is Available and Aligned.</i> The Heartbeat task goes to the next NE record stored in the database, and performs step 1 as explained above.
Yes	No	<i>Network Element is Available, but Unaligned.</i> The Heartbeat task sets the “aligned” flag in the database for the SSU to FALSE, then goes to the next NE record stored in the database, and performs step 1 as explained above.
No	<i>N/A</i>	<i>Network Element is Unavailable.</i> The Heartbeat task sets the “available” flag, the “aligned” flag, and the “hw_aligned” flag in the database for the SSU to FALSE, then goes to the next NE record stored in the database, and performs step 1 as explained above.

The “aligned” and “available” database flags that are set by the Heartbeat task are subsequently used by the Alignment daemon (refer to *Alignment Daemon*, below).

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**NOTE**


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In the current version of the OSMF software, the heartbeat is sent out to all Network Elements every 20 seconds.

### Alignment Daemon

An SSU Alignment task, also known as the *Alignment daemon*, periodically goes through the list of SSUs in the OSMF database identifying SSUs for which the “aligned” flag is set to FALSE, and the “available” and “managed” flags are set to TRUE.

When an SSU is identified as having its “aligned” flag set to FALSE and its “available” and “managed” flags set to TRUE, the Alignment task acquires a database lock on the SSU to prevent other processes from attempting to realign it or modify its configuration during the realignment process. After the database lock is procured, the Alignment task follows the following sequence:

- The local port on the SSU is disabled.
- The SSU’s configuration is uploaded to the database.
- The “aligned” flag is set to TRUE for the SSU.
- The last\_config\_time is set at the SSU, then uploaded to the database.
- The local port is enabled if it was enabled before the start of re-alignment.

- The database lock is released for the SSU.

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**NOTE**

If, during the database walkthrough, the Alignment task discovers unaligned SSUs that are either unmanaged or unavailable, it does not act on them, however, they are checked again the next time the database is walked through by the Alignment task.

If the Alignment task cannot procure a database lock because the SSU has already been locked, it returns an error which explains the reason for the failure (whether it is already being re-aligned, or modified). In this case, the SSU will be aligned as soon as the Alignment task walks through the database and discovers that the SSU is available, managed, and not locked.

### **Alarm Synchronization**

The OSMF software obtains a list of active alarms from each SSU and GPS and compares these with the alarms in its database, which are the alarms shown in the Alarm Viewer. During this comparison, any alarms that are in the database (still active in the Alarm Viewer) but are no longer active in an SSU or GPS are considered *expired*. Once alarms have expired, they are transferred from the Alarm Viewer to the Event History Log dialog box.

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**NOTE**

In the current version of the OSMF software, the alarm synchronization process synchronizes the alarms at startup and then repeats every 12 hours.

### **Hardware Alignment**

Whenever the hardware configuration of an SSU is modified (as when certain boards are either added or removed), the following events are generated by the SSU, as relevant:

- OPCDIN (an output card has been inserted into a slot)
- OPCDNP (a previously-detected output card has been removed from its slot)
- ITHGONE (an ITH card is missing)

Whenever any of these events are received by the OSMF software for a given SSU, the OSMF software sets the “hw\_aligned” flag for the SSU to FALSE.

As previously stated under *Heartbeat Daemon*, above, the Heartbeat task checks the state of the “hw\_aligned” flag, and if it discovers that the flag is set to FALSE, it invokes a process called “check\_hw\_align.” The “check\_hw\_align” process determines the actual state of hardware for the SSU, and acts accordingly.

- If “check\_hw\_align” determines that the hardware is unaligned because of the addition of boards, it updates the rack inventory and output card inventory database tables accordingly with the relevant information, and then sets the “hw\_aligned” flag to TRUE.
- If “check\_hw\_align” determines that the hardware is unaligned because output cards have been deleted, it does not change the “hw\_aligned” flag, so it remains set to FALSE. Instead,



it generates a secondary event, called “Secondary Event - Configurable Units Removed,” or SE-CFGRM (which has a severity of Critical).

In the case where the SE-CFGRM event is generated, the “Configuration:Modify” dialog box presents a warning dialog box to the user informing that a reduction in the number of output cards has been detected, and prompts the user as to whether or not the output card records should be deleted from the database. When the user elects to delete the cards from the database, the rack inventory and output card inventory database tables are updated, commands are issued to the SSU to remove the cards from its inventory, the SE-CFGRM event is cleared, and the “hw\_aligned” flag is set to TRUE.

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## 1.4 System Requirements

1.4.1 The following is required to run the OSMF software.

### *1.4.1.1 OSMF Software Requirements*

The OSMF software requires a workstation running the HP UNIX (HP-UX) operating system. The following is the recommended configuration:

- C-Class HP Workstation C-160/180/200
- 384 MB RAM
- 19-inch 1280-by-1024 Monitor

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**NOTE**

The OSMF software requires a minimum of 4 GB of hard disk space to run.

- HP-UX version 10.20
- OVDM 4.21 (HP OpenView Windows 4.01)
- Oracle release 7.3.2.3.0 components as follows:
  - Oracle 7 server
  - Server Manager
  - Advance Replication Manager
  - Oracle UNIX installer
  - PL/SQL
  - Pro\*C 2.2
  - SQL\*Net
  - SQL\*Plus
  - TCP/IP Protocol Adapter
  - SPATIAL option
  - CONTEXT option
- Developer 2000 release 1.3.2 components as follows:
  - Oracle Forms 4.5
  - Graphics 2.5

- Reports 2.5

#### ***1.4.1.2 Hardware Requirements for Using Network Time Protocol (NTP)***

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**NOTE**

NTP is available in version 3.0 and greater of the OSMF software.

In the OSMF implementation of NTP, a daemon (xntpd) adjusts the OSMF workstation clock from an external GPS reference source. This requires connection of the workstation to an GPS reference source that has an RS-232 serial “Time of Day” port. Connection between the GPS and OSMF workstation is with a 9-pin DTE to DTE interface cable. Refer to the GPS and workstation documentation for additional interface information.

#### ***1.4.1.3 Hardware Requirements for SSUs***

To be managed by the OSMF software, an 55400A Network Synchronization Unit must include one of the following Network Information Management (NIMC) cards:

- 55442A NIMC card (standard configuration) to support TCP/IP connectivity.
- 55442A Option 002 NIMC card to support X.25 connectivity.
- 55442A Option 003 NIMC card to support TP-4 connectivity.

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**NOTE**

TP-4 connectivity is an option also from the perspective of the OSMF software. In order to support TP-4 connectivity, this option must be installed and activated on the OSMF workstation.

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## **1.5 OSMF On-Line Help**

1.5.1 The current version of the OSMF software contains an on-line help system that can be accessed from the **OSMF** menu. This help system is HTML-based and is displayed in an HTML browser. The current version of software displays the on-line help using the Netscape browser.

In order to ensure that the OSMF software can properly invoke the on-line help system, you must do the following:

- Add the Netscape executable’s path to the PATH variable in the OSMF environment (sv-ux.env). The OSMF environment is located in the /opt/smartview/config/env directory.
- Ensure that the Netscape executable name on your system is “netscape.”

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## **1.6 Responsibilities of the System Administrator**

1.6.1 The system administrator is responsible for maintenance of the OSMF system. This requires the system administrator to understand both the hardware and the software installed in the Server.

1.6.2 The main responsibilities of the system administrator are as follows:

- Periodic backup of system files and the system database.

## Prerequisite Knowledge

- Archival of event log, transaction log, and performance data files.
- Updates to the operating system and OSMF software when necessary.
- Implementation of system security measures.

---

**CAUTION**

The security-level (“svsec”) user has the potential to cause data loss or corruption of the network topology (refer to *User Classes*, below). Users of the security-level class have the ability to modify network topology, configuration settings, management status of SSUs, etc. It is the responsibility of the system administrator to secure the OSMF workstation against unintentional and unauthorized operation.

---

---

## 1.7 Prerequisite Knowledge

1.7.1 As stated previously, the procedures in this manual assume you have HP-UX and HP OpenView experience. This knowledge is useful, and in some cases necessary when performing the tasks in this manual. Hewlett-Packard offers training classes on these subjects.

---

## 1.8 Related Documentation

1.8.1 In some cases, procedures in this guide might refer you to procedures or other information contained in documentation that includes the SSU documentation (55400 Network Synchronization Unit Site Preparation Guide and 55400 Network Synchronization Unit User’s Manual), GPS documentation, HP-UX documentation, and HP OpenView documentation.

---

## 1.9 The OSMF Software Administration Utility

The procedures in this manual explain how to accomplish system administration tasks using a Software Administration Utility, also known as the “svadmin” utility, whenever possible. This utility provides a menu-driven interface for various system administration tasks. It also provides a help menu, from where you can view the help files for the various administration scripts, view the latest on-line guides, etc. The “svadmin” utility can be started by typing the following command at the login prompt:

**svadmin**

The utility is located in the `/opt/smartview/utills` directory. The utility can be run at any time by any valid HP-UX user, however, database-related operations require the user be logged in as `svroot`, with primary group of `dba`.

---

**NOTE**

If a database-related operation is attempted by any user other than `svroot`, the utility will notify the user that only user `svroot` can perform the operation.

---

The main menu and sub-menus of the “svadmin” utility are shown below:

**Main Menu**  
Status  
Backups  
Database Administration  
Resilience Administration  
Time Synchronization  
Help and Documentation  
Exit

---

**Database Backup Menu**

Archive Event History Logs  
Perform Online Database Backup  
Return to Previous menu  
Exit

**Database Administration Menu**

Startup Database  
Shutdown Database  
Add Database User  
Drop Database User  
Revive Oracle Scheduled Jobs  
Migrate an Existing Database  
Create New Database  
Return to Previous Menu  
Exit

**Resiliency Administration Menu**

Status of Resilience  
Relocate Primary Master Database  
Remove Database from Replication  
Add Database to Replication  
Process Deferred Entries  
Resilience Help and Documentation  
Return to Previous Menu  
Exit

**Time Synchronization Menu**

Synchronize Time to all Managed NEs  
Return to Previous menu  
Exit

**Help Menu<sup>1</sup>**

svarchive (Chapter 3)  
svdbbackup (Chapter 4)  
svdbrecover (Chapter 4)  
svstatus (Chapter 2)  
svdbsetup (Chapter 5)  
Migration Guide  
Mirror Guide  
System Backup/Recovery  
NTP  
Return to Previous Menu

<sup>1</sup> Usage information for the utilities specified in this column can be found in the chapter noted in parentheses.



## **2.1 In this Chapter**

2.1.1 The procedures in this chapter explain how to start and stop an OSMF software session. Performing these tasks are often necessary prior to performing other system administration tasks.

---

## 2.2 To Start an OSMF Software Session

2.2.1 Use the following procedure when initiating a session of the OSMF software. Note that all steps might not be necessary, for example, the OSMF workstation might already be powered on. The general procedure is as follows:

- Power up the OSMF workstation and log into HP-UX.
- Start the Oracle database, if necessary.
- Check that the environment is correct, and ensure that all necessary OSMF software daemons are active.
- Set up the printer to be used for printing reports, if necessary.
- Start the OSMF software operator session.

---

**CAUTION**

Once you have initiated an OSMF software session using the following procedure, be aware that you must correctly stop the session using the procedure in this chapter. Failure to correctly end the session might result in corruption of system data or data loss.

### 2.2.1.1 Power up the OSMF workstation.

If the OSMF workstation has already been powered up, go to *Start the Oracle database (if necessary)*. Note that you must be logged into HP-UX as “svroot” to start the Oracle database.

- 1 Set the power switches on the monitor and OSMF workstation to on. The green power indicators light when power is switched on.

As the workstation starts up, it runs a series of self tests during which numerous messages appear. Once the start-up sequence is complete, the HP VUE login window appears.

- 2 Log in at the HP VUE login screen as **svroot**, and enter the svroot password.

After the login is complete, a terminal window containing the HP-UX svroot prompt might appear. If this window does not appear, open one.

### 2.2.1.2 Start the Oracle database (if necessary).

The Oracle database is started upon power-up of the OSMF workstation. The following procedure can be used to check that it is running, and start it if necessary.

- 1 Type the following at the HP-UX svroot prompt to check if the Oracle database is running:

```
ps -ef | grep ora
```

**To Start an OSMF Software Session**

The information returned should suggest that all necessary Oracle processes are running, and should appear similar to the following (the PIDs, times, etc., will be different):

```
svroot 1141 1 0 18:00:19 ? 0:00 ora_arch_SV30
svroot 1143 1 0 18:00:19 ? 0:02 ora_lgwr_SV30
svroot 1139 1 0 18:00:19 ? 0:02 ora_dbwr_SV30
svroot 1153 1 0 18:00:19 ? 0:00 ora_d001_SV30
svroot 1151 1 0 18:00:19 ? 0:00 ora_d000_SV30
svroot 1149 1 0 18:00:19 ? 0:09 ora_snp1_SV30
svroot 1160 1 0 18:00:19 ? 0:00 ora_d003_SV30
svroot 1155 1 0 18:00:19 ? 0:00 ora_d002_SV30
svroot 1137 1 0 18:00:19 ? 0:00 ora_pmon_SV30
svroot 1215 1214 0 18:00:41 ? 0:00 oracleSV30 (DESCRIPTION=(LOCAL=YES) (ADDRESS=(PROTOCOL=beq)))
svroot 1145 1 0 18:00:19 ? 0:00 ora_smon_SV30
svroot 1147 1 0 18:00:19 ? 0:09 ora_snp0_SV30
svroot 1190 1 0 18:00:35 ? 0:00 /opt/oracle/app/oracle/product/7.3.2.2/bin/tnslsnr LISTENER
```

If the information returned suggests that the Oracle processes are running, go to *Start OpenView and the necessary OSMF software processes*. If no information is returned, continue with the next step.

- 2 Type the following commands to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

When the “svadmin” utility starts, the OSMF Administration Utility main menu appears.

