Sun Cluster Data Service for WebLogic Server Guide for Solaris OS

SPARC Platform Edition

Adobe PostScript™

050504@11223

Contents

Preface

Sun Cluster Data Service for WebLogic Server Guide for Solaris OS explains how to install and configure Sun™ Cluster HA for BEA WebLogic Server.

This document is intended for system administrators with extensive knowledge of Sun software and hardware. Do not use this document as a planning or presales guide. Before reading this document, you should have already determined your system requirements and purchased the appropriate equipment and software.

The instructions in this document assume knowledge of the Solaris™ Operating System (Solaris OS) and expertise with the volume manager software that is used with Sun Cluster.

UNIX Commands

This document contains information about commands that are specific to installing and configuring Sun Cluster data services. The document does *not* contain comprehensive information about basic UNIX® commands and procedures, such as shutting down the system, booting the system, and configuring devices. Information about basic UNIX commands and procedures is available from the following sources:

- Online documentation for the Solaris Operating System
- Solaris Operating System man pages
- Other software documentation that you received with your system

Typographic Conventions

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

TABLE P–1 Typographic Conventions

Typeface or Symbol	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name% `**`su`** `Password:`
AaBbCc123	Command-line placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. Perform a *patch analysis*. Do *not* save the file. [Note that some emphasized items appear bold online.]

Shell Prompts in Command Examples

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	`machine_name%`
C shell superuser prompt	`machine_name#`
Bourne shell and Korn shell prompt	`$`

TABLE P–2 Shell Prompts   *(Continued)*

Shell	Prompt
Bourne shell and Korn shell superuser prompt	#

Related Documentation

Information about related Sun Cluster topics is available in the documentation that is listed in the following table. All Sun Cluster documentation is available at `http://docs.sun.com`.

Topic	Documentation
Data service administration	*Sun Cluster Data Services Planning and Administration Guide for Solaris OS*
	Individual data service guides
Concepts	*Sun Cluster Concepts Guide for Solaris OS*
Overview	*Sun Cluster Overview for Solaris OS*
Software installation	*Sun Cluster Software Installation Guide for Solaris OS*
System administration	*Sun Cluster System Administration Guide for Solaris OS*
Hardware administration	*Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS*
	Individual hardware administration guides
Data service development	*Sun Cluster Data Services Developer's Guide for Solaris OS*
Error messages	*Sun Cluster Error Messages Guide for Solaris OS*
Command and function reference	*Sun Cluster Reference Manual for Solaris OS*

For a complete list of Sun Cluster documentation, see the release notes for your release of Sun Cluster at `http://docs.sun.com`.

Related Third-Party Web Site References

Third-party URLs that are referenced in this document provide additional related information.

Note – Sun is not responsible for the availability of third-party web sites mentioned in this document. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials that are available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content, goods, or services that are available on or through such sites or resources.

Documentation, Support, and Training

Sun Function	URL	Description
Documentation	`http://www.sun.com/documentation/`	Download PDF and HTML documents, and order printed documents
Support and Training	`http://www.sun.com/supporttraining/`	Obtain technical support, download patches, and learn about Sun courses

Product Training

Sun Microsystems offers training in many Sun technologies through a variety of instructor-led courses and self-paced courses. For information about the training courses that Sun offers and to enroll in a class, visit Sun Microsystems Training at `http://training.sun.com/`.

Getting Help

If you have problems installing or using Sun Cluster, contact your service provider and provide the following information:

- Your name and email address (if available)
- Your company name, address, and phone number
- The model and serial numbers of your systems
- The release number of the Solaris Operating System (for example, Solaris 8)
- The release number of Sun Cluster (for example, Sun Cluster 3.0)

Use the following commands to gather information about each node on your system for your service provider.

Command	Function
prtconf -v	Displays the size of the system memory and reports information about peripheral devices
psrinfo -v	Displays information about processors
showrev –p	Reports which patches are installed
SPARC: prtdiag -v	Displays system diagnostic information
scinstall -pv	Displays Sun Cluster release and package version information

Also have available the contents of the /var/adm/messages file.

Installing and Configuring Sun Cluster HA for BEA WebLogic Server

This chapter explains how to install and configure Sun Cluster HA for BEA WebLogic Server.

This chapter contains the following sections.

Sun Cluster HA for BEA WebLogic Server Overview

Use the information in this section to understand how to make the BEA WebLogic Server application highly available.

BEA WebLogic Server running on Sun Cluster systems delivers a highly available platform for developing and deploying mission-critical e-commerce applications across distributed, heterogeneous application environments.

The Sun Cluster HA for BEA WebLogic Server provides fault monitoring and high availability for the BEA WebLogic Server application. High availability is provided for the WebLogic Administration Server and WebLogic Managed Servers. Because Sun Cluster HA for BEA WebLogic Server only supports the non-clustered BEA WebLogic Servers, the client sessions could be lost during the failover or restart.

Note – Sun Cluster HA for BEA WebLogic Server provides high availability to stand-alone WebLogic Server instances (instances not using WebLogic Server clustering).

For conceptual information on failover services, see the *Sun Cluster Concepts Guide for Solaris OS*.

TABLE 1 Protection of BEA WebLogic Server Components

BEA WebLogic ServerComponent	Protected by
BEA WebLogic Server	Sun Cluster HA for BEA WebLogic Server
	The resource type is `SUNW.wls.`
BEA WebLogic Serverdatabase	All databases supported by BEA WebLogic Server and supported on Sun Cluster
HTTP servers	All HTTP servers supported by BEA WebLogic Server and supported on Sun Cluster

Overview of the Installation and Configuration Process for Sun Cluster HA for BEA WebLogic Server

The table below lists the tasks for installing and configuring Sun Cluster HA for BEA WebLogic Server. Perform these tasks in the order that they are listed.

