

# **Oracle® Solaris Cluster Data Service for Oracle WebLogic Server Guide**

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# Preface

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*Oracle Solaris Cluster Data Service for WebLogic Server Guide* explains how to install and configure Oracle Solaris Cluster data services.

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**Note** – This Oracle Solaris Cluster release supports systems that use the SPARC and x86 families of processor architectures. In this document, “x86” refers to the larger family of 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 Oracle 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 Oracle Solaris Operating System and expertise with the volume-manager software that is used with Oracle Solaris Cluster software.

Bash is the default shell for Oracle Solaris 11. Machine names shown with the Bash shell prompt are displayed for clarity.

## Using UNIX Commands

This document contains information about commands that are specific to installing and configuring Oracle Solaris 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 Oracle Solaris Operating System
- Oracle 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	Description	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% you have mail.</code>
<b>AaBbCc123</b>	What you type, contrasted with onscreen computer output	<code>machine_name% su</code> Password:
<i>aabbcc123</i>	Placeholder: replace with a real name or value	The command to remove a file is <code>rm filename</code> .
<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 UNIX system prompts and superuser prompts for shells that are included in the Oracle Solaris OS. In command examples, the shell prompt indicates whether the command should be executed by a regular user or a user with privileges.

TABLE P-2 Shell Prompts

Shell	Prompt
Bash shell, Korn shell, and Bourne shell	\$
Bash shell, Korn shell, and Bourne shell for superuser	#
C shell	machine_name%
C shell for superuser	machine_name#



## Related Documentation

Information about related Oracle Solaris Cluster topics is available in the documentation that is listed in the following table. All Oracle Solaris Cluster documentation is available at <http://www.oracle.com/technetwork/indexes/documentation/index.html>.

Topic	Documentation
Hardware installation and administration	<i>Oracle Solaris Cluster 4.1 Hardware Administration Manual</i> Individual hardware administration guides
Concepts	<i>Oracle Solaris Cluster Concepts Guide</i>
Software installation	<i>Oracle Solaris Cluster Software Installation Guide</i>
Data service installation and administration	<i>Oracle Solaris Cluster Data Services Planning and Administration Guide</i> and individual data service guides
Data service development	<i>Oracle Solaris Cluster Data Services Developer's Guide</i>
System administration	<i>Oracle Solaris Cluster System Administration Guide</i> <i>Oracle Solaris Cluster Quick Reference</i>
Software upgrade	<i>Oracle Solaris Cluster Upgrade Guide</i>
Error messages	<i>Oracle Solaris Cluster Error Messages Guide</i>
Command and function references	<i>Oracle Solaris Cluster Reference Manual</i> <i>Oracle Solaris Cluster Data Services Reference Manual</i> <i>Oracle Solaris Cluster Geographic Edition Reference Manual</i> <i>Oracle Solaris Cluster Quorum Server Reference Manual</i>
Compatible software	Oracle Solaris Cluster Compatibility Guide available at the Oracle Solaris Cluster Technical Resources page

## Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

## Getting Help

If you have problems installing or using Oracle Solaris 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 operating environment (for example, Oracle Solaris 11)
- The release number of Oracle Solaris Cluster (for example, Oracle Solaris Cluster 4.1)

Use the following commands to gather information about 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>pkg list</code>	Reports which packages are installed
<code>prtdiag -v</code>	Displays system diagnostic information
<code>/usr/cluster/bin/clnode show-rev -v</code>	Displays Oracle Solaris Cluster release and package version information for each node

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

# Installing and Configuring Oracle Solaris Cluster HA for WebLogic Server

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This chapter explains how to install and configure Oracle Solaris Cluster HA for WebLogic Server.

This chapter contains the following sections.

- “Oracle Solaris Cluster HA for WebLogic Server Overview” on page 11
- “Overview of the Installation and Configuration Process for Oracle Solaris Cluster HA for WebLogic Server” on page 12
- “Planning the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration” on page 14
- “Preparing the Nodes and Disks” on page 21
- “Installing and Configuring the WebLogic Server Application” on page 24
- “Verifying the WebLogic Server Installation and Configuration” on page 26
- “Installing the HA for WebLogic Server Package” on page 29
- “Registering and Configuring the Oracle Solaris Cluster HA for WebLogic Server” on page 30
- “Setting Up the WebLogic Server for HAStoragePlus Configuration” on page 48
- “Verifying the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration” on page 51
- “Alternate Oracle Solaris Cluster HA for WebLogic Server Configurations” on page 53
- “Operation of the Oracle Solaris Cluster HA for WebLogic Server Fault Monitor” on page 56

## Oracle Solaris Cluster HA for WebLogic Server Overview

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

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

The Oracle Solaris Cluster HA for WebLogic Server provides fault monitoring and high availability for the WebLogic Server application. High availability is provided for the WebLogic Administration Server and WebLogic Managed Servers.

Oracle Solaris Cluster HA for WebLogic Server enables the Managed Server component of the WebLogic Server clustering solution to be highly available in an Oracle Solaris Cluster system. To achieve this, you must configure the data service to be mastered by multiple nodes.

For conceptual information on failover and multi-master services, see the [Oracle Solaris Cluster Concepts Guide](#).

TABLE 1-1 Protection of WebLogic Server Components

WebLogic Server Component	Protected by
WebLogic Server	Oracle Solaris Cluster HA for WebLogic Server The resource type is SUNW.wls.
WebLogic Server database	All databases supported by WebLogic Server are supported on Oracle Solaris Cluster
HTTP servers	All HTTP servers supported by WebLogic Server are supported on Oracle Solaris Cluster

## Overview of the Installation and Configuration Process for Oracle Solaris Cluster HA for WebLogic Server

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

TABLE 1-2 Task Map: Installing and Configuring Oracle Solaris Cluster HA for WebLogic Server

Task	For Instructions
Plan the WebLogic Server installation	“Planning the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration” on page 14
Prepare the nodes and disks	“How to Prepare the Nodes for a Failover Configuration” on page 22 “How to Prepare the Nodes for a Multi-Master Configuration” on page 23 “How to Prepare the Nodes for a Multi-Instance Configuration” on page 23
Install and configure WebLogic Server	“How to Install WebLogic Server” on page 24 “Installing a Database” on page 26 “Installing a Web Server” on page 26

**TABLE 1-2** Task Map: Installing and Configuring Oracle Solaris Cluster HA for WebLogic Server  
(Continued)

Task	For Instructions
Verify WebLogic Server installation and configuration	<ul style="list-style-type: none"> <li>■ For failover services, see “How to Verify the WebLogic Server Installation and Configuration for Failover Services” on page 26</li> <li>■ For multi-master and multi-instance services, see “How to Verify the WebLogic Server Installation and Configuration for Multi-Master Services” on page 28</li> </ul>
Install Oracle Solaris Cluster HA for WebLogic Server packages	“How to Install the HA for WebLogic Server Package” on page 29
Register and configure Oracle Solaris Cluster HA for WebLogic Server	<p>For guided configuration using the <code>clsetup</code> utility:</p> <ul style="list-style-type: none"> <li>■ “How to Configure Logical Host Resources for Oracle Solaris Cluster HA for WebLogic Server (<code>clsetup</code>)” on page 31</li> <li>■ “How to Configure Storage Resources for Oracle Solaris Cluster HA for WebLogic Server (<code>clsetup</code>)” on page 33</li> <li>■ “How to Register and Configure the Oracle Solaris Cluster HA for WebLogic Server as an Administration Server (<code>clsetup</code>)” on page 35</li> <li>■ “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Managed Servers (<code>clsetup</code>)” on page 38</li> <li>■ “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Reverse Proxy Servers (<code>clsetup</code>)” on page 41</li> </ul> <p>For configuring with commands:</p> <ul style="list-style-type: none"> <li>■ For failover services, see “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Failover Data Service (CLI)” on page 45</li> <li>■ For multi-master services, see “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Multi-Master Data Service (CLI)” on page 46</li> <li>■ For multi-instance services, see “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Multi-Instance Data Service (CLI)” on page 48</li> </ul>
Verify Oracle Solaris Cluster HA for WebLogic Server installation and configuration	<ul style="list-style-type: none"> <li>■ For failover services, see “How to Verify the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration for Failover Services” on page 51</li> <li>■ For multi-master and multi-instance services, see “How to Verify the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration in a Multi-Master or Multi-Instance Configuration” on page 52</li> </ul>
View Oracle Solaris Cluster HA for WebLogic Server Fault Monitor	“Operation of the Oracle Solaris Cluster HA for WebLogic Server Fault Monitor” on page 56

# Planning the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration

This section contains the information you need to plan your Oracle Solaris Cluster HA for 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.

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

For restrictions that apply to all data services, see the [Oracle Solaris Cluster 4.1 Release Notes](#).

- Oracle Solaris Cluster HA for WebLogic Server provides high availability to stand alone WebLogic Server instances (instances not using WebLogic Server clustering).
- For a failover file system, all WebLogic Server instances using that file system must be configured in a single resource group.
- For a multi-master configuration, the WebLogic software can be installed in the failover or global file system, or in the local file system on all Oracle Solaris Cluster nodes.
- If you want to configure different instances in different resource groups, the WebLogic Server installation must be on a global file system.
- If the WebLogic Server cluster directory and other configuration files are installed on a global file system and you want to configure WebLogic Server in a zone cluster, use the SUNW.HASStoragePlus resource type to make a global file system available to zone cluster nodes. For information on the HASStoragePlus configuration for a zone cluster, see [Oracle Solaris Cluster Software Installation Guide](#).

