

Oracle® Solaris Cluster Data Service for Oracle E-Business Suite Guide

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Preface

Oracle Solaris Cluster Data Service for Oracle E-Business Suite Guide explains how to install and configure Oracle Solaris Cluster data services.

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

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

The instructions in this book assume knowledge of the Oracle Solaris Operating System and expertise with the volume-manager software that is used with Oracle Solaris Cluster software.

Using UNIX Commands

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

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

Typographic Conventions

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

TABLE P-1 Typographic Conventions

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

Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for shells that are included in the Oracle Solaris OS. Note that the default system prompt that is displayed in command examples varies, depending on the Oracle Solaris release.

TABLE P-2 Shell Prompts

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

Related Documentation

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

Topic	Documentation
Data service administration	<i>Oracle Solaris Cluster Data Services Planning and Administration Guide</i> Individual data service guides
Concepts	<i>Oracle Solaris Cluster Concepts Guide</i>
Software installation	<i>Oracle Solaris Cluster Software Installation Guide</i>
System administration	<i>Oracle Solaris Cluster System Administration Guide</i>
Hardware administration	<i>Oracle Solaris Cluster 3.3 Hardware Administration Manual</i> Individual hardware administration guides
Data service development	<i>Oracle Solaris Cluster Data Services Developer's Guide</i>
Error messages	<i>Oracle Solaris Cluster Error Messages Guide</i>
Command and function reference	<i>Oracle Solaris Cluster Reference Manual</i>

For a complete list of Oracle Solaris Cluster documentation, see the release notes for your release of Oracle Solaris Cluster at <http://www.oracle.com/technetwork/indexes/documentation/index.html>.

Related Third-Party Web Site References

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

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

Documentation and Support

See the following web sites for additional resources:

- [Documentation \(http://www.oracle.com/technetwork/indexes/documentation/index.html\)](http://www.oracle.com/technetwork/indexes/documentation/index.html)
- [Support \(http://www.oracle.com/us/support/systems/index.html\)](http://www.oracle.com/us/support/systems/index.html)

Oracle Software Resources

[Oracle Technology Network \(http://www.oracle.com/technetwork/index.html\)](http://www.oracle.com/technetwork/index.html) offers a range of resources related to Oracle software:

- Discuss technical problems and solutions on the [Discussion Forums \(http://forums.oracle.com\)](http://forums.oracle.com).
- Get hands-on step-by-step tutorials with [Oracle By Example \(http://www.oracle.com/technetwork/tutorials/index.html\)](http://www.oracle.com/technetwork/tutorials/index.html).

Getting Help

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

- Your name and email address (if available)
- Your company name, address, and phone number
- The model number and serial number of your systems
- The release number of the Oracle Solaris Operating System (for example, Oracle Solaris 10)
- The release number of Oracle Solaris Cluster (for example, Oracle Solaris Cluster 3.3)

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

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

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

Installing and Configuring Oracle Solaris Cluster HA for Oracle E-Business Suite

This chapter explains how to install and configure Oracle Solaris Cluster HA for Oracle E-Business Suite (HA for Oracle E-Business Suite).

This chapter contains the following sections.

- “HA for Oracle E-Business Suite Overview” on page 11
- “Overview of Installing and Configuring HA for Oracle E-Business Suite” on page 13
- “Planning the HA for Oracle E-Business Suite Installation and Configuration” on page 13
- “Installing and Configuring Oracle E-Business Suite” on page 17
- “Verifying the Installation and Configuration of Oracle E-Business Suite” on page 25
- “Installing the HA for Oracle E-Business Suite Packages” on page 34
- “Registering and Configuring HA for Oracle E-Business Suite” on page 36
- “Verifying the HA for Oracle E-Business Suite Installation and Configuration” on page 45
- “Upgrading HA for Oracle E-Business Suite” on page 45
- “Understanding the HA for Oracle E-Business Suite Fault Monitor” on page 47
- “Debugging HA for Oracle E-Business Suite” on page 48

HA for Oracle E-Business Suite Overview

Note – Throughout this document a non-global zone may be referred to as a zone. A global zone will always be referred to as a global zone.

The HA for Oracle E-Business Suite data service provides a mechanism for the orderly startup and shutdown, fault monitoring, and automatic failover of the Oracle E-Business Suite.

Oracle E-Business Suite is a complete set of business applications that enables you to efficiently manage business processes by using a unified open architecture. This architecture is a framework for multi tiered, distributed computing that supports Oracle products. The tiers that

compose Oracle E-Business Suite are the database tier, applications tier, and desktop tier. These tiers can be distributed as a logical grouping and can be grouped on one or more nodes.

TABLE 1 Oracle E-Business Suite Architecture

Desktop Tier	Application Tier	Database Tier
Web Browser	Web Server	Database Server
	Forms Server	
	Concurrent Server	
	Reports Server	
	Admin Server	
	Discoverer Server	

The distributed nature of Oracle E-Business Suite requires more than one cluster data service if all application and database tiers are to be managed by the cluster.

The following tables list the Oracle E-Business Suite components and the corresponding Oracle Solaris Cluster data service that provides high availability to that component.

TABLE 2 Protection of Components

Component	Protected by
Database Server	HA for Oracle (Database and Listener)
Web Server	HA for Apache
Forms Server	HA for Oracle E-Business Suite
Concurrent Manager Server	HA for Oracle E-Business Suite
Concurrent Manager Listener	HA for Oracle (Listener)
Reports Server	HA for Oracle E-Business Suite

The Admin Server and Discoverer Server are not normally run within Oracle Solaris Cluster and therefore are not protected by HA for Oracle E-Business Suite.

Overview of Installing and Configuring HA for Oracle E-Business Suite

The following table summarizes the tasks for installing and configuring HA for Oracle E-Business Suite and provides cross-references to detailed instructions for performing these tasks. Perform the tasks in the order that they are listed in the table.

TABLE 3 Tasks for Installing and Configuring HA for Oracle E-Business Suite

Task	Instructions
Plan the installation	“Planning the HA for Oracle E-Business Suite Installation and Configuration” on page 13
Install and configure the Oracle E-Business Suite software	“How to Install and Configure Oracle E-Business Suite” on page 17
Verify the installation and configuration	“How to Verify the Installation and Configuration of Oracle E-Business Suite” on page 25
Install HA for Oracle E-Business Suite packages	“How to Install the HA for Oracle E-Business Suite Packages” on page 34
Register and configure HA for Oracle E-Business Suite resources	“How to Register and Configure HA for Oracle E-Business Suite” on page 36
Verify the HA for Oracle E-Business Suite installation and configuration	“How to Verify the HA for Oracle E-Business Suite Installation and Configuration” on page 45
Upgrade the HA for Oracle E-Business Suite data service	“How to Upgrade to the New Version of HA for Oracle E-Business Suite” on page 45
Tune the HA for Oracle E-Business Suite fault monitor	“Understanding the HA for Oracle E-Business Suite Fault Monitor” on page 47
Debug HA for Oracle E-Business Suite	“How to Turn on Debugging for HA for Oracle E-Business Suite” on page 48

Planning the HA for Oracle E-Business Suite Installation and Configuration

This section contains the information you need to plan your HA for Oracle E-Business Suite installation and configuration.

Configuration Restrictions

The configuration restrictions in the subsections that follow apply only to HA for Oracle E-Business Suite.



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

Restriction for the Supported Configurations of HA for Oracle E-Business Suite

The HA for Oracle E-Business Suite data service can be configured as a failover service or, when using Concurrent Parallel Processing, as a scalable service.

Oracle E-Business Suite can be deployed in the global zone or in a non-global zone.

Oracle E-Business Suite is installed by using *rapidwiz* onto a *single-node*, *two-node* or *multi-node* installation.

