

# PRIMECLUSTER Wizard for Oracle 4.1

## Configuration and Administration Guide

Oracle Solaris

J2S1-7440-04ENZ0(01)  
September 2013

# Preface

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## Purpose

The purpose of the document is to outline functions of PRIMECLUSTER Wizard for Oracle. Further, it describes the procedures from installation to operation management.

## Readers

This document is intended for system engineers and system administrators who design, configure, and manage PRIMECLUSTER systems. The reader should have expertise in the PRIMECLUSTER and Oracle system.

## Outline

The document consists of the following six chapters and two appendices:

- Chapter 1 Feature
- Chapter 2 Environment setup
- Chapter 3 Operation
- Chapter 4 Command
- Chapter 5 Notice
- Chapter 6 Message
- Appendix A Setup Method with CUI
- Appendix B Using PRIMECLUSTER Wizard for Oracle in Oracle Solaris Zones Environments

## Notational convention

The document conforms to the following notational conventions:



.....  
Describes points where a user should take notice.  
.....



.....  
Describes information a user can refer to.  
.....



.....  
Describes settings using an example.  
.....



.....  
Provides the names of manuals to be referenced.  
.....

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## Editing Record

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Additions and changes	Section	Edition
Added the description of using Oracle Solaris Legacy Containers(OSLC)	1.2 Operating Environment Appendix B Using PRIMECLUSTER Wizard for Oracle in Oracle Solaris Zones Environments	1.1
Added notes on clgetoralog command.	4.5 clgetoralog - Oracle Troubleshooting Information Collection	
Added the Notice of PRIMECLUSTER Wizard for Oracle.	Chapter 5 Notice	

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# Chapter 1 Feature

## 1.1 Feature outline

PRIMECLUSTER Wizard for Oracle is a software product that facilitates cluster operation management for Oracle operating on a PRIMECLUSTER system.

This is required for scalable operation and standby operation of cold standby Oracle instances. The scalable operation requires Oracle Real Application Clusters (Oracle9i RAC or Oracle RAC 10g). The standby operation requires Oracle cold standby instances.

### Module structure

The modules for operating Oracle on PRIMECLUSTER are as follows:

Environment setup Wizard	Environment setup tool to enable Oracle operation on PRIMECLUSTER
Detector	Module to monitor Oracle
Scripts	Control Oracle startup and stop
Setup/operation command	Commands used to set up and operate

### Environment setup

The environment setup tool provides “ORACLE” Wizard that creates userApplication in the PRIMECLUSTER RMS configuration.

### Monitoring

A detector monitors Oracle instances and Oracle listeners.

The detector connects to Oracle as SYSTEM user to monitor the Oracle instance. Then, it periodically creates, updates, and deletes a table, which is created in the SYSTEM user’s default tablespace by executing the SQL command. This enables the detector to monitor logical failures as well as the processes state of the Oracle instance. When the Oracle instance hangs, and if the SQL command is not returned within a specified time, the detector times out to notify a user of the failure.

The two types of monitoring the Oracle listener are process detection and the “tnsping” command.

In operation with Oracle RAC 10g, a detector monitors Oracle services. Oracle instances and Oracle listeners are also monitored, but the recoveries of them are managed by CRS (Cluster Ready Services).

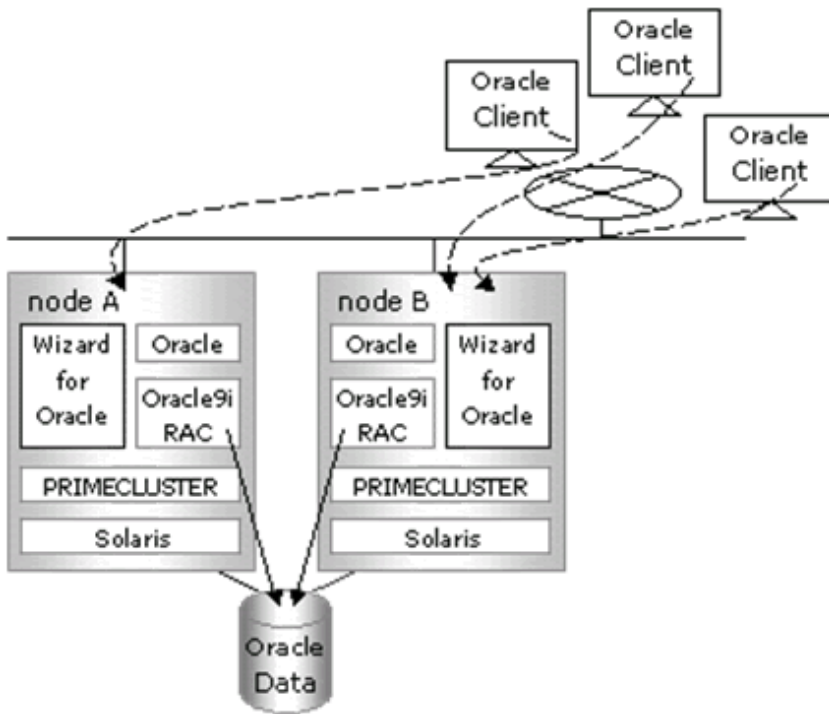
### Startup and stop control

Along with the state transition of a cluster system, scripts automatically start or stop Oracle instances or Oracle listeners. These scripts first check and then start up the Oracle instances. If damage occurs, the scripts automatically recover the Oracle instances. For example, if the Oracle instance fails during online backup, the scripts automatically execute “end backup” to start up the Oracle instance (When the AutoRecover is set to “Yes”.) When stopping the Oracle instance, the scripts stop it in the immediate mode (default). If this does not occur properly, the scripts will stop the instance in the abort mode. This means operating node switchover can be performed at high-speed.

In operation with Oracle RAC 10g, start and stop of Oracle services are managed.

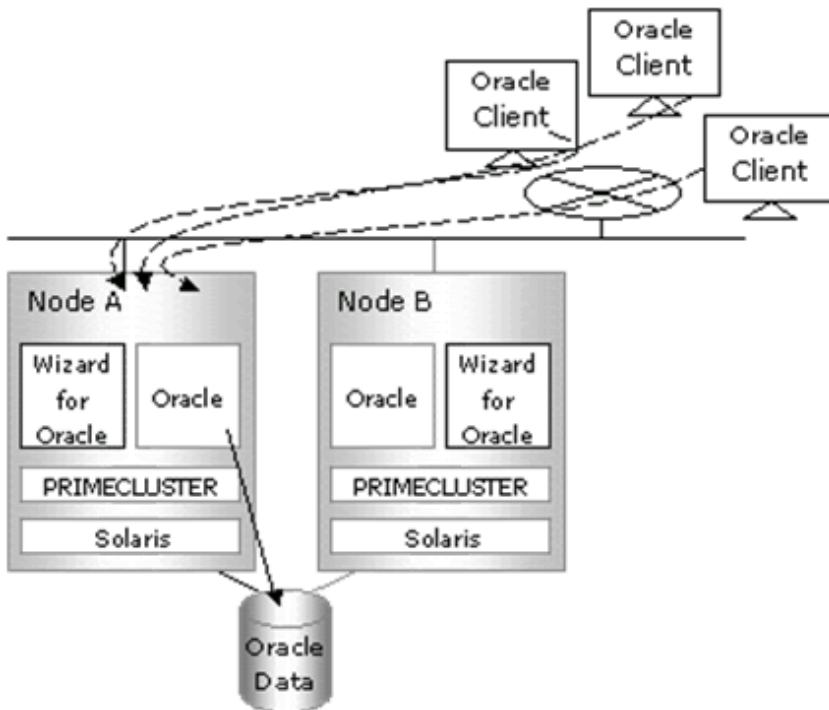
## 1.2 Operating Environment

### Scalable operation



In scalable operation with Oracle9i RAC or Oracle RAC 10g, Oracle is operated on all nodes. Regardless of which node a client is connected to, the client is able to use a database.

### Standby operation



In standby operation, a cluster system consists of an operating node and standby nodes. On the operating node, the resources such as Oracle applications, a logical IP address and shared disks are active. On the standby node, these resources are inactive. In the event of a failure, userApplication is switched to the standby node, and the resources on this standby node become activated. Then, the client can connect to the operating node using the logical IP address without changing any settings.

 Note

When using PRIMECLUSTER Wizard for Oracle in Oracle Solaris Zones environments, refer to "[Appendix B Using PRIMECLUSTER Wizard for Oracle in Oracle Solaris Zones Environments](#)".



# Chapter 2 Environment setup

## 2.1 Oracle Environment Setting

This section explains a general setup procedure of Oracle operating on a PRIMECLUSTER system.

### Scalable operation (Oracle9i RAC)

No	Procedure	
	One arbitrary node	Other nodes
1	Install and configure PRIMECLUSTER	Install and configure PRIMECLUSTER
2	Install PRIMECLUSTER Wizard for Oracle	Install PRIMECLUSTER Wizard for Oracle
3	Install and configure Oracle software	Install and configure Oracle software (*Installation automatically done)
4	Create userApplication	
5	Create and set up an Oracle database	
6		Set up an Oracle database
7	Create and set up Oracle resources	

Further details are given in the following section.

### Scalable operation (Oracle RAC 10g)

No	Procedure	
	One arbitrary node	Other nodes
1	Install and configure PRIMECLUSTER	Install and configure PRIMECLUSTER
2	Install PRIMECLUSTER Wizard for Oracle	Install PRIMECLUSTER Wizard for Oracle
3	Install and configure Oracle software	Install and configure Oracle software (*Installation automatically done)
4	Create and set up an Oracle database	
5	Create and set up Oracle resources	

Further details are given in "2.7 Oracle RAC 10g" section.

### Standby operation

No	Procedure	
	Operating node	Standby node
1	Install and configure PRIMECLUSTER	Install and configure PRIMECLUSTER
2	Install PRIMECLUSTER Wizard for Oracle	Install PRIMECLUSTER Wizard for Oracle
3	Install and configure Oracle software	Install and configure Oracle software
4	Create userApplication	
5	Create and set up an Oracle database	
6		Set up an Oracle database
7	Create and set up Oracle resources	

Further details are given in the following section.

## 2.2 PRIMECLUSTER Installation and Configuration

---

This section explains how to install and configure PRIMECLUSTER.

For scalable operation with Oracle RAC 10g, refer to "2.7 Oracle RAC 10g" section.

### Set up hardware

Set up hardware required for PRIMECLUSTER. The shared disk is also required to create an Oracle database.

### Install software

Install PRIMECLUSTER first, referring to the "PRIMECLUSTER Installation Guide".

Then, install Oracle Wizard following the instructions of the "PRIMECLUSTER Wizard for Oracle Installation Guide".

Scalable operation requires the PRIMECLUSTER Enterprise Edition.

Standby operation requires the PRIMECLUSTER Enterprise Edition or PRIMECLUSTER HA Server.

### Configure a cluster system

Configure a cluster system including network systems and shared disk units according to the PRIMECLUSTER manual.

## 2.3 Oracle Installation and Configuration

---

This section explains how to install and configure Oracle.

### Initial setup

- /etc/system

Set up values in the "/etc/system" file for Oracle in addition to the values for PRIMECLUSTER.

The kernel parameter values vary depending on the implemented Oracle versions.

Refer to the Oracle installation guide. The parameter values should be the same on all the nodes.



Before installing Oracle, it is necessary to change the "/etc/system" file and reboot the node.



The setup examples for Oracle9i are shown below:

```
set shmsys:shminfo_shmmax=4294967295
set shmsys:shminfo_shmmin=1
set shmsys:shminfo_shmmni=100
set shmsys:shminfo_shmseg=10
set semsys:seminfo_semmni=100
set semsys:seminfo_semmns=200
set semsys:seminfo_semmns=400
set semsys:seminfo_semopm=100
set semsys:seminfo_sevmx=32767
```

- /etc/services

Set up a port number for the Oracle listener.



```
listener 1521/tcp oracle
```

- Oracle User

Create DBA (database administrator) user to allow a user to install and operate Oracle. The user ID and the group ID should be the same on all the nodes.

 Example

```
# groupadd -g <group ID> dba
# useradd -u <user ID> -g dba -d /export/home/oracle -s /bin/sh -m oracle
# passwd oracle
```

Normally, the group name should be “dba”.

Set up an environment variable of Oracle user.

 Example

(.profile)

```
ORACLE_BASE=/opt/oracle; export ORACLE_BASE
ORACLE_HOME=/opt/oracle/product/8.1.7; export ORACLE_HOME
ORACLE_TERM=sun-cmd; export ORACLE_TERM
ORA_NLS33=$ORACLE_HOME/ocommon/nls/admin/data; export ORA_NLS33
LD_LIBRARY_PATH=$ORACLE_HOME/lib; export LD_LIBRARY_PATH
PATH=$ORACLE_HOME/bin:/usr/bin:/usr/ccs/bin:/usr/ucb; export PATH
```

When “/usr/ucb” is contained in PATH, it needs to be set up after ”/usr/ccs/bin”.

 Note

PRIMECLUSTER Wizard for Oracle controls Oracle as Oracle DBA user.

- Be sure to include "\$ORACLE\_HOME/bin" in the PATH environment variable of the DBA user.
- Check if root user access privileges can switch the user to the Oracle user, using the su(1M) command.

```
# su - <Oracle user>
```

- A command (e.g. script) that has interactive mode should not be described in Oracle user's profile. (e.g. /etc/profile, .bash\_profile, .cshrc, .profile) It may cause failure of resource monitoring or userApplication startup or shutdown.
- Environment that Oracle user's home directory and profile are located on the shared disk is not supported. Oracle user's home directory and profile must be located on the local disk of each node.

 See

For further details, refer to the Oracle manual.

## Installation

- Oracle

Install Oracle using Oracle user. Install a program on the local disk of each node. The database needs to be created on the shared disk when a cluster system is configured, not when Oracle is installed. The details will be described later in this document.

- Oracle9i RAC

Refer to the Oracle9i RAC manual.



For further details, refer to the Oracle manual.

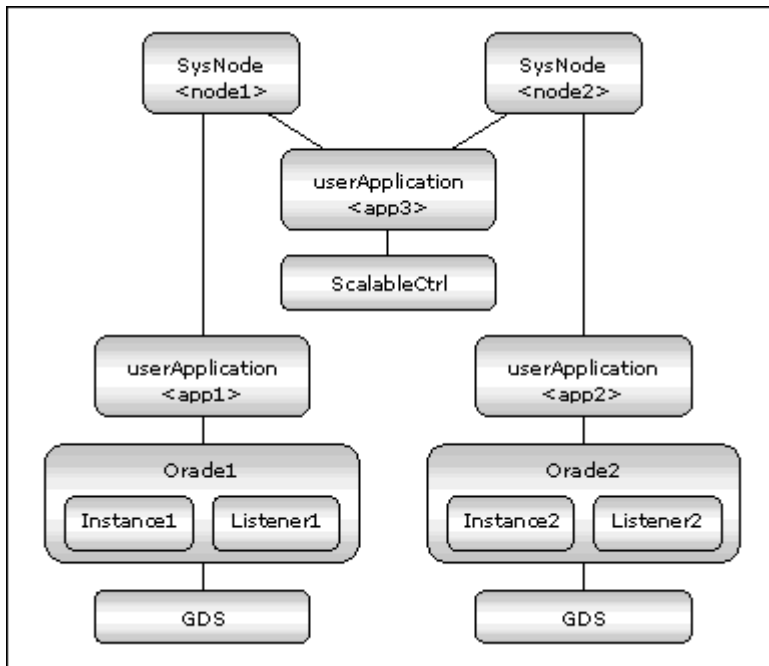
## 2.4 userApplication Creation

This section explains how to set up userApplication creation and Non-Oracle resource setup.

Set up Oracle resources after configuring a database.

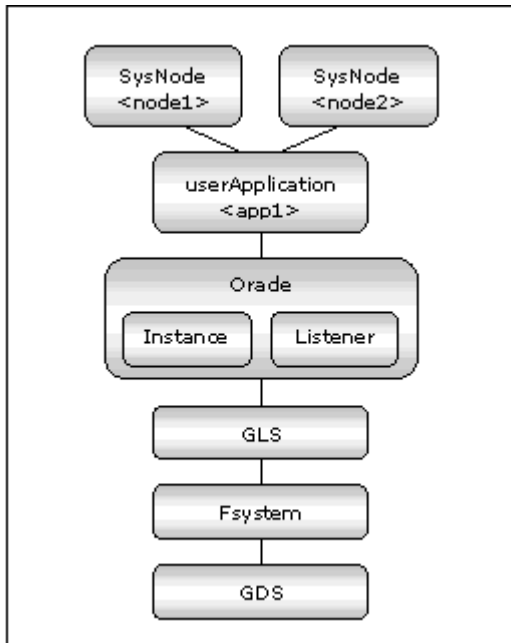
The resource tree (userApplication configuration) is described below:

- Scalable operation (Oracle9i RAC)



userApplication <app3> is management userApplication to start or stop the other userApplication <app1> and <app2>. It means that Oracle9i RAC on one or more nodes is controlled by management userApplication <app3>.

- Standby operation



The flow of userApplication creation is as follows:

1. Creation of userApplication NOT including Oracle resources (“2.4.1 Application-Create”)
2. Addition of Oracle resources to userApplication (“2.6 Oracle Resource Creation and Setting”)
3. Creation of userApplication including Controller resources (in case of scalable operation)

Set up userApplication using the userApplication Configuration Wizard. This userApplication Configuration Wizard follows the Wizard format in which you can select the item from the menu and click the “Next” button.



See

See “Chapter 6 Building Cluster Applications” of the “PRIMECLUSTER Installation and Administration Guide” for the userApplication Configuration Wizard setup.

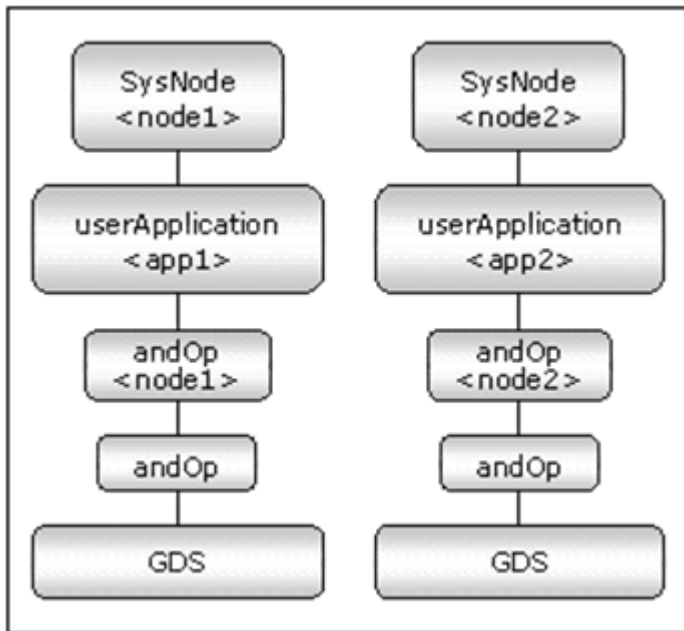
## 2.4.1 Application-Create

---

This section discusses the configuration of userApplication that does not include Oracle resources.

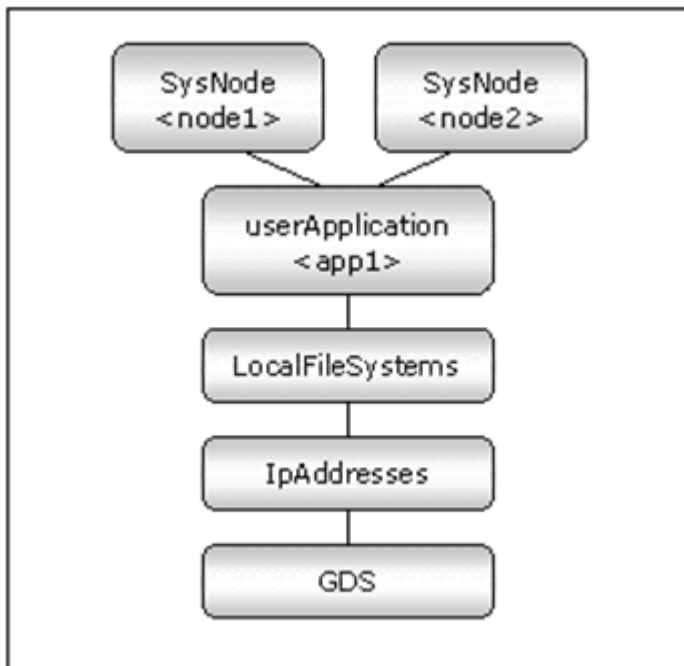
- Scalable operation (Oracle9i RAC)

In scalable operation, userApplication that excludes management userApplication and Oracle resources is configured.



- Standby operation

userApplication is configured as shown in the illustration.



### GDS setup

GDS should be set up as the “shared disk for concurrent access” for scalable operation and the “switching disk” for standby operation. We recommend that you prepare a disk class for Oracle system table space and the other Oracle resources respectively. For the MONITORONLY attribute, specify “NO” for the Oracle system table space and “YES” for the other Oracle resources.

### userApplication setup

Create userApplication using the userApplication Configuration Wizard. See “6.6 Setting Up Cluster Applications” of the “PRIMECLUSTER Installation and Administration Guide”. In scalable operation, userApplication should be created for each node. In standby operation, userApplication should be created for the operating node. The recommended values are as follows:

- Scalable operation (Oracle9i RAC)
  - Operation=Standby
  - AutoStartup=No
  - PersistentFault = 1
  - Additional resources =Gds resource
- Standby operation
  - Operation =Standby
  - AutoSwitchOver = HostFailure|ResourceFailure|ShutDown
  - PersistentFault = 1
  - HaltFlag=Yes
  - Additional resources = Gds resource, Fsystem resource, Network resource

## 2.4.2 userApplication check

---

Start up userApplication and check if it is normally running on all the nodes by executing the “hvcn” command.

- Shared disk - Check access to the shared disk on the operating node. Be sure to check if file creation by Oracle user is available.
- Logical IP address - Check access to the operating node.

## 2.5 Oracle Database Creation and Setting

---

- Allocate database
  - Create a database on the shared disk. The shared disk should be active.
  - Each file is allocated as follows:

Files	Locations	Note
Init.ora file	Local	Allocate on a local disk of each node
Server parameter file	Share	
Control files	Share	
Data files	Share	
Redo log files	Share	
Archive log files	Arbitrary	Allocate either on a local disk or a shared disk

- Create a database (Scalable operation with Oracle9i RAC)
  - Create a database on any one of the nodes. This database should be accessible from the other nodes.



Refer to the Oracle9i RAC manual.

- Create a database (Standby operation)
  - Operating node
    - Create a database on the operating node. On a standby node, it is only necessary to set the database management on shared disks.



Refer to the Oracle manual.

- Standby node
  - Set up directory generation, file copy, and links. The configuration should be the same as that of the operating node where the database is generated.

Under \$ORACLE\_HOME/dbs  
Under \$ORACLE\_BASE/admin/\$ORACLE\_SID

The access privilege to the directories and files must be also the same as those on the operating node.  
Set up an archive log file output directory on the standby node if it is set on the operating node.

### See

The required files on the operating node can be backed up in a tar format with the “cloracy” command. Refer to “4.4 cloracy - Oracle Environment Setup Tool for Standby Node”.

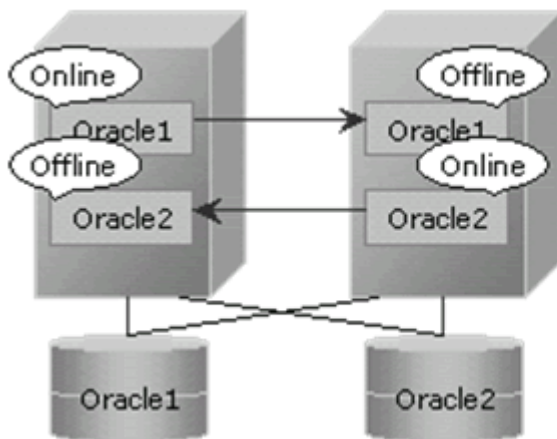
#### - Mutual standby / N:1 Standby operation

Create a database on the operating node.

