Oracle® Solaris Cluster Data Service for Oracle WebLogic Server Guide

ORACLE®

Oracle Solaris Cluster Data Service for Oracle WebLogic Server Guide

Part No: E71431

Contents

Figures

Tables

Using This Documentation

- **Overview** – Describes how to install and configure the Oracle Solaris Cluster HA for Oracle WebLogic Server data service.
- **Audience** – Technicians, system administrators, and authorized service providers.
- **Required knowledge** – Advanced experience troubleshooting and replacing hardware.

Product Documentation Library

Documentation and resources for this product and related products are available at `http://www.oracle.com/pls/topic/lookup?ctx=E69294_01`.

Feedback

Provide feedback about this documentation at `http://www.oracle.com/goto/docfeedback`.

♦♦♦ **C H A P T E R 1**

1

Installing and Configuring Oracle Solaris Cluster HA for Oracle WebLogic Server

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

This chapter contains the following sections:

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 Oracle WebLogic Server (HA for WebLogic Server) data service provides fault monitoring and high availability for the WebLogic Server application. High availability is provided for the WebLogic Administration Server and WebLogic Managed Server.

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.

Note - You can install and configure this data service to run in either the global zone or a zone cluster. For updated information about supported configurations of this data service, see the *Oracle Solaris Cluster 4 Compatibility Guide*.

For conceptual information on failover and multi-master services, see the *Concepts for Oracle Solaris Cluster 4.4*.

TABLE 1   Protection of WebLogic Server Components

WebLogic Server Component	Protected by
WebLogic Server	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 HA for WebLogic Server

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

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

Task	For Instructions
Plan the WebLogic Server installation	"Planning the HA for WebLogic Server Installation and Configuration" on page 18
Prepare the nodes and disks	"How to Prepare the Nodes for a Failover Configuration" on page 28
	"How to Prepare the Nodes for a Multi-Master Configuration" on page 29

Task	For Instructions
Install and configure WebLogic Server	"How to Prepare the Nodes for a Multi-Instance Configuration" on page 30
	"How to Install WebLogic Server" on page 31
	"Installing a Database" on page 33
	"Installing a Web Server" on page 33
Verify WebLogic Server installation and configuration	■ For failover services, see "How to Verify the WebLogic Server Installation and Configuration for Failover Services" on page 33
	■ For multi-master and multi-instance services, see "How to Verify the WebLogic Server Installation and Configuration for Multi-Master Services" on page 35
Install HA for WebLogic Server packages	"How to Install the HA for WebLogic Server Package" on page 36
Register and configure HA for WebLogic Server	For guided configuration using the `clsetup` utility: ■ "How to Configure Logical Host Resources for HA for WebLogic Server (`clsetup`)" on page 39 ■ "How to Configure Storage Resources for HA for WebLogic Server (`clsetup`)" on page 42 ■ "How to Register and Configure the HA for WebLogic Server as an Administration Server (`clsetup`)" on page 44 ■ "How to Register and Configure HA for WebLogic Server Managed Servers (`clsetup`)" on page 47 ■ "How to Register and Configure HA for WebLogic Server Reverse Proxy Servers (`clsetup`)" on page 51 For configuring with commands: ■ For failover services, see "How to Register and Configure HA for WebLogic Server as a Failover Data Service (CLI)" on page 55 ■ For multi-master services, see "How to Register and Configure HA for WebLogic Server as a Multi-Master Data Service (CLI)" on page 57 ■ For multi-instance services, see "How to Register and Configure HA for WebLogic Server as a Multi-Instance Data Service (CLI)" on page 58
Verify HA for WebLogic Server installation and configuration	■ For failover services, see "How to Verify the HA for WebLogic Server Installation and Configuration for Failover Services" on page 62
	■ For multi-master and multi-instance services, see "How to Verify the HA for WebLogic Server Installation and Configuration in a Multi-Master or Multi-Instance Configuration" on page 63
View the HA for WebLogic Server fault monitor	"Operation of the HA for WebLogic Server Fault Monitor" on page 68

Planning the HA for WebLogic Server Installation and Configuration

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

Configuration Restrictions

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

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

For restrictions that apply to all data services, see the *Oracle Solaris Cluster 4.4 Release Notes*.

- 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.HAStoragePlus` resource type to make a cluster file system available to zone cluster nodes. For information on the `HAStoragePlus` configuration for a zone cluster, see *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

Configuration Requirements

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

Use the requirements in this section to plan the installation and configuration of HA for WebLogic Server. These requirements apply to HA for WebLogic Server only. You must meet these requirements before you proceed with your 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 *Planning and Administering Data Services for Oracle Solaris Cluster 4.4*.

