Oracle® Solaris Cluster Data Service for Oracle Business Intelligence Enterprise Edition Guide

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Contents

Using This Documentation

- **Overview** – Provides procedures to install and configure the Oracle Solaris Cluster HA for Oracle Business Intelligence Enterprise Edition (HA for Oracle BI EE) data service.
- **Audience** – Experienced system administrators with extensive knowledge of Oracle software and hardware.
- **Required knowledge** – Knowledge of the Oracle Solaris operating system, of Oracle Solaris Cluster software, and expertise with the volume manager software that is used with Oracle Solaris Cluster software.

This document is not to be used as a planning or presales guide.

Product Documentation Library

Late-breaking information and known issues for this product are included in the documentation library at http://www.oracle.com/pls/topic/lookup?ctx=E39579.

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♦♦♦ CHAPTER 1

Installing and Configuring HA for Oracle BI EE

This document explains how to install and configure Oracle Solaris Cluster HA for Oracle Business Intelligence Enterprise Edition (HA for Oracle BI EE).

Note - This data service supports the Oracle Business Intelligence Enterprise Edition (Oracle BI EE) software running only on SPARC systems.

The instructions in this guide assume that you are using Oracle WebLogic Server with Oracle BI EE. Other web servers are supported, but are not documented in this guide.

This chapter contains the following sections:

- "HA for Oracle BI EE Overview" on page 9
- "Overview of Installing and Configuring HA for Oracle BI EE" on page 12
- "Planning the HA for Oracle BI EE Installation and Configuration" on page 12
- "Installing and Configuring Oracle Business Intelligence Enterprise Edition" on page 13
- "Installing the HA for Oracle BI EE Package" on page 16
- "Registering and Configuring HA for Oracle BI EE" on page 17
- "Verifying the HA for Oracle BI EE Installation and Configuration" on page 34
- "Tuning the HA for Oracle BI EE Fault Monitors" on page 35
- "Debugging HA for Oracle BI EE" on page 36

HA for Oracle BI EE Overview

At a basic level, Oracle Business Intelligence Enterprise Edition is a multi-tier application that enables you to perform queries and reports against one or more data sources. Figure 1-1 shows the relationships among the various components in the Oracle Business Intelligence Enterprise Edition stack.

FIGURE 1-1   Oracle Business Intelligence Enterprise Edition Components
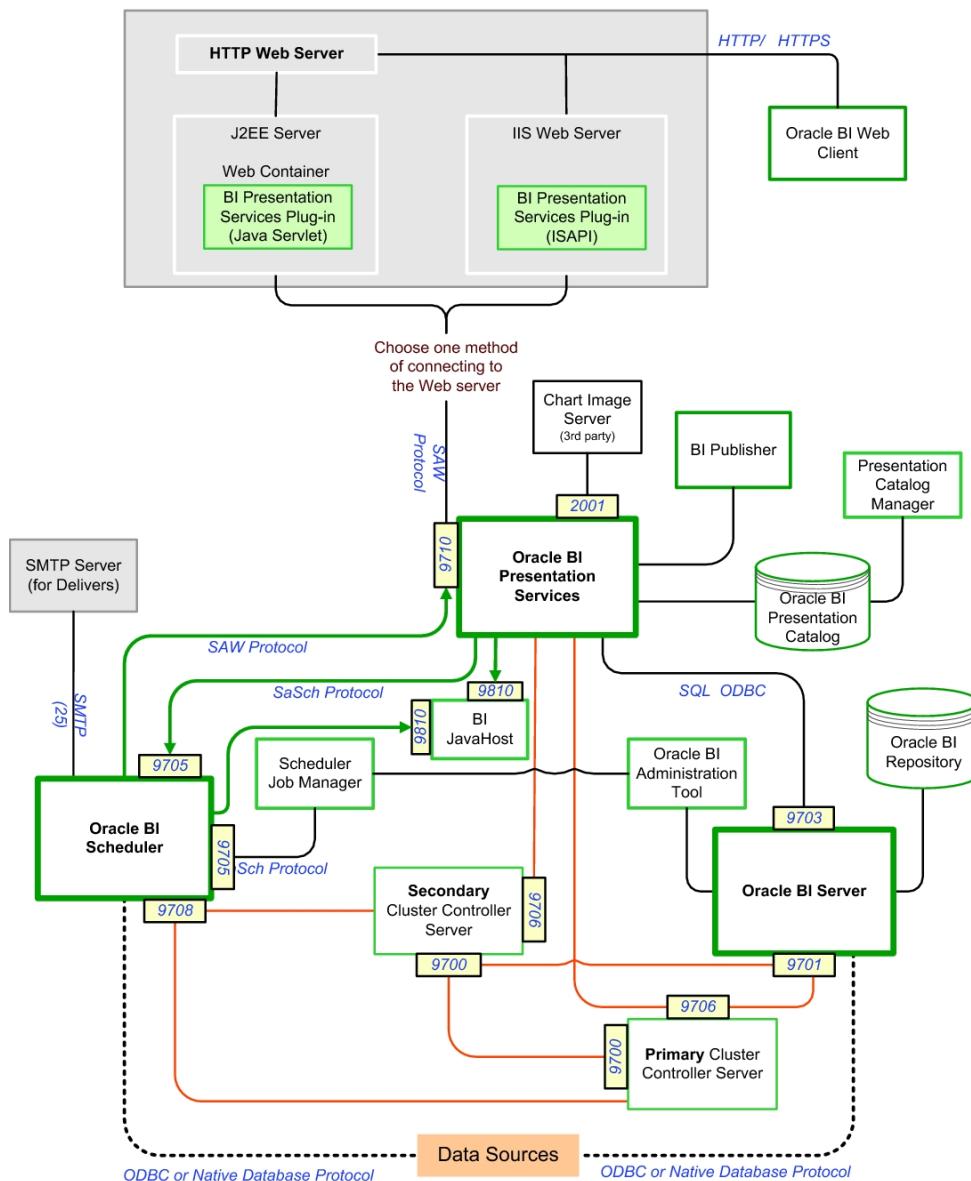
The primary components of the Oracle Business Intelligence Enterprise Edition stack include the following:

- Oracle Business Intelligence (BI) Presentation Services Plug-in – An enterprise archive file (`analytics.ear`) or Web Archive file (`analytics.war`) plug-in loads into each configured J2EE web server container. The J2EE container can be any J2EE-compliant web container. However, the J2EE container is typically Oracle WebLogic Server or Oracle Containers for Java.
- Oracle BI Presentation Services – There can be multiple Presentation Service processes.
- Oracle BI Java Host – There can be multiple Java Host processes. The number of Java Host processes must be equal to the number of Presentation Services processes because they are started from a common script.
- Oracle BI Server – There are up to 16 BI servers, but only one is nominated as the master server. The list of potential hosts of the BI servers is static.
- Oracle BI Scheduler – There is one active primary scheduler and one passive secondary scheduler.
- Oracle BI Cluster Controller – There is one active primary cluster controller and one passive secondary cluster controller.
- One or more data sources.

In addition to these primary components, you can also configure a directory server to store user credentials to authenticate through the web browser sign-on process. For more information about the Oracle Business Intelligence Enterprise Edition components and how they communicate with each other, see the Oracle Business Intelligence Suite Enterprise Edition Documentation (`http://www.oracle.com/technetwork/middleware/bi-enterprise-edition/documentation/bi-ee-087853.html`).

For conceptual information about failover data services, multiple-master data services, and scalable data services, see *Oracle Solaris Cluster Concepts Guide* .

Clustering Capabilities of Oracle Business Intelligence Enterprise Edition

The Oracle Business Intelligence Enterprise Edition software offers its own clustering solution. User access is distributed through an external load-balancer (usually a hardware load-balancer), to the web service containers. Onward distribution of requests, made through the BI Presentation Service plug-in, are coordinated by the cluster controller.