- 3 Choose the following menu items in the order shown to start the Oracle database (type the number next to the menu item to choose the item):

<b>Database Administration</b>	from the “svadmin” main menu
<b>Startup Database</b>	from the “Database Administration” menu



### 2.2.1.3 Start OpenView and the necessary OSMF software processes.

- 1 Choose the following menu items in the order shown to check the status of the OSMF software processes (type the number next to the menu item to choose the item):

<b>Return to Previous Menu</b>	from the “Database Administration” menu
<b>Status</b>	from the “svadmin” main menu

The report that is returned in the HP-UX window contains information on the current status of the OSMF software. The following shows what the report will indicate in part if the OSMF software is running correctly:

```
OSMF, Release 3.0 (build build_no)

The OSMF environment is set
-----

Openview is up
-----

Status of OSMF daemons ...
-----

Alignment Daemon:           up
HeartBeat Daemon:          up
Event Receiver Daemon:     up
Event Alert Daemon:        up
OVW Communication Daemon:  up
Status Sync Daemon:        up
GPS Agent Daemon:          up

Status of Internal Database Process
-----

Lock-Management-Process:   up
Archive-Process:           up
Map-Status-Sync-Process:   up

Replication Option is not installed
-----
```

- 2 If the status report indicates that the environment is not set or that HP OpenView or any of the daemons are not up, continue with this procedure, otherwise, go to *Set up the printer to be used for printing reports (if necessary)*.
- 3 Exit the “svadmin” utility, then log in as **root** and enter the root password.
- 4 Type the following command to terminate all related processes.

**svstop**

After all processes have terminated, the root prompt returns.

- 5 Type the following command to source the OSMF environment:

```
. /opt/smartview/config/env/sv-ux.env
```

---

**NOTE**

The above command must be run from the Korn shell (ksh).

- 6 Type the following command to start OV-PMD and the OSMF software processes:

```
svstart
```

After all processes are spawned, the HP-UX root prompt returns.

- 7 Restart the “svadmin” utility (type **svadmin**), then choose the following menu item to re-check the status of the OSMF system:

```
Status                                from the “svadmin” main menu
```

The status report returned should indicate that the environment is set, and that HP OpenView and OSMF software processes are now up.

- 8 Choose the **Exit** menu item from the “svadmin” main menu to return to the HP-UX prompt.

#### ***2.2.1.4 Set up the printer to be used for printing reports (if necessary).***

---

**NOTES**

In addition to the following steps, you should specify system printers in the “\$ORACLE\_HOME/guicommon2/tk23/admin/uiprint.txt” file. Refer to the document entitled *Developer 2000 for HP 9000 Series 700/800: Installation and Configuration Guide* for information on how to modify this file.

If the “TK2\_PRINT” and “TK2\_PRINTER” variables have been set in the user’s “.profile” file, there is no need to perform the following steps. If these variables have already been set in the user’s “.profile” file, go to *Start the OSMF Software Session* to continue.

The OSMF software provides the capability to print formatted reports, such as Event Reports, to a system printer. These reports can be in either PostScript or ASCII format. You must identify the printer that will be used for printing reports, and configure it in the following steps.

- 1 Type the following command at the svroot prompt to specify the print command string that will be used when printing reports:

```
export TK2_PRINT='lp -s -dprname format'
```

Where *prname* is the name of the printer that will be used to print reports. If the specified printer is a PostScript printer, substitute **-ops** for *format*; if the printer is an ASCII printer, ignore *format*.

- 2 Optionally, type the following command to specify the default printer named in the above step as the printer for printing reports:

```
export TK2_PRINTER=prname
```

Where *prname* is the name of the printer that will be used to print reports.

**NOTE**

If the TK2\_PRINTER variable is specified in the above step and there are no entries in the “uiprint.txt” file, the report as shown in the relevant “Previewer” dialog box will be in PostScript format.

If the TK2\_PRINTER variable is not specified in the above step but there are entries in the “uiprint.txt” file, the report will select the first printer item shown in the Printer Chooser dialog box by default. You can also select another printer from this dialog box if desired.

If the TK2\_PRINTER variable is not specified in the above step *and* there are no entries in the “uiprint.txt” file, an error condition will result when an attempt is made to generate a report.

**2.2.1.5 Start the OSMF Software Operator Session.**

- 1 Log into HP-UX as either a “Security,” “Administrator,” or “User” class user, and enter the appropriate password.

The user group (**svsec** (Security), **svadm** (Administrator), or **svusr** (User)) will determine the level of capability that the user is granted when using the system. The section entitled *User Classes* in Chapter 1 of this manual explains in more detail exactly which tasks can be performed by users of given user classes.

**NOTE**

Prior to logging in, the user needs to be created in the appropriate user group by the Security-class user. Refer to the section entitled *OSMF System User Administration* in the *Security Management* chapter of the *55452A OSMF Software User's Guide* for more information. If the user has not been created in one of the three user groups (svsec, svadm, or svusr), the following message will be displayed when an attempt is made to start the OSMF software operator session:

```
User usr_name is not allowed to start OpenView for OSMF.
```

**NOTE**

If certain other applications, such as Netscape, are running using the default color map before HP OpenView is started, conflicts can occur with HP OpenView, causing unpredictable color problems in the display. If color map conflicts are occurring, one or more messages similar to the following will be displayed after you log in:

```
ovw: Xt Warning: Cannot allocate colormap entry for "#xxxxxx"
```

where *xxxxxx* is a hexadecimal number. If these messages occur, either quit the other applications, or re-launch the applications (for example, Netscape) using a private (non-default) color map.

- 2 Type the following command to correctly set the DISPLAY variable:

**To Start an OSMF Software Session**

```
export DISPLAY=hostname:0
```

Where *hostname* is the hostname of the OSMF workstation, or the x-terminal from where the OSMF software session is to be started.

- 3 Type the following command to start the OSMF operator session:

```
svovwstart
```

---

**NOTE**

In release 1.X, the command to start the OSMF operator session was **ovw**. In release 2.0 and greater, the command is **svovwstart**. In any case, do not use the command **/opt/OV/bin/ovw** to start HP OpenView windows.

When the OSMF session starts, the main “Root” map will be displayed on the monitor. It might appear similar to the following.

---

**NOTE**

When the map first appears, its menus, etc., will not be synchronized. Do not begin using the OSMF software until after synchronization is complete. Synchronization is complete after the word “Synchronizing” appears in the status area at the bottom of the map window, for example:

```
default [Read-Write] [Synchronizing]    For the “svsec” user.
```

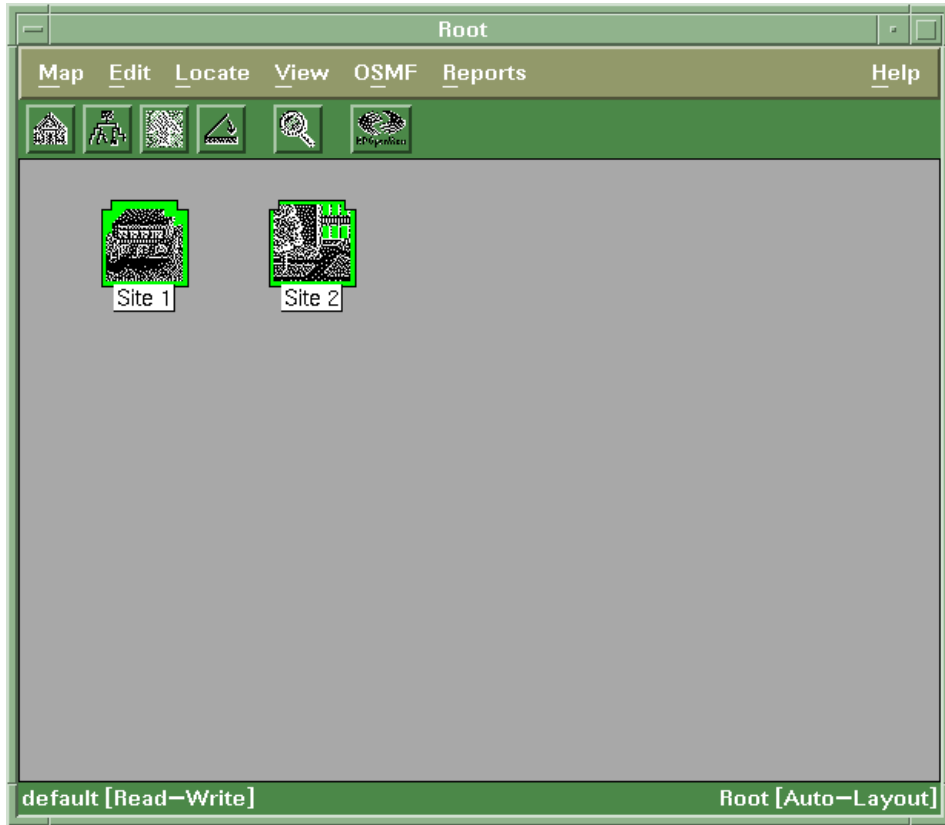
*or*

```
default [Read-Only] [Synchronizing]    For other users.
```

---

then disappears.

**To Start an OSMF Software Session**



---

## 2.3 To Stop an OSMF Software Operator Session

2.3.1 Use the following procedure to stop an OSMF operator session.

---

**CAUTION**

You must correctly end the session using the following procedure. Failure to correctly end the session might result in corruption of system data or data loss.

- In the main operator session screen, choose **Exit** from the “Map” menu, then click **OK** in the “OpenView Windows Warning” box when it appears.

After the OSMF operator session ends, the operator session screens disappear.

---

## 2.4 To Stop the OSMF Software and Database

2.4.1 To perform system maintenance, such as system backup, you might need to shut down the OSMF software and related Oracle processes. When the workstation is properly shut down using the command **shutdown -h**, the software and related processes are brought down gracefully. If you need to shut down the software and related processes, but not the workstation, you can use the following steps:

- 1 Log into HP-UX as **root**, and enter the root password.
- 2 Type the following command to cause all background processes to terminate:

**svstop**

After all processes have terminated, the root prompt returns.

- 3 Log in as **svroot**, then type the following command to start the “svadmin” utility:

**svadmin**

When the “svadmin” utility starts, the OSMF Administration Utility main menu appears.

- 4 Choose the following menu item to check the status of the OSMF system (type the number next to the menu item to choose the item):

**Status**

from the “svadmin” main menu

The status report should indicate that the OSMF software daemons and OV-PMD are no longer up.

**To Stop the OSMF Software and Database**

- 5 Exit the “svadmin” utility, log in as **svroot**, restart the “svadmin” utility, then choose the following menu items in the order shown to stop the Oracle processes:

**Database Administration**

from the “svadmin” main menu

**Shutdown Database**

from the “Database Administration” menu







---

### 3.1 In this Chapter

3.1.1 The following procedures are included in this chapter:

- To Check the Health of the OSMF Workstation
- To Archive Performance Measurement Data, Events, and Transactions
- To Clean Up Temporary Files

---

#### **NOTES**

Your DDS DAT tape drive should be cleaned on a regular basis. Please refer to the tape drive manual for cleaning frequency and instructions. If a proper cleaning schedule is not maintained, data integrity might be compromised.

---

### 3.2 Database Limits

3.2.1 For a typical OSMF software configuration with hard disk capacity of 4 GB (or duplicate 4 GB capacity in the case of disk mirroring), the following are the limits on the number of records that the OSMF database can hold for various forms:

- **Event History Log** - 150,000 records.
- **Alarm Viewer** - 10,000 records.
- **Performance Log** - 450,000 records.
- **Transaction Log** - 30,000 records.

In the case of the performance log, a data retrieval or download generates six to seven records per each performance time interval for each enabled input channel. The “svarchive” utility, which is explained in this chapter, can be used to clean out records from the performance log, event history log, and transaction log database tables to maintain the tables.

In addition, the maximum number of SSUs and GPSs are as follows:

- **SSUs** - 500 (assuming five pair of output cards per SSU)
- **GPSs** - 50

---

### 3.3 To Check the Health of the OSMF Workstation

3.3.1 The “svsystem” script is run on the OSMF workstation to determine the overall health of the workstation. Database table and disk utilization are monitored. The script is configured to run automatically (see *Automatic Script Execution*, below), or it can be run manually to perform a system health check at any time (see *Manual Script Execution*, below).

---

#### **NOTE**

The “svsystem” script can effectively be executed by running the “svadmin” utility, then choosing the **Status** menu item in the “svadmin” main menu. Certain script options, however, cannot be included when running the “svsystem” via the “svadmin” utility. For more options, like e-mail notification, run the “svsystem” script from the command line (see *Manual Script Execution*, below).

---

#### **3.3.1.1 Automatic Script Execution**

The “svsystem” script is located in the /opt/smartview/utills directory. The script is configured to run automatically, via cron, every 20 minutes. The following entries will be included in the /var/spool/cron/crontabs/svroot file:

```
#Monitor Database table size and Disk Utilization
00,20,40 * * * * { . /opt/smartview/config/env/sv-ux.env; \
/opt/smartview/utills/svsystem -an; }
```

This periodic run will check disk space usage and OSMF database table utilization. Default disk thresholds are set at product installation time. These values are configurable within the body of the “svsystem” script. The following are the default values:

/	ROOT_LIMIT_PERCENT=70
/stand	STAND_LIMIT_PERCENT=60
/opt	OPT_LIMIT_PERCENT=70
/var	VAR_LIMIT_PERCENT=90
/tmp	TMP_LIMIT_PERCENT=80
/usr	USR_LIMIT_PERCENT=80
/home	HOME_LIMIT_PERCENT=70
/*	DEFAULT_LIMIT_PERCENT=90

Each numeric value in the above table is a threshold value that represents a percent of the total space available for each logical volume. If the naming convention is different for the volumes, then the default limit will be selected. These values can be adjusted to fit the environment. The goal is to give some warning in case there is a problem with disk space.

The database table thresholds are preconfigured by the OSMF software and should not be changed. If any monitored tables are more than 50 percent utilized, the OSMF software will generate a warning email message which is sent to the svroot user. The mailing list can be modified to include anyone who should be notified of warnings. The ADMIN variable in the

body of the “svsystem” script contains the list of users to notify. For non-critical database thresholds, email will be sent once a week. For non-critical disk thresholds, email will be sent once a day. For critical threshold crossings, email will be sent every time the automated script runs (every 20 minutes by default).

### ***3.3.1.2 Manual Script Execution***

The script can be run manually at any time. Note that the user must have the proper permission to access the database status information. If proper permissions are not granted, the script will ignore the request for this information when run.

The command and its options are as follows (the script is located in the /opt/smartview/utlis directory):

```
svsystem <-a | d | t><n | v | nv> [h]
```

The first three options (a, d, t) determine the function that the script will perform; only one of these options should be issued per command line. The second three options (n, v, nv) determine the output of the script; if the command is issued without the “n” or “v” option, no output will be generated. The last option (h) returns the help file for the script.

