Oracle® Solaris Cluster Data Service for Oracle Communications ASAP Guide

SPARC Platform Edition

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Oracle Solaris Cluster Data Service for Oracle Communications ASAP Guide

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Contents

Using This Documentation

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

Product Documentation Library

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◆◆◆ **C H A P T E R 1**

1

Getting Started with Oracle Communications ASAP

This chapter provides an overview of the data service for Oracle Solaris Cluster HA for Oracle Communications ASAP. The chapter also explains how to install and configure the data service package.

About HA for Oracle Communications ASAP

The Oracle Communications ASAP data service provides orderly startup, shutdown, fault monitoring, and automatic failover of the ASAP Control Server. Use the information in this section to understand how to make the ASAP servers highly available.

The HA for Oracle Communications ASAP provides fault monitoring and automatic failover for the ASAP server to eliminate single points of failure in a Oracle Communications ASAP system. Table 1, "Oracle Communications ASAP System Components and Their Data Services," on page 9 lists the data service that protects each of the Oracle Communications ASAP components in an Oracle Solaris Cluster configuration.

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

TABLE 1   Oracle Communications ASAP System Components and Their Data Services

Oracle Communications ASAP System Component	Data Service
Database server	The data service for the database that you are using are as follows: ■ For the Oracle database, the data service is explained in the *Oracle Solaris Cluster Data Service for Oracle Database Guide* .

Oracle Communications ASAP System Component	Data Service
	■ For the Oracle RAC database, the data service is explained in the *Oracle Solaris Cluster Data Service for Oracle Real Application Clusters Guide* . ■ For the Oracle External Proxy, the data service is explained in the *Oracle Solaris Cluster Data Service for Oracle External Proxy Guide* .
ASAP server	The data service is HA for Oracle Communications ASAP. The resource type is ORCL.asap. The data service is explained in this guide.
WebLogic server	The data service is explained in the *Oracle Solaris Cluster Data Service for Oracle WebLogic Server Guide* .

High availability is provided for the ASAP Control Server of the Oracle Communications ASAP system. ASAP servers can be configured as a failover data service.

For conceptual information about failover services, see the *Oracle Solaris Cluster 4.3 Concepts Guide* .

HA for Oracle Communications ASAP requires a functioning cluster with the initial cluster framework 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 the HA for Oracle Communications ASAP after you successfully install the basic components of Oracle Solaris Cluster and Oracle Communications ASAP software.

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

For more information about Oracle Communcations ASAP, see the Oracle Communications ASAP Documentation.

♦ ♦ ♦ **C H A P T E R   2**

2

Installing and Configuring the Oracle Communications ASAP

This chapter provides an overview of the Oracle Communications ASAP and explains how to install and configure it.

This chapter contains the following sections:

- "Overview" on page 11
- "Planning the Oracle Communications ASAP Installation and Configuration" on page 12
- "Preparing the Nodes and Disks" on page 21
- "Installing and Configuring the Oracle Communications ASAP Resource" on page 25
- "Verifying the Oracle Communications ASAP Installation and Configuration" on page 26
- "Registering and Configuring the Oracle Communications ASAP" on page 29
- "Verifying the HA for Oracle Communications ASAP Installation and Configuration" on page 32
- "Tuning the Oracle Communications ASAP Fault Monitors" on page 34
- "Debugging the Oracle Communications ASAP" on page 35

Overview

The Oracle Communications ASAP component is protected by the HA for Oracle Communications ASAP data service.

Table 2, "Tasks for Installing and Configuring the HA for Oracle Communications ASAP ," on page 12 summarizes the tasks for installing and configuring HA for Oracle Communications ASAP and provides cross-references to detailed instructions for performing these tasks. Perform the tasks in the order in which they are listed in the table.

TABLE 2   Tasks for Installing and Configuring the HA for Oracle Communications ASAP

Task	Instructions
1. Plan the installation	"Planning the Oracle Communications ASAP Installation and Configuration" on page 12
2. Install and configure the Oracle Communications ASAP	"Installing and Configuring the Oracle Communications ASAP Resource" on page 25
3. Verify the Oracle Communications ASAP installation and configuration	"Verifying the Oracle Communications ASAP Installation and Configuration" on page 26
4. Register and configure Oracle Communications ASAP resources	"Registering and Configuring the Oracle Communications ASAP" on page 29
5. Verify the Oracle Communications ASAP installation and configuration	"Verifying the HA for Oracle Communications ASAP Installation and Configuration" on page 32
6. Tune the Oracle Communications ASAP fault monitor	"Tuning the Oracle Communications ASAP Fault Monitors" on page 34
7. Debug the Oracle Communications ASAP	"Debugging the Oracle Communications ASAP" on page 35

Planning the Oracle Communications ASAP Installation and Configuration

This section contains the information you need to plan your Oracle Communications ASAP installation and configuration.

Note - Before you begin, consult your Oracle Communications ASAP documentation for configuration restrictions and requirements that are not stated in Oracle Solaris Cluster documentation or imposed by Oracle Solaris Cluster software. Read all Oracle Communications ASAP notes that pertain to your release of Oracle Communications ASAP. For more information, see the Oracle Communications ASAP Documentation.

Configuration Restrictions for Oracle Communications ASAP

The configuration restrictions in the subsections that follow apply only to the Oracle Communications ASAP.

■   Configure the database resource to be in a different resource group from the Oracle Communications ASAP resource, if possible. However, if you are using Oracle as the database, and if you must configure Oracle in the same resource group as the Oracle

Communications ASAP resource, ensure that the value of the `restart_type` extension property for Oracle Solaris Cluster HA for Oracle database is set to `RESOURCE_RESTART`. This property setting indicates that if the response to a fault in the Oracle database is to restart the Oracle resource, only the Oracle database is restarted. If this property is set to `RESOURCE_GROUP_RESTART`, and if the response to a fault in the Oracle database is to restart the Oracle resource, all the resources in the resource group are restarted.