TABLE 2 Task Map: Installing and Configuring Sun Cluster HA for BEA WebLogic Server

Task	For Instructions
Plan the BEA WebLogic Server installation	"Planning the Sun Cluster HA for BEA WebLogic Server Installation and Configuration" on page 13
Prepare the nodes and disks	"How to Prepare the Nodes" on page 19
Install and configure BEA WebLogic Server	"How to Install BEA WebLogic Server" on page 21
	"Installing a Database" on page 22
	"Installing a Web Server" on page 22
Verify BEA WebLogic Server installation and configuration	"How to Verify the BEA WebLogic Server Installation and Configuration" on page 22
Install Sun Cluster HA for BEA WebLogic Server packages	"How to Install the Sun Cluster HA for BEA WebLogic Server Packages Using the Web Start Program" on page 24
	"How to Install the Sun Cluster HA for BEA WebLogic Server Packages Using the `scinstall` Utility" on page 25
Register and configure Sun Cluster HA for BEA WebLogic Server as a failover data service	"How to Register and Configure Sun Cluster HA for BEA WebLogic Server as a Failover Data Service" on page 27
Verify Sun Cluster HA for BEA WebLogic Server installation and configuration	"How to Verify the Sun Cluster HA for BEA WebLogic Server Installation and Configuration" on page 28
View Sun Cluster HA for BEA WebLogic Server Fault Monitor	"Operation of the Sun Cluster HA for BEA WebLogic Server Fault Monitor" on page 31

Planning the Sun Cluster HA for BEA WebLogic Server Installation and Configuration

This section contains the information you need to plan your Sun Cluster HA for BEA WebLogic Server installation and configuration.

Configuration Restrictions

Caution – Your data service configuration might not be supported if you do not observe these restrictions.

This section provides a list of software and hardware configuration restrictions that apply to Sun Cluster HA for BEA WebLogic Server. Use the restrictions in this section to plan the installation and configuration of Sun Cluster HA for BEA WebLogic Server.

For restrictions that apply to all data services, see the *Sun Cluster Release Notes for Solaris OS*.

- Sun Cluster HA for BEA WebLogic Server provides high availability to stand alone BEA WebLogic Server instances (instances not using BEA WebLogic Server clustering).

- For a Failover Filesystem, all BEA WebLogic Server instances using that filesystem must be configured in a single resource group.

- If the user wants to configure different instances in different resource groups, the BEA WebLogic Server installation must be on a Global File System.

Configuration Requirements

Caution – Your data service configuration might not be supported if you do not adhere to these requirements.

Use the requirements in this section to plan the installation and configuration of Sun Cluster HA for BEA WebLogic Server. These requirements apply to Sun Cluster HA for BEA WebLogic Server only. You must meet these requirements before you proceed with your Sun Cluster HA for BEA WebLogic Server installation and configuration.

For requirements that apply to all data services, see "Configuration Guidelines for Sun Cluster Data Services" in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*.

- If the BEA WebLogic Server home directory and other config files are installed on a failover filesystem using HAStoragePlus, then all BEA WebLogic Server resources using that filesystem should be configured in the same resource group.

- If the BEA WebLogic Server depends on any database such as Oracle or Sybase, the administrator must make sure that the database is highly available before configuring and starting the BEA WebLogic Server under Sun Cluster HA for BEA WebLogic Server.

- In BEA WebLogic Server, the Managed Servers can be configured to start independently in "Managed Server Independence mode." For Sun Cluster HA for BEA WebLogic Server, the administrator must configure all Managed Servers to be able to start independently.

  To configure the Managed Server in the independent mode, see the relevant BEA WebLogic Server documentation for the version you are using. For example, for BEA WebLogic Server 7.0, the documentation is located at

  `http://e-docs.bea.com/wls/docs70/admin_domain/failures.html#1104833`

- You can configure separate scripts to start the BEA WebLogic Managed Servers. If separate scripts are configured, the Admin Server url and the Managed Server name must be set in the START script. The scripts should be able to start each BEA WebLogic Server instance without arguments.

- If you intend to use a single START script to start several Managed Servers, the Admin url must be specified in the START script and only the Managed Server name should be taken as the argument to the script. For example, if the script used to start the Managed Server is `startMangedWeblogic.sh`, then the Managed Server `petstore_server` should be able to start as follows:

  ```
  node1>cd /global/beahome/weblogic700/domain/petstore
  node1>./startManagedWeblogic.sh petstore_server
  ```

- The BEA WebLogic Server START script needs a `username` and `password`. You can configure a file `boot.properties` to store the `username` and `password` which is encrypted after the first startup of the BEA WebLogic Server. If the `boot.properties` file is used, Sun Cluster HA for BEA WebLogic Server will not be able to do a smooth shutdown of the BEA WebLogic Server because the `username` and `password` will be unavailable. During the Sun Cluster HA for BEA WebLogic Server shutdown, the STOP method will kill the BEA WebLogic Server process using `sigkill`. If a smooth shutdown (using java `weblogic.Admin`) is desired, the `username` and `password` must be configured using the BEA WebLogic Server variables `WLS_USER` and `WLS_PW` in the START script and the extension property `Smooth_shutdown` must be set to `TRUE` when the resource is created.

  Note – To enable `smooth_shutdown` at resource creation or by updating the resource, the BEA WebLogic Server variables `WLS_USER` and `WLS_PW` must be configured with the `username` and `password` accordingly. Otherwise, the associated server will not start under Sun Cluster.