The cluster controller has both a primary and secondary process. If the primary process fails, the secondary process takes over control of this distribution process. The cluster controller is aware of how many Business Intelligence (BI) servers are available and on which hosts. Similarly, if the active scheduler fails, the inactive (secondary) scheduler process can continue to coordinate the scheduling of queued requests. In the event that the Oracle BI Server master fails, access to the shared repository is made read-only.

In a multi-master configuration, the HA for Oracle BI EE agents interoperate with the Oracle BI EE clustering components to provide greater functionality, such as start-up ordering, dependencies, and integration with disaster recovery. Because the Oracle BI EE clustering architecture allows Oracle BI EE instances to be run on different machines, you can use the Oracle Solaris Cluster multi-master configuration to achieve high availability and efficient load-balancing.

In a multi-master configuration, a resource group can be mastered on multiple nodes where the methods of the resources in the resource group are invoked by the Resource Group Manager on all the nodes where the resource group is mastered. The resource group is typically mastered on more than one node. The nodes on which the resource group can be brought online can be specified while creating the resource group. The `Maximum_primaries` and `Desired_primaries` properties of the resource group are used to specify the number of primaries and desired primaries on which the resource group should be brought online.

Note - Although BI servers can be started and stopped dynamically as part of a multi-master BI server resource group, the number and location of these BI servers is determined by the `SERVERS` variable in the `NQClusterConfig.INI` file. The cluster controller only expects the servers listed in this variable to come online, thus the configuration is dynamic within the confines of the servers specified.

Overview of Installing and Configuring HA for Oracle BI EE

The following list summarizes the tasks for installing and configuring HA for Oracle BI EE and provides cross-references to detailed instructions for performing these tasks. Perform the tasks in the order that they are shown.

- "Planning the HA for Oracle BI EE Installation and Configuration" on page 12
- "Installing and Configuring Oracle Business Intelligence Enterprise Edition" on page 13
- "Installing the HA for Oracle BI EE Package" on page 16
- "Registering and Configuring HA for Oracle BI EE" on page 17
- "Verifying the HA for Oracle BI EE Installation and Configuration" on page 34
- "Tuning the HA for Oracle BI EE Fault Monitors" on page 35
- "Debugging HA for Oracle BI EE" on page 36

Planning the HA for Oracle BI EE Installation and Configuration

This section contains the information you need to plan your HA for Oracle BI EE installation and configuration.

Configuration Requirements

The configuration requirements in this section apply only to HA for Oracle BI EE.

> ⚠️ **Caution -** If your data service configuration does not conform to these requirements, the data service configuration might not be supported.

- Because Oracle Business Intelligence Enterprise Edition software supports a wide range of locales, including the default of `en-US.UTF-8`, the Oracle Solaris OS must be installed with the appropriate 8–bit locales.
- For a multi-master configuration, the following key configuration files must be kept consistent between the cluster nodes:
  - *Oracle-BI-Home*`/OracleBI/server/Config/NQSConfig.INI`
  - *Oracle-BI-Home*`/OracleBI/server/Config/NQClusterConfig.INI`
  - *Oracle-BI-Home*`/OracleBIData/scheduler/config/instanceconfig.xml` (for the Scheduler)
  - *Oracle-BI-Home*`/OracleBIData/web/config/instanceconfig.xml` (for the BI Presentation Services)
- For a multi-master configuration, the Oracle Business Intelligence Enterprise Edition software must be installed following the identical directory structure on each participating cluster node.
- For a multi-master configuration, the following sets of files must be shared among the participating cluster nodes:
  - Presentation catalog: *Oracle-BI-Home*`/OracleBIData/web/catalog/catalog_name`
  - Repository publishing directory: *Oracle-BI-Home*`/OracleBIData/cluster_rep_pub_dir`
  - Cluster-aware global cache: *Oracle-BI-Home*`/OracleBIData/cluster_cache_dir`
  - Scheduler scripts directory: *Oracle-BI-Home*`/OracleBI/server/Scripts/Common`

Installing and Configuring Oracle Business Intelligence Enterprise Edition

Installing and configuring Oracle Business Intelligence Enterprise Edition involves the following steps. For detailed instructions on installing Oracle BI EE, see *Oracle Business Intelligence Infrastructure Installation and Configuration Guide*. For additional information about configuring clustering, see *Oracle BI EE Enterprise Deployment Guide*.

Note - The Oracle Solaris Cluster HA for Oracle Business Intelligence Enterprise Edition (HA for Oracle BI EE) software can be configured to run in a zone cluster.

▼ How to Install and Configure Oracle BI EE

1. **Create an Oracle Solaris user to own the software installation, for example, user `obiee`, group `obiee`.**

2. **Set the maximum number of files that a process can open to 10,240.**

   Use the `projmod` command to alter the setting for the default project, for example. If the resource group or resource is bound to a different project, then that project definition also requires updating.

   ```
   $ cat /etc/project
   system:0::::
   user.root:1::::
   noproject:2::::
   default:3::::process.max-file-descriptor=(priv,10240,deny)
   group.staff:10::::
   ```

3. **Download the Oracle Business Intelligence Enterprise Edition and WebLogic software bundles from the Oracle download site.**

   Note - This data service supports the Oracle Business Intelligence Enterprise Edition (Oracle BI EE) software running only on SPARC systems. For information about supported versions, see Oracle Solaris Cluster 4 Compatibility Guide (`http://www.oracle.com/technetwork/server-storage/solaris-cluster/overview/solariscluster4-compatibilityguide-1429037.pdf`).

   The instructions in this section assume that you are using Oracle WebLogic Server with Oracle BI EE. Other web servers are supported, but are not documented in this guide.

4. **(Optional) Install the Oracle WebLogic Server software.**

   For more information, see the Oracle WebLogic Server installation guide.

5. **Extract (unzip) the Oracle BI EE software into a temporary location (for example, `/download`).**

6. **Go to the `Solaris/Server/Oracle_Business_Intelligence` subdirectory of the location into which the Oracle BI EE software was extracted.**

7. **(Optional) If you plan to run a failover configuration, configure Oracle Solaris Cluster software for the failover component:**

a. **Create a resource group for the failover component.**

b. **Create a `LogicalHostName` resource for the failover component.**

c. **Create the highly available local file system.**

d. **Create an HAStoragePlus resource for the highly available local file system.**

e. **Bring the resource group online.**

For detailed information about these steps, see the appropriate failover configuration section.

8. **Run the `UnixChk.sh` shell script and specify the intended installation directory for the Oracle BI EE software.**

   ■ **For a failover configuration, use a command similar to the following example:**

   ```
   $ ./UnixChk.sh /failover/obiee
   SUCCESS!! - This machine is configured for Oracle BI EE 10.1.3.4
   ```

   ■ **For a multi-master configuration, use a command similar to the following example where the path points to a local disk:**

   ```
   $ ./UnixChk.sh /export/home/obiee
   SUCCESS!! - This machine is configured for Oracle BI EE 10.1.3.4
   ```

9. **Set the `DISPLAY` environment variable if required, then run the `setup.sh` script.**

10. **Specify the installation and data directory names.**

    ■ For a failover configuration, the directories should both be on a highly available local file system.
    ■ For a multi-master configuration, the directories should be on a local file system.

11. **Select the Oracle BI EE Presentation Services or BI Server installation option depending on which tier is being installed.**

12. **Type the path to the JDK directory and provide a password for `oc4jadmin`.**

Note - This information is important only if you are using Oracle Containers for Java. If you are using Oracle WebLogic Server, it does not matter what you enter in this step and you should stop the `oc4j` process after installation finishes.

---

13. If you are using Oracle WebLogic Server, when the installation completes, go to the setup directory and shut down `oc4j`.

