



# **Sun Cluster Data Service for WebLogic Server Guide for Solaris OS**



Sun Microsystems, Inc.  
4150 Network Circle  
Santa Clara, CA 95054  
U.S.A.

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# Preface

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

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**Note** – This Sun Cluster release supports systems that use the SPARC and x86 families of processor architectures: UltraSPARC, SPARC64, AMD64, and Intel 64. In this document, x86 refers to the larger family of 64-bit x86 compatible products. Information in this document pertains to all platforms unless otherwise specified.

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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 book assume knowledge of the Solaris™ Operating System (Solaris OS) and expertise with the volume-manager software that is used with Sun Cluster software.

## Using 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 conventions that are used in this book.

TABLE P-1 Typographic Conventions

Typeface	Meaning	Example
AaBbCc123	The names of commands, files, and directories, and onscreen 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 onscreen computer output	<code>machine_name%</code> <b>su</b> Password:
<i>aabbcc123</i>	Placeholder: replace with a real name or value	The command to remove a file is <i>rm filename</i> .
<i>AaBbCc123</i>	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . <i>A cache</i> is a copy that is stored locally. Do <i>not</i> save the file. <b>Note:</b> Some emphasized items appear bold online.

## Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P-2 Shell Prompts

Shell	Prompt
C shell	<code>machine_name%</code>
C shell for superuser	<code>machine_name#</code>
Bourne shell and Korn shell	<code>\$</code>
Bourne shell and Korn shell for superuser	<code>#</code>

## 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	<i>Sun Cluster Data Services Planning and Administration Guide for Solaris OS</i> Individual data service guides
Concepts	<i>Sun Cluster Concepts Guide for Solaris OS</i>
Overview	<i>Sun Cluster Overview for Solaris OS</i>
Software installation	<i>Sun Cluster Software Installation Guide for Solaris OS</i>
System administration	<i>Sun Cluster System Administration Guide for Solaris OS</i>
Hardware administration	<i>Sun Cluster 3.1 - 3.2 Hardware Administration Manual for Solaris OS</i> Individual hardware administration guides
Data service development	<i>Sun Cluster Data Services Developer's Guide for Solaris OS</i>
Error messages	<i>Sun Cluster Error Messages Guide for Solaris OS</i>
Command and function reference	<i>Sun Cluster Reference Manual for Solaris OS</i>

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.

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## Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

- [Documentation](http://www.sun.com/documentation/) (<http://www.sun.com/documentation/>)
- [Support](http://www.sun.com/support/) (<http://www.sun.com/support/>)
- [Training](http://www.sun.com/training/) (<http://www.sun.com/training/>)

## Sun Welcomes Your Comments

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## 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 number and serial number of your systems
- The release number of the Solaris Operating System (for example, Solaris 10)
- The release number of Sun Cluster (for example, Sun Cluster 3.2)

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

Command	Function
<code>prtconf -v</code>	Displays the size of the system memory and reports information about peripheral devices
<code>psrinfo -v</code>	Displays information about processors
<code>showrev -p</code>	Reports which patches are installed
<code>prtdiag -v</code>	Displays system diagnostic information
<code>/usr/cluster/bin/clnode show-rev</code>	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

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

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**Note** – If you are using the Solaris 10 OS, you can install and configure this data service to run in the non-global zone. Sun Cluster HA for BEA WebLogic Server is currently supported in non-global zones.

---

This chapter contains the following sections.

- “Sun Cluster HA for BEA WebLogic Server Overview” on page 10
- “Overview of the Installation and Configuration Process for Sun Cluster HA for BEA WebLogic Server” on page 10
- “Planning the Sun Cluster HA for BEA WebLogic Server Installation and Configuration” on page 11
- “Preparing the Nodes and Disks” on page 17
- “Installing and Configuring the BEA WebLogic Server Application” on page 18
- “Verifying the BEA WebLogic Server Installation and Configuration” on page 20
- “Installing the Sun Cluster HA for BEA WebLogic Server Packages” on page 21
- “Registering and Configuring the Sun Cluster HA for BEA WebLogic Server” on page 23
- “Verifying the Sun Cluster HA for BEA WebLogic Server Installation and Configuration” on page 27
- “Alternate Sun Cluster HA for BEA WebLogic Server Configurations” on page 28
- “Operation of the Sun Cluster HA for BEA WebLogic Server Fault Monitor” on page 31