- If you have configured HA for Oracle Communications ASAP deployed across several UNIX machines, you must ensure that the logical host resource hostname or IP address configured for Slave Control servers and the servers controlled by the Slave Control Servers, is up and running. If the Slave Control Server logical host or IP address is down, the start up of ASAP Master Control server takes much longer time, due to which the HA Oracle Communications ASAP data service fails while trying to start the resource.

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

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

Configuration Requirements for Oracle Communications ASAP

Use the requirements in this section to plan the installation and configuration of the Oracle Communications ASAP. These requirements apply only to the Oracle Communications ASAP. You must meet these requirements before you proceed with your Oracle Communications ASAP installation and configuration.

Information about how to install Oracle Communications ASAP is published at Oracle Communications ASAP Documentation.

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

The following configuration requirements apply:

- **Configuration files** – The ASAP installation is supported on all the file system types supported by Oracle Solaris Cluster. While using local file system, the ASAP configuration

files `Environment_Profile`, `interfaces`, `ASAP.cfg`, and `ASAP.properties` should reside on a highly available file system so that it is accessible on the node where the resource is started. The `Environment_Profile` is the default environment file. You can also use the extension property `ENV_PROFILE` to enter a different environment file.

- **Application user** – The ASAP Master Control Server uses rhosts protocol to communicate to the Slave Control Servers. The ASAP installation users must have the `.rhosts` file with all the nodes of the cluster listed in the file. This file must exist on all the nodes for all the ASAP users. Ensure that the `svc:/network/shell:default` service is enabled. For example:

```
bash-4.1$ su – asap
bash-4.1$ cat ~/.rhosts
phobo1 asap
phobo2 asap
phobo1 slave1
phobo2 slave1
phobo1 slave2
phobo2 slave2
```

The above example displays the content of the `.rhosts` file for the `asap` user in the user's home directory. `slave1` is the first slave control server username. `slave2` is the second slave control server username. `phobo1` and `phobo2` are the physical hostnames of the cluster nodes. This configuration is required only when ASAP is deployed on multiple UNIX machines.

- **ASAP configuration file** – In the ASAP configuration file `ASAP.properties`, set the value of `hostname` to the logical host resource hostname for the ASAP Master Control Server. For example:

```
$ cat ASAP.properties | grep hostname
hostname=hobo-4
```

where `hobo-4` is the hostname of the logical host resource.

- `interfaces` **file** – Change the host name for each entry in the `$ASAP_BASE/SYBASE/ interfaces` file to the logical host resource hostname or IP address. For example:

```
###########SYBASE Interface File###################
SRP2ENV2
    master tcp ether hobo-3 40053
    query tcp ether hobo-3 40053
NEP2ENV2
    master tcp ether hobo-3 40051
    query tcp ether hobo-3 40051
CTRLSLV2
```

```
        master tcp ether hobo-3 40050
        query tcp ether hobo-3 40050
SRPSlave
        master tcp ether hobo-2 40033
        query tcp ether hobo-2 40033
NEPSlave
        master tcp ether hobo-2 40031
        query tcp ether hobo-2 40031
CTRLSLV1
        master tcp ether hobo-2 40030
        query tcp ether hobo-2 40030
OCA_ENV2
        master tcp ether hobo-4 40016
        query tcp ether hobo-4 40016
SRP_ENV2
        master tcp ether hobo-4 40012
        query tcp ether hobo-4 40012
DAEMENV2
        master tcp ether hobo-4 40019
        query tcp ether hobo-4 40019
SARMENV2
        master tcp ether hobo-4 40010
        query tcp ether hobo-4 40010
ADM_ENV2
        master tcp ether hobo-4 40015
        query tcp ether hobo-4 40015
NEP_ENV2
        master tcp ether hobo-4 40013
        query tcp ether hobo-4 40013
CTRLENV2
        master tcp ether hobo-4 40011
        query tcp ether hobo-4 40011
```

In this example, `hobo-2` and `hobo-3` are the logical host resource hostnames of `Slave Control server 1` and `Slave Control Server 2`. `hobo-4` is the logicalhost resource hostname of Master Control Server.

- **Database configuration** – When configuring HA for Oracle Communications ASAP, the database resource can be highly-available Oracle database, Oracle RAC, or Oracle External Proxy.

- **Database tables** – Update the following database tables to enable ASAP servers to listen on the hostname of the logical host or IP address:

This example uses the default `Environment_Profile` file.

- Update the Control Database table `tbl_listeners`.

  ```
  bash>$ su – asap
  bash>$ . $ASAP_BASE/Environment_Profile
  ```

  Log in to the Control database and update the `host_name` variable.

  ```
  bash>$ sqlplus $CTRL_USER/`GetPassword $CTRL_USER 2`@ORACLE_SID
  SQL>update tbl_listeners set host_name='hobo-4';
  ```

- Update the SARM Database table `tbl_asap_srp`.

  ```
  bash>$ su – asap
  bash>$ . $ASAP_BASE/Environment_Profile
  ```

  You must replace the default user environment profile with the user selected environment file if it exists.

  Log in to the SARM Control database and update the `srp_host_name` variable.

  ```
  bash>$ sqlplus $SARM_USER/`GetPassword $SARM_USER 2`@ORACLE_SID
  SQL>update tbl_asap_srp set srp_host_name='hobo-4'
  ```

  where `hobo-4` is the logical host resource hostname of the ASAP Master Control Server.

