Symmetricom

Open System Management Framework (OSMF)

for HP-UX

Resiliency Option

Administrator's Guide

This manual provides information necessary to manage and maintain the OSMF Resiliency Option Primary and Secondary Master hardware and software.

For assistance, contact:

Symmetricom, Inc.
2300 Orchard Parkway
San Jose, CA 95131-1017

U.S.A. Call Center:
888-367-7966 (from inside U.S.A. only – toll free)
408-428-7907

U.K. Call Center:
+44.7000.111666 (Technical Assistance)
+44.7000.111888 (Sales)
+44.1604.586740

Fax: 408-428-7998

E-mail: ctac@symmetricom.com

Internet: http://www.symmetricom.com

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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Introduction and General Information

1.1 In This Guide

The *55452A OSMF Resiliency Option System Administrator's Guide* provides information necessary to manage and maintain the OSMF Resiliency Option Primary and Secondary Master hardware and software. It makes the assumption you have HP-UX, HP OpenView, and OSMF software experience.

1.1.1 Topics Included in This Guide

This guide includes the following topics:

*   A description of the software, as well as features supported in the current version of the software
*   Responsibilities of the system administrator
*   Basic system administration tasks, such as installing the software and running the scripts that are provided to manage replication of the OSMF databases
*   Troubleshooting recommendations

1.1.2 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
Resiliency Option	Resiliency Option, Resiliency, Replication option
Master Definition Site	Primary Master, primary
Secondary Master Site	Secondary Master, secondary, standby system
MDS Database	Primary Master database, primary database
Secondary Master database	secondary database
HP-UX Workstation	OSMF workstation, OSMF system, host system, element manager

1.2 Description of the OSMF Resiliency Option

The OSMF Resiliency Option provides the ability to continually replicate Oracle databases containing telecommunications-network management information, thus providing a fully functioning and up-to-date backup system (Secondary Master) that can be put into immediate use if the primary network-management workstation (Primary Master) fails. The Resiliency Option's database replication functions also ensure that little or no raw or processed performance, alarm, event, and configuration data is lost when the primary HP-UX workstation controlling telecommunications-network equipment goes off-line.

Since the Resiliency Option replicates user information at the level of the Oracle database only, changes to user information that are made at the Unix level are not replicated. Therefore, the system administrator must ensure that Unix-level user information is kept in synchronization on the Primary and Secondary Master workstations.

1.2.1 Features of the OSMF Resiliency Option - Version 1.3

The following features are included in version 1.3 of the Resiliency Option software:

*   The ability to continually replicate database information.
*   An up-to-date, working backup system that can immediately assume control of the network should the Primary system fail.
*   An executable that prepares the Primary and Secondary Master workstations for replication.
*   A menu-driven user interface (part of svadmin) that provides quick access to all Resiliency administration functions.
*   Menu commands that automate the processes of starting and stopping replication and relocating the Primary designation from one workstation to the other.
*   A menu command that reports the status of the Resiliency processes on either the Primary Master or the Secondary Master.

1.3 Responsibilities of the System Administrator

The system administrator is responsible for maintenance of the OSMF system and the Resiliency Option. This requires the system administrator to understand both the workstation hardware and all of the software installed in the Primary and Secondary Master workstations.

1.3.1 Main Responsibilities of the System Administrator

The main responsibilities of the system administrator are:

*   Installing the Resiliency Option software.
*   Preparing both the Primary and Secondary Master workstations for replication by running the svinstall_replication script on the Primary Master workstation.
*   Monitoring the condition of the Primary and Secondary Master systems using the health-check command (**Status of Resilience** svadmin menu command).
*   Moving the Primary designation from the Primary Master to the Secondary Master (using the svadmin utility) when the Primary Master goes off-line.
*   Removing the database from replication on the Primary Master workstation (using the svadmin utility) when the Primary Master workstation will be out of service for an extended period.
*   Removing the database on the Primary or Secondary Master workstation from replication as required.
*   Troubleshooting Resiliency Option problems.
*   Ensuring that Unix-level user information is kept in synchronization on the Primary and Secondary Master workstations (i.e., any user added at the Unix level on the Primary Master must also be added on the Secondary Master).

1.4 System Requirements

The software described in the following sections is required to run the OSMF Resiliency Option.

1.4.1 OSMF Software Requirements

The Resiliency Option requires an additional workstation running the HP UNIX (HP-UX) version 10.20 operating system and OSMF software version 3.0 with appropriate patches. The following is the recommended hardware configuration:

- C-Class HP Workstation C-240, C-200, C-180, or C-160
- 384 MB RAM
- 19-inch 1280-by-1024 Monitor

NOTE For additional information on required hardware and software, see the section titled "System Requirements" in the *55452A OSMF Software System Administrator's Guide*.

1.4.2 Oracle Database Requirements

Version 1.3 of the OSMF Resiliency Option is designed to work with release 7.3.3.*X.X* of the Oracle database.

1.5 Prerequisite Knowledge

The procedures in this manual assume that the system administrator has HP-UX, HP OpenView, and OSMF software experience. This knowledge is useful, and in some cases necessary when performing the tasks in this manual.

1.6 Related Documentation

Some procedures in this guide may refer you to procedures or other information that is contained in the *55452A OSMF Software System Administrator's Guide*. Information on svadmin, the system administration utility for the OSMF software, is also available in the *55452A OSMF Software System Administrator's Guide*.

2

Installation

2.1 In this Chapter

The procedures in this chapter explain how to install the files that comprise the Resiliency Option and how to prepare the Primary and Secondary Master workstations for database replication.

NOTES
- All procedures in this chapter explain how to accomplish tasks using a command-line interface.