#### **Options**

- a Perform all available checks for which a user has permissions.
- d Perform a Disk Space Check.
- t Check the size of and Warning threshold values for the following OSMF Database tables:
  - historic\_events
  - performance\_log
  - tr\_log
  - current\_alarms
  - nes

50 percent is the first threshold which will generate a warning message. The user must be svroot to access this information.
- n Email Notification if Warning conditions exist. If this option is selected, email will be sent to all users assigned to the ADMIN variable in the “svsystem” script. Email will only be sent if a Warning threshold has been crossed. Email messages are limited to once a week for database warnings, and once a day for disk warnings. Critical warning email will be sent every time the script is run.
- v Verbose output. This option must be selected to display any information to stdout.
- h Display usage information (the man page) for the “svsystem” script.

**Transactions****Example “svsystem” E-Mail Message**

The following text might be included in an e-mail message sent by “svsystem” in response to the performance log becoming full. The e-mail, which would have the subject “WARNING: OSMF System Status,” would be sent to the svroot user and any users included in the script’s ADMIN variable. Since this e-mail is being sent in response to a critical threshold crossing, it will continue to be sent every time the script runs until the condition is remedied.

```
#####
WARNING: Database Table Space threshold has been crossed
Table Space performance_log is Greater than 100% CRITICAL
#####
```

---

### 3.4 To Archive Performance History Data, Events, and Transactions

3.4.1 An OSMF software process copies events and performance history data that is older than 14 days to special *archive tables* in the database. This software process also copies transactions that are older than 30 days to the archive tables. These archive tables have pre-allocated space for 200,000 performance entries, 100,000 event entries, and 15,000 transaction entries. Software functionality problems might occur if the tables fill up. The archive tables, therefore, should periodically be cleaned. The procedure in this section can be used to archive the data contained in the archive tables, and consequently clean them out.

3.4.2 In the procedure that follows, an archive script is run. This script does the following:

- Copies performance history data, events, and transactions from the archive tables to a report file.
- Names the report file to reflect the date range of the data it contains.
- Deletes the information from the archive tables.
- Removes any entries that have accumulated in the event error log (which contains any events that could not be processed due to an error).

3.4.3 To complete the archive process, the system administrator should copy the report file to an offline storage device, such as a local tape drive, and then delete the report file from the system. The following procedure explains this.

---

**NOTE**

The following procedure must be performed as part of regularly-scheduled system maintenance to ensure that the system continues to operate efficiently. *Symmetricom recommends that the procedure be performed at least once every week.*

- 1 If not logged into HP-UX as svroot, log in as **svroot**, then enter the svroot password.
- 2 Type the following command to start the “svadmin” utility:

```
svadmin
```

## To Archive Performance History Data, Events, and Transactions

When the “svadmin” utility starts, the OSMF Administration Utility main menu appears.

- 3 Choose the following menu items in the order shown to run the archive script (type the number next to the menu item to choose the item):

<b>Backups</b>	from the “svadmin” main menu
<b>Archive Event History Logs</b>	from the “Database Backup” menu

The archive script produces a report file in the /var/tmp directory with the name “exp`olddate_mrcode`.TXT” where `olddate` is the date of the oldest data in the file, and `mrcode` is the date of the most recent data in the file. As an example, if the oldest data in the file was generated on March 15, 1997 and the most recent data in the file was generated on March 24, 1997, the file name would be exp970315\_970324.TXT. When the archive script finishes running, the HP-UX prompt returns.

The report file is a text file that can be viewed using any text editor. The report file contains information needed to interpret the data in the file. Refer to the *Example Archive Report File*, which follows this procedure, for an example of a typical report file.

---

### NOTE

Perform the following steps to copy the file to the local tape drive.

- 4 Ensure that a tape is inserted into the local tape drive (/dev/rmt/0mn).
- 5 Exit the “svadmin” utility, then copy the report file to the tape.

You can use any of a number of methods to copy the file (tar, cpio, etc.). For example, if the file being copied to tape is exp970315\_970324.TXT, the following can be used:

```
find /var/tmp/exp970315_970324.TXT | cpio -ocmxvB /dev/rmt/0mn
```

- 6 After the file has been copied to the local tape drive with no errors, type the following command to delete the report file:

```
rm reptfile
```

Where *reptfile* is the name of the report file.

### Example Archive Report File

```
PERFORMANCE DATA
```

```
-----
```

```
"15.1.1.1", "0", "FFOFF", "192S", "98-03-23 08:58:59", ".000012"
"15.1.1.1", "0", "TDEV", "256S", "98-03-23 08:58:59", ".000012"
"15.1.1.1", "0", "MRTIE", "2H", "98-03-23 08:58:59", ".000012"
"15.1.1.1", "0", "LMRTIE", "2H", "98-03-23 08:58:59", ".000012"
"15.1.1.1", "0", "FFOFF", "768S", "98-03-23 08:58:59", ".000012"
"15.1.1.1", "0", "TDEV", "1024S", "98-03-23 08:58:59", ".000012"
```

```
"15.1.1.1", "0", "MRTIE", "8H", "98-03-23 08:58:59", ".000012"  
"15.1.1.1", "0", "LMRTIE", "8H", "98-03-23 08:58:59", ".000012"  
"15.1.1.1", "0", "FFOFF", "3072S", "98-03-23 08:58:59", ".000012"  
"15.1.1.1", "1", "TDEV", "1S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "MRTIE", "1S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "LMRTIE", "1S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "FFOFF", "3S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "TDEV", "4S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "MRTIE", "15M", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "LMRTIE", "15M", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "FFOFF", "12S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "TDEV", "16S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "MRTIE", "30M", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "LMRTIE", "30M", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "FFOFF", "48S", "98-03-23 08:58:59", ".000023"  
"15.1.1.1", "1", "TDEV", "64S", "98-03-23 08:58:59", ".000023"
```

\*\*

Fields are separated by commas  
Field 1: IP Address  
Field 2: Channel no. (0-8)  
Field 3: Performance type  
Field 4: time interval  
Field 5: time stamp  
Field 6: value

EVENTS/ALARMS DATA

-----

```
"1", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"2", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"3", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"4", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"5", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"6", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"7", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"8", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"9", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"10", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"11", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:52", "Output Card Not Present"  
"312", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"313", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"314", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"315", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"316", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"317", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"318", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"319", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"320", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"321", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"  
"322", "SSU-9", "OUT4B", "MINOR", "Y", "98-03-23 08:56:54", "Output Card Not Present"
```

\*\*

Fields are separated by commas  
Field 1: event number

Field 2: selection name  
Field 3: aid  
Field 4: severity  
Field 5: sa  
Field 6: event time  
Field 7: event message

TRANSACTION LOG DATA

```
-----  
"1","Add","SVROOT","98-09-28 12:09:23","S-221","SSU","","",""  
"2","Add","SVROOT","98-09-28 12:09:23","S-222","SSU","","",""  
"3","Remove","SVROOT","98-09-28 12:09:23","S-222","SSU","","",""  
"4","Add","SVROOT","98-09-28 12:09:23","S1$1->S2$0$D$8","SYNC-TRAIL","","",""  
"5","Remove","SVROOT","98-09-28 12:09:23","S1$1->S2$0$D$8","SYNC-TRAIL",  
  "","",""  
"6","Edit","SVROOT","98-09-28 12:09:23","S-221","OUTA","MANAGED","Y","N"  
"7","Edit","SVROOT","98-09-28 12:09:23","S-221","OUTA","HW_ALIGNED","Y","N"  
"8","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH","PIRANGE","4600","10000"  
"9","Edit","SVROOT","98-09-28 12:09:23","S-221","IMC","LCLBAUD","2400","9600"  
"10","Edit","SVROOT","98-09-28 12:09:23","S-221","S0-OUTA","SSMBIT","SA4",  
  "SA7"  
"11","Edit","SVROOT","98-09-28 12:09:23","S-221","S4-OUTE","SABITS","223",  
  "150"  
"12","Edit","SVROOT","98-09-28 12:09:23","S-221","S2-OUTC","HLDACT",  
  "CONTINUE","AIS"  
"13","Edit","SVROOT","98-09-28 12:09:23","S-221","S2-OUTC-1","SQUELCH","Y","N"  
"14","Edit","SVROOT","98-09-28 12:09:23","S-221","S2-OUTC-16","SQUELCH","N",  
  "Y"  
"15","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH-0","ENABLE","N","Y"  
"16","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH-1","FORMAT","E1","SQW"  
"17","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH-9","CURRSSM","128","210"  
"18","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH-1-SPRD-3S","THR",  
  "12.9878","3.43874"  
"19","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH-8-LMRTIE-3071S","THR",  
  "12.9878","3.43874"  
"20","Edit","SVROOT","98-09-28 12:09:23","S-221","ITH-8-MRTIE-1S","PM","Y","N"  
"21","Un-Ack","SVROOT","98-09-28 12:09:23","S-221","SSU","INPDISQ","",""  
"22","Un-Ack","SVROOT","98-09-28 12:09:23","S-221","SSU","SE-CFGRM","",""  
"23","Cut-Off","SVROOT","98-09-28 12:09:23","S-221","SSU","","",""  
"24","Dw-F/w","SVROOT","98-09-28 12:09:23","S-221","SSU","3724 firmware","",""  
"25","Dw-Cfg","SVROOT","98-09-28 12:09:23","S-221","SSU","Standard Config",  
  "",""
```

\*\*

Fields are separated by commas  
Field 1: Transaction serial number  
Field 2: Transaction type  
Field 3: User ID  
Field 4: Date/time stamp  
Field 5: Object name  
Field 6: Object class (AID)  
Field 7: Attribute name  
Field 8: Old value  
Field 9: New value



### 3.4.3.1 Backup and Recovery

The purpose of the archive script is to maintain the database within limits under normal operating conditions. Backup and recovery utilities are provided to backup the system so that the system can be recovered in the event of a failure. Refer to the *System Backup and Recovery* chapter in this manual for more information.

---

## 3.5 To Clean Up Temporary Files

3.5.1 Some OSMF software forms, such as the Event History Log and Alarm Viewer, will on occasion create large files in the `/var/tmp` directory. These files are created when, for example, the Event History Log dialog box is open and you scroll to view events that are out of view. In this case, the scrolled events are placed into a temporary file with the name `AAApid.tmp` (`pid` is a process identifier). If the quantity of events is large, an attempt to view all of them can result in the dialog box exiting uncleanly, causing the file to be left in the directory.

3.5.2 As long as no forms are opened, there should be no temporary files of the form `AAApid.tmp` left in the `/var/tmp` directory which have OSMF software users or user `svroot` as owners. The system administrator might periodically check the `/var/tmp` directory with no forms opened to ensure that these temporary files are not present.

3.5.3 If these temporary files do appear in the directory under the above-mentioned conditions, type the following commands to remove them:

```
cd /var/tmp
rm AAA*.tmp
```

---

**NOTE**

There may be more than one `AAApid.tmp` file in the directory. It is safe to remove them all as long as no forms are opened and they are owned by the OSMF software users or user `svroot`. It is also important to note that there might be other files in the directory that start with `AAA`, but you should only delete those with the `.tmp` extension.

---

---

## 3.6 To Synchronize the Date and Time of SSUs with the OSMF Workstation

3.6.1 The OSMF software contains a utility that sources the current date and time as it occurs on the OSMF workstation to every SSU indicated as “managed” in the OSMF database. In succession for each managed SSU, the current date and time is fetched from the database and then downloaded to the SSU. This allows for very accurate time synchronization between all SSUs in the network, notwithstanding slight inaccuracies resulting from network delays, which are typically very small (typically within milliseconds).

- 1 If not logged into HP-UX as `svroot`, log in as **svroot**, then enter the `svroot` password.
- 2 Type the following command to start the “`svadmin`” utility:

```
svadmin
```

**To Synchronize the Date and Time of SSUs with the OSMF****Workstation**

When the “svadmin” utility starts, the OSMF Administration Utility main menu appears.

- 3 Choose the following menu items in the order shown to synchronize the date and time of the SSUs with the OSMF workstation (type the number next to the menu item to choose the item):

**Time Synchronization** from the “svadmin” main menu

**Synchronize Time to all Managed NEs** from the “Time Synchronization” menu



---

## 4.1 In this Chapter

4.1.1 The procedures in this chapter can be used to perform regularly scheduled backups of the OSMF system. If a disaster occurs, such as a database or system crash that leads to data corruption, the recovery information in this chapter can be used to recover from the failure.

The following sections are included in this chapter:

- System Backup
- Backup Procedures
- System Recovery
- Mirrored Disk Failure Recovery

---

### **NOTES**

Your Hewlett-Packard DDS DAT tape drive should be cleaned on a regular basis. Please refer to the tape drive manual for cleaning frequency and instructions. If a proper cleaning schedule is not maintained, data integrity might be compromised. Hewlett-Packard recommends that a cleaning be performed before any HP-UX Core System Backup and any system recovery.

---

---

## 4.2 System Backup

4.2.1 It is important to maintain a recent backup of the entire operating system on the OSMF workstation. In the event of hardware failure, operator error, or other disaster, the backup will provide the most direct path to restoration of the system and user data.

### 4.2.1.1 Backup Categories

The OSMF software system level backup can be divided into three broad backup categories:

- **HP-UX Core System Backup**

The core system backup is an offline image backup of the boot disk. This will backup the entire disk which provides a complete path to recovery from the time the backup was performed. There should always be a HP-UX Core Backup media prepared by the System Administrator.

- **System Backup**

This is an online backup of all files EXCEPT for the OSMF database. (in other words, excluding the /opt/oradata directory which contains the OSMF database files). This will backup the entire system, applications, and user files needed to recover from a system that is already running. This backup does not provide the low level formatting of the disk drive as the HP-UX core system backup does.

One method of performing the online System Backup is with SAM, the System Administration Manager, which is part of the HP-UX product. SAM offers the Backup and Recovery menu which allows automated backups as well as interactive backups and recoveries. Files may be included or excluded when defining the scope of the backup or recovery. Each Backup may be automated and set to run at a predetermined time without user interaction.

Full and Incremental backups may be performed using SAM. Full backup will backup the entire system. Incremental backups will backup any file that has changed since the last Full backup.

It is best if HP OpenView, Oracle, and the OSMF software processes are not running for this backup. HP OpenView, Oracle, and the OSMF software have processes which will have file locks and may show some indication of this during the backup. This should not inhibit the backup from completing. For best results the HP OpenView, Oracle, and OSMF applications should be shut down. It is still possible to depend on the HP-UX Core System Backup for the system recovery at this level, if the Applications cannot be interrupted. Even though the OSMF software's associated applications may be running during the backup, they *should not* be running during a system recovery.