- In the Control Database table `tbl_appl_proc`, set `auto_start` to `N` for all the configured slave control servers to ensure that the Master Control Server does not restart any abnormally terminated Slave Control Server.

  ```
  bash>$ sqlplus $CTRL_USER/`GetPassword $CTRL_USER 2`
  SQL>update tbl_appl_proc set auto_start = N where appl_cd = 'CTRLSLV1';
  ```

  where `CTRLSLV1` is the name of the Slave Control Server.

  You must run the above command for all the configured Slave Control Servers. This configuration is required only when ASAP is deployed on multiple UNIX machines.

- **Storage configuration** – You can use the `SUNW.HAStoragePlus` or `SUNW.ScalMountPoint` resource type to configure the storage resource.

- **WebLogic configuration** – To configure WebLogic server for HA ASAP, You can use the HA WebLogic server agent only in the failover configuration. Update the WebLogic configuration files with the virtual IP.

  - Update the `ASAP.properties` file with the virtual IP information.

    ```
    wls_admin_host=wls_admin_server_virtual_IP
    wls_host=wls_mgd_server_virtual_IP
    ```

  - Update the `ASAP.cfg` file with the virtual IP information.

BEA_WLS_HOST=*wls_admin_server_virtual_IP*

- Perform the following steps to update the hostname in the URL of `RPCConnectionPool`.

    1. Back up the files in the *your_WebLogic_domain*/`config`/`jdbc` directory.
    2. In the `*RPCDataSource*jdbc.xml` file, update the host in <url>jdbc:sybase:
       Tds:*host*:port</url> with the hostname of the logical host resource on which the
       ASAP Master Control Server is configured to listen.
    3. Change to the *your_WebLogic_doman*/`servers`/*adminServer*/`upload`/
       `asap`*ENV_ID*/`app` directory.
    4. Back up `asap`*ENV_ID*`.ear` file, extract the file to be updated.

       ```
       $ jar xvf asap<ENV_ID>.ear jmx_connector.rar
       $ jar xvf jmx_connector.rar META-INF
       ```
    5. Change the `HOST` to the hostname of the logicalhost resource for the ASAP Master
       Control server in the `ra.xml` file.

       ```
       $ cd META-INF
       $ vi ra.xml
       <config-property-name>HOST</config-property-name>
       <config-property-type>java.lang.String</config-property-type>
       <config-property-value>hobo-4</config-property-value>
       ```

       where `hobo-4` is the logicalhost resource hostname of the ASAP Master Control
       Server.
    6. Add the modified files into the application.

       ```
       $ jar uvf jmx_connector.rar META-INF
       $ jar uvf asapENV_ID.ear jmx_connector.rar
       ```

Oracle Communications ASAP Data Service Configurations

Use the data service configurations in this section to plan the installation and configuration of
the Oracle Communications ASAP.

Failover Configuration for ASAP Deployed on a Single UNIX Machine

When the Oracle Communications ASAP software is installed in a traditional file system, a failover deployment requires a configuration where one failover resource group contains the Oracle Communications ASAP resource and the logical hostname resource. The logical host resource and the highly available ASAP resource must be configured in the same resource group. You can configure the failover storage resource in the same resource group or in a different resource group. If you configure the storage resource in a different resource group, ensure that the ASAP resource group has a strong positive affinity on the storage resource group.

When the Oracle Communications ASAP software is installed on NAS, a failover resource group is configured with the logical hostname resource and Oracle Communications ASAP resource.

The ASAP resource needs a resource dependency on the logical host resource. You must set an offline-restart dependency from the `ORCL.asap` resource on the storage resource to ensure proper start and stop ordering of the resources.

Figure illustrates how to deploy HA for ASAP on a single UNIX machine.

on a Single UNIX

Node 1

ASAP Resource Group

Oracle Communications
ASAP Resource

Logical Hostname
Resource

Storage Resource

WebLogic Server Resource Group

WebLogic Server
Resource

Database Resource Group

Database Resource
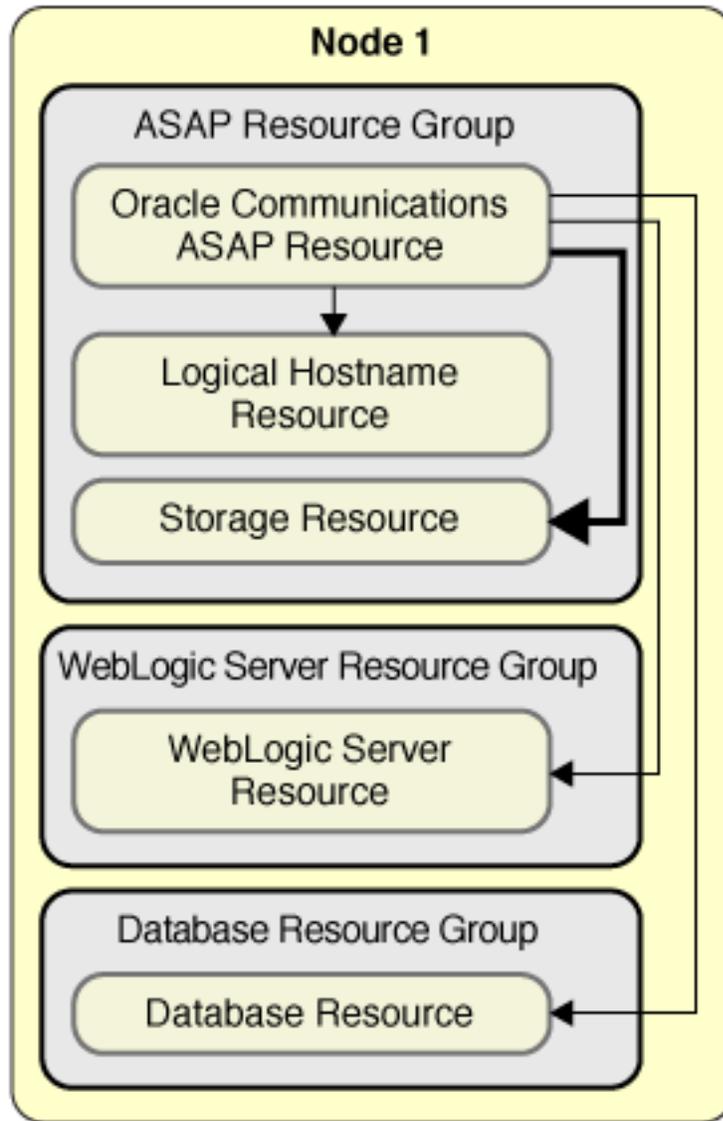
→ Denotes a strong dependency