- OSMF software, version 3.0 with appropriate patches is a prerequisite for version 1.3 of the Resiliency Option. Before installing the Resiliency Option, ensure that the OSMF software, version 3.0 with appropriate patches is installed on both workstations.

2.2 Installing the Resiliency Option

To install the Resiliency Option, use the OSMF software's 'swinstall' utility, as described in the following sections.

2.2.1 Backing 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 OSMF software, version 3.0 database.

Refer to the procedure entitled "OSMF Database Backup" in the "Backup Procedures" section of the "System Backup and Recovery" chapter of the *55452A OSMF Software System Administrator's Guide* for more information.

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

```
svstop
```

5 Log in as svroot, and type the following commands to stop the OSMF database:

```
cd /opt/smartview/config/DB
./svdbshut
```

2.2.2 Installing the Resiliency Option Software Using the Software Distributor

NOTE   User 'svroot' must not be logged into the system, and all svroot processes must be stopped
before the following steps are performed. You can use the following command to determine if
any svroot processes are running:

      ps -u svroot

This command returns no output unless one or more svroot processes are running.

1 Insert the Resiliency Option installation 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 15.

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

9 Double click **Install Software to Local Host**.

10 Click **Source Depot Type**, and then select **Local Tape**.

11 Click **Source Depot Path**, select the path to the local tape drive, and then click **OK**.

The path to the local tape drive is typically /dev/rmt/0m.

12 In the Software Selection window, highlight **55452CB**, and click on **Actions>Install (analysis)**.

Install analysis begins automatically, and it normally completes with a status of "Ready." If a
status other than "Ready" is indicated, click the **Logfile...** button in the "Install Analysis" dialog
box for information about the problem.

13 After install analysis completes, click **OK**, and then click **Yes** in the confirmation window that appears to start the execution phase of the install process.

14 When the status is shown as "`Completed`," and "`Percent Complete=100%`," click **Done**.

15 Click **File>Exit** to exit Software Distributor.

16 Click **File>Exit SAM** to end the software installation process and exit SAM.

2.2.3 Restarting the OpenView and OSMF Daemons

To complete the installation, use the following procedure to restart HP OpenView:

1 Log in as **root**, and type the following command to source the OSMF environment (this command must be run from the Korn shell [ksh]):

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

2 Type the following command to restart the HP OpenView processes:

```
svstart
```

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

3 Type the following command to ensure that the OSMF software-related processes are up:

```
svstatus
```

The "svstatus" command outputs a status report to the HP-UX window. The following shows
what the report contains if all OSMF software 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
-----------------------------------
```

Figure 2-1. Sample Output of the svstatus Command

2.3 Preparing the Workstations for Database Replication (Resilience)

Once the Resiliency Option files are installed, you must decide which workstation will become the Primary Master. Usually, this is the workstation that currently has an active OSMF system installed, is managing NEs, and is configured as IPEM1 in the SSUs. The database on this workstation becomes the primary database, and the information in it is retained. The secondary database is created on the Secondary Master workstation, and the information in the primary database is then replicated in the secondary database.

NOTES

- Since the secondary database is newly created, it should not contain any information until the information in the primary database is replicated to it. Any information that does exist in the secondary database is destroyed during the initial database replication process.

- The svinstall_replication script creates the Oracle users 'repadmin' and 'repsys' to support the replication processes. These users are required for replication of the Oracle databases only, so corresponding Unix user accounts are unnecessary.

- Before you run any of the Resiliency Option scripts, you must specify the correct hostname for user 'svroot' in $HOME/.rhosts on both workstations.

- Before issuing a command to start or stop the OSMF and HP OpenView daemon processes, you must log in as root.

Use the following procedure to create the database and install replication:

1 Add following entry to $HOME/.rhosts for user 'svroot' on both workstations:

```
hostname svroot
```

The correct hostname for user 'svroot' must be specified in $HOME/.rhosts on both workstations. If $HOME/.rhosts does not include the correct hostname for svroot on either system, replication cannot be installed.

2 Log in as svroot on the workstation that you have decided to define as the Secondary Master, and type the following commands to source the environment, and start the system administration utility:

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

3 Select "**Database Administration**" from the svadmin main menu by typing the number next to that menu item, then select the **"Create New Database"** option from the menu to set up the database.

4 Log in as root on the Primary Master workstation, and type the following commands to stop all of the daemon processes:

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

5 Type the following commands on the Primary Master workstation to activate replication:

```
. /opt/smartview/config/env/sv-ux.env
cd /opt/smartview/RD
./svinstall_replication database hostname
```

where *database hostname* is the hostname of the Secondary Master. Figure 2-2 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!!
###

Figure 2-2. Sample Output of the svinstall_replication Script

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 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.

6 On the Secondary Master workstation, select "**Resilience Administration**" from the svadmin main menu, then select the **"Remove Database From Replication"** option from the menu to remove the Secondary Master database from replication.

7 Log in as svroot on the Primary Master workstation, and type the following commands to reestablish execute permission for the svdbsetup script, and start the system administration utility:

```
cd /opt/smartview/config/DB
chmod +x svdbsetup
svadmin
```

8 Select "**Database Administration**" from the svadmin main menu, then select the **"Create New Database"** option from the menu to set up the database.

9 Log in as svroot on the Secondary Master workstation, and type the following commands to activate replication:

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

where *database hostname* is the hostname of the Primary Master.

NOTE The above step copies the data stored in the database of the Secondary Master to the database of the Primary Master. This has the effect of temporarily reversing the roles of the Primary and Secondary Masters. The following step should be performed on the workstation that will ultimately be the Primary Master workstation.

10 On the Primary Master workstation, select "**Resilience Administration**" from the svadmin main menu, then select the **"Relocate Primary Master Database"** option from the menu to relocate the database from the Secondary Master to the Primary Master.

11 Log in as svroot on the Secondary Master workstation, and type the following commands to verify that all operations performed so far have resulted in the successful set up of Resilience:

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

Figure 2-3 shows a sample of the screen output from svhrc.