- **OSMF Database Backup**

The OSMF workstation automatically performs nightly backups of database-related files via the "svdbbackup" utility (called "dbbackup" in release 1.X of the OSMF software) which

runs as a cron job. The Operating system, application software, and user files should be backed up by the System Administrator.

#### ***4.2.1.2 Special Considerations***

Special considerations should be observed when backing up an online database. The database will have active files and locks that may prevent some backup programs from accessing certain files. It is strongly recommended that the OSMF database be excluded from the system backup. The backup of the OSMF database files should be performed using the "svdbbackup" script, which takes online backups ("hot backups") and is designed specifically for the OSMF database.

Special attention should be observed when performing backup and recovery procedures on OSMF systems that have the Resiliency option installed. The procedures for backup and recovery are different when performed on OSMF systems with the Resiliency option. Select the appropriate procedures when performing backup and recovery.

#### ***4.2.1.3 Backup Requirements***

Based on different needs and configurations, backup requirements and methods will vary. As part of the OSMF software management solution, the following backup scenario is recommended:

- **HP-UX Core System Backup** - Off-line core system backup should be done every 3 months, or whenever hardware additions or software changes are made. This backup will ensure a properly bootable system in the event of a disk replacement. This backup must be scheduled and users notified since the system must be offline.
- **System Backup** - Complete backup of system (excluding the OSMF database) should be done once every 1 week using SAM or other Backup utility.

---

#### ***NOTES***

To exclude the OSMF database from the system backup, exclude the "/opt/oradata" directory.

It is recommended that you shutdown the OSMF software, HP OpenView, and Oracle processes during a System Backup. This is not required, however, a greater level of data integrity is possible while the applications are not running.

- **OSMF Database Backup** - OSMF database backup should be done every night using the "svdbbackup" script (called "dbbackup" in release 1.X).

The HP-UX Core System Backup should be considered very important and be kept current. Based on needs, the Full System Backup may be performed more or less frequently. If no changes are made to the system or user files between backups, the System Backup cycle time may be increased. If frequent changes are made to user files, then incremental backups may also be scheduled in the System Backups. The OSMF database should be backed up at least once a day, which is default configuration shipped with the OSMF software.

#### 4.2.1.4 Mirrored Data

HP Mirror UX offers extra protection against data loss. In the event of disk failures, the system will automatically switch to the mirrored copy and remain running. Refer to the section in this chapter entitled *To Recover from a Mirrored Disk Failure* for information regarding the use of disk mirroring. Disk Mirroring is supported in version 2.0 and greater of the OSMF software.

#### 4.2.1.5 Resiliency Option

The OSMF Resiliency option adds an additional level of protection against data loss. When the Resiliency option is installed, all relevant data in the database is replicated to another OSMF management system, which can assume all management tasks should the need arise. Special considerations apply to system recovery of an OSMF Resiliency system.

---

### 4.3 Backup Procedures

4.3.1 The following backup procedures are included as part of the OSMF software management solution.

**Important!** If the Resiliency option is installed and activated on the OSMF workstation, there might be additional steps to perform in the HP-UX Core System Backup. This necessitates different procedures depending on the existence of the option on your system. This section contains the following two HP-UX Core System Backup procedures:

- HP-UX Core System Backup - Systems Without Resiliency Option, or Secondary Master Resiliency Server
- HP-UX Core System Backup - Primary Master Resiliency Server

The procedure entitled *HP-UX Core System Backup - Primary Master Resiliency Server* only needs to be performed if OSMF management operations must continue while the Primary Master is off-line for backup. If management operations are not required for the duration of the core system backup, then you can use the procedure entitled *HP-UX Core System Backup - Systems Without Resiliency Option, or Secondary Master Resiliency Server* to backup both the Primary and Secondary masters.

---

#### 4.3.1.1 HP-UX Core System Backup - Systems Without Resiliency Option, or Secondary Master Resiliency Server

This procedure will create a system recovery tape which will clone the entire boot disk including all software. Most importantly, the file system infrastructure will be reproduced so HP-UX will not have to be reinstalled. This backup tape will allow the system to be recovered to the same point as when the backup was performed.

- 1 Shutdown the system by typing the following command:

```
/etc/shutdown -h now
```

- 2 Power the system off, then power the system back on.

**3** Perform an attended boot:

Press the **ESC** key when the following message appears on the screen:

```
Processor is booting from first available device.
To discontinue, press any key within 10 seconds.
```

**4** Load the HP-UX Support CD in the CD-ROM drive.**NOTE**

The HP-UX Support CD is known as the HP-UX Diagnostic Independent Product Release CD for some versions of HP-UX.

**5** Type **search**:

A list of all potential boot devices will be displayed, such as the following (your system may show different PATH numbers):

PATH Number	Device Path	Device Type
-----	-----	-----
P0	FWSCSI.6.0	SEAGATE ST32430W
P1	FWSCSI.5.0	SEAGATE ST32430W
P2	SESCSI.3.0	HP C1533A
P3	SESCSI.2.0	TOSHIBA CD-ROM XM-5401TA

**6** Type **boot path\_num**

Where *path\_num* is the path number of CD-ROM device where the support CD is loaded. For example, type **boot P3** if the CD-ROM device is P3.

**7** Answer **Y** to the question `Interact with IPL?`**8** Type **ode copyutil** at the ISL prompt.

Note the legend of the “copyutil” output after it scans the system for devices:

```
Ty      Device Type 'D' for Disk and 'T' for Tape.
Indx    Index number used for referencing the device.
Rev     Firmware Revision of the device.
Size    Size of the Disk drive or "N/A" for a Tape drive.
```

**9** Type **backup**.**10** Enter the Disk Index number to be copied.**11** Enter the Tape Index number to copy to.



- 12 Load the tape into the tape drive when prompted by the “copyutil” program.
- 13 When ready, type **y** to continue.

Copyutil will display the status of the backup as follows:

```

.....10% completed
.....20% completed
.....30% completed
.....40% completed
.....50% completed
.....60% completed
.....70% completed
.....80% completed
.....90% completed
.....100% completed
END of BACKUP
Please wait while I rewind the tape

```

- 14 Switch off the power to the workstation, then switch it back on and boot the system as normal.
- 15 Store the Backup tape in a secure area.

---

**NOTE** The HP-UX Core System Backup procedure is now complete.

#### ***4.3.1.2 HP-UX Core System Backup - Primary Master Resiliency Server***

---

**NOTE** Perform this procedure only if the Resiliency option is installed and active and OSMF management operations must continue while the Primary Master is off-line for backup. If management operations are not required while the Primary Master is off-line for backup, then you can use the procedure entitled *HP-UX Core System Backup - Systems Without Resiliency Option, or Secondary Master Resiliency Server* to backup the Primary Master workstation.

---

This procedure will create a system recovery tape for the Primary Master. This procedure clones the entire boot disk including all software, and reproduces the file system infrastructure so HP-UX will not have to be reinstalled in the event of recovery.

- 1 On the Primary Master workstation, log in as **root** and enter the root password.
- 2 Type the following command on the Primary Master workstation to terminate all OSMF daemons.

**svstop**

After all processes have terminated, the root prompt returns.

- 3 On the Secondary Master workstation, log in as **svroot** and enter the svroot password.
- 4 Type the following commands on the Secondary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

When the “svadmin” utility starts, the OSMF Administration Utility main menu appears.

- 5 Choose the following menu items in the order shown to relocate the Primary Master database to the Secondary Master workstation (type the number next to the menu item to choose the item):

<b>Resilience Administration</b>	from the “svadmin” main menu
<b>Relocate Primary Master Database</b>	from the “Resilience Administration” menu

As the Primary Master database is relocated, the following will appear in the Secondary Master workstation’s display:

```
1. Ascertaining that secondary_master_hostname is part of replication...
Verified
2. Retrieving the name of the current master definition site...
3. Relocating the master definition site...
4. Redefining the site priorities...
5. Resume the master activities and restart the archive processes
6. Synchronizing the OSMF users information
#####
      Relocation of the master definition site done !!
#####
```

- 6 On the Secondary Master workstation, exit the “svadmin” utility, then type the following command to run the health check script:

```
svrhc
```

The following line should be returned as part of the health check:

```
Status of the replication system :NORMAL
```

This line *must* show a status of NORMAL before you proceed to the next step in this procedure. If the status is QUIESCED, allow all deferred entries to be processed, then run the health check again and ensure that the status is NORMAL before proceeding.

- 7 On the original Secondary Master workstation (which is now functioning as the Master Definition Site), log in as **root** and enter the root password.
- 8 Type the following command on the Master Definition Site (which was the original Secondary Master) to re-start OV-PMD and the OSMF software processes:

**svstart**


---

**NOTE** Management operations can now resume on the current Master Definition Site.

---

The following steps should be performed on the OSMF workstation that was originally the Primary Master workstation, until noted otherwise.

- 9 Shutdown the system by typing the following command:

```
/etc/shutdown -h now
```

- 10 Power the system off, then power the system back on.

- 11 Perform an attended boot:

Press the **ESC** key when the following message appears on the screen:

```
Processor is booting from first available device.
To discontinue, press any key within 10 seconds.
```

- 12 Load the HP-UX Support CD in the CD-ROM drive.

---

**NOTE** The HP-UX Support CD is known as the HP-UX Diagnostic Independent Product Release CD for some versions of HP-UX.

- 13 Type **search**:

A list of all potential boot devices will be displayed, such as the following (your system may show different PATH numbers):

PATH Number	Device Path	Device Type
-----	-----	-----
P0	FWSCSI.6.0	SEAGATE ST32430W
P1	FWSCSI.5.0	SEAGATE ST32430W
P2	SESCSI.3.0	HP C1533A
P3	SESCSI.2.0	TOSHIBA CD-ROM XM-5401TA

- 14 Type **boot path\_num**

Where *path\_num* is the path number of CD-ROM device where the support CD is loaded. For example, type **boot P3** if the CD-ROM device is P3.

- 15 Answer **Y** to the question `Interact with IPL?`

- 16 Type **ode copyutil** at the ISL prompt.

Note the legend of the “copyutil” output after it scans the system for devices:

Ty Device Type 'D' for Disk and 'T' for Tape.  
 Indx Index number used for referencing the device.  
 Rev Firmware Revision of the device.  
 Size Size of the Disk drive or "N/A" for a Tape drive.

**17 Type backup.**

**18** Enter the Disk Index number to be copied.

**19** Enter the Tape Index number to copy to.

**20** Load the tape into the tape drive when prompted by the “copyutil” program.

**21** When ready, type **y** to continue.

Copyutil will display the status of the backup as follows:

```

.....10% completed
.....20% completed
.....30% completed
.....40% completed
.....50% completed
.....60% completed
.....70% completed
.....80% completed
.....90% completed
.....100% completed
END of BACKUP
Please wait while I rewind the tape

```

**22** Switch off the power to the workstation, then switch it back on and boot the system as normal.

**23** Store the Backup tape in a secure area.

**24** On the *original* Secondary Master workstation (which is currently functioning as the Master Definition Site), log in as **root** and enter the root password.

**25** Type the following command on the *original* Secondary Master workstation to terminate all OSMF daemons.

**svstop**

After all processes have terminated, the root prompt returns.

- 26 On the workstation that was originally the Primary Master workstation, log in as **svroot** and enter the svroot password.
- 27 Type the following commands on the *original* Primary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 28 Choose the following menu items in the order shown to relocate the Primary Master database back to the original Primary Master workstation:

<b>Resilience Administration</b>	from the “svadmin” main menu
<b>Relocate Primary Master Database</b>	from the “Resilience Administration” menu

As the Primary Master database is relocated, the following will appear in the Secondary Master workstation’s display:

```
1. Ascertaining that secondary_master_hostname is part of replication...
Verified
2. Retrieving the name of the current master definition site...
3. Relocating the master definition site...
4. Redefining the site priorities...
5. Resume the master activities and restart the archive processes
6. Synchronizing the OSMF users information
#####
Relocation of the master definition site done !!
#####
```

- 29 On the Primary Master workstation, exit the “svadmin” utility, then type the following command to run the health check script:

```
svrhc
```

The following line should be returned as part of the health check:

```
Status of the replication system :NORMAL
```

This line *must* show a status of NORMAL before you proceed to the next step in this procedure. If the status is QUIESCED, allow all deferred entries to be processed, then run the health check again and ensure that the status is NORMAL before proceeding.

- 30 On the Primary Master workstation (which is now functioning as the Master Definition Site), log in as **root** and enter the root password.
- 31 Type the following command on the Primary Master workstation to re-start OV-PMD and the OSMF software processes:

**svstart****NOTE**

The HP-UX Core System Backup procedure is now complete. Management operations can now resume on the Primary Master workstation.

**4.3.1.3 Full System Backup**

Use the following Full System Backup procedure for systems that do not have the Resiliency option installed, as well as for those systems that do.

- 1 Log in as **root**, then type the following command to stop HP OpenView:

**svstop**

- 2 Log in as **svroot** and enter the svroot password.
- 3 Type the following commands to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 4 Choose the following menu items in the order shown to stop the OSMF database:

<b>Database Administration</b>	from the “svadmin” main menu
<b>Shutdown Database</b>	from the “Database Administration” menu

- 5 Exit the “svadmin” utility, then log in as root and type the following command to start SAM:

```
/usr/sbin/sam
```

- 6 Double click on the **Backup and Recovery** icon.
- 7 Double click on the **Interactive Backup and Recovery** icon.
- 8 Select **Backup Device** from the list that appears.
- 9 Select **Backup Files Interactively** from the “Actions” menu.
- 10 Select **Specified Files** from the “Select Backup Scope” menu.
- 11 Include the following files under “Include Files:”
  - / >Add
  - /stand >Add
  - /opt >Add
  - /var >Add

```

/tmp    >Add
/usr    >Add
/home   >Add

```

- 12** Exclude the following files under “Exclude Files:

```

/opt/oradata    >Add

```

- 13** Select **OK**, then select **OK** in the box that appears.

---

**NOTE**

SAM might give a warning about more than one user being logged on to the system. If such a warning appears, select **Yes** to proceed.

---

- 14** Select **Yes** in the Confirmation box that appears to proceed.

After you click **Yes** to confirm and proceed, SAM will begin the Backup session and will display messages similar to the following:

```

Starting interactive backup...
br_backup: Invoking fbackup. See /var/sam/log/br_log for details.
fbackup(1421): no history is available for graph file
/etc/sam/br/graphFDAa01970 (below level 0)
fbackup(1004): session begins on Thu Feb 26 13:07:52 1998

```

In addition, each file will be listed on the display as it is backed up.