- In a single-node installation, you install the Database, Web, Forms, Concurrent Manager, and Reports Server onto a single node.
- In a two-node installation, one node contains the Database, Concurrent Manager and Reports server; and the other node contains the Forms and Web Server.
- In a multi-node installation, you can specify any combination of up to five nodes to install the Database, Web, Forms, Concurrent Manager, and Reports Server.
- The following are the components of an Oracle E-Business Suite configuration:
 - **Database Server** – Using *rapidwiz*, install the Database Server as a single database instance. The Database Server must be managed by Oracle Solaris Cluster HA for Oracle as a failover service in the cluster.
 - **Web Server**– Using *rapidwiz*, install the Web Server (Apache) onto a node. If this will run in the cluster, then the Web Server is managed by Oracle Solaris Cluster HA for Apache and can be deployed as either a failover or scalable service in the cluster.
 - **Forms, Concurrent Manager, and Reports Server** – Depending on how you install using *rapidwiz*, you can install the Forms, Concurrent Manager, and Reports Server onto the same node or onto different nodes. All of these components are managed by HA for Oracle E-Business Suite as a failover service in the cluster.
- **Parallel Concurrent Processing** – HA for Oracle E-Business Suite support for Parallel Concurrent Processing requires a minimum of Oracle E-Business Suite Version 12.0. When using *rapidwiz*, you must specify the physical hostnames that will be used within the Parallel Concurrent Processing deployment.

- Clustered Oracle Process Manager and Notification (OPMN) is supported with at least Oracle E-Business Suite Version 12.0. When you use the rapidwiz installer, you must install an OPMN instance as a single Web Entry Point (an HTTP_Server) using a logical host. Other OPMN instances must provide just OC4J services (oafm, forms, and oacore) and must specify the physical hostnames. Refer to MOS Note 380489.1 for more information about setting up a single Web Entry Point OPMN instance.

The following example shows Clustered OPMN OC4J instances on physical servers pcastor3 and pcastor4, in addition to a single Web Entry Point OPMN instance using logical host ebiz.lh that can fail over between physical servers pcastor3 and pcastor4.

```
-bash-3.00$ ./adopmctl.sh @cluster status
```

```
You are running adopmctl.sh version 120.4.12000000.3
Checking status of OPMN managed processes in a cluster...
```

```
Processes in Instance: PROD_pcastor4.pcastor4.sfbay.com
```

ias-component	process-type	pid	status
OC4J	oafm	11020	Alive
OC4J	forms	10892	Alive
OC4J	oacore	10672	Alive
HTTP_Server	HTTP_Server	N/A	Down

```
Processes in Instance: PROD_pcastor3.pcastor3.sfbay.com
```

ias-component	process-type	pid	status
OC4J	oafm	29657	Alive
OC4J	forms	29535	Alive
OC4J	oacore	29413	Alive
HTTP_Server	HTTP_Server	N/A	Down

```
Processes in Instance: PROD_ebiz-lh.ebiz-lh.sfbay.com
```

ias-component	process-type	pid	status
OC4J	oafm	N/A	Down
OC4J	forms	N/A	Down
OC4J	oacore	N/A	Down
HTTP_Server	HTTP_Server	16905	Alive

To implement clustered OPMN within Oracle Solaris Cluster, perform the following steps.

1. Ensure that each OPMN instance is deployed using a shared file system.
2. Install or clone the AppsTier Services for the OPMN OC4J instances where each OPMN OC4J instance uses the hostname of the node within the global cluster or the zone node of a zone cluster.
3. Install or clone the AppsTier Services for the OPMN Web Entry Point instance so that a logical host is used, regardless if the deployment of the OPMN Web Entry Point is within the global cluster or zone cluster. Using the example above, the

OPMN Web Entry Point instance `PROD_ebiz-lh.ebiz-lh.sfbay.com` is deployed using a logical host (`ebiz-lh`) and can fail over between physical hosts `pcastor3` and `pcastor4`.

4. Follow Metalink note-id 380489.1, section and subsection 3.1.1 for a Single Web Entry Point. When you use the example above, each OPMN instance context file should define the following context variable as follows.

```
<oc4j_cluster_nodes oa_var="s_oc4j_cluster_nodes">pcastor3.sfbay.com:6200,
  pcastor4.sfbay.com:6200,ebiz-lh.sfbay.com:6200</oc4j_cluster_nodes>
<webentryhost oa_var="s_webentryhost">ebiz-lh</webentryhost>
<login_page oa_var="s_login_page">http://ebiz-lh.sfbay.com:8000/OA_HTML
  /AppsLogin</login_page>
<externURL oa_var="s_external_url">http://ebiz-lh.sfbay.com:8000</externURL>
```

Refer to Metalink note-id 380489.1 for a description of these context variables and other context variables that can be changed.

5. When installing or cloning the AppsTier for the OPMN instances, ensure that the OPMN Web Entry Point instance uses different port numbers that are used by the OPMN OC4J instances for ONS-related variables. For example:
- `ons_localport`
 - `ons_remoteport`
 - `ons_requestport`

Failing to use different port numbers for the ONS-related variables prevents the OPMN Web Entry Point instance from starting.

Restriction for the Location of Oracle E-Business Suite Files

The Oracle E-Business Suite files are the data files that are created when you install Oracle E-Business Suite using the `rapidwiz` installer.

The Oracle E-Business Suite files must be placed on shared storage as either a cluster file system or a highly available local file system. The following tables show the mount points and acceptable file system types.

Mount Point	Filesystem Type
<i>dbnameDATA</i>	Cluster file system or highly available local file system.
<i>dbnameDB</i>	Local, cluster file system or highly available local file system.
<i>dbnameORA</i>	Local, cluster file system or highly available local file system.

Mount Point	Filesystem type
<i>dbnameCOMN_TOP</i>	Cluster file system or highly available local file system.

Mount Point	Filesystem type
<code>dbnameAPPL_TOP</code>	Cluster file system or highly available local file system.
<code>dbnameAPPLCSF</code>	Cluster file system or highly available local file system.

Configuration Requirements

The configuration requirements in this section apply only to HA for Oracle E-Business Suite.



Caution – If your data service configuration does not conform to these requirements, the data service configuration might not be supported.

Determine Which Solaris Zone Oracle E-Business Suite Will Use

Solaris zones provide a means of creating virtualized operating system environments within an instance of the Solaris OS. Solaris zones allow one or more applications to run in isolation from other activity on your system. For complete information about installing and configuring Solaris zones, refer to *System Administration Guide: Oracle Solaris Containers-Resource Management and Oracle Solaris Zones*.

You must determine which Solaris zone Oracle E-Business Suite will use. Oracle E-Business Suite can run within the global zone or in a non-global zone configuration.

Installing and Configuring Oracle E-Business Suite

This section contains the procedures you need to install and configure Oracle E-Business Suite.

▼ How to Install and Configure Oracle E-Business Suite

This section contains the procedures you need to install and configure Oracle E-Business Suite.

- 1 **On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` RBAC authorization.**

- 2 **Determine which Solaris zone to use.**

Refer to “[Determine Which Solaris Zone Oracle E-Business Suite Will Use](#)” on page 17 for more information.

- 3 **If a zone will be used, create the zone.**

Refer to *System Administration Guide: Oracle Solaris Containers-Resource Management and Oracle Solaris Zones* for complete information about installing and configuring a zone.

4 If a non-global zone is being used, ensure that the non-global zone is booted.

a. Boot the non-global zone if it is not running.

```
# zoneadm list -v
# zoneadm -z zonename boot
```

b. Repeat this step on all nodes of the cluster if a non-global zone is being used.

5 Create a cluster file system or highly available local file system for the Oracle E-Business Suite files.

Refer to [Oracle Solaris Cluster Software Installation Guide](#) for information about creating a cluster file system and to [Oracle Solaris Cluster Data Services Planning and Administration Guide](#) for information about creating a highly available local file system.

6 Mount the highly available local file system.

Perform this step from the global zone on one node of the cluster.

- **If a non-ZFS highly available local file system is being used for Oracle E-Business Suite, perform one of the following steps.**

Note – Ensure that the node has ownership of the disk set or disk group.

- For Solaris Volume Manager, type:

```
# metaset -s disk-set -t
```

- For Veritas Volume Manager, type:

```
# vxdg -C import disk-group
# vxdg -g disk-group startall
```

- **If the global zone is being used for Oracle E-Business Suite, type the following command.**

```
# mount highly-available-local-filesystem
```

- **If a non-global zone is being used for Oracle E-Business Suite, create the mount point on all non-global zones of the cluster that are being used for Oracle E-Business Suite.**

```
# zlogin zonename mkdir highly-available-local-filesystem
```

Mount the highly available local file system on one of the zones being used.

```
# mount -F lofs highly-available-local-filesystem \
> /zonepath/root/highly-available-local-filesystem
```

- If a ZFS highly available local file system is being used for Oracle E-Business Suite, perform one of the following steps.
 - If the global zone is being used for Oracle E-Business Suite, type the following command.


```
# zpool import -R / HAZpool
```
 - If a non-global zone is being used for Oracle E-Business Suite, type the following command.


```
# zpool export -f HAZpool
# zpool import -R /zonepath/root HAZpool
```

7 Plumb the Oracle E-Business Suite logical hostname.

Note – If you are using Parallel Concurrent Processing, omit this step. Parallel Concurrent Processing requires physical hostnames.