```
=========================================================================

                                   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
=========================================================================
```

Figure 2-3. Output of Resiliency Health Check (svrhc)

If any problems are reported by svrhc, take whatever action is necessary to resolve these issues before proceeding. For additional information, see Chapter 4, "Troubleshooting."

3

Maintenance

3.1 In this Chapter

The OSMF software Resiliency Option ensures that there is little or no risk of data loss and that downtime is minimized as long as at least one of the two OSMF workstations in replication remains operational. To maximize uptime and data integrity and to help prevent a situation in which both OSMF workstations fail at the same time, the system administrator should perform certain maintenance tasks on the Primary and Secondary Master workstations on a regular basis. These maintenance tasks, which are designed to ensure that replication is operating properly, are described in this chapter.

NOTES
- For additional information regarding overall maintenance of OSMF systems, see the *55452A OSMF Software System Administrator's Guide*.

- The Resiliency Option does not provide an online status display to indicate the health of the replication processes. The **"Status of Resilience"** svadmin menu command, which checks the status of the Resiliency processes, is designed to determine and report the status of the systems in replication. It is up to the system administrator to schedule health checks to monitor the condition of the resilient systems and to take whatever actions are necessary to restore normal operation of the database replication processes when necessary.

3.1.1 Procedures in this Chapter

This chapter includes the following procedures:

- Checking the Resiliency status using the **"Status of Resilience"** svadmin menu command
- Relocating the Master Definition Site using the "**Relocate Primary Master Database**" svadmin menu command

3.2 Overview

The system administrator must determine, implement, and monitor a schedule of Resiliency health checks to ensure proper operation of the replication processes. If health checks are not scheduled frequently, the protection afforded by the Resiliency Option may be compromised, and data loss and downtime can result. Frequent health checks and timely responses to error conditions provide the highest levels of data integrity and system reliability.

3.3 Executing Commands

All commands that execute Resiliency Option scripts must be issued by user 'svroot.' The commands to start and stop the OSMF and HP OpenView daemon processes (svstart and svstop) must be issued by user 'root.' Before executing any commands, ensure that the OSMF environment is set by typing the following command:

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

3.4 Checking Resiliency Status

The Resiliency Option includes a svadmin menu command that runs svrhc to check the status of several aspects of the database replication system and report the results in a uniform on-screen display. The svadmin **Status of Resilience** command reports the following:

1. The designation of the databases participating in replication (i.e., Primary Master or Secondary Master).

2. The status of the replication system on participating databases. NORMAL indicates that the replication system is operating. QUIESCED indicates that either replication is currently being installed or a database is currently being added to the replication operation.

3. The status of the deferred execution job. If the Secondary Master database is down for an extended period, this job will fail (svrhc reports "Deferred Execution job status: BROKEN"). A cron job will attempt to revive the failed job every 20 minutes if the database is reachable at that time. However, when revival is attempted five times in succession, an email message is automatically sent to svroot. The failed job can be restarted manually after the cause of the failure is remedied by using the **Process Deferred Entries** command in the Resilience Administration Menu of the svadmin utility.

NOTE   When the secondary database is brought up after having been down for an extended period of time, the Status of Resilience command may report "Deferred Execution job status: BROKEN" even though the number of RPCs is declining (the declining number of RPCs signifies that the transactions are being replicated). In this situation, the BROKEN status indicator should be ignored. When the replication system completes the process of replicating the accumulated RPCs, the status report for the deferred execution job returns to NORMAL.

4. The number of entries in the replication catalog. Each entry in this catalog represents a Data Definition Language (DDL) change that has not been communicated from the Primary Master database to the Secondary Master database or a DDL change that could not be replicated in the Secondary Master database. This number should be zero except when a database is being installed or added to replication. If any entries are reported in the replication catalog (dba_repcatlog) table at any other time, contact technical support for assistance.

5. The number of entries in the replication catalog that have errors associated with them. Each entry that has an error associated with it represents an operation that failed when replication was attempted on the Secondary database. The message field in the dba_repcatlog table

contains an explanation of the failure. A non-zero value indicates that replication is not configured correctly. If svrhc reports any entries with errors in the dba_repcatlog table, contact technical support for assistance.

6. The current number of deferred transactions. Each deferred transaction is a transaction that has not yet been communicated to the Secondary Master. Each of these transactions may have multiple deferred RPC calls. Since the Resiliency Option supports only one active master at a time, the number of entries in the deferred transaction (deftran) table is significant for the current Primary Master only.

7. Reports the number of deferred RPC entries. This number should never exceed 10,000. The Resiliency Option runs a process every 20 minutes that monitors this value and automatically removes the Secondary Master workstation from replication if it exceeds 10,000. It is possible for svrhc to report a value in excess of 10,000 during the period between these checks. No action is necessary if this occurs, since the system will detect this and automatically remove the secondary database from replication on the next check.

8. The number of deferred errors. Each deferred error represents a deferred transaction that resulted in an error. This number is more significant on the Secondary Master than on the Primary Master. For additional information on the deferred error table, see Chapter 4, "Troubleshooting.

3.4.1 Running the Health-Check (Status of Resilience Menu Command/svrhc)

There are two ways to check the status of the replication processes. Both methods provide the same information.

3.4.1.1 Starting the Health Check from the Command Line

Use the following procedure to run the health check from the command line:

1 Log in as svroot on the both workstations, and type the following commands:

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

The three figures below (figures 3-1, 3-2, and 3-3) are examples of the output of the health check in three different cases, as explained in the caption for each figure. Note that these three cases do not necessarily indicate a functional problem with the system.

2 Review the contents of the displayed messages to determine the status of the replication processes.

If the status indicates one or more problems, see Chapter 4, "Troubleshooting."