- 15** Allow the Backup session to complete, then exit SAM when done.

#### 4.3.1.4 OSMF Database Backup

There are three ways to HOT backup the OSMF database:

- 1** Allow the automated cron job to backup the database every night at 12:00 am.
- 2** Log in as svroot, then run the command `"/opt/smartview/config/DB/svdbbackup"` Refer to the “svdbbackup.doc” file included with the OSMF software in the `/opt/smartview/doc` directory for more information, or use the help provided as part of the “svadmin” utility.
- 3** Run the `svadmin` command and choose **Perform Online Database Backup** from the “Backups” menu. The “svadmin” utility allows interactive online database backups.

In any case, the database backup utility produces an output, which is sent to a file in the `/tmp` directory with the file name “`backup.log.date`” where `date` is the date when the utility was run (for example, `backup.log.981210` if the utility ran on December 10, 1998). The following is an example of what the output file might look like:

**Backup Procedures**

Database backup started on Thu Dec 10 15:05:39 PST 1998

.....

List of data files copied as part of the hot backup:

.....

/opt/oradata/SV30/APPL01.DBF	230690816
/opt/oradata/SV30/APPL02.DBF	230690816
/opt/oradata/SV30/IND01.DBF	41947136
/opt/oradata/SV30/IND02.DBF	41947136
/opt/oradata/SV30/SYSTEM01.DBF	52432896
/opt/oradata/SV30/TEMP01.DBF	20975616
/opt/oradata/SV30/RBS01.DBF	31461376
/opt/oradata/SV30/TOOLS01.DBF	10489856

List of archive redo log files backed up along with their size

.....

/opt/oracle/app/oracle/admin/SV30/arch/SV3059.ARC	2098176
/opt/oracle/app/oracle/admin/SV30/arch/SV3060.ARC	2098176
/opt/oracle/app/oracle/admin/SV30/arch/SV3061.ARC	2098176
/opt/oracle/app/oracle/admin/SV30/arch/SV3062.ARC	2098176
/opt/oracle/app/oracle/admin/SV30/arch/SV3063.ARC	1750016

List of log files backed up along with their size

.....

/opt/oradata/SV30/SV30_01A.LOG	2098176
/opt/oradata/SV30/SV30_01B.LOG	2098176
/opt/oradata/SV30/SV30_02A.LOG	2098176
/opt/oradata/SV30/SV30_02B.LOG	2098176
/opt/oradata/SV30/SV30_03A.LOG	2098176
/opt/oradata/SV30/SV30_03B.LOG	2098176

List of control files backed up along with their size

.....

/opt/oracle/app/oracle/admin/SV30/SV30_01ctl	44032
/opt/oracle/app/oracle/admin/SV30/SV30_02ctl	44032
/opt/oracle/app/oracle/admin/SV30/SV30_03ctl	44032

Database backup completed successfully on Tue Mar 10 15:11:54 PST 1998

Tape filemark is 0 for /opt/oradata/SV30/APPL01.DBF  
 Tape filemark is 1 for /opt/oradata/SV30/APPL02.DBF  
 Tape filemark is 2 for /opt/oradata/SV30/IND01.DBF  
 Tape filemark is 3 for /opt/oradata/SV30/IND02.DBF  
 Tape filemark is 4 for /opt/oradata/SV30/SYSTEM01.DBF  
 Tape filemark is 5 for /opt/oradata/SV30/TEMP01.DBF  
 Tape filemark is 6 for /opt/oradata/SV30/RBS01.DBF  
 Tape filemark is 7 for /opt/oradata/SV30/TOOLS01.DBF  
 Tape filemark is 8 for redo log files  
 Tape filemark is 9 for archived redo log files



**Backup Procedures**

Tape filemark is 10 for control files  
Tape filemark is 11 for openview files

---

## 4.4 System Recovery

4.4.1 In the event of data loss, data can be recovered from the backup archive. Different levels of recovery may exist depending on the amount of data loss:

### 4.4.1.1 Complete System Recovery

This level of recovery includes if the boot disk is replaced. It is broken into three main steps, or sub-procedures:

**Step 1 - This involves recovery of the HP-UX Core System using the HP-UX Support CD and previously created backup tape.**

---

#### **NOTE**

The HP-UX Support CD is known as the HP-UX Diagnostic Independent Product Release CD for some versions of HP-UX.

The following procedure is for HP-UX Core System recovery using the “copyutil” backup tape:

- 1 Replace the bad disk and assure the new disk’s SCSI address is set the same as the old disk. Refer to the manufacturer’s hard drive documentation for setting the SCSI address. The default SCSI address for the boot disk on the OSMF workstation is “6.”
- 2 Power the system on.
- 3 Perform an attended boot.

Press the **ESC** key when the following message appears on the screen:

```
Processor is booting from first available device. To
discontinue, Press any key within 10 seconds.
```

- 4 Load the HP-UX Support CD into the CD-ROM drive.
- 5 Type **search**:

A list of all potential boot devices will be displayed such as this (your system may show different PATH numbers):

PATH Number	Device Path	Device Type
-----	-----	-----
P0	FWSCSI.6.0	SEAGATE ST32430W
P1	FWSCSI.5.0	SEAGATE ST32430W
P2	SESCSI.3.0	HP C1533A
P3	SESCSI.2.0	TOSHIBA CD-ROM XM-5401TA

- 6 Type **boot path\_num**

Where *path\_num* is the path number of CD-ROM device where the support CD is loaded. For example, type **boot P3** if the CD-ROM device is P3.

7 Answer **Y** to the question `Interact with IPL?`

8 Type **ode copyutil** at the ISL prompt.

Note the legend of the “copyutil” output after it scans the system for devices:

Ty Device Type 'D' for Disk and 'T' for Tape.

Indx Index number used for referencing the device.

Rev Firmware Revision of the device.

Size Size of the Disk drive or "N/A" for a Tape drive.

9 Type **restore**.

10 Enter the Disk Index number that will be restored.

11 Enter the Tape Index number to copy from.

Copyutil will check the type of disk drive to recover to. If the disk drive is different than what the backup was taken from, copyutil will ask if you want to continue. It is important that the size of the disk drive be the same (4 GB) as the drive the backup was taken from, and that there is enough space on the new disk to hold the data from the backup.

12 Load the tape into the tape drive when asked to by the “copyutil” program.

13 When ready, type **y** to continue.

Copyutil will display the status of the recovery as follows:

```
.....10% completed
.....20% completed
.....30% completed
.....40% completed
.....50% completed
.....60% completed
.....70% completed
.....80% completed
.....90% completed
.....100% completed
Restored Successfully.
Please wait while I rewind the tape
```

---

**NOTE**

The recovery might take some time. One to two hours is typical for a 4 GB disk.

After the Restore process completes, the data has been restored onto your new disk drive. You can now exit the program and cycle the workstation's power off and then on. When the power is cycled, the system will boot from the new installed disk.

If there were no major changes to the Operating System since the last "copyutil" backup was performed, then the following procedure (*Step 2*) can be bypassed. If any application or user files need to be recovered, perform *Step 2* to recover them.

---

**NOTE**

---

All application and user files are included on the HP-UX Core Backup. You might not need to restore any other system files once *Step 1* is complete.

**Step 2 - This involves restoring any application or user files to system from the System Backup tape.**

The following section entitled *Using SAM for Backup/Recovery* gives an example of how to do this. This process is only needed if the data restored in *Step 1* is not current. *Step 1* produces a fully functional system. *Step 2* allows restoration of changes since *Step 1*.

**Step 3 - This involves restoring the OSMF database backup from the tape which has the files backed up by the "svdbbackup" script (called "dbbackup in release 1.X).**

The procedure involved for this step depends on whether or not the Resiliency option is installed and activated on the OSMF workstations. Choose the appropriate procedure for this step:

- **Procedure 1** - Use this procedure for database recovery when the OSMF system does not have the Resiliency option installed and activated.
- **Procedure 2** - When the Resiliency option is installed and activated, use this procedure for database recovery on the Primary Master workstation.
- **Procedure 3** - When the Resiliency option is installed and activated, use this procedure for database recovery on the Secondary Master workstation.
- **Procedure 4** - When the Resiliency option is installed and activated, use this procedure for database recovery on both the Primary and Secondary master workstations. It is unlikely that this procedure will be needed, however, if both the Primary and Secondary databases are corrupted, you must follow this procedure to recover.

---

**NOTE**

---

Regardless of which procedure is used for step 3, there may be different variations of the above steps depending on how much data was lost. If the system is able to run the recovery process, *Step 1* is not required. If only the database recovery is required, *Step 1* and *Step 2* are not needed.

In the following procedures, Primary Master always refers to the original primary master database workstation, and Secondary Master always refers to the original secondary master workstation.

---

***Procedure 1***

This procedure entails performing the second step in the example under *Using SAM for Backup/Recovery*. Refer to that procedure for information on how to recover the OSMF database. In that procedure, the OSMF database is brought to the level of the “svdbackup” run from which the recovery is being done.

***Procedure 2***

- 1 On the Primary Master workstation, log in as **root** and enter the root password.
- 2 Type the following command on the Primary Master workstation to terminate all OSMF daemons.

```
svstop
```

After all processes have terminated, the root prompt returns.

- 3 On the Secondary Master workstation, log in as **svroot** and enter the svroot password.
- 4 Type the following commands on the Secondary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env  
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 5 Choose the following menu items in the order shown to remove the Primary Master from replication:

<b>Resilience Administration</b>	from the “svadmin” main menu
<b>Remove Database From Replication</b>	from the “Resilience Administration” menu

- 6 On the Primary Master workstation, log in as **svroot** and enter the svroot password.
- 7 Type the following commands on the Primary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env  
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 8 Choose the following menu items in the order shown to shut down the Primary Master database:

**Database Administration** from the “svadmin” main menu  
**Shutdown Database** from the “Database Administration” menu

- 9 Choose the following menu item to set up the database on the Primary Master workstation:

**Create New Database** from the “Database Administration” menu

The setup script will ask some questions, then several minutes will elapse while the Oracle database is being created. When database set-up is finished, the “Database Administration” menu returns.

- 10 Choose the following menu items in the order shown to relocate the database to the Primary Master workstation:

**Resilience Administration** from the “svadmin” main menu  
**Relocate Primary Master Database** from the “Resilience Administration” menu

As the Primary Master database is relocated, the following will appear in the workstation’s display:

```
1. Ascertaining that secondary_master_hostname is part of replication...
Verified
2. Retrieving the name of the current master definition site...
3. Relocating the master definition site...
4. Redefining the site priorities...
5. Resume the master activities and restart the archive processes
6. Synchronizing the OSMF users information
#####
Relocation of the master definition site done !!
#####
```

- 11 On the Primary Master workstation, exit the “svadmin” utility, then type the following command to run the health check script:

**svrhc**

The following line should be returned as part of the health check:

```
Status of the replication system :NORMAL
```

---

**NOTE**

This line *must* show a status of NORMAL before you proceed to the next step in this procedure. If the status is QUIESCED, allow all deferred entries to be processed, then run the health check again and ensure that the status is NORMAL before proceeding.

---

- 12 On the Primary Master workstation, log in as **root** and enter the root password.

- 13 Type the following command on the Primary Master workstation to re-start OV-PMD and the OSMF software processes:

```
svstart
```

**NOTE**

The procedure is now complete. Management operations can now resume on the Primary Master workstation.

**Procedure 3**

- 1 On the Primary Master workstation, log in as **svroot** and enter the svroot password.
- 2 Type the following commands on the Primary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 3 Choose the following menu items in the order shown to remove the Secondary Master from replication:

<b>Resilience Administration</b>	from the “svadmin” main menu
<b>Remove Database From Replication</b>	from the “Resilience Administration” menu

- 4 On the Secondary Master workstation, log in as **svroot** and enter the svroot password.
- 5 Type the following commands on the Secondary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 6 Choose the following menu items in the order shown to shut down the Secondary Master database:

<b>Database Administration</b>	from the “svadmin” main menu
<b>Shutdown Database</b>	from the “Database Administration” menu

- 7 Choose the following menu item to set up the database on the Secondary Master workstation:

**Create New Database** from the “Database Administration” menu

The setup script will ask some questions, then several minutes will elapse while the Oracle database is being created. When database set-up is finished, the “Database Administration” menu returns.

---

**NOTE**

---

Procedure 3 is now complete. You can now start the OSMF daemons and resume management operations.

**Procedure 4**

- 1 On the Primary Master workstation, log in as **svroot** and enter the svroot password.
- 2 Recover the OSMF database from the backup tape to the Primary Master workstation.

Refer to the second step in the example under *Using SAM for Backup/Recovery* for information on how to recover the OSMF database.

- 3 On the Secondary Master workstation, log in as **svroot** and enter the svroot password.
- 4 Type the following commands on the Secondary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

---

**NOTE**

---

The above commands must be run from the Korn shell (ksh).

- 5 Choose the following menu items in the order shown to rebuild the database on the Secondary Master workstation:

**Database Administration** from the “svadmin” main menu

**Create New Database** from the “Database Administration” menu

The setup script will ask some questions, then several minutes will elapse while the Oracle database is being created. When database set-up is finished, the “Database Administration” menu returns.

- 6 On the Primary Master workstation, type the following commands to initiate replication and copy the Primary Master database to the Secondary Master:



```
cd /opt/smartview/RD
./svinstall_replication secondary_master_hostname
```

Where *secondary\_master\_hostname* is the hostname of the Secondary Master workstation.

- 7 Type the following commands on the Primary Master workstation to source the OSMF environment, then start the “svadmin” utility:

```
./opt/smartview/config/env/sv-ux.env
svadmin
```

---

**NOTE**

The above commands must be run from the Korn shell (ksh).

- 8 Choose the following menu items in the order shown to rebuild the database on the Primary Master workstation:

<b>Database Administration</b>	from the “svadmin” main menu
<b>Create New Database</b>	from the “Database Administration” menu

The setup script will ask some questions, then several minutes will elapse while the Oracle database is being created. When database set-up is finished, the “Database Administration” menu returns.

- 9 On the Secondary Master workstation, exit the “svadmin” utility, then type the following commands to initiate replication and copy the Secondary Master database back to the Primary Master workstation:

```
cd /opt/smartview/RD
./svinstall_replication primary_master_hostname
```

Where *primary\_master\_hostname* is the hostname of the Primary Master workstation.