Perform this step in the global zone on one node of the cluster for each logical hostname being used by Oracle E-Business Suite.

- If the global zone is being used for Oracle E-Business Suite, type the following command.


```
# ifconfig interface addif logical-hostname up
```
- If a zone is being used for Oracle E-Business Suite, type the following command.


```
# ifconfig interface addif logical-hostname up zone zonename
```

If you are deploying Clustered OPMN OC4J instances, omit this step. Clustered OPMN OC4J instances require physical hostnames. If you are installing a Clustered OPMN single Web Entry Point server, you must still specify a logical hostname.

8 Enable logical host interpositioning.

Note – If you are using Parallel Concurrent Processing, omit this step. Parallel Concurrent Processing requires physical hostnames.

Perform this step on all cluster nodes where Oracle E-Business Suite will run.

To provide logical host interpositioning for Oracle E-Business Suite you must create a symbolic link from `/usr/lib/secure/libschost.so.1` to `/usr/cluster/lib/libschost.so.1`

```
# cd /usr/lib/secure
# ln -s /usr/cluster/lib/libschost.so.1 libschost.so.1
```

If you are deploying Clustered OPMN OC4J instances, omit this step. Clustered OPMN OC4J instances require physical hostnames. If you are installing a Clustered OPMN single Web Entry Point server, you must still specify a logical hostname.

9 Install the Oracle E-Business Suite software.

Perform this step in the global zone or non-global zone on one node of the cluster.

a. As superuser, execute **rapidwiz**.

When running the **rapidwiz** installer, unless you are installing Parallel Concurrent Processing or Clustered OPMN OC4J instances, you must enter the logical hostname as the node name for the Database, Administration, Concurrent Manager, Forms, and Web Server. If you are performing a two-node or multi-node installation, you must specify the appropriate logical hostname as the appropriate node for the Database, Administration, Concurrent Manager, Forms, and Web Server.

If you are installing Parallel Concurrent Processing, do not specify a logical hostname. Instead, specify the physical hostname for the Concurrent Manager (Batch services). Using **rapidwiz**, add a server and configure batch services for each physical hostname that will participate in Parallel Concurrent Processing.

If you are installing Clustered OPMN OC4J instances, do not specify a logical hostname. Instead, specify the physical hostname. Using **rapidwiz**, add a server for each physical hostname that will participate in Clustered OPMN OC4J instances. If you are installing a Clustered OPMN single Web Entry Point server, you must still specify a logical hostname.

When executing **rapidwiz**, save the **config.txt** file in a permanent location, for example, **/var/tmp/config.txt**. If you are installing at least Oracle E-Business Suite Version 12, save the **/var/tmp/conf_*SID*.txt** file before clicking OK on **rapidwiz** message No install actions found.

```
# cd oracle-ebusiness-suite-install-directory
# ./rapidwiz
```

b. As superuser, execute **rapidwiz** for each logical hostname.

Execute **rapidwiz** for each logical hostname that you entered when generating the **/var/tmp/config.txt** file or **/var/tmp/conf_*SID*.txt** file.

```
# cd oracle-ebusiness-suite-install-directory
# ./rapidwiz -servername logical-hostname
```

10 (Optional) If encountered, resolve validation error JSP is not responding, waiting 15 seconds and retesting.

If, after installing the Web Server, you encounter the validation error JSP is not responding, waiting 15 seconds and retesting, leave the rapidwiz GUI and follow [Step a](#) through [Step e](#) to resolve the validation error. Then you must return to the rapidwiz GUI to retry the validation.

a. Edit the httpd_pls.conf file.

Edit the httpd_pls.conf file and add the following entries for *each* physical cluster node within the VirtualHost_default_:* section.

```
Allow from cluster-node
Allow from cluster-node.fqdn

# su - oraapp-user
$ cd base-directory/sidora/ias/Apache/Apache/conf
$ vi httpd_pls.conf
$ exit
```

The following example shows the logical hostname lhost1 and the cluster nodes clnode1 and clnode2 that have been added.

```
<VirtualHost _default_:*>
  <Location />
    Order deny,allow
    Deny from all
    Allow from localhost
    Allow from lhost1
    Allow from lhost1.example.com
    Allow from clnode1
    Allow from clnode1.example.com
    Allow from clnode2
    Allow from clnode2.example.com
  </Location>
</VirtualHost>
```

b. Edit the opprocmgr.conf file.

Edit the opprocmgr.conf file and add the following entries for *each* physical cluster node within the VirtualHost_default_:8100 section.

```
Allow from cluster-node
Allow from cluster-node.fqdn

# su - oraapp-user
$ cd base-directory/sidora/ias/Apache/Apache/conf
$ vi opprocmgr.conf
$ exit
```

The following example shows logical hostname lhost1 and the cluster nodes clnode1 and clnode2 that have been added.

```
<IfModule mod_oprocmgr.c>
  Listen 8000
```

```

ProcNode lhost1.example.com 8100

<VirtualHost _default_:8100>
<IfDefine SSL>
    SSLEngine off
</IfDefine>
    Port 8100
    <Location />
        Order Deny,Allow
        Deny from all
        Allow from localhost
        Allow from lhost1
        Allow from lhost1.example.com
        Allow from clnode1
        Allow from clnode1.example.com
        Allow from clnode2
        Allow from clnode2.example.com
    </Location>/base-directory/sidappl/admin/SID_lhost1.xml
    <Location /oprocmgr-service>
        SetHandler oprocmgr-service
    </Location>
    <Location /oprocmgr-status>
        SetHandler oprocmgr-status
    </Location>
</VirtualHost>
</IfModule>

```

c. Edit the jserv.properties file.

Edit the jserv.properties file and add the following entries for all physical cluster node within the security.allowedAddresses entry.

```

security.allowedAddresses=127.0.0.1, \
lhost.fqdn,clnode1.fqdn,clnode2.fqdn

# su - oraapp-user
$ cd base-directory/sidora/ias/Apache/Jserv/etc
$ vi jserv.properties
$ exit

```

The following example shows logical hostname lhost1 and the cluster nodes clnode1 and clnode2 that have been added.

```
security.allowedAddresses=127.0.0.1,lhost1.example.com,clnode1.example.com,clnode2.example.com
```

d. Restart Oracle E-Business Suite.

```

# su - oraapp-user
$ cd base-directory/sidcomn/admin/scripts/SID_logical-hostname
$ ./adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd base-directory/siddb/9.2.0/appsutil/scripts/SID_logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
$ ./addbctl.sh start
$ ./addlnctl.sh start SID
$ exit

```

```
# su - oraapp-user
$ cd base-directory/sidcomn/admin/scripts/SID_logical-hostname
$ ./adstrtal.sh apps/apps
$ exit
```

e. Return to the rapidwiz GUI and click Retry.

The JSP check should now work.

11 When Oracle E-Business Suite installation is complete, edit `listener.ora`.

Note – If you are using Parallel Concurrent Processing, omit this step. Parallel Concurrent Processing requires physical hostnames.

Perform this step from the global zone or non-global zone where you installed Oracle E-Business Suite.