```
========================================================================

                                  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
========================================================================
```

Figure 3-1. Output of Resiliency Health Check When Replication is Active, and Both Databases are Reachable

```
========================================================================

                                  hostname1           Hostname2(Unreachable)
========================================================================
Designation                       Primary-Master
Replication System Status         NORMAL
Deferred Execution job status     Working
Replication Catalog entries       0
Replication Catalog Error Entries 0
Deferred Transaction entries      0
Deferred RPCs entries             0
Deferred Error entries            0
  ======================================================================
```

Figure 3-2. Output of Resiliency Health Check When Replication is Active, but Other Database Participating in Replication is Unreachable

```
OSMF is not working in replication mode
```

Figure 3-3. Output of Resiliency Health Check When Replication is Not Active

3.4.1.2 Starting the Health Check from the svadmin *Status of Resilience* Menu Command

Use the following procedure to start the health check from the svadmin "Resilience Administration" menu:

1 Log in as svroot on both workstations, then type the following commands:

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

2 On each workstation, select **Resilience Administration** from the svadmin main menu by typing the number next to that menu item.

3 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) by typing the number next to that menu item. The three figures above (figures 3-1, 3-2, and 3-3) are examples of the output of the health check in three different cases, as explained in the caption for each figure.

3.5 Relocating the Master Definition Site

The most common reason for moving the Primary designation from the current Primary Master workstation to the current Secondary Master workstation is to allow maintenance or repairs to be performed on the Primary Master workstation. In these cases, the script that moves the Primary designation is run as part of the troubleshooting procedures in Chapter 4. There may, however, be other circumstances in which you might want to relocate the Master Definition Site. Use the following procedure to relocate the Master Definition Site from one workstation to the other (Figure 3-4 shows the screen output you see when you select "**Relocate Primary Master Database**" from the svadmin Resilience Administration menu):

1 Log in as root on the Primary Master workstation, and type the following commands to stop the OSMF and HP OpenView daemon processes on the Primary Master:

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

2 Log in as svroot on the workstation that you want to relocate the Master Definition Site *to* (during normal operation, this is most likely to be the workstation that is normally the Secondary Master), and type the following commands:

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

3 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

4 Select "**Relocate Primary Master Database**" from the "Resilience Administration" menu by typing the number next to that menu item.

Figure 3-4 shows a sample of the screen output that the Relocate Primary Master Database menu item provides.

```
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 !!
########################################################################
```

Figure 3-4. Sample Output of Relocate Primary Master Database

NOTES

- All OSMF and HP OpenView daemon processes must be stopped before selecting the Relocate Primary Master Database operation.

- The Relocate Primary Master Database operation logs in internally as 'repadmin' and uses 'repadmin' as its password. If the password for user 'repadmin' has been changed to anything else, the Relocate Primary Master Database operation will fail.

- The OSMF system allows the OSMF and HP OpenView daemon processes to be started on the Primary Master workstation only.

- If the original Master Definition Site (i.e., the normal Primary Master) will be offline for two or more days, or if the number of deferred RPC entries exceeds 10,000, the Secondary Master is automatically removed from replication. For information on removing the database from replication manually, see Chapter 4, "Troubleshooting."

4

Troubleshooting

4.1 In this Chapter

The information in this chapter describes what steps the system administrator should take if a problem occurs on the Primary Master workstation or the Secondary Master workstation. The procedures in this chapter cover the following situations:

1. The Primary Master is down, and the Secondary Master is up.

2. The Primary Master is up, the Secondary Master is down.

3. The health check reports that there are deferred error entries.

4. The secondary database is automatically removed from replication by the Resiliency Option software.

5. Alarms generated on the SSU are late in appearing in the alarm viewer.

The procedures for resolving the problems described in the first two scenarios are provided first in abbreviated form and then in a detailed, step-by-step procedure. No abbreviated procedures are provided for the remaining scenarios, since the procedures for resolving these problems are relatively short.

4.2 Scenario #1: Primary Master is Down; Secondary Master is Up

4.2.1 Outline of Procedure for Scenario #1

The following is an abbreviated procedure that describes the steps that the system administrator should take:

1. Remove the database on the Primary Master workstation from replication.

2. Start the OSMF and HP OpenView daemon processes on the Secondary Master workstation.

3. Use the Secondary Master to continue management operations until the Primary Master is restored to normal operation (the Secondary Master database is temporarily designated as the Primary).

4. Remedy the problem on the Primary Master.

5. Copy the database from the Secondary Master to the Primary Master.

6. Relocate the Primary designation from the Secondary Master workstation back to the Primary Master workstation.

7. Restart the OSMF and HP OpenView daemon processes on the Primary Master workstation.

8. Revert to the Primary Master workstation for network management operations.

4.2.2 Detailed Procedure for Scenario #1

Use the following procedure to restore replication in this scenario:

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

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

2 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

3 Select "**Remove Database from Replication**" from the "Resilience Administration" menu by typing the number next to that menu item.

Figure 4-1 shows a sample of the screen output from the svadmin "**Remove Database from Replication**" menu command.