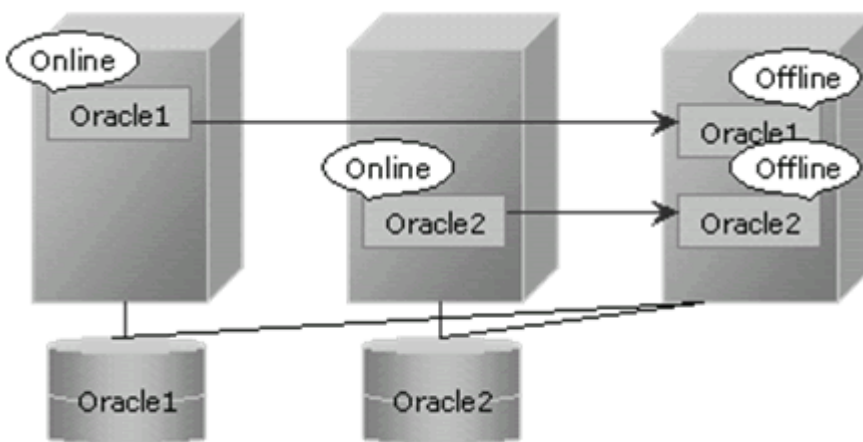
On the standby nodes, the database on the shared disk that is created on the operating node should be enabled. This is the same for the other operation methods.

### Example

Mutual standby



2:1 Standby



#### - Oracle9i

The initialized parameter LOCAL\_LISTENER must be compatible with the listener.ora and tnsnames.ora settings. If it is not, Oracle startup might fail.

Allocate a server parameter file on the shared disk when using the Oracle9i server parameter file. If this process is omitted or failed, the operating and standby nodes do not work properly.



## Example

You can set an initialized parameter file as follows:  
(\$ORACLE\_HOME/dbs/init<ORACLE\_SID>.ora

```
spfile = /mnt2/o9idb/parameter/spfile.ora
```

- Network setup  
Set up an Oracle network.

```
$ORACLE_HOME/network/admin/listener.ora, tnsnames.ora
```

- listener.ora  
Set up a logical IP address for a listener IP address to switch listeners.

## Example

```
LISTENER =  
  (DESCRIPTION =  
    (ADDRESS = (PROTOCOL = TCP)(HOST = <logical IP address>)(PORT = 1521))  
  )  
  
SID_LIST_LISTENER =  
  (SID_LIST =  
    (SID_DESC =  
      (GLOBAL_DBNAME = ora9i)  
      (ORACLE_HOME = /opt/oracle/product/9.0.1)  
      (SID_NAME = ora9i)  
    )  
  )  
)
```

## Note

- Operating system authentication (OS authentication) of Listener must be enabled.  
OS authentication is enabled in default. If the following parameter is defined in listener.ora file, OS authentication is enabled.

```
LOCAL_OS_AUTHENTICATION_<LISTENER_NAME> = ON
```

- tnsnames.ora  
Set up the "tnsnames.ora" file to monitor listener operation by executing the "tnsping" command. Also, set up a network service name in the "tnsnames.ora" file and in the Oracle listener environment of Oracle Wizard. The ORACLE\_SID, a host (logical IP address) and a port number, which are all set in this file, should be the same as those of the listener of the "listener.ora" file.

## Example

```
Network service name =  
  (DESCRIPTION =  
    (ADDRESS = (PROTOCOL = TCP)(HOST = <logical IP address>)(PORT = 1521))  
    (CONNECT_DATA = (SID = ora9i))  
  )
```

- SYSTEM user password  
PRIMECLUSTER Wizard for Oracle accesses and monitors Oracle using the Oracle SYSTEM user's password. The password must be set in PRIMECLUSTER Wizard for Oracle. See "4.3 clorapass - Set Password for Monitoring".

- Check Oracle operation  
Check if Oracle is properly running by starting and stopping manually.

### Note

- The Oracle “TWO\_TASK” environment variable must not be changed.  
It is used to add a connect identifier to connect to Oracle then automatically connect to network. In PRIMECLUSTER Wizard for Oracle, network connection is not supported. Users are supposed to connect to Oracle in local connection (“ / as sysdba”). If network connection is required, specify “@connect identifier” instead of using the “TWO\_TASK” environment variable when connecting at the connecting.
- The processes other than definition of system environment variables must not be added to login.sql of Oracle DBA users.  
SQL can be described in the SQL\*Plus profile login.sql. However, it might automatically be executed and affect ongoing operations because Oracle is controlled through SQL\*Plus in PRIMECLUSTER Wizard for Oracle.  
It is available to setup the system environment variables to login.sql by SET command.

## 2.6 Oracle Resource Creation and Setting

This section explains how to register an Oracle-related resource in userApplication.

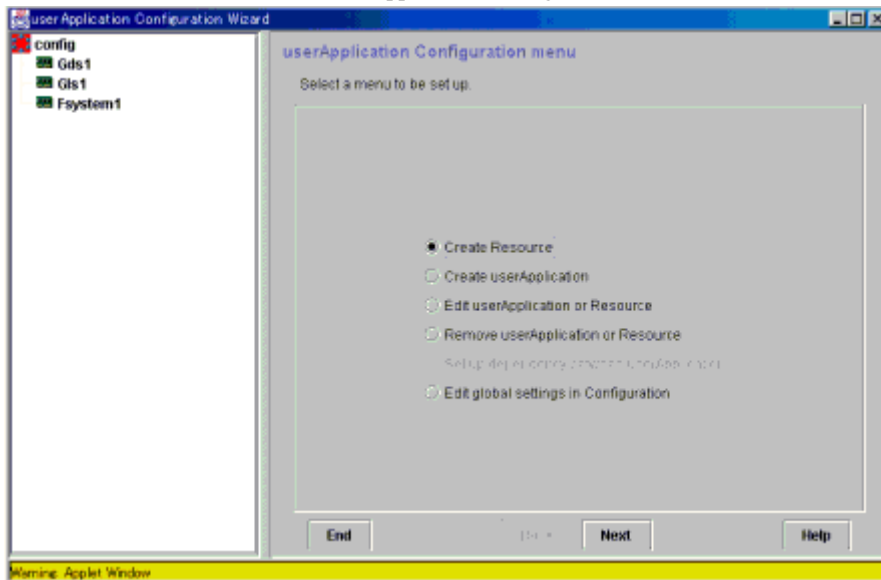
### Note

Check if Oracle is properly running by starting and stopping manually before starting Oracle Resource Creation and Setting.  
Before starting this procedure, Oracle instances, Oracle listeners and RMS on all the cluster nodes should stop.

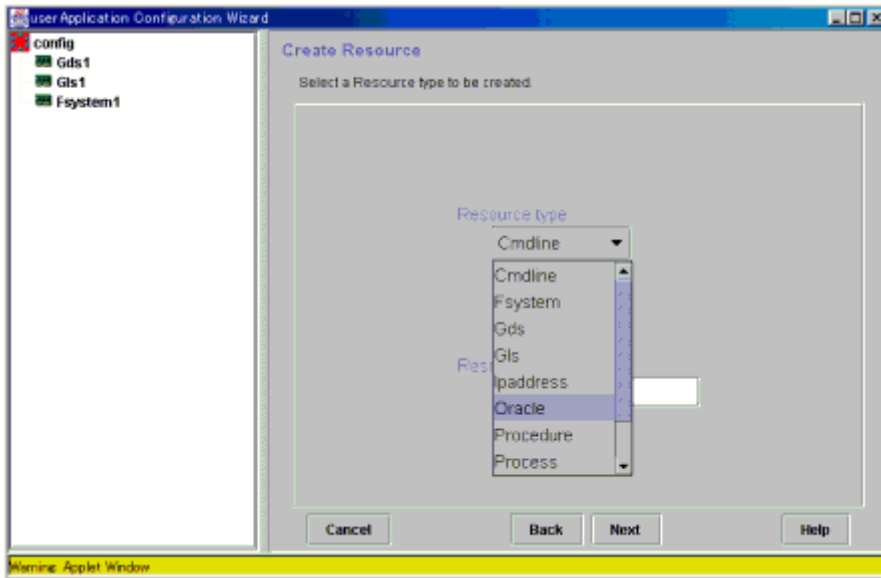
### 2.6.1 Create Oracle resource

This section explains how to create Oracle resources using the userApplication Configuration Wizard.

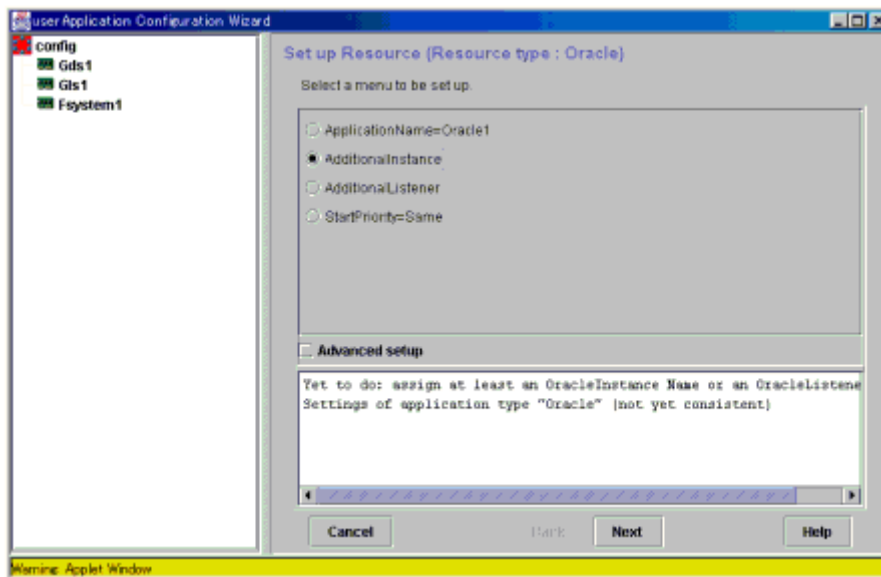
1. Select “Create Resource” in the “userApplication Configuration” menu.



2. Select "Oracle" in the "Resource Type" menu.



3. Add the Oracle instance and Oracle listener in the "Set up Resource" menu.



### ApplicationName (SubApplicationName)

Change the application name.

### Information

A resource name on RMS is based on the application name (SubApplicationName) entered in "ApplicationName" on this step.

- Oracle instance resource/ASM instance resource  
ORACLE\_<SubApplicationName>\_<OracleSID>
- Oracle listener resource  
LISTENER\_<SubApplicationName>\_<ListenerName>

These resource names have the following convention and rules.

- Characters per resource name must be less than 40 characters.
- "ORACLE\_" and "LISTENER\_" are fixed words.

**AdditionalInstance**

Add an Oracle instance resource.

**AdditionalListener**

Add an Oracle listener resource.

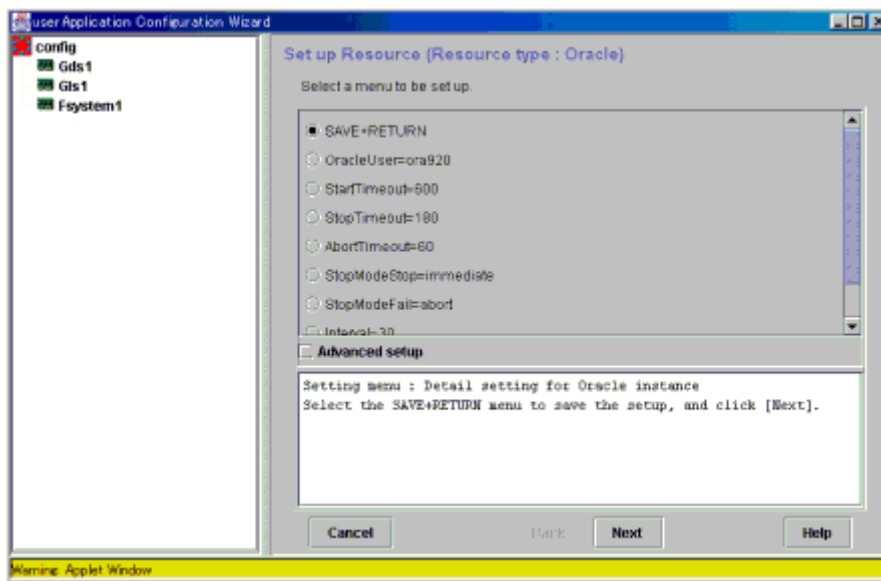
**StartPriority**

Set up a startup order of the Oracle instance and Oracle listener.

 **Example**

If you use the Oracle multi-threaded server (MTS), the Oracle listener must be started first.

4. Set up the Oracle instance as follows:

**OracleSID**

ORACLE\_SID

**OracleUser**

Oracle Installation user

**StartTimeout**

Timeout duration of Oracle startup.

Default: 600s (300s - 86400s)

**StopTimeout**

Timeout duration of Oracle stop.

Default: 180s (60s - 86400s)

**AbortTimeout**

Timeout duration of forced termination in the event of an Oracle stop error.

Default: 60s (60s - 86400s)

**StopModeStop**

Oracle stop mode in normal time.

Default: Immediate mode (abort, immediate, transactional)

**StopModeFail**

Oracle stop mode in the event of a failure.

Default: Abort mode (abort, immediate)

**Interval**

Monitoring interval of Oracle instance.

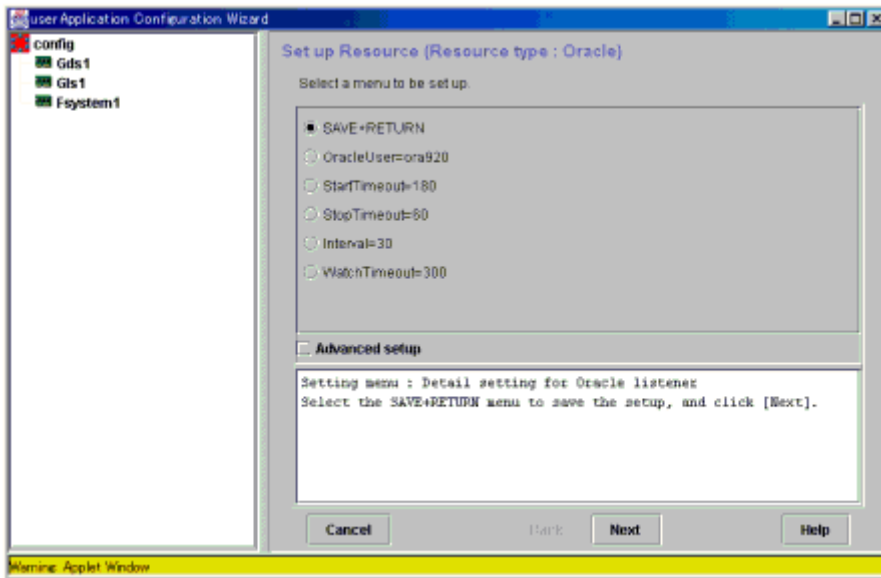
Default: 30s (5s - 86400s)

**WatchTimeout**

No response time during monitoring Oracle.

Default: 300s (30s - 3600s)

- 5. Set up the Oracle listener as follows:



**ListenerName**

Listener name

**OracleUser**

Oracle installation user

**StartTimeout**

Timeout duration of Oracle startup

Default: 180s (120s - 86400s)

**StopTimeout**

Timeout duration of Oracle stop

Default: 60s (60s - 86400s)

**Interval**

Monitoring interval of Oracle instance

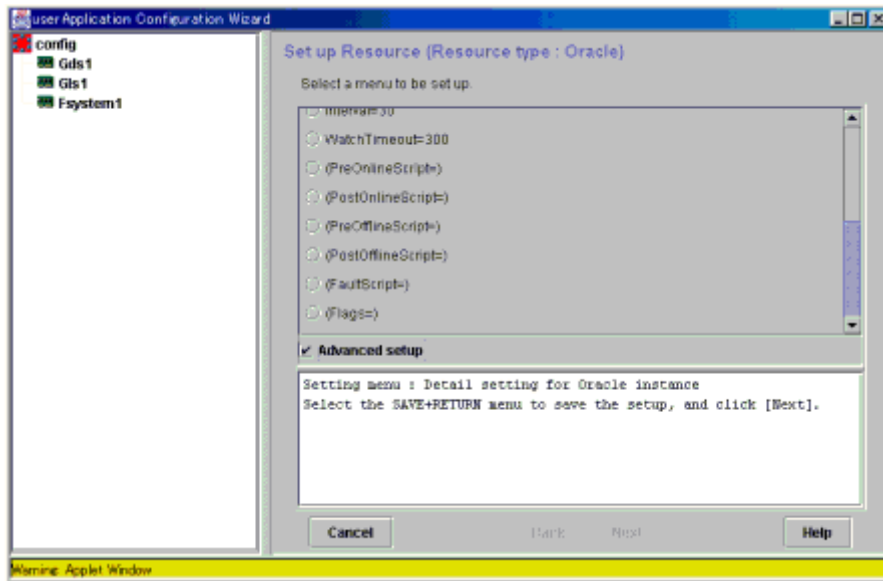
Default: 30s (5s - 86400s)

**WatchTimeout**

No response time during monitoring Oracle

Default: 300s (30s - 3600s)

## 6. Advanced setup



### **TNSName**

Network service name to monitor the Oracle listener

Note: The “insping” command is used to monitor the Oracle listener if TNSName is set. This TNSName is set in tnsnames.ora. When TNSName is omitted, the feature to monitor only the listener process is enabled (arbitrary).

### **PreOnlineScript**

Executed before Online processing  
No default

### **PostOnlineScript**

Executed after Online processing  
No default

### **PreOfflineScript**

Executed before Offline processing  
No default

### **PostOfflineScript**

Executed after Offline processing  
No default

### **FaultScript**

Executed when a fault occurs  
No default

### **Flags**

The following resource attributes can be set:

### **NULLDETECTOR**

Determines whether or not Detector monitors resources. The Detector does not monitor the resources if it is available (on).  
Oracle instance resource default value : off (on, off)  
Oracle listener resource default value : off (on, off)

### **AUTORECOVER**

Determines whether or not RMS attempts to restart resources before failover if a resource failure occurs. RMS attempts to restart the resources if it is available (on).  
Oracle instance resource default value : off (on, off)  
Oracle listener resource default value : on (on, off)

### **MONITORONLY**

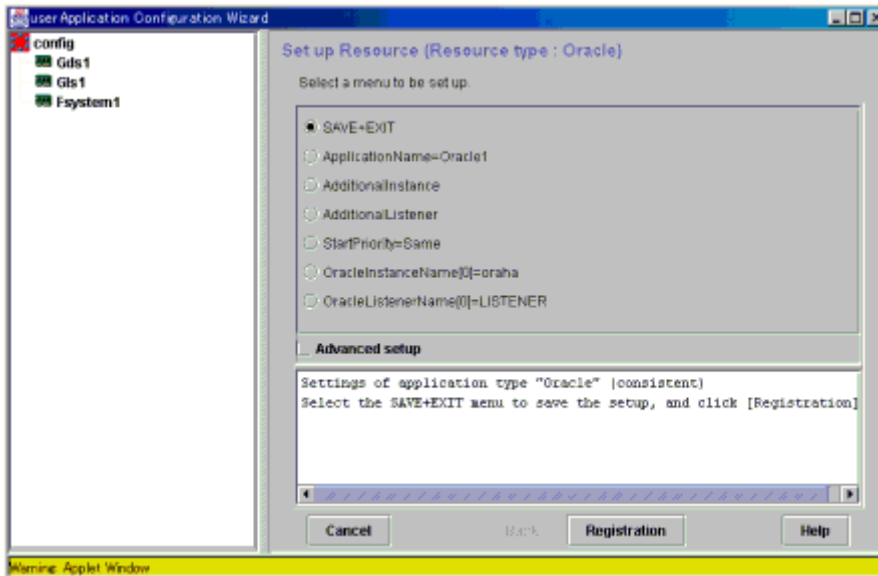
Determines whether or not failover of userApplication occurs by default. Failover does not occur if it is available (on).  
Oracle instance resource default value : off (on, off)  
Oracle listener resource default value : off (on, off)



See

For the above attributes, refer to "9 Appendix - Attributes" of the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".

7. Save the settings by selecting "SAVE+EXIT".



When using Oracle9i RAC, follow the setup procedure from 1 through 6 for each userApplication.



Note

For settings of "OracleSID" and "ListenerName" that have been already configured, the settings will be cleared if you select "NONE" and click the "NEXT" button.

HELP description is common to GUI and CUI, so a part of them includes a description about CUI.



See

After set up userApplication, the settings in this section can be confirmed with `clorainfo -c` command. See "4.7 clorainfo - display resource configuration information and monitoring status" for details.

## 2.6.2 Set up userApplication

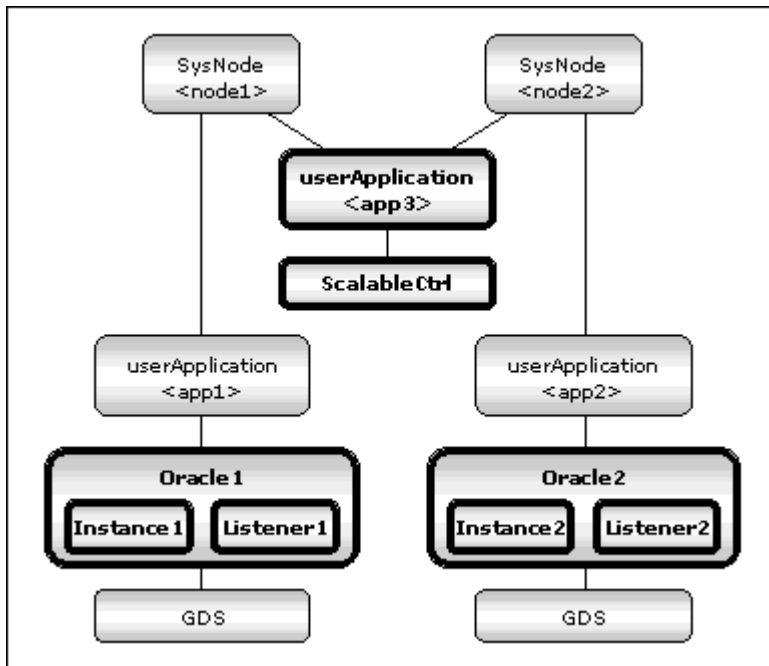
This section explains how to create userApplication and Oracle resources, referring to "8.1.1 Changing the Cluster Application Configuration" of the "PRIMECLUSTER Installation and Administration Guide".

In scalable operation, it is necessary to set up Scalable Cluster Application. For Scalable Cluster Application, refer to "6.6.2.2 Creating Scalable Cluster Applications" of the "PRIMECLUSTER Installation and Administration Guide".

The resource structure of userApplication is described below:

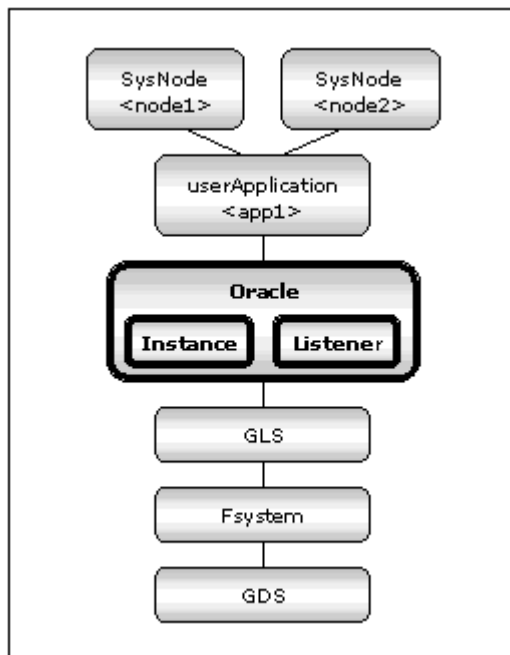
- Scalable operation (Oracle9i RAC)

In scalable operation, userApplication is configured as follows:



- Standby operation

In standby operation, userApplication is configured as follows:



## 2.6.3 Check userApplication

Start userApplication by executing the hvcm command then check if it is properly running on all the nodes.