➤ Denotes an offline-restart dependency

☐ Denotes a resource group

☐ Denotes a resource

Failover Configuration for ASAP Deployed Over Several UNIX Machines

The ORCL.asap resource for each Control Server type will be created. There would be an ASAP resource with `Control_Server_Type=Master` and one or more ASAP resources with `Control_Server_Type=Slave`. Each ASAP resource has a resource dependency on the logical hostname resource and an offline restart dependency on the storage resource. The ASAP resource with `Control_Server_Type=Slave` should have an `offline_restart_dependency` on the ASAP resource with `Control_Server_Type=Master`.

If you configure the storage resource in a different resource group, ensure that the ASAP resource group has a strong positive affinity on the storage resource group. You must set an offline-restart dependency from the `ORCL.asap` resource on the storage resource.

Figure illustrates how to deploy HA for Oracle Communications ASAP over several UNIX machines.

FIGURE 2 Configuring HA for Oracle Communications ASAP Deployed Over Several UNIX Machines
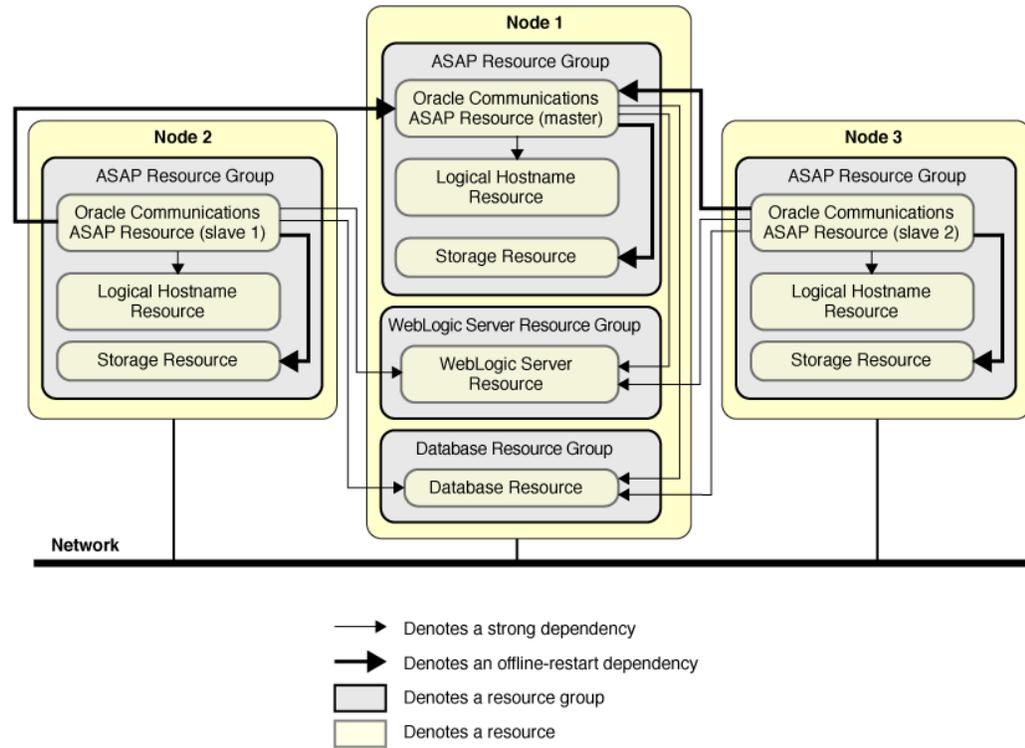
Preparing the Nodes and Disks

This section contains the procedure to prepare the nodes for a failover configuration.

Note - The following steps are based on the configurations that are described in "Oracle Communications ASAP Data Service Configurations" on page 17.

▼ How to Prepare the Nodes for Deploying ASAP on a Single UNIX Machine

Use this procedure to prepare for the installation and configuration of Oracle Communications ASAP in a failover configuration on a single UNIX machine. The examples in this procedure assume that the storage resource is configured using HAStoragePlus.

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

1. **Create a failover resource group to hold the logical hostname, the storage, and the Oracle Communications ASAP resources.**

   `# clresourcegroup create [-n` *nodelist*`]` *asap-app-rg*

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

   The *logicalhost–resource* is the host name where Oracle Communications ASAP will be listening.

   `# clreslogicalhostname create -g` *asap-app-rg* *logicalhost-resource*

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

   ---

3. **Create a highly-available local file system.**

   This example shows the highly-available local file system managed by the HAStoragePlus resource.

   `# clresource create -g` *asap-app-rg* `-t SUNW.HAStoragePlus \`
   `-p FilesystemMountPoints=`*asap-mount-points* *hasp-rs*

   For more information, see "How to Set Up the HAStoragePlus Resource Type for New Resources" in *Oracle Solaris Cluster 4.3 Data Services Planning and Administration Guide* .