- Because the agent runs the server START script as root, all required environment variables must be set in the START script or set in a separate file and sourced by the START script before starting the server. For details, see the relevant BEA WebLogic Server documentation for the version you are using. For example, for BEA WebLogic Server 7.0, the documentation is located at

  `http://e-docs.bea.com/wls/docs70/adminguide/startstop.html#1086359`

- To enable the discovery of running Managed Servers after a failover and restart of an Administration Server, make sure the Administration server START script does not include `-Dweblogic.management.discover+=false`. This setting disables the Administration Server from discovering its running Managed Servers. For details, see the relevant BEA WebLogic Server documentation for the version you are using. For example, for BEA WebLogic Server 7.0, the documentation is located at

  `http://e-docs.bea.com/wls/docs70/admin_domain/failures.html#1104811`

- Make sure that the hostnames used in the `server_url` and `monitor_uri_list` are resolvable. If you use Fully Qualified Domain Names (FQDNs), then DNS must be enabled and `/etc/nsswitch.conf` must have the correct entries to resolve the hostnames using DNS.

Standard Data Service Configurations

Use the standard configurations in this section to plan the installation and configuration of Sun Cluster HA for BEA WebLogic Server. Sun Cluster HA for BEA WebLogic Server supports the standard configurations in this section.

In addition to the standard configurations provided in this section, the following BEA WebLogic Server configurations are possible.

- Separate START script for each BEA WebLogic Server (Administration and Managed).
- Single START script for all Managed Servers which takes the Managed Server name as the input.
- Setting the `username` and `password` in `boot.properties`.

  This configuration allows only forced shutdown by Sun Cluster HA for BEA WebLogic Server.

- Setting the `username` and `password` in the START script.

  This configuration allows smooth shutdown by Sun Cluster HA for BEA WebLogic Server.

Note – The BEA WebLogic Server is currently supported as a Failover data service.

Sun Cluster HA for BEA WebLogic Server might support additional configurations. However, you must contact your Sun service provider for information on additional configurations.

Simple Configuration

This simple configuration for Sun Cluster HA for BEA WebLogic Server uses two resource groups configured as follows.

- RG1 containing logical-host-1 and WLS-Admin-Server-resource
- RG2 containing logical-host-2 and WLS-Managed-Server-resource

RG1 and RG2 are failover resource groups

This configuration is possible only if the BEA WebLogic Server is installed on a Global File System. See Figure 1 for an illustration of this configuration.
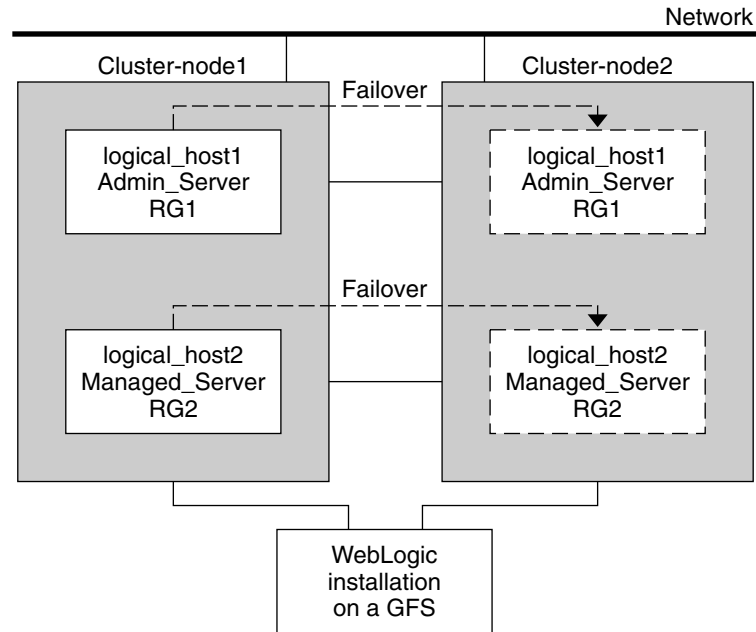
FIGURE 1 Sun Cluster HA for BEA WebLogic Server Simple Configuration

Configuration 1

In this configuration RG1, RG2, RG3, and RG4 are failover Resource Groups configured as follows.

- RG1 containing logical-host-1 and WLS-Admin-resource
- RG2 containing logical-host-2 and WLS-Managed-Server-resource2
- RG3 containing logical-host-3 and WLS-Managed-Server-resource3
- RG4 containing logical-host-4 and WLS-Managed-Server-resource4

This configuration is possible only if the BEA WebLogic Server is installed on a Global File System.

Configuration 2

In this configuration, RG1, RG2, and RG3 are failover Resource Groups configured as follows.

- RG1 containing logical-host-1, WLS-Admin-resource, and WLS-Managed-Server-resource1
- RG2 containing logical-host-2, WLS-Managed-Server-resource2, WLS-Managed-Server-resource3, and WLS-Managed-Server-resource4
- RG3 containing logical-host-3, WLS-Managed-Server-resource5, WLS-Managed-Server-resource6, WLS-Managed-Server-resource7

This configuration is possible only if the BEA WebLogic Server is installed on a Global File System.

Configuration 3

If the BEA WebLogic Server is installed on a Failover File system using HAStoragePlus, all the BEA WebLogic Server instances must be configured in the same Failover resource group which has a dependency on the Failover filesystem.

RG1 contains logical-host-resource resources and all Administration and Managed-Server resources.

For information on how to register a resource with dependency on an HAStoragePlus resource, see "Enabling Highly Available Local File Systems" in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*.

