SPARC: Oracle® Solaris Cluster Data Service for Oracle PeopleSoft Enterprise Guide

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Oracle Solaris Cluster Data Service for Oracle PeopleSoft Enterprise Guide

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Contents

Figures

Tables

Examples

Using This Documentation

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

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♦ ♦ ♦ CHAPTER 1

Getting Started with HA for PeopleSoft Application Server

This chapter provides an overview of data services for Oracle Solaris Cluster HA for PeopleSoft Application Server (HA for PeopleSoft application server) and Oracle Solaris Cluster HA for PeopleSoft process scheduler (HA for PeopleSoft process scheduler). The chapter also explains how to install and configure the data service package.

This chapter contains the following sections:

Overview

The PeopleSoft application server data service provides orderly startup, shutdown, fault monitoring, and automatic failover of a PeopleSoft application server domain. The PeopleSoft process scheduler data service manages the start, shutdown, and fault monitoring of a specific process scheduler domain.

Use the information in this section to understand how HA for PeopleSoft Enterprise makes PeopleSoft Enterprise highly available.

HA for PeopleSoft Enterprise provides fault monitoring and automatic failover for the PeopleSoft Enterprise application to eliminate single points of failure in a PeopleSoft Enterprise system. Any PeopleSoft Enterprise application runs on the PeopleSoft Enterprise PeopleTools three-tier architecture. Oracle Solaris Cluster orchestrates the startup, shutdown, and failover of the PeopleSoft Enterprise PeopleTools components. The following table lists the data services that protect PeopleSoft Enterprise PeopleTools components in an Oracle Solaris Cluster configuration.

TABLE 1 Protection of PeopleSoft Enterprise PeopleTools components

PeopleSoft Enterprise PeopleTools Component	Protected By
Database server	The data service for the database that you are using, for example: ■ For the Oracle database, the data service is explained in the *Oracle Solaris Cluster Data Service for Oracle Database Guide*. ■ For the Oracle RAC database, the data service is explained in the *Oracle Solaris Cluster Data Service for Oracle Real Application Clusters Guide*.
Application server	The data service is HA for PeopleSoft Application Server. The resource type is `ORCL.PeopleSoft_app_server`. The data service is explained in this document.
Web server	The data service is explained in the *Oracle Solaris Cluster Data Service for Oracle WebLogic Server Guide*.
Process Scheduler	The data service is HA for PeopleSoft Process Scheduler. The resource type is `ORCL.PeopleSoft_process_scheduler`. The data service is explained in this document.

HA for PeopleSoft Enterprise requires that a functioning cluster with the initial cluster framework is already installed. See the *Oracle Solaris Cluster 4.3 Software Installation Guide* for details on initial installation of clusters and data service software. You register HA for PeopleSoft Enterprise after you successfully install the basic components of Oracle Solaris Cluster and PeopleSoft Enterprise software.

For information about which version of PeopleSoft Enterprise software is compatible, see the Oracle Solaris Cluster Compatibility Guide available at the Oracle Solaris Cluster Technical Resources page.

Installing the Data Service Package

If you did not install the `ha-cluster/data-service/peoplesoft` package during your initial Oracle Solaris Cluster installation, perform this procedure to install the data services package. The package contains both HA for PeopleSoft Application Server and HA for PeopleSoft Process Scheduler software.

▼ How to Install HA for PeopleSoft Application Server Data Service Package

Perform this procedure on each cluster node where you want HA for PeopleSoft application server and HA for PeopleSoft process scheduler software to run.

1. **On the cluster node or zone 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/peoplesoft
# 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 11.3*.

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 11.3*.

3. **Install the data services package for the PeopleSoft Application Server and PeopleSoft Process Scheduler software.**

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

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

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

Installation is successful if output shows: `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 4.3 System Administration Guide*.

Next Steps See Chapter 2, "Installing and Configuring the HA for PeopleSoft Application Server" and Chapter 3, "Installing and Configuring the HA for PeopleSoft Process Scheduler".

♦ ♦ ♦ CHAPTER 2

Installing and Configuring the HA for PeopleSoft Application Server

This chapter gives an overview of the HA for PeopleSoft application server and explains how to install and configure it.

This chapter contains the following sections:

Overview

The HA for PeopleSoft application server data service provides orderly startup, shutdown, fault monitoring, and automatic failover of a PeopleSoft application server domain. The PeopleSoft application server component is protected by the HA for PeopleSoft application server data service.

The following table summarizes the tasks for installing and configuring HA for PeopleSoft application server 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 2 Tasks for Installing and Configuring HA for PeopleSoft application server

Task	Instructions
1. Plan the installation.	"Planning the HA for PeopleSoft Application Server Installation and Configuration" on page 22
2. Install and configure the PeopleSoft application server domain.	"Installing and Configuring the PeopleSoft Application Server Domain" on page 28
3. Verify the PeopleSoft application server installation and configuration.	"Verifying Installation and Configuration of the PeopleSoft Application Server Domain" on page 29
4. Register and configure HA for PeopleSoft application server resources.	"Registering and Configuring HA for PeopleSoft Application Server" on page 30
5. Verify the HA for PeopleSoft application server domain resource installation and configuration.	"Verifying Installation and Configuration of the PeopleSoft Application Server Domain Resource" on page 49
6. Tune the HA for PeopleSoft application server fault monitor.	"Tuning the HA for PeopleSoft Application Server Fault Monitor" on page 50
7. Debug the HA for PeopleSoft application server.	"Debugging HA for PeopleSoft Application Server" on page 52

Planning the HA for PeopleSoft Application Server Installation and Configuration

This section contains the information you need to plan your HA for PeopleSoft application server installation and configuration.

Configuration Restrictions for HA for PeopleSoft Application Server

The configuration restrictions in the subsections that follow apply only to the HA for PeopleSoft application server.

For restrictions that apply to all data services, see the *Oracle Solaris Cluster 4.3 Release Notes*.

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

- **Failover support only** - PeopleSoft application server can be configured only as a failover data service and not as a scalable data service.

- **Multiple application server domains** - The Oracle Solaris Cluster resource of resource type `ORCL.PeopleSoft_app_server` can manage exactly one PeopleSoft application server domain. To manage multiple PeopleSoft application server domains, configure multiple Oracle Solaris Cluster resources of resource type `ORCL.PeopleSoft_app_server`, each resource managing exactly one PeopleSoft application server domain.

Configuration Requirements for HA for PeopleSoft Application Server

Use the requirements in this section to plan the installation and configuration of the HA for PeopleSoft application server. These requirements apply to HA for PeopleSoft application server only. You must meet these requirements before you proceed with your HA for PeopleSoft application server installation and configuration.

Information about how to install PeopleSoft Enterprise PeopleTools version 8.52 is published in the PeopleSoft PeopleTools 8.52 Install Documentation Library.

For requirements that apply to all data services, see Chapter 1, "Planning for Oracle Solaris Cluster Data Services" in *Oracle Solaris Cluster 4.3 Data Services Planning and Administration Guide*.

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

- **UNIX user and group** - The UNIX user and group that are used to install, operate, and manage the PeopleSoft application server domain must exist on all cluster nodes where the corresponding resource for the PeopleSoft application server domain is configured to come online.
- **File systems** - The file systems used to store the required binaries and data for the PeopleSoft application server domain must be configured on highly available local file systems. If you choose to install the binaries on local storage, install and keep them identical on all the cluster nodes. The directory specified for `Psft_Cfg_Home` must reside on a highly available local file system, which needs to be accessible where the corresponding resource for the PeopleSoft application server domain comes online.

  If you are setting up PeopleSoft application server in a multi-instance configuration, the PeopleSoft application server installation should be located on network attached storage (NAS) accessible to all the nodes running the server.
- **Environment variables** - In addition to the required environment variables that are explained in the PeopleSoft Enterprise PeopleTools installation guide, you must set up the following variables before you configure the PeopleSoft application server domain:

- SC_LHOSTNAME
- LD_PRELOAD_32
- LD_PRELOAD_64

Set SC_LHOSTNAME to the logical hostname under which the PeopleSoft application server domain must be reachable from the web tier. For more details, refer to the libschost.so.1(1) man page.

Set these environment variables for the profile of the user that operates the PeopleSoft application server domain. Ensure that the login for the user is noninteractive. If you invoke as the root role, you must see these variables displayed in the psadmin command output:

```
# su - Psft_User -c "/Psft_Home/appserv/psadmin -env"
```

- **Database tier dependency** - If the database tier is deployed on the same global cluster, the resource for the PeopleSoft application server domain must define a strong resource dependency to the resources for the database instance and database listener. This ensures that the PeopleSoft application server domain will only try to start when the corresponding database is already operational. This configuration is required for a successful startup of the PeopleSoft application server domain.

  If the Oracle database is not managed through Oracle Solaris Cluster, you can also configure the database tier dependency by using the data service delivered as part of the Oracle External Proxy resource.
- **Database client network connection** - The database client used by the PeopleSoft application server domain configuration must be configured to connect to the network address that is managed by the cluster framework for the corresponding database server.