4. **If you are using a `ScalMountpoint` resource to manage the ASAP application binaries installed on a NAS storage, type the following commands.**

   Create a scalable mount-point resource group.

   `# clresourcegroup create -p RG_mode=Scalable \`
   `-p Desired_primaries=2 \`
   `-p Maximum_primaries=2 scalmnt-rg`

Type the following command to register the resource type for the scalable mount-point resource.

```
# clresourcetype register SUNW.ScalMountPoint
```

Type the following command to add a scalable mount-point resource to scalmnt-rg.

```
# clresource create -g scalmnt-rg -t SUNW.ScalMountPoint \
-p TargetFileSystem=asap4nas:/export/home/asap \
-p FileSystemType=nas \
-p MountPointDir=/global/asap scalmnt-resource
```

Bring the resource group online.

```
# clresourcegroup online -emM scalmnt-rg
```

Set the resource group affinities.

```
# clrg set -p rg_affinities=++scalmnt-rg asap-app-rg
```

For more information, see "How to Configure a Scalable Application Using the ScalMountPoint Resource" in *Oracle Solaris Cluster 4.3 Data Services Planning and Administration Guide* .

5. Bring the resource group online.

```
# clresourcegroup online -emM asap-app-rg
```

▼ How to Prepare the Nodes for Deploying ASAP on Several UNIX Machines

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

1. Create a failover resource group to hold the logical hostname, the HAStoragePlus resource, and the Oracle ASAP Slave Control server resource.

```
# clresourcegroup create [-n nodelist] asap-slave-rg
```

2. Add the logical host name resource.
The *slave-logicalhost-rs* is the host name where Oracle Communications ASAP Slave Control Server will be listening.

```
# clreslogicalhostname create -g asap-slave-rg slave-logicalhostname-rs
```

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

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

   ```
   # clresource create -g asap-slave-rg -t SUNW.HAStoragePlus \
   -p FilesystemMountPoints=asap-slave-server-mount-points  slave-hasp-rs
   ```

   For more information, see "How to Set Up the HAStoragePlus Resource Type for New Resources" in *Oracle Solaris Cluster 4.3 Data Services Planning and Administration Guide* .

4. **If you are using a `ScalMountpoint` resource to manage the ASAP application binaries installed on a NAS storage, type the following commands.**

   Create a scalable mount-point resource group.

   ```
   # clresourcegroup create -p RG_mode=Scalable \
   -p Desired_primaries=2 \
   -p Maximum_primaries=2 scalmnt-rg
   ```

   Type the following command to register the resource type for the scalable mount-point resource.

   ```
   # clresourcetype register SUNW.ScalMountPoint
   ```

   Type the following command to add a scalable mount-point resource to scalmnt-rg.

   ```
   # clresource create -g scalmnt-rg -t SUNW.ScalMountPoint \
   -p TargetFileSystem=asap4nas:/export/home/asap \
   -p FileSystemType=nas \
   -p MountPointDir=/global/asap scalmnt-resource
   ```

   Bring the resource group online.

   ```
   # clresourcegroup online -emM scalmnt-rg
   ```

   Set the resource group affinities.

   ```
   # clrg set -p rg_affinities=++scalmnt-rg asap-slave-rg
   ```

   For more information, see "How to Configure a Scalable Application Using the ScalMountPoint Resource" in *Oracle Solaris Cluster 4.3 Data Services Planning and Administration Guide* .

5. **Bring the resource group online.**

```
# clresourcegroup online -emM asap-slave-rg
```

Installing and Configuring the Oracle Communications ASAP Resource

This section contains the procedures to install and configure a Oracle Communications ASAP as a cluster resource.

▼ How to Install Oracle Communications ASAP Software

1. **On the cluster member where the Oracle Communications ASAP resource group is online, assume the `root` role.**

2. **Follow the instructions in the appropriate Oracle Communications ASAP documentation for your version of the product.**

   See the https://docs.oracle.com/cd/E18887_01/.

   Ensure that you observe the configuration requirements in "Configuration Requirements for Oracle Communications ASAP" on page 13.

   Note - When you use the Oracle Solaris Cluster HA for Oracle WebLogic Server, the "Host Name of Oracle WebLogic Server" field in the "Configure Oracle WebLogic Server for ASAP" window, should have the hostname or IP address of the HA Oracle WebLogic Server logical host resource.

   Note - The HA for Oracle Communications ASAP supports Oracle Solaris Cluster HA for Oracle WebLogic Server in the failover configuration only.

Verifying the Oracle Communications ASAP Installation and Configuration

This section contains the procedure to verify the Oracle Communications ASAP installation and configuration.

▼ How to Verify the Oracle Communications ASAP Installation and Configuration for Failover Services

Use this procedure to verify the Oracle Communications ASAP installation and configuration. This procedure does not verify that your application is highly available because you have not yet installed the data service.

Note - Use the following steps for the failover configuration that is described in "Standard Data Service Configurations" in *Oracle Solaris Cluster Data Service for Oracle WebLogic Server Guide* . If you are planning a different configuration, you must configure the Oracle Communications ASAP accordingly.

---

1. Ensure that all the logical hostname resources are online.

2. Ensure that weblogic server resources and database resources are online.

3. Assume the `root` role and log into the node that currently hosts the Oracle Communications ASAP resource group and start the Oracle Communications ASAP.