- 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 ensure that the database is highly available before configuring and starting the WebLogic Server under HA for WebLogic Server.

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

  To configure the Managed Server in independent mode, see the relevant WebLogic Server documentation for the version you are using. For example, for WebLogic Server 12*c*, the documentation is located at `http://docs.oracle.com/middleware/1212/wls/index.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/wls/user_projects/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.

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 12*c*, see `http://docs.oracle.com/middleware/1212/wls/START/overview.htm#START112`.

- 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 12*c*, the documentation is located at `http://docs.oracle.com/middleware/1212/wls/index.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, ensure that 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 12*c*, the documentation is located at `http://docs.oracle.com/middleware/1212/wls/index.html`.

- Ensure 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 HA for WebLogic Server. 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 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 by HA for 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`.

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

HA for WebLogic Server might support additional configurations. Contact your Oracle service provider for information about additional configurations.

WebLogic Server Configured as a Failover Resource

Simple Configuration

This simple configuration for the 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 cluster file system. See Figure 1, "HA for WebLogic Server Simple Configuration," on page 22 for an illustration of this configuration.

FIGURE   1   HA for WebLogic Server Simple Configuration
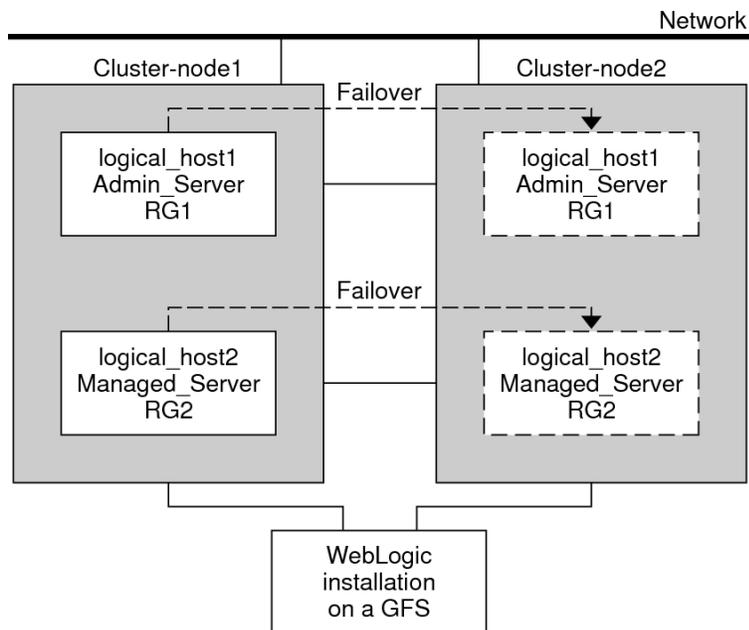
Configuration 1

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 *Planning and Administering Data Services for Oracle Solaris Cluster 4.4*.

See Figure 2, "HA for WebLogic Server File System Failover Configuration," on page 24 for an illustration of this configuration.

FIGURE   2   HA for WebLogic Server File System Failover Configuration
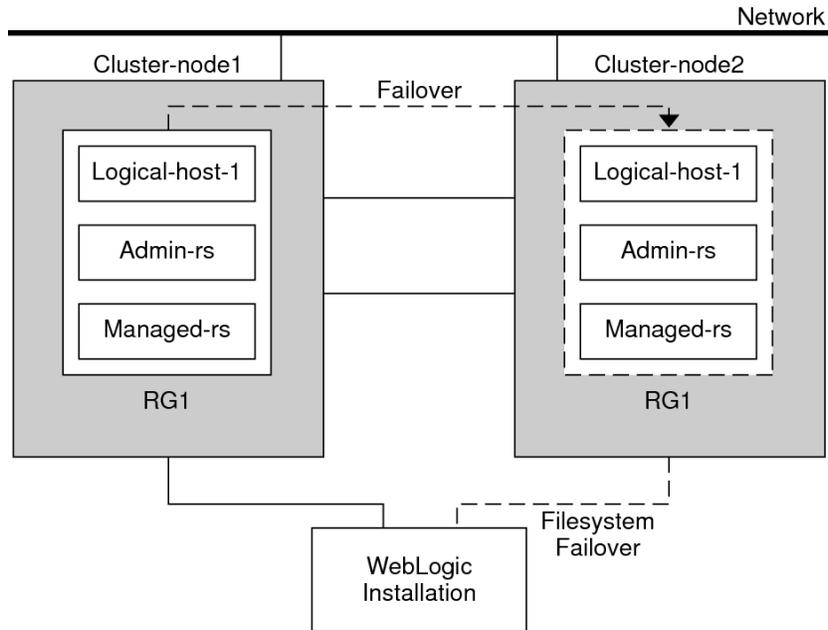
WebLogic Servers Configured as a Multi-Master Resource