- Check if you can access to the shared disk from the operating node. Also, check if a file can be created on the shared disk using Oracle user access privileges.
- Check if you can access the operating node from the client using the logical IP address.
- Check if you can access to Oracle running on the operating node from the client using the logical IP address.



## 2.7 Oracle RAC 10g

---

The Oracle RAC 10g has been improved; a new concept of Service Registration aims at increasing high availability. The service settings vary depending on PRIMECLUSTER userApplication resources.

### 2.7.1 PRIMECLUSTER Installation and Configuration

---

#### - Hardware configuration

Some hardware products need to be configured to operate PRIMECLUSTER. Shared disk devices are also required to create Oracle database files.

#### - Software installation

It is necessary to install PRIMECLUSTER Enterprise Edition by referring to the PRIMECLUSTER Enterprise Edition Installation/Administration Guide.

It is also necessary to install PRIMECLUSTER Wizard for Oracle by referring to the PRIMECLUSTER Wizard for Oracle Installation Guide.

#### - Cluster configuration

It is necessary to configure cluster systems by referring to the PRIMECLUSTER Installation/Administration Guide.



Oracle RAC 10g starts Cluster Ready Services(CRS) along with OS startup, then accesses a shared disk. For this reason, volumes on the shared disk must be active during CRS startup.

When operating an Oracle database on the RPRIMECLUSTER GDS volume, it is necessary to make the RPRIMECLUSTER GDS volume active during OS startup without registering it as a PRIMECLUSTER RMS resource.

If you operate an NAS as a shared disk, it is necessary to make the NFS mount point active during OS startup without registering it as a PRIMECLUSTER RMS resource.

The shared disk requires the following volumes:

- For the Oracle Cluster Registry
- For the Voting Disk
- For a database

### 2.7.2 Oracle Software Installation and Configuration

---

#### - Site Preparation

Set kernel parameters and user groups according to the Oracle manual and installation guide. It is necessary to set a logical IP address for RAC on each node.

When a DBA (Database Administrator) user that is used for installation, Oracle start, or stop is created, a user ID and group ID must be the same on all the nodes.

Be sure to set \$ORACLE\_HOME/bin and \$ORACLE\_CRG\_HOME/bin for the DBA user PATH.



The following shows a setting example.

```
PATH=/opt/oracle/product/10.1.0/bin:/opt/oracle/product/10.1.0/crs/bin; export PATH
```

#### - CRS installation

Install CRS by referring to the Oracle manual and installation guide.

- Oracle 10g installation

Install Oracle 10g with the RAC option by referring to the Oracle manual and installation guide.

### Note

PRIMECLUSTER Wizard for Oracle controls Oracle as the Oracle DBA user.

- Be sure to include \$ORACLE\_HOME/bin and \$ORACLE\_CRS\_HOME/bin in the PATH environment variable of the DBA user.
- A command (e.g. script) that has interactive mode should not be described in Oracle user's profile. (e.g. /etc/profile, .bash\_profile, .cshrc, .profile) It may cause failure of resource monitoring or userApplication startup or shutdown.
- Environment that Oracle user's home directory and profile are located on the shared disk is not supported. Oracle user's home directory and profile must be located on the local disk of each node.

- Database or service creating and settings

Create a database and Oracle services by referring to the Oracle manual and installation guide.

- Operation check

Check if Oracle instances, listeners, and services are properly operating. Also, check if the crs\_stat command can be executed using the DBA user.

### Example

The following shows an example how the results of the above operations are displayed.

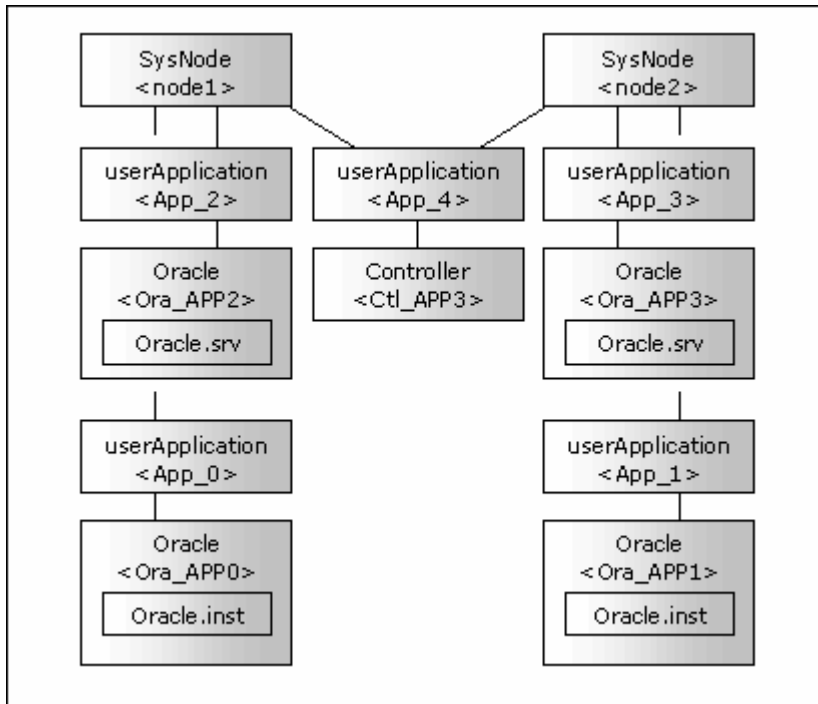
```
% crs_stat -t
```

Name	Type	Target	State	Host
ora....e1.lsnr	application	ONLINE	ONLINE	node1
ora.node1.gsd	application	ONLINE	ONLINE	node1
ora.node1.ons	application	ONLINE	ONLINE	node1
ora.node1.vip	application	ONLINE	ONLINE	node1
ora.ora10.db	application	ONLINE	ONLINE	node2
ora....01.inst	application	ONLINE	ONLINE	node1
ora....02.inst	application	ONLINE	ONLINE	node2
ora....pcl.cs	application	ONLINE	ONLINE	node2
ora....101.srv	application	ONLINE	ONLINE	node1
ora....102.srv	application	ONLINE	ONLINE	node2
ora....e1.lsnr	application	ONLINE	ONLINE	node2
ora.node2.gsd	application	ONLINE	ONLINE	node2
ora.node2.ons	application	ONLINE	ONLINE	node2
ora.node2.vip	application	ONLINE	ONLINE	node2

## 2.7.3 userApplication and Resource Configuration

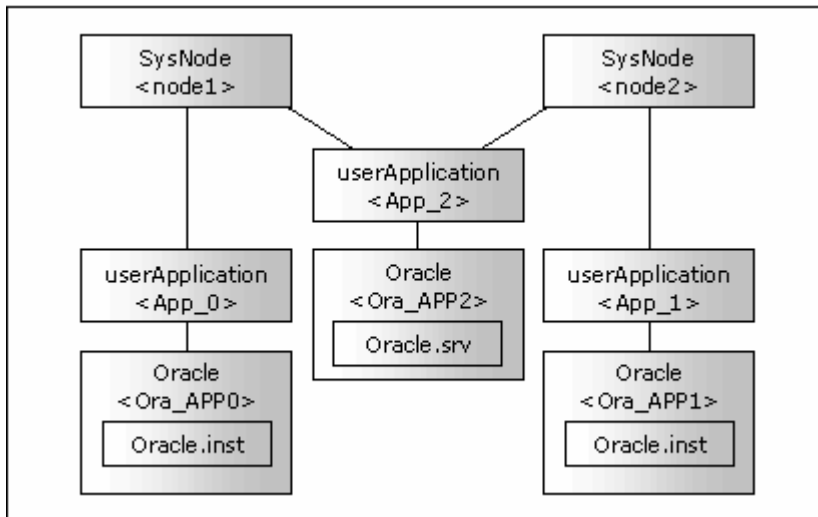
Oracle RAC 10g manages Oracle instances and services as PRIMECLUSTER RMS resources. Note that RMS does not manage listeners because CRS controls and monitors them. UserApplication settings vary depending on service configurations.

- When all instance attributes configuring the service are preferred (scalable operation)



userApplication<App\_0> and userApplication<App\_1> are userApplication that controls the Oracle instance.  
 userApplication<App\_2> and userApplication<App\_3> are userApplication that controls the Oracle service.  
 userApplication<App\_4> is userApplication that controls Oracle service startup and stop on multiple nodes.

- When available instance attributes are selected in the services (HA)



userApplication<App\_0> and userApplication<App\_1> are userApplication that controls the Oracle instance.  
 userApplication<App\_2> is userApplication that controls the Oracle service.

Before creating userApplication, it is necessary to register the following:

1. Register Oracle instance resources
2. Register Oracle service resources
3. Register the other required resources
4. Create userApplication

userApplication is configured with the RMS Configuration Wizard. This RMS Configuration Wizard forms Wizard format as follows:  
Menu à Settings à Next button



.....  
For setting the userApplication Configuration Wizard, see “Chapter 6 Cluster application configuration” of the “PRIMECLUSTER Installation/Administration Guide”.  
.....

## 2.7.4 Oracle Instance Resource Registration

This section describes how to register Oracle instance resources on each node using the userApplication Configuration Wizard. Before the registration, it is necessary to associate the Oracle instances with Oracle 10g services. Out of the Oracle 10g resources that are displayed with the crs\_stat command, it is necessary to register the ora.\*.inst resources.



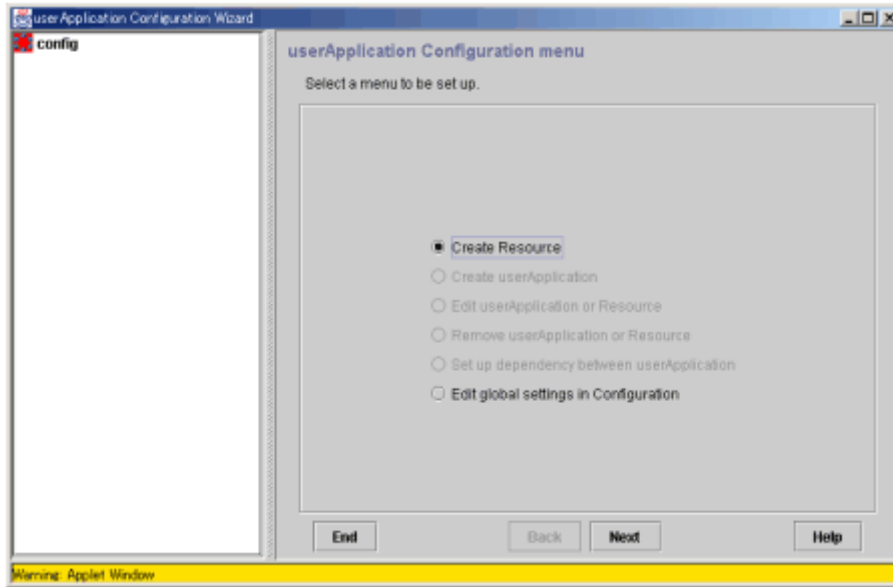
.....  
See the following example:

```
% crs_stat -t
```

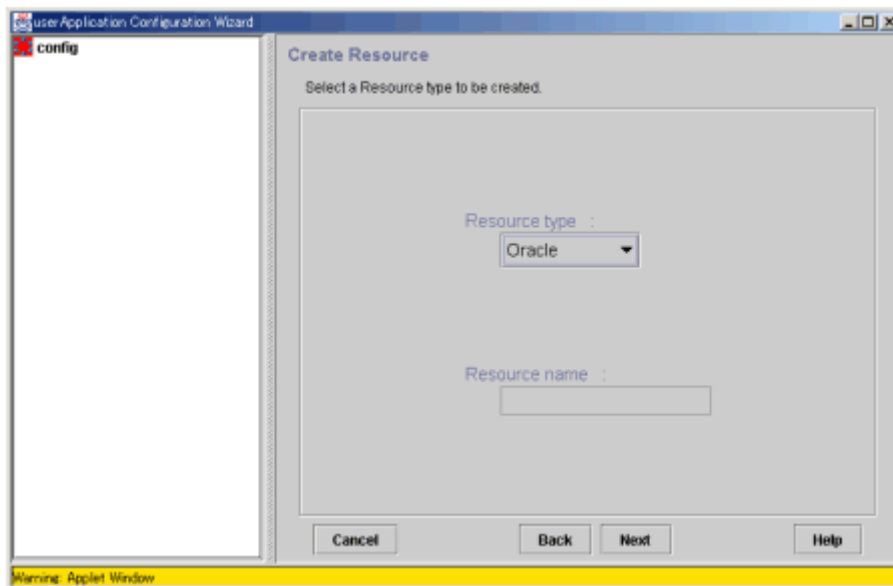
Name	Type	Target	State	Host
ora...e1.lsnr	application	ONLINE	ONLINE	node1
ora.node1.gsd	application	ONLINE	ONLINE	node1
ora.node1.ons	application	ONLINE	ONLINE	node1
ora.node1.vip	application	ONLINE	ONLINE	node1
ora.ora10.db	application	ONLINE	ONLINE	node2
ora...01.inst	application	ONLINE	ONLINE	node1
ora...02.inst	application	ONLINE	ONLINE	node2
ora...pcl.cs	application	ONLINE	ONLINE	node2
ora...101.srv	application	ONLINE	ONLINE	node1
ora...102.srv	application	ONLINE	ONLINE	node2
ora...e2.lsnr	application	ONLINE	ONLINE	node2
ora.node2.gsd	application	ONLINE	ONLINE	node2
ora.node2.ons	application	ONLINE	ONLINE	node2
ora.node2.vip	application	ONLINE	ONLINE	node2

In the above configuration, “ora...01.inst” included in node 1, and “ora...02.inst” included in Node2 are registered as a resource respectively.  
.....

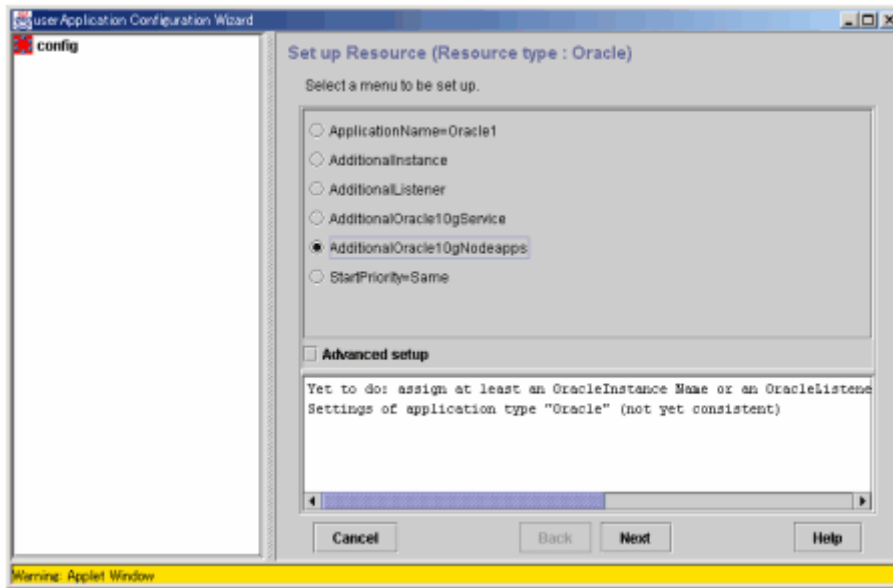
1. Select "Create Resource".



2. Select "Oracle" of "Resource type".



- For changing a resource name, select "ApplicationName", and change the name. If you register the resource without changing the name, select "AdditionalOracle10gNodeapps".



### Information

A resource name on RMS is based on the application name (SubApplicationName) entered in "ApplicationName" on this step.

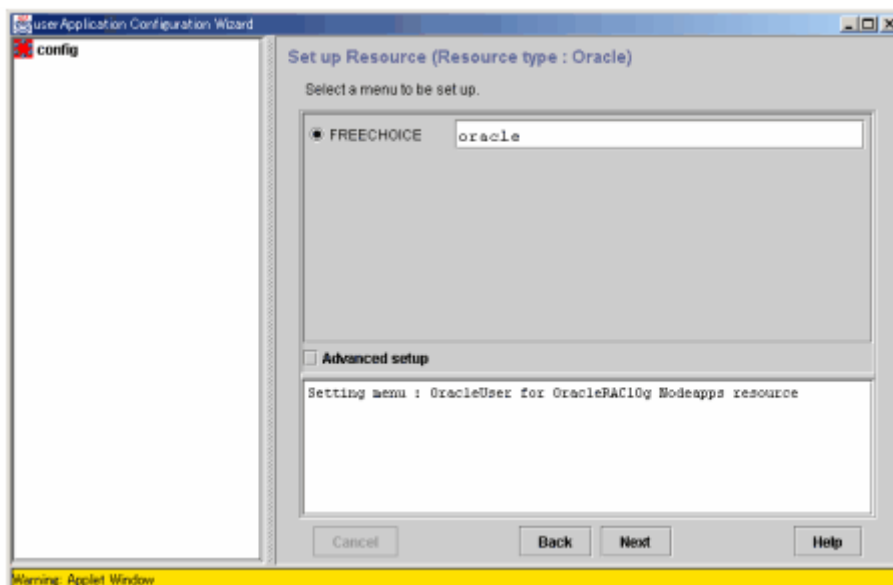
- Oracle 10g instance resource  
`<SubApplicationName>_<db_unique_name>.<inst_name>.inst`

The RMS resource name is based on the Oracle 10g resource name which is output of crs\_stat command, and the first part ("ora.") of the Oracle 10g resource name is replaced by "<SubApplicationName>\_".

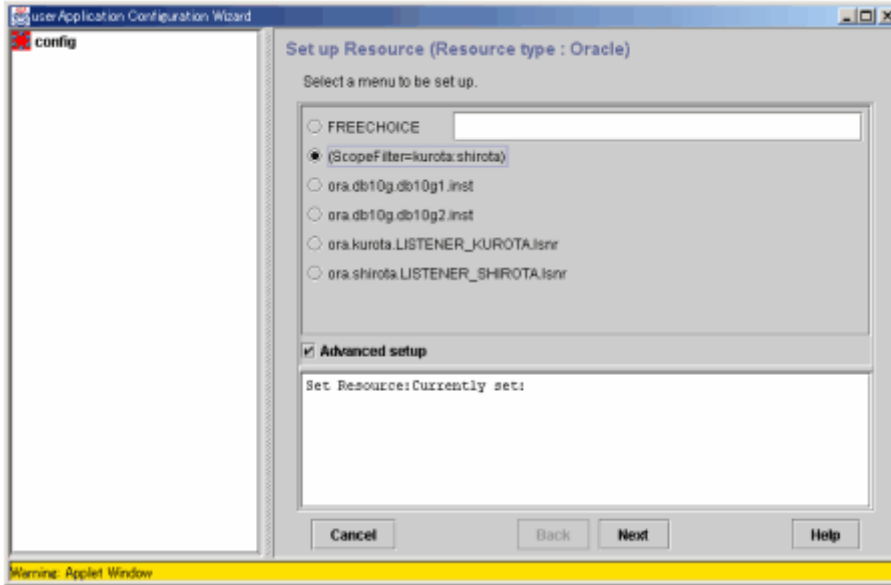
The RMS resource name of Oracle 10g instance resource has the following convention and rules.

- Characters per resource name must be less than 40 characters.
- "<SubApplicationName>\_" can be changed in "ApplicationName" on this step.

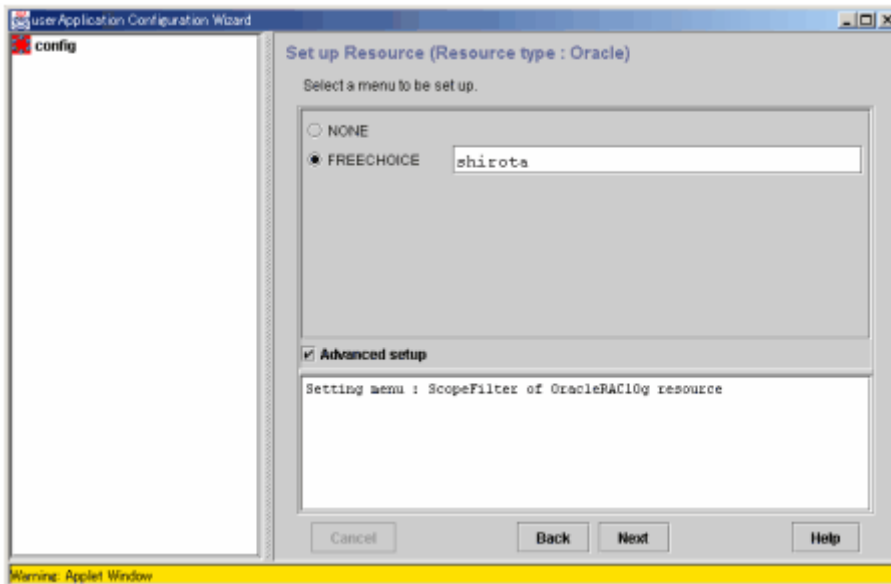
- Enter the Oracle DBA user name.



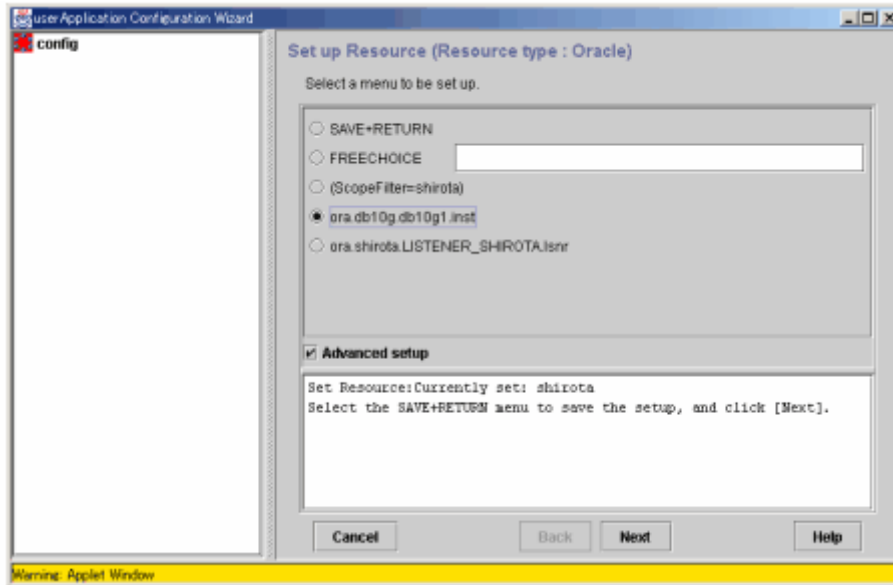
5. A list of available resources is displayed. If it is not displayed, check “Advanced setup”, then specify a node with “ScopeFilter”.



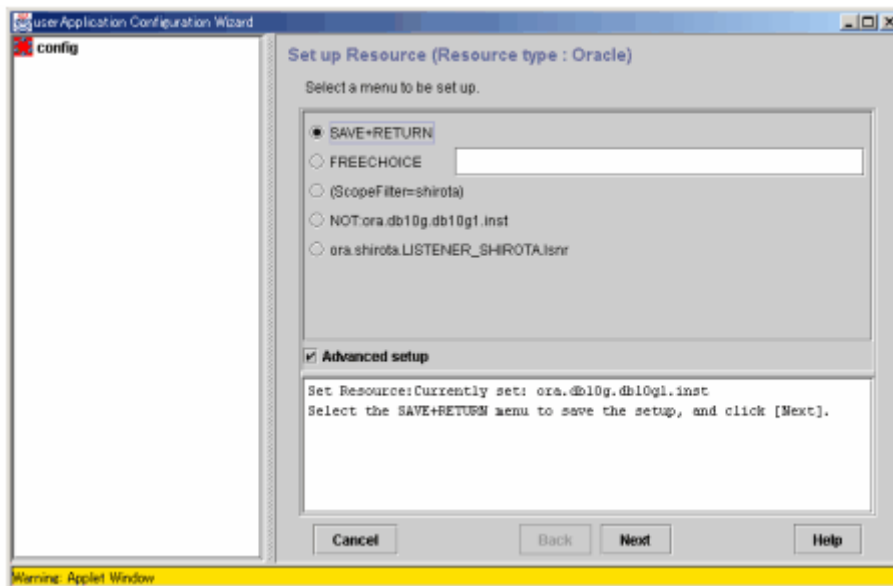
6. Input the name of a host where the resource belongs.