- **If you are installing at least Oracle E-Business Suite Version 12, perform the following steps.**

- a. **Create a custom `SID_app-logical-host.env` file.**

```
# su - oraapp-user
$ vi app-base-directory/apps/apps_st/appl/customSID_app-logical-host.env
```

- b. **Add the following lines to the `customSID_app-logical-host.env` file:**

```
LD_PRELOAD_32=/usr/lib/secure/libschost.so.1
SC_LHOSTNAME=app-logical-host
```

```
export LD_PRELOAD_32 SC_LHOSTNAME
```

- **If you are installing Oracle E-Business Suite Version 11.5.10 or a prior version, edit the `listener.ora` file and add the following entries to the `envs=` parameter for the `SID_NAME=FNDSM` entry.**

```
envs='LD_LIBRARY_PATH=/usr/dt/lib:/user/openwin/lib:basedir/sidora/8.0.6/lib, \
LD_PRELOAD_32=/usr/lib/secure/libschost.so.1,SC_LHOSTNAME=lhost,MYAPPSORA=...
```

```
# su - oraapp-user
$ cd base-directory/sidora/8.0.6/network/admin/SID_logical-hostname
$ vi listener.ora
```

The following example shows the `LD_PRELOAD_32` and `SC_LHOSTNAME` entries that have been added.

```
SID_LIST_APPS_PROD =
(SID_LIST =
( SID_DESC = ( SID_NAME = FNDSM )
( ORACLE_HOME = /base-directory/sidora/8.0.6 )
( PROGRAM = /base-directory/sidappl/fnd/11.5.0/bin/FNDSM )
( envs='LD_LIBRARY_PATH=/usr/dt/lib:/user/openwin/lib:basedir/sidora/8.0.6 \
/lib,LD_PRELOAD_32=/usr/lib/secure/libschost.so.1,SC_LHOSTNAME=lhost1,MYAPPS=
```

12 Stop Oracle E-Business Suite.

Perform this step from the global zone or non-global zone where you installed Oracle E-Business Suite.

Note – If you installed Parallel Concurrent Processing, you installed batch services on the physical hostname. Therefore, to stop the Concurrent Manager, you must specify the physical-host pathname for the admin scripts. To stop other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

If you installed Clustered OPMN OC4J instances, you installed on the physical hostname. Therefore, to stop the Clustered OPMN OC4J instance, you must specify the physical-host pathname for the admin scripts. To stop other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

- **If you are installing at least Oracle E-Business Suite Version 12, type the following commands.**

```
# su - oraapp-user
$ cd app-base-directory/inst/apps/SID_app-logical-hostname/admin/scripts
$ ./adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd db-base-directory/SID/db/tech_st/*/appsutil/scripts/SID_db-logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
```

- **If you are installing Oracle E-Business Suite Version 11.5.10 or a prior version, type the following commands.**

```
# su - oraapp-user
$ cd app-base-directory/SIDcomn/admin/scripts/SID_app-logical-hostname
$ ./adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd db-base-directory/SID/db/9.2.0/appsutil/scripts/SID_db-logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
```

13 Unmount the highly available local file system.

Perform this step from the global zone on the node where you installed Oracle E-Business Suite.

- **To unmount a non-ZFS highly available local file system that is being used for the Oracle E-Business Suite, perform one of the following steps.**
 - **If the global zone is being used for Oracle E-Business Suite, type the following command.**

```
# umount highly-available-local-filesystem
```


- If a non-global zone is being used for Oracle E-Business Suite, type the following command.

```
# umount /zonepath/root/highly-available-local-filesystem
```

- If a ZFS highly available local file system is being used for Oracle E-Business Suite, type the following command.

```
# zpool export -f HAZpool
```

14 Unplumb the Oracle E-Business Suite logical hostname.

Perform this step from the global zone on one node of the cluster for each logical hostname being used by Oracle E-Business Suite.

```
# ifconfig interface removeif logical-hostname
```

Verifying the Installation and Configuration of Oracle E-Business Suite

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

▼ How to Verify the Installation and Configuration of Oracle E-Business Suite

This procedure does not verify that your application is highly available because you have not yet installed your data service.

Perform this procedure on one node or zone of the cluster unless a specific step indicates otherwise.

- 1 On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` RBAC authorization.
- 2 If a non-global zone is being used for Oracle E-Business Suite, ensure that the non-global zone is booted.

- a. Boot the non-global zone if it is not running.

```
# zoneadm list -v
# zoneadm -z zonename boot
```

- b. Repeat this step on all nodes on the cluster if a non-global zone is being used.

3 Mount the highly available local file system.

Perform this step from the global zone on one node of the cluster.

- If a non-ZFS highly available local file system is being used for the Oracle E-Business Suite files, perform one of the following steps.

Note – Ensure that the node has ownership of the disk set or disk group.

For Solaris Volume Manager, type:

```
# metaset -s disk-set -t
```

For Veritas Volume Manager, type:

```
# vxdg -C import disk-group
# vxdg -g disk-group startall
```

- If the global zone is being used for Oracle E-Business Suite, type:


```
# mount highly-available-local-filesystem
```
- If a non-global zone is being used for Oracle E-Business Suite, mount the highly available local file system on one of the non-global zones being used.


```
# mount -F lofs highly-available-local-filesystem \
> /zonepath/root/highly-available-local-filesystem
```
- If a ZFS highly available local file system is being used for Oracle E-Business Suite, perform one of the following steps.
 - If the global zone is being used for Oracle E-Business Suite, type the following command.


```
# zpool import -R / HAZpool
```
 - If a non-global zone is being used for Oracle E-Business Suite, type the following command.


```
# zpool import -R /zonepath/root HAZpool
```

4 Plumb the Oracle E-Business Suite logical hostname.

Note – If you are using Parallel Concurrent Processing, omit this step. Parallel Concurrent Processing requires physical hostnames.

If you are using Clustered OPMN OC4J instances, omit this step. Clustered OPMN OC4J instances require physical hostnames.

Perform this step for each logical hostname being used by Oracle E-Business Suite.

- a. If the global zone is being used for Oracle E-Business Suite, type the following command.

```
# ifconfig interface addif logical-hostname up
```

- b. If a non-global zone is being used for Oracle E-Business Suite, type the following command.

```
# ifconfig interface addif logical-hostname up zone zonename
```

- 5 If a non-global zone is being used, log in to the non-global zone.

```
# zlogin zonename
```

- 6 Start Oracle E-Business Suite.

Note – If you installed Parallel Concurrent Processing, you installed batch services on the physical hostname. Therefore, to start the Concurrent Manager, you must specify the physical-host pathname for the admin scripts. To start other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

If you installed Clustered OPMN OC4J instances, you installed on the physical hostname. Therefore, to start the Clustered OPMN OC4J instance, you must specify the physical-host pathname for the admin scripts. To start other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

- If you are using at least Oracle E-Business Suite Version 12, perform the following commands.

```
# su - oradb-user
$ cd db-base-directory/SID/db/tech_st/*/appsutil/scripts/ \
  SID_db-logical-hostname
$ ./addbctl.sh start
$ ./addlnctl.sh start SID
$ exit
# su - oraapp-user
$ cd app-base-directory/inst/apps/SID_app-logical-hostname/admin/scripts
$ ./adstrtal.sh apps/apps
$ exit
```

- If you are using Oracle E-Business Suite Version 11.5.10 or a prior version, perform the following commands.

```
# su - oradb-user
$ cd db-base-directory/SID/db/9.2.0/appsutil/scripts/ \
  SID_db-logical-hostname
$ ./addbctl.sh start
$ ./addlnctl.sh start SID
$ exit
# su - oraapp-user
$ cd app-base-directory/SIDcomm/admin/scripts/SID_app-logical-hostname
$ ./adstrtal.sh apps/apps
$ exit
```

7 Test that a client can access Oracle E-Business Suite by using a Windows Client.

- **If you are using at least Oracle E-Business Suite Version 12, perform the following steps.**

- a. **Log in to Standalone Diagnostics at**
`http://ebs-logical-host.domainname:8000/OA_HTML/DiagLogin.jsp.`
- b. **Log in with Userid sysadmin and Password sysadmin and click Login.**
- c. **Click the Basic tab and click Run All.**

Note – Some diagnostics tests might fail as Oracle E-Business Suite is not fully configured.