# 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.

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

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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 Server Component	Protected by
BEA WebLogic Server	Sun Cluster HA for BEA WebLogic Server The resource type is SUNW.wls.
BEA WebLogic Server database	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	<a href="#">“Planning the Sun Cluster HA for BEA WebLogic Server Installation and Configuration” on page 11</a>
Prepare the nodes and disks	<a href="#">“How to Prepare the Nodes” on page 17</a>
Install and configure BEA WebLogic Server	<a href="#">“How to Install BEA WebLogic Server” on page 19</a> <a href="#">“Installing a Database” on page 19</a> <a href="#">“Installing a Web Server” on page 20</a>
Verify BEA WebLogic Server installation and configuration	<a href="#">“How to Verify the BEA WebLogic Server Installation and Configuration” on page 20</a>
Install Sun Cluster HA for BEA WebLogic Server packages	<a href="#">“How to Install the Sun Cluster HA for BEA WebLogic Server Packages” on page 21</a>
Register and configure Sun Cluster HA for BEA WebLogic Server as a failover data service	<a href="#">“How to Register and Configure Sun Cluster HA for BEA WebLogic Server as a Failover Data Service” on page 24</a>
Verify Sun Cluster HA for BEA WebLogic Server installation and configuration	<a href="#">“How to Verify the Sun Cluster HA for BEA WebLogic Server Installation and Configuration” on page 27</a>
View Sun Cluster HA for BEA WebLogic Server Fault Monitor	<a href="#">“Operation of the Sun Cluster HA for BEA WebLogic Server Fault Monitor” on page 31</a>

## 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

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**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 configuration 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](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 Administration 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 Administration 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 `startManagedWeblogic.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 user name and password. You can configure a file `boot.properties` to store the user name and password which are 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 perform a smooth shutdown of the BEA WebLogic Server because the user name 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`. To ensure a smooth shutdown (by using Java `weblogic.Admin`), you must configure the user name and password by 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 user name and password accordingly. Otherwise, the associated server will not start under Sun Cluster. This information applies only to BEA WebLogic Server 7.x or earlier versions.

In BEA WebLogic Server 8.1 or later versions, you can perform a smooth shutdown without adding the user name and password to the START script. For BEA WebLogic Server 8.1 or later versions, the `boot.properties` file must be present in the `$DOMAIN_DIR` directory for smooth shutdown. The user name and password do not need to be configured by adding the BEA WebLogic Server variables `WLS_USER` and `WLS_PW` to the START script. If the extension property `smooth_shutdown` is set to `TRUE`, the `boot.properties` file must be present in the `$DOMAIN_DIR` directory.

---

- 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](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 user name and password in the `boot.properties` file  
This configuration enables a smooth shutdown by Sun Cluster HA for BEA WebLogic Server 8.1 or later versions.
- Setting the user name and password in the START script  
This configuration enables a smooth shutdown by Sun Cluster HA for BEA WebLogic Server 7.x or earlier versions.

---

**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 about 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.

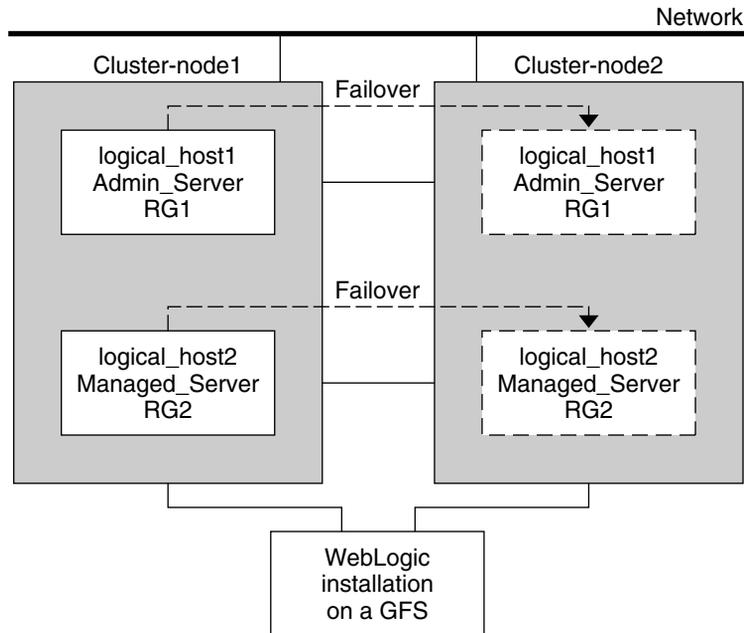


FIGURE 1 Sun Cluster HA for BEA WebLogic Server Simple Configuration

## 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 by using HAStoragePlus, all the BEA WebLogic Server instances must be configured in the same failover resource group that has a dependency on the failover file system.