7. Select the resource (Oracle instance).

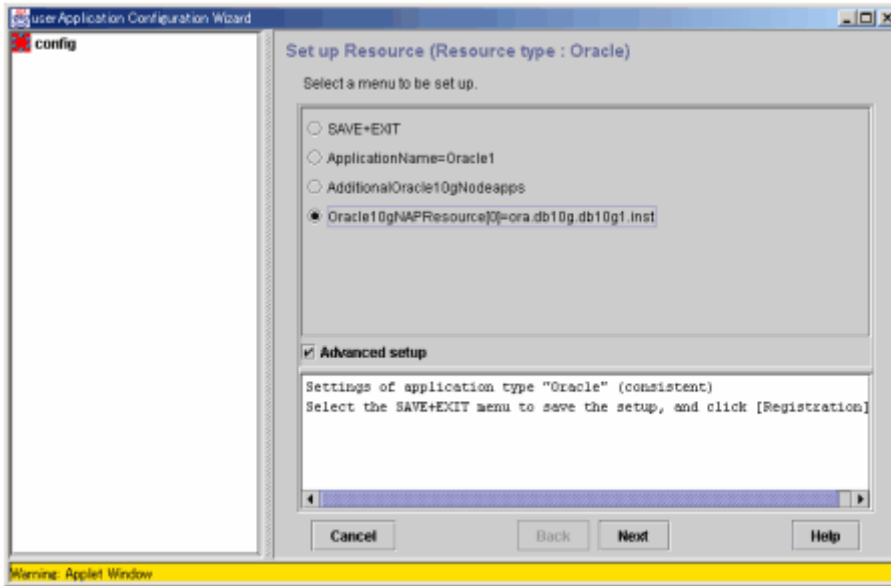


8. Select "SAVE+RETURN". The resource will be displayed in the following message box, "Set Resource: Currently set:". Note that the Oracle listeners (ora.\*.lsnr) must not be selected in this screen because CRS will control and monitor them. Also, do not register the resources on two or more nodes at the same time.

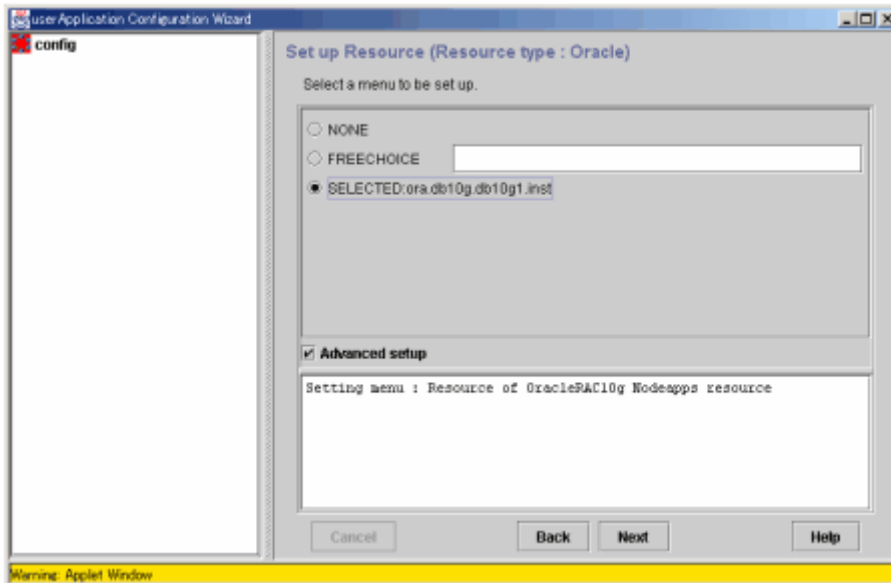


9. Select "SAVE+EXIT", then click the "Registration" button. The registration will be completed. If you want to further set it, select each resource, then click the "Next" button.

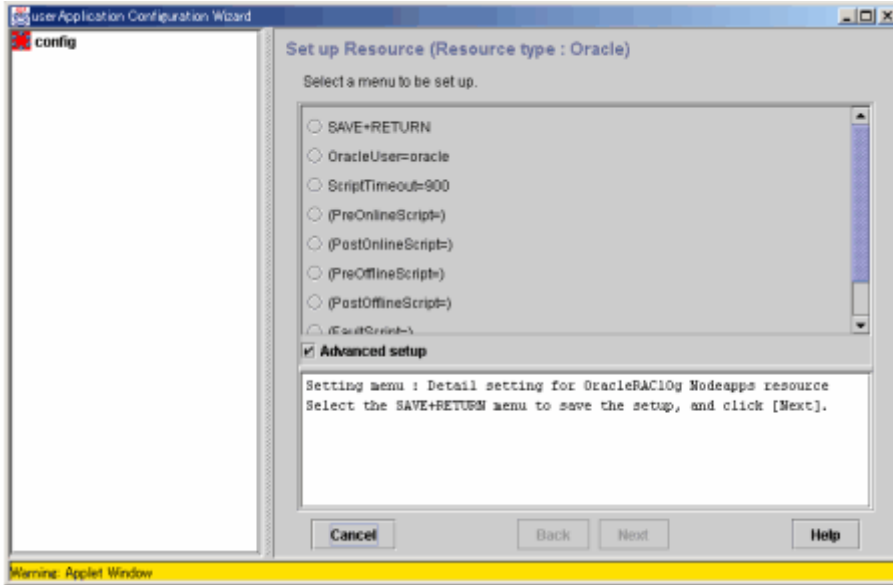




10. Select "SELECTED:<Resource>", then click the "Next" button.



11. Select the menu, then click the “Next” button. Selecting the “Advanced setup” allows you to set more details.



Settings (clorainfo -c)	Descriptions
Oracle user (OracleUser)	Input an Oracle DBA user name on UNIX.
ScriptTimeout (ScriptTimeout)	Timeout of each resource startup and stop Default : 900 s (300s - 86400s)
PreOnlineScript (PreOnlineScript)	Script that is executed before online processing
PostOnlineScript (PostOnlineScript)	Script that is executed before online processing
PreOfflineScript (PreOfflineScript)	Script that is executed before online processing
PostOfflineScript (PostOfflineScript)	Script that is executed before online processing
FaultScript (FaultScript)	Script that is executed after offline processing
Flags (Flags)	The following resource attributes can be set: o NULLDETECTOR If the flag is set, resources are monitored. Default: Resources are monitored.

12. After setting, select “SAVE+RETURN”. Clicking the “Registration” button completes the setting.

13. Repeat steps 1 through 12 for each node.

## 2.7.5 Oracle Service Resource Registration

This section describes how to register Oracle instance resources on each node using the userApplication Configuration Wizard. Before the registration, it is necessary to associate the Oracle instances to Oracle 10g services. Out of the Oracle 10g resources that are displayed with the crs\_stat command, it is necessary to register the ora.\*.srv resources.

## Example

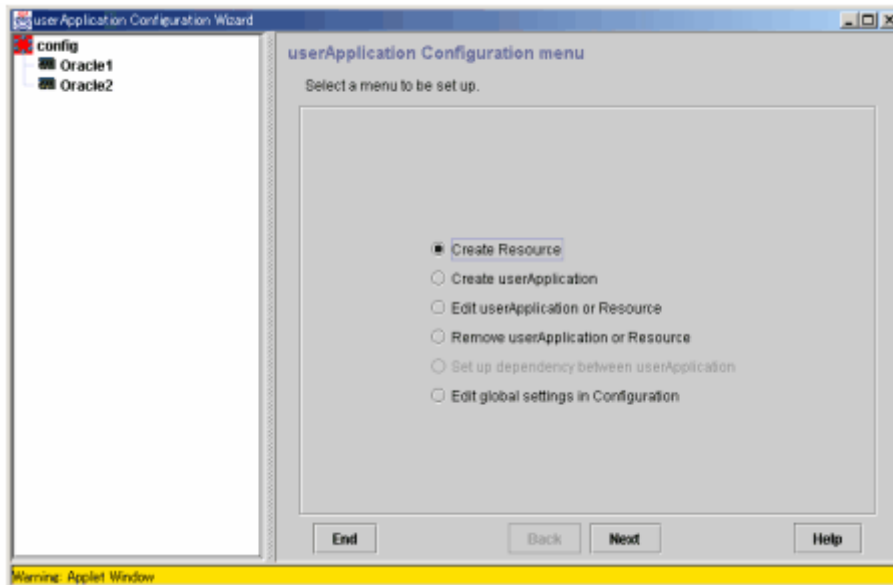
See the following example:

```
% crs_stat -t
```

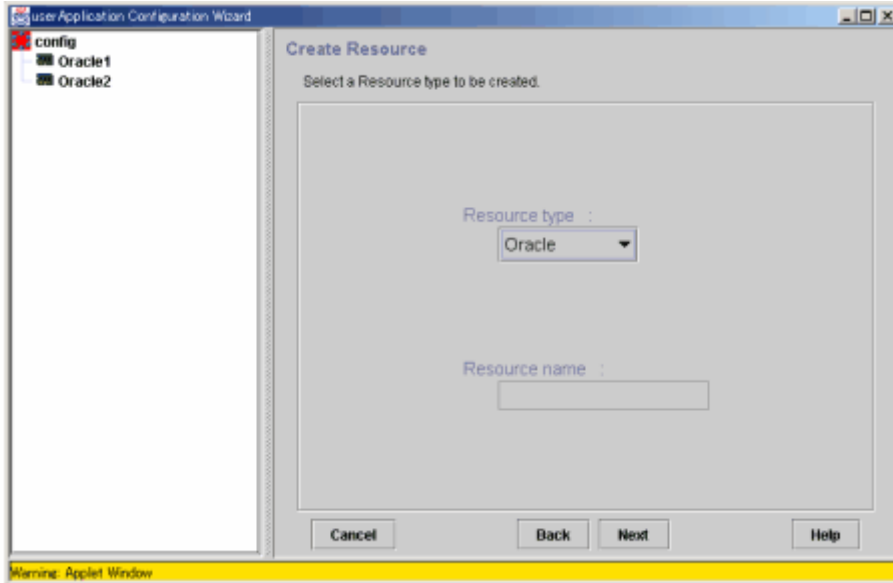
Name	Type	Target	State	Host
ora...e1.lsnr	application	ONLINE	ONLINE	node1
ora.node1.gsd	application	ONLINE	ONLINE	node1
ora.node1.ons	application	ONLINE	ONLINE	node1
ora.node1.vip	application	ONLINE	ONLINE	node1
ora.ora10.db	application	ONLINE	ONLINE	node2
ora...01.inst	application	ONLINE	ONLINE	node1
ora...02.inst	application	ONLINE	ONLINE	node2
ora...pcl.cs	application	ONLINE	ONLINE	node2
ora...101.srv	application	ONLINE	ONLINE	node1
ora...102.srv	application	ONLINE	ONLINE	node2
ora...e2.lsnr	application	ONLINE	ONLINE	node2
ora.node2.gsd	application	ONLINE	ONLINE	node2
ora.node2.ons	application	ONLINE	ONLINE	node2
ora.node2.vip	application	ONLINE	ONLINE	node2

In the above configuration, “ora...101.srv” included in node 1, and “ora...102.srv” included in Node2 are registered as a resource respectively.

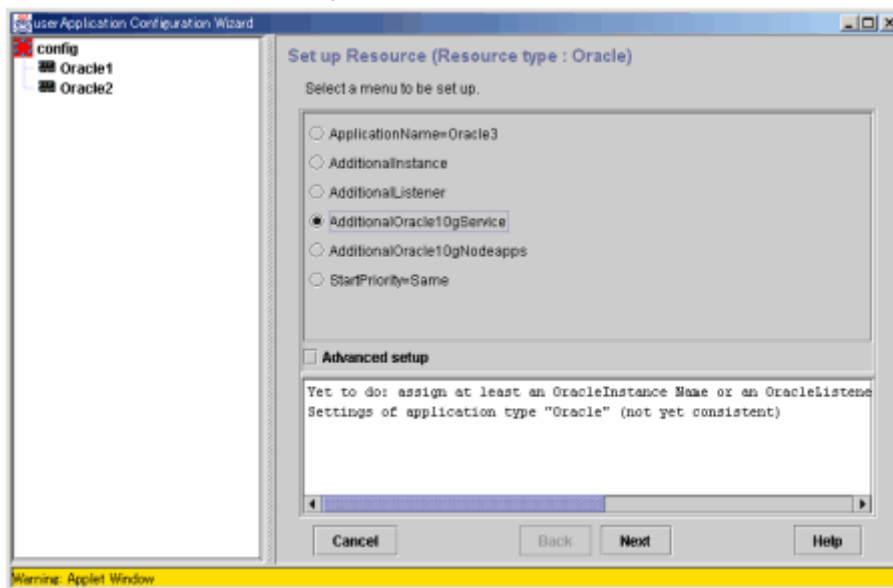
1. Select “Create Resource”.



2. Select "Oracle" of "Resource type".



3. For changing a resource name, select "ApplicationName", and change the name. If you register the resource without changing the name, select "AdditionalOracle10gService"



## Information

A resource name on RMS is based on the application name (SubApplicationName) entered in "ApplilcationName" on this step.

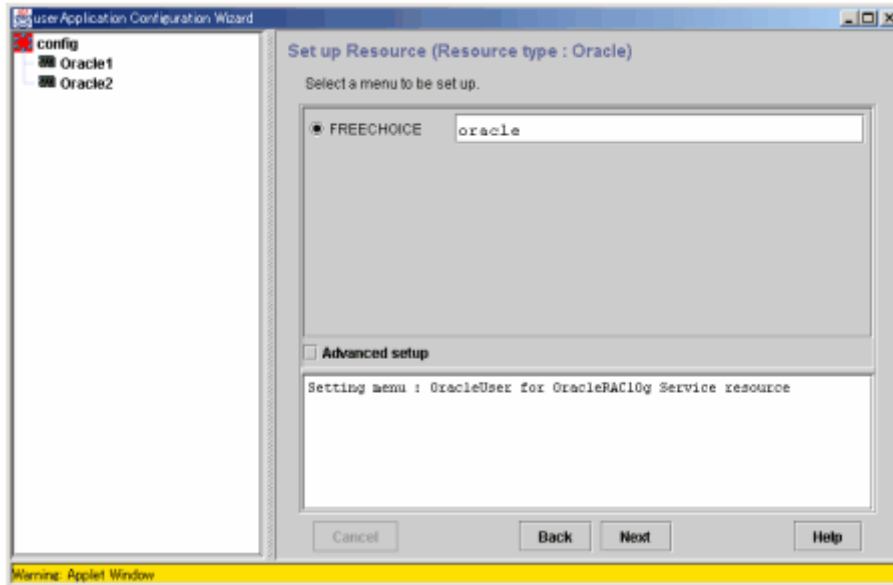
- Oracle 10g service resource  
`<SubApplicationName>_<db_unique_name>.<service_name>.<inst_name>.srv`

The RMS resource name is based on the Oracle 10g resource name which is output of crs\_stat command, and the first part ("ora.") of the Oracle 10g resource name is replaced by "<SubApplicationName>\_".

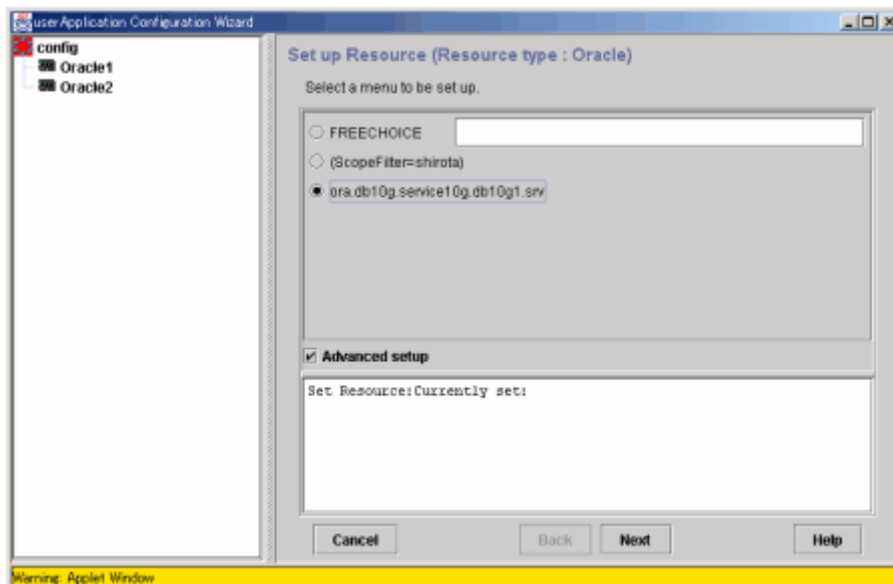
The RMS resource name of Oracle 10g service resource has the following convention and rules.

- Characters per resource name must be less than 40 characters.
- "<SubApplicationName>\_" can be changed in "ApplilcationName" on this step.

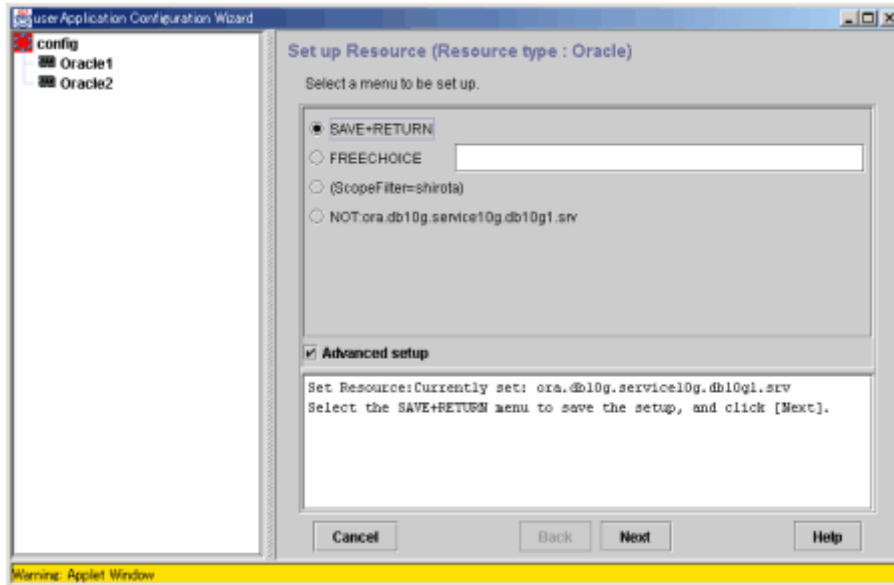
4. Enter the Oracle DBA user name.



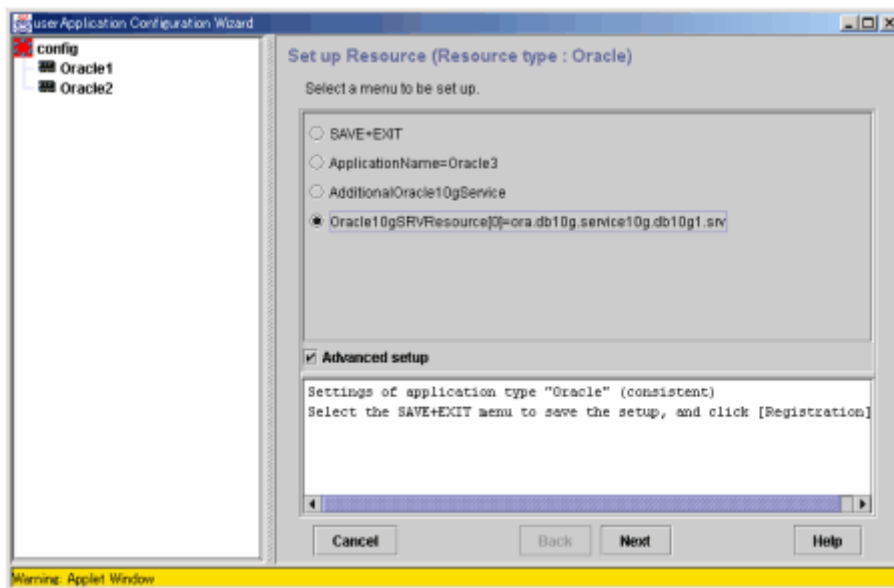
5. A list of available resources is displayed. If it is not displayed, check “Advanced setup”, then specify a node with “ScopeFilter”.



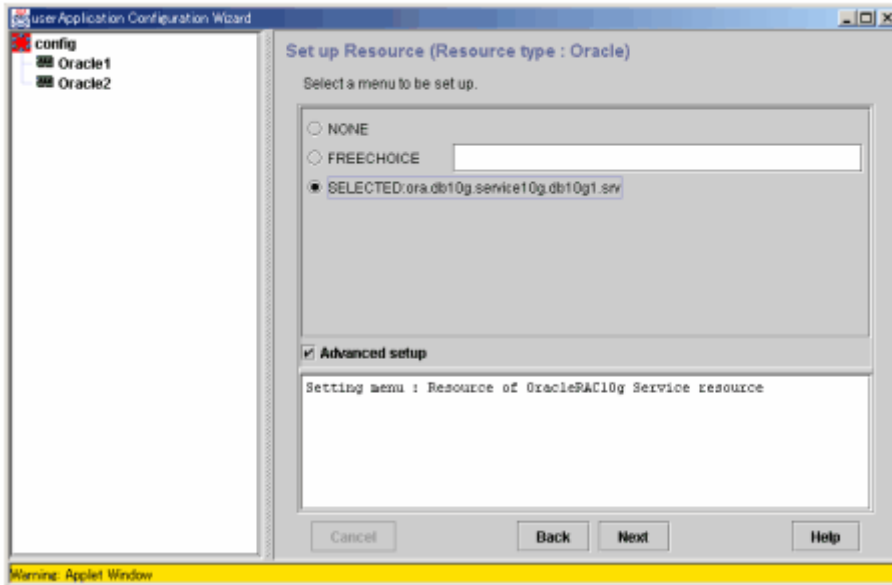
6. The resource will be displayed in the following message box. Select “SAVE+RETURN”, then click the “Next” button.



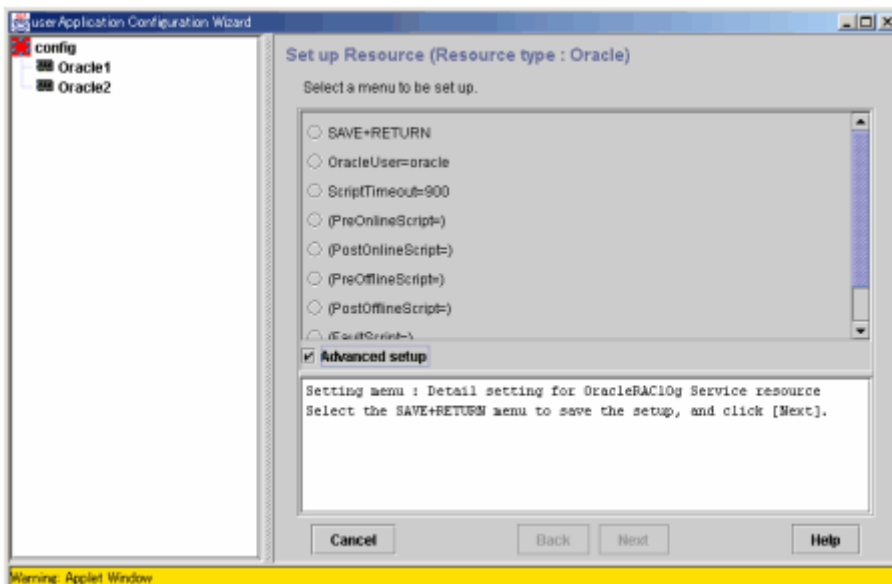
7. Select “SAVE+EXIT”, then click the “Registration” button, so the registration will be completed. If you want to further set it, select each resource, then click the “Next” button.