See Figure 2 for an illustration of this configuration.

```
                                          Network
        Cluster-node1                          Cluster-node2
                            Failover
   ┌─────────────────┐                    ┌─────────────────┐
   │  ┌───────────┐  │                    │  ┌───────────┐  │
   │  │Logical-host-1│                    │  │Logical-host-1│
   │  └───────────┘  │                    │  └───────────┘  │
   │  ┌───────────┐  │                    │  ┌───────────┐  │
   │  │ Admin-rs  │  │                    │  │ Admin-rs  │  │
   │  └───────────┘  │                    │  └───────────┘  │
   │  ┌───────────┐  │                    │  ┌───────────┐  │
   │  │ Managed-rs│  │                    │  │ Managed-rs│  │
   │  └───────────┘  │                    │  └───────────┘  │
   │      RG1        │                    │      RG1        │
   └─────────────────┘                    └─────────────────┘
                                Filesystem
                                 Failover
              ┌─────────────────┐
              │    WebLogic     │
              │  Installation   │
              └─────────────────┘
```
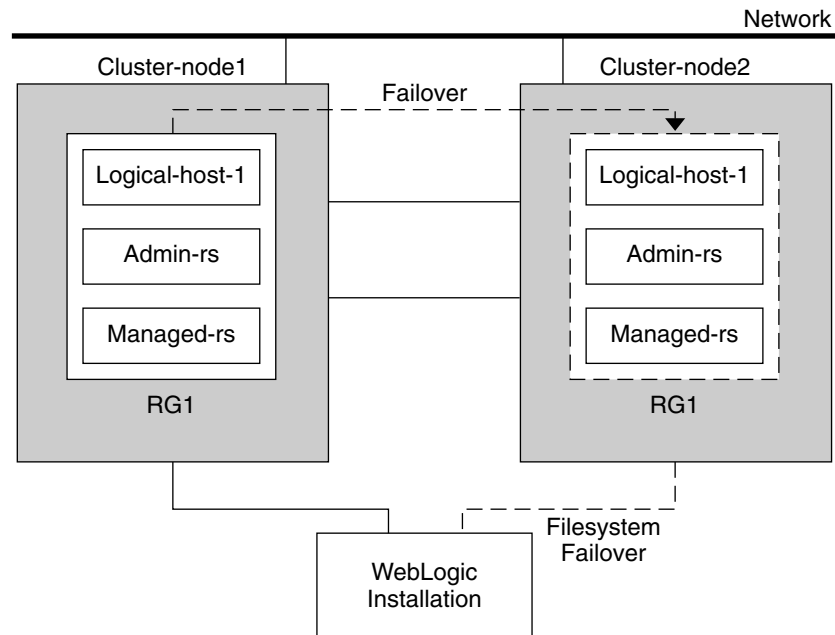
FIGURE 2 Sun Cluster HA for BEA WebLogic Server File System Failover Configuration

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Preparing the Nodes and Disks

This section contains the procedures you need to prepare the nodes and disks.

Note – The following steps are based on the Simple Configuration described in "Simple Configuration" on page 16.

▼ How to Prepare the Nodes

Use this procedure to prepare for the installation and configuration of BEA WebLogic Server.

Steps **1. Create a failover resource group to hold the logical hostname and the BEA Administration Server resources.**

   # **scrgadm -a -g** *RG1* **[-h nodelist]**

2. **Add the logical hostname resource.**

   The *logical-host–1* is the hostname the BEA WebLogic Admin Server will be listening on. This can be set from the WebLogic console.

   ```
   # scrgadm -a -L -g RG1 -l logical-host-1
   ```

3. **Bring the resource group online.**

   ```
   # scswitch -Z -g RG1
   ```

4. **Create a failover resource to hold the logical hostname and the WebLogic Managed Server resources.**

   Note – Depending on the number of BEA WebLogic Servers and on the configuration planned, create the resource groups and the *logical_hostname* resources. (Refer to "Standard Data Service Configurations" on page 16.)

   ```
   # scrgadm -a -g RG2 [-h nodelist]
   ```

5. **Add the logical hostname resource.**

   The *logical-host-2* is the hostname the BEA WebLogic Admin Sever will be listening on.

   ```
   # scrgadm -a -L -g RG2 -l logical-host-2
   ```

6. **Bring the resource group online.**

   ```
   # scswitch -Z -g RG2
   ```

Installing and Configuring the BEA WebLogic Server Application

This section contains the procedures you need to install and configure the BEA WebLogic Server application.

▼ How to Install BEA WebLogic Server

Note – This procedure is based on the configuration described in "Simple Configuration" on page 16. If you are planning a different configuration, you must configure the BEA WebLogic Server accordingly.

Steps 1. **Follow the BEA WebLogic Server documentation to install the BEA WebLogic Server on the global filesystem or a failover filesystem.**

2. **Follow the BEA WebLogic Server Administration Guide to configure the WebLogic Domain.**

   Note – Enter the logical hostname or its IP address when configuring the BEA WebLogic Servers.

3. **After completing all necessary configuration for the domain, shut down the Administration Server.**

4. **Edit the Administration Server START script and the Managed Server START script setting the `WLS_USER` and `WLS_PW`.**
   The START scripts should be able to run without any arguments.

   Note – The `WLS_USER` and `WLS_PW` are required by the agent to do a smooth shutdown of the BEA WebLogic Server. If this is a security issue, you can set these properties in the `boot.properties` file. However, the smooth shutdown will not be possible and the agent will do a force shutdown of the BEA WebLogic Server.

5. **In the Managed Server START script, set the `ADMIN_URL` and the `SERVER_NAME` variables.**
   This script should be able to run without any arguments.

6. **Set the necessary environment variables in the `setWLSEnv.sh` or the `startWLS.sh` scripts.**
   These environment variables include any additional CLASSPATH or LD_LIBRARY_PATH, etc. These scripts contain all necessary environmental variables such as CLASSPATH and LD_LIBRARY_PATH.

7. **Verify that the `config.xml` file is in the same directory as the START scripts.**

Installing a Database

If you are using a database with BEA WebLogic Server, install the database by using its installation documentation. If the database you are using has a highly available agent on Sun Cluster, install that version.

Installing a Web Server

If you are using a web server with BEA WebLogic Server, install the web server by using its installation documentation. If the web server you are using has a highly available agent on Sun Cluster, install that version.