> **Note -** The port number might vary from what is shown in the following example.

```
$ cd /failover/obiee/OracleBI/setup
$ ./oc4j -shutdown -port 23791 -password password-supplied
```

14. Install the `ORCLscobiee` package.
For more information, see "Installing the HA for Oracle BI EE Package" on page 16.

Installing the HA for Oracle BI EE Package

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

▼ How to Install the HA for Oracle BI EE Package

Perform this procedure on each cluster node where you want the HA for Oracle BI EE 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/obiee
# 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 *Adding and Updating Software in Oracle Solaris 11.2*.

> **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 *Adding and Updating Software in Oracle Solaris 11.2*.

3. **Install the HA for Oracle BI EE software package.**

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

4. **Verify that the package installed successfully.**

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

    Installation is successful if output shows that State is Installed.

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

    For instructions on updating your software, see Chapter 11, "Updating Your Software," in *Oracle Solaris Cluster System Administration Guide*.

Registering and Configuring HA for Oracle BI EE

Before you perform the tasks in this section:

- Ensure that the HA for Oracle BI EE data service packages are installed.
- Decide which services you need to register and configure. For guidance, see "Determining Which Services You Need" on page 17.

Registering and configuring HA for Oracle BI EE involves the tasks that are explained in the following sections.

Determining Which Services You Need

Figure 1-2 helps you to decide which services you need for a failover configuration. Figure 1-3 helps you to decide which services you need for a multi-master configuration.

FIGURE 1-2 Oracle BI EE Resources in a Failover Configuration
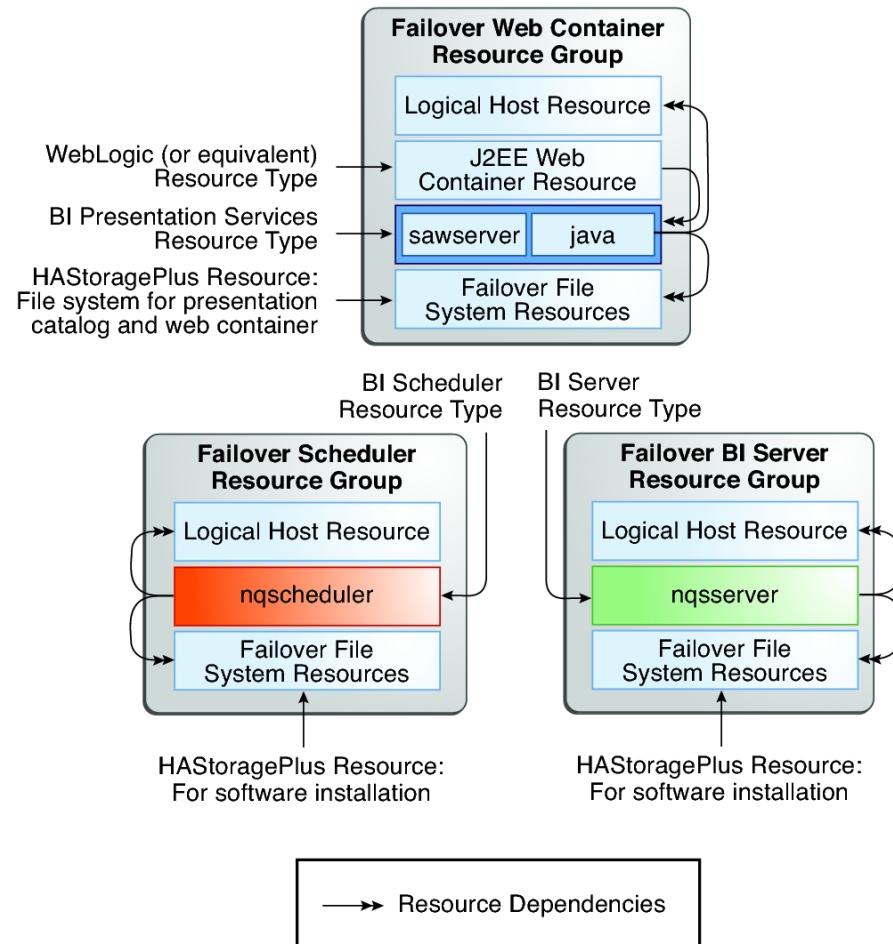
FIGURE   1-3   Oracle BI EE Resources in a Multi-Master Configuration
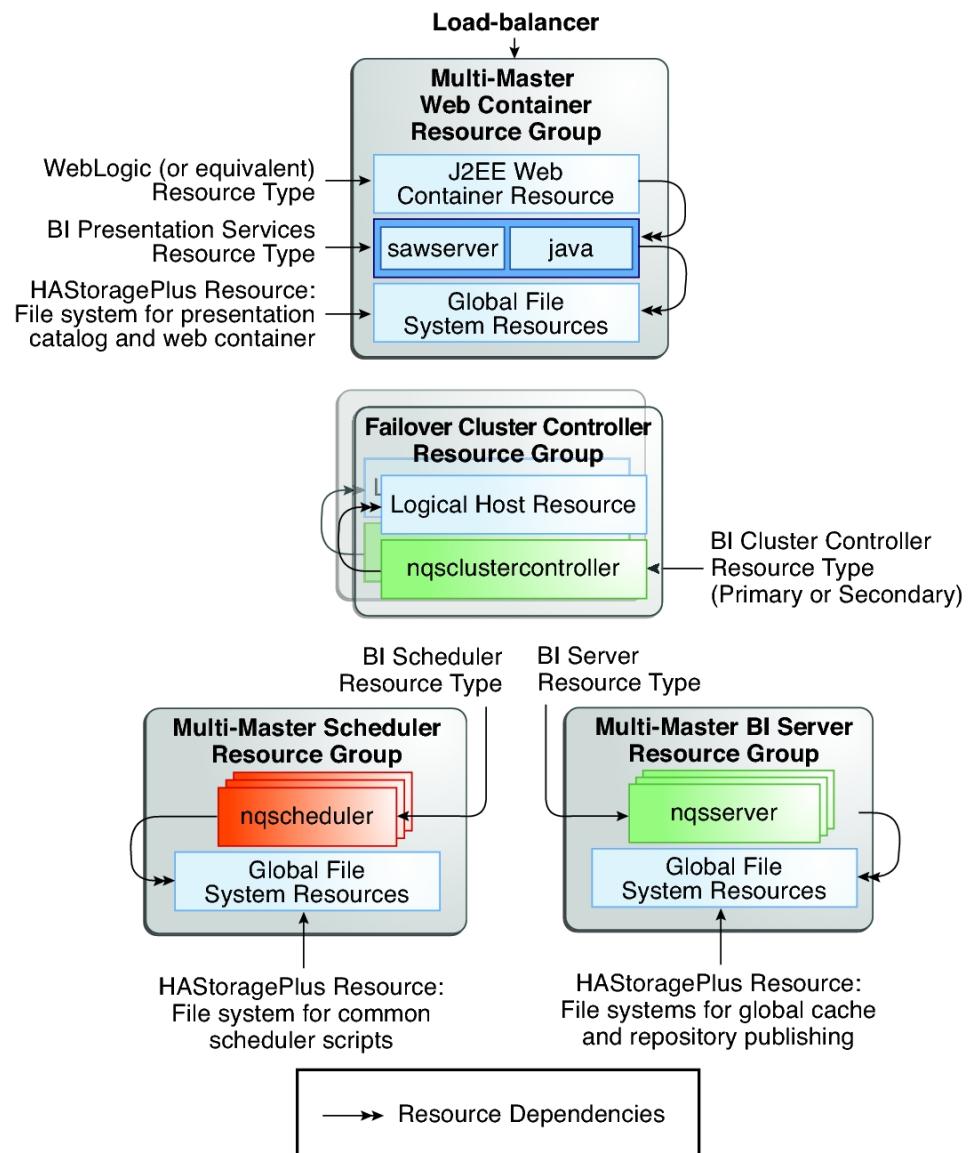
Presentation Services Configuration

This section describes how to configure the Presentation Services and create the appropriate Oracle Solaris Cluster resource groups and resources for both a failover and a multi-master case.