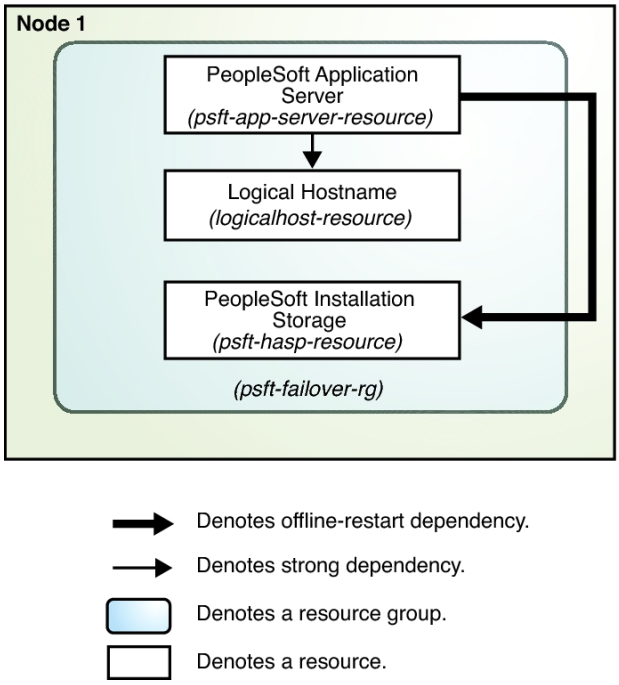
HA for PeopleSoft Application Server Data Service Configurations

Use the data service configurations in this section to plan the installation and configuration of the HA for PeopleSoft application server.

Failover Configurations

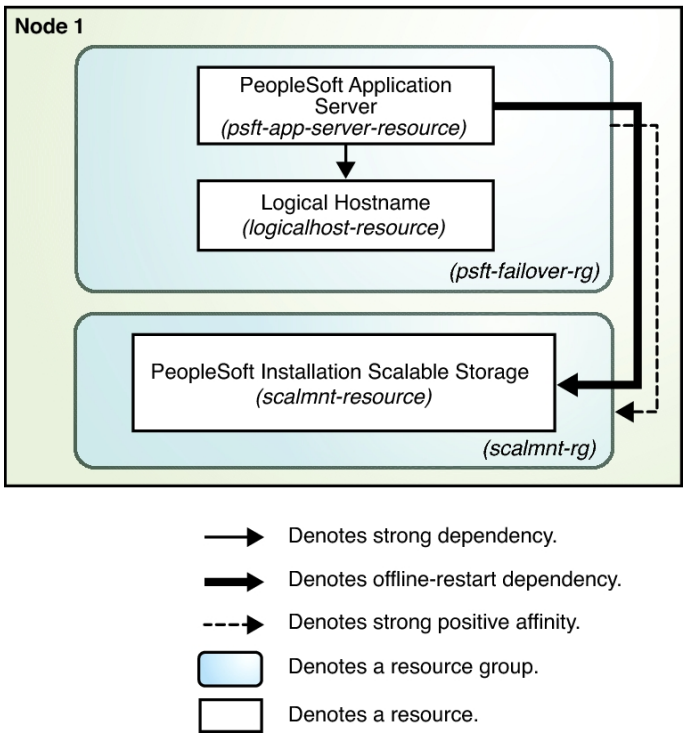
When the PeopleSoft software is installed in a traditional file system, a failover deployment requires a configuration where one failover resource group contains the PeopleSoft application server resource, the logical hostname resource, and the failover storage resource. This type of configuration is shown in the following figure.

FIGURE 1 PeopleSoft Application Server Configured for Failover with Traditional File Storage



When the PeopleSoft software is installed on network attached storage (NAS), a failover resource group is configured with the logical hostname resource and PeopleSoft application server resource. A scalable resource group is configured with the NAS storage resource. Such a configuration is shown in the following figure.

FIGURE 2 PeopleSoft Application Server Configured for Failover with NAS



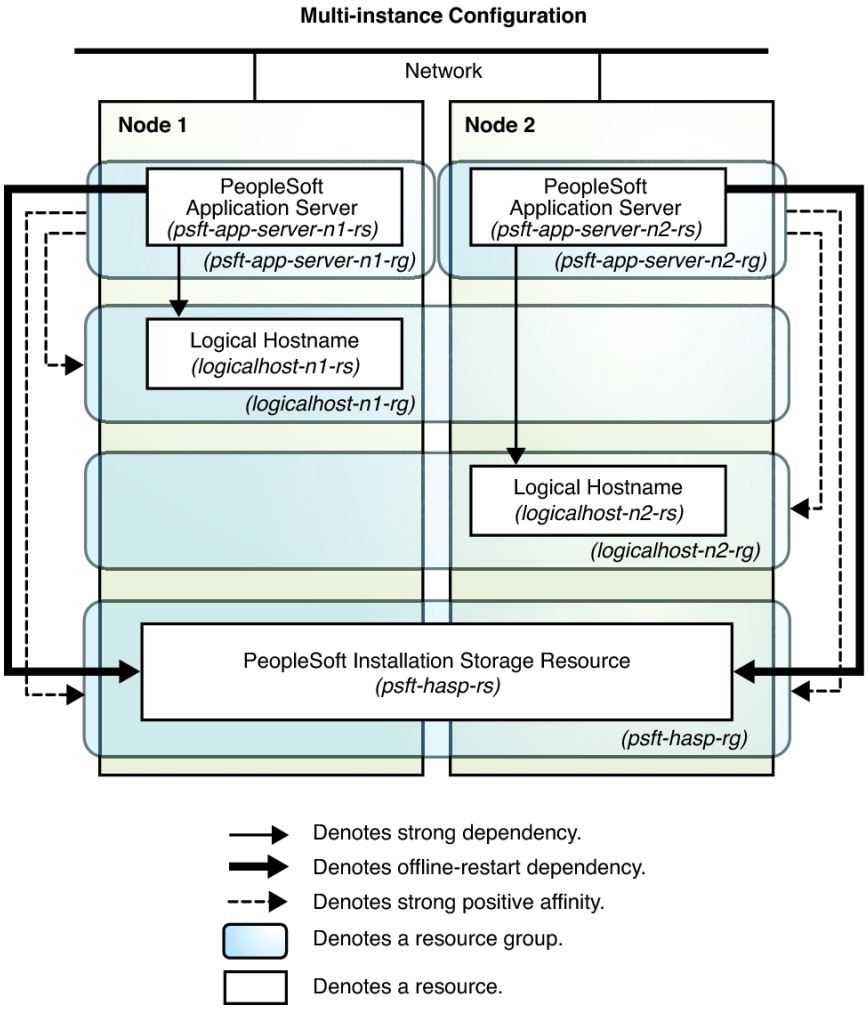
Multi-Instance Configuration

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

This example illustrates a multi-instance configuration using single-node resource groups. A single-node resource group is created for each of the PeopleSoft application server resources. Each resource group has a strong positive affinity on a storage resource group and a logical host

resource group whose primary node is the node containing the PeopleSoft application server resource group.

FIGURE 3 PeopleSoft Application Server Configured as a Multi-Instance Application With Single-Node Resource Groups



Installing and Configuring the PeopleSoft Application Server Domain

This section contains the procedures you need to install and configure a PeopleSoft application server domain as a cluster resource.

▼ How to Enable the PeopleSoft Application Server Domain to Run in a Cluster

Perform this procedure on one node of the cluster to configure storage and logical host resource groups.

Tip - The `clsetup` utility provides a wizard that can also be used to configure storage and logical host resource groups. See "How to Register and Configure HA for PeopleSoft Application Server for Multi-Instance (`clsetup`)" on page 38

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

1. **On a cluster node that will host the PeopleSoft application server domain, assume the `root` role or a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` authorization.**

2. **Register the `SUNW.HAStoragePlus` resource type.**

   ```
   # clresourcetype register SUNW.HAStoragePlus
   ```

3. **Create a failover resource group.**

   ```
   # clresourcegroup create psft-failover-rg
   ```

4. **Create a resource for the PeopleSoft application server domain file systems on shared storage.**

   ```
   # clresource create -g psft-failover-rg -t SUNW.HAStoragePlus \
   -p FileSystemMountPoints=psft-mount-points psft-hasp-resource
   ```

5. **Create a resource for the logical hostname that will be used by the web tier to connect to the PeopleSoft application server domain.**

```
# clreslogicalhostname create -g psft-failover-rg \
-h logical-hostname  logicalhost-resource
```

6. **Enable the failover resource group that now includes the PeopleSoft application server domain disk storage and logical host resources.**

```
# clresourcegroup online -eM -n current-node psft-failover-rg
```

▼ How to Install PeopleSoft Application Server Software

1. **On the cluster member where the *psft-failover-rg* resource group is online, assume the `root` role.**

2. **Follow the instructions in the appropriate PeopleSoft documentation for your version of the product.**

   Documentation for installing PeopleSoft Enterprise PeopleTools version 8.52 is published in the PeopleSoft PeopleTools 8.52 Install Documentation Library. When following these instructions, ensure that you observe the information in “Configuration Requirements for HA for PeopleSoft Application Server” on page 23.