- d. **From the Application drop-down menu, select HTML Platform and click Run All Groups.**
 - e. **From the Application drop-down menu, select Application Object Library and click Run All Groups.**
 - f. **From the Application drop-down menu, select CRM Foundation and click Run All Groups.**
- **If you are using Oracle E-Business Suite Version 11.5.10 or a prior version, perform the following steps.**
 - a. **Log in to Standalone Diagnostics at**
`http://ebs-logical-host.domainname:8000/OA_HTML/US/ICXINDEX.htm.`
 - b. **Log in with Userid sysadmin and Password sysadmin and click System Admin.**
 - c. **Double-click Requests and double-click Run.**
 - d. **Click OK on Single requests.**
 - e. **Type Active Users in the Name field.**
 - f. **Click OK to submit the request.**
 - g. **Click Refresh Data until you see the message Active Users is Completed.**
 - h. **Click View Output.**

8 Stop Oracle E-Business Suite.

Note – If you installed Parallel Concurrent Processing, you installed batch services on the physical hostname. Therefore, to stop the Concurrent Manager, you must specify the physical-host pathname for the admin scripts. To stop other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

If you installed Clustered OPMN OC4J instances, you installed on the physical hostname. Therefore, to stop the Clustered OPMN OC4J instance, you must specify the physical-host pathname for the admin scripts. To stop other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

- **If you are using at least Oracle E-Business Suite Version 1, perform the following commands.**

```
# su - oraapp-user
$ cd app-base-directory/inst/apps/SID_app-logical-hostname/admin/scripts
$ .adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd db-base-directory/SID/db/tech_st/*/appsutil/scripts/ \
SID_db-logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
```

- **If you are using Oracle E-Business Suite Version 11.5.10 or a prior version, perform the following commands.**

```
# su - oraapp-user
$ cd app-base-directory/SIDcomn/admin/scripts/SID_app-logical-hostname
$ .adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd db-base-directory/SID/db/9.2.0/appsutil/scripts/ \
SID_db-logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
```

- 9 **If a non-global zone is being used, log out of the non-global zone.**

```
# exit
```

- 10 **Unmount the highly available local file system.**

Perform this step only in the global zone.

- **To unmount a non-ZFS highly available local file system that is being used for Oracle E-Business Suite, perform one of the following steps.**
 - **If the global zone is being used for Oracle E-Business Suite, type the following command.**

```
# umount highly-available-local-filesystem
```

- If a zone is being used for Oracle E-Business Suite, unmount the highly available local file system from the zone.
`# umount /zonepath/root/highly-available-local-filesystem`
 - If a ZFS highly available file system is being used for Oracle E-Business Suite, type the following command.
`# zpool export -f HAZpool`
- 11 Unplumb the Infrastructure logical IP address.**
 Perform this step for each logical hostname being used by Oracle E-Business Suite.
`# ifconfig interface removeif logical-hostname`
- 12 Relocate the shared storage to another node and mount the highly available local file system.**
 Perform this step on another node of the cluster.
- If a non-ZFS highly available local file system is being used for the Oracle E-Business Suite files, perform one of the following steps.

Note – Ensure that the node has ownership of the disk set or disk group.

- For Solaris Volume Manager, type the following command.
`# metaset -s disk-set -t`
- For Veritas Volume Manager, type the following command.
`# vxdg -C import disk-group`
`# vxdg -g disk-group startall`
- If the global zone is being used for Oracle E-Business Suite, type the following command.
`# mount highly-available-local-filesystem`
- If a non-global zone is being used for Oracle E-Business Suite, mount the highly available local file system on one of the non-global zones being used.
`# mount -F lofs highly-available-local-filesystem \`
`> /zonepath/root/highly-available-local-filesystem`
- If a ZFS highly available file system is being used for Oracle E-Business Suite, perform one of the following steps.
 - If the global zone is being used for Oracle E-Business Suite, type the following command.
`# zpool import -R / HAZpool`
 - If a non-global zone is being used for Oracle E-Business Suite, type the following command.
`# zpool import -R /zonepath/root HAZpool`

13 Plumb the Oracle E-Business Suite logical hostname.

Perform this step on another node of the cluster for each logical hostname being used by Oracle E-Business Suite.

- **If the global zone is being used for Oracle E-Business Suite, type the following command.**
`# ifconfig interface addif logical-hostname up`
- **If a non-global zone is being used for Oracle E-Business Suite, type the following command.**
`# ifconfig interface addif logical-hostname up zone zonename`

14 If a non-global zone is being used, log in to the non-global zone.

`# zlogin zonename`

15 Start Oracle E-Business Suite.

Note – If you installed Parallel Concurrent Processing, you installed batch services on the physical hostname. Therefore, to start the Concurrent Manager, you must specify the physical-host pathname for the admin scripts. To start other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

If you installed Clustered OPMN OC4J instances, you installed on the physical hostname. Therefore, to start the Clustered OPMN OC4J instance, you must specify the physical-host pathname for the admin scripts. To start other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

- **If you are using at least Oracle E-Business Suite Version 12, perform the following:**

```
# su - oradb-user
$ cd db-base-directory/SID/db/tech_st/*/appsutil/scripts/ \
  SID_db-logical-hostname
$ ./addbctl.sh start
$ ./addlnctl.sh start SID
$ exit
# su - oraapp-user
$ cd app-base-directory/inst/apps/SID_app-logical-hostname/admin/scripts
$ ./adstrtal.sh apps/apps
$ exit
```

- **If you are using Oracle E-Business Suite Version 11.5.10 or a prior version, perform the following:**

```
# su - oradb-user
$ cd db-base-directory/SID/db/9.2.0/appsutil/scripts/ \
  SID_db-logical-hostname
$ ./addbctl.sh start
$ ./addlnctl.sh start SID
$ exit
# su - oraapp-user
```

```
$ cd app-base-directory/SIDcomn/admin/scripts/SID_app-logical-hostname
$ ./adstrtal.sh apps/apps
$ exit
```

16 Test that a client can access Oracle E-Business Suite by using a Windows Client.

- **If you are using at least Oracle E-Business Suite Version 12, perform the following:**

- a. **Log in to Standalone Diagnostics at**
`http://ebs-logical-host.domainname:8000/OA_HTML/DiagLogin.jsp.`
- b. **Log in with Userid sysadmin and Password sysadmin and click Login.**
- c. **Click the Basic tab and click Run All.**

Note – Some diagnostics tests might fail as Oracle E-Business Suite is not fully configured.

- d. **From the Application drop-down menu, select HTML Platform and click Run All Groups.**
 - e. **From the Application drop-down menu, select Application Object Library and click Run All Groups.**
 - f. **From the Application drop-down menu, select CRM Foundation and click Run All Groups.**
- **If you are using Oracle E-Business Suite Version 11.5.10 or a prior version, perform the following commands.**
 - a. **Log in to Standalone Diagnostics at**
`http://ebs-logical-host.domainname:8000/OA_HTML/US/ICXINDEX.htm.`
 - b. **Log in with Userid sysadmin and Password sysadmin and click System Admin.**
 - c. **Double-click Requests and double-click Run.**
 - d. **Click OK on Single requests.**
 - e. **Type Active Users in the Name field.**
 - f. **Click OK to submit the request.**
 - g. **Click Refresh Data until you get the message Active Users is Completed.**
 - h. **Click View Output.**

17 Stop Oracle E-Business Suite.

Note – If you installed Parallel Concurrent Processing, you installed batch services on the physical hostname. Therefore, to stop the Concurrent Manager, you must specify the physical-host pathname for the admin scripts. To stop other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

If you installed Clustered OPMN OC4J instances, you installed on the physical hostname. Therefore, to stop the Clustered OPMN OC4J instance, you must specify the physical-host pathname for the admin scripts. To stop other application-tier components that you installed by using a logical host, you must use the logical-host pathname for the admin scripts.

- **If you are using at least Oracle E-Business Suite Version 12, perform the following commands.**

```
# su - oraapp-user
$ cd app-base-directroy/inst/apps/SID_app-logical-hostname/admin/scripts
$ .adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd db-base-directory/SIDdb/tech_st/*/appsutil/scripts/SID_db-logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
```

- **If you are using Oracle E-Business Suite Version 11.5.10 or earlier, perform the following commands.**

```
# su - oraapp-user
$ cd app-base-directory/SIDcomn/admin/scripts/SID_app-logical-hostname
$ .adstpall.sh apps/apps
$ exit
# su - oradb-user
$ cd db-base-directory/SIDdb/9.2.0/appsutil/scripts/ \
SID_db-logical-hostname
$ ./addlnctl.sh stop SID
$ ./addbctl.sh stop immediate
```

18 If a non-global zone is being used, log out of the non-global zone.

```
# exit
```

19 Unmount the highly available local file system.

Perform this step in the global zone only.