```
1. Verifying that database on primary_master_hostname is part of replication system...
2. Verifying that there is more than one database in the replication system...
3. Removing database on primary_master_hostname from the replication system...
4. Synchronizing the OSMF users information
########################################################################
      Database has been removed from the replication system !!!
########################################################################
```

Figure 4-1. Sample Output of Remove Database from Replication Menu Command

NOTES
- Under normal circumstances, the OSMF and HP OpenView daemon processes would not be running on the Secondary Master at the time that the Primary Master went down. The daemon processes must not be running for the svadmin "**Remove Database from Replication**" menu command to run successfully.

- This script does not delete the database from the specified workstation. It simply prevents changes to this copy of the database from being replicated.

- The svadmin "**Remove Database from Replication**" menu command automatically relocates the MDS to the Secondary Master.

- The password for user 'repadmin' must be 'repadmin.' If this password is changed, the procedure aborts.

4 Log in as root on the Secondary Master workstation, and type the following commands to start the OSMF and HP OpenView daemon processes on the Secondary Master:

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

5 Perform all management operations from the Secondary Master workstation until the Primary Master workstation is restored to normal operation.

6 Troubleshoot and repair the problem on the Primary Master workstation.

7 On both workstations, log in as root, and type the following commands to stop the OSMF and HP OpenView daemon processes:

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

NOTE In normal circumstances, the OSMF and HP OpenView daemon processes are not running simultaneously on both workstations.

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

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

9 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

10 Select "**Add Database to Replication**" from the "Resilience Administration" menu by typing the number next to that menu item.

Figure 4-2 shows a sample of the screen output from the svadmin "**Add Database to Replication**" menu command.

```
1. Ascertaining that database is not already part of replication...
2. Ascertaining that replication system should have at least one and only one database...
3. Suspending master activities...
4. Add the database to the replicated system...
5. Waiting for the database synchronizing to be over...
6. Recompiling svroot object on machine primary_master and secondary_master database...
7. Generating the copy table script...
8. Copying tables to new site from existing site...
*************************************************************
DATABASE HAS BEEN ADDED TO THE REPLICATION SYSTEM !!!
*************************************************************
```

Figure 4-2. Sample Output of the Add Database to Replication Menu Command

NOTES   • This command removes all the existing data from the database on the other workstation and
              then copies all of the data from the current MDS (in this case, the Secondary Master
              workstation).

              • The password for user 'repadmin' must be 'repadmin.' If this password has been changed,
              the script will abort.

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

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

12 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to
that menu item.

13 Select "**Relocate Primary Master Database**" from the "Resilience Administration" menu by
typing the number next to that menu item. Figure 4-3 shows a sample of the screen output from
the svadmin "**Relocate Primary Master Database**" menu command.

```
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 !!
################################################################################
```

Figure 4-3. Sample Output of Relocate Primary Master Database Menu Command

NOTES   • All OSMF and HP OpenView daemon processes must be stopped before relocating the
              Primary Master database.

              • The "**Relocate Primary Master Database**" menu command logs in internally as 'repadmin'
              and uses 'repadmin' as its password. If the password for user 'repadmin' has been changed
              to anything else, the attempt to relocate the database will fail.

14 Log in as root on the Primary Master workstation, and type the following commands to start the
OSMF and HP OpenView daemon processes on the Primary Master:

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

15 Type the following commands on the Primary Master and Secondary Master workstations:

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

16 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

17 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) by typing the number next to that menu item. (For additional information on this command, see "Running the Health-Check (Status of Resilience Menu Command/svrhc)" in Chapter 3). Figure 4-4 shows a sample of the screen output of the "**Status of Resilience**" menu command.

```
=========================================================================

                                 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
=========================================================================
```

Figure 4-4. Output of Resiliency Health Check

18 If deferred errors are reported, perform the procedure in this chapter for Scenario #3.

4.3 Scenario #2: Primary Master is Up; Secondary Master is Down

4.3.1 Outline of Procedure for Scenario #2

If the database on the Secondary Master is not damaged, and the Secondary Master is down for two days or less (and the number of entries in the deferred RPC (defcall) table does not exceed 10,000), the only actions normally required for this scenario are to repair and restart the Secondary Master. However, if the database on the Secondary Master is damaged, the Secondary Master is down for more than two days, or the number of entries in the defcall table is 10,000 or more, it is necessary to remove the database on the Secondary Master from replication, and then copy the database from the Primary Master to the Secondary Master once the Secondary Master has been repaired.

NOTES
- Under normal transaction load conditions, the Secondary Master can be out of replication for up to two days (or until the number of entries in the defcall table reaches 10,000) with no adverse effects. If the Primary Master experiences abnormally high transaction load levels while the Secondary Master is out of service, or if the Secondary Master is out of service for more than two days (or if the number of entries in the defcall table exceeds 10,000), the replication queue on the Primary Master may consume all of the available space in the MDS database system tablespace.

- If the database on the Secondary Master is not damaged, and the system tablespace in the MDS database has not been overrun, the transactions that have accumulated in the replication queue on the Primary Master are automatically duplicated on the Secondary Master when the Secondary Master becomes available.

The following is an abbreviated procedure that describes the steps that the system administrator should take if the database on the Secondary Master is damaged, the Secondary Master is down for more than two days, or the number of entries in the defcall table is 10,000 or more:

1. Remove the database on the Secondary Master workstation from replication.

2. Continue network management operations from the Primary Master workstation.

3. Remedy the problem on the Secondary Master workstation.

4. Stop the OSMF and HP OpenView daemon processes on the Primary Master workstation.

5. Copy the database from the Primary Master workstation to the database on the Secondary Master workstation, and add the Secondary Master database to replication.

6. Start the OSMF and HP OpenView daemon processes on the Primary Master workstation, and resume management operations.

4.3.2 Detailed Procedure for Scenario #2

Use the following procedure to restore replication in this scenario:

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

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

2 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

3 Select "**Remove Database from Replication**" from the "Resilience Administration" menu by typing the number next to that menu item.

Figure 4-5 shows a sample of the screen output from the svadmin "**Remove Database from Replication**" menu command.