Verifying Installation and Configuration of the PeopleSoft Application Server Domain

This section contains the procedure to verify successful installation and configuration of the PeopleSoft application server domain.

▼ How to Verify PeopleSoft Application Server Domain Installation and Configuration

1. **Assume the `root` role and log in to the node that currently hosts the *psft-failover-rg* resource group.**

2. **Start the PeopleSoft application server domain.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -c boot -d Psft_Domain"
   ```

3. **Verify the status of the PeopleSoft application server domain.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -c sstatus -d Psft_Domain"
   ```

4. **Stop the PeopleSoft application server domain.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -c shutdown -d Psft_Domain"
   ```

5. **Switch the PeopleSoft application server resource group to another cluster member.**

   ```
   # clresourcegroup switch -n node psft-failover-rg
   ```

6. **Repeat all steps until you have tested all the potential nodes on which the PeopleSoft application server domain can run.**

Registering and Configuring HA for PeopleSoft Application Server

This section contains the procedures to configure or unconfigure HA for PeopleSoft application server.

Tools for Registering and Configuring HA for PeopleSoft Application Server

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

- **The clsetup(1CL) utility.** The clsetup utility provides a wizard for configuring the HA for PeopleSoft application server. This wizard reduces the possibility for configuration errors that might result from command syntax errors or omissions. This wizard also ensures that all required resources are created and that all required dependencies between resources are set.

  For instructions to use the wizard, see "How to Register and Configure HA for PeopleSoft Application Server for Failover (clsetup)" on page 31 and "How to Register and Configure HA for PeopleSoft Application Server for Multi-Instance (clsetup)" on page 38.
- **Oracle Solaris Cluster maintenance commands.** For instructions to use the commands, see "How to Register and Configure HA for PeopleSoft Application Server for Failover (CLI)" on page 46 and "How to Register and Configure HA for PeopleSoft Application Server for Multi-Instance Configuration (CLI)" on page 47.

▼ How to Register and Configure HA for PeopleSoft Application Server for Failover (clsetup)

Use this procedure to configure the HA for PeopleSoft application server for failover. The clsetup utility includes a wizard to guide you through the creation of logical hostname resources. The wizard creates multiple resource groups, each containing one logical hostname resource, with a different preferred node in each group.

Before You Begin

Before you run clsetup, be sure that the following tasks have been performed:

- PeopleSoft application server software and agent packages are installed on the nodes of the cluster as described in "Installing and Configuring the PeopleSoft Application Server Domain" on page 28 and "Installing the Data Service Package" on page 18.
- All storage management software that you intend to use is installed and configured on all nodes where PeopleSoft application server is to run.
- Zone clusters where you intend to run PeopleSoft application server have been created.
- The logical hostnames that are to be made available by the resources have an entry in a name service database such as DNS.

- If you are using IP Network Multipathing (IPMP) groups, the groups are configured on the nodes where the logical hostname resources can be brought online.
- Any project you created to run PeopleSoft application server exists in the `projects` name service database for the user that runs the PeopleSoft application server application. For more information, see the `projects(1)` man page.

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

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

   ```
   # /usr/cluster/bin/clsetup
   ```

   The `clsetup` main menu is displayed.

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

   The Data Services menu is displayed.

4. **Type the number for Logical Hostname.**

5. **Select the Global Cluster or Zone Cluster by typing the corresponding number.**

   - If you specified a Zone Cluster, the `clsetup` utility displays a list of zone clusters.
   - If you specified a Global Cluster, the `clsetup` utility displays a list of tasks you need to complete. Continue to Step 7.

6. **If you specified a Zone Cluster, type the number that corresponds to the zone cluster where you want to configure the PeopleSoft application server.**

   The `clsetup` utility displays a list of tasks you need to complete.

7. **Verify that you have met the prerequisites.**

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

8. **Select the nodes where you want to run the logical host resources.**

   - **To accept the default selection of all listed nodes, type `a`.**
   - **To select a subset of the listed nodes, type the numbers of the nodes with a space or comma between the numbers.**

   The `clsetup` utility prompts you for the logical host for the first node.

9. **Type the name of the logical host to be used for the specified node.**

   The `clsetup` utility repeats the prompt for each node that you selected.

   When you have finished specifying a logical host for each node, the wizard automatically generates names for the logical hostname resources and resource groups based on the logical hostnames you entered.

   The wizard then displays a Select Resource Groups to Edit panel that shows a list of resource groups that are about to be created, with the ordered node list for each group. You can edit the names of these resource groups if you want.

   Note - The nodes in each resource group cannot be altered in this panel. The wizard sets the preferred node name automatically and ensures that a different node is the preferred node for each group. If you need to change any information about the nodes, you must go back through the wizard by pressing the < key.

   ---

10. **(Optional) If you want to edit the name of a resource group shown in the panel, type the number of a group you want to change.**

    The wizard displays a list of the names of the resource and resource group for the group you selected. From here you can separately edit these names.

    a. **Type the number for the name you want to change.**

    b. **Type the new name when prompted.**

       The wizard displays the new names of the resource and resource group for the group you selected.

    c. **Type `d` when you are done editing the names.**

       The Select Resource Groups to Edit panel is displayed again with the new values of all the resource groups that are to be created.

11. **Type `d` in the Select Resource Groups to Edit panel when you are done with editing.**

    The wizard displays the Review Configuration of Logical Hostname Resources panel to display the resource name, resource group name, node list, and logical hostname that will be created. The names are not editable here, but you can type the < key to go back to the previous panel to edit.

12. **In the Review Configuration of Logical Hostname Resources panel type `c` to create the configuration.**

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

Note - The clsetup utility rolls back the changes if it fails to complete the logical host configuration process.

13. **Press Return to continue.**

    The clsetup utility returns you to the Data Services menu.

14. **Type the number for PeopleSoft Enterprise Application Server.**

    The clsetup utility displays a list of options for the PeopleSoft application server location.

    The next step is optional. You should skip to Step 24 if you are not using HA for storage or you have previously configured HA for storage, either through the clsetup main menu or by using other commands.

15. **Select the Global Cluster or Zone Cluster by typing the corresponding number.**

    - If you specified a Zone Cluster, the clsetup utility displays a list of zone clusters.
    - If you specified a Global Cluster, the clsetup utility displays a list of tasks you need to complete. Continue to Step 17.

16. **If you specified a Zone Cluster, type the number that corresponds to the zone cluster where you want to configure the PeopleSoft application server.**

    The clsetup utility displays a list of components you need to configure.

17. **(Optional) Type the number for Storage.**

    The clsetup utility prepares to start a wizard to guide you through the creation and configuration of storage resource groups for PeopleSoft application server.

    Before you continue, make sure all the listed prerequisites have been met.

18. **Verify that the prerequisites are met.**

    If you are configuring on a zone cluster, the clsetup utility displays the nodes available for you to select for storage resources to run.

    If you are configuring on a global cluster, the clsetup utility displays the existing file system mount points.

19. **If you are configuring on a zone cluster, select the nodes where the storage resources should run.**

The clsetup utility displays the existing file system mount points.

20. **Select the file system mount points for HA for PeopleSoft application server data files.**

    - **To select a subset of the listed file system mount points, type a comma-separated or space-separated list of the numbers that correspond to the file system mount point.**
    - **To select all file system mount points in a particular order, type a comma-separated or space-separated ordered list of the numbers that correspond to the file system mount points.**

21. **To confirm your selection of file system mount points, type d.**

    The clsetup utility displays a review panel where you can change the names of the objects that are about to be created.

22. **If you want a different name for any resources or groups, change each name as follows.**

    a. **Type the number for the name that you want to change.**

       The clsetup utility displays a screen where you can specify the new name.

    b. **At the New Value prompt, type the new name.**

    The clsetup utility returns you to the list of the names of the objects that the utility will create.

23. **To confirm the names, type d.**

    The clsetup utility displays information about the configuration that the utility will create.

24. **To create the configuration, type c.**

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

    Note - The clsetup utility rolls back the changes if it fails to complete the storage configuration process.

    ---

25. **Press Return to continue.**

    The clsetup utility returns you to the list of options for configuring the HA for PeopleSoft application server.

26. Type the number for PeopleSoft application server.

The utility displays a list of prerequisites for the creation of the PeopleSoft application server resource group.

27. Verify that you have met all the prerequisites.

The wizard lists all the local user names from the selected cluster so you can choose the user name that should run the PeopleSoft application server.

28. Type the number for the user name that should be used to run the PeopleSoft application server.

If you do not see the user name that you want, type **n** to see another page of user names. If you want to use the `psft` user, for example, it might be listed on the second page.

For better security, you should not run the server as the root user, but you are not prevented from doing so.

The `clsetup` utility then displays a panel for you to specify the PeopleSoft application server installation directory location.

29. Type the full path to the PeopleSoft application server directory that you want to use.

The directory contains the PeopleSoft application server binaries and corresponds to the directory specified as `PS_HOME` when you installed the PeopleSoft software. The directory must be accessible from at least one cluster node if you are setting up a failover configuration, or from each cluster node if you are setting up a multi-instance configuration.

The `clsetup` utility then prompts you to enter the location of the domain directory. The value displayed is the directory specified as `PS_CFG_HOME` when you installed the PeopleSoft software. By default the domain directory is `${PSFT_USER_HOME}/psft/pt/${PT_VERSION}`.

30. If the domain directory path displayed is not correct, type the full path to the domain directory for the PeopleSoft application server.

The `clsetup` utility prompts you for the project to use.

31. Type the option number to choose a listed project.

If you did not create a project where PeopleSoft application server will run, select the default project. The `clsetup` utility prompts for the configuration mode.

32. Type the number that corresponds to the Failover configuration mode.

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

The clsetup utility displays a list of PeopleSoft application server domain configuration names that you can configure. The domain names are obtained from the domain directory that you specified.

33. **Specify the domain where you want PeopleSoft application servers to run by doing one of the following:**

    - **Type the number for a domain in the list.**

      When configuring failover mode you can select only one domain.

    - **Type e then type the name of the domain that you want to use.**

      This option is useful if you want to use a domain that is not shown in the list.

      The wizard displays the domain you have selected and you must type yes to confirm it is correct.

    The clsetup utility then prompts for database information.

34. **Type yes if the application server uses a database resource, or type no if it does not.**

    If you specify yes, the utility searches for database resources and presents a numbered list of resources found and prompts you to select from the list.

    a. **Type the number of one or more database resources that should be used by the application, with commas or spaces between the numbers.**

    b. **Type d.**

    The utility displays a list of logical hostname resources for the application server domain.

35. **Select the logical hostname resource that will run the application server domain:**

    a. **Type the number of the logical hostname resource that should run the application server.**

    b. **Type d.**

    The clsetup utility displays a list of storage resources for PeopleSoft application server files.

36. **Type the number of the storage resource you want to use for the PeopleSoft application server.**

The clsetup utility displays a review panel that shows the storage resource group and application server domain that you have selected.

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

    - **To confirm creation of the resource groups, type d.**
    - **To change the names of any resources or groups, type the number of the item in the list.**
      The clsetup utility displays a new panel for changing the names. You can type the number for the name you want to change, and the utility prompts you to change the name.