Once the Oracle BI EE Presentation Services software has been installed, you must configure Oracle WebLogic Server to load the `analytics.ear` (Enterprise Archive) file as described in the Oracle WebLogic Server documentation. Ensure that the plug-in is marked as active, otherwise attempts to connect to the service will result in HTTP 503 errors. The plug-in cannot be tested until the entire stack, Presentation Services, BI Server and Cluster Controller, where appropriate, are set up.

▼ How to Define a Failover Configuration for Presentation Services

Before You Begin   Before you create the BI Presentation Service resource for a failover configuration, you might need to edit the following files:

- `/etc/netmasks` – 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.
- *BI_DATA_DIRECTORY*`/web/config/instanceconfig.xml` – Check the setting for the `<DSN>` tag. This field references a `[tag_name]` section in the `odbc.ini` file.
- *BI_INSTALL_DIRECTORY*`/setup/odbc.ini` – Set the `ServerMachine` and `Port` entries that will be used by the BI server. For a failover configuration, the `ServerMachine` corresponds to the host name plumbed by the `SUNW.LogicalHostname` resource in the BI Server resource group.

1. **On each node where BI Presentation Services will run, verify that Presentation Services can start.**

   ```
   # run-saw.sh
   ```

2. **Create a resource group for the Oracle WebLogic Server (or OC4J) instance.**

   ```
   # clresourcegroup create -n phys-green1,phys-green2 \
   wls-svr-rg
   ```

3. **Create the logical hostname resource for Oracle WebLogic Server.**

   ```
   # clreslogicalhostname create -g wls-svr-rg -h green-lh2 wls-svr-lh-rs
   ```

4. **Create an HAStoragePlus resource for Oracle WebLogic Server.**

   ```
   # clresource create -t SUNW.HAStoragePlus -g wls-svr-rg \
   ```

```
-p FileSystemMountPoints=/failover/wls:/failover/wls \
```
wls-svr-hasp-rs

For more information about creating a failover configuration for Oracle WebLogic Server, see *Oracle Solaris Cluster Data Service for Oracle WebLogic Server Guide* .

5. **Bring the Oracle WebLogic Server resource group online.**

   ```
   # clresourcegroup online -eM wls-svr-rg
   ```

6. **Create the Oracle WebLogic Server resource.**

   This resource must reside in the same resource group as the Presentation Service resource.

   ```
   # clresource create -t SUNW.wls -g wls-svr-rg \
   -p resource_dependencies=wls-svr-hasp-rs \
   -p Confdir_list=/failover/wls/Oracle/Middleware/wlserver_10.3 \
   -p Server_url=http://green-lh2.example.com:7003 \
   -p Start_script=/failover/wls/Oracle/Middleware/user_projects/domains/obiee/bin/
   startManagedWebLogic.sh \
   -p Server_name=ms1 wls-svr-rs
   ```

7. **Install the Oracle BI EE software.**

   For more information, see "Installing and Configuring Oracle Business Intelligence Enterprise Edition" on page 13.

8. **Register the BI Presentation Services resource type.**

   ```
   # clresourcetype register ORCL.obiee_presentation_service
   ```

9. **Create the BI Presentation Services resource.**

   ```
   # clresource create -g wls-svr-rg \
   -t ORCL.obiee_presentation_service \
   -p Run_64_bit=True \
   -p resource_dependencies=wls-svr-hasp-rs,wls-svr-lh-rs \
   -p BI_INSTALL_DIRECTORY=/failover/wls/obiee/OracleBI \
   -p BI_DATA_DIRECTORY=/failover/wls/obiee/OracleBIData \
   bi-pres-svc-rs
   ```

10. **Verify that the BI presentation services resource group is online.**

    ```
    # clresource status bi-pres-svc-rs
    === Cluster Resources ===
    Resource Name  Node Name     State  Status  Message
    -------------  ---------     -----  ------- -------
    bi-pres-svc-rs phys-green1  Online  Online - Service is online.
      phys-green2  Offline  Offline
    ```

11. **Set an `offline_restart` dependency between the Oracle WebLogic Server resource and the BI Presentation Services resource.**

Because the Oracle WebLogic Server Presentation Service plug-in sends requests to the local BI Presentation Service server process, the Oracle WebLogic Server resource must set an `offline_restart` dependency on the BI Presentation Service resource. This setting ensures that if a BI Presentation Service server is unavailable, the load-balancer stops sending requests to the Oracle WebLogic Server.

```
# clresource set \
-p resource_dependencies_offline_restart=bi-pres-svc-rs \
wls-svr-rs
```

12. **Verify that the configuration is valid.**

```
# ps -ef | grep sawserver
# /usr/java/bin/jps -v | grep javahost
```

The Presentation Services tier results in two processes being started: `sawserver` and a Java process. The name of the `sawserver` process depends on whether the 64-bit option is chosen.

If the BI server has been configured, you can log in from a web browser using one of the accounts that you have configured. For example, if the Oracle WebLogic Server is running on logical host `green-lh1` on port 7003, the URL would be `http://green-lh1:7003/analytics/saw.dll?Dashboard`.

▼ How to Define a Multi-Master Configuration for Presentation Services

A multi-master Presentation Services configuration requires a multi-master Oracle WebLogic Server configuration and a mechanism to load-balance incoming web connections. A failover Oracle WebLogic Server with a load-balancing plug-in can be configured to perform this task. For more information about creating a multi-master configuration for Oracle WebLogic Server, see *Oracle Solaris Cluster Data Service for Oracle WebLogic Server Guide* .

Before You Begin Before you create the multi-master configuration for BI Presentation Services, you need to edit the following configuration file:

■ *BI_INSTALL_DIRECTORY*/`setup`/`odbc.ini` – A multi-master Presentation Services configuration requires primary and secondary cluster controllers to be defined in the `odbc.ini` file. Therefore, ensure that the PrimaryCCS and SecondaryCCS entries are present in the file. The host names used must be capable of being resolved.

Note - When using a multi-master BI Presentation Services configuration, the `instanceconfig.xml` and `odbc.ini` files must remain synchronized. You can manually copy the changes between machines, or you can link the files to centrally held copies on a global file system. However, if you link these two files, the remainder of the Oracle BI EE software must be installed on local file systems.

---

1. **On each node where BI Presentation Services will run, verify that Presentation Services can start.**

   ```
   # run-saw.sh
   ```

2. **Create a resource group for the multi-master Oracle WebLogic Server configuration.**

   ```
   # clresourcegroup create -n phys-green1,phys-green2 \
   -p RG_mode=Scalable \
   -p Maximum_primaries=2 \
   -p Desired_primaries=2 \
   mm-wls-svr-rg
   ```

3. **Create an HAStoragePlus resource for Oracle WebLogic Server.**

   ```
   # clresource create -t SUNW.HAStoragePlus -g mm-wls-svr-rg \
   -p FileSystemMountPoints=/global/wls:/global/wls \
   mm-wls-svr-hasp-rs
   ```

4. **Bring the Oracle WebLogic Server resource group online.**

   ```
   # clresourcegroup online -eM mm-wls-svr-rg
   ```

5. **Create the Oracle WebLogic Server resource.**

   ```
   # clresource create -t SUNW.wls -g mm-wls-svr-rg \
   -p Confdir_list=/export/home/beamm/Oracle/Middleware/wlserver_10.3 \
   -p Server_url=http://localhost:7003 \
   -p Start_script=/export/home/beamm/Oracle/Middleware/user_projects/domains/obiee/bin/
   startManagedWebLogic.sh \
   -p "Server_name{phys-green1}"=ms1 \
   -p "Server_name{phys-green2}"=ms2 \
   -p smooth_shutdown=true \
   -p resource_dependencies=mm-wls-svr-hasp-rs \
   mm-wls-svr-rs
   ```