- **To unmount a non-ZFS highly available local file system that is being used for Oracle E-Business Suite, perform one of the following steps.**
 - **If the global zone is being used for Oracle E-Business Suite, type the following command.**

```
# umount highly-available-local-filesystem
```

- If a non-global zone is being used for Oracle E-Business Suite, unmount the highly available local file system from the non-global zone.
`# umount /zonepath/root/highly-available-local-filesystem`
 - If a ZFS highly available file system is being used for Oracle E-Business Suite, type the following command.
`# zpool export -f HAZpool`
- 20 Unplumb the Oracle E-Business Suite logical hostname.**
Perform this step for each logical hostname being used by Oracle E-Business Suite.
`# ifconfig interface removeif logical hostname`

Installing the HA for Oracle E-Business Suite Packages

If you did not install the HA for Oracle E-Business Suite packages during your initial Oracle Solaris Cluster installation, perform this procedure to install the packages. To install the packages, use the `installer` program.

Note – You need to install the HA for Oracle E-Business Suite packages in the global cluster and not in the zone cluster.

▼ How to Install the HA for Oracle E-Business Suite Packages

Perform this procedure on each cluster node where you want the HA for Oracle E-Business Suite software to run.

You can run the `installer` program with a command-line interface (CLI) or with a graphical user interface (GUI). The content and sequence of instructions in the CLI and the GUI are similar.

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

Before You Begin Ensure that you have the Oracle Solaris Cluster installation media.

If you intend to run the `installer` program with a GUI, ensure that your `DISPLAY` environment variable is set.

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

2 Load the Oracle Solaris Cluster installation media into the DVD-ROM drive.

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

3 Change to the installation wizard directory of the DVD-ROM.

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

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

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

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

4 Start the installation wizard.

```
# ./installer
```

5 When you are prompted, accept the license agreement.**6 From the list of Oracle Solaris Cluster agents under Availability Services, select the data service for Oracle E-Business Suite.****7 If you require support for languages other than English, select the option to install multilingual packages.**

English language support is always installed.

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

Choose Configure Later to perform the configuration after the installation.

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

The installation wizard displays the status of the installation. When the installation is complete, the wizard displays an installation summary and the installation logs.

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

The Product Registration option is not available with the CLI. If you are running the installation wizard with the CLI, omit this step.

11 Exit the installation wizard.

- 12 Unload the installation media from the DVD-ROM drive.
 - a. To ensure that the DVD-ROM is not being used, change to a directory that does *not* reside on the DVD-ROM.
 - b. Eject the DVD-ROM.

```
# eject cdrom
```

Registering and Configuring HA for Oracle E-Business Suite

This section contains the procedures you need to configure HA for Oracle E-Business Suite.

Some procedures within this section require you to use certain Oracle Solaris Clustercommands. Refer to the relevant Oracle Solaris Clustercommand man page for more information about these commands and their parameters.

▼ How to Register and Configure HA for Oracle E-Business Suite

Perform this procedure on one node of the cluster only.

This procedure assumes that you installed the data service packages during your initial Oracle Solaris Cluster installation.

If you did not install the HA for Oracle E-Business Suite packages as part of your initial Oracle Solaris Cluster installation, go to [“How to Install the HA for Oracle E-Business Suite Packages” on page 34](#).

- 1 On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` RBAC authorization.
- 2 Register the following resource types.

```
# clresourcetype register SUNW.HAStoragePlus  
# clresourcetype register SUNW.gds
```
- 3 (Optional) Create a scalable resource group for Parallel Concurrent Processing.

```
# clresourcegroup create -S -n nodelist pcp-rg
```
- 4 (Optional). Create a scalable resource group for Clustered OPMN OC4J instances.

```
# clresourcegroup create -S -n nodelist c_opmn-rg
```
- 5 Create a failover resource group for Oracle E-Business Suite.

```
# clresourcegroup create -n nodelist ebs-rg
```

6 Create a resource for the Oracle E-Business Suite Logical Hostname.

```
# clreslogicalhostname create -g ebs-rg \
> -h logical-hostname \
> logical-hostname-resource
```

7 Create a resource for the Oracle E-Business Suite Disk Storage.

- If a ZFS highly available local file system is being used, perform the following command.

```
# clresource create -g ebs-rg \
> -t SUNW.HAStoragePlus \
> -p Zpools=oracle-ebusiness-suite-zspool \
> oracle-ebusiness-suite-hastorage-resource
```

- If a cluster file system or a non-ZFS highly available local file system is being used, perform the following command.

```
# clresource create -g ebs-rg \
> -t SUNW.HAStoragePlus \
> -p FilesystemMountPoints=oracle-ebusiness-suite-filessystem-mountpoint \
> oracle-ebusiness-suite-hastorage-resource
```

Note – If you installed Parallel Concurrent Processing on a cluster file system, when you create the HAStoragePlus resource, specify the scalable resource group that you created in [Step 3](#).

If you installed Clustered OPMN OC4J instances, when you create the HAStoragePlus resource, specify the scalable resource group that you created in [Step 4](#).

8 Enable the resource group.

If you created a scalable resource group in [Step 3](#), also enable that resource group.

```
# clresourcegroup online -M ebs-rg
    If Parallel Concurrent Processing is used:
# clresourcegroup online -M pcp-rg
```

If Clustered OPMN OC4J instances are used, enable that resource group,

```
# clresourcegroup online -M c_opmn-rg
```

9 Register and enable a resource for the Oracle Database.

For complete information about creating and registering a cluster resource for the Oracle Database, refer to [Oracle Solaris Cluster Data Service for Oracle Guide](#).

Note – Before creating corresponding resources, you need to register the SUNW.oracle_server resource type.

```
# clresource create -g ebs-rg \
> -t SUNW.oracle_Server \
```

```
> -p Connect_string=apps/apps \
> -p ORACLE_SID=SID \
> -p ORACLE_HOME=oracle-home \
> -p Alert_log_file=oracle-home/admin/SID \
> _db-logical-hostname/bdump/alert_SID.log \
> -p Restart_type=RESOURCE_GROUP_RESTART \
> -p Resource_dependencies=oracle-ebusiness-suite-hastorage-resource \
> oracle-resource
# clresource enable oracle-resource
```

10 Register and enable a resource for the Oracle Listener.

For complete information about creating and registering a cluster resource for the Oracle Listener, refer to *Oracle Solaris Cluster Data Service for Oracle Guide*.

Note – The `copy_env` script is used to copy and format the `sid.env` to `sid_ha.env`, which is used by the `User_env=` parameter in the following example.

Note – Before creating corresponding resources, you need to register the `SUNW.oracle_listener` resource type.

```
# cd /opt/SUNWscebs/cmg/util
# ./copy_env oracle-home SID_db-logical-host
# clresource create -g ebs-rg \
> -t SUNW.oracle_listener \
> -p Listener_name=SID \
> -p ORACLE_HOME=oracle-home \
> -p User_env=oracle-home/SID_db-logical-hostname_ha.env \
> -p Resource_dependencies=oracle-ebusiness-suite-hastorage-resource \
> listener-resource
# clresource enable listener-resource
```

11 Create and register a resource for the Concurrent Manager Listener.

Note – If deploying Oracle E-Business Suite within a zone cluster, you must loopback mount the `/var/cluster/logs` directory within the zone-cluster node, before registering the Oracle E-Business Suite components.

On all the zone-cluster nodes, perform the following step:

```
# mkdir /var/cluster/logs
```

In the global zone where the zone-cluster node is running, perform the following step:

```
# mount -F lofs /var/cluster/logs zonenode zonepath/root/var/cluster/logs
```

After all the Oracle E-Business Suite components have been registered, `/var/cluster/logs` is no longer required within the zone-cluster node. To unmount the previously loopback mounted `/var/cluster/logs`, perform the following step from the global zone where you loopback mounted `/var/cluster/logs`:

```
# umount zonenode zonepath/root/var/cluster/logs
```

Edit the `/opt/SUNWscebs/cmglslr/util/cmglslr_config` file and follow the comments within that file. After editing the `cmglslr_config` file, you must register the resource.

```
# cd /opt/SUNWscebs/cmglslr/util
# vi cmglslr_config
# ./cmglslr_register
```

Note – If you installed Parallel Concurrent Processing, follow these additional editing instructions:

- Use `COMNTOP=app-base-directory/inst/apps/`.
 - Specify the scalable resource group that you created in [Step 3](#).
 - Specify a null value for the `LH=` entry.
-
- **If you are using at least Oracle E-Business Suite Version 12, use:**
`COMNTOP=app-base-directory/inst/apps/SID_app-logical-hostname`
 - **If you are using at least Oracle E-Business Suite Version 11.5.10, use:**
`COMNTOP=app-base-directory/SIDcomm`

The following example shows edits of the `cmglslr_config` file.

```
RS=ebs-cmglslr
RG=ebs-rg
LH=ebs-lh
HAS_RS=ebs-has
COMNTOP=use appropriate COMNTOP
APPSUSER=oraapp-user
```

```
APP_SID=SID
VERSION=12.0
```

12 Create and register a resource for the Concurrent Manager.

Note – A value for the APPS_PASSWD keyword within the /opt/SUNWscebs/cmgsr/util/cmgsr_config file is optional. You can either specify the password within the /opt/SUNWscebs/cmgsr/util/cmgsr_config file or within the /opt/SUNWscebs/.\${APP_SID}_passwd file on each cluster node as super user. Specifying the password within the /opt/SUNWscebs/.\${APP_SID}_passwd file will prevent the password from being viewed by non super users. Refer the comments within the /opt/SUNWscebs/cmgsr/util/cmgsr_config file for an example.