This example illustrates a multi-master configuration for HA for 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 3, "WebLogic Server Configured as a Multi-Master Resource," on page 25, 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 3   WebLogic Server Configured as a Multi-Master Resource
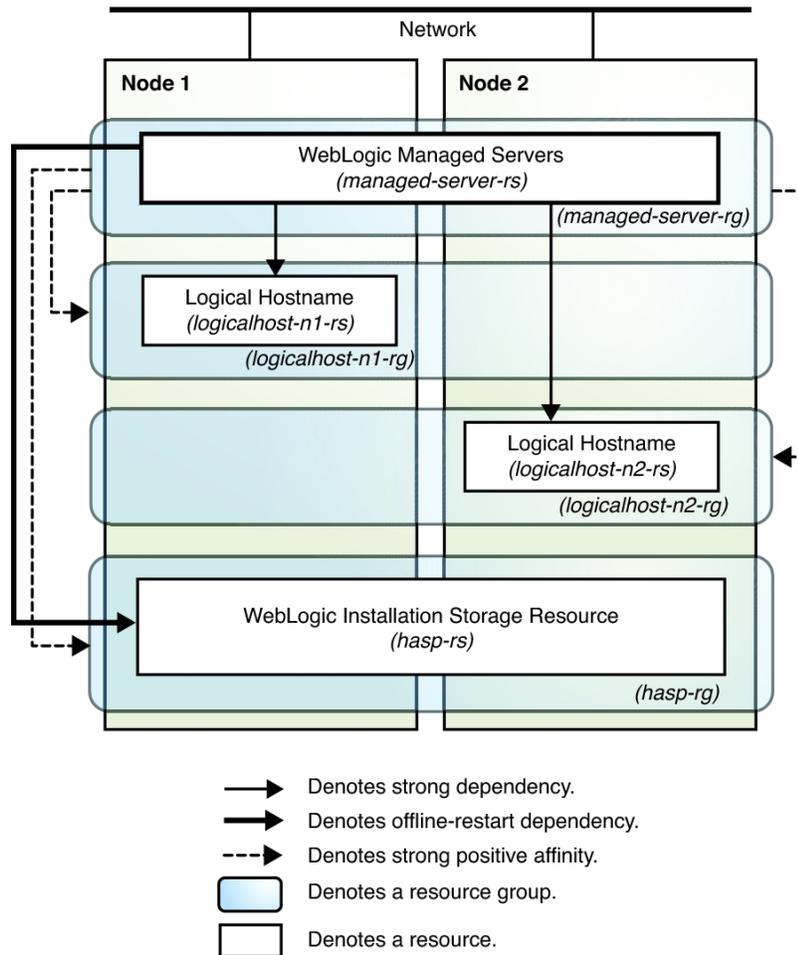
WebLogic Servers Configured as Multi-Instance