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

For information about 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.

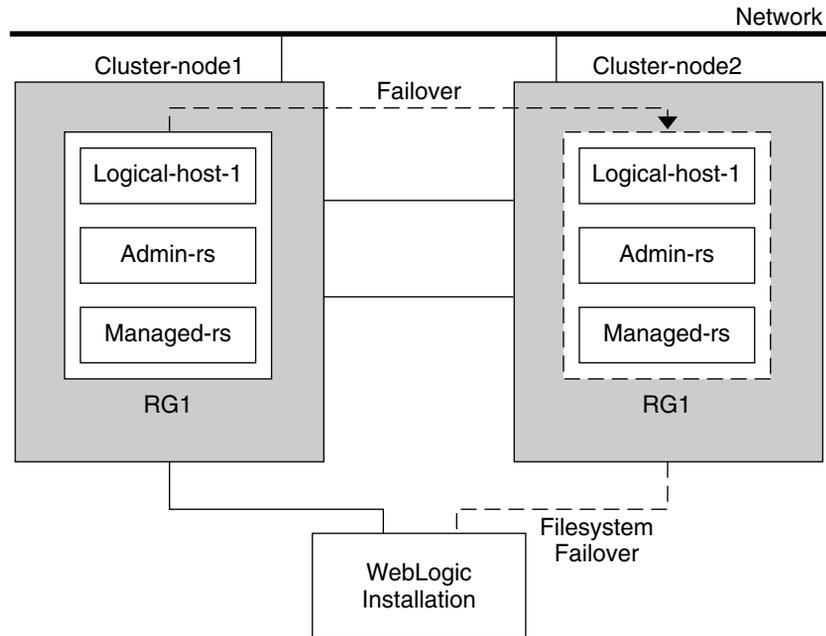


FIGURE 2 Sun Cluster HA for BEA WebLogic Server File System Failover Configuration

## Preparing the Nodes and Disks

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

**Note** – The following steps are based on the configuration that is described in [“Simple Configuration”](#) on page 15.

### ▼ How to Prepare the Nodes

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

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

```
# clresourcegroup create [-n nodelist] RG1
```

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

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

```
# clreslogicalhostname create -g RG1 logical-host-1
```

---

**Note** – If you require a fully qualified hostname, you must specify the fully qualified name with the `-h` option and you cannot use the fully qualified form in the resource name.

---

**3 Bring the resource group online.**

```
# clresourcegroup online -M RG1
```

**4 Create a failover resource group 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 14.

---

```
# clresourcegroup create [-n nodelist] RG2
```

**5 Add the logical hostname resource.**

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

```
# clreslogicalhostname create -g RG2 logical-host-2
```

---

**Note** – If you require a fully qualified hostname, you must specify the fully qualified name with the `-h` option and you cannot use the fully qualified form in the resource name.

---

**6 Bring the resource group online.**

```
# clresourcegroup online -M RG2
```

## Installing and Configuring the BEA WebLogic Server Application

This section contains the procedures that 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 that is described in “[Simple Configuration](#)” on page 15. If you are planning a different configuration, you must configure the BEA WebLogic Server accordingly.

---

- 1 **Follow the BEA WebLogic Server documentation to install the BEA WebLogic Server on the global file system or a failover file system.**
- 2 **Follow the *BEA WebLogic Server Administration Guide* to configure the WebLogic Domain.**

---

**Note** – Type 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 by setting the WLS\_USER and WLS\_PW.**

The START scripts should be able to run without any arguments.

---

**Note** – To perform a smooth shutdown of the BEA WebLogic Server, the `boot.properties` file with a valid user name and password is required. You do not need to set the `WLS_USER` and `WLS_PW` variables for a smooth shutdown if the `boot.properties` file is available. This waiver applies only to BEA WebLogic Server 8.1 or later versions.

---

- 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 that 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 that 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 that 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 that is described in [“Simple Configuration” on page 15](#). If you are planning a different configuration, you must configure the BEA WebLogic Server accordingly.

---

- 1 **Verify that the *logical-host-1* and *logical-host-2* configured in RG1 and RG2 are online on *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 18](#).**
- 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 start them on *cluster-node2*.

```
clresourcegroup switch -n cluster-node2 RG1
clresourcegroup switch -n cluster-node2 RG2
```
- 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 section 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. To install the packages, use the Sun Java Enterprise System Common Installer.