6. **Verify that the Oracle WebLogic Server resource group is online.**

   ```
   # clresource status -g mm-wls-svr-rg
   === Cluster Resources ===
   Resource Name          Node Name          State  Status Message
   -------------          ---------          -----  --------------
   mm-wls-svr-hasp-rs       phys-green1   Online  Online
                            phys-green2   Online  Online
   mm-wls-svr-rs            phys-green1    Online  Online - Service is online.
                            phys-green2   Online  Online - Service is online.
   ```

7. **Register the BI Presentation Services resource type.**

   ```
   # clresourcetype register ORCL.obiee_presentation_service
   ```

8. **Create the BI Presentation Services resource.**

    ```
    # clresource create -t ORCL.obiee_presentation_service \
    -g mm-wls-svr-rg -p BI_INSTALL_DIRECTORY=/export/home/obiee/OracleBI \
    -p BI_DATA_DIRECTORY=/export/home/obiee/OracleBIData \
    -p Resource_dependencies_offline_restart=mm-wls-svr-hasp-rs \
    mm-pres-svc-rs
    ```

9. **Verify that the BI Presentation Services resource is online.**

    ```
    # clresource status -g mm-wls-svr-rg
    === Cluster Resources ===
    Resource Name            Node Name      State  Status Message
    -------------            ---------      -----  --------------
    mm-wls-svr-hasp-rs        phys-green1  Online  Online
                             phys-green2  Online  Online
    mm-wls-svr-rs             phys-green1  Online  Online - Service is online.
                             phys-green2  Online  Online - Service is online.
    mm-pres-svc-rs            phys-green1  Online  Online - Service is online.
                             phys-green2  Online  Online - Service is online.
    ```

10. **Set an offline-restart dependency between the Oracle WebLogic Server resource and the BI Presentation Services resource.**

    Because the Oracle WebLogic Server Presentation Service plug-in sends requests to the local BI Presentation Service server process, the Oracle WebLogic Server resource must set an offline-restart dependency on the BI Presentation Service resource. This ensures that if a BI Presentation Service server is unavailable, the load-balancer stops sending requests to the Oracle WebLogic Server.

    ```
    # clresource set \
    -p Resource_dependencies_offline_restart=mm-pres-svc-rs \
    mm-wls-svr-rs
    ```

11. **Verify that the configuration is valid.**

    When a multi-master configuration is used, connection is made through the logical hostname of the load-balancer resource. For example, if the Oracle iPlanet Web Server is running on logical host web-svr-lh, the URL is http://wls-svr-lh/analytics/saw.dll?Dashboard. The requests are then load-balanced to the underlying managed Oracle WebLogic Servers that listen on port 7003.

BI Server Configuration

This section describes how to configure the BI server and create the appropriate Oracle Solaris Cluster resource groups and resources for both a failover and a multi-master case.

▼ How to Define a Failover Configuration for BI Server

The failover BI server configuration does not require a cluster controller because there is only one active BI server process. Therefore, configuration of a failover BI server is similar to configuration on a single server with the exception that the software is installed directly on a highly available local file system managed by Oracle Solaris Cluster.

Before You Begin Before you create the BI Server resource for a failover configuration, you might need to edit the following files:

- `/etc/netmasks` – 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.
- *BI_INSTALL_DIRECTORY*`/server/Config/NQSConfig.INI` – Verify the following settings:
    - All the file paths should be part of the highly available local file system.
    - `SERVER_HOSTNAME_OR_IP_ADDRESSES` should be set to the logical hostname or `ALLNICS`.
    - `CLUSTER_PARTICIPANT` must be set to NO .
- *BI_INSTALL_DIRECTORY*`/server/Config/NQClusterConfig.INI` – Set `ENABLE_CONTROLLER` to NO. Although not strictly required by Oracle BI EE, this setting ensures that there is no confusion as to the configuration being implemented.

1. On each node, verify that BI Services can start.

```
$ export SC_LHOSTNAME=bi-svr-lh
$ pwd
/bi_server/OracleBI/setup
$ ./run-sa.sh start
$ ./run-sa.sh stop
```

2. Create a resource group for the BI Server.

```
# clresourcegroup create -n phys-red1,phys-red2 bi-svr-rg
```

3. Create the logical hostname resource for BI Server.

```
# clreslogicalhostname create -g bi-svr-rg -h red-lh1 bi-svr-lh-rs
```

4. Create an HAStoragePlus resource for BI Server.

```
# clresource create -t SUNW.HAStoragePlus -g bi-svr-rg \
-p FileSystemMountPoints=/failover/obiee:/failover/obiee \
bi-svr-hasp-rs
```

5. Bring online the BI Server resource group.

```
# clresourcegroup online -eM bi-svr-rg
```

6. **Install the Oracle BI EE software.**

   For more information, see "Installing and Configuring Oracle Business Intelligence Enterprise Edition" on page 13.

7. **Register the BI Server resource type.**

   ```
   # clresourcetype register ORCL.obiee_server
   ```

8. **Create the BI Server resource.**

   ```
   # clresource create -g bi-svr-rg \
   -t ORCL.obiee_server \
   -p Run_64_bit=True \
   -p resource_dependencies=bi-svr-hasp-rs,bi-svr-lh-rs \
   -p BI_INSTALL_DIRECTORY=/failover/obiee/OracleBI \
   -p BI_DATA_DIRECTORY=/failover/obiee/OracleBIData \
   -p BI_PROBE_USER=demo \
   -p BI_PROBE_PASSWORD=demo \
   bi-svc-rs
   ```

9. **Verify the status of the BI Server resource.**

   ```
   # clresource status bi-svr-rs
   === Cluster Resources ===
   Resource Name  Node Name    State  Status Message
   -------------  ---------    -----  --------------
   bi-svr-rs            phys-red1  Online  Online - Service is online.
                       phys-red2  Offline  Offline
   ```

   Because the BI Server does not have any hard dependencies on other services, it does not require any resource dependencies to be set. Once the BI Server is running, connection can be made through the Web interface.

▼ How to Define a Multi-Master Configuration for BI Server

A multi-master BI Server configuration requires primary and secondary BI Cluster Controller to be configured, although strictly speaking, the secondary BI controller is optional when creating a Oracle Solaris Cluster configuration. The BI Cluster Controller is responsible for load-balancing the requests coming in from the Presentation Services clients to the available BI servers.

Before You Begin   Before you create the BI Server resource for a multi-master configuration, you might need to edit the following files:

- *BI_INSTALL_DIRECTORY*/server/Config/NQSConfig.INI – Verify the following settings:

  - SERVER_HOSTNAME_OR_IP_ADDRESSES should be commented out.
  - CLUSTER_PARTICIPANT must be set to YES.

- *BI_INSTALL_DIRECTORY*/`server/Config/NQClusterConfig.INI` – Verify the following settings:

  Note - Although not strictly required by Oracle BI EE, these settings are used to verify the resource group settings for the cluster controller configuration.

  - `ENABLE_CONTROLLER` must be set to YES.
  - Primary and secondary controllers are defined to listen on logical hosts, for example:

    ```
    PRIMARY_CONTROLLER = "red-lh2";
    SECONDARY_CONTROLLER = "red-lh3";
    ```
  - Servers are set to a list of the nodes that are defined in the multi-master resource group, for example:

    ```
    SERVERS = "phys-red1","phys-red2";
    ```
  - One of the nodes in the multi-master resource group is set to be the master server, for example:

    ```
    MASTER_SERVER = "phys-red1";
    ```
  - The BI Server global cache directory and the repository publishing directory must be on a cluster file system and be configured under a `SUNW.HAStoragePlus` resource.

