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## HA Installation Guide

# **Solstice Enterprise Manager™ 4.1**

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Part No. 806-7975-10  
October 2001, Revision A

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# Preface

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This manual explains how to install and configure the High Availability (HA) option for Solstice Enterprise Manager 4.1 (Solstice EM).

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## Who Should Use This Book

This book is written for users installing and using High Availability for Solstice EM (SEM-HA) and who are familiar with Solstice EM 4.1, Sun Cluster 3.0 software, and Solaris™ 8.0 operating environment.

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## Before You Read This Book

If you are unfamiliar with Sun Clusters, read the following documents for an overview of the Sun Cluster functions, features, and components:

- *Sun Cluster 3.0 Concepts*
- *Sun Cluster 3.0 Installation Guide*
- *Sun Cluster 3.0 System Administration Guide*
- *Sun Cluster 3.0 Release Notes*
- *Sun Cluster 3.0 Hardware Guide*
- *Sun Cluster 3.0 Error Messages Guide*

If you have just acquired Solstice EM, read:

- *Installation Guide*
- *Managing Your Network*
- *Release Notes*

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# How This Book is Organized

This book contains the following chapters:

**Chapter 1 “Preparing for SEM-HA Installation”** describes the installation requirements and other information you need before installing SEM-HA.

**Chapter 2 “Installing SEM-HA”** explains how to install SEM-HA.

**Chapter 3 “Running SEM-HA”** describes the procedures for registering and running SEM-HA.

**Chapter 4 “Removing the SEM-HA Software”** explains how to remove SEM-HA.

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## Related Books

Developers writing services for Solstice EM may refer to the *Sun Cluster 3.0 Data Services Developers’ Guide*, *Sun Cluster 3.0 Data Services Installation, and Configuration Guide* for instructions on how to make the services highly available.



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# Conventions Used in This Book

This section describes the conventions used in this book.

## What Typographic Changes Mean

The following table describes the typographic changes used in this book.

TABLE P-1    Typographic Conventions

Typeface or Symbol	Meaning	Example
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>machine_name%</code> You have mail.
<b>AaBbCc123</b>	What you type, contrasted with on-screen computer output	<code>machine_name%</code> <b>su</b> Password:
<i>AaBbCc123</i>	Command-line placeholder: replace with a real name or value	To delete a file, type <code>rm filename</code> .
<i>AaBbCc123</i>	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be root to do this.

## Shell Prompts in Command Examples

All command-line examples in this guide use the C-shell environment. If you use either the Bourne or Korn shells, refer to `sh(1)` and `ksh(1)` man pages for command equivalents to the C shell. The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

**TABLE P-2** Shell Prompts

Shell	Prompt
C shell prompt	hostname%
C shell superuser prompt	#
Bourne shell and Korn shell prompt	hostname\$
Bourne shell and Korn shell superuser prompt	#

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Also, you can view the online documentation by pointing your browser to the following URL, `file:/opt/SUNWconn/em/docs/SEMDOCHP/index.html`

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# Preparing for SEM-HA Installation

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This chapter describes the installation requirements and other information you need before installing High Availability for Solstice EM (SEM-HA). It also contains a checklist to use if you have a problem installing the software. The checklist outlines the information you need to provide if you call customer support.

The following topics are covered in this chapter:

- Section 1.1 “Overview” on page 1-1
- Section 1.2 “System Requirements” on page 1-2
- Section 1.3 “Information you Provide” on page 1-3
- Section 1.4 “Getting Help” on page 1-3

---

## 1.1 Overview

SEM-HA enables Solstice EM to be *highly available* when supported by a cluster of servers (Sun Cluster Servers). A highly available system contains no single point of failure.

Sun Cluster provides high availability support for data service applications, such as Solstice EM. In a HA environment (such as Solstice EM) the software application runs on the primary server. If the primary server fails, a backup server in the cluster takes over designated applications from the primary server, and then applications are able to resume services with minimal disruption.

For more information on Sun Cluster high availability feature, refer to the *Sun Cluster 3.0 Concepts Guide*.

---

## 1.2 System Requirements

Your system must meet the following hardware and software requirements before SEM-HA can be installed.

### 1.2.1 Hardware Requirements

SEM-HA runs on any hardware supported by the Sun Cluster 3.0 configuration and Solstice EM 4.1.