Verifying the BEA WebLogic Server Installation and Configuration

This section contains the procedure you need to verify the BEA WebLogic Server installation and configuration.

▼ How to Verify the BEA WebLogic Server Installation and Configuration

Use this procedure to verify the BEA WebLogic Server Administration Server, BEA WebLogic Managed Server, and database installation and configuration. This procedure does not verify that your application is highly available because you have not installed the data service yet.

Note – The following steps are for the configuration described in "Simple Configuration" on page 16. If you are planning a different configuration, you must configure the BEA WebLogic Server accordingly.

Steps 1. **Verify that the** *logical_-host-1* **and** *logical-host-2* **configured in RG1 and RG2 are online on cluster***cluster-node1***.**

2. **If you are using a database, verify that the database is running.**

3. **Go to the directory containing the Administration Server and the Managed Server START scripts configured in the section "Installing and Configuring the BEA WebLogic Server Application" on page 20.**

4. **Start the Administration Server by running the Administration Server START script.**

   ```
   example:
   cluster-node1>cd /global/wls/user_projects/petstore
   cluster-node1>./startWebLogic.sh
   ```

5. **After the Administration Server starts successfully, start the Managed Server.**

   ```
   example:
   cluster-node1>cd /global/wls/user_projects/petstore
   cluster-node1>./startManagedWebLogic.sh
   ```

6. **Make sure that you can successfully connect to the** *logical-host-1* **and** *logical-host-2* **from a client.**

7. **Verify that the Administration Server and the Managed Servers are in the RUNNING mode on cluster-node1.**

8. **Shut down the Administration Server and the Managed Server.**

9. **Switch the Resource Groups RG1 and RG2 to cluster-node2.**

   This action brings down *logical-host-1* and *logical-host-2* on cluster-node1 and bring them up on cluster-node2.

   scswitch -z -g *RG1* **-h** *cluster-node2*
   scswitch -z -g *RG2* **-h** *cluster-node2*

10. **Repeat Step 4, Step 5, and Step 6 on cluster-node2.**

11. **Verify that the Administration Server and the Managed Servers are in the RUNNING mode on cluster-node2.**

12. **If the clients can successfully connect to the Administration Server and the Managed Server on each of the potential master nodes, you have successfully configured the BEA WebLogic Servers to work with the Sun Cluster HA for BEA WebLogic Server.**

13. **Stop the Administration Server and the Managed Servers and proceed to the next session to install the Sun Cluster HA for BEA WebLogic Server.**

Installing the Sun Cluster HA for BEA WebLogic Server Packages

If you did not install the Sun Cluster HA for BEA WebLogic Server packages during your initial Sun Cluster installation, perform this procedure to install the packages. Perform this procedure on each cluster node where you are installing the Sun Cluster HA for BEA WebLogic Server packages. To complete this procedure, you need the Sun Cluster Agents CD.

If you are installing more than one data service simultaneously, perform the procedure in "Installing the Software" in *Sun Cluster Software Installation Guide for Solaris OS*.

Install the Sun Cluster HA for BEA WebLogic Server packages by using one of the following installation tools:

- The Web Start program
- The `scinstall` utility

Note – If you are using Solaris 10, install these packages *only* in the global zone. To ensure that these packages are not propagated to any local zones that are created after you install the packages, use the `scinstall` utility to install these packages. Do *not* use the Web Start program.

▼ How to Install the Sun Cluster HA for BEA WebLogic Server Packages Using the Web Start Program

You can run the Web Start program with a command-line interface (CLI) or with a graphical user interface (GUI). The content and sequence of instructions in the CLI and the GUI are similar. For more information about the Web Start program, see the `installer`(1M) man page.

Steps   1. **On the cluster node where you are installing the Sun Cluster HA for BEA WebLogic Server packages, become superuser.**

2. **(Optional) If you intend to run the Web Start program with a GUI, ensure that your `DISPLAY` environment variable is set.**

3. **Insert the Sun Cluster Agents CD into the CD-ROM drive.**

   If the Volume Management daemon `vold`(1M) is running and configured to manage CD-ROM devices, it automatically mounts the CD-ROM on the

`/cdrom/cdrom0` directory.

4. **Change to the Sun Cluster HA for BEA WebLogic Server component directory of the CD-ROM.**

   The Web Start program for the Sun Cluster HA for BEA WebLogic Server data service resides in this directory.

   ```
   # cd /cdrom/cdrom0/components/SunCluster_HA_BEA_WLS_3.1
   ```

5. **Start the Web Start program.**

   ```
   # ./installer
   ```

6. **When you are prompted, select the type of installation.**

   - To install only the C locale, select Typical.
   - To install other locales, select Custom.

7. **Follow the instructions on the screen to install the Sun Cluster HA for BEA WebLogic Server packages on the node.**

   After the installation is finished, the Web Start program provides an installation summary. This summary enables you to view logs that the Web Start program created during the installation. These logs are located in the `/var/sadm/install/logs` directory.

8. **Exit the Web Start program.**

9. **Remove the Sun Cluster Agents CD from the CD-ROM drive.**

   a. **To ensure that the CD-ROM is not being used, change to a directory that does** *not* **reside on the CD-ROM.**

   b. **Eject the CD-ROM.**

   ```
   # eject cdrom
   ```

▼ How to Install the Sun Cluster HA for BEA WebLogic Server Packages Using the `scinstall` Utility

Perform this procedure on all of the cluster members that can master Sun Cluster HA for BEA WebLogic Server.

Before You Begin Ensure that you have the Sun Cluster Agents CD.

Steps 1. **Load the Sun Cluster Agents CD into the CD-ROM drive.**

2. **Run the `scinstall` utility with no options.**

This step starts the `scinstall` utility in interactive mode.

3. **Select the menu option, Add Support for New Data Service to This Cluster Node.**

   The `scinstall` utility prompts you for additional information.