## Configuration Requirements

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**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 Oracle Solaris Cluster HA for WebLogic Server. These requirements apply to Oracle Solaris Cluster HA for WebLogic Server only. You must meet these requirements before you proceed with your Oracle Solaris Cluster HA for WebLogic Server installation and configuration.

For requirements that apply to all data services, see “[Configuration Guidelines for Oracle Solaris Cluster Data Services](#)” in *Oracle Solaris Cluster Data Services Planning and Administration Guide*.

- If the WebLogic Server home directory and other configuration files are installed on a failover file system using HAStoragePlus, then all WebLogic Server resources using that file system should be configured in the same resource group.
- If the 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 WebLogic Server under Oracle Solaris Cluster HA for WebLogic Server.
- In WebLogic Server, the Managed Servers can be configured to start independently in “Managed Server Independence mode.” For Oracle Solaris Cluster HA for 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 WebLogic Server documentation for the version you are using. For example, for WebLogic Server 10.3, the documentation is located at [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/sitemap.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/sitemap.html).
- You can configure separate scripts to start the WebLogic Server 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 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 WebLogic Server START script needs a user name and password. You configure the `DOMAIN_DIR/boot.properties` file to store the user name and password which are encrypted after the first startup of the WebLogic Server. The `DOMAIN_DIR/boot.properties` file also enables a smooth shutdown when used with a resource for which the extension property `smooth_shutdown` is set to `TRUE`.

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**Note** – Starting with WebLogic Server version 10.3, the `boot.properties` file must reside in both the `$DOMAIN_DIR` and `$DOMAIN_DIR/servers/server-name/security` directories to bypass the need to prompt for user credentials when starting and stopping instances of WebLogic Server. If the `$DOMAIN_DIR/servers/server-name/security` directory does not exist or does not include a `boot.properties` file, create the directory and copy the `boot.properties` file from the `$DOMAIN_DIR`. For more information about the `boot.properties` file for WebLogic Server version 10.3, see [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/server\\_start/overview.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/server_start/overview.html).

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- All required environment variables must be set in the WebLogic Server environment file before you start the server. For details about the WebLogic Server environment file, see the relevant WebLogic Server documentation for the version you are using. For example, for WebLogic Server 10.3, the documentation is located at [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/sitemap.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/sitemap.html). To set the path to the WebLogic Server environment file, use the `Environment_File` property described in Appendix A, “HA for WebLogic Server Extension Properties.”
- 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 WebLogic Server documentation for the version you are using. For example, for WebLogic Server 10.3, the documentation is located at [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/sitemap.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/sitemap.html).
- Make sure that the host names 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 host names using DNS.

---

**Note** – To avoid any failures due to delays in name-service lookup, the host name used in the `Server_url` property should be added to the `/etc/hosts` file. Configure name-service mapping in the `/etc/nsswitch.conf` file on the servers to first check the local files before trying to access other name services.

---

## Standard Data Service Configurations

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



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

- Separate START script for each 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 `$DOMAIN_DIR/boot.properties` file
- This configuration enables a smooth shutdown.

---

**Note** – Starting with WebLogic Server version 10.3, the `boot.properties` file must reside in both the `$DOMAIN_DIR` and `$DOMAIN_DIR/servers/server-name/security` directories to bypass the need to prompt for user credentials when starting and stopping instances of WebLogic Server. If the `$DOMAIN_DIR/servers/server-name/security` directory does not exist or does not include a `boot.properties` file, create the directory and copy the `boot.properties` file from the `$DOMAIN_DIR`.

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**Note** – The WebLogic Server can be configured either as a failover data service, multi-instance data service, or multi-master data service.

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Oracle Solaris Cluster HA for WebLogic Server might support additional configurations. However, you must contact your Oracle service provider for information about additional configurations.

## WebLogic Server Configured as a Failover Resource

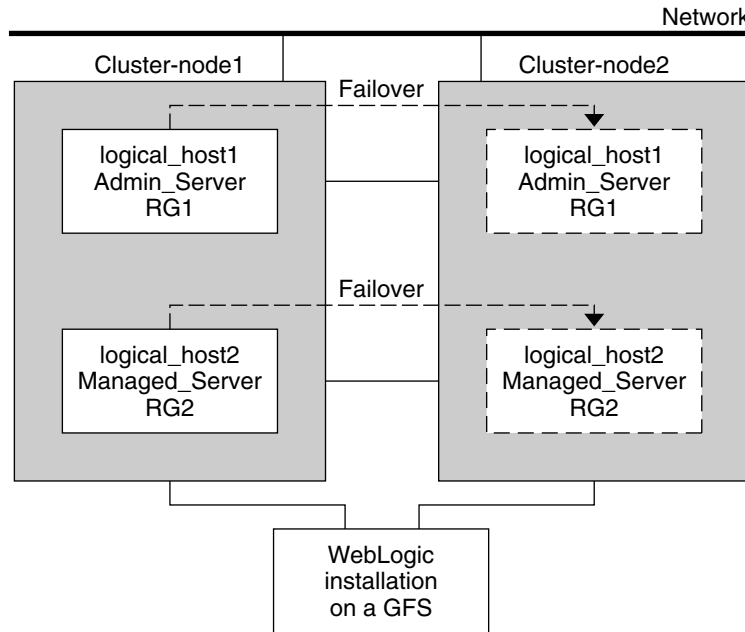
### Simple Configuration

This simple configuration for Oracle Solaris Cluster HA for 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 WebLogic Server is installed on a global file system. See [Figure 1–1](#) for an illustration of this configuration.

**FIGURE 1-1** Oracle Solaris Cluster HA for 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 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 WebLogic Server is installed on a global file system.

### Configuration 3

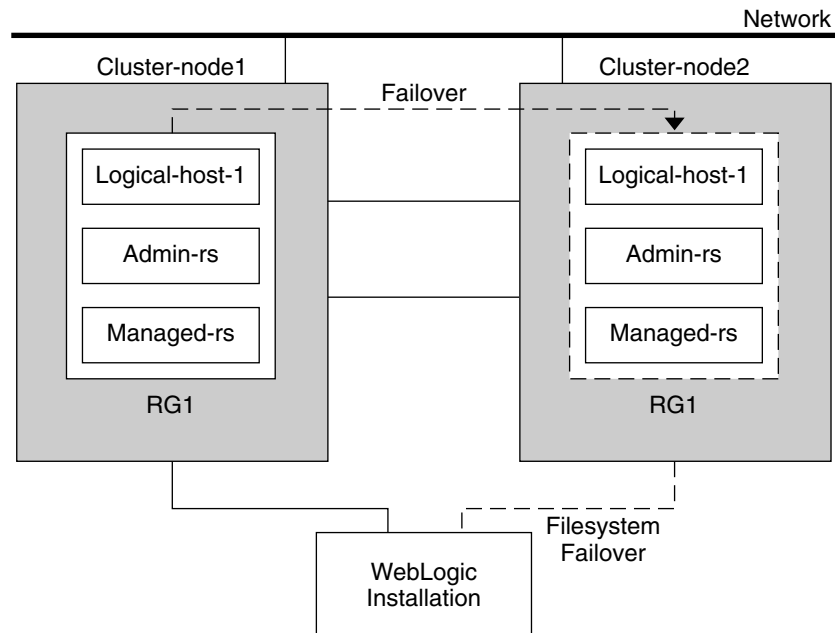
If the WebLogic Server is installed on a failover file system by using HAStoragePlus, all the WebLogic Server instances must be configured in the same failover resource group that has a dependency on the failover file system.

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 *Oracle Solaris Cluster Data Services Planning and Administration Guide*.

See [Figure 1–2](#) for an illustration of this configuration.

FIGURE 1–2 Oracle Solaris Cluster HA for WebLogic Server File System Failover Configuration



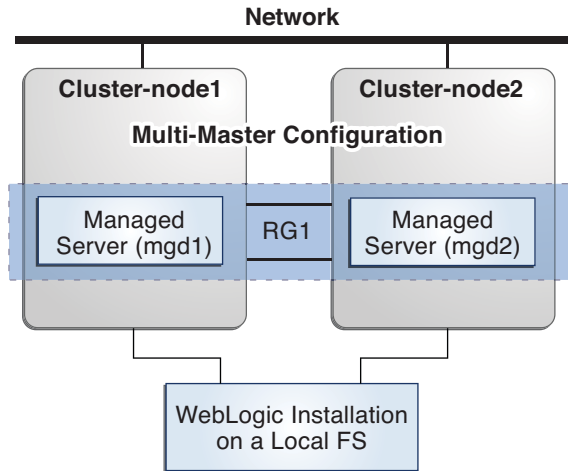
### WebLogic Servers Configured as a Multi-Master Resource

This example illustrates a multi-master configuration for Oracle Solaris Cluster HA for Oracle WebLogic Server (configured as a cluster).

In multi-master data service configuration, the WebLogic Server resource is used in a scalable resource group. The WebLogic Server managed server resource is online on multiple nodes at the same time.

In this configuration shown in [Figure 1–3](#), a single resource group *managed-server-rg* includes the managed server resources running on Node 1 and Node 2. Each managed server resource depends on a logical host resource and group that contains only one node.