1. **Create a resource group for the BI Server.**

   ```
   # clresourcegroup create -n phys-red1,phys-red2 \
   -p maximum_primaries=2 \
   -p desired_primaries=2 \
   mm-bi-svr-rg
   ```

2. **Create an HAStoragePlus resource for BI Server.**

   ```
   # clresource create -t SUNW.HAStoragePlus -g bi-svr-rg \
   -p FileSystemMountPoints=/global/obiee:/global/obiee \
   mm-bi-svr-hasp-rs
   ```

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

   ```
   # clresourcegroup online -eM mm-bi-svr-rg
   ```

4. **Register the BI Server resource type.**

   ```
   # clresourcetype register ORCL.obiee_server
   ```

5. **Create the BI Server resource.**

   In the example below, the PROBE user and password are optional. The password is not protected, therefore, the user account must have no privileges to query anything other than

the list of catalogs from the BI servers. This approach enables the probe to connect to the BI server and get a response back to the `list catalogs` query which helps to demonstrate the responsiveness of the BI server.

```
# clresource create -g mm-bi-svr-rg \
-t ORCL.obiee_server \
-p Run_64_bit=True \
-p resource_dependencies=mm-bi-svr-hasp-rs \
-p BI_INSTALL_DIRECTORY=/export/home/obiee/OracleBI \
-p BI_DATA_DIRECTORY=/export/home/obiee/OracleBIData \
-p BI_PROBE_USER=demo \
-p BI_PROBE_PASSWORD=demo \
mm-bi-svc-rs
```

6. **Verify the status of the BI Server resource.**

```
# clresource status -g mm-bi-svr-rg
=== Cluster Resources ===
Resource Name    Node Name      State  Status Message
-------------    ---------      -----  --------------
mm-bi-svr-hasp-rs phys-red1   Online Online
phys-red2  Online  Online
mm-bi-svr-rs     phys-red1   Online  Online
phys-red2  Online  Online
```

BI Cluster Controller Configuration

This section describes how to configure the BI Cluster Controller and create the appropriate Oracle Solaris Cluster resource groups and resources to support highly available solutions.

▼ How to Define a Highly Available BI Cluster Controller Configuration

Note - The failover BI Cluster Controller resource groups provide the "glue" between the multi-master BI Presentation Services and the multi-master BI Servers and multi-master Schedulers.

Before You Begin   Before you create the BI Cluster Controller resource for a failover configuration, you might need to edit the following file:

- /etc/netmasks – 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.
- *BI_INSTALL_DIRECTORY*/server/Config/NQClusterConfig.INI – Verify the following settings:
  - ENABLE_CONTROLLER must be set to YES.

■ Primary and secondary cluster controllers are defined to listen on logical hosts, for example:

```
PRIMARY_CONTROLLER = "red-lh2";
SECONDARY_CONTROLLER = "red-lh3";
```

■ Servers are set to a list of the nodes that are defined in the multi-master resource group, for example:

```
SERVERS = "phys-red1","phys-red2";
```

■ One of the nodes in the multi-master resource group is set to be the master server, for example:

```
MASTER_SERVER = "phys-red1";
```

1. **On each node, verify that the BI Cluster Controller can start.**

   a. **Export the necessary parameters.**

   The following example is a single command. The line breaks are added for readability.

   ```
   SC_LHOSTNAME=fo-bi-pcc-lh;LD_PRELOAD_32=${LD_PRELOAD_32}
   :/usr/cluser/lib/libschost.so.1;LD_PRELOAD_64=${LD_PRELOAD_64}
   :/usr/cluster/lib/64/libschost.so.1;
   export SC_LHOSTNAME LD_PRELOAD_32 LD_PRELOAD_64
   ```

   b. **Start the BI Cluster Controller.**

   ```
   # run-ccs.sh start
   ```

   c. **Confirm that the BI Cluster Controller process is running.**

   ```
   # ps -ef | grp nqscheduler
   ```

2. **Create a resource group for the primary BI Cluster Controller.**

   ```
   # clresourcegroup create -n phys-red1 fo-bi-pcc-rg
   ```

   Note - Although the failover resource group can contain more than one node, the list of nodes for the primary BI Cluster Controller resource group and the list of nodes for the secondary BI Cluster Controller resource group cannot intersect.

3. **Create the logical hostname resource for the primary BI Cluster Controller.**

   ```
   # clreslogicalhostname create -h red-lh2 -g fo-bi-pcc-rg fo-bi-pcc-lh-rs
   ```

4. **Create the resource for the primary BI Cluster Controller.**

   ```
   # clresource create -t ORCL.obiee_cluster_controller \
   -g fo-bi-pcc-rg \
   ```

```
-p BI_INSTALL_DIRECTORY=/export/home/obiee/OracleBI \
-p BI_DATA_DIRECTORY=/export/home/obiee/OracleBIData \
-p Run_64_bit=TRUE \
-p CLUSTER_CONTROLLER_ROLE=PRIMARY \
-p Resource_dependencies=fo-bi-pcc-lh-rs \
fo-bi-pcc-rs
```

5. **Create a resource group for the secondary BI Cluster Controller.**

    ```
    # clresourcegroup create -n phys-red2 fo-bi-scc-rg
    ```

    Note - Although the failover resource group can contain more than one node, the list of nodes for the primary BI Cluster Controller resource group and the list of nodes for the secondary BI Cluster Controller resource group cannot intersect.

6. **Create the logical hostname resource for the secondary BI Cluster Controller.**

    ```
    # clreslogicalhostname create -h red-lh3 -g fo-bi-scc-rg fo-bi-scc-lh-rs
    ```

7. **Create the resource for the secondary BI Cluster Controller.**

    ```
    # clresource create -t ORCL.obiee_cluster_controller \
    -g fo-bi-scc-rg \
    -p BI_INSTALL_DIRECTORY=/export/home/obiee/OracleBI \
    -p BI_DATA_DIRECTORY=/export/home/obiee/OracleBIData \
    -p Run_64_bit=TRUE \
    -p CLUSTER_CONTROLLER_ROLE=SECONDARY \
    -p Resource_dependencies=fo-bi-scc-lh-rs \
    fo-bi-scc-rs
    ```

8. **Bring the BI Cluster Controller resource groups online.**

    ```
    # clresourcegroup online -eM fo-bi-pcc-rg fo-bi-scc-rg
    ```

9. **Verify the resource status.**

    ```
    # clresource status -g fo-bi-pcc-rg,fo-bi-scc-rg
    === Cluster Resources ===
    Resource Name          Node Name State  Status Message
    -------------          --------- -----  ------ --------
    fo-bi-pcc-lh-rs         phys-red1  Online  Online - LogicalHostname online.
    fo-bi-pcc-rs            phys-red1  Online  Online - Service is online.
    fo-bi-scc-lh-rs         phys-red2  Online  Online - LogicalHostname online.
    fo-bi-scc-rs            phys-red2  Online  Online - Service is online.
    ```

BI Scheduler Configuration

This section describes how to configure the BI scheduler and create the appropriate Oracle Solaris Cluster resource groups and resources for both a failover and a multi-master case.

▼ How to Define a Failover Configuration for BI Scheduler

The failover BI scheduler configuration does not require a cluster controller because there is only one active BI scheduler process.

1. **As user `oracle` (or any non-root user), install the Oracle Database client software on the servers that will host the scheduler.**
   The schedulers need access to the Oracle Database client libraries and `tnsnames.ora` file to be able to connect to the scheduler database.

2. **Create and configure a database to hold the scheduler job information.**
   For more information, see the section "Configuration Tasks for Oracle BI Scheduler " in the *Oracle Fusion Middleware Scheduling Jobs Guide for Oracle Business Intelligence Enterprise Edition*.