      Type **d** to confirm the new names.

    The utility displays a review panel of the objects that it will create.

38. **To create the configuration, type c.**
    When configuration is complete, the clsetup utility displays the commands that the utility ran to create the configuration.

    Note - The clsetup utility rolls back the changes if it fails to complete the database configuration process.

39. **Press Return to continue.**
    The clsetup utility returns you to the list of options for configuring PeopleSoft application server.

40. **Press Return to exit the wizard for configuring the PeopleSoft application server.**
    The clsetup utility returns to the Data Services Configuration menu.

41. **(Optional) Type q repeatedly until you quit the clsetup utility.**
    If you prefer, you can leave the clsetup utility running while you perform other required tasks before using the utility again.

▼ How to Register and Configure HA for PeopleSoft Application Server for Multi-Instance (clsetup)

Use this procedure to configure the HA for PeopleSoft application server for multiple instances. The clsetup utility includes a wizard to guide you through the creation of logical hostname

resources. The wizard creates multiple resource groups, each containing one logical hostname resource, with a different preferred node in each group.

Before You Begin

Before you run clsetup, be sure that the following tasks have been performed:

- PeopleSoft application server software and agent packages are installed on the nodes of the cluster as described in "Installing and Configuring the PeopleSoft Application Server Domain" on page 28 and"Installing the Data Service Package" on page 18.
- All storage management software that you intend to use is installed and configured on all nodes where PeopleSoft application server is to run.
- Zone clusters where you intend to run PeopleSoft application server have been created.
- The logical hostnames that are to be made available by the resources have an entry in a name service database such as DNS.
- If you are using IP Network Multipathing (IPMP) groups, the groups are configured on the nodes where the logical hostname resources can be brought online.
- Any project you created to run PeopleSoft application server exists in the projects name service database for the user that runs the PeopleSoft application server application. For more information, see the projects(1) man page.
- Any non-global zones that can master the resources are already configured on your cluster nodes.

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

2. **Start the clsetup utility.**

   ```
   # /usr/cluster/bin/clsetup
   ```

   The clsetup main menu is displayed.

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

   The Data Services menu is displayed.

4. **Type the number for PeopleSoft Application Server.**

   The clsetup utility displays a list of options for the PeopleSoft application server location.

5. **Select the Global Cluster or Zone Cluster by typing the corresponding number.**

   - If you specified a Zone Cluster, the clsetup utility displays a list of zone clusters.
   - If you specified a Global Cluster, the clsetup utility displays a list of tasks you need to complete. Continue to Step 7.

6. **If you specified a Zone Cluster, type the number that corresponds to the zone cluster where you want to configure the PeopleSoft application server.**

The `clsetup` utility displays a list of components to configure.

7. **Type the number for Per Node Logical Hostname.**

   The utility displays a list of prerequisites for the creation of logical hostname resources.

8. **Verify that you have met the prerequisites.**

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

9. **Select the nodes where you want to run the logical host resources.**

   - **To accept the default selection of all listed nodes, type `a`.**
   - **To select a subset of the listed nodes, type the numbers of the nodes with a space or comma between the numbers.**

   The `clsetup` utility prompts you for the logical host for the first node.

10. **Type the name of the logical host to be used for the specified node.**

    The `clsetup` utility repeats the prompt for each node that you selected.

    When you have finished specifying a logical host for each node, the wizard automatically generates names for the logical hostname resources and resource groups based on the logical hostnames you entered.

    The wizard then displays a Select Resource Groups to Edit panel that shows a list of resource groups that are about to be created, with the ordered node list for each group. You can edit the names of these resource groups if you want.

    Note - The nodes in each resource group cannot be altered in this panel. The wizard sets the preferred node name automatically and ensures that a different node is the preferred node for each group. If you need to change any information about the nodes, you must go back through the wizard by pressing the < key.

11. **(Optional) If you want to edit the name of a resource group shown in the panel, type the number of a group you want to change.**

    The wizard displays a list of the names of the resource and resource group for the group you selected. From here you can separately edit these names.

    a. **Type the number for the name you want to change.**

b. Type the new name when prompted.

The wizard displays the new names of the resource and resource group for the group you selected.

c. Type `d` when you are done editing the names.

The Select Resource Groups to Edit panel is displayed again with the new values of all the resource groups that are to be created.

12. Type `d` in the Select Resource Groups to Edit panel when you are done with editing.

The wizard displays the Review Configuration of Logical Hostname Resources panel to display the resource name, resource group name, node list, and logical hostname that will be created. The names are not editable here, but you can type the < key to go back to the previous panel to edit.

13. In the Review Configuration of Logical Hostname Resources panel type `c` to create the configuration.

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

Note - The `clsetup` utility rolls back the changes if it fails to complete the logical host configuration process.

---

14. Press Return to continue.

The `clsetup` utility returns you to the list of options for configuring PeopleSoft application server.

Skip to Step 24 if you are not using HA for storage or you have previously configured HA for storage, either through the `clsetup` main menu or by using other commands.

15. (Optional) Type the number for Storage.

The `clsetup` utility prepares to start a wizard to guide you through the creation and configuration of storage resource groups for PeopleSoft application server.

Before you continue, make sure all the listed prerequisites have been met.

16. Verify that the prerequisites are met.

- If you are configuring on a zone cluster, the `clsetup` utility displays the nodes available for you to select for storage resources to run.

- If you are configuring on a global cluster, the clsetup utility displays the existing file system mount points.

17. **If you are configuring on a zone cluster, select the nodes where the storage resources should run.**
    The clsetup utility displays the existing file system mount points.

18. **Select the file system mount points for HA for PeopleSoft application server data files.**

    - **To select a subset of the listed file system mount points, type a comma-separated or space-separated list of the numbers that correspond to the file system mount point.**
    - **To select all file system mount points in a particular order, type a comma-separated or space-separated ordered list of the numbers that correspond to the file system mount points.**

19. **To confirm your selection of file system mount points, type d.**
    The clsetup utility displays a review panel where you can change the names of the objects that are about to be created.

20. **If you want a different name for any resources or groups, change each name as follows.**

    a. **Type the number for the name that you want to change.**
       The clsetup utility displays a screen where you can specify the new name.

    b. **At the New Value prompt, type the new name.**

    The clsetup utility returns you to the list of the names of the objects that the utility will create.

21. **To confirm the names, type d.**
    The clsetup utility displays information about the configuration that the utility will create.

22. **To create the configuration, type c.**
    When configuration is complete, the clsetup utility displays the commands that the utility ran to create the configuration.

Note - The clsetup utility rolls back the changes if it fails to complete the storage configuration process.

---

23. Press Return to continue.

The clsetup utility returns you to the list of options for configuring the HA for PeopleSoft application server.

24. Type the number for PeopleSoft application server.

The utility displays a list of prerequisites for the creation of the PeopleSoft application server resource group.

25. Verify that you have met all the prerequisites.

The wizard lists all the local user names from the selected cluster so you can choose the user name that should run the PeopleSoft application server.

26. Type the number for the user name that should be used to run the PeopleSoft application server.

If you do not see the user name that you want, type **n** to see another page of user names. If you want to use the psft user, for example, it might be listed on the second page.

For better security, you should not run the server as the root user, but you are not prevented from doing so.

The clsetup utility then displays a panel for you to specify the PeopleSoft application server installation directory location.

27. Type the full path to the PeopleSoft application server directory that you want to use.

The directory contains the PeopleSoft application server binaries and corresponds to the directory specified as PS_HOME when you installed the PeopleSoft software. The directory must be accessible from each cluster node when you are setting up a multi-instance configuration.

The clsetup utility then prompts you to enter the location of the domain directory. The value displayed is the directory specified as PS_CFG_HOME when you installed the PeopleSoft software. By default the domain directory is ${PSFT_USER_HOME}/psft/pt/${PT_VERSION}.

28. If the domain directory path displayed is not correct, type the full path to the domain directory for the PeopleSoft application server.

The clsetup utility prompts for the configuration mode.

29. Type the number that corresponds to the multi-instance mode.

The clsetup utility displays a list of PeopleSoft application server domain configuration names that you can configure. The domain names are obtained from the domain directory that you specified.

30. **Specify the domains where you want PeopleSoft application servers to run by doing one of the following:**

    - **Type the number of one or more domain in the list.**

      You can select multiple domains by entering their numbers with spaces or commas in between.

    - **Type `e` then type the name of the domain that you want to use.**

      This option is useful if you want to use a domain that is not shown in the list.

      When you are configuring for multi-instance mode you can type the names of multiple domains. You can include domains that are shown in the list or not shown in the list. Type one domain name when prompted. Type additional domains names when prompted, one name at a time, in the same manner. When you have finished entering domain names, press Return at the prompt without typing anything else.

    The wizard displays the list of domains you have selected. You must type **`yes`** to confirm they are correct.

    The `clsetup` utility prompts you for the project to use,

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

    If you did not create a project where PeopleSoft application server will run, select the default project. The `clsetup` utility prompts for database information.

32. **Type `yes` if the application server uses a database resource, or type `no` if it does not.**

    If you specify yes, the utility searches for database resources and presents a numbered list of resources found and prompts you to select from the list.

    a. **Type the number of one or more database resources that should be used by the application, with commas or spaces between the numbers.**

    b. **Type `d`.**

    The utility displays a list of logical hostname resources for the application server domain.

33. **Select the logical hostname resources that will run the application server domains:**

    a. **Type the number of a logical hostname resource that should run the application server.**

b. Type `d`.

The `clsetup` utility prompts you for the logical hostname for each of the selected domains.

When you have completed the logical hostname assignments, the `clsetup` utility displays a list of storage resources for PeopleSoft application server files.

The `clsetup` utility displays a list of storage resources for PeopleSoft application server files.

34. Type the number of the storage resource you want to use for the PeopleSoft application server.

The `clsetup` utility displays a review panel that shows the storage resource group and application server domain that you have selected.

35. In the review panel, do one of the following:

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

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

  Type **`d`** to confirm the new names.

The utility displays a review panel of the objects that it will create.

36. To create the configuration, type `c`.

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

Note - The `clsetup` utility rolls back the changes if it fails to complete the database configuration process.

---

37. Press Return to continue.

The `clsetup` utility returns you to the list of options for configuring PeopleSoft application server.

38. Press Return to exit the wizard for configuring the PeopleSoft application server.

The `clsetup` utility returns to the Data Services Configuration menu.

39. (Optional) Type `q` repeatedly until you quit the `clsetup` utility.

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

▼ How to Register and Configure HA for PeopleSoft Application Server for Failover (CLI)

Before You Begin Install the data service package during your initial Oracle Solaris Cluster installation.

If you did not install the HA for PeopleSoft application server package as part of your initial Oracle Solaris Cluster installation, go to "Installing the Data Service Package" on page 18.

1. **On the cluster node that hosts the PeopleSoft application server domain, assume the `root` role or a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` authorization.**

2. **Register the `ORCL.PeopleSoft_app_server` resource type.**