4. **Provide the path to the Sun Cluster Agents CD.**

   The utility refers to the CD as the "data services cd."

5. **Specify the data service to install.**

   The `scinstall` utility lists the data service that you selected and asks you to confirm your choice.

6. **Exit the `scinstall` utility.**

7. **Unload the CD from the drive.**

Registering and Configuring the Sun Cluster HA for BEA WebLogic Server

This section contains the procedures you need to configure Sun Cluster HA for BEA WebLogic Server.

Setting Sun Cluster HA for BEA WebLogic Server Extension Properties

The sections that follow contain instructions for registering and configuring Sun Cluster HA for BEA WebLogic Server resources. For information about the extension properties, see Appendix A. The Tunable entry indicates when you can update a property.

See Appendix A, "Standard Properties," in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* for details on all of the Sun Cluster properties.

To set an extension property of a resource, include the following option in the `scrgadm`(1M) command that creates or modifies the resource:

-x *property=value*

-x *property*
   Identifies the extension property that you are setting

value
   Specifies the value to which you are setting the extension property

You can also use the procedures in Chapter 2, "Administering Data Service Resources," in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* to configure resources after the resources are created.

▼ How to Register and Configure Sun Cluster HA for BEA WebLogic Server as a Failover Data Service

Use this procedure to configure Sun Cluster HA for BEA WebLogic Server as a failover data service. The following steps assume that you are using the configuration described in "Simple Configuration" on page 16 and have configured the BEA WebLogic Serves as mentioned in "Installing and Configuring the BEA WebLogic Server Application" on page 20. These steps assume that you have already created resource groups RG1 and RG2 and have also created *logical-host-1* and *logical-host-2* resources in these resource groups. Refer to "How to Prepare the Nodes" on page 19 for procedures to create logical hostname resources. If you are planning a different configuration, you must configure the BEA WebLogic Server resources accordingly.

Note – Before you start Sun Cluster HA for BEA WebLogic Server, if you are using a database, check that your database is accessible.

Steps 1. **Add the BEA WebLogic Server resource type.**

```
# scrgadm -a -t SUNW.wls
```

2. **Create a BEA WebLogic Admin Server resource in the RG1 resource group.**

```
# scrgadm -a -j admin-rs -t SUNW.wls -g RG1 \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical-host-1:7001 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh
```

Note – This configuration does not enable smooth shutdown. The Sun Cluster HA for BEA WebLogic Server stop method will force shutdown the BEA WebLogic Administration Server (kill the process). Refer to "Creating a Resource That Shuts Down Smoothly" on page 30 for the configuration to enable smooth shutdown. For more information, see "STOP Method" on page 33.

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3. **Create a BEA WebLogic Managed Server resource in the RG2 resource group.**

```
# scrgadm -a -j managed-rs -t SUNW.wls -g RG2 \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical-host-2:7004 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startManagedWebLogic.sh
```

Verifying the Sun Cluster HA for BEA WebLogic Server Installation and Configuration

This section contains the procedure you need to verify that you installed and configured your data service correctly.

▼ How to Verify the Sun Cluster HA for BEA WebLogic Server Installation and Configuration

Use this procedure to verify that you installed and configured Sun Cluster HA for BEA WebLogic Server correctly.

Steps   **1. Bring the BEA WebLogic Server resource groups online on the cluster.**

```
# scswitch -z -g RG1 -h cluster-node1
# scswitch -z -g RG2 -h cluster-node1
```

The BEA WebLogic Administration and Managed Servers must be online on cluster-node1.

2. Make sure that you can successfully connect to the BEA WebLogic servers from a client and that both the Administration Server and the Managed Server are in the RUNNING mode.

3. Switch the resource groups to cluster-node2.

```
# scswitch -z -g RG1 -h cluster-node2
# scswitch -z -g RG2 -h cluster-node2
```

The BEA WebLogic Administration and Managed Servers must go offline on cluster-node1 and go online on cluster-node2. Make sure the BEA WebLogic Server processes on cluster-node1 are stopped. Because smooth shutdown is not enabled, the BEA WebLogic Server process will be killed by the Sun Cluster HA for BEA WebLogic Server STOP method instead of being shut down smoothly. Refer to "Creating a Resource That Shuts Down Smoothly" on page 30 for the configuration enabling smooth shutdown. For more information, see "STOP Method" on page 33 for configuration enabling smooth shutdown.

4. Make sure that you can successfully connect to the BEA WebLogic servers from the client and that both the Administration Server and the Managed Server are in the RUNNING mode.

> **Note –** The client sessions may be lost when the BEA WebLogic Servers go offline on cluster-node1 and come online on cluster-node2.

5. **On cluster-node2, kill the Administration Server process.**

   The Fault Monitor must detect this and restart the Administration Server.

6. **Kill the Administration Server process repeatedly.**

   The Administration Server Resource group will failover after the number of retries exceeds the retry count within the retry interval.

7. **On cluster-node2, kill the Managed Server process.**

   The Fault Monitor must detect this and restart the Managed Server.

8. **Kill the Managed Server process repeatedly.**

   The Managed Server Resource group will failover after the number of retries exceeds the retry count within the retry interval.

   If the previous steps are successful, you have correctly configured Sun Cluster HA for BEA WebLogic Server.

Troubleshooting Once the BEA WebLogic Administration and Managed servers are in production under Sun Cluster control, do not start or stop the servers manually or through the Administration Console. If you need to perform maintenance on the servers, you must first disable their associated resources.

Alternate Sun Cluster HA for BEA WebLogic Server Configurations

The installation, registration, and configuration procedures in this chapter assume that you are installing a Simple Configuration as described in "Simple Configuration" on page 16. This section provides examples of other possible Sun Cluster HA for BEA WebLogic Server configurations.