If you are configuring the HA for Oracle Communications ASAP deployed on single UNIX machine, the following command would start a single control server and the application processes managed by the Control Server. If you are configuring HA for Oracle Communications ASAP deployed across several UNIX machines, this command would start the Master Control Server, all the configured Slave Control Servers and the application processes managed by all the control servers.

```
# su - $Application_User -c ". $ASAP_HOME/Environment_Profile;$ASAP_HOME/scripts/
start_asap_sys  -d"
```

Application_User   Installation user of Oracle Communications ASAP

ASAP_HOME	Installation directory of Oracle Communications ASAP software
Environment_Profile	Default environment script that sets the environment for running ASAP servers.

4. **Verify the status of the Oracle Communications ASAP.**

```
# su - $Application_User -c ". $ASAP_HOME/Environment_Profile;$ASAP_HOME/scripts/status"
```

Application_User	Installation user of Oracle Communications ASAP
ASAP_HOME	Installation directory of Oracle Communications ASAP software
Environment_Profile	Default environment script that sets the environment for running ASAP servers

Verify that all the server processes you wanted to start appear in the output. For instructions about verifying Oracle Communications ASAP installation, see Oracle Communications ASAP Installation Guide.

5. **Stop the Oracle Communications ASAP.**

```
# su - $Application_User -c ". $ASAP_HOME/Environment_Profile;$ASAP_HOME/scripts/
stop_asap_sys  -d"
```

If you have deployed ASAP on a single UNIX machine, this command stops the Control Server and the application processes managed by the control server. If you have deployed ASAP over several UNIX machines, this command stops the Master Control Server and all the configured Slave Control Servers and the application processes managed by all the control servers.

6. **Switch the Oracle Communications ASAP resource group to another cluster member.**

- Use the following command if you have deployed ASAP on a single unix machine:

  ```
  # clresourcegroup switch -n node asap-app-rg
  ```
- Use the following command if you have deployed ASAP on several unix machines:

  Switch the Master Control resource group to another node:

  ```
  # clresourcegroup switch -n node asap-app-rg
  ```

  Switch all the Slave Control Servers resource groups to another node:

  ```
  # clresourcegroup switch -n node asap-slave-rg
  ```

This example displays the commands used for a single Slave Control Server resource group.

7. Repeat all steps until you have tested all the potential nodes where the Oracle Communications ASAP can run.

If the clients can successfully connect to the Oracle Communications ASAP on each of the potential master nodes, you have successfully configured theOracle Communications ASAP to work with the HA for Oracle Communications ASAP.

8. Stop the Oracle Communications ASAP and proceed to "How to Install the HA for Oracle Communications ASAP Package" on page 28.

Installing the HA for Oracle Communications ASAP Package

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

▼ How to Install the HA for Oracle Communications ASAP Package

Perform this procedure on each cluster node where you want the HA for Oracle Communications ASAP software to run.

1. On the cluster node where you are installing the data service package, assume the `root` role.

2. Ensure that the data service package is available from the configured publisher and that the `solaris` and `ha-cluster` publishers are valid.

```
# pkg list -a ha-cluster/data-service/oracle-asap
# 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 HA for Oracle Communications ASAP software package.

```
# pkg install ha-cluster/data-service/oracle-asap
```

4.   Verify that the package installed successfully.

```
# pkg info ha-cluster/data-service/oracle-asap
```

Installation is successful if output shows that State is Installed.

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

For instructions on updating your software, see Chapter 11, "Updating Your Software," in *Oracle Solaris Cluster 4.3 System Administration Guide* .

Registering and Configuring the Oracle Communications ASAP

This section contains the procedures to configure or unconfigure the Oracle Communications ASAP.

- "How to Register and Configure Oracle Communications ASAP for Failover" on page 30
- "How to Remove a Oracle Communications ASAP Resource From a Failover Resource Group" on page 31

▼ How to Register and Configure Oracle Communications ASAP for Failover

Use this procedure to configure Oracle Solaris Cluster HA for Oracle Communications ASAP as a failover data service. The following steps assume that you have configured the Oracle Communications ASAP as described in "Installing and Configuring the Oracle Communications ASAP Resource" on page 25.

Before You Begin Install the data service package during your initial Oracle Solaris Cluster installation. If you did not install the Oracle Communications ASAP package as part of your initial Oracle Solaris installation, go to "How to Install the HA for Oracle Communications ASAP Package" on page 28.

1. **On the cluster node that hosts the Oracle Communications ASAP, assume the `root` role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorizations.**

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

   ```
   # clresourcetype register ORCL.asap
   ```

3. **Create a Oracle Communications ASAP resource in the failover resource group.**

   If you are configuring HA for Oracle Communications ASAP deployed on a single unix server, use the following command:

   ```
   # clresource create -g asap-app-rg -d \
   -t ORCL.asap \
   -p ASAP_HOME=asap-home-directory \
   -p Control_Server_Type=MASTER \
   -p Master_Control=asap-master-control-server-name \
   -p resource_dependencies=logicalhost-resource,weblogic-rs,db-rs \
   -p resource_dependencies_offline_restart=hasp-rs asap-app-rs
   ```

ASAP_HOME	Location of ASAP installation
Control_Server_Type	Type of control server
Master_Control	Name of the Master Control Server

   If you are configuring HA for Oracle Communications ASAP deployed over several unix machines, use the following command:

   ```
   # clresource create -g asap-slave-rg -d \
   ```

```
-t ORCL.asap \
-p ASAP_HOME=asap-slave-home-directory \
-p Control_Server_Type=SLAVE \
-p Master_Control=asap-master-control-server-name \
-p Slave_Control=asap-slave-control-server-name \
-p resource_dependencies=slave-logicalhost-resource,weblogic-rs,db-rs \
-p resource_dependencies_offline_restart=slave-hasp-rs,asap-app-rs asap-slave-rs
```

where `Slave_Control` is the name of the Slave Control Server name. For more information about extension properties, see Appendix A, "Oracle HA for Oracle Communications ASAP Extension Properties".

The ASAP resource with `Control_Server_Type=SLAVE` should have an offline_restart dependency on the ASAP resource with `Control_Server_Type=MASTER`. If you are using the `scalMountPoint` storage resource, you must set the offline-restrat dependency on the *scalmnt-rs* resource.

4.   Enable the Oracle Communications ASAP resource.