```
# clresourcetype register ORCL.PeopleSoft_app_server
```

3. **Create a PeopleSoft application server domain resource in the failover resource group.**

```
# clresource create -g psft-app-failover-rg -d \
-t ORCL.PeopleSoft_app_server \
-p Psft_User=Psft-username -p Psft_Domain=Psft-domainname \
-p Psft_Home=Psft-home-directory -p Psft_Cfg_Home=Psft-config-home-directory \
-p Resource_dependencies=logicalhostname-resource \
-p Resource_dependencies_offline_restart=hasp-resource psft-app-server-resource
```

4. **If the database tier is deployed on the same global cluster, configure a strong dependency to the resources for the database instance and database listener.**

   Do this even if the database tier is deployed in a different zone cluster of the same global cluster.

```
# clresource set -p Resource_dependencies+=db-instance-resource,db-listener-resource \
psft-app-server-resource
```

5. **Enable thePeopleSoft application server domain resource.**

   Repeat this step for each PeopleSoft application server domain instance, if multiple instances were created.

```
# clresource status
# clresource enable psft-app-server-resource
```

How to Remove a PeopleSoft Application Server Domain Resource From a Failover Resource Group

1. **Assume the `root` role or a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` authorizations.**

2. **Disable and remove the resource that is used by the HA for PeopleSoft application server data service.**

```
# clresource disable psft-app-server-resource
# clresource delete psft-app-server-resource
```

How to Register and Configure HA for PeopleSoft Application Server for Multi-Instance Configuration (CLI)

This procedure shows how to use commands to create a PeopleSoft application server multi-instance configuration that uses single-node resource groups. This method is an alternative to using the `clsetup` wizard described in "How to Register and Configure HA for PeopleSoft Application Server for Multi-Instance (`clsetup`)" on page 38.

A single node resource group is created for each of the application server resources managing a domain. Each resource group has a strong positive affinity on storage resource group and a logical host resource group whose primary node is the node containing the application server resource group.

Note - These instructions assume a zone cluster. If you are configuring in the global cluster, omit the `-Z` option.

---

1. **Create a logical host resource group.**

```
# clresourcegroup create -Z zone-name \
```

```
-p Nodelist=node1,node2,node3... \
logicalhost-resource-group
```

2. **Create a logical hostname resource in the resource group for logical hostnames.**

```
# clreslogicalhostname create -Z zone-name \
-g logicalhost-resource-group -h hostname \
logicalhost-resource
```

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

```
# clresourcegroup online -emM -Z zone-name logicalhost-resource-group
```

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

```
# clresourcegroup create -Z zone-name -p Nodelist=node1 \
-p RG_affinities=++logicalhost-resource-group,++scalmnt-rg psft-app-server-rg
```

5. **Set the logical hostname resource group `Failback` property.**

```
# clresourcegroup set -p Failback=True -Z zone-name logicalhost-resource-group
```

6. **Create the PeopleSoft application server resource and set its properties.**

```
# clresource create -t ORCL.PeopleSoft_app_server:1 -g psft-app-server-rg \
-p Resource_dependencies=logicalhost-resource1,zone-1:rac-proxy-rs \
-p Resource_dependencies_offline_restart=storage1-rs,storage2-rs \
-p Psft_Home=/path/to/Psft/home/dir \
-p Psft_Cfg_Home=/path/to/Psft/cfg-home \
-p Psft_User=username \
-p Psft_Domain=Psft-domain psft-application-rs
```

Example 1 Commands for Configuring HA for PeopleSoft Application Server in a Single-Node Resource Group Multi-Instance Configuration

```
# clresourcegroup create -Z zone-2 \
-p Nodelist=vzmoney1d,vzmoney2d,vzmoney3d,vzmoney4d money-9-rg