---

**Note** – You need to install the Sun Cluster HA for BEA WebLogic Server packages in the global cluster and not in the zone cluster.

---

### ▼ How to Install the Sun Cluster HA for BEA WebLogic Server Packages

Perform this procedure on each cluster node where you are installing the Sun Cluster HA for BEA WebLogic Server packages.

You can run the Sun Java Enterprise System Common Installer 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.

---

**Note** – Even if you plan to configure this data service to run in non-global zones, install the packages for this data service in the global zone. The packages are propagated to any existing non-global zones and to any non-global zones that are created after you install the packages.

---

**Before You Begin** Ensure that you have the Sun Java™ Availability Suite DVD-ROM.

If you intend to run the Sun Java Enterprise System Common Installer with a GUI, ensure that your DISPLAY environment variable is set.

**1 On the cluster node where you are installing the data service packages, become superuser.**

**2 Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the Volume Management daemon `vol(1M)` is running and configured to manage DVD-ROM devices, the daemon automatically mounts the DVD-ROM on the `/cdrom` directory.

**3 Change to the Sun Java Enterprise System Common Installer directory of the DVD-ROM.**

- **If you are installing the data service packages on the SPARC® platform, type the following command:**

```
# cd /cdrom/cdrom0/Solaris_sparc
```

- **If you are installing the data service packages on the x86 platform, type the following command:**

```
# cd /cdrom/cdrom0/Solaris_x86
```

**4 Start the Sun Java Enterprise System Common Installer.**

```
# ./installer
```

**5 When you are prompted, accept the license agreement.**

If any Sun Java Enterprise Suite components are installed, you are prompted to select whether to upgrade the components or install new software.

**6 From the list of Sun Cluster agents under Availability Services, select the data service for BEA WebLogic Server.**

**7 If you require support for languages other than English, select the option to install multilingual packages.**

English language support is always installed.

**8 When prompted whether to configure the data service now or later, choose Configure Later.**

Choose Configure Later to perform the configuration after the installation.

**9 Follow the instructions on the screen to install the data service packages on the node.**

The Sun Java Enterprise System Common Installer displays the status of the installation. When the installation is complete, the wizard displays an installation summary and the installation logs.

**10 (GUI only) If you do not want to register the product and receive product updates, deselect the Product Registration option.**

The Product Registration option is not available with the CLI. If you are running the Sun Java Enterprise System Common Installer with the CLI, omit this step.

**11 Exit the Sun Java Enterprise System Common Installer.**

**12 Unload the Sun Java Availability Suite DVD-ROM from the DVD-ROM drive.**

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

b. Eject the DVD-ROM.

```
# eject cdrom
```

**Next Steps** See “[Registering and Configuring the Sun Cluster HA for BEA WebLogic Server](#)” on page 23 to register Sun Cluster HA for BEA WebLogic Server and to configure the cluster for the data service.

## Registering and Configuring the Sun Cluster HA for BEA WebLogic Server

This section contains the procedures that 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 [Sun Cluster HA for BEA WebLogic Server Extension Properties](#). The Tunable entry indicates when you can update a property.

See Appendix B, “Standard Properties,” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* for details about all the Sun Cluster properties.

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

**-p** *property=value*

**-p** *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 that is described in “Simple Configuration” on page 15 and have configured the BEA WebLogic Server as mentioned in “Installing and Configuring the BEA WebLogic Server Application” on page 18. 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 17 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.

---

#### 1 Add the BEA WebLogic Server resource type.

```
# clresourcetype register SUNW.wls
```

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

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

The resource is created in the enabled state.

---

**Note** – This configuration does not enable smooth shutdown. The Sun Cluster HA for BEA WebLogic Server stop method forces the shutdown of the BEA WebLogic Administration Server (kills the process). Refer to [“Creating a Resource That Shuts Down Smoothly” on page 29](#) for the configuration to enable smooth shutdown. For more information, see [“STOP Method” on page 32](#).

---

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

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

The resource is created in the enabled state.

## Setting Up the BEA WebLogic Server on Non-Global Zones for HAStoragePlus Configuration

Use the following procedure to configure an HAStoragePlus resource for non-global zones.