A cluster configuration will have:

- Two or more servers with local storage
- Shared storage in the form of multihosted disks or RAID arrays
- Cluster interconnect
- Public Network Interface

For setting up the cluster hardware, refer to *Sun Cluster 3.0 Hardware Guide*

You will also need the following:

1. A CD-ROM drive (local or remote).
2. No additional space is required beyond the memory requirements for Solstice EM 4.1.
3. Superuser password for the machines on which you are installing the High Availability option

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**Note** – If the CD-ROM drive is on a different machine, you must have the superuser password for that machine as well.

---

### 1.2.2 Software Requirements

The following software must be installed successfully before you can install SEM-HA:

- Solaris 8.0 operating environment
- Sun Cluster 3.0 with Volume Management Software (viz. Solstice DiskSuite (SDS) or Veritas Volume Manager)

---

## 1.3 Information you Provide

Read through the Chapter 2, then complete the checklist in TABLE 1-1. You must be able to answer yes or have the appropriate information for each of the questions. If you have problems with your installation, you will need this information when you call customer support.

**TABLE 1-1** Installation Checklist

Question	Answer
Do you have a Database Administrator Password?	_____
Do you have the superuser password for all the machines comprising the cluster where the Solstice EM software is installed?	_____
Do you have access to a local or remote CD-ROM drive? (The remote drive can be attached to a machine running SunOS 4.x or later.)	_____
If remote, what is the host name of the machine to which the CD-ROM drive is attached?	_____
Is your installation setup running the Solaris 8 operating environment?	_____
Is your installation setup running Sun Cluster 3.0 with Volume Manager?	_____
Are your installation machines Sun SPARC machines?	_____
Is the installation medium a CD-ROM?	_____
Do you have a valid IP address and name of the logical host?	_____
Do you have the global file system configured?	_____
Does the superuser have read, write, and execute access to the installation directory where the Solstice EM 4.1 software is being installed?	_____

---

## 1.4 Getting Help

If you have problems installing or using SEM-HA, you can call your authorized service provider and have the following information ready:

- Model number of the machine
- Serial number of the machine
- SunOS release number
- Solstice Cluster release number
- Solstice EM release number

You can display information needed for help calls by entering the **showrev** command. Your screen will display information similar to the following:

```
saturn# showrev
Hostname: saturn
Hostid: 80f2614b
Release: 5.8
Kernel architecture: sun4u
Application architecture: sparc
Hardware provider: Sun_Microsystems
Domain: blr03-01.India.sun.com
Kernel version: SunOS 5.8 Generic February 2000
saturn#
```

# Installing SEM-HA

---

This chapter provides instructions for installing High Availability for Solstice EM (SEM-HA).

The chapter describes the following topics:

- Section 2.1 “Summary of Installation Procedure” on page 2-1
- Section 2.2 “Choosing a Directory for SEM-HA Installation” on page 2-2
- Section 2.3 “Configuring Cluster for SEM-HA” on page 2-3
- Section 2.4 “Installing SEM-HA” on page 2-4
- Section 2.5 “Post-Installation Procedure” on page 2-5
- Section 2.6 “What to do Next” on page 2-6

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## 2.1 Summary of Installation Procedure

Installing HA comprises:

1. Reading and understanding the contents of this chapter.
2. Planning your installation layout based on your administrative needs.
3. Filling up the Installation Checklist.
4. Running the installation program from the product CD-ROM.
5. Responding correctly to the prompts displayed by the install program.
6. Running the post-installation procedures, see “Post-Installation Procedure” on page 5.

---

## 2.2 Choosing a Directory for SEM-HA Installation

While installing SEM-HA you will be prompted to choose a default/non-default location for the software. The choice of default or non-default is an individual judgement based on the administrative needs of your system.

### 2.2.1 Installing to a Default Location

If you choose to locate the software in the default location, *install* will place all the software files in a location on the global file system that you specify. The advantage of choosing the default location is that all the files used by Solstice EM will be on the highly available global system. Should any node crash, the files on the global file system are still available since they are on the shared multihosted disks. If you have chosen to mirror the disks on the multihosted disks, the files will also be protected against individual failures of the multihosted disks.

---

**Note** – To find out how to use disk-mirroring in the multihosted disks, refer the Volume Manager documentation for the volume manager that has been installed in your Cluster.

---

Another advantage of placing all the files in the global file system is that there will be only one copy of the files, making administration easier.

---

**Note** – There are some files that cannot be placed on the global file system. These will always be installed on the local disk.

---

If you choose to use the default install location, there are some issues that you should consider.