# clreslogicalhostname create -Z zone-2 -g money-9-rg -h money-9 money-9-rs

# clresourcegroup online -eM -Z zone-2 money-9-rg

# clresourcegroup create -Z zone-2 -p Nodelist=vzmoney1d \
-p RG_affinities=++money-9-rg,++scalmnt-rg pse-PSEDB-rg
```

```
# clresourcegroup set -p Failback=True -Z zone-2 money-9-rg

# clresource create -Z zone-2 -t ORCL.PeopleSoft_app_server:1 -g pse-PSEDB-rg \
-p Resource_dependencies=money-9-rs,zone-1:rac-proxy-rs \
-p Resource_dependencies_offline_restart=scalmnt-crs03-rs,scalmnt-crs01-rs \
-p Psft_Home=/scalable/pse-app/PT8.52 \
-p Psft_Cfg_Home=/scalable/pse-app/psft/cfg-home \
-p Psft_User=psft -p Psft_Domain=PSEDB \
pse-PSEDB-rs
```

Verifying Installation and Configuration of the PeopleSoft Application Server Domain Resource

This section contains the procedure to verify successful installation and configuration of the PeopleSoft application server domain resource.

▼ How to Verify HA for PeopleSoft Application Server Domain Resource Installation and Configuration

1. **Assume the `root` role and log in to the node that currently hosts the resource group that contains the PeopleSoft application server guest domain resource.**

2. **Switch the PeopleSoft application server domain resource group to another cluster member.**

   `# clresourcegroup switch -n` *node psft-app-failover-rg*

3. **Verify the status of the PeopleSoft application server domain instance.**

   `# su -` *Psft_User* **`-c "`***/Psft_Home***`/appserv/psadmin -c sstatus -d`** *Psft_Domain***"**

4. **Verify the status of the PeopleSoft application server domain resource.**

   `# clresource status` *psft-app-server-resource*

5. **Repeat all steps until you have tested all the potential nodes on which the PeopleSoft application server domain can run.**

Tuning the HA for PeopleSoft Application Server Fault Monitor

This section describes the HA for PeopleSoft application server fault monitor's probing algorithm or functionality, and states the conditions, messages, and recovery actions associated with unsuccessful probing.

For conceptual information about fault monitors, see the *Oracle Solaris Cluster 4.3 Concepts Guide*.

Resource Properties

The HA for PeopleSoft application server fault monitor uses the resource properties that are specified in the resource type `ORCL.PeopleSoft_app_server`. Refer to the `r_properties(5)` man page for a list of general resource properties used. Refer to "`ORCL.PeopleSoft_app_server` Extension Properties" on page 69 for a specific list of resource properties for this resource type.

Probing Algorithm and Functionality

The HA for PeopleSoft application server is controlled by extension properties that control the probing frequency. The default values of these properties determine the preset behavior of the fault monitor and are suitable for most Oracle Solaris Cluster installations. You can modify this preset behavior by modifying the following settings:

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

The HA for PeopleSoft application server fault monitor checks the domain status within an infinite loop. During each cycle, the fault monitor checks the domain state 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.

Operations of the PeopleSoft Application Server Probe

The following explains the operations of the PeopleSoft application server probe:

- If the `control_app_server` script for the resource is still running with the start option the probe returns 100. This basically implements “wait for online” during start. Otherwise, the probe continues.
- If the output from `psadmin` for the boot option contains the string `ERROR:`, the probe returns 100 to indicate a failed start. Otherwise, the probe continues.
- If the output for the `psadmin -c sstatus -d ${Psft_Domain}` command contains the string `ERROR:`, the probe checks for the following specific message:

  ```
  Can not find DBBL on master and backup nodes.
  ```

  - If that string is detected, it assumes the critical BBL service has failed and tries to restart the BBL by sending the `bbc` command, using `tmadmin`. The probe returns 50, which puts the service into degraded mode. If on a subsequent probe the same error is detected, the return code is 50 again, which totals 100, resulting in a failed probe.
  - If the specific error message is not matched, the probe immediately returns 100.
  - If no error message is found, the probe continues.
- The probe checks whether at least one of each of the services that are defined as critical is running. The following services are regarded as critical:
  - `BBL`
  - `PSAPPSRV`
  - `PSMONITORSRV`
  - `PSSAMSRV`
  - `PSWATCHSRV`

  If the probe does not detect that all of the critical services are running, the probe returns 100, otherwise it returns 0.

- If the PeopleSoft application server guest-domain resource is repeatedly restarted and subsequently exhausts the `Retry_count` within the `Retry_interval`, and if `Failover_enabled` is set to `TRUE`, a failover to another node is initiated for the resource group.

Debugging HA for PeopleSoft Application Server

The HA for PeopleSoft application server has an extension property named `debug_level`. This extension property enables you to activate debugging for PeopleSoft application server guest-domain resources.

How to Activate Debugging for HA for PeopleSoft Application Server

Perform this procedure to activate debugging.

Note - To deactivate debugging, repeat all steps in this procedure with the following changes:

- Change `daemon.debug` to `daemon.notice`.
- Change the `Debug_level` property to 0.

---

1. **Determine whether debugging for the PeopleSoft application server domain is active.**

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

   - If debugging is active, `daemon.debug` is set in the file `/etc/syslog.conf`. You do not need to continue this procedure.
   - If debugging is inactive, `daemon.notice` is set in the file `/etc/syslog.conf` of the appropriate node. Perform the remaining steps in this procedure to activate debugging.

2. **If debugging is inactive, edit the `/etc/syslog.conf` file in the appropriate node to change `daemon.notice` to `daemon.debug`.**

3. **Confirm that debugging for PeopleSoft application server domain is active.**

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

4. **Restart the `syslogd` daemon.**

```
# svcadm refresh svc:/system/system-log:default
```

5. **Set the property `Debug_level` to level 2.**

```
# clresource set -p Debug_level=2 psft-app-server-resource
```

♦ ♦ ♦ CHAPTER 3

Installing and Configuring the HA for PeopleSoft Process Scheduler

This chapter gives an overview of the optional HA for PeopleSoft process scheduler and explains how to install and configure it.

This chapter contains the following sections:

Overview

The HA for PeopleSoft process scheduler data service manages the start, shutdown, and fault monitoring of a specific process scheduler domain.

The HA for PeopleSoft process scheduler performs the following tasks:

- Supports the PeopleSoft application environment – Run batch certain processes (such as batch programs and reports) behind the scenes of the online system. Examples of processes that run offline include running reports, posting journal entries, loading benefit enrollment forms, or calculating payroll deductions.

- Schedules and manages the execution of PeopleSoft batch processes – Schedule recurring processes to run on a specific date or at a specific time interval. You can also create jobs that run several processes and then schedule successive processes based on the status of a previous process.
- Enables load balancing – Set up a Master Scheduler server, which enables workload balancing by automatically routing requests to available Process Scheduler servers. The feature also provides fault tolerance in a batch environment.

The following table lists the tasks for configuring the HA for PeopleSoft process scheduler data service and provides links 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 PeopleSoft Process Scheduler

Task	Instructions
1. Plan the installation	"Planning the HA for PeopleSoft Process Scheduler Installation and Configuration" on page 56
2. Install and configure the PeopleSoft process scheduler domain	"Installing and Configuring the PeopleSoft Process Scheduler Domain" on page 59
3. Verify the PeopleSoft process scheduler domain installation and configuration	"Verifying Installation and Configuration of the PeopleSoft Process Scheduler Domain" on page 62
4. Register and configure the HA for PeopleSoft process scheduler resources	"Registering and Configuring HA for PeopleSoft Process Scheduler" on page 63
5. Verify the HA for PeopleSoft process scheduler resource installation and configuration	"Verifying Installation and Configuration of the PeopleSoft Process Scheduler Domain Resource" on page 64
6. Tune the HA for PeopleSoft process scheduler fault monitor	"Tuning the HA for PeopleSoft Process Scheduler Fault Monitor" on page 65
7. Debug the HA for PeopleSoft process scheduler	"Debugging the HA for PeopleSoft Process Scheduler Fault Monitor" on page 67

Planning the HA for PeopleSoft Process Scheduler Installation and Configuration

This section contains the information you need to plan your HA for PeopleSoft process scheduler configuration.

The HA for PeopleSoft process scheduler data service uses the `ORCL.PeopleSoft_process_scheduler` resource type and the software is delivered as part of the `ha-cluster/data-service/peoplesoft` package. The resource type uses the `psadmin` command

to start, stop, and fault monitor the specific process scheduler commands. You can use the command to verify the PeopleSoft process scheduler domain status.

Configuration Restrictions for the HA for PeopleSoft Process Scheduler

The configuration restrictions in the subsections that follow apply only to the HA for PeopleSoft process scheduler.

For restrictions that apply to all data services, see the *Oracle Solaris Cluster 4.3 Release Notes*.

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

- **Multiple process scheduler instances** – If multiple process scheduler instances are configured for the same Oracle Solaris database, you must configure a resource for each of the process scheduler instances.
- **Failover support only** – PeopleSoft process scheduler can be configured only as a failover data service and not as a scalable data service.
- **Multiple process scheduler domains** –The Oracle Solaris Cluster resource of resource type `ORCL.PeopleSoft_process_scheduler` can manage exactly one PeopleSoft process scheduler domain. To manage multiple PeopleSoft process scheduler domains, configure multiple Oracle Solaris Cluster resources of resource type `ORCL.PeopleSoft_process_scheduler`, each resource managing exactly one PeopleSoft process scheduler domain.

Configuration Requirements for the HA for PeopleSoft process scheduler

Use the requirements in this section to plan the configuration of HA for PeopleSoft process scheduler. These requirements apply to HA for PeopleSoft process scheduler only.

Information about how to install PeopleSoft Enterprise PeopleTools version 8.52 is published in the PeopleSoft PeopleTools 8.52 Install Documentation Library.

For requirements that apply to all data services, see Chapter 1, “Planning for Oracle Solaris Cluster Data Services” in *Oracle Solaris Cluster 4.3 Data Services Planning and Administration Guide*.

- **UNIX user and group** - The UNIX user and group that are used to install, operate, and manage the PeopleSoft process scheduler domain must exist on all cluster nodes where the corresponding resource for the PeopleSoft process scheduler domain is configured to come online.
- **File systems** - The corresponding file system resource for the domain is configured in the same resource group as the PeopleSoft process scheduler's resource domain. The file systems used to store the required binaries and data for the domain must be configured on highly available local file systems. If you choose to install the binaries on local storage, install and keep them identical on all the cluster nodes. The directory specified for `Psft_Cfg_Home` must reside on a highly available local file system, which needs to be accessible where the corresponding resource for the PeopleSoft process scheduler domain comes online.

  If you are setting up HA for PeopleSoft process scheduler in a multi-instance configuration, the PeopleSoft process scheduler installation should be located on network attached storage (NAS) accessible to all the nodes running the server.
- **Environment variables** - In addition to the required environment variables that are explained in thePeopleSoft Enterprise PeopleTools installation guide, you must set up the following variables before you configure the PeopleSoft process scheduler domain:
  - `SC_LHOSTNAME`
  - `LD_PRELOAD_32`
  - `LD_PRELOAD_64`

  Set `SC_LHOSTNAME` to the logical hostname under which the PeopleSoft process scheduler domain must be reachable from the web tier. For more details, refer to the `libschost.so.1`(1) man page.

  Set these environment variables for the profile of the user that operates the PeopleSoft process scheduler domain. Ensure that the login for the user is noninteractive. If you invoke as user `root`, you must see these variables displayed in the `psadmin` command output:

  ```
  # su - Psft_User -c "/Psft_Home/appserv/psadmin -env"
  ```
- **Database tier dependency** - If the database tier is deployed on the same global cluster, the resource for the PeopleSoft process scheduler domain must define a strong resource dependency to the resources for the database instance and database listener. This ensures that the PeopleSoft process scheduler domain will only try to start when the corresponding database is already operational. This configuration is required for a successful startup of the PeopleSoft process scheduler domain. If the Oracle database is not managed through Oracle Solaris Cluster, you can also configure the database tier dependency by using the data service delivered as part of the Oracle External Proxy resource. You can specify a resource dependency to the Oracle External Proxy resource.

- **Database client network connection** - The database client used by the PeopleSoft process scheduler domain configuration must be configured to connect to the network address that is managed by the cluster framework for the corresponding database server.

Configuration Options for the HA for PeopleSoft process scheduler

Use the data service configurations in this section to plan the installation and configuration of HA for PeopleSoft process scheduler.

Failover Configurations

When the PeopleSoft software is installed in a traditional file system, a failover deployment requires a configuration where one failover resource group contains the PeopleSoft process scheduler resource, the logical hostname resource, and the failover storage resource. For more information, see the graphics in “HA for PeopleSoft Application Server Data Service Configurations” on page 24.

Multi-Instance Configurations

Multi-instance configuration is an application deployment topology where multiple instances of the same application provide an aggregation of services. This topology can be achieved independently of using a data service because you can manually start and stop the instances on the cluster nodes. When HA of such instances is required, you can enable a data service for the instances by creating multiple single-node resource groups or a few multi-master resource groups. For more information, see the graphics in “HA for PeopleSoft Application Server Data Service Configurations” on page 24.

Installing and Configuring the PeopleSoft Process Scheduler Domain

HA for PeopleSoft process scheduler

This section contains the two procedures you need to install and configure a PeopleSoft process scheduler domain as a cluster resource.

Complete the following items before you perform the procedures in this section:

- Install the PeopleSoft application server and PeopleSoft process scheduler data service package during your initial Oracle Solaris Cluster installation. If you did not yet install the package, "Installing the Data Service Package" on page 18.
- Install and configure all storage management software that you intend to use on all nodes where PeopleSoft process scheduler is to run.
- Create zone clusters where you intend to run PeopleSoft process scheduler.
- Create an entry in a name service database (such as DNS) for the logical hostnames that are to be made available by the resources.
- If you are using IPMP groups, configure the groups on the nodes where the logical hostname resources can be brought online.
- Ensure that any non-global zones that can master the resources are already configured on your cluster nodes.

Note - If you want to configure identical multiple process scheduler instances that are distributed across multiple nodes without failover, you can configure a resource group for each node, where only that node is listed in the nodelist. Each process scheduler instance that runs only on a specific node gets its own resource in the corresponding resource group.

In the steps below, it is assumed the UNIX user `psft` was used to install the PeopleSoft process scheduler software, that *HR91* is the process scheduler domain name, that *psft-sched-rg* is the resource group name, and that *pse-sched-rs* is the resource name. Change the resource group name, resource name, user name, and domain name to match your configuration.

How to Enable the PeopleSoft Process Scheduler Domain to Run in a Cluster

Perform this procedure on one node of the cluster to configure storage and logical host resource groups.

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

1. **On a cluster node that will host the PeopleSoft process scheduler domain, assume the `root` role or a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` authorization.**

2. **Register the `SUNW.HAStoragePlus` resource type.**

```
# clresourcetype register SUNW.HAStoragePlus
```

3. **Create a failover resource group.**

```
# clresourcegroup create psft-sched-rg
```

4. **Create a resource for the PeopleSoft process scheduler domain file systems on shared storage.**

```
# clresource create -g psft-sched-rg -t SUNW.HAStoragePlus \
-p FileSystemMountPoints=psft-mount-points psft-hasp-resource
```

5. **Create a resource for the logical hostname that will be used by the web tier to connect to the PeopleSoft process scheduler domain.**

```
# clreslogicalhostname create -g psft-sched-rg \
-h logical-hostname logicalhost-resource
```

6. **Enable the failover resource group that now includes the PeopleSoft process scheduler domain disk storage and logical host resources.**

```
# clresourcegroup online -eM -n current-node psft-sched-rg
```

▼ How to Install PeopleSoft Process Scheduler Software

1. **On the cluster member where the *psft-sched-rg* resource group is online, assume the `root` role.**

2. **Follow the instructions in the appropriate PeopleSoft documentation for your version of the product. Documentation for installing PeopleSoft Enterprise PeopleTools version 8.52 is published in the PeopleSoft PeopleTools 8.52 Install Documentation Library.**

   Use the file system specified within the `HAStoragePlus` resource and the IP address within the logical hostname. When following these instructions, ensure that you observe the information in "Configuration Requirements for the HA for PeopleSoft process scheduler" on page 57.

Next Steps See "Verifying Installation and Configuration of the PeopleSoft Process Scheduler Domain" on page 62.

Verifying Installation and Configuration of the PeopleSoft Process Scheduler Domain

This section contains the procedure to verify successful installation and configuration of the PeopleSoft process scheduler domain.

▼ How to Verify the PeopleSoft Process Scheduler Domain Installation and Configuration

1. **Assume the `root` role and log in to the node that currently hosts the resource group that contains the PeopleSoft process scheduler guest domain resource.**

2. **Start the PeopleSoft process scheduler.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -p start -d Psft_Domain"
   ```

3. **Verify the status of the PeopleSoft process scheduler.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -p sstatus -d Psft_Domain"
   ```

4. **Stop the PeopleSoft process scheduler.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -p stop -d Psft_Domain"
   ```

5. **Switch the PeopleSoft process scheduler resource group to another cluster member.**

   ```
   # clresourcegroup switch -n node psft-sched-rg
   ```

6. **Repeat all steps until you have tested all the potential nodes on which the PeopleSoft Process Scheduler can run.**

Next Steps See “Registering and Configuring HA for PeopleSoft Process Scheduler” on page 63.

Registering and Configuring HA for PeopleSoft Process Scheduler

This section contains the procedures to configure or unconfigure the HA for PeopleSoft process scheduler.

▼ How to Register and Configure HA for PeopleSoft Process Scheduler for Failover

Before You Begin Install the data service package during your initial Oracle Solaris Cluster installation.

If you did not install the HA for PeopleSoft Process Scheduler package as part of your initial Oracle Solaris Cluster installation, go to "Installing the Data Service Package" on page 18.

1. **On the cluster node that hosts the PeopleSoft process scheduler domain, assume the `root` role or a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` authorization.**

2. **Create a PeopleSoft process scheduler domain resource in the failover resource group.**

```
# clresource create -g psft-sched-rg -d \
-t ORCL.PeopleSoft_process_scheduler \
-p Psft_User=Psft-username -p Psft_Domain=Psft-domainname \
-p Psft_Home=Psft-home-directory -p Psft_Cfg_Home=Psft-config-home-directory \
-p Resource_dependencies=logicalhostname-resource \
-p Resource_dependencies_offline_restart=hasp-resource psft-sched-rs
```

3. **If the database tier is deployed on the same global cluster, configure a strong dependency to the resources for the database instance and database listener.**

   Do this even if the database tier is deployed in a different zone cluster of the same global cluster.

```
# clresource set -p Resource_dependencies+=db-instance-resource,db-listener-resource \
psft-sched-rs
```

4. **Enable the PeopleSoft process scheduler domain resource.**

   Repeat this step for each PeopleSoft process scheduler domain instance, if multiple instances were created.