### ▼ How to Set Up the BEA WebLogic Server on Non-Global Zones for HAStoragePlus Configuration

#### Before You Begin

- The entries in the `/etc/vfstab` file for cluster file systems should contain the global keyword in the mount options.
- The BEA WebLogic Server binaries that will be made highly accessible by using the HAStoragePlus resource should be accessible from the non-global zones.
- In non-global zones, file systems that are used by different resources in different resource groups must reside in a single HAStoragePlus resource that resides in a scalable resource group. The node list of the scalable HAStoragePlus resource group must be a superset of the node lists of the application resource groups that have resources which depend on the file systems. These application resources that depend on the file systems must have a strong

resource dependency set to the HAStoragePlus resource. In addition, the dependent application resource group must have a strong positive resource group affinity set to the scalable HAStoragePlus resource group.

- 1 **On any node in the cluster, become superuser or assume a role that provides solaris.cluster.modify RBAC authorization.**

- 2 **Create the scalable resource group with non-global zones that contain the HAStoragePlus resource.**

```
# clresourcegroup create -p Maximum primaries=m \
-p Desired primaries=n \
[-n node-zone-list] hasp-rg
```

-p Maximum primaries=*m*

Specifies the maximum number of active primaries for the resource group.

-p Desired primaries=*n*

Specifies the number of desired primaries on which the resource group should attempt to start.

-n *node-zone-list*

Specifies the list of nodename:zonename pairs as the node list of the HAStoragePlus resource group where the WebLogic Server instances can be brought online.

*hasp-rg*

Specifies the name of the scalable resource group to be added. This name must begin with an ASCII character.

- 3 **Register the resource type for the HAStoragePlus resource.**

```
# clresourcetype register HAStoragePlus
```

- 4 **Create the HAStoragePlus resource *hasp-rs* and define the WebLogic Server file-system mount points.**

```
# clresource create -g hasp-rg -t SUNW.HAStoragePlus \
-p filesystemMountPoints=/global/wls affinityon=false hasp-rs
```

- 5 **Bring the HAStoragePlus resource and resource group online.**

```
# clresourcegroup online hasp-rg
```

- 6 **Register the resource type for the WebLogic Server application.**

```
# clresourcetype register SUNW.wls
```

- 7 **Create a WebLogic Server resource group and set the dependency to *hasp-rg*.**

```
# clresourcegroup create -g wls2-rg \
RG_affinities=++hasp-rg wls2-rg
```

- 8 Add the WebLogic Server resource to *wls2-rg* and set the dependency to HASStoragePlus resource.

```
# clresource create -g wls2-rg -t SUNW.wls \
-p Confdir_list=/global/bea/beahome/weblogic700 \
-p Server_url=http://logical-host-1:7001 \
-p Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \
-p Server_name=ManagedServer_2 \
-p resource_dependencies=hasp-rs \
wls2-rs
```

- 9 Bring the failover resource group online.

```
# clresourcegroup online wls2-rg
```

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

This section describes the procedure to verify if you have installed and configured your data service correctly.

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

To verify that you have installed and configured Sun Cluster HA for BEA WebLogic Server correctly, perform the following steps:

- 1 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.

- 2 Switch the resource groups to *cluster-node2*.

```
# clresourcegroup switch cluster-node2 RG1
# clresourcegroup switch cluster-node2 RG2
```

The BEA WebLogic Administration and Managed Servers must go offline on *cluster-node1* and go online on *cluster-node2*. Ensure that 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 29](#) for the configuration that enables smooth shutdown. For more information, see [“STOP Method” on page 32](#) for the configuration that enables smooth shutdown.

- 3 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 might be lost when the BEA WebLogic Servers go offline on *cluster-node1* and come online on *cluster-node2*.

---

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

The Fault Monitor must detect the killed process and restart the Administration Server.

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

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

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

The Fault Monitor must detect the killed process and restart the Managed Server.

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

The Managed Server Resource group fails over 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** After 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 the configuration that is described in [“Simple Configuration” on page 15](#). 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 user name and password that are needed to start the BEA WebLogic Server can be configured within this START script or in the `boot.properties` file.

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

The resource is created in the enabled state.

## 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.

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

The resource is created in the enabled state.

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

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

The resource is created in the enabled state.

## 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. To enable smooth shutdown of the BEA WebLogic Server, set the `Smooth_shutdown` extension property to `TRUE`. If this extension

property is enabled, the `boot.properties` file with valid user name and password must be present in the `$DOMAIN_DIR` directory. The BEA WebLogic Server variables, `WLS_USER` and `WLS_PW` do not need to be set in the `START` script for smooth shutdown. This waiver applies only to BEA WebLogic Server 8.1 or later versions.