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 4, "WebLogic Server Configured as a Multi-Instance Application With Single-Node Resource Groups," on page 27 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 4   WebLogic Server Configured as a Multi-Instance Application With Single-Node Resource Groups
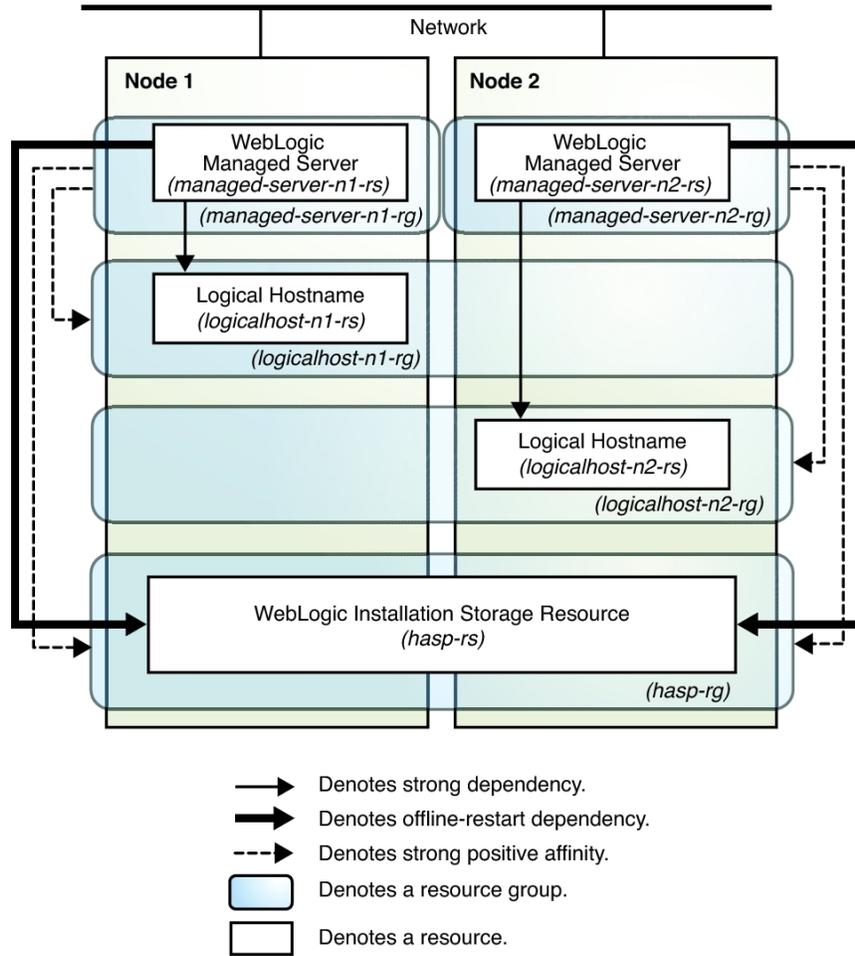
Preparing the Nodes and Disks

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 21.

▼ 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.

Before You Begin   Ensure that the /etc/netmasks file has IP-address subnet and netmask entries for all logical hostnames. If necessary, edit the /etc/netmasks file to add any missing entries.

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 hostname where WebLogic Administration Server will be listening. This hostname can be set from the WebLogic console.

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

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

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

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

4. **Create a failover resource group to hold the logical 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 21.

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

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

The *logical-host-2* is the hostname where the WebLogic Managed Server will be listening.

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

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

---

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

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

7. **Create a highly-available local file system managed by the `HAStoragePlus` resource.**

For more information, see Chapter 5, "Creating a Cluster File System" in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

▼ 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.

Before You Begin   Ensure that the `/etc/netmasks` file has IP-address subnet and netmask entries for all logical hostnames. If necessary, edit the `/etc/netmasks` file to add any missing entries.

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

5. **Create a cluster file system managed by the `HAStoragePlus` resource.**

   For more information, see Chapter 5, "Creating a Cluster File System" in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

▼ 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 3, "WebLogic Server Configured as a Multi-Master Resource," on page 25.

Before You Begin Ensure that the /etc/netmasks file has IP-address subnet and netmask entries for all logical hostnames. If necessary, edit the /etc/netmasks file to add any missing entries.

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 -eM logicalhost-n1-rg
# clresourcegroup online -eM 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 *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

Installing and Configuring the HA for 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 21. 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 cluster file system or a highly available local 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 12*c*, see http://docs.oracle.com/middleware/1212/wls/index.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://docs.oracle.com/middleware/1212/wls/START/overview.htm#START112`.

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 HA for 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 21. 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 HA for WebLogic Server Application" on page 31.**

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. **Ensure 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 HA for WebLogic Server.**

13. **Stop the Administration Server and the Managed Servers and proceed to the next section to install the 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 21. 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. **Ensure 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. **Ensure 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 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 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 data service package is available from the configured publisher and that the `solaris` and `ha-cluster` publishers are valid.**

```
# pkg list -a ha-cluster/data-service/weblogic
# pkg publisher
PUBLISHER                         TYPE     STATUS   P  LOCATION
solaris                           origin   online   F  solaris-repository
ha-cluster                        origin   online   F  ha-cluster-repository
```

For information about setting the `solaris` publisher, see "Adding, Modifying, or Removing Package Publishers" in *Updating Systems and Adding Software in Oracle Solaris 11.4*.

Tip - Use the -nv options whenever you install or update to see what changes will be made, such as which versions of which packages will be installed or updated and whether a new BE will be created.

If you do not get any error messages when you use the -nv options, run the command again without the -n option to actually perform the installation or update. If you do get error messages, run the command again with more -v options (for example, -nvv) or more of the package FMRI pattern to get more information to help you diagnose and fix the problem. For troubleshooting information, see Appendix A, "Troubleshooting Package Installation and Update," in *Updating Systems and Adding Software in Oracle Solaris 11.4*.