```
1. Verifying that database on secondary_master_hostname is part of replication system...
2. Verifying that there is more than one database in the replication system...
3. Removing database on secondary_master_hostname from the replication system...
4. Synchronizing the OSMF users information
########################################################################
        Database has been removed from the replication system !!!
########################################################################
```

Figure 4-5. Sample Output of Remove Database from Replication Menu Command

NOTES
  • This command does not delete the database from the other workstation. It simply prevents changes to this copy of the database from being replicated.

  • The password for user 'repadmin' must be 'repadmin.' If this password has been changed, the script will abort.

4 Continue network management operations from the Primary Master workstation.

5 Repair the problem on the Secondary Master workstation.

6 Log in as root on the Primary Master workstation, and type the following commands to stop all of the OSMF and HP OpenView daemon processes on the Primary Master:

> **`. /opt/smartview/config/env/sv-ux.env`**
> **`svstop`**

7 Type the following commands on the Primary Master:

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

8 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

9 Select "**Add Database to Replication**" from the "Resilience Administration" menu by typing
   the number next to that menu item.

   Figure 4-6 shows a sample of the screen output from the svadmin "**Add Database to
   Replication**" menu command.

   1. Ascertaining that database is not already part of replication...
   2. Ascertaining that replication system should have at least one and only one database...
   3. Suspending master activities...
   4. Add the database to the replicated system...
   5. Waiting for the database synchronizing to be over...
   6. Recompiling svroot object on machine *primary master* and *secondary master* database
   7. Generating the copy table script...
   8. Copying tables to new site from existing site...
   ****
   DATABASE HAS BEEN ADDED TO THE REPLICATION SYSTEM !!!
   ****

   Figure 4-6. Sample Output of the Add Database to Replication Menu Command

NOTES   • This operation removes all the existing data from the database on the other workstation and
             then copies all of the data from the current MDS (in this case, the Primary Master
             workstation).

          • The password for user 'repadmin' must be 'repadmin.' If this password has been changed,
             the script will abort.

10 Log in as root on the Primary Master workstation, and type the following commands to start the
    OSMF and HP OpenView daemon processes on the Primary Master:

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

11 Type the following commands on the Primary Master and Secondary Master workstations:

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

12 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to
    that menu item.

13 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) by typing the number next to that menu item. (For additional information
    on this command, see "Running the Health-Check (Status of Resilience Menu Command/svrhc)"
    in Chapter 3). Figure 4-7 shows a sample of the screen output of the "**Status of Resilience**"
    menu command.

```
========================================================================


                                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
========================================================================
```

Figure 4-7. Output of Resiliency Health Check

14 If Deferred Errors are reported, perform the procedure in this chapter for Scenario #3.

4.4 Scenario #3: Deferred Errors are Reported

The system administrator should use the following procedure if there are deferred errors immediately after running svinstall_replication or immediately after using the "**Add Database to Replication**" menu command in the svadmin "Resilience Administration" menu:

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

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

2 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

3 Select "**Process Deferred Entries**" from the "Resilience Administration" menu by typing the number next to that menu item.

4 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) by typing the number next to that menu item. (For additional information on this command, see "Running the Health-Check (Status of Resilience Menu Command/svrhc)" in Chapter 3). Figure 4-8 shows a sample of the screen output of the "**Status of Resilience**" menu command.

```
=======================================================================

                                  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
=======================================================================
```

Figure 4-8. Output of Resiliency Health Check

5 If this procedure executes successfully, as indicated by the output of the "**Status of Resilience**" menu command, the Resiliency Option is performing correctly. If this procedure does not execute successfully, call technical support for assistance.

4.5 Scenario #4: The Secondary Database is Automatically Removed from Replication

In normal operation, the replication system attempts to keep the Primary Master and Secondary Master databases synchronized by replicating all of the changes that are made to the Primary Master database in the Secondary Master database. The changes made to the Primary Master database are manifested as deferred transactions that are queued for processing on the Secondary Master. These transactions are applied to the Secondary Master database whenever this database is reachable.

If the Secondary Master database is unreachable for an extended period of time, a large number of deferred RPC calls accumulates. When the number of deferred RPC calls exceeds 10,000, a replication-system process automatically removes the Secondary Master database from replication to prevent the accumulated deferred RPC calls from consuming all of the available system tablespace on the Primary Master. The process that removes the Secondary Master database from replication also notifies the system administrator (svroot user) of this action via e-mail.

The system administrator should use the following procedure when an e-mail notification of automatic Secondary Master database removal is received:

1 Determine why the Secondary Master database is unreachable.

2 Correct the problem.

3 Type the following commands on the Primary Master:

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

4 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

5 Select "**Add Database to Replication**" from the "Resilience Administration" menu by typing the number next to that menu item.

    Figure 4-9 shows a sample of the screen output from the svadmin "**Add Database to Replication**" menu command.

1. Ascertaining that database is not already part of replication...
2. Ascertaining that replication system should have at least one and only one database...
3. Suspending master activities...
4. Add the database to the replicated system...
5. Waiting for the database synchronizing to be over...
6. Recompiling svroot object on machine *primary master* and *secondary master* database
7. Generating the copy table script...
8. Copying tables to new site from existing site...
****
DATABASE HAS BEEN ADDED TO THE REPLICATION SYSTEM !!!
****

Figure 4-9. Sample Output of the Add Database to Replication Menu Command

NOTES • This operation removes all the existing data from the database on the other workstation and then copies all of the data from the current MDS (in this case, the Primary Master workstation).

• The password for user 'repadmin' must be 'repadmin.' If this password has been changed, the script will abort.

6 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) by typing the number next to that menu item. (For additional information on this command, see "Running the Health-Check (Status of Resilience Menu Command/svrhc)" in Chapter 3). Figure 4-10 shows a sample of the screen output of the "**Status of Resilience**" menu command.