FIGURE 1–3 Oracle WebLogic Server Configured as a Multi-Master Resource

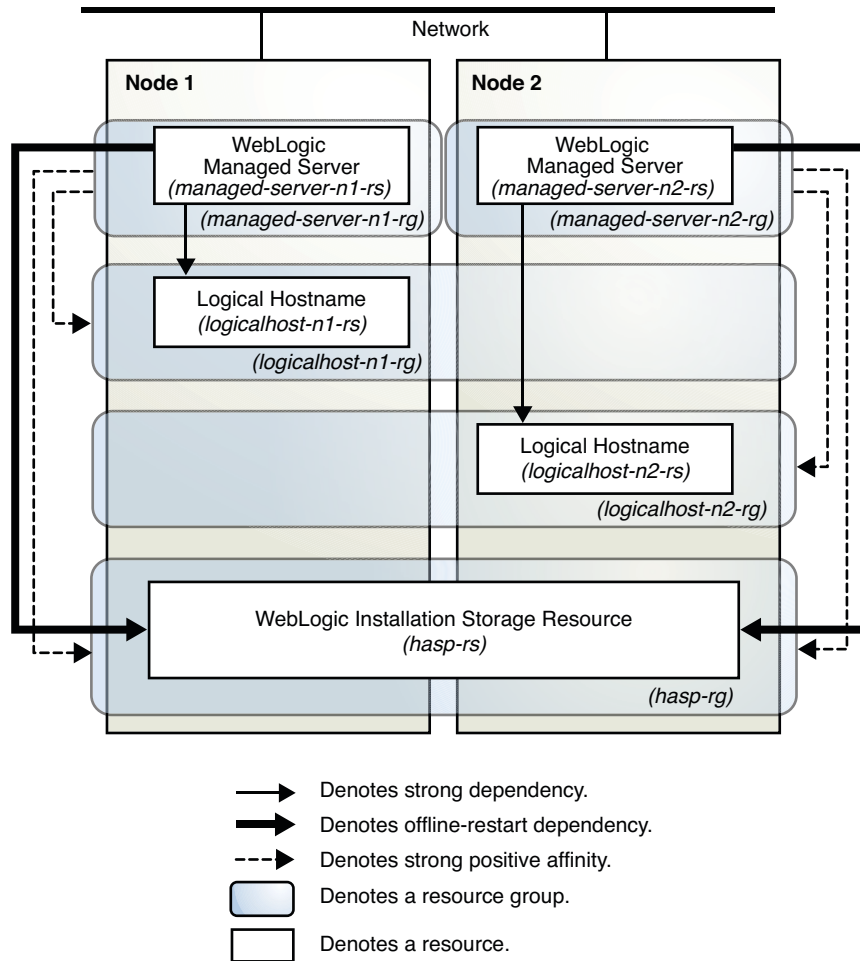


## WebLogic Servers Configured as Multi-Instance

Multi-instance is an application configuration topology where multiple instances of the same application provide an aggregation of services. This topology can be achieved independently of using a data service because you can manually start and stop the instances on the cluster nodes. When HA of such instances is required, you can enable a data service for the instances by creating multiple single-node resource groups or a few multi-master resource groups.

The diagram in [Figure 1–4](#) illustrates a multi-instance configuration using single-node resource groups. A single-node resource group is created for each of the managed server resources. The resource groups are represented by *managed-server-n1-rg* and *managed-server-n2-rg* in the diagram. Each resource group has a strong positive affinity on a storage resource group *hasp-rg* and a logical host resource group whose primary node is the node containing the managed server resource group.

FIGURE 1-4 Oracle WebLogic Server Configured as a Multi-Instance Application With Single-Node Resource Groups



## 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 configurations that are described in “Standard Data Service Configurations” on page 16.

## ▼ How to Prepare the Nodes for a Failover Configuration

Use this procedure to prepare for the installation and configuration of WebLogic Server in a failover configuration.

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

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

- 2 **Add the logical host name resource.**

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

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

---

**Note** – If you require a fully qualified host name, 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 host name and the WebLogic Managed Server resources.**

---

**Note** – Depending on the number of 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.

---

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

- 5 **Add the logical host name resource.**

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

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

---

**Note** – If you require a fully qualified host name, 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
```

## 7 Create a highly-available local file system managed by the HASStoragePlus resource.

For more information, see [Chapter 5, “Creating a Cluster File System,”](#) in *Oracle Solaris Cluster Software Installation Guide*

## ▼ How to Prepare the Nodes for a Multi-Master Configuration

Use this procedure to prepare for the installation and configuration of WebLogic Server in a multi-master configuration that uses single-node resource groups.

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

```
# clresourcegroup create [-n nodelist] RG1
# clreslogicalhostname create -g RG1 logical-host-1
# clresourcegroup online -M RG1
```

### 2 Create failover resource groups for the logical hostnames for the managed server.

```
# clresourcegroup create -p nodelist=node1,node2 logicalhost-n1-rg
# clresourcegroup create -p nodelist=node2,node1 logicalhost-n2-rg
```

### 3 Create logical hostname resources in the resource groups.

```
# clreslogicalhostname create -g logicalhost-n1-rg -h logicalhost-n1 logicalhost-n1-rs
# clreslogicalhostname create -g logicalhost-n2-rg -h logicalhost-n2 logicalhost-n2-rs
```

### 4 Bring the logical hostname resource groups online.

```
# clresourcegroup online -emM logicalhost-n1-rg
# clresourcegroup online -emM logicalhost-n2-rg
```

### 5 Create a cluster file system managed by the HASStoragePlus resource.

For more information, see [Chapter 5, “Creating a Cluster File System,”](#) in *Oracle Solaris Cluster Software Installation Guide*

## ▼ How to Prepare the Nodes for a Multi-Instance Configuration

Use this procedure to prepare for the installation and configuration of WebLogic Server in a multi-instance configuration.

The procedure assumes two nodes in the cluster and implements the configuration shown in [Figure 1–3](#).

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

```
# clresourcegroup create [-n nodelist] RG1
# clreslogicalhostname create -g RG1 logical-host-1
# clresourcegroup online -M RG1
```

- 2 Create failover resource groups for the logical hostnames for the managed server.

```
# clresourcegroup create -p nodelist=node1,node2 logicalhost-n1-rg
# clresourcegroup create -p nodelist=node2,node1 logicalhost-n2-rg
```

- 3 Create logical hostname resources in the resource groups.

```
# clreslogicalhostname create -g logicalhost-n1-rg -h logicalhost-n1 logicalhost-n1-rs
# clreslogicalhostname create -g logicalhost-n2-rg -h logicalhost-n2 logicalhost-n2-rs
```

- 4 Bring the logical hostname resource groups online.

```
# clresourcegroup online -emM logicalhost-n1-rg
# clresourcegroup online -emM logicalhost-n2-rg
```

- 5 Set the Failback property for each logical hostname resource group.

```
# clresourcegroup set -p Failback=True logicalhost-n1-rg
# clresourcegroup set -p Failback=True logicalhost-n2-rg
```

- 6 Create a cluster file system managed by the HAStoragePlus resource.

For more information, see [Chapter 5, “Creating a Cluster File System,”](#) in *Oracle Solaris Cluster Software Installation Guide*.

## Installing and Configuring the WebLogic Server Application

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

### ▼ How to Install WebLogic Server

---

**Note** – This procedure is based on the configuration that is described in “[Simple Configuration](#)” on [page 17](#). If you are planning a different configuration, you must configure the WebLogic Server accordingly.

---

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



---

**Note** – For failover services, type the logical host name or its IP address when configuring the WebLogic Servers.

For multi-master configurations, ensure that each managed server is configured to listen on each logical hostname or its IP address.

---

- 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 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 WebLogic Server 8.1 or later versions.

---

---

**Note** – Starting with WebLogic Server version 10.3, the `boot.properties` file must reside in both the `$DOMAIN_DIR` and `$DOMAIN_DIR/servers/server-name/security` directories to bypass the need to prompt for user credentials when starting and stopping instances of WebLogic Server. If the `$DOMAIN_DIR/servers/server-name/security` directory does not exist or does not include a `boot.properties` file, create the directory and copy the `boot.properties` file from the `$DOMAIN_DIR`. For more information about the `boot.properties` file for WebLogic Server version 10.3, see [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/server\\_start/overview.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/server_start/overview.html).

---

- 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`.
- 

**Note** – Starting with WebLogic Server version 10.3, the `startWLS.sh` script has been removed. Therefore, these environment settings must be made only in the `setWLSEnv.sh` script.

---

- 7 For versions of WebLogic Server before 10.3, verify that the config.xml file is in the same directory as the START scripts.**

- 8 For a multi-master configuration of WebLogic Server installed on a local file system, replicate the domain and Managed Servers across the cluster.**
  - a. Use the `pack.sh` command to create a template of the domain and Managed Servers that you created.
  - b. Copy the template to other Oracle Solaris Cluster nodes.
  - c. Use the `unpack.sh` command to unpack the template to create the domain and Managed Servers.

For more information, see [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/server\\_start/overview.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/server_start/overview.html).

## Installing a Database

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

## Installing a Web Server

If you are using a web server with 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 Oracle Solaris Cluster, install that version.

# Verifying the WebLogic Server Installation and Configuration

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

## ▼ How to Verify the WebLogic Server Installation and Configuration for Failover Services

Use this procedure to verify the WebLogic Server Administration Server, 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 failover configuration that is described in [“Standard Data Service Configurations” on page 16](#). If you are planning a different configuration, you must configure the 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 that contains the Administration Server and the Managed Server START scripts configured in the section [“Installing and Configuring the WebLogic Server Application” on page 24](#).**
- 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 WebLogic Servers to work with the Oracle Solaris Cluster HA for WebLogic Server.**

- 13 **Stop the Administration Server and the Managed Servers and proceed to the next section to install the Oracle Solaris Cluster HA for WebLogic Server.**

## ▼ **How to Verify the WebLogic Server Installation and Configuration for Multi-Master Services**

Use this procedure to verify the WebLogic Server Administration Server, WebLogic Managed Server, and database installation and configuration for multi-master services. 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 multi-master configuration that is described in “[Standard Data Service Configurations](#)” on page 16. If you are planning a different configuration, you must configure the WebLogic Server accordingly.

---

- 1 **Verify that the *logical-host-1* and *logical-host-2* configured in *RG1* and *RG2* are online on *cluster-node1* and *cluster-node2* respectively.**
- 2 **If you are using a database, verify that the database is running.**
- 3 **Go to the directory that contains the Administration Server and the Managed Server START scripts.**
- 4 **Start the Administration Server by running the Administration Server START script.**  
For example:

```
cluster-node1>cd /mnt/user_projects/domains/base_domain
cluster-node1>./startWebLogic.sh
```
- 5 **After the Administration Server starts successfully, start the Managed Server *mgd1* on *phys-host-1*.**  
For example:

```
cluster-node1>cd /mnt/user_projects/domains/base_domain_mgd1
cluster-node1>./startManagedWebLogic.sh mgd1
```
- 6 **Make sure that you can successfully connect to the *logical-host-1* from a client.**
- 7 **Verify that the Administration Server and the Managed Servers are in the **RUNNING** mode on *phys-node-1*.**
- 8 **Make sure that you can successfully connect to the *logical-host-2* from a client.**

- 9 Go to the directory containing the domain directory on phys-host-2 and start the Managed Server mgd2.  
For example:  

```
cluster-node1>cd /mnt/user_projects/domains/base_domain_mgd1
cluster-node1>./startManagedWebLogic.sh mgd2
```
- 10 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 WebLogic Servers to work with the Oracle Solaris Cluster HA for WebLogic Server in a multi-master configuration.
- 11 Stop the Administration Server and the Managed Servers, and proceed to the next task to install the Oracle Solaris Cluster HA for WebLogic Server software.

## Installing the HA for WebLogic Server Package

If you did not install the HA for WebLogic Server package during your initial Oracle Solaris Cluster installation, perform this procedure to install the package.

### ▼ How to Install the HA for WebLogic Server Package

Perform this procedure on each cluster node where you want the HA for WebLogic Server software to run.

- 1 On the cluster node where you are installing the data service package, assume the root role.
- 2 Ensure that the solaris and ha-cluster publishers are valid.

```
# pkg publisher
PUBLISHER          TYPE    STATUS  URI
solaris            origin online  solaris-repository
ha-cluster         origin online  ha-cluster-repository
```

For information about setting the solaris publisher, see [“Set the Publisher Origin to the File Repository URI”](#) in *Copying and Creating Oracle Solaris 11.1 Package Repositories*.

- 3 Install the HA for WebLogic Server software package.  

```
# pkg install ha-cluster/data-service/weblogic
```

- 4 Verify that the package installed successfully.

```
$ pkg info ha-cluster/data-service/weblogic
```

Installation is successful if output shows that State is Installed.

**5 Perform any necessary updates to the Oracle Solaris Cluster software.**

For instructions on updating single or multiple packages, see [Chapter 11, “Updating Your Software,”](#) in *Oracle Solaris Cluster System Administration Guide*.

## Registering and Configuring the Oracle Solaris Cluster HA for WebLogic Server

This section contains the procedures that you need to configure Oracle Solaris Cluster HA for WebLogic Server.

### Tools for Registering and Configuring Oracle Solaris Cluster HA for WebLogic Server

Oracle Solaris Cluster software provides the following tools for registering and configuring HA for WebLogic Server in the global cluster or in a zone cluster:

- **The `clsetup(1CL)` utility.**
- **Oracle Solaris Cluster maintenance commands.**

The `clsetup` utility provides a wizard for configuring HA for WebLogic Server. This wizard reduces the possibility for configuration errors that might result from command syntax errors or omissions. This wizard also ensures that all required resources are created and that all required dependencies between resources are set. For more information, see [“Using the `clsetup` Utility to Register and Configure the WebLogic Server Data Service”](#) on page 30.

### Using the `clsetup` Utility to Register and Configure the WebLogic Server Data Service

The WebLogic Server data service configuration is a multiple step procedure, which the `clsetup` utility's WebLogic Server Configuration wizard enables you to perform by answering prompts. You do not need to run individual commands and set extension properties explicitly.

Use the `clsetup` utility's WebLogic Server Configuration wizards in the following order:

1. [“How to Configure Logical Host Resources for Oracle Solaris Cluster HA for WebLogic Server \(`clsetup`\)”](#) on page 31
2. [“How to Configure Storage Resources for Oracle Solaris Cluster HA for WebLogic Server \(`clsetup`\)”](#) on page 33
3. [“How to Register and Configure the Oracle Solaris Cluster HA for WebLogic Server as an Administration Server \(`clsetup`\)”](#) on page 35

4. “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Managed Servers (c`lsetup`)” on page 38
5. “How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Reverse Proxy Servers (c`lsetup`)” on page 41

## ▼ How to Configure Logical Host Resources for Oracle Solaris Cluster HA for WebLogic Server (c`lsetup`)

Use this procedure to configure logical hostname resources for Oracle Solaris Cluster HA for WebLogic Server.

**Before You Begin** Before you run `clsetup`, ensure that the following tasks have been performed:

- WebLogic server software and agent packages are installed on the nodes of the cluster as mentioned in “Installing and Configuring the WebLogic Server Application” on page 24
- Volumes, disk groups, and file systems are created
- The WebLogic domain, the Administration Server, and Managed Server instances are created with the `WebLogic config.sh` script

**1 Become root or a role with on any cluster node.**

**2 Start the `clsetup` utility.**