```
# clresource status
# clresource enable asap-app-rs
# clresource enable asap-slave-rs
```

▼ How to Remove a Oracle Communications ASAP Resource From a Failover Resource Group

1.   On the cluster node that hosts Oracle Communications ASAP resource, assume the `root` role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorizations.

2.   Disable and remove the resource that is used by the Oracle Communications ASAP data service.

```
# clresource disable asap-app-rs
# clresource delete asap-app-rs
# clresource disable asap-slave-rs
# clresource delete asap-slave-rs
```

Verifying the HA for Oracle Communications ASAP Installation and Configuration

This section contains the procedure to verify that you installed and configured the Oracle Communications ASAP resources correctly.

▼ How to Verify the Oracle Communications ASAP Installation and Configuration in a Failover Configuration

Use this procedure to verify that you installed and configured the Oracle Communications ASAP correctly.

1. **On the cluster node that hosts the resource group that contains the Oracle Communications ASAP resource, assume the `root` role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorizations.**

2. **Switch the Oracle Communications ASAP resource group to another cluster member.**

   `# clresourcegroup switch -n node2` *asap-app-rg*

   The Oracle Communications ASAP resource must go offline on `node1` and go online on `node2`. Ensure that the Oracle ASAP processes on `node1` are stopped.

3. **Verify the status of the Oracle Communications ASAP.**

   `# su - $Application_User -c ". $ASAP_HOME/Environment_Profile;$ASAP_HOME/scripts/status"`

Application_User	Installation user of Oracle Communications ASAP
ASAP_HOME	Installation directory of Oracle Communications ASAP software
Environment_Profile	Default environment script that sets the environment for running ASAP servers.

   Verify if a work order is getting executed by using the following steps. The following steps assume POTS Demonstration Service Activation Model is installed. If POTS is not installed, see Oracle Communications ASAP Installation Guide.

a. **Check the count of POTS-2 work order with 104 status by logging in to SARM database.**

```
# su - $Application_User -c ". $ASAP_HOME/Environment_Profile;sqlplus \$SARM_USER/
\`GetPassword \$SARM_USER 2\`"
```

At the SQL prompt, type the following query:

```
select count(*) from tbl_wrk_ord where wo_id like '%POTS-2%'and wo_stat = '104';
```

This command connects to the SARM database and checks if there are any POTS-2 work orders with 104 status. 104 is the expected result for a successful completion.

b. **Execute the `run_suite` command by logging as ASAP Installation user.**

```
# su - $Application_User -c "cd $ASAP_HOME; . ./Environment_Profile; run_suite \
$SRP \`GetPassword \$CTRL_USER 2\` POTS-2"
```

c. **Check the count of the number of POTS-2 work orders with 104 status.**

```
# su - $Application_User -c ". $ASAP_HOME/Environment_Profile;sqlplus \$SARM_USER/
\`GetPassword \$SARM_USER 2\`"
```

This command connects to the SARM database and checks if POTS-2 work order is executed.104 is the expected result for a successful execution.

4. **Verify the status of the Oracle Communications ASAP resource.**