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 about updating your software, see Chapter 10, "Updating Software Packages" in *Updating Your Oracle Solaris Cluster 4.4 Environment*.

Registering and Configuring the HA for WebLogic Server

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

Tools for Registering and Configuring 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`(8CL)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 HA for WebLogic Server Data Service" on page 38.

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

The HA for WebLogic Server data service configuration is a multiple step procedure, which the `clsetup` utility's HA for 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 configuration wizards in the following order:

1. "How to Configure Logical Host Resources for HA for WebLogic Server (`clsetup`)" on page 39
2. "How to Configure Storage Resources for HA for WebLogic Server (`clsetup`)" on page 42
3. "How to Register and Configure the HA for WebLogic Server as an Administration Server (`clsetup`)" on page 44
4. "How to Register and Configure HA for WebLogic Server Managed Servers (`clsetup`)" on page 47
5. "How to Register and Configure HA for WebLogic Server Reverse Proxy Servers (`clsetup`)" on page 51

▼ How to Configure Logical Host Resources for HA for WebLogic Server (`clsetup`)

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

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

- An entry for each logical hostname that is to be made available by the resource is added to the name service database.
- If you are using PNM objects, the objects are configured on the nodes where the logical hostname resource can be brought online. Public network management (PNM) objects include Internet Protocol network multipathing (IPMP) groups, trunk and datalink multipathing (DLMP) link aggregations, and VNICs that are directly backed by link aggregations.
- WebLogic Server software and agent packages are installed on the nodes of the cluster as mentioned in "Installing and Configuring the HA for WebLogic Server Application" on page 31.
- 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.

Have available the logical hostnames that you plan to add to the resource group.

1. **Assume the `root` role on any cluster node.**

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

    `# clsetup`

    The `clsetup` main menu is displayed.

3. **Type the number for Data Services.**

    The Data Services menu is displayed.

4. **Type the number for WebLogic Server.**

    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.**

    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.**

   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.**

   The prerequisites for logical hostname configuration are displayed.

8. **Verify the prerequisites have been met.**

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

   If you are configuring in a global cluster, a list of global cluster nodes is displayed.

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

   ■ **To accept the default selection of all listed nodes in an arbitrary order, type a.**

   ■ **To select a subset of the listed nodes, type the numbers of the nodes with a space or comma between the numbers.**

   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.**

   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.**

    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.**

    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.

12. **When you have provided each node with a logical hostname, press Return.**

- **If more than one PNM object is configured for the specified logical hostname, the `clsetup` utility provides a screen where you can specify the PNM objects to use.**
  Proceed to Step 13.

- **If only one PNM object is configured for the specified logical hostname, the `clsetup` utility lists the names of the Oracle Solaris Cluster objects that the utility will create.**
  Skip to Step 14.

13. **Select from the list of available PNM objects one object for each cluster node.**

    The `clsetup` utility displays a review panel showing the resources and resource groups that are about to be created.

14. **In the review panel, do one of the following:**

    - **To confirm creation of the resource groups, type `d`.**

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

15. **To create the configuration, type `c`.**

    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.

    ---

16. **Press Return to continue.**

    The `clsetup` utility returns you to the list of options for configuring the HA for WebLogic Server.
    Continue to the next task, "How to Configure Storage Resources for HA for WebLogic Server (`clsetup`)" on page 42.

▼ How to Configure Storage Resources for HA for WebLogic Server (`clsetup`)

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

Before You Begin   You must complete "How to Configure Logical Host Resources for HA for WebLogic Server (`clsetup`)" on page 39 before configuring storage resources.

1. **In the WebLogic Server Configuration panel, type the number corresponding to Storage.**

   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 any order of preference.

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

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

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

     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.**

     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 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 **?** 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.

If you are not sure whether to use a shared file system or shared device, type ? 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.**

■   **To change the names of any resources or groups, type the number of the item in the list.**

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** 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.

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 HA for WebLogic Server.

Continue to .

▼ How to Register and Configure the HA for WebLogic Server as an Administration Server (`clsetup`)

Use this procedure to configure the HA for WebLogic Server for an Administration Server.

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

Note - Before you start 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 HA for WebLogic Server (`clsetup`)" on page 42 before beginning this task.

Any project you created to run Oracle WebLogic Server exists in the `projects` name service database for the user that runs that application. If no custom project is created for the application, the default project is used. For more information, see the `projects`(1) man page.

Have available the logical hostnames that you plan to add to the resource group.

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

   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.**

   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.**

- **Type `e`, then type the full path to the WebLogic home directory that you want to use.**

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

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

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

6. **Type the path to the WebLogic Server environment file.**

   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 prompts you for the project to use.