8. Select “SELECTED:<Resource>”, then click the “Next” button.



9. Select the menu, then click the “Next” button. Selecting the “Advanced setup” allows you to set more details.



Settings (clorainfo -c)	Descriptions
Oracle user (OracleUser)	Input an Oracle DBA user name on UNIX.
ScriptTimeout (ScriptTimeout)	Timeout of each resource startup and stop Default : 900 s (300s - 86400s)
PreOnlineScript (PreOnlineScript)	Script that is executed before online processing
PostOnlineScript (PostOnlineScript)	Script that is executed before online processing
PreOfflineScript (PreOfflineScript)	Script that is executed before online processing

PostOfflineScript (PostOfflineScript)	Script that is executed before online processing
FaultScript (FaultScript)	Script that is executed after offline processing
Flags (Flags)	The following resource attributes can be set: o NULLDETECTOR If the flag is set, resources are monitored. Default: Resources are monitored.

10. After setting, select “Save and return” from the original screen. Clicking the “Register” button completes the setting.
11. Repeat steps 1 through 10 for each node.

## 2.7.6 Other Resource Registration

---

If there are other necessary resources, register them using userApplication Configuration Wizard. As described in 2.7.1, PRIMECLUSTER GDS volumes on which OCR and Voting Disk Oracle databases are configured must not be registered as RMS resources. Also, if PRIMECLUSTER GLS and an Oracle virtual IP address are set on the same public LAN, PRIMECLUSTER GLS must not be registered as an RMS resource.

## 2.7.7 UserApplication Creation

---

Create userApplication using userApplication Configuration Wizard. See 2.7.3.

1. When preferring all instance attributes configuring the service (scalable)
  1. Create userApplication with Oracle instances as follows.  
Note that this userApplication only belongs to one node.  
Operation method: Standby (required)  
AutoStartup=Yes  
PersistentFault = 1  
The Oracle instances are automatically started with CRS during OS startup, so we recommend that Yes set for AutoStartup.
  2. Create userApplication with Oracle services as follows.  
Note that this userApplication only belongs to one node.  
Operation method: Standby (required)  
AutoStartup=No  
PersistentFault = 1
  3. Create userApplication that controls the Oracle service.  
Operation method: Scalable (required)  
AutoStartup=No

### Note

PersistentFault remains the same resource status (Faulted) even after RMS is restarted in the event of a resource failure. Users are supposed to locate the fault and check completion of recovery processing then start userApplication manually. For example, if a failure occurs, users can detect which userApplication failed even after server reboot. Even though AutoStartUp setup is set, userApplication will not be started, and automatic startup will prevent recurrence of the failure.

In the Oracle RAC 10g environment, the Oracle resource is automatically started by CRS. Specify the setting of PersistentFalut "0" to match the state of the resource of RMS to the state of the resource of CRS. In this case, you investigate the cause of failover from syslog and various log files, etc.

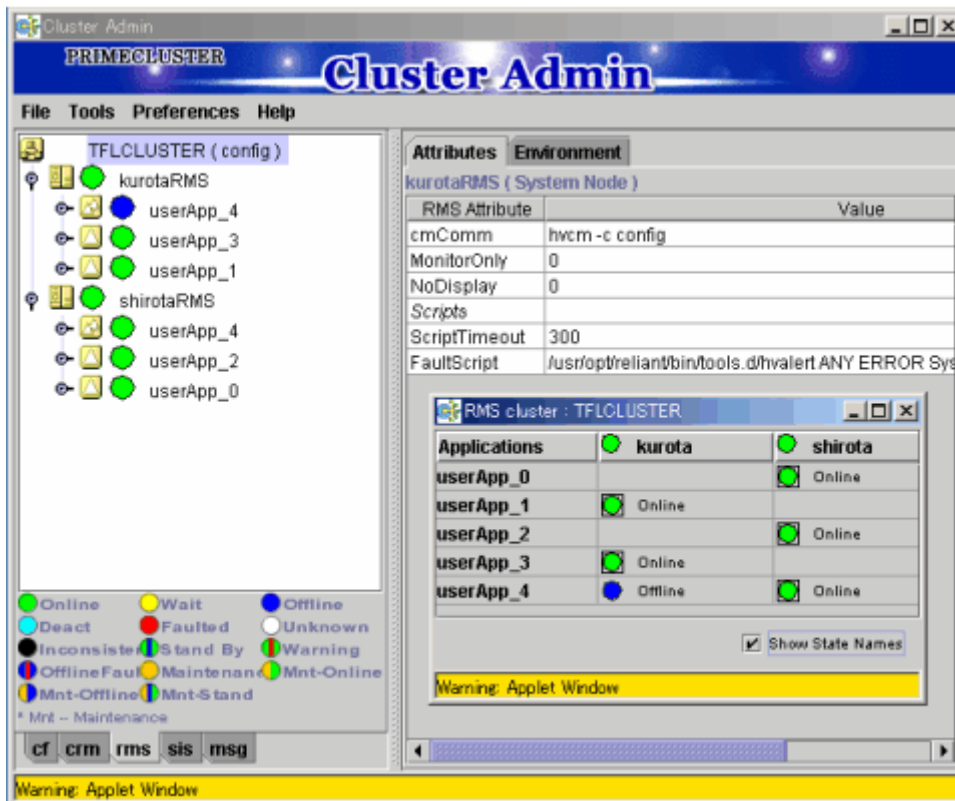


## Note

AutoStartup is a setting to start userApplication automatically when RMS starts. In the Oracle RAC 10g environment, the Oracle resource is automatically started by CRS. Therefore, the state of the resource of RMS might be not corresponding to the state of the resource of CRS until userApplication is started when AutoStartup is "0".

When it takes time to start CRS demon, the start of userApplication might become faulted if AutoStartup of userApplication of service is set to be "1". Therefore, AutoStartup of userApplication of service is recommended to be "0".

After creating userApplication, start RMS and check if it is properly running. The following example shows how userApplication is displayed in the Cluster Admin screen.



## 2. When available attribute instances are selected in the service (HA)

1. Create userApplication with Oracle instances as follows.  
Note that this userApplication only belongs to one node.

Operation method: Standby (required)

AutoStartup=Yes

PersistentFault = 1

2. Create userApplication with Oracle services on all nodes where failover might occur.  
Operation method: Standby (required)

AutoSwitchOver = HostFailure|ResourceFailure|ShutDown

PersistentFault = 1

HaltFlag=Yes

After creating userApplication, start RMS and check if it is properly running. The following example shows how userApplication is displayed in the Cluster Admin screen.

Cluster Admin

# PRIMECLUSTER Cluster Admin

File Tools Preferences Help

TFLCLUSTER (config)

- kurolaRMS
  - app2
  - app3
- shirotaRMS
  - app1
  - app3

● Online ● Wait ● Offline  
● Deact ● Faulted ● Unknown  
● Inconsistent ● Stand By ● Warning  
● OfflineFault ● Maintenance ● Mat-Online  
● Mat-Offline ● Mat-Stand B  
 \* Mnt - Maintenance

cf crm rms sis msg

Attributes

kurolaRMS ( System Node )

RMS Attribute	Value
cmComm	hwcm -c config
MonitorOnly	0
NoDisplay	0
Scripts	
ScriptTimeout	300
FaultScript	/usr/opt/reliant/bin/tools.d/hvalert ANY ERROR Sys

RMS cluster : TFLCLUSTER

Applications	kurola	shirota
app1		●
app2	●	
app3	●	●

Show State Names

Java Applet Window

Java Applet Window

# Chapter 3 Operation

## 3.1 Controlling Oracle on the Cluster system

In Standby operation or Scalable operation (Oracle9i RAC), Control of Oracle by "PRIMECLUSTER Wizard for Oracle" is as follows.

### Startup Oracle

Startup of Oracle is managed by a shell script. Procedure of the startup is as follows:

1. su - <Oracle DBA user>
2. sqlplus / nolog
3. connect / as sysdba
4. startup nomount or startup mount
5. alter database mount (if "startup nomount" was executed at step 4.)
6. alter database open

- location of initialization parameter file/server parameter file

PRIMECLUSTER Wizard for Oracle starts up Oracle without the initialization parameter file specification. Therefore, the initialization parameter file located in the default path is used. Put an initialization parameter file in the following default path: (See chapter 2.5)

`$ORACLE_HOME/dbs/init<$ORACLE_SID>.ora`

A server parameter file should be located in the shared disk because the file contents are changed dynamically. When a server parameter file is used, enter the full path of the server parameter file in an initialization parameter file.

It is recommended that the same values for initialization parameters are set between cluster nodes.

- Oracle recovery

In the following cases, PRIMECLUSTER Wizard for Oracle recovers Oracle instance in Oracle startup processing.

1. ACTIVE tablespaces exist in V\$BACKUP view.
2. Files that require recovery exist in V\$RECOVER\_FILE view.

The above recoveries are not done in Oracle9i RAC environment.

### Shutdown Oracle

Shutdown of Oracle is managed by a shell script. Procedure of the shutdown is as follows:

1. su - <Oracle DBA user>
2. sqlplus / nolog
3. connect / as sysdba
4. shutdown <immediate/abort>
5. shutdown abort (if shutdown failed at step 4.)

- the method of Oracle shutdown

Normally, PRIMECLUSTER Wizard for Oracle shuts down Oracle with immediate mode (default). In the case of resource failures or failover, Wizard for Oracle shuts down Oracle with abort mode.

If shutdown with immediate mode fails, Wizard for Oracle shuts down Oracle with abort mode.

### Oracle monitoring

Oracle monitoring is done by binary programs. Procedure of the monitoring is as follows:

1. su - <Oracle DBA user>

2. Connect to Oracle instance as SYSTEM user (local connection)
3. Check if Oracle status is "OPEN"
4. data manipulation (issue SQL "insert", "update" and "delete" to a table which is created on a SYSTEM user's default tablespace.)

- SYSTEM user's password

PRIMECLUSTER Wizard for Oracle uses SYSTEM user's password to connect Oracle instance. Register the password on Wizard for Oracle. (See chapter 4.3.)

- table for monitoring

PRIMECLUSTER Wizard for Oracle creates a table for monitoring. The table is created on SYSTEM user's default tablespace if it does not exist. Its size is few bytes.

- Warning state

If the following abnormalities are detected, PRIMECLUSTER Wizard for Oracle reports Warning state to RMS. This is not Faulted state, so failover does not occur.

- Connecting to Oracle instance is not available because of wrong SYSTEM user's password.
- Connecting to Oracle instance is not available because of max session error or max process error.
- Connecting to Oracle instance is available and the status is "OPEN" even though issued SQL does not return.

## 3.2 Oracle RAC 10g Operation

---

In the Oracle RAC 10g operation, startup/shutdown, monitoring and auto recovery of Oracle instance and listener are managed by CRS (Cluster Ready Services). Failover of Oracle services are also managed by CRS.

PRIMECLUSTER Wizard for Oracle reports Warning to RMS if the resources' failures are detected, but leaves the recovery or failover of the resources to CRS.

However, only if the recovery has not completed in the ScriptTimeout, Wizard for Oracle reports Faulted to RMS to occur failover of userApplication.

If startup/shutdown of userApplication is issued, Wizard for Oracle also starts up/shuts down CRS resources.

### Information

---

PRIMECLUSTER Wizard for Oracle uses the following commands to control CRS resources.

- Oracle Service resource

```
srvctl enable service -d $DB_NAME -s $SERVICE_NAME -i $ORACLE_SID
srvctl start service -d $DB_NAME -s $SERVICE_NAME -i $ORACLE_SID
```

```
srvctl stop service -d $DB_NAME -s $SERVICE_NAME -i $ORACLE_SID
srvctl disable service -d $DB_NAME -s $SERVICE_NAME -i $ORACLE_SID
```

- Oracle instance resource

```
srvctl start instance -d $DB_NAME -i $ORACLE_SID
srvctl stop instance -d $DB_NAME -i $ORACLE_SID
```

---

### Note

---

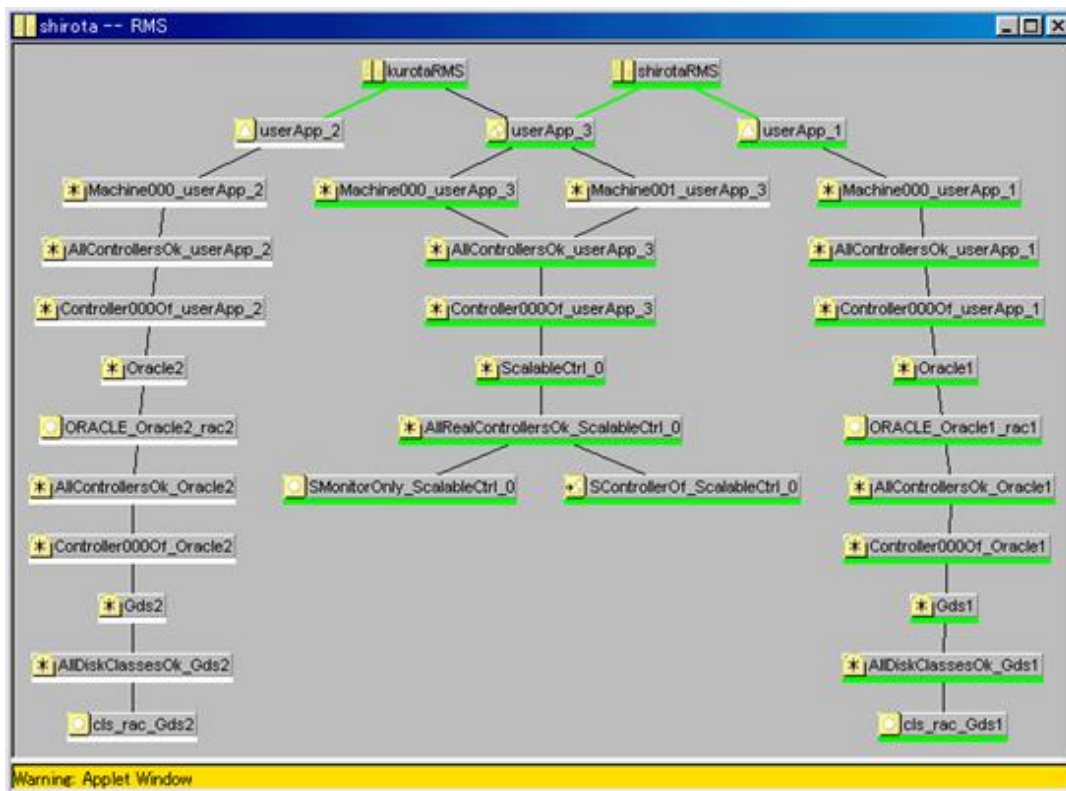
- PRIMECLUSTER Wizard for Oracle uses "srvctl enable|disable" only if attributes of all instances that configure service are "Preferred". It means scalable operation (see chapter 2.7.3.).
- Oracle listeners controlling is managed by CRS (Cluster Ready Services). The other resources (vip, gsd and ons, etc.) are also managed by CRS.
- If you want to startup, stop, or switch Oracle instances, execute hvswitch and hvutil on RMS userApplication. If you execute the CRS srvctl command or shutdown command to the Oracle instance directly, PRIMECLUSETR will consider that the instance fails, and

recovery processing might be initiated for the Oracle instance. To executing the command, put userApplication into maintenance mode.

### 3.3 userApplication Management in Scalable Operation

Scalable operation consists of groups of userApplication. Some groups include Oracle resources and management userApplication that bundles userApplication, and support scalable operation. Resource tree structure is described below:

"userApp\_3" in the center is the management userApplication that bundles the other groups of userApplication.



All the bundled userApplication start or stop if the management userApplication is started or stopped.



See

For information on how to start or stop userApplication, see "7.2.1 RMS Operation" of the "PRIMECLUSTER Installation and Administration Guide".



Note

To start or stop userApplication on each node, start or stop each userApplication directly.

### 3.4 Oracle-related Script Setting

The script files on a PRIMECLUSTER system control each resource startup and stop. The script files in PRIMECLUSTER Wizard also start and stop of the Oracle instances and Oracle listeners. Along with this Oracle startup and stop, the scripts can execute user programs and batch process.

## Script Type

- PreOnlineScript  
Executed before Online processing
- PostOnlineScript  
Executed after Online processing
- PreOfflineScript  
Executed before Offline processing
- PostOfflineScript  
Executed after Offline processing
- FaultScript  
Executed when failures occur

## Notice

- System administrator access privileges are used for execution.
- The exit code 0 indicates normal termination. The value other than 0 indicates abnormal termination or switching process failures.
- The script is abnormally terminated when the execution time exceeds the given timeout. This also causes a failure during switchover process.
- Each script has the environment variable defined in RMS.



See

.....  
See the “PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide” for further details.  
.....

## 3.5 Oracle maintenance

---

PRIMECLUSTER Wizard for Oracle monitors an Oracle system while PRIMECLUSTER is running. If the Oracle system is stopped, this PRIMECLUSTER Wizard considers that a failure occurs in the system. Then, the Oracle system is restarted or switched to the standby node. If maintenance work such as Oracle cold backup is required, use RMS maintenance mode.

- Oracle cold backup  
The following steps are for Oracle cold backup (offline backup).
  1. Set maintenance mode of userApplicatoin.
  2. Shutdown Oracle manually.
  3. Back up database.
  4. Startup Oracle manually.
  5. Stop maintenance mode of userApplicatoin. (starting operation)

Before stopping maintenance mode (step 5), check if Oracle instance and listener work correctly.

- Oracle patch application  
The method of Oracle patch application vary depending on necessity of database mount.  
Stop RMS on the node where Oracle patch will be applied if it is not necessary to mount database before or after the patch application.  
Set maintenance mode of userApplication if it is necessary to mount database before or after the patch application.
  1. Set maintenance mode of userApplicatoin.
  2. Shutdown Oracle manually. (if necessary)
  3. Apply Oracle patch on all cluster nodes.
  4. Startup Oracle manually. (if Oracle was stopped at step 2.)

## 5. Stop maintenance mode of userApplication. (starting operation)

Before stopping maintenance mode (step 5), check if Oracle instance and listener work correctly.

### Information

To operate Oracle RAC 10g resources, control RMS userApplication without using the `srvctl` or `shutdown` command. If you execute the command to the Oracle instance directly, `PRIMECLUSETR` will consider that the resource fails, and recovery processing might be initiated for the Oracle resource. To executing the command, put userApplication into maintenance mode.

For details of maintenance mode, see "5.4.11 Using maintenance mode" of the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".

If you want to discontinue to monitor Oracle instance, listener or service, execute the following command.

- When discontinuing  
`/opt/FJSVclora/sbin/hvoradisable application_name resource_name`
- When restarting  
`/opt/FJSVclora/sbin/hvoraenable application_name resource_name`

These commands are executed for the Oracle instance and listener resources on the node where maintenance work is required.

### See

See "4.1 `hvoradisable` - Discontinue Monitoring Resources", or "4.2 `hvoraenable` - Restart Monitoring Resources" for the detail.

### Note

- Restart monitoring  
When the Oracle instances and/or listeners are stopped, and monitoring is discontinued, restart the Oracle instances and/or listeners before monitoring is restarted.
- State transition during maintenance  
When the Oracle system is not monitored, the state transition does not occur even in the event of an Oracle failure. However, the state transition might occur because of other glitches like disk failures.
- userApplication during maintenance  
When the "hvoradisable" command properly stops monitoring the resources, they enter the Warning state on Web-Based Admin View.

## 3.6 Oracle SYSTEM User Password Change

You can change the Oracle SYSTEM user password without stopping operation by using the following steps on the node where userApplication is Online.

1. Discontinue monitoring the Oracle instance resources  
Discontinue monitoring the Oracle instance resources using the `hvoradisable` command. For the `hvoradisable` command, see "4.1 `hvoradisable` - Discontinue Monitoring Resources". Be sure to check the following message in `syslog` before going to the next step:

```
[Info] [0101] Fault Watching is disable
```

2. Change the Oracle SYSTEM user password  
Change the Oracle SYSTEM user password. For information on how to change the Oracle SYSTEM user password, refer to the Oracle manual.

3. Set up the Oracle SYSTEM user password to Wizard for Oracle  
Set up the Oracle SYSTEM user password to Wizard for Oracle using the clorapass command. For the clorapass command, refer to "[4.3 clorapass - Set Password for Monitoring](#)".
4. Restart monitoring the Oracle instance resources  
Restart monitoring the Oracle instance resources using the hvoraenable command.  
For the hvoradisable command, refer to "[4.2 hvoraenable - Restart Monitoring Resources](#)". Be sure to check the following message in syslog after execution:

[Info] [0102] Fault Watching is enable

## Note

If the Oracle SYSTEM user password is changed in scalable operation with Oracle9i RAC, discontinue monitoring the Oracle instance resources on all the nodes where password is changed. Set up all the passwords for the Oracle instance resources whose passwords are changed with the clorapass command.

## 3.7 Action Definition File

The instance-monitoring detector of Oracle Wizard determines what corrective action should be taken from an error code. The action definition file consists of Oracle error numbers, corrective actions, and error messages.

- Action definition file name and path

```
/opt/FJSVclora/etc/FJSVclorafm.actionlist
```

- File format

```
errno/Status/Action/Message
 18   Cn   Wa  "maximum number of sessions exceeded"
 20   Cn   Wa  "maximum number of processes (%s) exceeded"
470   All  Of  "LGWR process terminated with error"
471   All  Of  "DBWR process terminated with error"
472   All  Of  "PMON process terminated with error"
942   Ol   Np  "table or view does not exist"
1012  All   Rs  "not logged on"
1034  All   Of  "ORACLE not available"
...
```

- errno  
Indicates an Oracle error number (ORA-xxxxx).
- Status  
Indicates the detector state  
Cn : When connecting to an Oracle instance.  
Ol : Under connection to an Oracle instance.  
Dc : When disconnecting to an Oracle instance.  
All : Any status of above.
- Action  
Indicates detector operation.  
Np : Ignores any detected errors.  
Of : Notifies Offline.  
Wa : Notifies Warning.  
Rs : Restarts detector.  
Fa : Notifies Faulted.



## Note

### NOP error

When an error is detected with the “UPDATE” command of SQL, and if NP is shown as a corrective action, the subsequent process has to be discontinued. Take the Rs process.

- Message  
Indicates text of an error code.

## 3.8 Corrective Action against Failover

### Oracle logging

When failover or node elimination occurs, solve the problem referring to Oracle alert logging or trace logging in the same way as the solution in single Oracle operation.

### PRIMECLUSTER Wizard for Oracle logging

PRIMECLUSTER Wizard for Oracle provides information what kind of failure is detected and what corrective action should be taken in the following log files:

```
/var/opt/reliant/log/FJSVclora_<OracleSID>_*.log  
/var/opt/reliant/log/FJSVclora_<ListenerName>_*.log
```

The log file formats are as follows:

```
Date/type/ID/text  
2002/04/25 15:18:40 [Info] [1101] Starting Oracle detector  
2002/04/25 15:18:40 [Info] [1102] Connected to Oracle  
2002/04/25 15:18:40 [Error] [1299] ORA-01034 Oracle not available.
```

- Date  
Output in the format of YYYY/MM/DD HH:MM:SS.
- Type  
Indicates Information, Error, or Warning
- ID  
Indicates a message number.
- Text  
Indicates message content.

## Note

There is no restriction of space or memory for log files. RMS manages the log files.

## Information

The following trace logs are output as information for troubleshooting.

```
/var/opt/FJSVclora/FJSVclora_<OracleSID>_*.trclog  
/var/opt/FJSVclora/FJSVclora_<ListenerName>_*.trclog
```



## Note

The log files and the trace files are important for troubleshooting. Do not delete or edit these files.

## 3.9 Troubleshooting Information Collection

---

This section describes what files you can check to collect troubleshooting information.

### Oracle information

- Setup file

```
$ORACLE_HOME/network/admin/*.ora  
$ORACLE_HOME/dbs/*.ora  
$ORACLE_BASE/admin/$ORACLE_SID/pfile/*.ora
```

- Logging file

```
$ORACLE_HOME/rdbms/log/alert_${ORACLE_SID}.log  
$ORACLE_BASE/admin/$ORACLE_SID/bdump/alert_${ORACLE_SID}.log  
$ORACLE_HOME/network/log/<ListenerName>.log
```

### PRIMECLUSTER information

You can collect troubleshooting information by executing the “fjsnap” command of PRIMECLUSTER. Refer to the “PRIMECLUSTER Configuration and Administration Guide”.