Note – If deploying Oracle E-Business Suite within a zone cluster, you must loopback mount /var/cluster/logs with in the zone-cluster node before performing this step. See [Step 11](#), for information to loop back mount /var/cluster/logs.

Edit the /opt/SUNWscebs/cmgsr/util/cmgsr_config file and follow the comments within that file. After you have edited the cmgsr_config file, you must register the resource.

```
# cd /opt/SUNWscebs/cmgsr/util
# vi cmgsr_config
# ./cmgsr_register
```

Note – If you installed Parallel Concurrent Processing, follow these additional editing instructions:

- Use COMNTOP=*app-base-directory*/inst/apps/.
 - Specify the scalable resource group that you created in [Step 3](#).
 - Specify a null value for the LH= entry.
-
- **If you are using at least Oracle E-Business Suite Version 12, use:**
COMNTOP=*app-base-directory*/inst/apps/*SID_app-logical-hostname*
 - **If you are using Oracle E-Business Suite Version 11.5.10 or earlier, use:**
COMNTOP=*app-base-directory*/*SID*conn

The following example shows edits of the cmgsr_config file.

```
RS=ebs-cmg
RG=ebs-rg
LH=ebs-lh
HAS_RS=ebs-has
LSR_RS=ebs-cmglsr
```



```

VERSION=11.5.10
COMNTOP=use appropriate COMNTOP
APPSUSER=oraapp-user
APP_SID=SID
APPS_PASSWD=password or empty
if using /opt/SUNWscebs/.$(APP_SID)_passwd to store the password.
ORACLE_HOME=oracle_home
CON_LIMIT=50
#
# Required for Oracle E-Business Suite version 11.5.10 CU2 or later
#
ORASVR_RS=ebs1-orasvr
ORALSR_RS=ebs1-oralshr

```

13 Create and register a resource for the Forms Server in Servlet Mode.

Note – This step is required only if you are using Oracle E-Business Suite Version 11.5.10 or prior releases. If you are using at least Oracle E-Business Suite Version 12, skip to [Step 17](#).

Note – If deploying Oracle E-Business Suite within a zone cluster, you must loopback mount /var/cluster/logs with in the zone-cluster node before performing this step. See [Step 11](#), for information to loop back mount /var/cluster/logs.

Edit the /opt/SUNWscebs/frm/util/frm_config file and follow the comments within that file. After you have edited the frm_config file, you must register the resource.

```

# cd /opt/SUNWscebs/frm/util
# vi frm_config
# ./frm_register

```

The following example shows edits of the frm_config file.

```

RS=ebs-frm
RG=ebs-rg
LH=ebs-lh
HAS_RS=ebs-has
COMNTOP=base-directory/sidcomm
APPSUSER=oraapp-user
APP_SID=SID
VERSION=11.5.10

```

14 Create and register a resource for the Forms Server in Socket Mode.

Note – This step is required only if you are using Oracle E-Business Suite Forms Server in Socket Mode.

Note – If you are deploying Oracle E-Business Suite within a zone cluster, you must loopback mount the `/var/cluster/logs` directory within the zone-cluster node before performing this step. See [Step 11](#) for instructions on loopback mounting the `/var/cluster/logs` directory.

Edit the `/opt/SUNWscebs/frmsrv/util/frmsrv_config` file and follow the comments within that file. After you have edited the `frmsrv_config` file, you must register the resource.

```
# cd /opt/SUNWscebs/frmsrv/util
# vi frmsrv_config
# ./frmsrv_register
```

The following example shows edits of the `frmsrv_config` file.

```
RS=ebs-frmsrv
RG=ebs-rg
LH=ebs-lh
HAS_RS=ebs-has
COMNTOP=base-directory/sidcomm
APPSUSER=oraapp-user
APP_SID=SID
VERSION=11.5.10
```

15 Create and register a resource for the Reports Server.

Note – This step is required only if you are using Oracle E-Business Suite Version 11.5.10 or a prior version. If you are using at least Oracle E-Business Suite Version 12, skip to [Step 17](#).

Note – If deploying Oracle E-Business Suite within a zone cluster, you must loopback mount `/var/cluster/logs` within the zone-cluster node before performing this step. See [Step 11](#), for information to loop back mount `/var/cluster/logs`.

Edit the `/opt/SUNWscebs/rep/util/rep_config` file and follow the comments within that file. After you have edited the `rep_config` file, you must register the resource.

```
# cd /opt/SUNWscebs/rep/util
# vi rep_config
# ./rep_register
```

The following example shows edits of the `rep_config` file.

```
RS=ebs-rep
RG=ebs-rg
LH=ebs-lh
HAS_RS=ebs-has
COMNTOP=base-directory/sidcomm
APPSUSER=oraapp-user
```

```
APP_SID=SID
VERSION=11.5.10
```

16 (Optional) Create and register a resource for the Web Server.

Note – This step is required only if you are using Oracle E-Business Suite Version 11.5.10 or a prior version. If you are using at least Oracle E-Business Suite Version 12, skip to [Step 17](#).

```
# cd base-directory/sidcomn/admin/scripts/SID_logical-hostname
# ln -s adapcctl.sh apachectl
```

Edit `adapcctl.sh` and modify the "`$control_code`" test to add `-a "$control_code" != "configtest"`.

```
# vi adapcctl.sh
```

The following output shows an amended `adapcctl.sh`.

Note: The output has been realigned to fit the page

```
Find control_code (/control_code)
```

```
Modify
-----
```

```
control_code="$1"

if test "$control_code" != "start" -a "$control_code" != "stop" \
-a "$control_code" != "status" ; then
    printf "\n$program: You must either specify \
        'start', 'stop', 'status'\n\n"
    printf "\n$program: You must either specify \
        'start', 'stop', 'status'\n\n" >> $LOGFILE
    exit 1;
fi
```

```
To (Note: We've simply added a test to allow "configtest"
-----
```

```
control_code="$1"

if test "$control_code" != "start" -a "$control_code" != "stop" \
-a "$control_code" != "status" \
-a "$control_code" != "configtest" ; then
    printf "\n$program: You must either specify \
        'start', 'stop', 'status'\n\n"
    printf "\n$program: You must either specify \
        'start', 'stop', 'status'\n\n" >> $LOGFILE
    exit 1;
fi
```

```
# clresource create -g ebs-rg \
> -t SUNW.apache \
> -p Port_list=8000/tcp \
```

```
> -p Bin_dir=base-directory/sidcomn/admin/scripts/ \
> SID_logical-hostname \
> -p Resource_dependencies=oracle-ebusiness-suite-hastorage-resource \
> apache-resource
```

17 Create and register a resource for the OPMN Server.

Note – If deploying Oracle E-Business Suite within a zone cluster, you must loopback mount /var/cluster/logs with in the zone-cluster node before performing this step. See [Step 11](#), for information to loopback mount /var/cluster/logs.

If Clustered OPMN OC4J instances are being deployed, you must specify the OPMN_COMPONENTS=opmn/oacore/forms/oafm. If a Clustered OPMN single Web Entry Point instance is being deployed, you must specify OPMN_COMPONENTS=opmn/http_server. You may also specify OC4J services if required.