```
# clsetup
```

The `clsetup` main menu is displayed.

**3 Type the number for Data Services and press Return.**

The Data Services menu is displayed.

**4 Type the number for WebLogic Server and press Return.**

The `clsetup` utility displays a list of WebLogic server locations.

**5 Select the Global Cluster or Zone Cluster by typing the number that corresponds to the WebLogic Server location and press Return.**

If you specified a Zone Cluster, the `clsetup` utility displays a list of zone clusters.

If you specified a Global Cluster, the `clsetup` utility displays a list of tasks you need to complete. Continue to [Step 7](#).

**6 If you specified a Zone Cluster, type the number that corresponds to the zone cluster where you want to configure the WebLogic server and press Return.**

The WebLogic Server Configuration wizard displays a list of tasks you need to complete to create necessary resources.

**7 Type the number for Logical Hostnames, and press Return.**

The prerequisites for logical hostname configuration are displayed.

**8 Verify the prerequisites have been met and press Return.**

If you are configuring in a zone cluster, the zone cluster nodes are displayed.

If you are configuring in a global cluster on Solaris 10, a list of global cluster nodes and zone nodes is displayed.

If you are configuring on Solaris 11, the zone nodes are not supported and only the global cluster nodes are displayed.

**9 Select the nodes where you want Oracle Solaris Cluster HA for WebLogic Server to run.**

- **To accept the default selection of all listed nodes in an arbitrary order, type a and press Return.**

- **To select a subset of the listed nodes, type the numbers of the nodes with a space or comma between the numbers. Then press Return.**

Ensure that the nodes are listed in the order in which the nodes are to appear in the resource group's node list. The first node in the list is the primary node of this resource group.

- **To select all nodes in a particular order, type the numbers of the nodes in the order you want with a space or comma between the numbers. Then press Return.**

Ensure that the nodes are listed in the order in which the nodes are to appear in the resource group's node list.

**10 To confirm your selection of nodes, type d and press Return.**

The `clsetup` utility displays a screen where you can specify the logical hostname that the resource is to make available for the first node in the resource group.

**11 Type the logical hostname and press Return.**

The panel is re-displayed for each node that you added to the resource group, and you must type a unique name for each node.

When you have provided each node with a logical hostname, the utility displays a review panel showing the resources and resource groups that are about to be created.

**12 In the review panel, do one of the following:**

- **To confirm creation of the resource groups, type d and press Return.**



- **To change the names of any resources or groups, type the number of the item in the list and press Return.**

The `clsetup` utility displays a new panel for changing the names. You can type the number for the name you want to change, and the utility prompts you to change the name.

Type **d** and press Return to confirm the new names.

The utility displays the Review Configuration of Logical Hostname Resources panel to display the resource name, resource group name, node list, and logical hostname that will be created.

### 13 **To create the configuration, type c and Press Return.**

When configuration is complete, the `clsetup` utility displays the commands that it ran to create the configuration.

---

**Note** – The `clsetup` utility will roll back the changes if it fails to complete the logical host configuration process.

---

### 14 **Press Return to continue.**

The `clsetup` utility returns you to the list of options for configuring Oracle Solaris Cluster HA for WebLogic Server.

Continue to the next task, “[How to Configure Storage Resources for Oracle Solaris Cluster HA for WebLogic Server \(clsetup\)](#)” on page 33.

## ▼ **How to Configure Storage Resources for Oracle Solaris Cluster HA for WebLogic Server (clsetup)**

These instructions assume that you are at the WebLogic Server Configuration list of options for configuring Oracle Solaris Cluster HA for WebLogic Server in the `clsetup` utility.

**Before You Begin** You must complete “[How to Configure Logical Host Resources for Oracle Solaris Cluster HA for WebLogic Server \(clsetup\)](#)” on page 31 before configuring storage resources.

### 1 **In the WebLogic Server Configuration panel, type the number corresponding to Storage and press Return.**

The `clsetup` utility reminds you that before you continue, you must ensure that the required volumes, disk groups, and file systems were already created.

### 2 **Press Return to continue with configuring highly available storage.**

The `clsetup` utility displays the available nodes in the cluster, and shows all the nodes as selected in an arbitrary order. You can specify particular nodes in an order of preference.

**3 Select the nodes where you want Oracle Solaris Cluster HA for WebLogic Server to run.**

- **To accept the default selection of all listed nodes in an arbitrary order, type a and press Return.**

- **To select a subset of the listed nodes, type the numbers of the nodes with a space or comma between the numbers. Then press Return.**

Ensure that the nodes are listed in the order in which the nodes are to appear in the resource group's node list. The first node in the list is the primary node of this resource group.

- **To select all nodes in a particular order, type the numbers of the nodes in the order you want, with a space or comma between the numbers. Then press Return.**

Ensure that the nodes are listed in the order in which the nodes are to appear in the resource group's node list.

**4 Type d and press Return when you are done specifying the nodes.**

**5 Type the number for the type of shared storage you want to configure.**

If you are not sure whether to use a shared file system or shared device, type ? and press Return for information about the storage options.

After you make a selection, the utility discovers existing file system mount points or storage devices and displays them for you to select.

**6 Type the number of the shared file system mount point or shared device and press Return.**

If you are not sure whether to use a shared file system or shared device, type ? and press Return for information about the storage options.

**7 In the review panel, do one of the following:**

- **To confirm creation of the resources and groups, type d and press Return.**

- **To change the names of any resources or groups, type the number of the item in the list and press Return.**

The clsetup utility displays a new panel for changing the names. You can type the number for the name you want to change, and the utility prompts you to change the name.

Type d and press Return to confirm the new names.

The utility displays the Review Configuration of Highly Available Storage Resources panel to display the resource name, resource group name, node list, file system mount points, and storage device groups that will be created.

**8 To create the configuration, type c and Press Return.**

The `clsetup` utility displays a progress message to indicate that the utility is running commands to create the configuration. When configuration is complete, the `clsetup` utility displays the commands that the utility ran to create the configuration.

---

**Note** – The `clsetup` utility will roll back the changes if it fails to complete the storage configuration process.

---

**9 Press Return to continue.**

The `clsetup` utility returns you to the list of options for configuring Oracle Solaris Cluster HA for WebLogic Server.

Continue to [“How to Register and Configure the Oracle Solaris Cluster HA for WebLogic Server as an Administration Server \(clsetup\)”](#) on page 35.

## ▼ **How to Register and Configure the Oracle Solaris Cluster HA for WebLogic Server as an Administration Server (clsetup)**

Use this procedure to configure Oracle Solaris Cluster HA for WebLogic Server for an Administration Server.

These instructions assume that you are at the WebLogic Server Configuration list of options for configuring Oracle Solaris Cluster HA for WebLogic Server in the `clsetup` utility.

---

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

---

**Before You Begin** You must complete [“How to Configure Storage Resources for Oracle Solaris Cluster HA for WebLogic Server \(clsetup\)”](#) on page 33 before beginning this task.

**1 In the WebLogic Server Configuration panel, type the number for configuring the Administration Server and press Return.**

The utility displays information for you to verify the prerequisites that must be met before you try to configure the Administration Server.

**2 Press Return to continue.**

The utility prompts you to enter the location of the domain.

**3 Type the full path to the WebLogic domain directory and press Return.**

Type the complete path to the domain directory.

The `clsetup` utility validates the path and then displays a panel for you to specify the WebLogic home directory location. The utility finds the home directory that is associated with the WebLogic domain that you entered, and displays this directory in the list.

**4 Specify the WebLogic home directory by doing one of the following:**

- **Type the number of a directory in the list and press Return.**
- **Type `e` and press Return, type the full path to the WebLogic home directory that you want to use, and press Return.**

The directory you specify must be accessible from each cluster node.

**5 Specify the full path to the start script for the WebLogic server and press Return.**

The `clsetup` utility supplies the default path to the script found in the WebLogic domain directory. You can press Return to accept this value or type a new path and press Return.

**6 Type the path to the WebLogic Server environment file and press Return.**

You can accept the default by pressing Return, or enter a new name. The environment file is typically `$WEBLOGIC_HOME/server/bin/setWLSEnv.sh` if WebLogic Server is configured through the installation wizard.

The `clsetup` utility displays available logical host resources.

**7 Type the number of the logical hostname resource you want to use for the Administration Server and press Return.**

The logical hostname resource you choose is configured as the host for the administration server resource that is created. The administration server resource has a resource dependency on the logical hostname resource and an offline restart dependency on the storage resource. Both resources are configured in the same failover resource group.

The `clsetup` utility prompts you to specify the optional monitoring URI. This URI can be used by the Fault Monitor to test the functionality of the Oracle WebLogic Server by doing an HTTP GET on the URI.

**8 Specify the optional monitoring URI as follows:**

- **If you do not want to use a monitoring URI, press Return.**
- **If you want to use a monitoring URI, type one or more URIs in the form `http://path/to/monitor` with commas separating multiple URIs, then press Return.**

The URIs will be validated against the configured logical host resources when the resource is created.

The `clsetup` utility then displays highly available storage resources.

**9 Type the number of the storage resource to use for the Administration Server and press Return.**

The storage resources must contain the WebLogic home and domain directory.

The storage resources displayed should be based on the WebLogic home directory value you specified earlier, but if `clsetup` cannot find any, all configured storage resources on the selected cluster are displayed instead.

You can select one from the list, or proceed without selecting anything by typing `d` and pressing Return.

**10 Review the configuration information in the review panel for all the properties associated with the administration server.**

- Press Return to continue if the information is correct.
- If necessary, you can edit the names of the administration server resources here by typing the numbers for these items from the list and pressing Return.
- Type `<` to return to the wizard steps if you need to change any other information.

After you press Return, the utility displays a summary of the information that will be used to create the configuration for the WebLogic Administration Server for your review. You cannot edit any of the values here except by typing `<` to return to the step where the value is specified.

**11 Type `c` and press Return to create the configuration.**

The utility displays the list of commands that are invoked on the cluster and also shows a status message indicating a success or failure. In the event that the configuration fails, a rollback is attempted.

**12 Press Return to exit the wizard for configuring the Administration Server.**

The `clsetup` utility returns to the WebLogic Server Configuration screen.

Continue to [“How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Managed Servers \(`clsetup`\)”](#) on page 38 if you want to configure Managed Servers now.

**13 (Optional) Press `Ctrl+D` and type `yes` to exit the wizard, and then type `q` and press Return two times to quit the `clsetup` utility.**

## ▼ How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Managed Servers (clsetup)

These instructions assume that you are at the WebLogic Server Configuration list of options for configuring Oracle Solaris Cluster HA for WebLogic Server in the `clsetup` utility.

Use this procedure to configure Oracle Solaris Cluster HA for WebLogic Server Managed Servers, using the `clsetup` utility. The utility starts a wizard to guide you through the creation of resource groups and resources for the managed server instances. The managed servers can be configured either in failover or multi-instance mode.

---

**Note** – If you want to configure the Managed Server instances in multi-master mode, you must use the procedure in [“How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Multi-Master Data Service \(CLI\)”](#) on page 46. The `clsetup` wizards do not yet support multi-master configuration.

---

**Before You Begin** You must perform the steps in [“How to Register and Configure the Oracle Solaris Cluster HA for WebLogic Server as an Administration Server \(clsetup\)”](#) on page 35 before configuring managed servers.

- 1 In the WebLogic Server Configuration panel, type the number for the Managed Servers option, and press Return.**