### PRIMECLUSTER Wizard for Oracle information

- Setup file

```
/opt/FJSVclora/etc/*  
/usr/opt/reliant/etc/hvgdconfig  
/usr/opt/reliant/build/wizard.d/<configuration name>.usfiles/*
```

- Log file

```
/var/opt/reliant/log/*  
/var/opt/FJSVclora/*
```



## Information

The above information can be collected by “fjsnap” command. “fjsnap” command which is a system information tool is bundled in ESF (Enhanced Support Facility). If PRIMECLUSTER system trouble occurs, “fjsnap” command collects required information to solve the trouble. Note that Oracle information is collected only if PRIMECLUSTER Wizard for Oracle settings are correct.

For information on how to collect troubleshooting information of PRIMECLUSTER Wizard for Oracle only, see “[4.5 clgetoralog - Oracle Troubleshooting Information Collection](#)”.

## 3.10 User scripts in Oracle startup processing

---

PRIMECLUSTER Wizard for Oracle provides user interfaces to do user’s own processing in Oracle startup processing.

- prestartup script

It is issued in the beginning of Oracle startup processing. Note that the Oracle status (STATUS column in V\$INSTANCE view) should be checked in the prestartup script if it is necessary to distinguish the status. Wizard for Oracle issues the prestartup script before Oracle startup processing independent of the Oracle status.

Put the executable file which name starts with “prestartup” in /opt/FJSVclora/usr directory.

- nomount script

It is issued when the Oracle status (STATUS column in V\$INSTANCE view) is "STARTED" in Oracle startup processing. Put the executable file which name starts with "nomount" in /opt/FJSDVclora/usr directory.

- mount script

It is issued when the Oracle status (STATUS column in V\$INSTANCE view) is "MOUNTED" in Oracle startup processing. Put the executable file which name starts with "mount" in /opt/FJSDVclora/usr directory.

## Notice

- Put in /opt/FJSDVclora/usr directory. I more than two exist, they are issued in order by name.
- The exit code 0 indicates normal termination. The value other than 0 indicates abnormal termination. If abnormal termination, the Oracle startup processing will also terminate abnormally.
- System administrator access privileges are used for execution.
- The following parameters are passed:  
\$1:ORACLE\_HOME  
\$2:ORACLE\_SID  
\$3:Oracle DBA user name
- If it does not complete within a period of StartTimeout, it is managed as abnormal termination. For StartTimeout, see step 4 in "2.6.1 Create Oracle resource".
- Using of the "su -" command is not supported for user scripts(prestapup\*, nomount\*, mount\*) under /opt/FJSDVclora/usr.

## 3.11 ASM (Automatic Storage Management)

---

Automatic Storage Management (hereafter ASM), which is one of the new Oracle 10g features, can be used for 1:1 standby operation or scalable operation, but not for mutual standby operation and N:1 standby operation.

- 1:1 standby operation

Create an ASM instance resource.

Startup and shutdown of the created ASM instance resource are managed by Wizard for Oracle, but monitoring is not.

An Oracle instance resource failure will occur and be detected by Wizard for Oracle even if an ASM instance resource fails, then userApplication is switched to the standby node.

- scalable operation

Do not create an ASM instance resource if ASM is used in Oracle RAC 10g because the ASM instance is controlled by CRS.

The following notices are also not necessary in this case.

### 3.11.1 Environment configuration

---

- ASM instance and database creation and configuration

- Operating node

ASM instance and database are only created on operating node. On a standby node, it is only necessary to set the database management on shared disks.



ASM instance name must begin with "+". The default name is "+ASM".



Refer to the Oracle manual.

- Standby node

Set up directories, files, and links. The settings must be the same as those of the database on the operating node.

Under \$ORACLE\_HOME/dbs

Under \$ORACLE\_BASE/admin/\$ORACLE\_SID

Under \$ORACLE\_BASE/admin/<ASM instance name>

The access privilege to the directories and files must be also the same as those on the operating node

Set up an archive log file output directory on the standby node if it is set on the operating node.

### Note

If required files backed up in a tar format on the operating node with the /opt/FJSVclora/sbin/cloracpy command, the ASM instance configuration will not be backed up.

It is necessary to copy the following files in a tar format manually:

Under \$ORACLE\_BASE/admin/<ASM instance name>

- ASM initialization parameter check

Check if the name of the disk group where an Oracle database is created is set in "ASM\_DISKGROUPS", the ASM instance initialization parameter.

### See

Refer to the Oracle manual.

- userApplication creation

Create an ASM instance resource as well as an Oracle instance resource, and register the ASM instance resource and the Oracle instance to the same userApplication.

### Information

NULLDETECTOR attribute of an ASM instance resource is automatically on. You may not change the setting.

## 3.11.2 Operation notes

---

The diskgroup for the ASM instance must not be mounted or dismounted manually. If the diskgroup is already mounted when an ASM resource is activated, the following message might be output to the console:

ORA-15032: not all alterations performed

ORA-15017: diskgroup "diskgroup name" cannot be mounted

ORA-15030: diskgroup name "diskgroup name" is in use by another diskgroup

# Chapter 4 Command

## 4.1 hvoradisable - Discontinue Monitoring Resources

### User

Super user

### Format

```
/opt/FJSVclora/sbin/hvoradisable application_name resource_name  
/opt/FJSVclora/sbin/hvoradisable -a [ application_name ]
```

### Function

It discontinues monitoring the specified Wizard for Oracle resource (Oracle service, Oracle instance or Oracle listener resources). The specified resource should exist on a local node (a node where the command is executed.).

This function is used to stop the Oracle service, Oracle instances or Oracle listeners for maintenance. If hvoradisable is executed while userApplication is running, the function is disabled to monitor the Oracle system immediately, and the resource state enters the Warning state. If hvoradisable is executed while userApplication is stopped, the function is enabled when userApplication is activated next time. Then, the resources enter the Warning state without starting the Oracle service, Oracle instances or Oracle listeners.

It is necessary to confirm if the resource state is Warning, and then stop the Oracle instances and Oracle listeners. Even though the Oracle instances or Oracle listeners are stopped, the resources remain Warning.



See

An ASM instance resource is not monitored, so it is not necessary to disable monitoring by using this command. Further details are given in "3.11 ASM (Automatic Storage Management)" section.

### Parameter

*application\_name*

It specifies the name of userApplication including the resources that discontinue to be monitored.

*resource\_name*

It specifies the name of the Oracle instance or listener resources that discontinue to be monitored.

-a [ *application\_name* ]

The hvoradisable command discontinues the monitoring of all Wizard for Oracle resources that exist on a local node and are included in the userApplication specified for *application\_name*.

If *application\_name* is not specified, the hvoradisable command discontinues the monitoring of all Wizard for Oracle resources that exist on a local node.

### Exit status

0: Normal termination

Non-0: Abnormal termination

2: Abnormal termination (disruption of resource monitoring with the -a option fails)



Note

Do not execute this command while switchover or failover is in progress.

## 4.2 hvoraenable - Restart Monitoring Resources

### User

Super user

## Format

```
/opt/FJSVclora/sbin/hvoraenable application_name resource_name  
/opt/FJSVclora/sbin/hvoraenable -a [ application_name ]
```

## Function

It restarts monitoring the Oracle instance or Oracle resources.

It restarts monitoring the specified Wizard for Oracle resource (Oracle service, Oracle instance or Oracle listener resources).

hvaraenable is available while regardless of userApplication active or inactive. If the command is executed while userApplication is stopped, the function cancels the setting of disabling monitoring with hvoradisable. If the command is executed while userApplication is running, monitoring the Oracle instance and Oracle listener resources is started immediately. It is necessary to execute the command after Oracle instance and Oracle listeners are manually started. Also, confirm that the resource state is changed from Warning to Online.



## See

.....  
An ASM instance resource is not monitored, so it is not necessary to enable monitoring by using this command.

Further details are given in "3.11 ASM (Automatic Storage Management)" section.  
.....

## Parameter

*application\_name*

It specifies the userApplication name including the resources that discontinue to be monitored.

*resource\_name*

It specifies the resource name of the Oracle instances or listeners that restart to be monitored.

-a [ *application\_name* ]

The hvoraenable command restarts the monitoring of all Wizard for Oracle resources that exist on a local node and are included in the userApplication specified for *application\_name*.

If *application\_name* is not specified, the hvoraenable command restarts the monitoring of all Wizard for Oracle resources that exist on a local node.

## Exit status

0: Normal termination

Non-0: Abnormal termination

2: Abnormal termination (disruption of resource monitoring with the -a option fails)



## Note

.....  
Do not execute this command while switchover or failover is in progress.  
.....

## 4.3 clorapass - Set Password for Monitoring

---

### User

Super user

### Format

```
/opt/FJSVclora/sbin/clorapass
```

### Function

It specifies a password of Oracle SYSTEM user in PRIMECLUSTER Wizard for Oracle by executing the "clorapass" command. The detector monitoring the Oracle instances connects to Oracle using SYSTEM user. For that purpose, the detector requires the password of Oracle SYSTEM user. If the password is not set in the Wizard for Oracle, the detector uses "manager" as a SYSTEM user password. The command is executed on any one of the nodes.

If multiple Oracle instances exist (e.g. RAC), execute the clorapass command for each Oracle instance.

Parameter

None.

Exit status

0 : Normal termination

Other than 0 : Abnormal termination



See

For information on how to change the password of the Oracle SYSTEM user operating on a cluster system, see “[3.6 Oracle SYSTEM User Password Change](#)”.

## 4.4 cloracpy - Oracle Environment Setup Tool for Standby Node

User

Oracle DBA user

Format

/opt/FJSVclora/sbin/cloracpy

Function

Required files on the operating node can be backed up in a tar format by executing the “cloracpy” command. By deploying this backup data on the standby nodes, the file copy and link settings are enabled.

Execute the “cloracpy” command

- \$ORACLE\_HOME and \$ORACLE\_BASE should be identical between the operating node and the standby nodes.
- An Oracle configuration should be the same between the operating node and the standby nodes.
- Databases should be created and set up on the operating node.
- The command must be executed with Oracle user.
- \$ORACLE\_BASE, \$ORACLE\_HOME and \$ORACLE\_SID must be set in Oracle user environment variables.

The following backup files are stored in the tar file with the “cloracpy” command:

- All resources under \$ORACLE\_HOME/dbs/
- All resources under \$ORACLE\_BASE/admin/\$ORACLE\_SID/
- \$ORACLE\_HOME/network/admin/\*.ora

These files must be stored in the “/tmp/oracle.\$ORACLE\_SID.tar” file. Copy this file to the standby nodes. Then, the files on the operating node are deployed on the standby nodes with the “tar xvf /tmp/oracle.\$ORACLE\_SID.tar” command.

This command stores the files in the tar file, and deploys with the full path. The command should not be executed if the \$ORACLE\_BASE or \$ORACLE\_HOME setup differs between the operating node and the standby nodes. Also, if the operation method is different between the operating node and the standby nodes, this command is not enabled. The file with the same name as the other file will be overridden.

Parameter

None.

Exit status

0 : Normal termination

Other than 0 : Abnormal termination

## 4.5 clgetoralog - Oracle Troubleshooting Information Collection

User

Super user

## Format

```
/opt/FJSVclora/bin/clgetoralog [ -n RMSconfiguration ] [ -d output_directory ] [ -a ]
```

## Function

It collects Oracle information for troubleshooting. The “clgetoralog” command collects Oracle information and log files on a PRIMECLUSTER system.

Collected information is archived to “<hostname>\_<yymmddHHMMSS>\_clgetoralog.tar”.

The “clgetoralog” command collects

- initialization parameter file
  - \$ORACLE\_HOME/dbs/\*.ora
  - \$ORACLE\_BASE/admin/\$ORACLE\_SID/pfile/\*.ora
- Oracle alert log
  - background\_dump\_dest/\*.log
  - \$ORACLE\_BASE/admin/\$ORACLE\_SID/bdump/\*.log
  - \$ORACLE\_HOME/rdbms/log/\*.log
  - \$ORACLE\_HOME/dbs/\*.log
- listener.ora, tnsnames.ora
  - \$ORACLE\_HOME/network/admin/\*.ora
- Listener log
  - \$ORACLE\_HOME/network/log/\*.log
- CRS information
  - \$ORACLE\_CRS\_HOME/crs/admin/\*
  - \$ORACLE\_CRS\_HOME/crs/log/\*
- PRIMECLUSTER Wizard for Oracle information
- PRIMECLUSTER, RMS information
- system information (execution results of the following commands and files)
  - # uname -a
  - # uptime
  - # psrinfo -v
  - # /usr/platform/^arch -k`/sbin/prtdiag (\*1)
  - # cat /etc/release
  - # cat /var/sadm/ptf/newprev/Rcontents
  - # pkgparam -v FJSVbse
  - # sysdef -i
  - # ipcs
  - # swap -l
  - # ptree -a, ps -ef
  - # ntpq -p
  - /var/adm/messages files

(\*1) In the environment that applied the patch 913933-07 or later of PRIMECLUSTER Wizard for Oracle, it is not gathered in a nonglobal zone or the Solaris 8 environment (OS patch 111792-17 applied).

## Note

When this command is executed in Solaris 8 environment (OS patch 111792-17 applied), the prtdiag command of OS terminates abnormally by incompatible OS and display the character string of "Killed" on the screen. You can ignore it.



## Information

The `fjsnap` command can also be used to collect troubleshooting information.

### Parameter

[ -n *RMSconfiguration* ]

Specify RMS configuration name for *RMSconfiguration*.

If this option is specified, `clgetoralog` command collects RMS configuration information in addition to the information described in “Function”. When the cluster application has been built by using GUI (userApplication Configuration Wizard), the RMS configuration name is "config". The RMS configuration name can be confirmed by the following command while RMS is running.

```
# /opt/SMAW/bin/hvdisp -a | grep Configuration
Configuration: /opt/SMAW/SMAWRrms/build/config.us
```

If this option is not specified, `clgetoralog` command collects only information described in “Function”.

[ -d *output\_directory* ]

For *output\_directory*, specify the directory name where collected information is stored.

`clgetoralog` command stores “<hostname>\_<yymmddHHMMSS>\_clgetoralog.tar” in the specified directory if this option is specified.

If this option is not specified, `clgetoralog` commands stores the archived file in `/var/tmp` directory.

[ -a ]

If this option is specified, `clgetoralog` command collects the following information in addition to the information described in “Function”.

- current active RMS configuration  
(if -n option is specified, the specified configuration is collected.)
- RMS logfiles (`/var/opt/reliant/log/*`)
- RMS environment variables configuration file (`/usr/opt/reliant/bin/hvenv.local`)
- `/var/adm/messages*`
- `/etc/hosts, /etc/inet/hosts`
- `/etc/passwd`
- `/etc/services, /etc/inet/services`
- `/etc/system`
- `/etc/vfstab`
- `# showrev -p`

If this option is not specified, `clgetoralog` command collects only information described in “Function”.

### Exit status

0 : Normal termination

Other than 0 : Abnormal termination

## Note

The `clgetoralog` command searches Oracle alert log based on `background_dump_dest` defined in the Initialization Parameters File (`$ORACLE_HOME/dbs/init<SID>.ora`) or in `$ORACLE_BASE/admin/<SID>/bdump` directory. However, `clgetoralog` cannot collect Oracle alert log if `spfile` (Persistent Initialization Parameters File) is used or `background_dump_dest` is not defined in the Initialization Parameters File.

It is necessary to define the full path of Oracle alert log in `/opt/FJSVclora/etc/clgetoralog.conf`. A definition example is described below:

```
COLLECTOBJ=/oracle/admin/orclsid/bdump/alert_orclsid.log
COLLECTOBJ=/oracle/admin/orclsid/bdump/*.trc
```

The location of Oracle alert log is defined in `background_dump_dest` of the Initialization Parameters File or `spfile`.

Start with “COLLECTOBJ=” and define full pathname of a file or a directory after “=”. Wildcard character is available, but not available to use it in middle of pathname.

```
COLLECTOBJ=/oracle/admin/orclsid/bdump/*.trc [available]
COLLECTOBJ=/oracle/admin/*/bdump/*.trc [NOT available]
```

If the size of collected information becomes large because of using wildcard character, some information might not be collected.

## 4.6 clorabr - Integrated Backup and Restoration of Configuration Files

### User

Super user

### Format

```
/opt/FJSVclora/bin/clorabr { backup | restore } [ -d backup_directory ]
```

### Function

PRIMECLUSTER Wizard for Oracle supports integrated backup and restoration (cfbackup/cfrestore) of PRIMECLUSTER systems. The clorabr command can only back up and restore PRIMECLUSTER Wizard for Oracle configuration information.



For integrated backup and restoration of PRIMECLUSTER systems, refer to "Chapter 11 Backing Up and Restoring a PRIMECLUSTER System" of the "PRIMECLUSTER Installation and Administration Guide".

The following files can be backed up and restored:

```
- /opt/FJSVclora/etc/FJSVclora.pwd
- /opt/FJSVclora/etc/FJSVclorafm.actionlist
- /opt/FJSVclora/usr/_mount10EndBackup.sh
- /opt/FJSVclora/usr/mount10EndBackup.sh
- /opt/FJSVclora/usr/_mount20MediaRecover.sh
- /opt/FJSVclora/usr/mount20MediaRecover.sh
- /opt/FJSVclora/usr/mount05EndBackup_MediaRecover.sh
```

### Parameter

#### *backup*

Backs up PRIMECLUSTER Wizard for Oracle configuration information. With this option, a list of configuration files that will be backed up in standard output is displayed. The configuration information will be stored in FJSVclora on the specified directory or the directory (current directory) that is created with the clorabr command. For example, if this command is executed when the current directory is /var/tmp, the backup information will be stored in /var/tmp/FJSVclora.

#### *restore*

Restores the PRIMECLUSTER Wizard for Oracle configuration information that have previously been configured. With this option, a list of configuration files that will be restored in standard output is displayed. Check that backed up configuration information are stored in the specified directory or in FJSVclora in the directory (current directory) that is created with the clorabr command. For example, if the backup information is stored in /var/tmp/FJSVclora, execute the command after moving it to /var/tmp.

[ -d *backup\_directory* ]

Specifies the directory where data will be backed up or restored using the full path. With the backup option, the FJSVclora directory will be created on the specified directory, and data will be stored in the FJSVclora. With the restore option, data will be restored from the FJSVclora.

Without this option, data will be backed up or restored in the current directory where the command is executed.

### Exit status

0 : Normal termination

Other than 0 : Abnormal termination

## 4.7 clorainfo - display resource configuration information and monitoring status

---

### User

Super user

### Format

```
/opt/FJSVclora/bin/clorainfo { -c [ RMSconfiguration ] | -e | -m [ ResourceName ] | -v }
```

### Function

This command displays configuration information or monitoring status concerning Wizard for Oracle resources.

### Parameter

-c [ *RMSconfiguration* ]

The clorainfo command displays configuration information of Wizard for Oracle resources that are configured in the specified RMS configuration. Specify RMS configuration name for *RMSconfiguration*.

If *RMSconfiguration* is not specified, this command displays configuration information of Wizard for Oracle resources that are configured in the current active RMS configuration.

-e

The clorainfo command displays kernel parameter settings concerning Oracle and Oracle environment settings on a local node.

-m [ *ResourceName* ]

The clorainfo command displays current monitoring status of Wizard for Oracle resources on a local node. For *ResourceName*, specify name of Wizard for Oracle resource which exists on a local node.

If *ResourceName* is specified, this command displays monitoring status of the specified resource and exits with the following status.

0: monitoring is active. (RMS is running)

2: monitoring is inactive. (RMS is running)

10: monitoring is active. (RMS is not running)

12: monitoring is inactive. (RMS is not running)

If *ResourceName* is not specified, this command displays monitoring status of all Wizard for Oracle resources on a local node.

-v

The clorainfo command displays Wizard for Oracle package information installed in a local node.

### Exit status

0: Normal termination or RMS is running and resource monitoring is active ("-m *ResourceName*" specified)

2: RMS is running and resource monitoring is inactive ("-m *ResourceName*" specified)

10: RMS is stopped, and resource monitoring is active ("-m *ResourceName*" specified)

12: RMS is stopped, and resource monitoring is inactive ("-m *ResourceName*" specified)

Other than the above values: Abnormal termination

# Chapter 5 Notice

Particular attention should be given to the following:

## Prerequisites and requirements

PRIMECLUSTER Wizard for Oracle has specific system requirements and component prerequisites that need to be understood prior to operation.

- More than one Oracle product which version/release is different can be installed on the same node. However, the version and release should be same on an operating node and standby nodes.  
For the Oracle products supported, see “Installation Guide” and “Handbook”.
- An Oracle database must be allocated to a shared disk.
- A user name, user ID, group name, and group ID should be identical on all the nodes to install Oracle.
- If multiple ORACLE\_HOME are configured on one server, a different user name must be assigned respectively.
- Setting Oracle log output on the shared disk is not recommended. When a disk device fails, log is not output, and the trouble may be unable to be investigated.
- Oracle archive log files can be set on local disks. In such a case, if Oracle recovery is required, the Oracle archive log files on both nodes must be put together.
- The Oracle “TWO\_TASK” environment variable cannot be used. For details, see “[2.5 Oracle Database Creation and Setting](#)”.
- The setting to connect to an Oracle Database must not be described in login.sql of an Oracle user. For details, see “[2.5 Oracle Database Creation and Setting](#)”.
- PRIMECLUSTER Wizard for Oracle connects to Oracle instance with SYSDBA system privilege to start up or stop Oracle instance/database. In this case, local connection in operating system authentication is used. Therefore, the following requirements should be satisfied. (If not, startup and stop of Oracle instance/database might fail.)
  - Oracle user that is set for Oracle instance resource in “[2.6.1 Create Oracle resource](#)” or “[2.7.4 Oracle Instance Resource Registration](#)” should belong to OSDBA group.
  - SQLNET.AUTHENTICATION\_SERVICES parameter should not be defined in sqlnet.ora file.

The other connections (e.g. user own connection for maintenance) can use the password file authentication.

- A command (e.g. script) that has interactive mode should not be described in Oracle user's profile(e.g. /etc/profile, .bash\_profile, .cshrc, .profile). It may cause failure of resource monitoring or userApplication startup or shutdown.  
For details, refer to “[2.3 Oracle Installation and Configuration](#)” or “[2.7.2 Oracle Software Installation and Configuration](#)”.
- Environment that Oracle user's home directory and profile are located on the shared disk is not supported. Oracle user's home directory and profile must be located on the local disk of each node.
- Operating system authentication of Listener should be enabled. For details, refer to “[2.5 Oracle Database Creation and Setting](#)”.
- Oracle user should have access privileges for /tmp directory.  
The programs of PRIMECLUSTER Wizard for Oracle working with Oracle user use /tmp directory. If Oracle user does not have access privileges for /tmp directory, the programs do not work correctly and startup or shutdown of Oracle fails.
- Using of the "su -" command is not supported for user scripts(prestapup\*, nomount\*, mount\*) under /opt/FJSVclora/usr.

## Features and functions

Below are guidelines and precautions to be taken in using the features and functions provided by PRIMECLUSTER Wizard for Oracle.

- To monitor the Oracle instances, the detector connects to the database by using SYSTEM user. The detector also creates a table for monitoring in the SYSTEM user's default tablespace to check Oracle operation. Size of the table is few bytes.
- The Oracle instances fail to stop in the “immediate” mode in the following situations:
  1. DBA user is connected to the Oracle instance, or
  2. Oracle instance backup is in progressIn these cases, Wizard for Oracle shuts down Oracle instance with “abort” mode.