   Note - If the schedule database is an Oracle database on an Oracle Solaris Cluster configuration, make the schedule highly available by using the Oracle Solaris Cluster HA for Oracle Database agent or by using an Oracle RAC database with Oracle Solaris Cluster software.

   ---

3. **Configure the scheduler.**
   For more information, see the section "Configuring Oracle BI Scheduler Instances in a Clustered Environment" in the *Oracle Fusion Middleware Scheduling Jobs Guide for Oracle Business Intelligence Enterprise Edition*.

4. **Edit the scheduler user parameters file to provide appropriate Oracle Solaris information.**
   To access the Oracle client libraries, the scheduler uses parameters set in the *BI_INSTALL_DIRECTORY*/`setup/user.sh` file. Uncomment and provide appropriate values for the Oracle Solaris entries:

   ```
   $ cat ~/OracleBI/setup/user.sh
   …
   ORACLE_HOME=/export/home/oracle/app/oracle/product/11.1.0/client_1
   export ORACLE_HOME
   TNS_ADMIN=$ORACLE_HOME/network/admin
   export TNS_ADMIN
   PATH=$ORACLE_HOME/bin:/opt/bin:$PATH
   export PATH
   LD_LIBRARY_PATH_64=$ORACLE_HOME/lib: $LD_LIBRARY_PATH_64:/opt/jdk/jdk1.6.0_20/jre/lib/sparc
   export LD_LIBRARY_PATH_64
   …
   ```

5. **As the `obiee` user, launch the scheduler configuration utility.**

   ```
   $ cd Oracle-BI-Install-dir/setup
   $ . ./sa-init64.sh
   $ schconfig
   ```

6. Use the `schconfig` utility to set the following parameters:

- Set the `Data Source Name` to the scheduler database service name in the `tnsnames.ora` file.
- Set the `User Name` and `Password` to the user name and password that you use to access the scheduler database.
- Set the `Scheduler Script Path` and `Default Script Path` to locations that reside on a global file system.
- To simplify setup and to avoid having to use certificates, set the `Administrator Password` to null.
- Set `Participant in Cluster` to `False`.
- Set the `SAW Machine Name` to the logical hostname of the Presentation Services tier.

The `schconfig` utility modifies the *BI_DATA_DIRECTORY*`/scheduler/config/instanceconfig.xml` file.

7. Register the BI scheduler resource type.

```
# clresourcetype register ORCL.obiee_scheduler
```

8. Create the BI scheduler resource.

```
# clresource create -g bi-svr-rg \
-t ORCL.obiee_scheduler \
-p Run_64_bit=True \
-p Resource_dependencies_offline_restart=bi-svr-hasp-rs,bi-svr-lh-rs \
-p BI_INSTALL_DIRECTORY=/failover/obiee/OracleBI \
-p BI_DATA_DIRECTORY=/failover/obiee/OracleBIData \
bi-sch-rs
```

9. Verify the status of the resource.

```
# clresource status bi-sch-rs
=== Cluster Resources ===
Resource Name  Node Name  State  Status Message
-------------  ---------  -----  --------------
bi-sch-rs      phys-red1  Online  Online - Service is online.
               phys-red2  Offline Offline
```

▼ How to Define a Multi-Master Configuration for BI Scheduler

A multi-master BI Scheduler configuration requires primary and secondary BI Cluster Controllers to be configured as explained in "BI Cluster Controller Configuration" on page 28, although strictly speaking, the secondary BI Cluster Controller is optional when creating an Oracle Solaris Cluster configuration. The BI Cluster Controller is responsible for directing requests coming in from the Presentation Services clients to the active BI scheduler.

1. **As user `oracle` (or any non-root user), install the Oracle Database client software on the servers that will host the scheduler.**

   The schedulers need access to the Oracle Database client libraries and `tnsnames.ora` file to be able to connect to the scheduler database.

2. **Create and configure a database to hold the scheduler job information.**

   For more information, see the section "Configuration Tasks for Oracle BI Scheduler " in the *Oracle Fusion Middleware Scheduling Jobs Guide for Oracle Business Intelligence Enterprise Edition*.

3. **Configure the scheduler.**

   For more information, see the section "Configuring Oracle BI Scheduler Instances in a Clustered Environment" in the *Oracle Fusion Middleware Scheduling Jobs Guide for Oracle Business Intelligence Enterprise Edition*.

4. **Edit the scheduler user parameters file to provide appropriate Oracle Solaris information.**

   In order to access the Oracle client libraries, the scheduler uses parameters set in the *BI_INSTALL_DIRECTORY*/`setup/user.sh` file. Uncomment and provide appropriate values for the Oracle Solaris entries.

   ```
   $ cat ~/OracleBI/setup/user.sh
   …
   ORACLE_HOME=/export/home/oracle/app/oracle/product/11.1.0/client_1
   export ORACLE_HOME
   TNS_ADMIN=$ORACLE_HOME/network/admin
   export TNS_ADMIN
   PATH=$ORACLE_HOME/bin:/opt/bin:$PATH
   export PATH
   LD_LIBRARY_PATH_64=$ORACLE_HOME/lib: $LD_LIBRARY_PATH_64:/opt/jdk/jdk1.6.0_20/jre/lib/sparc
   export LD_LIBRARY_PATH_64
   …
   ```

5. **As the `obiee` user on each cluster node, launch the scheduler configuration utility.**

   ```
   $ cd Oracle-BI-Install-dir/setup
   $ . ./sa-init64.sh
   $ schconfig
   ```

6. **On each cluster node, use the `schconfig` utility to set the following parameters:**

   - Set the `Data Source Name` to the scheduler database service name in the `tnsnames.ora` file.
   - Set the `User Name` and `Password` to the user name and password that you use to access the scheduler database.
   - Set the `Scheduler Script Path` and `Default Script Path` to locations that reside on a global file system.

- To simplify setup and to avoid having to use certificates, set the `Administrator Password` to null.

- Set `Participant in Cluster` to `True`.

- Set the `SAW Machine Name` to the physical host name of the Presentation Services component.

The `schconfig` utility modifies the *BI_DATA_DIRECTORY*/`scheduler/config/instanceconfig.xml` file.

7. **Create the resource.**

```
# clresource create -g mm-bi-svr-rg \
-t ORCL.obiee_scheduler \
-p BI_INSTALL_DIRECTORY=/export/home/obiee/OracleBI \
-p BI_DATA_DIRECTORY=/export/home/obiee/OracleBIData \
-p Resource_dependencies_offline_restart=mm-bi-svr-hasp-rs \
mm-bi-sch-rs
```

8. **Verify the resource status.**

```
# clresource status mm-bi-sch-rs
=== Cluster Resources ===
Resource Name    Node Name         State    Status Message
-------------    ---------         -----    --------------
mm-bi-sch-rs     phys-red1:red-zone1  Online  Online
                 phys-red2:red-zone2  Online  Online
```

Verifying the HA for Oracle BI EE Installation and Configuration

After you install, register, and configure HA for Oracle BI EE, verify the HA for Oracle BI EE installation and configuration. This verification determines whether the HA for Oracle BI EE data service makes your components highly available.

▼ How to Verify the HA for Oracle BI EE Installation and Configuration

1. **Assume the `root` role on a cluster node that is to host the Oracle Business Intelligence Enterprise Edition component.**

2. **Ensure all the Oracle BI EE resources are online.**

   For each resource, perform the following steps.

a. Determine whether the resource is online.

```
# cluster status -t rg,rs
```

b. If the resource is not online, bring it online.

```
# clresource enable obiee-biserver-resource
```

3. **For a failover service configuration, switch the resource group to another cluster node, such as** *node2***.**

```
# clresourcegroup switch -n node2 obiee-biserver-resource-group
```

4. **Confirm that the resource is now online on** *node2***.**

```
# cluster status -t rg,rs
```

Tuning the HA for Oracle BI EE Fault Monitors

The HA for Oracle BI EE fault monitors verify that the following components are running correctly:

- BI Presentation Services components – `sawserver` and `javahost` processes
- BI Server components – `nqserver` and `nqsserver` health (via probe)
- BI Cluster Controller components – `nqsclustercontroller` process
- BI Scheduler components – `nqsscheduler` process

Each HA for Oracle BI EE fault monitor is contained in the resource that represents each component. You create these resources when you register and configure HA for Oracle BI EE. For more information, see "Registering and Configuring HA for Oracle BI EE" on page 17.