The Verify Prerequisites screen lists the tasks that you should have already performed before you continue.

- 2 Press Return to continue if all the prerequisites have been met.**

The utility prompts you to enter the location of the domain.

- 3 Type the full path to the WebLogic domain directory and press Return.**

Type the complete path to the domain directory.

The utility prompts you to enter the location of the WebLogic home directory.

- 4 Specify the WebLogic home directory by doing one of the following:**

- **Type the number of a directory in the list and press Return.**
- **Type e and press Return, type the full path to the WebLogic home directory that you want to use, and press Return.**

The directory you specify must be accessible from each cluster node.

**5 Specify the full path to the start script for the WebLogic server and press Return.**

The `clsetup` utility supplies the default path to the script found in the WebLogic domain directory. You can press Return to accept this value or type a new path and press Return.

The `clsetup` utility prompts for the path to the WebLogic Server environment file.

**6 Type the path to the WebLogic Server environment file and press Return.**

You can accept the default by pressing Return, or enter a new name. The environment file is typically `$WEBLOGIC_HOME/server/bin/setWLSEnv.sh` if WebLogic Server is configured through the installation wizard.

The `clsetup` utility validates the environment file, then prompts you to specify a configuration mode.

**7 Type the number that corresponds to the configuration mode for the Managed Servers and press Return.****▪ Failover mode**

In failover mode, the WebLogic Server managed server instance runs on only a single node. If the fault monitor detects an error, it restarts the instance on the same node or starts an instance on another cluster node that is configured to master the WebLogic data service.

**▪ Multi-instance mode**

In multi-instance mode, one WebLogic Managed Server instance runs on the cluster node that is the primary node of the Managed Server's logical host. With this type of configuration there could be any number of Managed Server instances.

See [“Standard Data Service Configurations” on page 16](#) for more information about configuration modes.

The `clsetup` utility displays a list of Managed Servers that you can configure.

**8 Type the numbers for the Managed Servers you want to configure and press Return.****▪ For failover mode, you can specify one number.****▪ For multi-instance mode, you can specify multiple numbers separated with spaces or commas.**

The `clsetup` utility displays logical hostname resources that are available for the specified Managed Server.

**9 Type the number of the logical hostname resource you want to use for the Managed Server and press Return.**

The logical host name resource you choose is configured as the host for the managed server resource that is created. The managed server resource has a resource dependency on the logical

hostname resource. The managed server selected will be configured on the same resource group where the selected logical host exists, in failover mode.

In multi-instance mode, for each selected instance one logical hostname resource should be selected. You can select the same logical hostname resource for multiple managed server instances. A new resource and resource group will be created for each managed server instance.

The `clsetup` utility prompts you to specify the optional monitoring URI. This URI can be used by the Fault Monitor to test the functionality of the Oracle WebLogic Server by doing an HTTP GET on the URI.

**10 Specify the optional monitoring URI as follows:**

- **If you do not want to use a monitoring URI, press Return.**
- **If you want to use a monitoring URI, type one or more URIs in the form `http://path/to/monitor` with commas separating multiple URIs, then press Return.**

The URIs will be validated against the configured logical host resources when the resource is created.

The utility displays the highly available storage resources, if any.

**11 Type the number of the storage resource to use for the Managed Server and press Return.**

The storage resources must contain the WebLogic home and domain directory.

The storage resources displayed should be based on the WebLogic home directory value you specified earlier, but if `clsetup` cannot find any, all configured storage resources on the selected cluster are displayed instead.

You can select one from the list, or proceed without selecting anything by typing `d` and pressing Return.

**12 Specify the highly available storage resources:**

- **Type the number of the storage resource you want to use and press Return.**
- **Press Return if no highly available storage resources are present.**
- **Press `d` without making a selection to skip the storage resource selection.**

**13 Review the configuration information in the review panel.**

The review panel shows the values for all the properties associated with the managed servers.

- **If the configuration information is correct and you do not want to change anything, type `c` to create the configuration.**



- **Optionally, to edit the names of the managed server resources, type the number for Managed Server Resource and press Return.**

A new panel is displayed where you can then edit the managed server resource names one at a time, then type **d** when you are done.

The utility displays a summary of the information that will be used to create the configuration for the WebLogic Managed Server instance for your review. You cannot edit any of the values here.

**14 Press Return to create the configuration.**

The `clsetup` utility displays the list of commands that are invoked on the cluster and also shows a status message indicating a success or failure. In the event that the configuration fails, a rollback is attempted.

**15 Press Return to exit the wizard for configuring the Managed Server.**

The `clsetup` utility returns to the WebLogic Server Configuration screen.

Continue to the next procedure for Reverse Proxy Server configuration.

## ▼ **How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Reverse Proxy Servers (clsetup)**

Use this procedure to configure Reverse Proxy Servers for Oracle Solaris Cluster HA for WebLogic Server using the `clsetup` utility. The utility starts a wizard to guide you through the creation of resource groups and resources for the reverse proxy server instance.

These instructions assume that you are at the WebLogic Server Configuration list of options for configuring Oracle Solaris Cluster HA for WebLogic Server in the `clsetup` utility.

**Before You Begin** You must perform the steps in [“How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server Managed Servers \(clsetup\)”](#) on page 38 before configuring proxy servers.

**1 In the WebLogic Server Configuration panel, type the number for the Reverse Proxy Server option, and press Return.**

If you are configuring in a zone cluster, the zone cluster nodes are displayed.

If you are configuring in a global cluster on Solaris 10, a list of global cluster nodes and zone nodes is displayed.

If you are configuring on Solaris 11, the zone nodes are not supported and only the global cluster nodes are displayed.

**2 Press Return to continue.**

The utility prompts you to enter the location of the domain.

**3 Type the full path to the WebLogic domain directory and press Return.**

The default path to the domain directory is typically similar to */WebLogic-installation-dir/Oracle/Middleware/user\_projects/domains/domain-name* where the *WebLogic-installation-dir* and the *domain-name* are specific to your installation.

The utility prompts you to enter the location of the WebLogic home directory.

**4 Specify the WebLogic home directory by doing one of the following:**

- **Type the number of a directory in the list and press Return.**
- **Type e and press Return, type the full path to the WebLogic home directory that you want to use, and press Return.**

The directory you specify must be accessible from each cluster node.

**5 Specify the full path to the start script for the reverse proxy server and press Return.**

The `clsetup` utility supplies the default path to the script found in the WebLogic domain directory. You can press Return to accept this value or type a new path and press Return.

The `clsetup` utility prompts for the path to the WebLogic Server environment file.

**6 Type the path to the WebLogic Server environment file and press Return.**

You can accept the default by pressing Return, or enter a new name. The environment file is typically `$WEBLOGIC_HOME/server/bin/setWLSEnv.sh` if WebLogic Server is configured through the installation wizard.

The `clsetup` utility finds the names of reverse proxy instances and prompts you to specify one to configure.

**7 Type the number that corresponds to the reverse proxy server instance to configure, and press Return.**

The utility prompts you to specify the logical hostname resource for the reverse proxy server.

**8 Type the number of the logical hostname resource you want to use for the reverse proxy server and press Return.**

The logical hostname resource you choose is configured as the host for the reverse proxy server resource that is created.

A single failover resource group will be created for the reverse proxy server instance. The reverse proxy server resource will be configured in the resource group of the selected logical hostname resource. The reverse proxy server resource will have a strong dependency on the

logical host resource and an offline restart dependency on the storage resource. The failover resource group will be created with a strong positive affinity on the storage resource group.

The `clsetup` utility prompts you to specify the optional monitoring URI. This URI can be used by the Fault Monitor to test the functionality of the Oracle WebLogic Server by doing an HTTP GET on the URI.

**9 Specify the optional monitoring URI as follows:**

- **If you do not want to use a monitoring URI, press Return.**
- **If you want to use a monitoring URI, type one or more URIs in the form `http://path/to/monitor` with commas separating multiple URIs, then press Return.**

The URIs will be validated against the configured logical host resources when the resource is created.

**10 Type the number of the storage resource to use for the reverse proxy server and press Return.**

The storage resources must contain the WebLogic home and domain directory.

The storage resources displayed should be based on the WebLogic home directory value you specified earlier, but if `clsetup` cannot find any, all configured storage resources on the selected cluster are displayed instead.

You can select one from the list, or proceed without selecting anything by typing `d` and pressing Return.

**11 Review the configuration information in the review panel for all the properties associated with the reverse proxy server.**

- **If the configuration information is correct and you do not want to change anything, type `d` to indicate you are done.**
- **Optionally, to edit the name of the managed server resources, type the number for Reverse Proxy Server Resource and press Return.**

A new panel is displayed where you can then edit the reverse proxy server resource name, then type `d` when you are done.

The utility displays a summary of the information that will be used to create the configuration for the WebLogic Reverse Proxy Server instance for your review. You cannot edit any of the values here except by typing `<` to go back to the step where the value is specified.

**12 Type c and press Return to create the configuration.**

The utility displays the list of commands that are invoked on the cluster and also shows a status message indicating a success or failure. In the event that the configuration fails, a rollback is attempted.

**13 (Optional) Type q and press Return repeatedly until you quit the clsetup utility.**

If you prefer, you can leave the clsetup utility running while you perform other required tasks before using the utility again.

## Setting Oracle Solaris Cluster HA for WebLogic Server Extension Properties

The sections that follow contain instructions for registering and configuring Oracle Solaris Cluster HA for WebLogic Server resources using commands. For information about the extension properties, see [Appendix A, “HA for WebLogic Server Extension Properties.”](#) The Tunable entry indicates when you can update a property.

For details about all the Oracle Solaris Cluster properties, see the following man pages: [cluster\(1CL\)](#), [rt\\_properties\(5\)](#), [r\\_properties\(5\)](#), and [rg\\_properties\(5\)](#).

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 *Oracle Solaris Cluster Data Services Planning and Administration Guide* to configure resources after the resources are created.

## ▼ How to Register and Configure the Oracle Solaris Cluster HA for WebLogic Server as a Reverse Proxy Server (CLI)

You can configure your WebLogic Server running as a proxy server in a failover configuration. The procedure below assumes that you have completed the following steps:

- You are using one of the configurations described in [“Standard Data Service Configurations”](#) on page 16.

- You have configured the WebLogic Servers as described in “[Installing and Configuring the WebLogic Server Application](#)” on page 24.
- You have created a resource group for running WebLogic Server as a proxy server.
- You have started an administration server and a managed server either inside or outside the agent’s control.

This configuration does not enable a smooth shutdown. The Oracle Solaris Cluster HA for WebLogic Server stop method forces the shutdown of the WebLogic Server, and kills the process. See “[Creating a Resource That Shuts Down Smoothly](#)” on page 54 for instructions on enabling a smooth shut down. For more information, see “[STOP Method](#)” on page 58.

### 1 Install and configure the Oracle Solaris Cluster HA for WebLogic Server as a proxy server.

Follow the instructions on the [WebLogic Server documentation](#).

### 2 Add the WebLogic Server resource type.

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

### 3 Create a proxy server resource for starting the WebLogic Server as a proxy server.