- While installing SEM-HA, the install program will set up links from the location on the shared disk that you chose, to the directories where Solstice EM expects to find the files (on local disk). You should be aware that some of Sun's unbundled products cannot be installed in this fashion. In these cases, *install* will install these products on the local disk only.
- If you need to install any patches on an existing installation of SEM-HA, these patches must be installed on each node, in order to update the respective patch database. However while installing on the second and subsequent nodes, you may get an error from the `patchadd(1M)` utility indicating that checksum



validation has failed. This is because the relevant files have already been modified on the global disk. To avoid this use `patchadd -u` to unconditionally install the patch on all the remaining nodes.

## 2.2.2 Installing to a Non-default Location

If you choose a non-default location you have the option of specifying the location, either on local disk or on the global file system. If you choose the global file system, make sure that the directory that you specify exists on the global file system. The SEM-HA install program will not create it for you.

---

**Note** – There are some files that cannot be placed on the global file system. These will always be installed on the local disk.

---

---

**Note** – Runtime data will always be stored on the global file system. This is because this data will be used and modified by Solstice EM when it is running on any of the cluster nodes, and hence should be in a common location. Because of this you will have to specify a location on the global file system for this data.

---

If you choose to install on the local disk of each node, the installation program will create separate copies of the executable files on the local disk of each node.

---

**Note** – You cannot install SEM-HA on different directories for each node on the global file system.

---

---

## 2.3 Configuring Cluster for SEM-HA

To configure cluster you will have to perform the following steps:

1. **Make sure Sun Cluster 3.0 is installed correctly with Solstice DiskSuite or Veritas Volume Manager**
2. **Identify Shared File System**
  - Obtain the directory/path where the shared file system resides (typically, `/global/disk set/application`). The Solstice EM 4.1 platform for HA will be installed there.
  - The HA specific packages will be installed on the local disks for each node.

### 3. Identify Cluster Resources

- Decide which resource group should contain the SEM-HA data service (`em_services`) resource.
- Obtain the host name and IP address for SEM-HA to use as logical host (exclusively used for SEM-HA).
- Decide on a name for the logical hostname resource
  - There should be exactly one logical host resource in the group that contains `em_services`
  - The name of the resource should be unique to the cluster
  - The logical host resource should be configured exactly with one host name only and not with multihomed host.

You can configure the logical host yourself before installing SEM-HA using the relevant Sun Cluster commands or let the install program do it for you.

---

## 2.4 Installing SEM-HA

Perform the following steps to install SEM-HA.

#### 1. Begin by installing SEM-HA on the primary cluster node.

For installing, follow the installation procedure as instructed in the *Solstice EM 4.1 Installation Guide*.

#### 2. Choose Yes when asked by the install program Would you like to install EM for High Availability, and follow the steps as instructed on the screen.

---

**Note** – If you are not asked Would you like to install HA, then check your Sun Cluster installation.

---

---

**Note** – Do not use the `pkgadd` utility to install SEM-HA.

---

#### 3. Run the install program on each secondary node successively.

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**Note** – Do not run the install program simultaneously on more than one node.

---

#### 4. Perform the Post-Installation procedure.

---

## 2.5 Post-Installation Procedure

---

**Note** – SEM-HA should have been successfully installed on all nodes before you can execute the following steps.

---

After SEM-HA has been installed successfully without errors on all the cluster nodes, on the primary node do the following:

**1. Run the `scstat(1M)` cluster command and make sure that:**

- The group containing `em_services` is online,
- The logical host resource is online, and
- The `em_services` data service resource is offline.

If the status of the resource group and the resources are not as above, then use the `scswitch(1M)` cluster command to change the on/offline status.

**2. If the status of the resource group and the resources are as specified above, execute the command:**

```
/opt/SUNWconn/em/bin/get_local_host
```

If you have chosen to install in a non-default directory, then this command must be prepended by the appropriate path.

Make sure that the `get_local_host` command returns the name of the logical host and not the actual physical hostname.

**3. Run the command:**

```
em_services -reload
```

This will install the databases.

---

**Note** – If you have to load large amounts of configuration information, you may want to add `-nomonit` option to disable the monitor.

---

4. After the reload is successfully completed, and the platform comes up, stop the platform by executing:

```
em_services -stop
```

5. Now, on a secondary node, repeat steps 1-4 above.

---

**Note** – Make sure that the `em_services` data service is always offline.

---

6. Repeat the above step on every secondary node.
7. On the primary node bring the group containing `em_services` online, by executing:

```
swwswitch -z -g <groupname> -h <primary node name>
```

Now, enable the `em_services` data service by executing:

```
scswitch -e -j em_services
```

8. Check that the platform comes up successfully.

The platform is now running in HA mode.

---

## 2.6 What to do Next

After completing the installation, continue with the registering and running SEM-HA. Chapter 3 includes instructions for registering and running the Solstice EM with the high availability option.