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

```
# clresource create -g bea-rg -t SUNW.wls \  
-p Confdir_list=/global/bea/beahome/weblogic700 \  
-p Server_url=http://logical_host1:7001 \  
-p Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \  
-p Server_name=petstore1 \  
-p Smooth_shutdown=TRUE bea-rs
```

The resource is created in the enabled state.

## Creating a Resource That Probes the Database

The 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, the data service fails to start. To have the Sun Cluster HA for BEA WebLogic Server probe the database, supply your own database probe script to Sun Cluster HA for BEA WebLogic Server as an extension property. This database probe must return zero for success and nonzero for failure.

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

```
# clresource create -g bea-rg -t SUNW.wls \  
-p Confdir_list=/global/bea/beahome/weblogic700 \  
-p Server_url=http://logical_host1:7001 \  
-p Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \  
-p Server_name=petstore1 \  
-p Smooth_shutdown=TRUE \  
-p DB_probe_script=/global/bea/script/db_probe_script bea-rs
```

The resource is created in the enabled state.

## 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`.

```
# clresource create -g bea-rg -t SUNW.wls \  
-p Confdir_list=/global/bea/beahome/weblogic700 \  
-p Server_url=http://logical_host1:7001 \  
-p Monitor_uri_list=
```

```
-p Start_script=/global/bea/beahome/user_projects/petstore/startWebLogic.sh \  
-p Server_name=petstore1 \  
-p Smooth_shutdown=TRUE \  
-p DB_probe_script=/global/bea/script/db_probe_script \  
-p Monitor_uri_list=http://logical_host1:7001/petstore,http://logical_host1:7001/bookstore bea-s
```

The resource is created in the enabled state.

## 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 is 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 sends an HTTP GET request on the URL. If the connection 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 connection 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 a failure occurs. The probe sends an HTTP GET on the specified URI or URIs.

---

**Note** – The `Monitor_Uri_List` extension property supports HTTP requests only. It does not support HTTPS requests.

---

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 that is 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 running the script that is set in the extension property. If the database is up, the BEA WebLogic Server is started by running the START script that is configured in the extension property `Start_script` under `pmf`. If the database is not up, the START method returns success and lets the probe method handle the starting of the BEA WebLogic Server. The probe method waits until the database is up to start the BEA WebLogic Server, as explained in [“Probing Algorithm and Functionality” on page 31](#).

After starting the START script under `pmf`, the START method waits until the BEA WebLogic Server is in `RUNNING` mode before declaring the START method successful. While waiting for the BEA WebLogic Server to start, the probe method tries to connect to the server to check if it is up. Some messages are displayed on the console during startup. 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 completely. After the BEA WebLogic Server is in the `RUNNING` mode, the START method sets the status to “Started Successfully.”

BEA WebLogic Server console messages are stored at `/var/cluster/logs/hawls/wls-resource-name` on the cluster node where the resource is started. You can check this log file for startup messages of BEA WebLogic Server instances.

## STOP Method

The STOP method stops the BEA WebLogic Server that is 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 following 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 ensure that the BEA WebLogic process is stopped.

If the `smooth_shutdown` extension property is set to `TRUE`, ensure that the `boot.properties` file with valid user name and password is present in the `DOMAIN` directory. The BEA WebLogic Server variables, `WLS_USER` and `WLS_PW` do not need to be set in the START script for smooth shutdown. This waiver applies only to BEA WebLogic Server 8.1 or later versions.



# 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.

---

<b>Data type</b>	String array
<b>Default</b>	No default defined
<b>Range</b>	Not applicable
<b>Tunable</b>	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 Database 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 BEA WebLogic Server 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 31](#) for more details.

<b>Data type</b>	String
<b>Default</b>	Null
<b>Range</b>	Not applicable
<b>Tunable</b>	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 BEA WebLogic Server functionality by retrieving a Java servlet or making the BEA WebLogic Server 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.

<b>Data type</b>	String
<b>Default</b>	Null
<b>Range</b>	Not applicable
<b>Tunable</b>	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.

<b>Data type</b>	String
<b>Default</b>	Null
<b>Range</b>	Not applicable
<b>Tunable</b>	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 web site.

`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 BEA WebLogic Server 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`. This is applicable only for BEA WebLogic Server 7.x and earlier versions.

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 12](#).

**Data type** String  
**Default** No default defined

**Range**      Not applicable

**Tunable**    At creation

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