7. **Type the option number to choose a listed project.**

   If you did not create a project where WebLogic Server will run, select the default project. The `clsetup` utility displays available logical host resources.

8. **Type the number of the logical hostname resource you want to use for the Administration Server.**

   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 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.**

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

   The `clsetup` utility then displays the server URI value.

10.   If you want to change the value of the server URI used for the Administration Server, type the new value and press Enter.

The `clsetup` utility supplies the default server URI value found in the WebLogic domain directory. You can accept this value or type a new value.

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

11.   Type the number of the storage resource to use for the Administration Server.

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`.

12.   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.**

   ■   **Type the < key 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 the < key to return to the step where the value is specified.

13.   Type `c` 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.

14.   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 HA for WebLogic Server Managed Servers (`clsetup`)" on page 47 if you want to configure Managed Servers now.

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

▼ How to Register and Configure HA for WebLogic Server Managed Servers (`clsetup`)

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

Use this procedure to configure 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 HA for WebLogic Server as a Multi-Master Data Service (CLI)" on page 57. 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 HA for WebLogic Server as an Administration Server (`clsetup`)" on page 44 before configuring Managed Servers.

Any project you created to run Oracle WebLogic Server exists in the `projects` name service database for the user that runs that application. If no custom project is created for the application, the default project is used. For more information, see the `projects(1)` man page.

Have available the logical hostnames that you plan to add to the resource group.

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

   - **Type e, then type the full path to the WebLogic home directory that you want to use.**

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

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

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

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

6. **Type the path to the WebLogic Server environment file.**

   You can accept the default 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 prompts you for the project to use.

7. **Type the option number to choose a listed project.**

   If you did not create a project where WebLogic Server will run, select the default project. The clsetup utility validates the environment file, then prompts you to specify a configuration mode.

8. **Type the number that corresponds to the configuration mode for the Managed Servers.**

   - **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 21 for more information about configuration modes.

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

9. **Type the numbers for the Managed Servers you want to configure.**

   ■ **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.

10. **Type the number of the logical hostname resource you want to use for the Managed Server.**

    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 WebLogic Server by doing an HTTP GET on the URI.

11. **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.**

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

    The `clsetup` utility then displays the server URI value.

12. **If you want to change the value of the server URI used for the Managed Server, type the new value and press Enter.**

    In failover mode, the `clsetup` utility supplies the default server URI value for the selected Managed Server. You can accept this value or type a new value.

    In multi-instance mode, a default server URI value is provided for each of the selected instances. You can accept this value or type a new value.

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

13. **Type the number of the storage resource to use for the Managed Server.**

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.

14. **Do one of the following to specify the highly available storage resources:**

   ■ **Type the number of the storage resource you want to use.**

   ■ **Press Return if no highly available storage resources are present.**

   ■ **Press d without making a selection to skip the storage resource selection.**

15. **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.**

   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.

16. **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.

17. **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 HA for WebLogic Server Reverse Proxy Servers (`clsetup`)

Use this procedure to configure Reverse Proxy Servers for 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 HA for WebLogic Server in the `clsetup` utility.

Before You Begin You must perform the steps in "How to Register and Configure HA for WebLogic Server Managed Servers (`clsetup`)" on page 47 before configuring proxy servers.

Any project you created to run WebLogic Server exists in the `projects` name service database for the user that runs that application. If no custom project is created for the application, the default project is used. For more information, see the `projects(1)` man page.

Have available the logical hostnames that you plan to add to the resource group.

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

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

   If you are configuring in a global cluster, a list of global cluster nodes is 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.**

   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.**

   ■ **Type e, then type the full path to the WebLogic home directory that you want to use.**

   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.**

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

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

6. **Type the path to the WebLogic Server environment file.**

   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 prompts you for the project to use.

7. **Type the option number to choose a listed project.**

   If you did not create a project where WebLogic Server will run, select the default project. The `clsetup` utility finds the names of reverse proxy instances and prompts you to specify one to configure.

8. **Type the number that corresponds to the reverse proxy server instance to configure.**

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

9. **Type the number of the logical hostname resource you want to use for the reverse proxy server.**

   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 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.**

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

11. Type the number of the storage resource to use for the reverse proxy server.

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`.

12. 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.**

   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 the < key to go back to the step where the value is specified.

13. Type `c` 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.

14. (Optional) Type `q` 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 HA for WebLogic Server Extension Properties

The sections that follow contain instructions for registering and configuring 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(8CL)`, `rt_properties(7)`, `r_properties(7)`, and `rg_properties(7)`.