- 10 On the Primary Master workstation, choose the following menu items in the order shown to relocate the Master Definition Site to the Primary Master workstation:

<b>Resilience Administration</b>	from the “svadmin” main menu
<b>Relocate Primary Master Database</b>	from the “Resilience Administration” menu

The following will appear in the workstation’s display:

```
1. Ascertaining that secondary_master_hostname is part of replication...
Verified
2. Retrieving the name of the current master definition site...
3. Relocating the master definition site...
4. Redefining the site priorities...
5. Resume the master activities and restart the archive processes
6. Synchronizing the OSMF users information
#####
```

```

Relocation of the master definition site done !!
#####

```

**NOTE**

Procedure 4 is now complete. You can now start the OSMF daemons and resume management operations.

**4.4.1.2 Using SAM for Backup/Recovery**

An automated system backup schedule can be setup in SAM. This schedule must not conflict with the “svdbbackup” database backup which is automatically performed every night. A different backup tape must be used for the system backup. The “svdbbackup” database backup runs every night at 12:00 am. This time may be adjusted to fit the needs of the environment. Since the system backup must not interfere with the database backup, the System Administrator should be available to change the tape between backup schedules. If the system backup is performed once a week for example, then the System Administrator might choose to perform an interactive backup instead of an automated backup.

**Example**

If the /opt/oracle directory or a portion of the directory structure had been removed or lost, the following two steps would be used to recover the system:

**Step 1 - Recover the /opt/oracle directory to the system.**

- 1 Insert correct backup tape in the tape drive.
- 2 Log in as root, then type the following command to start SAM:
 

```

/usr/sbin/sam

```
- 3 Double click the **Backup and Recovery** icon.
- 4 Double click the **Interactive Backup and Recovery** icon.
- 5 Select **Recovery Files and Directories...** from the “Use Remote Backup Device” menu (the “Use Remote Backup Device” menu is part of the “Actions” menu).
- 6 In the “Recover Files and Directories” dialog box, click the **Select Recovery Scope...** button, then click **OK**.
- 7 Include the following files under “Include Files:”
 

```

/opt/oracle      >Add

```
- 8 Click **OK**.

**CAUTION**

If the OSMF Resiliency option is installed and activated, do not perform the following step (*Step 2 - Recover database files to synchronize Oracle files*), as data loss can result. *Procedure 2* or

*Procedure 3* under *Step 3* in the section entitled *Complete System Recovery* (in this chapter) should be performed instead.

### **Step 2 - Recover database files to synchronize Oracle files.**

**Important!** The Oracle database as well as HP OpenView must be shut down prior to performing the following steps. The following can be used to shut down HP OpenView and the Oracle database:

- Type the command **'svstop'** as root.
- Type the commands **'. /opt/smartview/config/env/sv-ux.env'**, then **'svadmin'** as svroot.
- Choose the following "svadmin" menu items:

<b>Database Administration</b>	from the "svadmin" main menu
<b>Shutdown Database</b>	from the "Database Administration" menu

The important point is that it is necessary for all Oracle processes to be shut down.

- 1 If not logged into HP-UX as root, log in as **root**, then enter the root password.
- 2 Ensure that the OSMF environment is set by typing the following command:

```
. /opt/smartview/config/env/sv-ux.env
```

**NOTE** The above command must be run from the Korn shell (ksh).

- 3 Insert the tape containing the files to be recovered (the "svdbbackup" tape) into the local tape drive.
- 4 Type the following command to produce a listing of the contents of the tape:

```
/opt/smartview/config/DB/svdbrecover -list
```

There should be twelve sets of files on the tape. The listing returned should appear similar to, but not necessarily identical to, the following:

```
Tape filemark is 0 for /opt/oradata/SV30/APPL01.DBF
Tape filemark is 1 for /opt/oradata/SV30/APPL02.DBF
Tape filemark is 2 for /opt/oradata/SV30/IND01.DBF
Tape filemark is 3 for /opt/oradata/SV30/IND02.DBF
Tape filemark is 4 for /opt/oradata/SV30/SYSTEM01.DBF
Tape filemark is 5 for /opt/oradata/SV30/TEMP01.DBF
Tape filemark is 6 for /opt/oradata/SV30/RBS01.DBF
Tape filemark is 7 for /opt/oradata/SV30/TOOLS01.DBF
Tape filemark is 8 for redo log files
Tape filemark is 9 for archived redo log files
```

```
Tape filemark is 10 for control files  
Tape filemark is 11 for openview files
```

If the listing verifies that the proper files are contained on the tape, continue with the next step. If the listing indicates that the tape contains invalid or outdated files, no listing is returned, or a message is returned indicating there is some other problem, troubleshoot the problem and ensure that the correct tape is installed before continuing.

- 5 Type the following command to recover the files from the tape:

```
/opt/smartview/config/DB/svdbrecover -recover
```

As each file is recovered, its name is displayed on the screen (*refer to the example output following this procedure*). When the recovery procedure is complete, the prompt returns to the screen.

The system is now at the same point as when “svdbbackup” was last run.

**Example “svdbrecover -recover” Output**

The following is an example of what the output might look like:

```
User verified
```

```
WARNING
```

```
#####
```

```
You are about to recover OSMF oracle database.
```

```
If you have an existing OSMF database and do not
```

```
want to lose the data, DO NOT run ./svdbrecover .
```

```
This process will replace all OSMF Oracle database
```

```
related files as well as OpenView database and map
```

```
files. Shutdown all OpenView and Oracle processes
```

```
before attempting a recovery.
```

```
You must have the OSMF dbbackup tape in the tape drive.
```

```
#####
```

```
Do you wish to proceed with the recovery process?
```

```
enter y or n
```

```
Y
```

```
./svdbrecover will proceed now
```

```
There is a tape in the tape drive, Is this the
```

```
correct backup tape to use for this recovery?
```

```
y or n
```

```
Y
```

```
Proceeding
```

```
This will take some time....
```

```
Recovering filemark 0
```

```
Recovering filemark 0
```

```
/opt/oradata/SV30/APPL01.DBF
```

```
450570 blocks
```

```
filemark 0 recovery passed
```

```
Recovering filemark 1
```

```
/opt/oradata/SV30/APPL02.DBF
```

```
450570 blocks
```

```
filemark 1 recovery passed
```

```
Recovering filemark 2
```

```
/opt/oradata/SV30/IND01.DBF
```

```
81930 blocks
```

```
filemark 2 recovery passed
```

```
Recovering filemark 3
```

```
/opt/oradata/SV30/IND02.DBF
```

**System Recovery**

81930 blocks  
filemark 3 recovery passed

Recovering filemark 4  
/opt/oradata/SV30/SYSTEM01.DBF  
102410 blocks  
filemark 4 recovery passed

Recovering filemark 5  
/opt/oradata/SV30/TEMP01.DBF  
40970 blocks  
filemark 5 recovery passed

Recovering filemark 6  
/opt/oradata/SV30/RBS01.DBF  
61450 blocks  
filemark 6 recovery passed

Recovering filemark 7  
/opt/oradata/SV30/TOOLS01.DBF  
20490 blocks  
filemark 7 recovery passed

Recovering filemark 8  
/opt/oradata/SV30/SV30\_01A.LOG  
/opt/oradata/SV30/SV30\_01B.LOG  
/opt/oradata/SV30/SV30\_02A.LOG  
/opt/oradata/SV30/SV30\_02B.LOG  
/opt/oradata/SV30/SV30\_03A.LOG  
/opt/oradata/SV30/SV30\_03B.LOG  
24590 blocks  
filemark 8 recovery passed

Recovering filemark 9  
/opt/oracle/app/oracle/admin/SV30/arch/SV3059.ARC  
/opt/oracle/app/oracle/admin/SV30/arch/SV3060.ARC  
970 blocks  
filemark 9 recovery passed

Recovering filemark 10  
/opt/oracle/app/oracle/admin/SV30/SV30\_01ctl  
/opt/oracle/app/oracle/admin/SV30/SV30\_02ctl  
/opt/oracle/app/oracle/admin/SV30/SV30\_03ctl  
260 blocks  
filemark 10 recovery passed

Recovering filemark 11  
/var/opt/OV/share/databases/openview/defmap  
/var/opt/OV/share/databases/openview/mapdb  
/var/opt/OV/share/databases/openview/ovwdb  
/var/opt/OV/share/databases/openview/ovwdb/ovserver

**System Recovery**

```

/var/opt/OV/share/databases/openview/ovwdb/current
/var/opt/OV/share/databases/openview/ovwdb/current/id_keeper.pag
/var/opt/OV/share/databases/openview/ovwdb/current/id_keeper.dir
/var/opt/OV/share/databases/openview/ovwdb/current/field_info.pag
/var/opt/OV/share/databases/openview/ovwdb/current/field_info.dir
/var/opt/OV/share/databases/openview/ovwdb/current/obj_info.pag
/var/opt/OV/share/databases/openview/ovwdb/current/obj_info.dir
/var/opt/OV/share/databases/openview/ovwdb/current/value_info.pag
/var/opt/OV/share/databases/openview/ovwdb/current/value_info.dir
/var/opt/OV/share/databases/openview/ovwdb/current/name_info.pag
/var/opt/OV/share/databases/openview/ovwdb/current/name_info.dir
/var/opt/OV/share/databases/openview/ovwdb/current/enum_info.pag
/var/opt/OV/share/databases/openview/ovwdb/current/enum_info.dir
60 blocks
filemark 11 recovery passed

```

```

#####
Will now perform the final stage of recovery.
Performing Auto Recovery of Database:
#####

```

User and Group verified

```

WARNING:
#####
You are about to Perform an Auto Recovery for OSMF oracle database.
You should only run this script after svdbrecover has successfully
been run.
#####
Do you wish to proceed with Database Auto Recovery?
enter y or n
y

```

```

/opt/smartview/config/DB/auto_recovery.ks will proceed now
Performing Oracle Database Auto Recovery Process
Oracle Database Auto Recovery Process Complete
log of Auto Recovery stored to /tmp/auto_recovery.log

```

---

## 4.5 Mirrored Disk Failure Recovery

4.5.1 When the system is running in mirror mode, identical copies of the system data are stored on two separate disks. If one of the disks fails, the system remains fully functional as long as one of the disks remains functional.

4.5.2 When the failed disk needs to be replaced, it should be replaced as soon as possible so that the system can once again continue running in mirror mode. Replacing the failed disk requires that the system be brought down, so this system down time should be scheduled as soon as possible after the failed disk is discovered.

- 1 If not logged into HP-UX as root, log in as **root**, then enter the root password.
- 2 Type the following command to save the volume group configuration for the specified volume group to the default configuration backup file:

```
/usr/sbin/vgcfbackup vgrp_name
```

Where *vgrp\_name* is the volume group path and name. For example, the default volume group path and name is **/dev/vg00**.

- 3 Type the following command to shut down the system:

```
/etc/shutdown -h now
```

This command shuts down the system with no grace period. Provide answers as necessary to any questions presented on the screen during shutdown. The system console will indicate when the shutdown is complete.

- 4 After the system has successfully shut down, turn off power to the system.
- 5 Disconnect the failed disk from the system and replace it with a known good replacement disk of the same model.

---

**NOTE**

Refer to the workstation documentation for procedures regarding replacement of disk hardware.

- 6 Turn on the OSMF workstation to commence normal system boot-up.

When system boot-up is complete, the HP-VUE login screen will appear on the display. Log in at the HP-VUE login screen as root.

- 7 After the terminal window appears, type the following command to restore the volume group configuration from the default configuration backup file:

```
/usr/sbin/vgcfrestore -n vgrp_name rep_dsk
```



Where *vgrp\_name* is the volume group path and name, and *rep\_dsk* is the raw device file for the replacement disk (for example, **/usr/sbin/vgcfrestore -n /dev/vg00 /dev/rdisk/c0t4d0**).

- 8 Type the following command to activate the specified volume group for read-write access:

```
/usr/sbin/vgchange -a y vgrp_name
```

Where *vgrp\_name* is the volume group path and name, for example, **/dev/vg00**.

- 9 Type the following command to synchronize the logical volume mirrors in the specified volume group:

```
/usr/sbin/vgsync vgrp_name
```

- 10 Type the following command to install the necessary boot programs on the replacement disk:

```
/usr/sbin/mkboot rep_dsk
```

Where *rep\_dsk* is the raw device file for the replacement disk, for example, **/dev/rdisk/c0t4d0**.

- 11 Type the following command to create an autoexecute file on the replacement disk containing the string enclosed in quotes:

```
/usr/sbin/mkboot -a "hpux -lq /stand/vmunix" rep_dsk
```

---

**NOTE**

The system is now recovered and running in mirrored disk mode.





---

## 5.1 In this Chapter

5.1.1 The OSMF software is shipped on a cartridge tape that contains the current version of the software. The procedures in this chapter explain how to install the system software from this tape.

The installation procedure you use depends on the current status of your OSMF system:

- If you are installing the OSMF software on a workstation for the first time, and that workstation *does not* contain an existing OSMF database, use the procedure *To Install the OSMF System Software - Initial installation*.
- If you are upgrading the OSMF software, and that workstation contains an existing OSMF database, use the procedure *To Install the OSMF System Software - Software Upgrades*.

Sections in this chapter also explain how to install, configure and activate NTP, and how to activate disk mirroring. Configuration issues that must be considered after the software is installed are also included.

---

**Important**

If you have received an OSMF system that has been integrated by Symmetricom, the OSMF software has already been installed. If this is the case, there are several parameters that you need to set before you begin using the system. The procedures to do this are included in two separate documents, entitled *OSMF - README.first Integration Documentation*, and *OSMF - Xterm Setup*, that ship with the system.

---

---

## 5.2 To Install the OSMF System Software - Initial Installation

5.2.1 If you are installing the OSMF software on your workstation for the first time, use the following procedure.

---

**CAUTION** If the following procedure is used to upgrade the OSMF software, the entire OSMF database will be destroyed. If you are upgrading the OSMF software, go to the procedure entitled *To Install the OSMF System Software - Software Upgrades*.

---

---

**NOTE** For Oracle, the following kernel parameter settings are the minimum required:

```
semms=300  
semmsi=10  
shmseg=20  
shmmax=40MB
```

For the OSMF software, the following kernel parameter settings are the minimum required:

```
maxfiles>300  
nfile>3000  
ninode>3000
```

---

### 5.2.1.1 Install the Software with Software Distributor

---

**NOTE** The svroot user must not be logged into the system and no svroot processes should be running when the next twelve steps are performed. The following command can be used to determine if any svroot processes are currently running:

```
ps -u svroot
```

---

No output will be returned if no svroot processes are running.