```
# clresource status asap-app-rs
```

5. **Repeat all steps until you have tested all the potential nodes where the Oracle Communications ASAP can run.**

After the Oracle Communications ASAP servers are in production under Oracle Solaris Cluster control, do not start or stop the servers manually. If you do need to perform maintenance on the ASAP control servers, you must first disable their associated resources.

If you need to perform maintenance on the ASAP servers other than control servers, use the property Unmonitored_Process_list that disables Oracle Solaris Cluster monitoring on the selected servers. For information on the Unmonitored_Process_list property, see Appendix A, "Oracle HA for Oracle Communications ASAP Extension Properties"

6. **Repeat all steps for all the Slave Control Server resources configured until you have tested all the potential nodes where the Oracle Communications ASAP can run.**

Tuning the Oracle Communications ASAP Fault Monitors

This section describes the Oracle Communications ASAP fault monitor's probing algorithm or functionality, and states the conditions, messages, and recovery actions associated with unsuccessful probing:

- "Resource Properties" on page 34
- "Probing Algorithm and Functionality" on page 34
- "Operation of the Oracle Communications ASAP Probe" on page 34

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

Resource Properties

The HA for Oracle Communications ASAP fault monitor uses the resource properties that are specified in the resource type `ORCL.asap`. See the `r_properties(5)` man page for a list of general resource properties used. See Appendix A, "Oracle HA for Oracle Communications ASAP Extension Properties" for a list of resource properties for this resource type.

Probing Algorithm and Functionality

The Oracle Communications ASAP 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 detailed probe on the application (`DETAILED_PROBING`).

Operation of the Oracle Communications ASAP Probe

The following list explains how the Oracle Communications ASAP probe operates:

- The `sqlplus` command is used to query the database for the list of configured processes. The `status` utility provides information about all the running ASAP application process. The HA ASAP agent compares the output of the `sqlplus` command with the output of the `status` command. If the Control Server process is not started, probe returns `100`. If all the processes configured in the database are started, the probe returns `0`. If the probe detects that any of the processes are not available, the status message for the resource is set to *proc_name* `terminated`.

- The probe returns `0` if the DB connection fails and the service is then put in to `DEGRADED` status. When the DB comes back up, the monitor program identifies the DB connectivity and changes the resource status to `ONLINE`.

- If an application process managed by the Control Server terminates abnormally, the Control Server would try to restart the terminated process. The Control Server uses RESTART_ATTEMPTS and RESTART_DELAY attributes configured in the ASAP.cfg file to restart the terminated process. If the Control Server fails to restart within the time calculated using RESTART_ATTEMPTS and RESTART_DELAY, it might require a restart of complete ASAP system based on the criticality of the process.

  If the `CRITICAL_PROCESS_LIST` property is set, it means the process listed is critical to the running of ASAP system. If the process in the list terminates abnormally and if the Control Server fails to restart the process, the highly available ASAP agent would restart the resource.

  The agent probe returns `100` if Control Server is terminated and the highly available ASAP resource will either get restarted on the same node or failed over to the next available node.

- If the `UNMONITORED_PROCESS_LIST` property is set, the agent will not report a status message when the selected process is stopped. The probe method periodically logs a message that the selected process is unmonitored. You can perform maintenance operations without being restarted by the Oracle Communications ASAP agent if the process is intentionally stopped. The agent will not report a status message when the selected process is stopped. You must make sure that the process is enabled for monitoring after performing maintenance by removing the process name from the property.

- If the `DETAILED_PROBING` is set to true, the agent probe executes the `run_suite` command followed by an SQL query to the ASAP SARM database to get the status of the work order.

Debugging the Oracle Communications ASAP

The Oracle Communications ASAP has an extension property named `debug_level`. This extension property enables you to activate and deactivate debugging for Oracle Communications ASAP resources.

This property indicates the level to which debug messages for the `ORCL.asap` resources are logged. When the debug level is increased, more debug messages are written to the terminal, the console, and the system log `/var/adm/messages` as follows:

`0`	No debug messages
`1`	Function Begin and End messages
`2`	All debug messages and function Begin and End messages
`3`	Prints all debug messages to the debug log file `/var/cluster/logs/DS/ORCL.asap/message_log_$resource_name`
	where *resource_name* is the name of the ASAP resource

Perform the following steps to ensure that messages appear in the system log:

1. Edit the `/etc/syslog.conf` file and ensure that the debug level is set.

    `*.err;kern.debug;daemon.debug;mail.crit /var/adm/messages`

2. Disable the system log.

    `# svcadm disable system-log`

3. Enable the system log.

    `# svcadm enable system-log`

4. To activate debugging, set the property `debug_level` to level 2.

    `# clresource set -p debug_level=2` *asap-app-rs*

▼ How to Deactivate Debugging for Oracle Communications ASAP

1. Edit the `/etc/syslog.conf` file on the appropriate node to change `daemon.debug` to `daemon.notice`.

2. Determine if debugging for the Oracle Communications ASAP is not active.

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

3. Restart the `syslogd` daemon.

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

4. **Set the property `debug_level` to level 0.**

```
# clresource set -p debug_level=0 asap-app-rs
```

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Oracle HA for Oracle Communications ASAP Extension Properties

Extension properties for the Oracle HA for Oracle Communications ASAP resource type are described below.

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

`ORCL.asap` Extension Properties

The `ORCL.asap` resource type represents the Oracle Communications ASAP in an Oracle Solaris Cluster configuration. The extension properties of this resource type are as follows:

Debug_Level

This property controls the debug level for the control script and its functions.

Data Type: Integer

Range: 0 – 3

Default: 0

Tunable: Anytime

Application_User

Specifies the username that is used to start the application. If this value is not set, the HA for Oracle Communications ASAP agent sets the ASAP installation user as the value of this property.

Data Type: String

Default: None

Tunable: When disabled

ASAP_HOME

Specifies the directory into which the ASAP software is installed.

Data Type: String

Default: None

Tunable: When disabled

Control_Server_Type

Defines the type of the Control Server: MASTER/SLAVE. When deploying ASAP across several UNIX machines, you must set the value of this property to SLAVE while creating a Slave Control Server resource.

Data Type: String

Default: None

Tunable: When disabled

Master_Control

Specifies the name of the Master Control Server.

Data Type: String

Default: None

Tunable: When disabled

Slave_Control

Specifies the name of the Slave Control Server.

Data Type: String

Default: None

Tunable: When disabled

CRITICAL_PROCESS_LIST

A comma-separated list of critical processes to be monitored for taking recovery action. If the process in the list terminates abnormally and if the Control Server fails to restart the process, the highly available ASAP agent would restart the resource.

Data Type: String array

Default: None

Tunable: Anytime

UNMONITORED_PROCESS_LIST

A comma-separated list of processes selected to be not monitored by the HA ASAP agent for performing maintenance. The agent will not report a status message when the selected

process is stopped. You must make sure that the process is enabled for monitoring after performing maintenance by removing the process name from the property.

Data Type: String array

Default: None

Tunable: Anytime

ENV_PROFILE

Specifies the absolute path to the Oracle Communications ASAP environment file. This file is typically installed in $ASAP_HOME when Oracle Communications ASAP is installed. If the value for this property is not set, the Oracle Communications ASAP agent uses the default file Environment_Profile installed under the $ASAP_HOME directory.

Data Type: String

Default: ""

Tunable: Anytime

Detailed_probing

This property controls whether detailed probing on the application is performed. If this property is set to True, the agent probe executes the run_suite command followed by checking the status of the work order using an SQL query. It uses POTS Demonstration Service Activation Model and SRP emulator. The administrator should make sure that POTS Demonstration Service Activation Model is installed and SRP emulator is running while using this property.

Data Type: Boolean

Default: False

Tunable: Anytime

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