Creating a Simple BEA WebLogic Server Resource

This configuration assumes that the START script, startWebLogic.sh, can start the BEA WebLogic Server without any arguments to the script. The username and password needed to start the BEA WebLogic Server can be configured within this START script or in the boot.properties file.

```
# scrgadm -a -j bea-rs -t SUNW.wls- -g bea-rg \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical_host1:7001 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh
```

Creating a Resource With a Server Name Argument

If the BEA WebLogic Server START script `startManagedWebLogic.sh` uses a Managed Server name as an argument, then the extension property `Server_name` can be set. The START script `startManagedWebLogic.sh` can be used to start several Managed Servers. The `ADMIN_URL` must be configured within the START script. To start the BEA WebLogic Server manually, use the following commands.

```
cluster-node-1> cd /global/wls/user_projects/petstore
cluster-node-1> ./startManagedWebLogic.sh petstore1
```

To configure a Sun Cluster HA for BEA WebLogic Server resource whose start script takes the server name `petstore1`, use the following commands.

```
# scrgadm -a -j bea-rs -t SUNW.wls -g bea-rg \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical_host1:7001 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \
-x Server_name=petstore1
```

To configure another Sun Cluster HA for BEA WebLogic Server resource which uses the same START script for a different server, `petstore2`, use the following commands.

```
# scrgadm -a -j bea-rs -t SUNW.wls -g bea-rg \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical_host1:7001 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \
-x Server_name=petstore2
```

Creating a Resource That Shuts Down Smoothly

The default for the Sun Cluster HA for BEA WebLogic Server STOP method kills the BEA WebLogic Server process to shut down the instance. If this is not desirable, set the `Smooth_shutdown` extension property to TRUE to enable smooth shutdown of the BEA WebLogic Server. If this extension property is enabled, `WLS_USER` and `WLS_PW` must be set in the START script. If this is a security concern, you must let Sun Cluster HA for BEA WebLogic Server perform the default forced shutdown (kill the process).

To configure a resource which will shut down smoothly, use the following commands.

```
# scrgadm -a -j bea-rs -t SUNW.wls -g bea-rg \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical_host1:7001 \
```

```
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \
-x Server_name=petstore1 \
-x Smooth_shutdown=TRUE
```

Creating a Resource That Probes the Database

Sun Cluster HA for BEA WebLogic Server does not probe the database health. If the database is down when Sun Cluster HA for BEA WebLogic Server starts up, the data service will fail to start. If you want Sun Cluster HA for BEA WebLogic Server to probe the database, then your own database probe script can be supplied to Sun Cluster HA for BEA WebLogic Server as an extension property. This database probe must return zero for success and non-zero for failure.

To configure a resource with the DB_probe script extension property set, use the following commands.

```
# scrgadm -a -j bea-rs -t SUNW.wls -g bea-rg \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical_host1:7001 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \
-x Server_name=petstore1 \
-x Smooth_shtudown=TRUE \
-x DB_probe_script=/global/bea/script/db_probe_script
```

Creating a Resource That Monitors URIs

To enable the Sun Cluster HA for BEA WebLogic Server resource to monitor URIs that are served by the BEA WebLogic Server configured in the resource, use the following commands to set the extension property Monitor_uri_list.

```
# scrgadm -a -j bea-rs -t SUNW.wls -g bea-rg \
-x Confdir_list=/global/bea/beahome/weblogic700 \
-x Server_url=http://logical_host1:7001 \
-x Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \
-x Server_name=petstore1 \
-x Smooth_shutdown=TRUE \
-x DB_probe_script=/global/bea/script/db_probe_script \
-x Monitor_uri_list=http://logical_host1:7001/petstore,http://logical_host1:7001/bookstore
```

Operation of the Sun Cluster HA for BEA WebLogic Server Fault Monitor

This section describes the Sun Cluster HA for BEA WebLogic Server Fault Monitor.

Probing Algorithm and Functionality

The Fault Monitor detects failures and takes action. If the monitor detects a failure in a BEA WebLogic Server, it first restarts the BEA WebLogic Server. If the BEA WebLogic Server fails a certain number of times (configurable by the administrator) within a certain time window (configurable by the administrator), the resource group containing the BEA WebLogic Server will be failed over to another surviving cluster node and restarted.

The Fault Monitor method, by default, probes the server URL set in the extension property `Server_url`. The probe connects to the hostname and the port and then does an `HTTP GET` request on the URL. If the connect fails, it is considered a complete failure and the resource group containing the BEA WebLogic Server is restarted or failed over to another surviving cluster node and restarted. If the connect succeeds, but the http response code is 500 (internal server error), it is also considered a complete failure and the resource group is restarted or failed over. All other http response codes are considered a success.

If the `monitor_uri_list` extension property is set, the probe method connects to the URIs mentioned in the list and takes action if there is a failure. The probe performs an `HTTP GET` on the specified URI or URIs.

If a complete failure (URL or URI probe) of the BEA WebLogic Server instance is detected by the probe, and if a database probe script is specified in the extension property `db_probe_script`, the probe method will probe the database before taking any action on the BEA WebLogic Server resource. If the database probe script returns success (database is up), action is taken on the BEA WebLogic Server resource. If the database probe script returns a failure (database is down), the BEA WebLogic Server probe will not take any action (restart or failover) until the database is up.

START Method

Before starting the BEA WebLogic Server configured in the resource, the BEA WebLogic Server configuration and the resource extension properties are validated. If the `db_probe_script` extension property is set, the database is probed by invoking the script set in the extension property. If the database is up, the BEA WebLogic Server is started by invoking the START script configured in the extension property `Start_script` under `pmf`. If the database is not up, the START method will return success and let the probe method handle the starting of the BEA WebLogic Server. The probe method will wait until the database is up to start the BEA WebLogic Server, as explained in

After launching the START script under `pmf`, the START method waits until the BEA WebLogic Server is in RUNNING mode before declaring the START method as successful. While waiting for the BEA WebLogic Server to start up, the probe method tries to connect to the server to check if it is up. There will be some messages displayed on the console during start up. The message "Failed to connect to host

logical-host-1 and port 7001: Connection refused" will continue to be displayed until the BEA WebLogic Server starts up completely. Once the BEA WebLogic Server is in the RUNNING mode, the START method sets the status to "Started Successfully".