- 1 Insert the OSMF software install tape into the local system tape drive.
- 2 Log into HP-VUE as **root** and enter the root password.

---

**NOTE** You can run “swinstall” directly as an alternative to running it from SAM. If you choose to do this, it is only necessary to perform steps 6 through 11.

---

- 3 Type the following command to start the System Administration Manager (SAM):

```
/usr/sbin/sam
```

- 4 Double click on **Software Management**.
- 5 Double click on **Install Software to Local Host**.

- 6 Click on **Source Depot Type**, then select **Local Tape**.
- 7 Click on **Source Depot Path**, select the path to the local tape drive, then click **OK**.

Typically, the path to the local tape drive will be /dev/rmt/0m.

- 8 In the Software Selection window, highlight **55452CA** (for version 3.0 of the OSMF software), then click on **Actions>Install (analysis)**.

Install analysis will begin and then complete with a status of “Ready.”

- 9 After install analysis completes, click **OK**, then click **Yes** in the confirmation window that appears.

After “Yes” is clicked, the execution phase of the install process will start. This phase should complete with no errors.

- 10 When the status shows “Completed” and “Percent Complete=100%,” click **Done**.
- 11 Click on **File>Exit** to exit Software Distributor.
- 12 Click on **File>Exit SAM** to end the software installation process and exit SAM.

#### ***5.2.1.2 Set up the database***

- 1 Log into HP-UX as **svroot**, and enter the svroot password.

---

**NOTE**

Before user svroot can log in, an svroot password must be set up by the root user. Alternatively, the root user can use the command **su - svroot** to switch to user svroot, in which case a password is not required.

---

**CAUTION**

If you create a new database on system that contains an existing OSMF database by performing the following steps, the entire database will be destroyed. If you are upgrading the OSMF software, perform the procedure entitled *To Install the OSMF System Software - Software Upgrades*, rather than this one.

- 2 Type the following commands to source the OSMF environment, then start the “svadmin” utility:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

---

**NOTE**

The above commands must be run from the Korn shell (ksh).

When the “svadmin” utility starts, the OSMF Administration Utility main menu appears.

- 3 Choose the following menu items in the order shown to set up the database (type the number next to the menu item to choose the item):

<b>Database Administration</b>	from the “svadmin” main menu
<b>Create New Database</b>	from the “Database Administration” menu

The setup script will ask some questions, then several minutes will elapse while the Oracle database is being created. When database set-up is finished, the “Database Administration” menu returns.

---

**NOTE**

Database creation will fail if disk space is less than what is required.

- 4 Exit the “svadmin” utility, then log into HP-UX as **root** and enter the root password.
- 5 Type the following command to ensure that the “ovwdb” process is running:

```
$OV_BIN/ovstart ovwdb
```

- 6 Type the following command:

```
$OV_BIN/ovw -fields
```

### ***5.2.1.3 Start the OpenView and OSMF Software Daemons***

Starting HP OpenView for the first time after the software is installed and configured completes the installation and configuration process.

- 1 Ensure that you are logged into HP-UX as root.
- 2 Type the following command to source the OSMF software environment:

```
. /opt/smartview/config/env/sv-ux.env
```

---

**NOTE**

The above command must be run from the Korn shell (ksh).

- 3 Type the following command to ensure that the OSMF software-related processes are terminated.

```
svstop
```

After all processes have terminated, the root prompt returns.

- 4 Type the following command to re-start the HP OpenView processes:

```
svstart
```

After all processes are spawned, the root prompt returns.

5 Type the following command to start the “svadmin” utility:

**svadmin**

6 Choose the following menu item to ensure that the OSMF software-related processes are up:

**Status** from the “svadmin” main menu

The report that is returned in the HP-UX window contains information on the current status of the OSMF software. The following shows what the report will indicate in part when the software-related processes are up:

```
OSMF, Release 3.0 (build build_no)

The OSMF environment is set
-----

Openview is up
-----

Status of OSMF daemons ...
-----

Alignment Daemon:           up
HeartBeat Daemon:          up
Event Receiver Daemon:     up
Event Alert Daemon:        up
OVW Communication Daemon:  up
Status Sync Daemon:        up
GPS Agent Daemon:          up

Status of Internal Database Process
-----

Lock-Management-Process:    up
Archive-Process:            up
Map-Status-Sync-Process:    up

Replication Option is not installed
-----
```



---

## 5.3 To Install the OSMF System Software - Software Upgrades

5.3.1 If you are upgrading the OSMF software on an existing functioning system, use the following procedure. If you are installing the OSMF software on a workstation for the first time, go to the procedure in this chapter entitled *To Install the OSMF System Software - Initial Installation*.

---

**NOTE** Upgrading the OSMF software directly from version 1.X to version 3.0 is not supported. This is because direct migration of the OSMF database from version 1.X to version 3.0 is not supported. To upgrade the software from version 1.X to version 3.0, you must first upgrade it from version 1.X to version 2.0, then upgrade it from version 2.0 to version 3.0.

---

### 5.3.1.1 Back up the OSMF Database

- 1 Log into HP-UX as **svroot**, and enter the svroot password.
- 2 Type the following command to source the OSMF environment:

```
. /opt/smartview/config/env/sv-ux.env
```

---

**NOTE** The above command must be run from the Korn shell (ksh).

---

- 3 Back up the current OSMF database.

Refer to the procedure entitled *OSMF Database Backup* that is in the *Backup Procedures* section of the *System Backup and Recovery* chapter of this manual for more information.

- 4 Log in as root, then type the following command to stop HP OpenView:

```
ovstop
```

- 5 Log in as svroot, then type the following command to start the “svadmin” utility:

```
svadmin
```

- 6 Choose the following menu items in the order shown to stop the OSMF database (type the number next to the menu item to choose the item):

<b>Database Administration</b>	from the “svadmin” main menu
<b>Shutdown Database</b>	from the “Database Administration” menu

- 7 Exit the “svadmin” utility.

### 5.3.1.2 Remove the Existing Version of the OSMF Software

---

**NOTE**

The svroot user must not be logged into the system and no svroot processes should be running when the following steps are performed. The following command can be used to determine if any svroot processes are currently running:

```
ps -u svroot
```

No output will be returned if no svroot processes are running.

---

- 1 Log into HP-VUE as **root** and enter the root password.
- 2 Type the following command to start the System Administration Manager (SAM):  

```
/usr/sbin/sam
```
- 3 Double click on **Software Management**.
- 4 Double click on **Remove Software**.
- 5 Double click on **Remove Local Host Software**.
- 6 In the “SD Remove-Software Selection” window that appears, select **55452AA** (for version 1.1 of the OSMF software) or **55452BA** (for version 2.0 of the software), then click on **Actions>Mark for Remove**.

---

**NOTE**

If any OSMF software patches are installed, these filesets will also have to be marked for removal since they are dependencies on the OSMF software product. If dependencies are present, SAM will indicate them in a “Dependency Message Dialog” box.

- 7 In the “SD Remove-Software Selection” window, select **Actions>Remove (analysis)...**

Remove analysis will begin automatically. It should complete with a status of “Ready.” If a status other than “Ready.” is indicated, click the **Logfile...** button in the “Remove Analysis” dialog box for details of the problem.

---

**NOTE**

The remove analysis will likely indicate some warnings. These warning messages are courtesy messages to indicate the severity of the imminent removal action and will not affect the removal process as long as the status indication is “Ready.”

- 8 After remove analysis completes, click **OK**, then click **Yes** in the Confirmation window that appears.

After “Yes” is clicked, the execution phase of the remove process will start. This phase should complete with no errors.

- 9 When the status shows “Completed” and “Percent Complete=100%,” click **Done**.

- 10 Click on **File>Exit** to exit Software Distributor, then double-click **...(go up)** to return to the Software Management area of SAM.

### ***5.3.1.3 Install the Software with Software Distributor***

---

**NOTE**

The svroot user must not be logged into the system and no svroot processes should be running when the following steps are performed. The following command can be used to determine if any svroot processes are currently running:

```
ps -u svroot
```

---

No output will be returned if no svroot processes are running.

- 1 Insert the OSMF software install tape into the local system tape drive.
- 2 Double click on **Install Software to Local Host**.
- 3 Click on **Source Depot Type**, then select **Local Tape**.
- 4 Click on **Source Depot Path**, select the path to the local tape drive, then click **OK**.  
  
Typically, the path to the local tape drive will be /dev/rmt/0m.
- 5 In the Software Selection window, highlight **55452CA** (for version 3.0 of the OSMF software), then click on **Actions>Install (analysis)**.  
  
Install analysis will begin automatically. It should complete with a status of "Ready." If a status other than "Ready." is indicated, click the **Logfile...** button in the "Install Analysis" dialog box for details of the problem.
- 6 After install analysis completes, click **OK**, then click **Yes** in the confirmation window that appears.  
  
After "Yes" is clicked, the execution phase of the install process will start. This phase should complete with no errors.
- 7 When the status shows "Completed" and "Percent Complete=100%," click **Done**.
- 8 Click on **File>Exit** to exit Software Distributor.
- 9 Click on **File>Exit SAM** to end the software installation process and exit SAM.

### 5.3.1.4 Prepare the Workstation for Database Migration

The following steps ensure that the workstation has sufficient internal resources to allow database migration to proceed.

- 1 Reboot the OSMF workstation.

During the reboot process, an attempt will be made to start the OSMF system. The OSMF system will not start, and this is expected behavior.

- 2 Type the following commands to remove the archive files from the `/opt/oracle/app/oracle/admin/SV20/arch` directory:

```
cd /opt/oracle/app/oracle/admin/SV20/arch  
rm SV*.ARC
```

### 5.3.1.5 Migrate the OSMF Database - Resilience Option Not Installed

Perform the steps in this sub-section if you are upgrading the OSMF software from version 2.0 to version 3.0, and you do not have the resiliency option installed. If you have installed the resiliency option, perform the steps in the sub-section entitled *Migrate the OSMF Database - Resilience Option Installed* instead.

---

#### NOTES

Migration directly from the version 1.X of the database to version 3.0 is not supported. The correct method for migrating the database from 1.X to 3.0 is to first upgrade the OSMF software from version 1.X to version 2.0, then upgrade the software from version 2.0 to version 3.0. Both upgrade procedures include migration as part of the upgrade process.

If you are re-installing the same version of the OSMF software, skip this sub-section and go to the sub-section entitled *Start the OpenView and OSMF Software Daemons*.

---

- 1 Log in as **root**, then type the following command to start the “ovwdb” process:

```
$OV_BIN/ovstart ovwdb
```

- 2 Log in as **svroot**, then type the following command to start the “svadmin” utility:

```
svadmin
```

- 3 Choose the following menu items in the order shown to start the OSMF database migration process (type the number next to the menu item to choose the item):

<b>Database Administration</b>	from the “svadmin” main menu
<b>Migrate an Existing Database</b>	from the “Database Administration” menu

- 4 Choose the following database migration option:

**2.0 to 3.0 Migration**      *to migrate the database from version 2.0 to 3.0 of the OSMF software.*

The database migration process updates the existing OSMF database to support structure changes in version 3.0 of the software, then starts the database processes. When it finishes running, the “Database Administration” menu returns.

- 5 Exit the “svadmin” utility.

### ***5.3.1.6 Migrate the OSMF Database - Resilience Option Installed***

- 1 Log in as svroot on the Primary Master workstation, and type the following commands:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

- 2 Choose the following menu items in the order shown to remove the Secondary Master database from replication (type the number next to the menu item to choose the item):

**Resilience Administration**      from the “svadmin” main menu  
**Remove Database from Replication**      from the “Resilience Administration” menu

- 3 Log in as svroot on the Secondary Master workstation, and type the following commands:

```
. /opt/smartview/config/env/sv-ux.env
svadmin
```

- 4 Choose the following menu items in the order shown to set up the database:

**Database Administration**      from the “svadmin” main menu  
**Create New Database**      from the “Database Administration” menu

Several minutes will elapse while the Oracle database is being created. When database set-up is finished, the “Database Administration” menu returns.

- 5 *On the Primary Master workstation*, choose the following menu items in the order shown to start the OSMF database migration process:

**Database Administration**      from the “svadmin” main menu  
**Migrate an Existing Database**      from the “Database Administration” menu

- 6 Choose the following database migration option:

**2.0 to 3.0 Migration**      *to migrate the database from version 2.0 to 3.0 of the OSMF software.*

The database migration process updates the existing OSMF database to support structure changes in version 3.0 of the software, then starts the database processes. When it finishes running, the “Database Administration” menu returns.

- 7 Type the following commands on the Primary Master workstation to activate replication on the Secondary Master workstation:

```
cd /opt/smartview/RD
./svinstall_replication database hostname
```

where *database hostname* is the hostname of the Secondary Master. The following figure shows a sample of the screen output from the `svinstall_replication` script.

```
Master Definition Site hostname is primary_master_hostname
Standby site hostname is secondary_master_hostname
For installation of the replication to be successful
it is imperative that the .rhosts file has been configured
on secondary_master_hostname to allow remote shells for svroot user
```

1. Creating the tnsnames.ora file...
  2. Creating replicated environment at the primary master database...
  3. Creating replicated environment at the standby master database...
  4. Creating master replication group at the both the sites...
  5. Adding the list of tables of the replicated environment...
  6. Adding the packages to be procedurally replicated...
  7. Defining the site priorities...
  8. Creating conflict resolution functions at both sites...
  9. Creating columns groups required for update conflict resolution....
  10. Executing update conflict resolution script...
  11. Executing delete conflict resolution scripts
  12. Adding insert/uniqueness conflicts resolution...
  13. Generating replication support for replicated tables...
  14. Bringing back the database to resume master activities...
  15. Waiting for the database synchronizing to be over...
  16. Recompiling all the stored objects on both sites...
  17. Copying data from primary master to standby master...
- ```
#####
Database are now working in replication mode!!
#####
```

**NOTES**

- Before starting `svinstall_replication`, run the `bdf` utility to ensure that there is adequate space on the `/opt` volume for the database archive files that are generated by `svinstall_replication`.
- The `svinstall_replication` script creates the internal Oracle users ‘`repadmin`’ (password: ‘`repadmin`’) and ‘`repsys`’ (password: ‘`repsys`’). To accomplish this, it logs into the database as ‘`sys`,’ using ‘`change_on_install`’ as a password. Therefore, if the password for `sys` was previously changed to anything other than `change_on_install`, this script will fail. Once the `svinstall_replication` script has run successfully, you can change the password for `sys`. It is not necessary to have Unix user accounts for these internal Oracle users.
- The `svinstall_replication` script displays a message that identifies the Primary Master and Secondary Master workstations by hostname. Verify that the hostnames correctly correspond to the Primary Master and Secondary Master workstations.
- Any information that exists in the secondary database prior to replication is overwritten during the initial database replication process.
- The `svinstall_replication` script reminds you the `.rhosts` file on the Secondary Master must be configured to allow remote shells for user ‘`svroot`.’
- During the operation of the `svinstall_replication` script, 17 numbered status messages are displayed. Unless there is a problem, there is no need to take note of the content of these messages. If a problem does occur, and you need to call Symmetricon technical support, you should take note of the number and content of any message that reports an error.
- It normally takes approximately 15 minutes to complete the processes that display the first 17 status messages. The time required to complete the 17th process can vary considerably depending upon the amount of data in the database to be replicated.