To set an extension property of a resource, include the following option in the `clresource` (8CL) 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 *Planning and Administering Data Services for Oracle Solaris Cluster 4.4* to configure resources after the resources are created.

▼ How to Register and Configure 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 21.
- You have configured the WebLogic Servers as described in "Installing and Configuring the HA for WebLogic Server Application" on page 31.
- 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 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 65 for instructions on enabling a smooth shut down. For more information, see "STOP Method" on page 70.

1. **Install and configure the 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/wls/Oracle/Middleware/wlserver_12.1 \
    -p Server_url=http://logical-host-2:portnumber \
    -p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/wlsd1/bin/startWebLogic.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 HA for WebLogic Server as a Failover Data Service (CLI)

Use this procedure to configure 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 21 and have configured the WebLogic Servers as mentioned in "Installing and Configuring the HA for WebLogic Server Application" on page 31. 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 28 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 HA for WebLogic Server, if you are using a database, check that your database is accessible.

---

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

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

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

   ```
   # clresource create -t SUNW.wls \
   -g wls-admin-rg
   -p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
   -p Server_url=http://logical-host-1:7001 \
   -p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/wlsd1

   /bin/startWebLogic.sh \
   -p Smooth_shutdown=true
   -p Resource_dependencies=logical-host-1
   admin-rs
   ```

   The resource is created in the enabled state.

Note - This configuration does not enable smooth shutdown. The 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 65 for the configuration to enable smooth shutdown. For more information, see "STOP Method" on page 70.

---

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

   ```
   # clresource create -t SUNW.wls \
   -g wls-mgd-rg1
   -p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
   -p Server_url=http://logical-host-2:7003 \
   -p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/wlsd1
   /bin/startWebLogic.sh \
   -p Server_name=dizzy1
   -p Smooth_shutdown=true
   -p Resource_dependencies=logical-host-2
   managed-rs
   ```

   The resource is created in the enabled state.

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

Use this procedure to configure 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 24 and have configured the WebLogic Servers as mentioned in "Installing and Configuring the HA for WebLogic Server Application" on page 31. 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 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 65 for the configuration to enable smooth shutdown in a multi-master configuration. For more information, see "STOP Method" on page 70.

---

1. **Add the HA for 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.**

   `# clresourcegroup 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=/global/wls/Oracle/Middleware/wlserver_12.1/ \
-p Server_url{node1}=http://logical-host-1:7003 \
-p Server_url{node2}=http://logical-host-2:7004 \
-p Start_script=/global/wls/Oracle/Middleware/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 HA for WebLogic Server as a Multi-Instance Data Service (CLI)

Use this procedure to configure 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 25 and have configured the WebLogic Servers as mentioned in "Installing and Configuring the HA for WebLogic Server Application" on page 31. 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 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 65 for the configuration to enable smooth shutdown in a multi-instance configuration. For more information, see "STOP Method" on page 70.

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-rs,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 *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.
- In a 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` authorization.**

2. **Create the scalable resource group that contains the `HAStoragePlus` resource.**

   ```
   # clresourcegroup create-p Maximum_primaries=m \
   -p Desired_primaries=n [-n node-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-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 *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

4. **Register the resource type for the `HAStoragePlus` resource.**

   ```
   # clresourcetype register HAStoragePlus
   ```

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

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

6. **Bring the `HAStoragePlus` 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 `HAStoragePlus` resource.**

   ```
   # clresource create -t SUNW.wls -g wls-rg \
   -p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
   -p Server_url{node1}=http://logical-host-1:7003 \
   -p Server_url{node2}=http://logical-host-2:7004 \
   -p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/base_domain/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
   ```

10. **Bring the failover resource group online.**

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

Verifying the 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 HA for WebLogic Server Installation and Configuration for Failover Services

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

1. **Ensure 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 HA for WebLogic Server STOP method instead of being shut down smoothly. Refer to "Creating a Resource That Shuts Down Smoothly" on page 65 for the configuration that enables smooth shutdown. For more information, see "STOP Method" on page 70 for the configuration that enables smooth shutdown.

3. **Ensure 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 the 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 HA for WebLogic Server Installation and Configuration in a Multi-Master or Multi-Instance Configuration

To verify that you have installed and configured the 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 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 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 21. This section provides examples of other possible 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 -t SUNW.wls \
-g wls-rg \
-p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url=http://logical_host1:7001 \
-p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/wlsd1/bin/startWebLogic.sh
admin-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 an HA for WebLogic Server resource whose start script takes the server name `petstore1`, use the following commands:

```
# clresource create -t SUNW.wls \
-g wls-mgd-rg1 \
-p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url=http://logical-host-2:7003 \
-p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/base_domain
/bin/startManagedWebLogic.sh \
-p Server_name=mgd1 \
-p Smooth_shutdown=true \
-p Resource_dependencies=logical-host-2 managed-server1
```

The resource is created in the enabled state.

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

```
# clresource create -t SUNW.wls \
-g wls-mgd-rg2 \
-p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url=http://logical-host-2:7004 \
-p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/base_domain
/bin/startManagedWebLogic.sh \
-p Server_name=mgd2 \
-p Smooth_shutdown=true \
-p Resource_dependencies=logical-host-2 managed-server2
```

The resource is created in the enabled state.

Creating a Resource That Shuts Down Smoothly

The default for the 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. 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.

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 that will shut down smoothly in a failover configuration, use the following commands:

```
# clresource create -t SUNW.wls \
-g wls-rg \
-p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url=http://logical-host-2:7003 \
-p Start_script=/globalwls/Oracle/Middleware/user_projects/domains/wlsd1/bin/startWebLogic.sh \
-p Smooth_shutdown=TRUE \ -p Server_name=dizzy1 \
managed-server
```

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=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url{phys-host-1}=http://logical-host-1:port-number1 \
-p Server_url{phys-host-2}=http://logical-host-2:port-number2 \
-p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/
wlsd1/bin/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

HA for WebLogic Server does not probe the database health. If the database is down when HA for WebLogic Server starts, the data service fails to start. To have HA for WebLogic Server probe the database, supply your own database probe script to 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 wls-rg -t SUNW.wls \
-p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url=http://logical_host1:7001 \
-p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/
/wlsd1/bin/startManagedWebLogic.sh \
-p Smooth_shutdown=TRUE \
-p DB_probe_script=/global/wls/Oracle/Middleware/wlserver_12.1/script/db_probe_script
wls-rs
```

The resource is created in the enabled state.

Following is an example of a DB_probe script:

```
if [ $? -eq 0 ]
then
 return 0
else
 return -1
fi
```

Creating a Resource That Monitors URIs

To enable the 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 wls-rg -t SUNW.wls \
-p Confdir_list=/global/wls/Oracle/Middleware/wlserver_12.1 \
-p Server_url=http://logical_host1:7001 \
-p Start_script=/global/wls/Oracle/Middleware/user_projects/domains/wlsd1/bin/startWebLogic.sh \
-p Smooth_shutdown=TRUE \
-p DB_probe_script=/global/wls/Oracle/Middleware/script/db_probe_script \
-p Monitor_uri_list=http://logical_host1:7001/petstore,http://logical_host1:7001/bookstore wls-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, ensure 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 HA for WebLogic Server Fault Monitor

This section describes the 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 68.

After starting the START script under `pmf`, the START method waits until the WebLogic Server is in RUNNING or ADMIN 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.

Debugging the HA for Oracle WebLogic Server

For debugging information, refer to Solaris Cluster Resource How to Enable Data Service Debug Mode (Doc ID 1010497.1).

A

HA for WebLogic Server Extension Properties

This section describes the extension properties for the resource type `SUNW.wls`. This resource type represents the WebLogic Server application in an Oracle Solaris Cluster configuration.

For details about system-defined properties, see the r_properties(7) man page and the rg_properties(7) 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.

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

DB_Probe_Script

>   The complete path to a Database probe script. The `HA-WLS` probe method probes only the `WLS` instances. The database probe script can be provided using this extension property if the Administrators want the `HA_WLS` to probe the 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 68 for more details.

Data type	String
Default	Null
Range	Not applicable
Tunable	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.

Data type	String
Default	No default defined
Range	Not applicable
Tunable	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.

Data type	String
Default	Null
Range	Not applicable

Tunable	At any time

`Server_name`

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

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

Data type	String
Default	Null
Range	Not applicable
Tunable	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 12*c*, the documentation is located at `http://docs.oracle.com/middleware/1212/wls/wls-administer.htm`.

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.

Data type	String
Default	Null
Range	Not applicable
Tunable	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. This extension property must be set to `TRUE` if a smooth shutdown is desired before trying to kill the WebLogic Server process. If this extension property is `TRUE`, then the `WLS_USER` and `WLS_PW` must be set in the `start_script` and not in `boot.properties`. This is applicable only for WebLogic Server 7.x and earlier versions.

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

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

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

`Start_Script`

The complete path to the script that should be used to start the 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 18.

Data type	String
Default	No default defined
Range	Not applicable

Tunable   At creation

Index