STOP Method

The STOP method stops the BEA WebLogic Server configured in the resource. By default, the STOP method kills the BEA WebLogic Server by sending a SIGKILL to the BEA WebLogic process. If the smooth_shutdown extension property is set to TRUE, the STOP method tries to bring down the BEA WebLogic instance by running the command

```
java weblogic.Admin -url hostname:port -username $WLS_USER
-password $WLS_PW SHUTDOWN
```

If this command fails, the BEA WebLogic Server is shut down by using SIGKILL. Even if the command succeeds, the STOP method sends SIGKILL to make sure the BEA WebLogic process is stopped.

If the smooth_shutdown extension property is set to TRUE, make sure the WLS_USER and WLS_PW are set in the BEA WebLogic Server START script. Once the Smooth_shutdown is set to TRUE, the WLS_USER and WLS_PW must not be removed from the START script unless the extension property is set to FALSE again.

Sun Cluster HA for BEA WebLogic Server Extension Properties

This section describes the extension properties for the resource type `SUNW.wls`. This resource type represents the Apache application in a Sun Cluster configuration.

For details about system-defined properties, see the `r_properties(5)` man page and the `rg_properties(5)` man page.

The extension properties of the `SUNW.wls` resource type are as follows:

`Confdir_list`
   The complete path to the BEA WebLogic Server home directory, `$WL_HOME`.

Note – If `setWLSEnv.sh` and `startWLS.sh` are not in the standard `$confdir_list/server/bin` location, then you must create links to these files from `$confdir_list/server/bin` directory. If you do not create this link, the BEA WebLogic Server resource creation will fail.

Data type	String array
Default	No default defined
Range	Not applicable
Tunable	At creation

`DB_Probe_Script`
   The complete path to a Database probe script. The `HA-WLS` probe method probes only the `WLS` instances. The database probe script can be provided using this extension property if the Administrators want the `HA_WLS` to probe the DB also. This probe script must return 0 for success. The BEA WebLogic Servers will be started only if this Database probe returns success. If an `HA-WLS` probe detects a failure in a WLS instance and if this extension property is set, the `HA-WLS` probe will take action only if the Database probe succeeds. Refer to "Probing Algorithm and Functionality" on page 32 for more details.

Data type	String
Default	Null
Range	Not applicable
Tunable	At any time

Monitor_Uri_List

A single URI, or a comma-separated list of URIs, which can be used by the fault monitor to test the functionality of the BEA WebLogic Server by doing an HTTP GET on the URI. The Server_Url extension property is for simple probes on the hostname and port. This extension property can be used to probe the WLS functionality by retrieving a Java servlet or making the WLS run an application and return an HTTP server code. If the HTTP server return code is 500 (Internal Server Error) or if the connect fails, the probe will take action. See the probe method for more details.

Make sure that the hostnames used in the server_url and monitor_uri_list are resolvable. If you use Fully Qualified Domain Names (FQDNs), then DNS must be enabled and /etc/nsswitch.conf must have the correct entries to resolve the hostnames using DNS.

Data type	String
Default	Null
Range	Not applicable
Tunable	At any time

Server_name

A single start script that can be used to start all the Managed Servers by passing the Managed Server name as an argument to the startup script. If Agent start methods have to pass the server name as an argument to the start script then, configure the Managed Server name in this extension property.

Data type	String
Default	Null
Range	Not applicable
Tunable	At any time

Server_Url

The complete URL of the BEA WebLogic Server, including the protocol used to connect to the server that this resource is configured to start. The probe method uses this URL to check the health of the server by performing an HTTP GET on the URL. The protocol in the URL must be set to http. The complete URL should be in the following form.

```
http://host:port
```

For more information about the `Server_Url`, see the relevant BEA WebLogic Server documentation for the version you are using. For example, for BEA WebLogic Server 7.0, the documentation is located at the following website.

```
http://e-docs.bea.com/wls/docs70/adminguide
/startstop.html#1161188
```

Make sure that the hostnames used in the `server_url` and `monitor_uri_list` are resolvable. If you use Fully Qualified Domain Names (FQDNs), then DNS must be enabled and `/etc/nsswitch.conf` must have the correct entries to resolve the hostnames using DNS.

Data type	String
Default	No default defined
Range	Not applicable
Tunable	At creation

`Smooth_shutdown`
Indication of whether to enable smooth shutdown using `WebLogic.Admin` class. This extension property must be set to `TRUE` if a smooth shutdown is desired before trying to kill the WLS process. If this extension property is `TRUE`, then the `WLS_USER` and `WLS_PW` must be set in the `start_script` and not in `boot.properties`.

Set this extension property to `TRUE` if all of the following apply.

- Setting the `username` and `password` in the `start_script` is not a concern.
- A smooth shutdown is desirable instead of the default, killing the process.
- It is not a concern if the agent stop method reads the username and password from the start script and passes it to the `java weblogic.Admin` command.

Data type	Boolean
Default	`FALSE`
Range	Not applicable
Tunable	At any time

`Start_Script`
The complete path to the script that should be used to start the BEA WebLogic Server instance (either Administration or Managed). This script is typically present under the domain name directory along with the `config.xml` file. A separate script or a single script can be configured for starting each BEA WebLogic Server. For more information, see "Configuration Requirements" on page 14.

Data type	String
Default	No default defined
Range	Not applicable
Tunable	At creation

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