- 8 Check the status of the replication processes on both the Primary and Secondary Master workstations using the `svadmin` “**Status of Resilience**” menu command (in the “Resilience Administration” menu). The following figure shows a sample of the screen output of the “**Status of Resilience**” menu command. Refer to the *55452A OSMF Software Resiliency Option System Administrator’s Guide* for more information on the health check. Also, refer to the *Resiliency Option System Administrator’s Guide* if problems are encountered.

```

=====
                                     hostname1          hostname2
-----
Designation                          Primary-Master    Secondary-Master
Replication System Status             NORMAL           NORMAL
Deferred Execution job status         Working          Working
Replication Catalog entries           0                0
Replication Catalog Error Entries     0                0
Deferred Transaction entries           0                0
Deferred RPCs entries                  0                0
Deferred Error entries                 0                0
=====

```

### ***5.3.1.7 Start the OpenView and OSMF Software Daemons***

Starting HP OpenView for the first time after the software is installed and configured completes the installation and configuration process.

- 1 Log in as **root**, then type the following command to source the OSMF software environment:

```
. /opt/smartview/config/env/sv-ux.env
```

---

**NOTE**

---

The above command must be run from the Korn shell (ksh).

- 2 Type the following command to re-start the HP OpenView processes:

```
svstart
```

After all processes are spawned, the HP-UX root prompt returns.

- 3 Log in as svroot, then type the following command to start the “svadmin” utility:

```
svadmin
```

- 4 Choose the following menu item to ensure that the OSMF software-related processes are up:

**Status** from the “svadmin” main menu



**To Install the OSMF System Software - Software Upgrades**

The report that is returned in the HP-UX window contains information on the current status of the OSMF software. The following shows what the report will indicate in part when the software-related processes are up:

```
OSMF, Release 3.0 (build build_no)

The OSMF environment is set
-----

Openview is up
-----

Status of OSMF daemons ...
-----

Alignment Daemon:           up
HeartBeat Daemon:          up
Event Receiver Daemon:     up
Event Alert Daemon:        up
OVW Communication Daemon:  up
Status Sync Daemon:        up
GPS Agent Daemon:          up

Status of Internal Database Process
-----

Lock-Management-Process:    up
Archive-Process:           up
Map-Status-Sync-Process:    up

Replication Option is not installed
-----
```

**NOTE**

If your system upgrade includes installation of one or more X-terminals, there are several parameters that you need to set before you begin using them. The procedure to do this is included in a separate document, entitled *OSMF - Xterm Setup*, that ships with the system.

---

## **5.4 OSMF Software Post-Installation Considerations**

5.4.1 The following should be considered after the OSMF software is installed.

### ***5.4.1.1 NIS Environments***

During the installation process, users “svroot” and “svsec” and groups “svsec,” “svadm,” and “svusr” are created. If your OSMF system is connected in a NIS environment, you must update your NIS master to reflect the addition of these new users and groups.

---

## 5.5 To Install, Configure and Activate NTP for OSMF

5.5.1 The Network Time Protocol (NTP) provides a mechanism for synchronizing time across a network. In the OSMF implementation of NTP, a daemon (xntpd) references its server clock from an external Symmetricom GPS reference source.

5.5.2 The necessary NTP files are loaded as part of a normal OSMF version 3.0 software installation or upgrade, however, NTP is not automatically installed, configured, and activated as part of the normal installation procedure. In order to install, configure, and activate NTP, perform the following procedures.

### 5.5.2.1 To Install and Configure NTP

- 1 Install patch PHNE\_11019 on the OSMF workstation.

This patch must be installed on the HP-UX 10.20 operating system. This patch (NTPv3.5 Timeservices Upgrade Plus Utilities) includes the proper driver for the xntpd daemon to interface with an Symmetricom GPS reference source.

---

**NOTE**

Patch PHNE\_11019 is available from Symmetricom field support.

- 2 Log into HP-UX as **root**, and enter the root password.
- 3 Type the following command to run the NTP configuration script:

```
/opt/smartview/config/ntp/svinstall_ntp
```

The script configures NTP for GPS. Specifically, it does the following:

- Creates the device file /dev/gps1 to interface with RS-232 port 1 of the OSMF workstation.
- Enables XNTPD in /etc/rc.config.d/netdaemons.
- Configures the file “/etc/ntp.conf” with these entries:

```
fudge 127.127.26.1 time1 -0.955 # s700
server 127.127.26.1 prefer minpoll 6 # GPS Clock
```

- 4 Connect the OSMF workstation to the Symmetricom GPS reference source.

The connection between the workstation and reference source is via RS-232. Use a DTE-to-DTE interface cable to connect the “time of day” port on the reference source to RS-232 port 1 on the OSMF workstation.

### 5.5.2.2 To Activate NTP

Once NTP is installed and configured, reboot the OSMF workstation to activate it. The xntpd daemon automatically starts at bootup time and synchronizes the OSMF workstation to the Symmetricom GPS reference source connected to RS-232 port 1 of the workstation.

---

**NOTES**

When running, xntpd will log messages to /var/adm/syslog/syslog.log

The “svadmin” utility provides a menu selection that can be used to synchronize the time of managed SSUs to the time on the OSMF workstation. While this feature is not dependent on NTP, a more accurate workstation time will result if NTP is active. To use this feature, start “svadmin,” then choose **Time Synchronization** from the main menu, and **Synchronize Time to all Managed NEs** from the “Time Synchronization” menu.

---

---

## 5.6 To Activate Disk Mirroring

5.6.1 It is not necessary to activate disk mirroring during initial OSMF software installation. Disk mirroring can be activated at any time, but the system will not be running in mirrored disk mode until it has been activated.

---

**Important** Two required patches must be installed on the OSMF workstation prior to running the “sv\_create\_mirror” script in this procedure. The script checks for installation of the patches and allows the user to continue if they are not installed (due to the nature of patches and operating system updates). Note that patches (including those listed below) might be replaced by more recent patches at any time, so the system administrator should always install the most current patches.

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The current patches as of this printing are PHCO\_16049 and PHKL\_15598.

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**NOTES** The disk mirroring feature is available with version 2.0 and later of the OSMF software.

---

Before proceeding, you should use SAM to determine the device file name of the mirror disk and the Volume Group to be mirrored, as you will be prompted to enter this information below.

- 1 If not logged into HP-UX as root, log in as **root**, then enter the root password.
- 2 Type the following commands to give user “root” execute permission for the script:

```
cd /opt/smartview/config/DB  
chmod 744 sv_create_mirror
```

- 3 Type the following command to run the “sv\_create\_mirror” script:

```
./sv_create_mirror
```

The script prompts you for the device file name of the mirror disk, and the Volume Group that will be mirrored. Answer the questions appropriately. When all required information has been entered, a pass/fail indication will be returned as each section is created. An indication of **PASS** should be returned for all sections.

When the script runs through to completion with no **ERROR** indications, disk mirroring has been set up successfully and the workstation is running in mirror mode.





## **6.1 In this Chapter**

6.1.1 In order to establish communication between an SSU and the OSMF software, several parameters and switch settings must be set at the SSU. The procedure in this chapter explains how to configure an SSU so that it can communicate with the OSMF software.



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## 6.2 To Configure SSUs to Communicate with the OSMF Software

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**Important** *The following steps suggest the order in which the SSU configuration should be performed. For details on how to modify particular parameters, refer to the documentation supplied with the interface used (TL1 commands or local craft terminal).*

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6.2.1 Before any SSU can be managed by the OSMF software, some basic configuration is required on behalf of the system administrator. Since the OSMF software cannot communicate with the SSU at this point, this configuration must be performed via an alternate interface. Most of the parameters can be set using TL1 commands or via the local craft terminal. Some switch settings will also have to be changed. These switches are located on the NIMC assembly in the SSU.

---

**NOTES** Modification of some network parameters using TL1 commands requires that a sequence be followed that is different than for other parameters to avoid their inadvertently being changed. This sequence is explained in detail in the document entitled *55400A Supplemental Documentation* (Part Number 55401-90009) that is shipped with the SSU.

Refer to the *55400A SSU Programming Manual* for information on creating the new user (“svsec”) and setting the switches.

---

- 1 Ensure that the "Security/Password Required" switch (bit 1 of switch S4 on the NIMC assembly) and the "Force Enable Local Port" switch (bit 3 of switch S4 on the NIMC assembly) is set to Off.

*Refer to the figure at the end of this procedure for switch locations.*

- 2 Create a user with name “svsec” and a security level of SECURITY with a password of up to ten characters. The password must contain at least one special character (such as a period, asterisk, ampersand, or percent) and at least one non-alphabetical character. (The related TL1 commands are ED-USER-SECU (edit user security) and ENT-USER-SECU (enter user security).)

The password will later be used when managing the SSU using the OSMF software.

- 3 Verify that Remote Automatic Output is set to “ALWAYS” (the related TL1 keyword is RMTAO).

RMTAO determines the conditions under which automatic output messages are reported to the remote port.

- 4 Verify that Automatic Output Message Merge is set to “N” (the related TL1 keyword is AOMERGE).

AOMERGE determines whether or not commands and automatic output messages are merged onto the command port, or carried on separate ports.

- 5 Set the following network parameters:
- a. SSU IP Address - Change this to the IP address for the SSU being configured (the related TL1 keywords are IPNE (for working memory) and IPNEX (for auxiliary memory)).
  - b. OSMF Host IP Address - Change this to the IP address for the host on which the OSMF software is running (the related TL1 keywords are IPEM1 (for working memory) and IPEM1X (for auxiliary memory)).
  - c. Replication System IP Address (if necessary) - Change this to the IP address for the OSMF software replication system, if one is installed (the related TL1 keywords are IPEM2 (for working memory) and IPEM2X (for auxiliary memory)).

**NOTE**

If a replication system is *not* installed, the following will be included as part of the status report when “svstatus” is run on the OSMF workstation (or when **Status** is chosen from the “svadmin” main menu):

```
Replication Option is not installed
```

If the replication option is not installed, the Replication System IP Address (IPEM2) value should be set to 0.0.0.0, which is its default value. Note that if IPEM2 is set to a value other than 0.0.0.0 when a replication system is not installed, OSMF functional problems can result.

- d. Gateway Address - Change this to the IP address of the default gateway (The related TL1 keywords are IPGATE (for working memory) and IPGATEX (for auxiliary memory)).
- e. Sub-Network Address - Change this to the IP address of the sub-network mask (the related TL1 keywords are IPSUBNET (for working memory) and IPSUBNETX (for auxiliary memory)).

**NOTE**

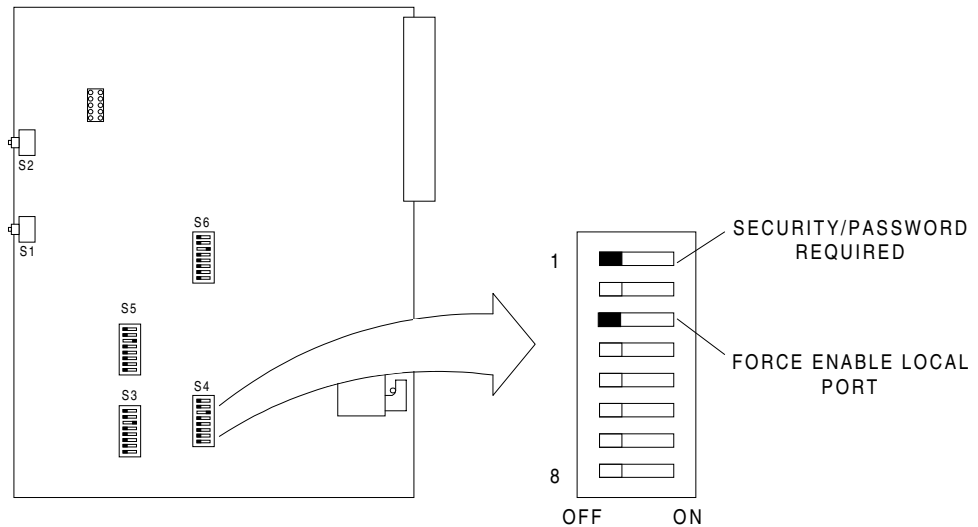
The following network parameters do not need to be changed from their default values to support OSMF software operation: Local Manager 1 Address (IPLM1, IPLM1X), Local Manager 2 Address (IPLM2, IPLM2X), Command Port (PORTCMDS, PORTCMDSX), Auto Output Port (PORTAO, PORTAOX), and Inactivity Time (INACTTIME).

The following network parameters are obsolete: Port Bulk, Poll Time, Ack Time, Net Retry, and Net Timer 1.

- 6 Set "Scramble" to "Y" (the related TL1 keyword is SCRAMBLE).
- Scramble determines whether or not communications from the SSU will be scrambled.
- 7 Set the time and date at the SSU (The “ED-DAT” TL1 command can be used to set the time and date).
- 8 Set "Security/Password Required" switch and "Force Enable Local Port" switch (bit 3 of switch S4 on the NIMC assembly) to On.

**NOTE**

The SSU is now configured to communicate with the OSMF software. It can now be added to a synchronization map. When managing the SSU for the first time, you will need to enter its IP Address and Password. The IP address to use is the one specified in step 5-a of the above procedure, and the Password is the one specified in step 2.

**NIMC Assembly Switch Locations****NOTE**

If you are running or plan to install and run the OSMF client package, bit 8 of switch S6 on the NIMC assembly *must* be set to Off. When this switch is set to Off, the SSU will accept communications from any address.

If, as for security reasons, your situation requires that the SSU accept communication *only* from the OSMF host workstation address (IPEM1) or replication system address (IPEM2), bit 8 of switch S6 should be set to On. Note that when this switch is set to On, communications from *all other addresses* will be ignored, *including* client workstations.