## Running SEM-HA

---

This chapter provides instructions for registering High Availability for Solstice EM (SEM-HA) and running the Solstice EM data services.

The chapter describes the following topics:

- Section 3.1 “Licensing SEM-HA” on page 3-1
- Section 3.2 “Running SEM-HA” on page 3-1
- Section 3.3 “Setting up Internationalization and Localization of SEM-HA” on page 3-2

---

### 3.1 Licensing SEM-HA

Solstice EM must be licensed on all the nodes. For licensing information refer to Chapter 5 in the *Solstice EM 4.1 Installation Guide*.

---

### 3.2 Running SEM-HA

1. The logical host must be online for the SEM-HA to run. Refer to the *Sun Cluster Administration Guide* and/or manual pages on how to bring a resource online.
2. At the time of system boot, if the resource group containing SEM-HA data service is online, then SEM-HA will start the platform in HA mode. When a node failure is detected, platform will be restarted on the backup node.
3. You can manually `stop/abort` a running platform at any time. (The Data Service status will still indicate online.)
4. You can manually start the platform by running `em_services`

---

**Note** – The online/offline status of `em_services` refers to the behavior when a node boots up or when the `em_services` is switched over to another node. If its state is online, then the platform will be started by the cluster.

---

The `scstat(1M)` gives the status of the logical host data service. See `scstat(1M)` man page for more information. The `scswitch(1M)` can be used to manipulate the data service and logical host.

---

## 3.3 Setting up Internationalization and Localization of SEM-HA

Internationalization is a method of designing and producing software that facilitates easy adaptation to local markets. SEM-HA has been internationalized to support several languages with minimum effort. SEM-HA and all supporting programs have been brought to level four compliance with full support of text and code sets, formats, and collation, messages and text presentation, and Asian language support.

Localization is the process of preparing SEM-HA for a specific locale. The localization process includes the translation of the message files, compiling the translated message files, and installing the message catalog.

The localization and internationalization processes are discussed in the *Solaris International Developer's Guide*, a Prentice Hall/SunSoft Press book (ISBN 0-13-031063-8).

### ▼ To Localize SEM-HA

To localize SEM-HA, you will need to carry out the following procedure.

1. **Login as `root` or become the superuser.**
2. **Change directories to where the text files are located.**

```
# cd /install directory/SUNWconn/em/lib/locale/en_US/LC_MESSAGES
```

3. **Translate the messages contained in the Solstice EM application message files for the target locale.**

One message file exists for SEM-HA: `emhareg.po`

4. Create the message file with the following command.

```
# msgfmt -o em.mo *.po
```

5. Install the message file.

```
# mkdir ../LANG/LC_MESSAGES  
# cp em.mo ../LANG/LC_MESSAGES
```

## ▼ To use Localized SEM-HA

To use the localized SEM-HA, you need to set the following environment variables.

1. First, set the environment variable `LANG` to your locale. Using Japan (JA) as an example, this would be the following in a C-shell:

```
hostname% setenv LANG ja
```

2. The equivalent in a Korn or Bourne shell is:

```
hostname$ LANG=ja; export LANG
```

3. Set the `NLSPATH` environment variable to provide the path to the localized message catalog for the internationalized applications.

```
hostname% setenv NLSPATH <path_to_catalog>/%N
```





## Removing the SEM-HA Software

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This chapter describes how to remove High Availability for Solstice EM (SEM-HA) from the Solstice EM platform.

The chapter describes:

- Section 4.1 “Removing the SEM-HA” on page 4-1

---

### 4.1 Removing the SEM-HA

You might want to remove SEM-HA from your machine, if, for example, you want to run Solstice EM in a non-HA mode, or uninstall the Solstice EM software completely. For instructions on how to uninstall Solstice EM software refer to Chapter 7 in the *Solstice EM 4.1 Installation Guide*.

---

**Note** – If you want to run Solstice EM in a non HA mode you must first uninstall SEM-HA, and then re-install Solstice EM, answering No when prompted if you want to install SEM-HA.

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**Note** – Deselecting SEM-HA option during Solstice EM installation process does not uninstall SEM-HA.

---

#### ▼ To Uninstall SEM-HA

- Bring the `em_services` data service offline, refer to the *Sun Cluster 3.0 Administration Guide*. This will stop the platform.
- Delete the `em_services` resource.

- Uninstall the Solstice EM.
- If you want to re-install Solstice EM in non-HA mode, run the install program again and choose No when prompted if you want to install SEM-HA.

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