```
# clresource create -g wls-proxy-rg -t SUNW.wls \
-p Confdir_list=/global/bean/beahome/weblogic103 \
-p Server_url=http://logical-host-2:portnumber \
-p Start_script=/global/bean/beahome/user_projects/petstore/startManagedWebLogic.sh \
-p resource_dependencies=wls-mgd1-rs,wls-mgd2-rs...
wls-proxy-rs
```

---

**Note** – If you are running managed server instances outside agent control, ensure that the managed server instances are running. If you are running the managed server instances under the agent control, add the managed server resources that are configured in the proxy server configuration under the `resource_dependencies` property. This ensures that the managed server resources are online before bringing the proxy server resource online.

---

## ▼ How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Failover Data Service (CLI)

Use this procedure to configure Oracle Solaris Cluster HA for WebLogic Server as a failover data service. The following steps assume that you are using the failover configuration that is described in “[Standard Data Service Configurations](#)” on page 16 and have configured the WebLogic Servers as mentioned in “[Installing and Configuring the WebLogic Server Application](#)” on page 24. 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 for a Failover Configuration](#)” on page 22 for procedures to create logical hostname resources. If you are planning a different configuration, you must configure the WebLogic Server resources accordingly.

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

---

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

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

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

```
# clresource create -g RG1 -t SUNW.wls \  
-p Confdir_list=/global/ea/beahome/weblogic700 \  
-p Server_url=http://logical-host-1:7001 \  
-p Start_script=/global/ea/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 Oracle Solaris Cluster HA for WebLogic Server stop method forces the shutdown of the WebLogic Administration Server (kills the process). Refer to [“Creating a Resource That Shuts Down Smoothly” on page 54](#) for the configuration to enable smooth shutdown. For more information, see [“STOP Method” on page 58](#).

---

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

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

The resource is created in the enabled state.

## ▼ **How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Multi-Master Data Service (CLI)**

Use this procedure to configure Oracle Solaris Cluster HA for WebLogic Server in a multi-master configuration. The following steps assume that you are using the configuration that is described in [“WebLogic Servers Configured as a Multi-Master Resource” on page 19](#) and have configured the WebLogic Servers as mentioned in [“Installing and Configuring the WebLogic Server Application” on page 24](#). These steps assume that you have already created a resource group and started the administration server either outside or inside the agent control. If you are planning a different configuration, you must configure the WebLogic Server resources accordingly.

---

**Note** – This configuration does not enable smooth shutdown. The Oracle Solaris Cluster HA for WebLogic Server stop method forces the shutdown of the WebLogic Server (kills the process). Refer to “[Creating a Resource That Shuts Down Smoothly](#)” on page 54 for the configuration to enable smooth shutdown in a multi-master configuration. For more information, see “[STOP Method](#)” on page 58.

---

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

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

**2 Create a scalable resource group for managed servers.**

```
# clresourcegroup create -p Maximum primaries=m \
-p Desired primaries=n managed-server-rg
```

Use the following information:

- -p Maximum primaries=m specifies the maximum number of active primary nodes permitted for this resource group. The default is 1.
- -p Desired primaries=n specifies the desired number of active primary nodes for this resource group. The default is 1.
- *managed-server-rg* is the resource group name.

**3 Bring the resource group online**

```
# clresourceoup online -M managed-server-rg
```

**4 Create a multi-master resource for starting the managed server instances simultaneously.**

The following example starts the WebLogic Server managed server instances mgd1 on node1 and mgd2 on node2.

```
# clresource create -t SUNW.wls -g managed-server-rg \
-p Confdir_list=/local/boa/beahome/wlserver_10.3 \
-p Server_url{node1}=http://logical-host-1:portnumber \
-p Server_url{node2}=http://logical-host-2:portnumber \
-p Start_script=/global/boa/beahome/user_projects/domains/
base_domain_mgd1/bin/startManagedWebLogic.sh \
-p "Server_name{node1}"=mgd1 \
-p "Server_name{node2}"=mgd2 \
-p resource_dependencies=logical-host-1@node1,logical-host-2@node2
managed-server-rs
```

---

**Tip** – You can create the resource in the global cluster or in a zone cluster. To create a resource in the specific zone cluster from the global cluster, use the -Z option to specify the name of the zone cluster.

---

## ▼ How to Register and Configure Oracle Solaris Cluster HA for WebLogic Server as a Multi-Instance Data Service (CLI)

Use this procedure to configure Oracle Solaris Cluster HA for WebLogic Server in a multi-instance configuration. The following steps assume that you are using the configuration that is described in “[WebLogic Servers Configured as Multi-Instance](#)” on page 20 and have configured the WebLogic Servers as mentioned in “[Installing and Configuring the WebLogic Server Application](#)” on page 24. These steps assume that you have already created a resource group and started the administration server either outside or inside the agent control. If you are planning a different configuration, you must configure the WebLogic Server resources accordingly.

---

**Note** – This configuration does not enable smooth shutdown. The Oracle Solaris Cluster HA for WebLogic Server stop method forces the shutdown of the WebLogic Server (kills the process). Refer to “[Creating a Resource That Shuts Down Smoothly](#)” on page 54 for the configuration to enable smooth shutdown in a multi-instance configuration. For more information, see “[STOP Method](#)” on page 58.

---

- 1 **Create a single-node resource group for a managed server, with strong positive affinities for the logical host resource group and the storage resource group.**

```
# clresourcegroup create -p nodelist=node1 \
-p "RG_affinities=++logicalhost-rg,++scalmnt-rg \
managed-server-rg
```

- 2 **Create the managed server resource and set its properties.**

```
# clresource create -t SUNW.wls -g managed-server-rg \
-p Confdir_list=/path/to/weblogic/config/dir \
-p Resource_dependencies=logicalhost-rg.proxy-rs \
-p Resource_dependencies_offline_restart=storage1-rs,storage2-rs,... \
-p Server_url=http://localhost:port-number \
-p Start_script=/path/to/weblogic/start-script \
-p Server_name=managed-server \
-p smooth_shutdown=true \
managed-server-rs
```

## Setting Up the WebLogic Server for HAStoragePlus Configuration

Use the following procedure to configure an HAStoragePlus resource.



## ▼ How to Set Up the WebLogic Server on Zone Clusters for HAStoragePlus Configuration

Use the following procedure to configure an HAStoragePlus resource for zone clusters.

---

**Note** – The examples shown in the following procedure assume that you perform all steps from inside the zone cluster. If you choose to create resources and resource groups from outside the cluster, you need to add the `-Z sczone` option to all commands to specify the name of the zone cluster.

---

### Before You Begin

- The entries in the `/etc/vfstab` file for cluster file systems should contain the global keyword in the mount options.
- The cluster file systems can be configured for zone clusters in the HAStoragePlus resources using the loopback mount mechanism. The `SUNW.HAStoragePlus` resource type makes the cluster file system available to a zone cluster by mounting the file system in the global cluster and then performing a loopback mount in the zone cluster node.
- The cluster file systems configured in the HAStoragePlus resource type for zone clusters should be authorized for use in zone clusters using the `clzonecluster` command. For more information, see “Adding File Systems to a Zone Cluster” in *Oracle Solaris Cluster Software Installation Guide*.
- In Zone Cluster, 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.

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

**2 Create the scalable resource group that contains 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 node names 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 Configure the cluster file system in the zone cluster.

For more information, see “Creating and Configuring a Zone Cluster” in *Oracle Solaris Cluster Software Installation Guide*.

### 4 Register the resource type for the HASStoragePlus resource.

```
# clresourcetype register HASStoragePlus
```

### 5 Create the HASStoragePlus resource *hasp-rs* and define the WebLogic Server file system mount points.

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

### 6 Bring the HASStoragePlus resource and resource group online.

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

### 7 Register the resource type for the WebLogic Server application.

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

### 8 Create a WebLogic Server resource group.

```
# clresourcegroup create -g wls-rg
```

### 9 Add the WebLogic Server resource to *wls-rg* and set the dependency to HASStoragePlus resource.

```
# clresource create -t SUNW.wls -g wls-rg \
-p Confdir_list=/global/bea/beahome/wlserver_10.3 \
-p Server_url{node1}=http://logical-host-1:port-number \
-p Server_url{node2}=http://logical-host-2:port-number \
-p Start_script=/global/bea/beahome/user_projects/domains/
base_domain_mgd1/bin/startManagedWebLogic.sh \
-p "Server_name{node1}"= ManagedServer_1 \
-p "Server_name{node2}"= ManagedServer_2 \
-p smooth_shutdown=true \
-p resource_dependencies=hasp-rs,logical-host-1@node1,logical-host-2@node2 \
wls-rs
```

### 10 Bring the failover resource group online.

```
# clresourcegroup online -M wls-rg
```

# Verifying the Oracle Solaris Cluster HA for 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 Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration for Failover Services

To verify that you have installed and configured Oracle Solaris Cluster HA for WebLogic Server correctly for a failover configuration, perform the following steps:

- 1 **Make sure that you can successfully connect to the 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 WebLogic Administration and Managed Servers must go offline on *cluster-node1* and go online on *cluster-node2*. Ensure that the WebLogic Server processes on *cluster-node1* are stopped. Because smooth shutdown is not enabled, the WebLogic Server process will be killed by the Oracle Solaris Cluster HA for WebLogic Server STOP method instead of being shut down smoothly. Refer to [“Creating a Resource That Shuts Down Smoothly” on page 54](#) for the configuration that enables smooth shutdown. For more information, see [“STOP Method” on page 58](#) for the configuration that enables smooth shutdown.