   ```
   # clresource status
   # clresource enable psft-sched-rs
   ```

How to Remove a PeopleSoft Process Scheduler Domain From a Failover Resource Group

1. **Assume the `root` role or a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` authorizations.**

2. **Disable and remove the resource that is used by the HA for PeopleSoft process scheduler data service.**

   ```
   # clresource disable psft-sched-rsresource
   # clresource delete psft-sched-rs
   ```

Verifying Installation and Configuration of the PeopleSoft Process Scheduler Domain Resource

This section contains the procedure to verify successful installation and configuration of the PeopleSoft process scheduler domain resource.

How to Verify PeopleSoft Process Scheduler Domain Resource Installation and Configuration

1. **Assume the `root` role and log in to the node that currently hosts the resource group that contains the PeopleSoft process scheduler guest domain resource.**

2. **Switch the PeopleSoft process scheduler domain resource group to another cluster member.**

   ```
   # clresourcegroup switch -n node psft-sched-rg
   ```

3. **Verify the status of the PeopleSoft process scheduler domain instance.**

   ```
   # su - Psft_User -c "/Psft_Home/appserv/psadmin -p sstatus -d Psft_Domain"
   ```

4. **Verify the status of the PeopleSoft process scheduler domain resource.**

   ```
   # clresource status psft-sched-rs
   ```

5. **Repeat all steps until you have tested all the potential nodes on which the PeopleSoft process scheduler domain can run.**

Tuning the HA for PeopleSoft Process Scheduler Fault Monitor

This section describes the HA for PeopleSoft process scheduler fault monitor's probing algorithm or functionality, and states the conditions, messages, and recovery actions associated with unsuccessful probing.

- "Resource Properties" on page 65
- "Probing Algorithm and Functionality" on page 65
- "Operations of the PeopleSoft Process Scheduler Probe" on page 66

For conceptual information about fault monitors, see the *Oracle Solaris Cluster 4.3 Concepts Guide*.

Resource Properties

The HA for PeopleSoft process scheduler fault monitor uses the resource properties that are specified in the resource type `ORCL.PeopleSoft_process_scheduler`. Refer to the `r_properties`(5) man page for a list of general resource properties used. Refer to "`ORCL.PeopleSoft_process_scheduler` Extension Properties" on page 71 for a specific list of resource properties for this resource type.

Probing Algorithm and Functionality

The HA for PeopleSoft process scheduler is controlled by extension properties that control the probing frequency. The default values of these properties determine the preset behavior of the

fault monitor and are suitable for most Oracle Solaris Cluster installations. You can modify this preset behavior by modifying the following settings:

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

The HA for PeopleSoft process scheduler fault monitor checks the domain status within an infinite loop. During each cycle, the fault monitor checks the domain state 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.

Operations of the PeopleSoft Process Scheduler Probe

The following explains the operations of the PeopleSoft process scheduler probe:

- If the `control_process_scheduler` script for the resource is still running with the start option, the probe returns 100. This basically implements “wait for online” during start. Otherwise, the probe continues.
- If the output from `psadmin` for the boot option contains the string `ERROR:`, the probe returns 100 to indicate a failed start. Otherwise, the probe continues.
- If the output for the `psadmin -p sstatus -d ${Psft_Domain}` command contains the string `ERROR:`, the probe checks for the following specific message:

  ```
  Can not find DBBL on master and backup nodes.
  ```

  - If that string is detected, it assumes the critical BBL service has failed and tries to restart the BBL by sending the `bbc` command, using `tmadmin`. The probe returns 50, which puts the service into degraded mode. If on a subsequent probe the same error is detected, the return code is 50 again, which totals 100, resulting in a failed probe.
  - If the specific error message is not matched, the probe immediately returns 100.
  - If no error message is found, the probe continues.

- The probe checks whether at least one of each of the services that are defined as critical is running. The following services are regarded as critical:
  - `BBL`
  - `PSMONITORSRV`
  - `PSPRCSRV`
  - `PSDSTSRV`

  If the probe does not detect that all of the critical services are running, the probe returns 100, otherwise it returns 0.
- If the PeopleSoft process scheduler guest-domain resource is repeatedly restarted and subsequently exhausts the `Retry_count` within the `Retry_interval`, and if `Failover_enabled` is set to `TRUE`, a failover to another node is initiated for the resource group.

Debugging the HA for PeopleSoft Process Scheduler Fault Monitor

The HA for PeopleSoft process scheduler has an extension property named `debug_level`. This extension property enables you to activate debugging for PeopleSoft process scheduler guest-domain resources.

▼ How to Activate Debugging for HA for PeopleSoft Process Scheduler

Perform this procedure to activate debugging.

Note - To deactivate debugging, repeat all steps in this procedure with the following changes:

- Change `daemon.debug` to `daemon.notice`.
- Change the `Debug_level` property to 0.

---

1. **Determine whether debugging for PeopleSoft process scheduler domain is active.**

```
# grep daemon /etc/syslog.conf
```

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

- If debugging is active, `daemon.debug` is set in the file `/etc/syslog.conf`. You do not need to continue this procedure.
- If debugging is inactive, `daemon.notice` is set in the file `/etc/syslog.conf` of the appropriate node. Perform the remaining steps in this procedure to activate debugging.

2. **If debugging is inactive, edit the `/etc/syslog.conf` file in the appropriate node to change `daemon.notice` to `daemon.debug`.**

3. **Confirm that debugging for PeopleSoft process scheduler domain is active.**

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

4. **Restart the `syslogd` daemon.**

```
# svcadm refresh svc:/system/system-log:default
```

5. **Set the property `Debug_level` to level 2.**

```
# clresource set -p Debug_level=2 psft-sched-rs
```

♦ ♦ ♦ APPENDIX A

HA for PeopleSoft Application Server Extension Properties

Extension properties for HA for PeopleSoft application server resource types are described in this chapter

For details about system-defined properties, see the `r_properties(5)` and `rg_properties(5)` man pages.

For details about properties that are inherited from the generic data service, see the `SUNW.gds(5)` man page.

`ORCL.PeopleSoft_app_server` Extension Properties

The `ORCL.PeopleSoft_app_server` resource type represents the PeopleSoft application server server in an Oracle Solaris Cluster configuration. The extension properties of this resource type are as follows:

`Psft_user`

Defines the username to use to run the PeopleSoft Enterprise application server domain.

Data Type: String

Default: None

Tunable: When disabled

`Psft_Home`

Defines the installation directory for the PeopleSoft Enterprise application server binaries. Provide exactly the same value as for `PS_HOME` during configuration of the PeopleSoft application server domain. This value must match the definition in the output for `psadmin -env`.

Data Type: String

Default: None

Tunable: When disabled

`Psft_Cfg_Home`

Defines the directory for the PeopleSoft Enterprise application server domain configuration. If you configure this property, provide exactly the same value as for `PS_CFG_HOME` during configuration of the PeopleSoft application server domain. The value must match the definition in the output for `psadmin -env`.

Data Type: String

Default: Empty String

Tunable: When disabled

`Psft_Domain`

Defines the name of the PeopleSoft Enterprise application server domain.

Data Type: String

Default: None

Tunable: When disabled

`Debug_level`

Debug level for the control script and its functions.

Data Type: Integer

Default: 0

Tunable: Anytime

♦ ♦ ♦ APPENDIX B

HA for PeopleSoft Process Scheduler Extension Properties

Extension properties for HA for PeopleSoft Process Scheduler resource types are described in this chapter.

For details about system-defined properties, see the `r_properties(5)` and `rg_properties(5)` man pages.

For details about properties that are inherited from the generic data service, see the `SUNW.gds(5)` man page.

`ORCL.PeopleSoft_process_scheduler` Extension Properties

The `ORCL.PeopleSoft_process_scheduler` resource type represents the HA for PeopleSoft Process Scheduler server in an Oracle Solaris Cluster configuration. The extension properties of this resource type are as follows:

`Psft_user`

Defines the username to use to run the PeopleSoft Enterprise application.

Data Type: String

Default: None

Tunable: When disabled

`Psft_Home`

Defines the installation directory for the PeopleSoft Enterprise process scheduler binaries. Provide exactly the same value as for `PS_HOME` during configuration of the HA for PeopleSoft Process Scheduler. This value must match the definition in the output for `psadmin -env`.

Data Type: String

Default: None

Tunable: When disabled

`Psft_Cfg_Home`

Defines the directory for the PeopleSoft Enterprise process scheduler domain configuration. If you configure this property, provide exactly the same value as for `PS_CFG_HOME` during configuration of the HA for PeopleSoft Process Scheduler. The value must match the definition in the output for `psadmin -env`.

Data Type: String

Default: Empty String

Tunable: When disabled

`Psft_Domain`

Defines the name of the PeopleSoft Enterprise process scheduler domain.

Data Type: String

Default: None

Tunable: When disabled

`Debug_level`

Debug level for the control script and its functions.

Data Type: Integer

Default: 0

Tunable: Anytime, per node

Index