```
=========================================================================

                                    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
=========================================================================
```

Figure 4-10. Output of Resiliency Health Check

4.6 Scenario #5: Alarms are Appearing Late in the Alarm Viewer

When the Primary Master receives alarms that are generated on the SSU while the Secondary Master database is unreachable, the Oracle server attempts to send the deferred transactions to the Secondary Master before it begins to process the alarms. The Oracle scheduler does not immediately detect that the secondary database is down, and it does not stop sending deferred transactions and process the alarms until it does. The server continues in this state until the deferred transaction job is flagged as broken, which can take up to 20 minutes. You can override this condition using the following procedure:

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

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

2 Select "**Resilience Administration**" from the svadmin main menu by typing the number next to that menu item.

3 Select "**Process Deferred Entries**" from the "Resilience Administration" menu by typing the number next to that menu item.

4 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) by typing the number next to that menu item. (For additional information on this command, see "Running the Health-Check (Status of Resilience Menu Command/svrhc)" in Chapter 3). Figure 4-11 shows a sample of the screen output of the "**Status of Resilience**" menu command.

```
=========================================================================

                                 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
=========================================================================
```

Figure 4-11. Output of Resiliency Health Check

A

MAN Pages

A.1 MAN Pages

This appendix contains a printed version of the MAN pages for the commands that are included in the Resiliency Option. Where appropriate, an illustration of the screen output of each script is provided.

NAME

svinstall_replication

SYNOPSIS

svinstall_replication *<database hostname>*

DESCRIPTION

This script installs database replication on the OSMF system. Both sites that are to be involved in replication (the site the script is executed from and the site specified in the command-line argument) must have version 3.0 of the OSMF software installed. The site from which the script is executed is designated as the Primary Master, and the site specified in the command-line argument *<database_hostname>* is designated as the Secondary Master.

Before you run this script, you must specify the correct hostname for user 'svroot' in $HOME/.rhosts on both workstations, and log in as svroot.

This script copies the records in the Primary Master database to the Secondary Master database after removing any existing data from the designated Secondary Master database. The time required to install replication varies with network bandwidth, the number of existing records in the Primary and Secondary Master databases, and other factors.

When replication is installed, a large number of archive redo log files are generated. You can safely remove the archive redo log files from the $ORACLE_BASE/admin/SV30/arch directory on both machines to make more disk space available (these files are automatically removed when you run svdbbackup).

This script should never be run after replication is successfully installed.

All OSMF and HP OpenView daemon processes must be stopped before running this script, and you must be logged in as svroot to run it. svinstall_replication logs in internally as user 'sys' using 'change_on_install' as the password. If the password for user 'sys' has been changed, it must be changed back to 'change_on_install' for this script to run successfully.

This script creates two internal Oracle users, repadmin (password repadmin) and repsys (password repsys). The passwords for these Oracle users must not be changed without contacting technical support.

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!!
###

Figure A-1. Sample Output of the svinstall_replication Script

NAME

svremove_database.ks

SYNOPSIS

svremove_database.ks <*database hostname*>

DESCRIPTION

This script removes the OSMF database on the workstation specified in the argument <*database hostname*> from replication. This is required if the standby machine is down and might remain down for an extended period of time. This script does not delete the database itself from the specified hostname. It prevents the changes recorded in the Primary Master database during normal OSMF operation from being communicated to the Secondary Master database.

NOTE   It is not necessary to run this script manually. Instead, run svadmin, and choose **Remove Database from Replication** from the Resilience Administration menu.

You cannot run svremove_database.ks on the workstation that contains the database that is to be removed from replication. For example, if 'hn1' and 'hn2' are participating in replication, and you want to remove 'hn2' from replication, you must run svremove_database.ks from 'hn1'.

If the database being removed from replication is the current Primary Master database, this script relocates the Primary Master site designation to the other database that is presently in replication, because the OSMF software requires the OSMF and HP OpenView daemon processes to be running on the Primary Master site only.

All OSMF and HP OpenView daemon processes must be stopped before running this script, and you must be logged in as svroot to run it. svinstall_replication logs in internally as user 'sys' using 'change_on_install' as the password. If the password for user 'sys' has been changed, it must be changed back to 'change_on_install' for this script to run successfully.

```
1. Verifying that database on primary_master_hostname is part of replication system...
2. Verifying that there is more than one database in the replication system...
3. Removing database on primary_master_hostname from the replication system...
4. Synchronizing the OSMF users information
#########################################################################
      Database has been removed from the replication system !!!
#########################################################################
```

Figure A-2. Sample Output of the svremove_database.ks Script

NAME

svrelocate_master.ks

SYNOPSIS

svrelocate_master.ks

DESCRIPTION

This script relocates the Master Definition Site from the current Primary site to the site from which the script is executed. svrelocate_master.ks does not require any command line parameters, since it obtains the name of the workstation on which it is executed from the 'hostname' command, and it obtains the name of the current Primary Master from the database. The OSMF software requires the OSMF and HP OpenView daemon processes to be running on the Primary Master site only.

Before you run this script, you must specify the correct hostname for user 'svroot' in $HOME/.rhosts on both workstations, and log in as svroot.

NOTE   It is not necessary to run this script manually. Instead, run svadmin, and choose **Relocate Primary Master Database** from the Resilience Administration menu.

All OSMF and HP OpenView daemon processes must be stopped before running this script, and you must be logged in as svroot to run it. svrelocate_master.ks logs in internally as user 'sys' using 'change_on_install' as the password. If the password for user 'sys' has been changed, it must be changed back to 'change_on_install' for this script to run successfully.