- 3 **Make sure that you can successfully connect to the 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 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 Oracle Solaris Cluster HA for WebLogic Server.

**Troubleshooting**

After the WebLogic Administration and Managed servers are in production under Oracle Solaris 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.

## ▼ **How to Verify the Oracle Solaris Cluster HA for WebLogic Server Installation and Configuration in a Multi-Master or Multi-Instance Configuration**

To verify that you have installed and configured Oracle Solaris Cluster HA for WebLogic Server correctly for a multi-master or multi-instance configuration, perform the following steps:

**1 Ensure that you can successfully connect to the WebLogic Servers from a client and that all the Managed Servers are in the RUNNING mode.**

**2 On one of the cluster nodes, kill the Managed Server process.**

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

**3 On the WebLogic Server cluster, deploy a sample application that consists of the WebLogic servers.**

**4 Use a proxy web server to try to access the sample application.**

**5 Shut down one of the nodes and try to access the application using the proxy web server address.**

You should still be able to access the application.

If the previous steps are successful, you have correctly configured Oracle Solaris Cluster HA for WebLogic Server in a multi-master or multi-instance configuration.

**Troubleshooting** After the WebLogic Server managed servers are in production under Oracle Solaris 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 Oracle Solaris Cluster HA for WebLogic Server Configurations

The installation, registration, and configuration procedures in this chapter assume that you are installing the configuration that is described in “[Standard Data Service Configurations](#)” on [page 16](#). This section provides examples of other possible Oracle Solaris Cluster HA for WebLogic Server configurations.

### Creating a Simple WebLogic Server Resource

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

---

**Note** – Starting with WebLogic Server version 10.3, the `boot.properties` file must reside in both the `$DOMAIN_DIR` and `$DOMAIN_DIR/servers/server-name/security` directories to bypass the need to prompt for user credentials when starting instances of WebLogic Server.

---

```
# 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 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 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 Oracle Solaris Cluster HA for 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 Oracle Solaris Cluster HA for 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 Oracle Solaris Cluster HA for WebLogic Server STOP method kills the WebLogic Server process to shut down the instance. To enable smooth shutdown of the WebLogic Server, set the `Smooth_shutdown` extension property to `TRUE`. If this extension property is enabled, the `DOMAIN_DIR/boot.properties` file must contain a valid user name and password.

---

**Note** – Starting with WebLogic Server version 10.3, the `boot.properties` file must reside in both the `DOMAIN_DIR` and `DOMAIN_DIR/servers/server-name/security` directories to bypass the need to prompt for user credentials when stopping instances of WebLogic Server. If the `DOMAIN_DIR/servers/server-name/security` directory does not exist or does not include a `boot.properties` file, create the directory and copy the `boot.properties` file from the `DOMAIN_DIR`.

---

To configure a resource which will shut down smoothly in a failover configuration, 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.

To configure a resource that will shut down smoothly in a multi-master configuration, use the following commands:

```
# clresource create -g RG -t SUNW.wls \
-p Confdir_list=/mnt/wlserver_10.3/ \
-p Server_url{phys-host-1}=http://logical-host-1:port-number \
-p Server_url{phys-host-2}=http://logical-host-2:port-number \
-p Start_script=/mnt/user_projects/domains/base_domain_mgd1/startManagedWebLogic.sh \
-p "Server_name{phys-host-1}"=mgd1 \
-p "Server_name{phys-host-2}"=mgd2 \
-p Smooth_shutdown=true \
-p resource_dependencies=logical-host-1@phys-host-1,logical-host-2@phys-host-2 \
managed-rs
```

The resource is created in the enabled state.

## Creating a Resource That Probes the Database

The Oracle Solaris Cluster HA for WebLogic Server does not probe the database health. If the database is down when Oracle Solaris Cluster HA for WebLogic Server starts, the data service fails to start. To have the Oracle Solaris Cluster HA for WebLogic Server probe the database, supply your own database probe script to Oracle Solaris Cluster HA for 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_shtudown=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 Oracle Solaris Cluster HA for WebLogic Server resource to monitor URIs that are served by the 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 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-rs
```

The resource is created in the enabled state.

## Using a Non-Clustered Managed Server Instance as a Proxy Server

You can configure a non-clustered managed server instance to run as a proxy server that hosts a servlet that directs the requests to the clustered managed server instances. In this configuration, you can define a failover configuration to make the WebLogic proxy server highly-available. When you define this configuration, make sure that you specify a resource dependency from the WebLogic Server proxy server to the managed server resource. Setting this dependency ensures that the proxy server resource will not try to come online unless the managed server resource is online.

## Operation of the Oracle Solaris Cluster HA for WebLogic Server Fault Monitor

This section describes the Oracle Solaris Cluster HA for WebLogic Server Fault Monitor.

### Probing Algorithm and Functionality

The Fault Monitor detects failures and takes action. If the monitor detects a failure in a WebLogic Server, it first restarts the WebLogic Server. If the 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 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 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.



In a multi-master configuration, the managed server resources have per-node resource dependencies set on the logical host resources. If the `monitor_uri_list` extension property is set, the probing algorithm iterates through the list of URIs and probes only those URIs that match the logical hostname that is online on that particular node. Probing on the rest of the URIs is ignored on that particular node.

For example, if

`Monitor_Uri_List=http://log-host-1:7003/abc.asp,http://log-host-2:7003/abc.asp`, and the property `resource_dependencies=log-host-1@node1,log-host-2@node2`, the probe method on Node1 connects to the URI `http://log-host-1:7003/abc.asp` and ignores the URI `http://log-host-2:7003/abc.asp`. The probe method on Node2 connects to the URI `http://log-host-2:7003/abc.asp` and ignores the other URI. The probe method running on each node takes appropriate action if a failure occurs.

---

**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 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 WebLogic Server resource. If the database probe script returns success (database is up), action is taken on the WebLogic Server resource. If the database probe script returns a failure (database is down), the WebLogic Server probe will not take any action (restart or failover) until the database is up.

## START Method

Before starting the WebLogic Server that is configured in the resource, the 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 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 WebLogic Server. The probe method waits until the database is up to start the WebLogic Server, as explained in [“Probing Algorithm and Functionality” on page 56](#).

After starting the `START` script under `pmf`, the `START` method waits until the WebLogic Server is in `RUNNING` mode before declaring the `START` method successful. While waiting for the 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 WebLogic Server starts completely. After the WebLogic Server is in the `RUNNING` mode, the `START` method sets the status to “Started Successfully.”

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 WebLogic Server instances.

## STOP Method

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

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

If this command fails, the WebLogic Server is shut down by using SIGKILL. Even if the command succeeds, the STOP method sends SIGKILL to ensure that the WebLogic Server 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 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 WebLogic Server 8.1 or later versions.

## HA for 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 Oracle Solaris 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 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 WebLogic Server resource creation will fail.

---

Starting with WebLogic Server version 10.3, the `startWLS.sh` script has been removed. Therefore, you do not need to create a link to the `startWLS.sh` script for these versions.

<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 WebLogic Servers will be started only if this Database probe returns success. If an HA-WLS probe detects a failure in a 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 56](#) for more details.

<b>Data type</b>	String
<b>Default</b>	Null
<b>Range</b>	Not applicable
<b>Tunable</b>	At any time

#### Environment\_File

The absolute path to the WebLogic Server environment file. This file is typically installed in `$WEBLOGIC_HOME/server/bin` when WebLogic Server is configured by using the installation wizard.

<b>Data type</b>	String
<b>Default</b>	No default defined
<b>Range</b>	Not applicable
<b>Tunable</b>	When disabled

#### 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 WebLogic Server by doing an HTTP GET on the URI. The `Server_Url` extension property is for simple probes on the host name and port. This extension property can be used to probe the WebLogic Server functionality by retrieving a Java servlet or making the 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 host names 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 host names 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.

You can specify a different value of the `Server_name` extension property for each node that can master the resource.

<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 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 WebLogic Server documentation for the version you are using. For example, for WebLogic Server 10.3, the documentation is located at [http://download.oracle.com/docs/cd/E12840\\_01/wls/docs103/sitemap.html](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/sitemap.html).

Ensure sure that the host names 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 host names using DNS.

You can specify a different value of the `Server_url` extension property for each node that can master the resource.

---

**Note** – To avoid any failures due to delays in name-service lookup, the host name used in the `Server_url` property should be added to the `/etc/hosts` file. Configure name-service mapping in the `/etc/nsswitch.conf` file on the servers to first check the local files before trying to access other name services.

---

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

**Smooth\_shutdown**

Indication of whether to enable smooth shutdown using `WebLogic.Admin` class. To perform a smooth shutdown before trying to kill the WebLogic Server process, set this extension property to `TRUE` and provide a valid user name and password in the `$DOMAIN_DIR/boot.properties` file.

<b>Data type</b>	Boolean
<b>Default</b>	FALSE
<b>Range</b>	Not applicable
<b>Tunable</b>	At any time

**Start\_Script**

The complete path to the script that should be used to start the 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 WebLogic Server. For more information, see [“Configuration Requirements” on page 14](#).

<b>Data type</b>	String
<b>Default</b>	No default defined
<b>Range</b>	Not applicable
<b>Tunable</b>	At creation

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