System properties and extension properties of these resources control the behavior of the fault monitor. The default values of these properties determine the preset behavior of the fault monitor. The preset behavior should be suitable for most Oracle Solaris Cluster installations. Therefore, you should tune the fault monitor *only* if you need to modify this preset behavior.

Tuning the fault monitors involves the following tasks:

- Setting the interval between fault monitor probes
- Setting the time-out for fault monitor probes
- Defining the criteria for persistent faults
- Specifying the failover behavior of a resource

For more information, see "Tuning Fault Monitors for Oracle Solaris Cluster Data Services" in *Oracle Solaris Cluster Data Services Planning and Administration Guide* .

Debugging HA for Oracle BI EE

Each component of HA for Oracle BI EE has a `debug_level` resource property that enables you to activate debugging for Oracle BI EE resources.

▼ How to Activate Debugging for HA for Oracle BI EE

1. **In `/etc/syslog.conf`, redirect `daemon.debug` to a suitable file.**

   For example:

   ```
   daemon.debug        /var/tmp/daemon_debug.log
   ```

   Tip - Use a tab character to separate the `daemon.debug` label from the file name.

2. **Set the `debug_level` resource property to 1 or 2.**

   ```
   # clresource set -p debug_level=1 resource_name
   ```

3. **Restart the `syslogd` daemon.**

   ```
   # svcadm restart system-log
   ```

4. **Check `/var/adm/messages` in both global zone and local zone.**

5. **Check `/var/opt/ORCLscobiee/message_log.`*resource-name*.**

   The BI Server resource file contains the output of the BI Server probe. The probe output can be useful if the password is wrong.

A

HA for Oracle BI EE Extension Properties

The extension properties that you can set for each HA for Oracle BI EE resource type are listed in the following sections:

See the r_properties(5) man page and the rg_properties(5) man page for details about all of the system-defined properties.

ORCL.obiee_cluster_controller Extension Properties

BI_Install_Directory

> Type string (required). This property is set to the absolute path to the Oracle BI software installation directory.
>
> **Default:** None
>
> **Values:** Absolute full path name
>
> **Tunable:** When disabled

BI_Data_Directory

> Type string (required). This property is set to the absolute path of the Oracle BI software data directory.
>
> **Default:** None
>
> **Values:** Absolute full path name
>
> **Tunable:** When disabled

Run_64_bit

> Type Boolean (required). If this property is set to TRUE, then the 64–bit version of the binary is run. If set to FALSE, then the 32–bit version of the binary is run

Default: TRUE

Values: TRUE or FALSE

Tunable: When disabled

Cluster_Controller_Role

Type enumerated (required). This property determines whether the resource represents a primary or secondary cluster controller.

Default: PRIMARY

Values: PRIMARY or SECONDARY

Tunable: When disabled

Debug_Level

Type enumerated (optional). This property specifies the debug_level.

Default: 0

Values: 0, 1, or 2

Tunable: Any time

ORCL.obiee_presentation_service Extension Properties

BI_Install_Directory

Type string (required). This property is set to the absolute path of the Oracle BI software installation directory. The home directory contains the OracleBI and OracleBIData subdirectories.

Default: None

Values: Absolute full path name

Tunable: When disabled

BI_Data_Directory

Type string (required). This property is set to the absolute path of the Oracle BI software data directory.

Default: None

Values: Absolute full path name

Tunable: When disabled

Run_64_bit

Type Boolean (required). If this property is set to TRUE, then the 64–bit version of the binary is run. If set to FALSE, then the 32–bit version of the binary is run

Default: TRUE

Values: TRUE or FALSE

Tunable: When disabled

Debug_Level

Type enumerated (optional). This property specifies the debug_level.

Default: 0

Values: 0, 1, or 2

Tunable: Any time

ORCL.obiee_scheduler Extension Properties

BI_Install_Directory

Type string (required). This property is set to the absolute path to the Oracle BI software installation directory.

Default: None

Values: Absolute full path name

Tunable: When disabled

BI_Data_Directory

Type string (required). This property is set to the absolute path of the Oracle BI software data directory.

Default: None

Values: Absolute full path name

Tunable: When disabled

Run_64_bit

Type Boolean (required). If this property is set to TRUE, then the 64–bit version of the binary is run. If set to FALSE, then the 32–bit version of the binary is run

Default: TRUE

Values: TRUE or FALSE

Tunable: When disabled

Debug_Level

Type enumerated (optional). This property specifies the debug_level.

Default: 0

Values: 0, 1, or 2

Tunable: Any time

`ORCL.obiee_server` Extension Properties

`BI_Install_Directory`

Type string (required). This property is set to the absolute path to the Oracle BI software installation directory.

Default: None

Values: Absolute full path name

Tunable: When disabled

`BI_Data_Directory`

Type string (required). This property is set to the absolute path of the Oracle BI software data directory.

Default: None

Values: Absolute full path name

Tunable: When disabled

`Run_64_bit`

Type Boolean (required). If this property is set to `TRUE`, then the 64–bit version of the binary is run. If set to `FALSE`, then the 32–bit version of the binary is run

Default: TRUE

Values: TRUE or FALSE

Tunable: When disabled

`BI_PROBE_USER`

Type string (optional). This property contains the Business Intelligence (BI) user name to use for probing the health of the BI server.

Default: None

Values: string

Tunable: When disabled

`BI_PROBE_PASSWORD`

Type string (optional). This property contains the Business Intelligence (BI) user password to use for probing the health of the BI server.

Default: None

Values: string

Tunable: When disabled

`Debug_Level`

Type enumerated (optional). This property specifies the debug_level.

Default: 0

Values: 0, 1, or 2

Tunable: Any time

Index

C

cluster controller
   extension properties, 37, 38

D

debugging
   HA for Oracle BI EE, 36

E

extension properties
   effect on fault monitors, 35
   `ORCL.obiee_cluster_controller` resource type, 37
   `ORCL.obiee_presentation_service` resource type, 38
   `ORCL.obiee_scheduler` resource type, 39
   `ORCL.obiee_server` resource type, 40

F

fault monitors
   tuning, 35

H

HA for Oracle BI EE
   debugging, 36
   fault monitors, 35

I

installing
   HA for Oracle BI EE, 16

O

OBIEE scheduler
   extension properties, 39
OBIEE server
   extension properties, 40
`obiee_cluster_controller` resource type
   extension properties, 37
`obiee_presentation_service` resource type
   extension properties, 38
`obiee_scheduler` resource type
   extension properties, 39
`obiee_server` resource type
   extension properties, 40
Oracle Business Intelligence Enterprise Edition application
   fault monitor, 35
Oracle Solaris Cluster software
   publisher, 16, 16
ORCL.obiee_cluster_controller, 37
`ORCL.obiee_cluster_controller` resource type
   extension properties, 37
ORCL.obiee_presentation_service, 38
`ORCL.obiee_presentation_service` resource type
   extension properties, 38
ORCL.obiee_scheduler, 39
`ORCL.obiee_scheduler` resource type
   extension properties, 39
ORCL.obiee_server, 40
`ORCL.obiee_server` resource type
   extension properties, 40
overview, 9

P

package
   HA for Oracle BI EE, 16