- The time required for Oracle instance startup and stop varies depending on the database size. The default startup timeout is 10 minutes. The default stop timeout is 3 minutes.  
RMS command “hvshut” has own timeout value. Offline processing of userApplication caused by RMS stop continues even though hvshut timeout has occurred.
- When a database failure is detected during Oracle instance startup, the database is automatically recovered. Note that if Oracle9iRAC is used in a system, this automatic recovery is not supported. If recovery is required, the file names in the “/opt/FJsvclora/usr” directory should be replaced as follows:  
\_mount10EndBackup.sh -> mount10EndBackup.sh  
\_mount20MediaRecover.sh -> mount20MediaRecover.sh  
mount05EndBackup\_MediaRecover.sh -> \_mount05EndBackup\_MediaRecover.sh
- Do not execute “srvctl” or “sqlplus” commands to shut down Oracle instance. It might cause mismatched status between RMS and Oracle RAC 10g.
- The Oracle RAC 10g resource name is generated on RMS as follows:
  - Oracle instance resource  
    <SubApplicationName>\_<inst\_name>.i
  - Oracle listener resource  
    <SubApplicationName>\_<lsnr\_name>.l

The RMS resource name is based on the Oracle 10g resource name which is output of crs\_stat command, and the first part ("ora.") of the Oracle 10g resource name is replaced by "<SubApplicationName>\_".  
The RMS resource name of Oracle 10g instance resource has the following convention and rules.

  - Characters per resource name must be less than 40 characters.
  - "<SubApplicationName>\_" can be changed in "ApplicationName" on this step.

## Configuration

Below are guidelines and precautions to be taken in configuring an environment that allows for PRIMECLUSTER Wizard for Oracle operations.

- Be aware of the exit code and timeout duration when the following scripts are set:  
PreOnlineScript, PostOnlineScript, PreOfflineScript, PostOfflineScript, FaultScript

## Operations

Users need to take a special precaution when changing the SYSTEM password for PRIMECLUSTER Wizard for Oracle as follows.

- For information on how to change the password of the Oracle SYSTEM operating on a cluster system, see “[3.6 Oracle SYSTEM User Password Change](#)”.

## Others

Users need to take the following special precaution when operating PRIMECLUSTER Wizard for Oracle.

- If the Oracle instance is stopped in the “abort” mode, automatic recovery runs when the Oracle instance is restarted next time.

# Chapter 6 Message

This chapter describes messages generated by PRIMECLUSTER Wizard for Oracle and lists the possible causes and actions you can take to resolve any problems indicated by a message.

## Oracle instance resource messages

---

### **ERROR: 1202: Cannot map shared memory or get semaphore**

[Content]

A system error occurred. Acquisition of shared memory or semaphores failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

### **ERROR: 1203: Cannot open actionlist**

[Content]

The action definition file cannot be opened.

[Corrective action]

Check if the action definition file already exists, or file access privileges have been changed.

---

### **ERROR: 1204: Corrupted actionlist: Invalid errno, line=xx**

[Content]

The “errno” setting of the action definition file is incorrect.

[Corrective action]

Check the “errno” setting of “line=%d” in the action definition file.

---

### **ERROR: 1205: Corrupted actionlist: Invalid status, line=xx**

[Content]

The “status” setting of the action definition file is incorrect.

[Corrective action]

Check the “status” setting of “line=%d” in the action definition file.

---

### **ERROR: 1206: Corrupted actionlist: Invalid action, line=xx**

[Content]

The “action” setting of the action definition file is incorrect.

[Corrective action]

Check the “action” setting of “line=%d” in the action definition file.

---

### **ERROR: 1208: <Oracle process> process error**

[Content]

An Oracle process error was detected.

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

### **ERROR: 1213: Action error detected: Offline**

[Content]

The “Offline” state of the resource will be notified.

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

#### **ERROR: 1214: Action error detected: Faulted**

[Content]

The “Faulted” state of the resource will be notified.

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

#### **ERROR: 1215: Action error detected: Restart**

[Content]

Monitoring will be retried.

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

#### **ERROR: 1219: Cannot read hvgdconfig**

[Content]

The RMS configuration file (hvgdconfig file) cannot be read.

[Corrective action]

Modify the RMS configuration file manually then check the file settings.

---

#### **ERROR: 1220: Not Found xx setting in hvgdconfig**

[Content]

The “%s” setting of the RMS configuration file (hvgdconfig file) is incorrect.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

#### **ERROR: 1223: Not found *AttributeName* in hvgdconfig**

[Content]

The “*AttributeName*” setting of the RMS configuration file (hvgdconfig file) is incorrect.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

#### **ERROR: 1224: Receiving of monitoring instruction failed (*detail*)**

[Content]

An internal error occurred. Acquisition of shared memory or semaphores failed.

[Corrective action]

Contact system administrators.

---

#### **ERROR: 1225: Reporting of monitoring result failed : *status***

[Content]

An internal error occurred. Notification of monitoring result failed.

[Corrective action]

Contact system administrators.

---

**ERROR: 1226: Checking existence of Detector process failed**

[Content]

An internal error occurred. Checking whether or not the detector process is alive failed.

[Corrective action]

Contact system administrators.

---

**ERROR: 1227: Invalid setting in hvgdconfig : *AttributeName***

[Content]

The “*AttributeName*” setting of the RMS configuration file (hvgdconfig file) is incorrect.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

**ERROR: 1299: ORA-xxxxx**

[Content]

An Oracle error “ORA-xxxxx” is output.

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

**WARN: 1302: Action error detected: Warning**

[Content]

The warning state of the resource will be notified.

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

**ERROR: 3402: clorainstance detected Oracle error! (ORA-xxxxx: )**

[Content]

An Oracle error occurred while Oracle startup or shutdown was in progress (svrmgrl).

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.

---

**ERROR: 3403: clorainstance detected Oracle error! (ORA-xxxxx: )**  
**ERROR: 7301: clasminstance detected Oracle error! (ORA-xxxxx: )**

[Content]

An Oracle error occurred while Oracle startup or shutdown was in progress (sqlplus).

[Corrective action]

Check if Oracle is properly running by referring to the Oracle alert log.



## Oracle listener resource messages

---

### **ERROR: 2202: Cannot map shared memory or get semaphore**

[Content]

A system error occurred. Acquisition of shared memory or semaphores failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

### **ERROR: 2203: Cannot get ORACLE\_HOME**

[Content]

ORACLE\_HOME cannot be acquired.

[Corrective action]

Check if ORACLE\_HOME is correct set for the environment variable.

---

### **ERROR: 2204: Cannot read hvgdconfig**

[Content]

The RMS configuration file (hvgdconfig file) cannot be read.

[Corrective action]

Modify the RMS configuration file manually then check the file settings.

---

### **ERROR: 2205: Not Found xx setting in hvgdconfig**

[Content]

The “%s” setting of the RMS configuration file (hvgdconfig file) is incorrect.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

### **ERROR: 2206: Not Found *AttributeName* in hvgdconfig**

[Content]

The “*AttributeName*” setting of the RMS configuration file (hvgdconfig file) is incorrect.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

### **ERROR: 2210: Tnsping detected the error (xx)**

[Content]

Listener monitoring with the tnsping command failed.

[Corrective action]

Check the Listener log and if the Listener is properly running.

---

### **ERROR: 2211: The listener name is invalid**

[Content]

The Oracle listener name is incorrect.

[Corrective action]

Check the Listener settings such as listener.ora and tnsnames.ora.

---

**ERROR: 2214: The process of the listener does not exist****[Content]**

An Oracle listener process failure was detected. It will be output along with userApplication stop.

**[Corrective action]**

If the error is output during userApplication is online, check the Listener log and if the Listener is properly running.

---

**ERROR: 2215: Process ID of the listener is not found****[Content]**

The Listener process ID is unknown.

**[Corrective action]**

Check the Listener log and if the Listener is properly running.

---

**ERROR: 2219: Reporting of monitoring result failed : *status*****[Content]**

An internal error occurred. Notification of monitoring result failed.

**[Corrective action]**

Contact system administrators.

---

**ERROR: 2220: System error occurred(*detail*)****[Content]**

A system error occurred.

**[Corrective action]**

The problem might be due to insufficient system resource. Check the system environment.

---

**ERROR: 2221: Receiving of monitoring instruction failed (*detail*)****[Content]**

An internal error occurred. Acquisition of shared memory or semaphores failed.

**[Corrective action]**

Contact system administrators.

---

**ERROR: 2222: Checking existence of Detector process failed****[Content]**

An internal error occurred. Checking whether or not the detector process is alive failed.

**[Corrective action]**

Contact system administrators.

---

**Common messages**

---

**INFO: 0101: Fault Watching is disable****[Content]**

Monitoring resource was discontinued after the hvoradisable was executed.

[Corrective action]

None. Execute the hvoraenable command to restart resource monitoring.

---

#### **INFO: 0102: Fault Watching is enable**

[Content]

Resource monitoring was restarted after the “hvoraenable” command was executed.

[Corrective action]

None.

---

#### **ERROR: 0207: Cannot allocate memory for hvgdconfig : *AttributeName***

[Content]

A system error occurred. Acquisition of memory failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

#### **ERROR: 0208: Data init error**

[Content]

A system error occurred. Acquisition of semaphore failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

#### **ERROR: 0209: Fork error**

[Content]

A system error occurred. Generation of process failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

#### **ERROR: 0211: User xx not found.**

[Content]

The Oracle user settings are incorrect.

[Corrective action]

Check if Oracle user information (e.g. username) is correct.

---

#### **ERROR: 0212: Cannot create log xx**

[Content]

Log files cannot be created.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

#### **ERROR: 0213: Library init error**

[Content]

A system error occurred. Initialization failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

**ERROR: 0219: Detector aborted**

[Content]

A system error occurred. The detector will be terminated.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

**ERROR: 0220: Not found <AttributeName> in hvgdconfig.**

[Content]

The “*AttributeName*” setting of the RMS configuration file (hvgdconfig file) is not set.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

**ERROR: 0221: Invalid setting in hvgdconfig : *AttributeName***

[Content]

The “*AttributeName*” setting of the RMS configuration file (hvgdconfig file) is incorrect.

[Corrective action]

If you modify the RMS configuration file manually, check the settings.

---

**ERROR: 0222: Checking permission of resource monitoring failed**

[Content]

An internal error occurred. Checking monitoring disruption failed.

[Corrective action]

Contact system administrators.

---

**ERROR: 0223: Checking existence of fault monitor process failed**

[Content]

An internal error occurred. Checking whether or not the monitoring process is alive failed.

[Corrective action]

Contact system administrators.

---

**ERROR: 0224: Sending monitoring instruction failed (*detail*)**

[Content]

A system error occurred. Acquisition of shared memory or semaphores failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

**ERROR: 0225: Receiving of monitoring result failed (*detail*)**

[Content]

A system error occurred. Acquisition of shared memory or semaphores failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

---

**ERROR: 0226: Watch Timeout error occurred (*count*)**

[Content]

Since there's no response from Oracle or Listener, timeout occurs.

[Corrective action]

Check if Oracle or Listener is properly running by referring to the Oracle alert log or Listener log.

---

**ERROR: 0227: Receiving of Script notice failed**

[Content]

An internal error occurred. Communication with the script failed.

[Corrective action]

Contact system administrators.

---

**ERROR: 0228: Starting fault monitor failed**

[Content]

Startup of the monitoring process failed.

[Corrective action]

Contact system administrators.

---

**ERROR: 0229: Pipe error**

[Content]

A system error occurred. Creation of output pipe failed.

[Corrective action]

The problem might be due to insufficient system resource. Check the system environment.

 **Note**

.....  
PRIMECLUSTER Wizard for Oracle outputs error messages to system console other than messages described above if error in Oracle instance startup occurs.  
.....

**clgetoralog messages**

---

**clgetoralog [ERROR] Creation of temporary directory failed! (*directory\_name*)**

[Content]

Cannot make a temporary directory.

[Corrective action]

Check the system environment.

---

**clgetoralog [ERROR] Invalid RMS Configuration name! (*RMS\_configuration*)**

[Content]

The specified RMS configuration *RMS\_configuration* does not exist.

[Corrective action]

Retry with a correct RMS configuration name.

---

**clgetorolog [ERROR] No space in path\_name (details)!**

[Content]

Not enough disk space in path\_name.

[Corrective action]

Check the system environment.

---

**clgetorolog [ERROR] Creation of directory failed! (directory\_name)**

[Content]

Cannot make a directory directory\_name where collected information is stored.

[Corrective action]

Check the system environment.

---

**clgetorolog [ERROR] "file\_name" already exists!**

[Content]

Cannot make file\_name because the same name file already exists.

[Corrective action]

The directory where the collected information has been stored is shown in the following message. Create an archive file from the directory manually with other file name.

---

**clgetorolog [ERROR] Creation of "file\_name" failed!**

[Content]

Cannot create an archive file file\_name.

[Corrective action]

The directory where the collected information has been stored is shown in the following message. Create an archive file from the directory manually.

---

**clgetorolog [WARN] Obtaining local SysNode Name failed!**

[Content]

Cannot get local SysNode name, but clgetorolog continues collecting information.

[Corrective action]

None.

---

**clgetorolog [WARN] Execution of hvw failed!**

[Content]

Cannot execute an RMS command hvw(1M) correctly, but clgetorolog continues collecting information.

[Corrective action]

None.

---

**clgetorolog [WARN] Result of hvw is invalid!**

[Content]

An RMS command hvw(1M) has returned unexpected result, but clgetoralog continues collecting information.

[Corrective action]

None.

---

#### **clgetoralog [WARN] Wizard for Oracle resources not found in hvgdconfig!**

[Content]

There are no definitions of Wizard for Oracle resources in hvgdconfig file, but clgetoralog continues collecting information.

[Corrective action]

None.

---

#### **clgetoralog [WARN] Obtaining RMS Configuration name from CONFIG.rms failed!**

[Content]

Cannot get RMS configuration name, but clgetoralog continue collecting information.

[Corrective action]

None.

---

#### **clgetoralog [WARN] Invalid RMS Configuration name! (RMS\_configuration)**

[Content]

Cannot get RMS configuration name, but clgetoralog continue collecting information.

[Corrective action]

None.

---

### **clorainfo messages**

---

#### **clorainfo: ERROR: Obtaining local SysNode Name failed!**

[Content]

Cannot get a local SysNode name.

[Corrective action]

Check if CF (Cluster Foundation) has been configured and is "UP" state.

---

#### **clorainfo: ERROR: Checking RMS running status failed! (details)**

[Content]

Cannot check if RMS is running or not.

[Corrective action]

Check if PRIMECLUSTER installation, cluster setup and building a cluster application (userApplication) have been completed.

---

#### **clorainfo: ERROR: Obtaining RMS configuration name failed! (details)**

[Content]

Cannot get an RMS configuration name.

[Corrective action]

Check if building a userApplication (cluster application) has been completed.

---

**clorainfo: ERROR: CONFIG.rms does not exist! (details)****[Content]**

CONFIG.rms file does not exist.

**[Corrective action]**

Check if building a userApplication (cluster application) has been completed.

---

**clorainfo: ERROR: Wizard for Oracle resources not found****[Content]**

There is no Wizard for Oracle resources in a build userApplication (cluster application).

**[Corrective action]**

Check if building a userApplication (cluster application) has been completed or Oracle instance resources or Listener resources are included in the userApplication.

---

**clorainfo: ERROR: The specified resource does not exist on this SysNode (SysNode\_name), or does not belong to Wizard for Oracle! - resource\_name****[Content]**

The specified resource resource\_name does not exist on the local node SysNode\_name, or is not a Wizard for Oracle resource.

**[Corrective action]**

Retry with a correct resource name.

---

**clorainfo: ERROR: Resource does not belong to Wizard for Oracle - resource\_name****[Content]**

The specified resource resource\_name is not a Wizard for Oracle resource.

**[Corrective action]**

Retry with a correct resource name.

---

**clorainfo: ERROR: Invalid RMS Configuration.****[Content]**

RMS configuration is invalid.

**[Corrective action]**

Check if building a userApplication (cluster application) has been completed.

---

**clorainfo: ERROR: RMS\_configuration does not exist.****[Content]**

The specified RMS configuration does not exist.

**[Corrective action]**

Retry with a correct RMS configuration name.

---

**hvoradisable/hvoraenable messages**

---

**command: ERROR: Internal error! (details)****[Content]**

Internal error occurred.



[Corrective action]

Contact your system administrator.

---

**command: ERROR: Failed to disable/enable resource monitoring - resource\_name**

[Content]

Cannot disable or enable monitoring.

[Corrective action]

Contact your system administrator.

---

**command: ERROR: hvgdconfig does not exist!**

[Content]

hvgdconfig file does not exist.

[Corrective action]

Check if building a userApplication (cluster application) has been completed.

---

**command: ERROR: Obtaining local SysNode Name failed!**

[Content]

Cannot get a local SysNode name.

[Corrective action]

Check if CF (Cluster Foundation) has been configured and is "UP" state.

---

**command: ERROR: Obtaining RMS configuration Name failed!**

[Content]

Cannot get an RMS configuration name.

[Corrective action]

Check if building a userApplication (cluster application) has been completed.

---

**command: ERROR: Execution of hvw failed!**

[Content]

Cannot execute an RMS command hvw(1M) correctly.

[Corrective action]

Check if building a userApplication (cluster application) has been completed.

---

**command: ERROR: Result of hvw is invalid!**

[Content]

Cannot execute an RMS command hvw(1M) correctly.

[Corrective action]

Check if building a userApplication (cluster application) has been completed.

---

**command: ERROR: Failed to disable/enable resource monitoring! (details)**

[Content]

Cannot disable or enable monitoring because of details.

[Corrective action]

Check if PRIMECLUSTER installation, cluster setup and building a cluster application (userApplication) have been completed.

---

**command: ERROR: No Wizard for Oracle resources belong to specified userApplication! - userApplication\_name**

[Content]

There is no Wizard for Oracle resources in the specified userApplication userApplication\_name.

[Corrective action]

Retry with a correct userApplication name.

---

**command: ERROR: No Wizard for Oracle resources are in the current RMS configuration!**

[Content]

There is no Wizard for Oracle resources in the current RMS configuration.

[Corrective action]

Check if building a userApplication (cluster application) has been completed or Oracle instance resources or Listener resources are included in the userApplication.

---

**command: ERROR: No Wizard for Oracle resources exist on this node! - SysNode\_name**

[Content]

There is no Wizard for Oracle resources on a local node SysNode\_name.

[Corrective action]

Check if building a userApplication (cluster application) has been completed or Oracle instance resources or Listener resources are included in the userApplication.

---

**command: ERROR: Invalid userApplication or Resource!**

[Content]

The specified userApplication name or resource name is invalid.

[Corrective action]

Retry with a correct userApplication name and resource name.

---

**command: ERROR: The specified resource does not exist on SysNode\_name! - resource\_name**

[Content]

The specified resource does not exist on a local node SysNode\_name.

[Corrective action]

Retry with a correct resource name or retry on a correct node.

---

**command: WARNING: RMS is not running, but the monitoring of resource\_name is disabled/enabled.**

[Content]

The monitoring is disabled or enabled although RMS is not running.

[Corrective action]

This setting will become effective in the next RMS startup.

## Appendix A Setup Method with CUI

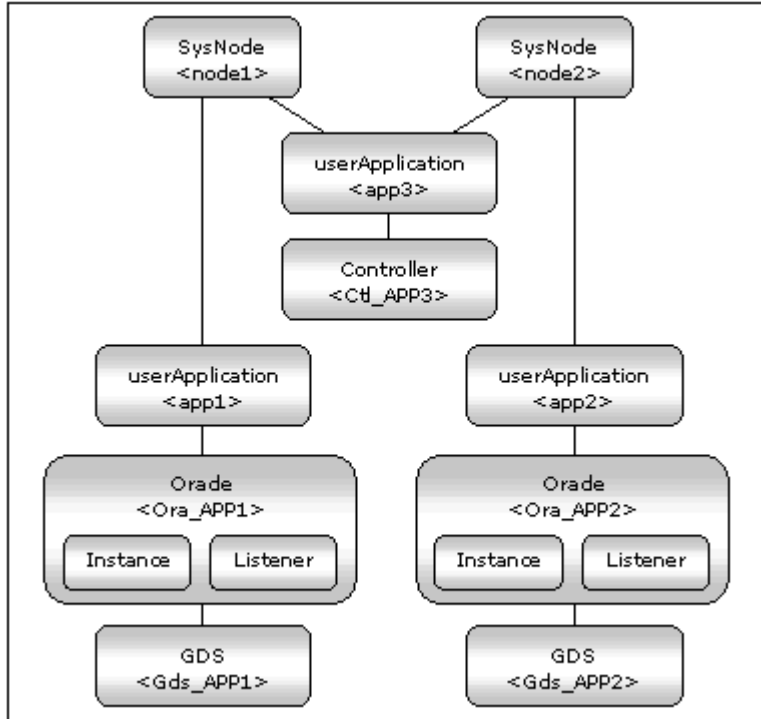
This appendix explains how to create the environment configuration using CUI.

A.1 Create userApplication following the procedure of [2.4 userApplication Creation](#)

A.2 Create the Oracle resource following the procedure of [2.6 Oracle Resource Creation and Setting](#)

The resource tree (userApplication configuration) and setup flow are described below. (The resource tree differs slightly from resource tree created using GUI. Resource name in parentheses <> is default value.)

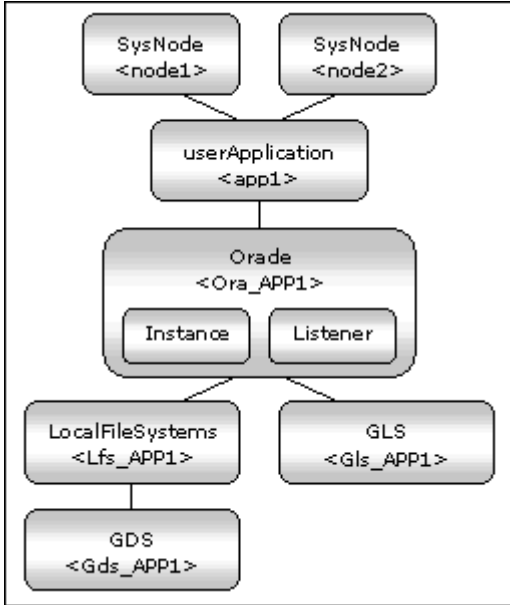
- Scalable operation (Oracle9i RAC)



The flow of setup procedure of scalable operation (Oracle9i RAC) with CUI is described below. (The procedure slightly differs than that with GUI.)

1. Creation of userApplication (app1, app2) not including Oracle resources (procedure 1 to 7 in "A.1.2 Set up scalable operation (Oracle 9i RAC)")
2. Creation of userApplication (app3) including Controller resources (procedure 8 to 14 in "A.1.2 Set up scalable operation (Oracle 9i RAC)")
3. Generate and Activate ("A.1.4 Configuration-Generate and Configuration-Activate")
4. Creation of Oracle databases ("[2.5 Oracle Database Creation and Setting](#)")
5. Addition of Oracle resources to userApplication app1 and app2 (step 1 to 7 in "A.2.1 Application-Edit")
6. Generate and Activate again ("A.2.2 Configuration-Generate and Configuration-Activate")

- Standby operation



The flow of setup procedure of standby operation with CUI is described below.

1. Creation of userApplication (app1) not including Oracle resources  
("A.1.3 Set up standby operation")
2. Generate and Activate  
("A.1.4 Configuration-Generate and Configuration-Activate")
3. Creation of Oracle databases  
("2.5 Oracle Database Creation and Setting")
4. Addition of Oracle resources to userApplication app1  
(procedure 1 to 7 in "A.2.1 Application-Edit")
5. Generate and Activate again  
("A.2.2 Configuration-Generate and Configuration-Activate")

## A.1 Create userApplication

This section explains userApplication creation and non-Oracle resource setup. Oracle resources must be set after a database is created. userApplication is configured with the RMS Configuration Wizard. This RMS Configuration Wizard forms Wizard format.

Execute the following command on any one of the nodes.

```
# hvw -n <Definition name>
```

You can configure an environment by selecting a number from the following menu:

1. Application-Creat	
2. Configuration-Generate	
3. Configuration-Activate	

The menu designated by capital letters is a turnkey wizard that facilitates creation of userApplication.