If you are installing at least Oracle E-Business Suite Version 12, perform the following:

Edit the /opt/SUNWscebs/opmn/util/opmn_config file and follow the comments within that file. After you have edited the opmn_config file, you must register the resource.

```
# cd /opt/SUNWscebs/opmn/util
# vi opmn_config
# ./opmn_register
```

The following example shows the edits of the opmn_config file.

```
RS=ebs-opmn
RG=ebs-rg
LH=ebs-lh
HAS_RS=ebs-has
VERSION=12.0
COMNTOP=app-base-directory/inst/apps/SID_app-logical-host
APPSUSER=oraapp-user
APP_SID=PROD
APPS_PASSWD=apps
OPMN_COMPONENTS=all
```

18 Enable the Oracle E-Business Suite resources.

If you created a scalable resource group in [Step 3](#), also enable that resource group.

```
# clresource enable -g ebs-rg +
    If Parallel Concurrent Processing is used:
# clresourcegroup online -eM pcp-rg
```

If you used Clustered OPMN OC4J, enable that resource group.

```
# clresourcegroup online -eM c_opmn-rg
```

Verifying the HA for Oracle E-Business Suite Installation and Configuration

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

▼ How to Verify the HA for Oracle E-Business Suite Installation and Configuration

- 1 On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` RBAC authorization.
- 2 Ensure that all the Oracle E-Business Suite resources are online.

```
# cluster status
```

Enable any Oracle E-Business Suite resources that are not online.

```
# clresource enable oracle-ebusiness-suite-resource
```
- 3 Switch the Oracle E-Business Suite resource group to another cluster node or non-global zone.

```
# clresourcegroup switch -n node[:zone] ebs-rg
```

Upgrading HA for Oracle E-Business Suite

Upgrade the HA for Oracle E-Business Suite data service if the following conditions apply:

- You are upgrading from an earlier version of the HA for Oracle E-Business Suite data service.
- You need to use the new features of this data service.

▼ How to Upgrade to the New Version of HA for Oracle E-Business Suite

You must perform all the steps within this procedure.

Note – Before performing this procedure you should consider if your current Oracle E-Business Suite resources have been modified to have specific timeout values that suit your deployment. If timeout values were previously adjusted you should reapply those timeout values to your new Oracle E-Business Suite resources.

- 1 On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` RBAC authorization.**

- 2 Disable the Oracle E-Business Suite resources.**

```
# clresource disable oracle-ebusiness-suite-resource
```

- 3 Install the new version of HA for Oracle E-Business Suite on each cluster.**

Refer to [“How to Install the HA for Oracle E-Business Suite Packages”](#) on page 34 for more information.

- 4 Delete the Oracle E-Business Suite resources.**

```
# clresource delete oracle-ebusiness-suite-resource
```

- 5 Upgrade the logical hostname interpositioning.**

Note – You must repeat the following steps, as the logical host interpositioning file name and variable names have changed. Change the following:

- LHOSTNAME to SC_LHOSTNAME
 - libloghost_32.so.1 to libschostr.so.1
-

- 6 Repeat [Step 8](#) and [Step 11](#) from [“How to Install and Configure Oracle E-Business Suite”](#) on [page 17](#).**

- 7 Reregister the Oracle E-Business Suite resources.**

Refer to [“How to Register and Configure HA for Oracle E-Business Suite”](#) on page 36 for more information.

- 8 Enable the Oracle E-Business Suite resources.**

```
# clresource enable oracle-ebusiness-suite-resource
```

Understanding the HA for Oracle E-Business Suite Fault Monitor

This section describes the HA for Oracle E-Business Suite fault monitor probing algorithm or functionality, states the conditions, and recovery actions associated with unsuccessful probing.

For conceptual information about fault monitors, see the [Oracle Solaris Cluster Concepts Guide](#).

Resource Properties

The HA for Oracle E-Business Suite fault monitor uses the same resource properties as resource type `SUNW.gds`. Refer to the `SUNW.gds(5)` man page for a complete list of resource properties used.

Probing Algorithm and Functionality

The HA for Oracle E-Business Suite fault monitor is controlled by the extension properties that control the probing frequency. 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 HA for Oracle E-Business Suite fault monitor *only* if you need to modify this preset behavior.

- Setting the interval between fault monitor probes (`Thorough_probe_interval`)
- Setting the timeout for fault monitor probes (`Probe_timeout`)
- Setting the number of times the fault monitor attempts to restart the resource (`Retry_count`)

The HA for Oracle E-Business Suite fault monitor performs a check within an infinite loop. During each cycle, the fault monitor checks the relevant component and reports either a failure or success.

If the fault monitor is successful, it returns to its infinite loop and continues the next cycle of probing and sleeping.

If the fault monitor reports a failure, a request is made to the cluster to restart the resource. If the fault monitor reports another failure, another request is made to the cluster to restart the resource. This behavior continues whenever the fault monitor reports a failure.

If successive restarts exceed the `Retry_count` within the `Thorough_probe_interval`, a request is made to fail over the resource group onto a different node or zone.

Concurrent Manager Probe

- Test whether at least one FND (Concurrent Manager) process is running. If this test fails, the probe restarts the Concurrent Manager Server resource.
- Test whether the probe can still connect to the Oracle Database. If this test fails, the probe restarts the Concurrent Manager Server resource.
- Calculate the number of concurrent processes running as a percentage of the maximum number of concurrent processes allowed. Then test whether that percentage is less than CON_LIMIT, when the Concurrent Manager Server resource was defined. If the percentage is less than CON_LIMIT, the probe restarts the Concurrent Manager Server resource.

Forms Server in Servlet Mode Probe

Test whether the `f60srv` process is running. If `f60srv` is found, then test whether `f60webmx` process is running. If `f60webmx` is not found, the probe retests after another iteration of the probe to determine whether `f60webmx` is still missing, because `f60srv` usually restarts `f60webmx`. If after two successive probes, `f60webmx` is still missing or `f60srv` is not found on any probe, the probe restarts the Forms Server resource.

Forms Server in Socket Mode Probe

Test whether the `frmsrv` process is running. If this test fails, the probe restarts the Forms Server in Socket Mode resource.

Reports Server Probe

Test whether `rwmts60` process is running for REP_APPUSER. If this test fails, the probe restarts the Forms Server resource.

Debugging HA for Oracle E-Business Suite

▼ How to Turn on Debugging for HA for Oracle E-Business Suite

HA for Oracle E-Business Suite can be used by multiple Oracle E-Business Suite instances. It is possible to turn debugging on for all Oracle E-Business Suite instances or a particular Oracle E-Business Suite instance.

`/opt/SUNWscebs/xxx/etc/config` allows you to turn on debugging for all Oracle E-Business Suite instances or for a specific Oracle E-Business Suite instance on a particular node or zone within the cluster. If you require debugging to be turned on for HA for Oracle E-Business Suite across the whole cluster, repeat this step on all nodes within the cluster.

1 Edit the /etc/syslog.conf file.**a. Change daemon.notice to daemon.debug.**

```
# grep daemon /etc/syslog.conf
*.err;kern.debug;daemon.notice;mail.crit      /var/adm/messages
*.alert;kern.err;daemon.err                    operator
#
```

b. Change the daemon.notice file to daemon.debug and restart the syslogd command.

Note that the following output, from `grep daemon /etc/syslog.conf`, shows that `daemon.debug` has been set.

```
# grep daemon /etc/syslog.conf
*.err;kern.debug;daemon.debug;mail.crit      /var/adm/messages
*.alert;kern.err;daemon.err                    operator
```

c. Restart the syslog daemon.

```
# svcadm disable system-log
# svcadm enable system-log
```

2 Edit the /opt/SUNWscebs/cmg/etc/config file.

Perform this step for each component that requires debug output, on each node of Oracle Solaris Cluster as required.

Edit the `/opt/SUNWscebs/cmg/etc/config` file and change `DEBUG=` to `DEBUG=ALL` or `DEBUG=sun-cluster-resource`.

```
# cat /opt/SUNWscebs/cmg/etc/config
#
# Copyright 2006 Sun Microsystems, Inc. All rights reserved.
# Use is subject to license terms.
#
# ident "@(#)config      1.1      06/03/06 SMI"
#
# Usage:
#       DEBUG=<RESOURCE_NAME> or ALL
#
DEBUG=ALL
```

Note – To turn off debug, reverse the previous steps.

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