```
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 !!
##########################################################################
```

Figure A-3. Sample Output of the svrelocate_master.ks Script

NAME

svadd_database.ks

SYNOPSIS

svadd_database.ks *<database hostname>*

DESCRIPTION

Run this script to include the Secondary Master workstation in the replication processes when it was previously removed from the replication system. svadd_database.ks must be executed from the current Primary Master site (which is currently the only site participating in the replication processes). The value of the database argument *<database hostname>* should be the hostname of the Secondary Master.

NOTE It is not necessary to run this script manually. Instead, run svadmin, and choose **Add Database to Replication** from the Resilience Administration menu.

Before you run this script, you must specify the correct hostname for user 'svroot' in $HOME/.rhosts on both workstations, and log in as svroot.

This script removes any existing data from the database which is being added and brings this database into synchronization with the Primary Master database.

All OSMF and HP OpenView daemon processes must be stopped before running this script, and you must be logged in as svroot to run it. svadd_database.ks logs in internally as user 'sys' using 'change_on_install' as the password. If the password for user 'sys' has been changed, it must be changed back to 'change_on_install' for this script to run successfully.

```
1. Ascertaining that database is not already part of replication...
2. Ascertaining that replication system should have at least one and only one database...
3. Suspending master activities...
4. Add the database to the replicated system...
5. Waiting for the database synchronizing to be over...
6. Recompiling svroot object on machine primary master and secondary master database
7. Generating the copy table script...
8. Copying tables to new site from existing site...
************************************************************
DATABASE HAS BEEN ADDED TO THE REPLICATION SYSTEM !!!
************************************************************
```

Figure A-4. Sample Output of the svadd_database.ks Script

NAME

svrhc

SYNOPSIS

svrhc

DESCRIPTION

This script reports the current state of the replication system in terms of various health parameters.

NOTE   The Resiliency Option includes an svadmin menu command (**Status of Resilience**) that checks the status of several aspects of the database replication system and reports the results in a uniform on-screen display.

The health parameters are

1.   The designation of the databases participating in replication (i.e., Primary Master or Secondary Master).

2.   The status of the replication system on participating databases. NORMAL indicates that the replication system is operating. QUIESCED indicates that either replication is currently being installed or a database is currently being added to the replication operation.

3.   The status of the deferred execution job. If the Secondary Master database is down for an extended period, this job will fail (svrhc reports "Deferred Execution job status: BROKEN"). A cron job will attempt to revive the failed job every 20 minutes if the database is reachable at that time. However, when revival is attempted five times in succession, an email message is automatically sent to svroot. The failed job can be restarted manually after the cause of the failure is remedied by using the **Process Deferred Entries** command in the Resilience Administration Menu of the svadmin utility.

NOTE   When the secondary database is brought up after having been down for an extended period of time, the Status of Resilience command may report "Deferred Execution job status: BROKEN" even though the number of RPCs is declining (the declining number of RPCs signifies that the transactions are being replicated). In this situation, the BROKEN status indicator should be ignored. When the replication system completes the process of replicating the accumulated RPCs, the status report for the deferred execution job returns to NORMAL.

4.   The number of entries in the replication catalog. Each entry in this catalog represents a Data Definition Language (DDL) change that has not been communicated from the Primary Master database to the Secondary Master database or a DDL change that could not be replicated in the Secondary Master database. This number should be zero except when a database is being installed or added to replication. If any entries are reported in the replication catalog (dba_repcatlog) table at any other time, contact technical support for assistance.

5.   The number of entries in the replication catalog that have errors associated with them. Each entry that has an error associated with it represents an operation that failed when replication

was attempted on the Secondary database. The message field in the dba_repcatlog table contains an explanation of the failure. A non-zero value indicates that replication is not configured correctly. If svrhc reports any entries with errors in the dba_repcatlog table, contact technical support for assistance.

6. The current number of deferred transactions. Each deferred transaction is a transaction that has not yet been communicated to the Secondary Master. Each of these transactions may have multiple deferred RPC calls. Since the Resiliency Option supports only one active master at a time, the number of entries in the deferred transaction (deftran) table is significant for the current Primary Master only.

7. Reports the number of deferred RPC entries. This number should never exceed 10,000. The Resiliency Option runs a process every 20 minutes that monitors this value and automatically removes the Secondary Master workstation from replication if it exceeds 10,000. It is possible for svrhc to report a value in excess of 10,000 during the period between these checks. No action is necessary if this occurs, since the system will detect this and automatically remove the secondary database from replication on the next check.

8. The number of deferred errors. Each deferred error represents a deferred transaction that resulted in an error. This number is more significant on the Secondary Master than on the Primary Master. For additional information on the deferred error table, see Chapter 4, "Troubleshooting.

```
=========================================================================

                                   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
=========================================================================
```

Figure A-5. Sample Output of the svrhc Script

NAME

svstart_dj.ks

SYNOPSIS

svstart_dj.ks

DESCRIPTION

This script performs the following jobs:

1. Resolves any distributed transactions that are in doubt.

2. Revives the deferred execution job, if this job is broken, and the Secondary Master database is reachable.

3. Attempts to re-execute any deferred transaction that resulted in an error.

This script runs automatically every 20 minutes as part of a cron job.

NOTE   It is not necessary to run this script manually. Instead, run svadmin, and choose **Process Deferred Entries** from the Resilience Administration Menu.