See

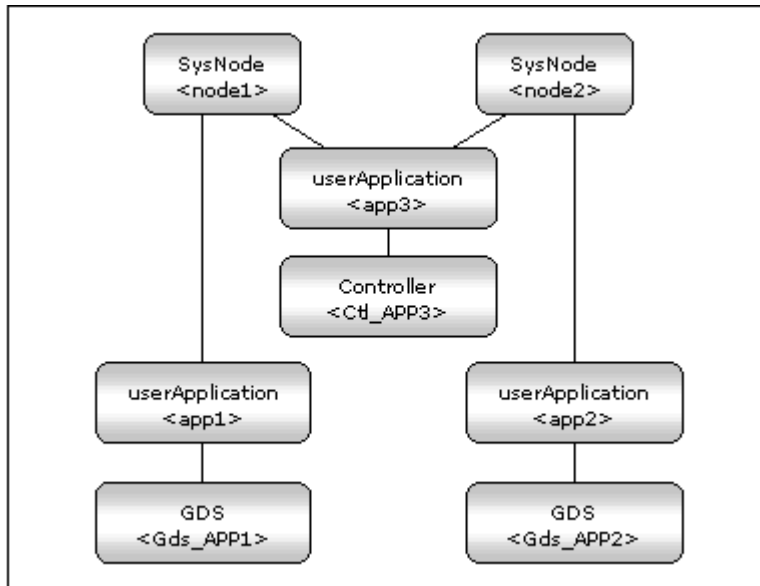
For further details, refer to the PRIMECLUSTER manuals.

## A.1.1 Application-Create

The examples of Oracle environment setup are provided as follows:

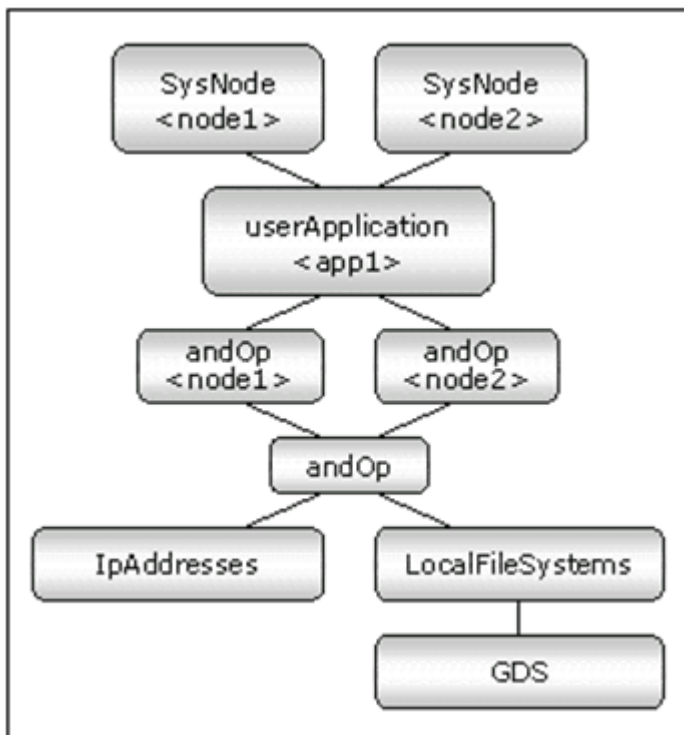
- Scalable operation (Oracle9i RAC)

In scalable operation, userApplication is configured as shown in the illustration.



- Standby operation

In standby operation, userApplication is configured as shown in the illustration.



## A.1.2 Set up scalable operation (Oracle 9i RAC)

---

1. Create userApplication by selecting Application-Create in “Main RMS management menu”.

```
host1: Main RMS management menu, current configuration: oracle1
1) HELP
2) QUIT
3) Application-Create
4) Application-Edit
5) Application-Remove
6) Application-Clone
7) Configuration-Generate
8) Configuration-Activate
. . .
```

2. Select ORACLE (all caps) in “Application type selection menu”.

```
Creation: Application type selection menu:
1) HELP
2) QUIT
3) RETURN
4) OPTIONS
5) GENERIC
6) ORACLE
Application Type: 6
```

3. Specify the userApplication name of ApplicationName in “Settings of turnkey wizard ORACLE”.

```
Settings of turnkey wizard "ORACLE"
1) HELP
2) NO-SAVE+EXIT
3) SAVE+EXIT
4) REMOVE+EXIT
5) ApplicationName=APP1
6) Machines+Basics(-)
Choose the setting to process: 5
```

4. Set up a node and the following menu items by selecting Machines+Basics.

Create userApplication for each Oracle instance. Set up a node for each userApplication. For other settings, refer to HELP or the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".

### Information

---

Recommended setting

AutoStartup = no

AutoSwitchOver = no

PersistentFault = 1

---

## Note

AutoStartUp, be sure to specify No.

Save the above settings by selecting SAVE+EXIT.

```
Machines+Basics (appl:consistent)
 1) HELP                               14) (AutoStartUp=no)
 2) -                                   15) (AutoSwitchOver=No)
 3) SAVE+EXIT                          16) (PreserveState=no)
 4) REMOVE+EXIT                         17) (PersistentFault=1)
 5) AdditionalMachine                   18) (ShutdownPriority=)
 6) AdditionalConsole                   19) (OnlinePriority=)
 7) Machines[0]=host1RMS                20) (StandbyTransitions=)
 8) (PreCheckScript=)                   21) (LicenseToKill=no)
 9) (PreOnlineScript=)                  22) (AutoBreak=yes)
10) (PostOnlineScript=)                  23) (HaltFlag=no)
11) (PreOfflineScript=)                  24) (PartialCluster=0)
12) (OfflineDoneScript=)                 25) (ScriptTimeout=)
13) (FaultScript=)
Choose the setting to process: 3
```

5. Set up a resource required for a shared disk (ex. GDS) in “Setting of turnkey wizard ORACLE”.

```
Settings of turnkey wizard "ORACLE"
 1) HELP                               10) LocalFileSystems(-)
 2) -                                   11) RemoteFileSystems(-)
 3) SAVE+EXIT                          12) IpAddresses(-)
 4) -                                   13) RawDisks(-)
 5) ApplicationName=APP1                14) RC-VolumeManagement(-)
 6) Machines+Basics(appl)               15) VERITAS-VolumeManagement(-)
 7) CommandLines(-)                     16) Gds:Global-Disk-Services(-)
 8) Controllers(-)                       17) Gls:Global-Link-Services(-)
 9) ORACLE(-)
Choose the setting to process:16
```

6. Return to the Main RMS management menu by executing SAVE+EXIT (Any settings related to Oracle should not be done here).
7. With the procedure from 1) to 6), node setting is done. For scalable operation, create userApplication for each node. This setup procedure must be completed for each node.
8. After userApplication creation is done on all the nodes, create userApplication app3 by selecting Application Create in “Main configuration menu”.
9. Set up nodes and GENERIC in “Application type selection menu” by selecting Machines+Basics. Save the settings by selecting SAVE+EXIT.

```

Machines+Basics (app3:consistent)
 1) HELP                                14) (FaultScript=)
 2) -                                    15) (AutoStartUp=no)
 3) SAVE+EXIT                            16) (AutoSwitchOver=No)
 4) REMOVE+EXIT                          17) (PreserveState=no)
 5) AdditionalMachine                    18) (PersistentFault=0)
 6) AdditionalConsole                     19) (ShutdownPriority=)
 7) Machines[0]=host1RMS                  20) (OnlinePriority=)
 8) Machines[1]=host2RMS                 21) (StandbyTransitions=)
 9) (PreCheckScript=)                    22) (LicenseToKill=no)
10) (PreOnlineScript=)                   23) (AutoBreak=yes)
11) (PostOnlineScript=)                  24) (HaltFlag=no)
12) (PreOfflineScript=)                  25) (PartialCluster=0)
13) (OfflineDoneScript=)                 26) (ScriptTimeout=)
Choose the setting to process: 3

```

10. Select the Controllers in "Settings of turnkey wizard "GENERIC".

```

Settings of turnkey wizard "GENERIC"
 1) HELP                                9) LocalFileSystems(-)
 2) -                                    10) RemoteFileSystems(-)
 3) SAVE+EXIT                            11) IpAddresses(-)
 4) -                                    12) RawDisks(-)
 5) ApplicationName=APP3                 13) RC-VolumeManagement(-)
 6) Machines+Basics(app3)                14) VERITAS-VolumeManagement(-)
 7) CommandLines(-)                     15) Gds:Global-Disk-Services(-)
 8) Controllers(-)                       16) Gls:Global-Link-Services(-)
Choose the setting to process: 8

```

11. Select the AdditionalAppToControl and add controlled userApplicatoin (app1 and app2).

```

Settings of application type "Controller" (not yet consistent)
 1) HELP
 2) -
 3) SAVE+EXIT
 4) REMOVE+EXIT
 5) ControlPolicy=FOLLOW
 6) AdditionalAppToControl
 7) (InParallel=)
 8) (FaultScript=)
Choose the setting to process: 6

```

12. Select the ControlPolicy and change FOLLOW to SCALABLE.



13. Save the settings by selecting SAVE+EXIT in "Settings of application type "Controller".

```
Settings of application type "Controller" (consistent)
1) HELP
2) -
3) SAVE+EXIT
4) REMOVE+EXIT
5) ControlPolicy=SCALABLE
6) AdditionalAppToControl
7) Controllers[0]=T180:app1
8) Controllers[1]=T180:app2
9) (FaultScript=)
10) (ApplicationSequence=)
11) (StateChangeScript=)
Choose the setting to process: 3
```

14. Go back to "Main configuration menu" by selecting SAVE+EXIT in "Settings of turnkey wizard "GENERIC".

```
Settings of turnkey wizard "GENERIC"
1) HELP
2) -
3) SAVE+EXIT
4) -
5) ApplicationName=APP3
6) Machines+Basics(app3)
7) CommandLines(-)
8) Controllers(Ctl_APP3)
9) LocalFileSystems(-)
10) RemoteFileSystems(-)
11) IpAddresses(-)
12) RawDisks(-)
13) RC-VolumeManagement(-)
14) VERITAS-VolumeManagement(-)
15) Gds:Global-Disk-Services(-)
16) Gls:Global-Link-Services(-)
Choose the setting to process: 3
```

### A.1.3 Set up standby operation

---

1. Create userApplication by selecting Application-Create in "Main RMS manage menu".

```
host1: Main RMS management menu, current configuration: oracle1
1) HELP
2) QUIT
3) Application-Create
4) Application-Edit
5) Application-Remove
6) Application-Clone
7) Configuration-Generate
8) Configuration-Activate
. . .
```

2. Select ORACLE (in capitals) in the “Application type selection menu” page.

```
Creation: Application type selection menu:
1) HELP
2) QUIT
3) RETURN
4) OPTIONS
5) GENERIC
6) ORACLE
Application Type: 6
```

3. Specify the userApplication name of ApplicationName in “Settings of turnkey wizard ORACLE”.

```
Settings of turnkey wizard "ORACLE"
1) HELP
2) NO-SAVE+EXIT
3) SAVE+EXIT
4) REMOVE+EXIT
5) ApplicationName=APP1
6) Machines+Basics(-)
Choose the setting to process: 5
```

4. Set up nodes and the following menu items by selecting Machines+Basics.  
Set the operating node to Machines[0], and the standby nodes to Machines[n]. Select AdditionalMachines to add the nodes. For other settings, refer to HELP or the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".

### Information

Recommended setting  
AutoSwitchOver = HostFailure|ResourceFailure|ShutDown  
PersistentFault = 1

Save the above settings by selecting SAVE+EXIT.

```

Machines+Basics (appl:consistent)
 1) HELP
 2) -
 3) SAVE+EXIT
 4) REMOVE+EXIT
 5) AdditionalMachine
 6) AdditionalConsole
 7) Machines[0]=node1RMS
 8) Machines[1]=node2RMS
 9) (PreCheckScript=)
10) (PreOnlineScript=)
11) (PostOnlineScript=)
12) (PreOfflineScript=)
13) (OfflineDoneScript=)
14) (FaultScript=)
15) (AutoStartUp=no)
16) (AutoSwitchOver=HostFailure|ResourceFailure|ShutDown)
17) (PreserveState=no)
18) (PersistentFault=1)
19) (ShutdownPriority=)
20) (OnlinePriority=)
21) (StandbyTransitions=)
22) (LicenseToKill=no)
23) (AutoBreak=yes)
24) (HaltFlag=yes)
25) (PartialCluster=0)
26) (ScriptTimeout=)
Choose the setting to process: 3

```

5. Set up a resource required for a shared disk (ex. GDS) by selecting LocalFileSystems and IpAddress in “Settings of turnkey wizard ORACLE”.

```

Settings of turnkey wizard "ORACLE"
 1) HELP
 2) -
 3) SAVE+EXIT
 4) -
 5) ApplicationName=APPL
 6) Machines+Basics(appl)
 7) CommandLines(-)
 8) Controllers(-)
 9) ORACLE(-)
10) LocalFileSystems(-)
11) RemoteFileSystems(-)
12) IpAddresses(-)
13) RawDisks(-)
14) RC-VolumeManagement(-)
15) VERITAS-VolumeManagement(-)
16) Gds:Global-Disk-Services(-)
17) Gls:Global-Link-Services(-)
Choose the setting to process:16

```

6. Return to the Main RMS management menu by selecting SAVE+EXIT. (Any settings related to Oracle should not be done here.)

## A.1.4 Configuration-Generate and Configuration-Activate

---

Set up userApplication by selecting Configuration-Generate.

Enable the userApplication settings by selecting Configuration-Activate.

Main RMS management menu

```
host1: Main RMS management menu, current configuration: oracle1
1) HELP
2) QUIT
3) Application-Create
4) Application-Edit
5) Application-Remove
6) Application-Clone
7) Configuration-Generate
8) Configuration-Activate
. . .
```

## A.1.5 Check userApplication

---

Start up userApplication and check if it is normally running on all the nodes by executing the “hvcn” command.

- Shared disk - Check access to the shared disk on the operating node.
- Logical IP address - Check access to the operating node.



See

.....  
For the RMS command, see "11.6 RMS" of the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".  
.....

## A.2 Create and set up Oracle resource

---

The Oracle-related resources are registered in userApplication that is created in [2.4 userApplication Creation](#).

Execute the following command on any one of the nodes.

```
# hvw -n <Definition name>
```



See

.....  
For further details, refer to the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".  
.....

### A.2.1 Application-Edit

---

The examples of the Oracle environment setup are as follows:

1. Edit userApplication by selecting Application-Edit in “Main RMS management menu”.

```

host1: Main RMS management menu, current configuration: oracle1
  1) HELP
  2) QUIT
  3) Application-Create
  4) Application-Edit
  5) Application-Remove
  6) Application-Clone
  7) Configuration-Generate
  8) Configuration-Activate
  . . .

```

2. Select userApplication created in “Application selection menu” of Chapter 2.4.

```

Edit: Application selection menu (restricted):
  1) HELP
  2) QUIT
  3) RETURN
  4) OPTIONS
  5) APP1
  6) APP2
  7) APP3
Application Name: 5

```

3. Select ORACLE in “Settings of turnkey wizard ORACLE”.

```

Settings of turnkey wizard "ORACLE"
  1) HELP
  2) -
  3) SAVE+EXIT
  4) -
  5) ApplicationName=APP1
  6) Machines+Basics(appl)
  7) CommandLines(-)
  8) Controllers(-)
  9) ORACLE(-)
 10) LocalFileSystems(-)
 11) RemoteFileSystems(-)
 12) IpAddresses(-)
 13) RawDisks(-)
 14) RC-VolumeManagement(-)
 15) VERITAS-VolumeManagement(-)
 16) Gds:Global-Disk-Services(Gds_...)
 17) Gls:Global-Link-Services(-)
Choose the setting to process:9

```

4. Add the Oracle instances and Oracle listeners in the Oracle setup page.

**AdditionalInstance**

Add the Oracle instance resources

**AdditionalListener**

Add the Oracle listener resources

**StartPriority**

Set up a startup order of the Oracle instances and Oracle listeners

 **Example**

.....  
 If you use the Oracle multi-threaded server (MTS), the Oracle listener needs to be started first.  
 .....

5. Set up the Oracle instances.  
See 4 of “2.6.1 Create Oracle resource” for details.
6. Set up the Oracle listeners.  
See 5 and 6 of “2.6.1 Create Oracle resource” for details.
7. Save the settings by selecting SAVE+EXIT. When using Oracle9i RAC, follow the setup procedure from 1) to 6) for each userApplication.

## A.2.2 Configuration-Generate and Configuration-Activate

Set up userApplication by selecting Configuration-Generate.  
Then, enable the userApplication settings by selecting Configuration-Activate.

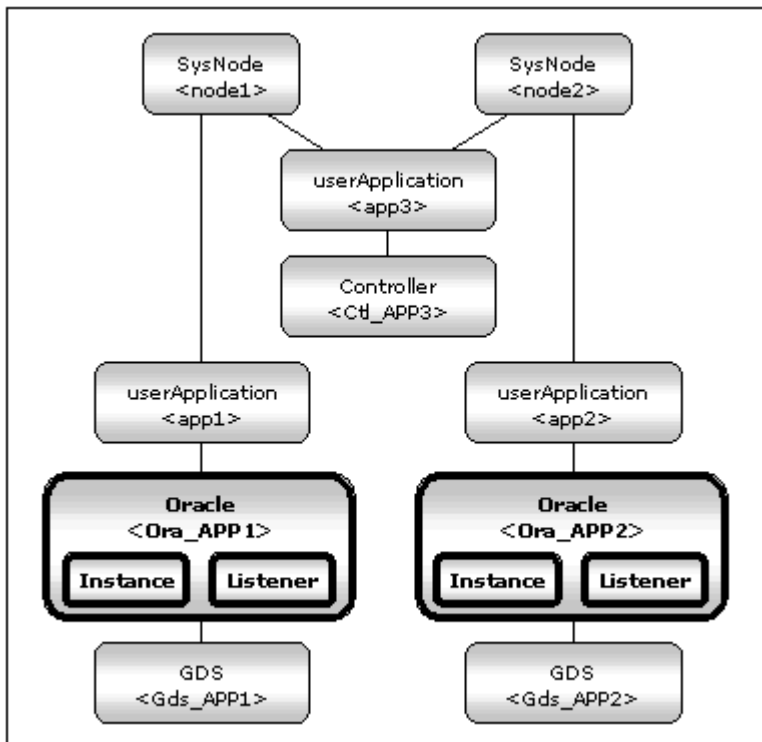
Main RMS management menu

```

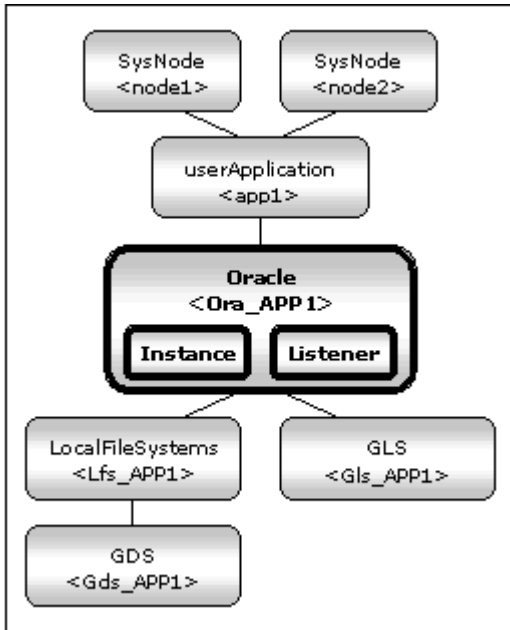
host1: Main RMS management menu, current configuration: oracle1
1) HELP
2) QUIT
3) Application-Creat
4) Application-Edit
5) Application-Remove
6) Application-Clone
7) Configuration-Generate
8) Configuration-Activate
. . .

```

In scalable operation, userApplication is configured as follows:



In standby operation, userApplication is configured as follows:



### A.2.3 Check userApplication operation

---

Start up userApplication and check if it is normally running by executing the “hvcn” command on all the nodes.

- Shared disk  
Check if you can access to the shared disk from the operating node.
- Logical IP address  
Check if you can access the operating node from the client using the logical IP address.
- Oracle  
Check if you can access to Oracle running on the operating node from the client using the logical IP address



See

For the RMS command, see "11.6 RMS" of the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris®, Linux®) Configuration and Administration Guide".

# Appendix B Using PRIMECLUSTER Wizard for Oracle in Oracle Solaris Zones Environments

This section explains notices, construction procedures, and maintenance procedures in the case of using PRIMECLUSTER Wizard for Oracle in Oracle Solaris Zones environments.

## Information

About the method of installing PRIMECLUSTER in Oracle Solaris Zones environment, refer to "Chapter 13 Using PRIMECLUSTER in Oracle Solaris Zones Environments" of the "PRIMECLUSTER Installation and Administration Guide".

## B.1 Notice of System Configuration

- Oracle RAC cannot be made a cluster in non-global zone.
- When you allocate the image of non-global zone on shared disks, create the volume for Oracle Database allocated on the shared disk class for non-global zone where Oracle is installed.  
When you allocate the image of non-global zone on a local disk, create the volume for Oracle Database allocated on shared disk class, and enable it to access from non-global zone.
- The configurations which support PRIMECLUSTER Wizard for Oracle 4.1A30 operating on an Oracle Solaris Zones environment are as follows.

global zone OS(*1)	Non-global zone type(*2)	Oracle Database Edition	Version and/or level
Oracle Solaris 10	Oracle Solaris 8 Containers (OSLC)	Enterprise Edition	R8.1.7(32bit/64bit)
	Oracle Solaris 9 Containers (OSLC)	Standard Edition	R9.2.0(32bit/64bit)
			R10.1.0 (64bit)

- (\*1) You need PRIMECLUSTER 4.3A20.
- (\*2) You need PRIMECLUSTER 4.1A30 or PRIMECLUSTER 4.1A40.

## B.2 Construction Procedure

This section explains construction procedure of Oracle and PRIMECLUSTER Wizard for Oracle in non-global zone. It needs to be beforehand completed to the setup of PRIMECLUSTER in non-global zone. (Before "13.3.4.10 Installing Middleware Products to Non-Global Zones" of "13.3.4 Creating Non-Global Zones" of "PRIMECLUSTER Installation and Administration Guide")

### B.2.1 PRIMECLUSTER Wizard for Oracle Installation

Mount the media of PRIMECLUSTER Wizard for Oracle on non-global zone, or copy to non-global zone, and install PRIMECLUSTER Wizard for Oracle. About the installation procedure of PRIMECLUSTER Wizard for Oracle, refer to the PRIMECLUSTER Wizard for Oracle Installation Guide.

## Note

When the global zone is Solaris 10, the existing systems running on Solaris 8 or Solaris 9 can also be run on Solaris 10 by migrating them to the non-global zone with Oracle Solaris Legacy Containers (OSLC).

If PRIMECLUSTER Wizard for Oracle 4.1A30 is used with the cluster system on Solaris 8/9 on migration source node, it is necessary to uninstall the PRIMECLUSTER Wizard for Oracle 4.1A30 before uninstall the PRIMECLUSTER on the Oracle Solaris zones environments.



Refer to the "PRIMECLUSTER Wizard for Oracle Installation Guide", and uninstall it.

Install PRIMECLUSTER Wizard for Oracle after it completes before "13.3.4.10 Installing Middleware Products to Non-Global Zones" of "13.3.4 Creating Non-Global Zones" of "PRIMECLUSTER Installation and Administration Guide".

After installing the packages, apply the newest patch of PRIMECLUSTER Wizard for Oracle. Procedure for applying the patch refer to the README provided with the patch. The versions necessary for applying the patch to the non-global zone is as follows.

Solaris 8 Containers
Solaris 9 Containers
913933-07 or later

## B.2.2 Oracle Installation and Oracle Database Creation

---

Install Oracle software and create Oracle Database. Refer to the following chapters.

- [2.3 Oracle Installation and Configuration](#)
- [2.5 Oracle Database Creation and Setting](#)



Be careful of the following points at the time of Oracle installation, and database creation.

- About the allocation of Oracle software and a database, read description of the above-mentioned chapter as follows.
  - It is necessary to replace "local disk" with "Volume for root file system of non-global zone".
  - It is necessary to replace "shared disk" with "Volume for Oracle data allocation".
- When non-global zone image is shared, because the operation node and standby node shares the root file system of non-global zone, installation/setup of Oracle software, and creation/setup of a database are only once carried out by operation node. When non-global zone image is not shared, installation/setup of Oracle software are carried out by all the nodes. creation/setup of database are only once carried out by operation node, and database setup of operation node is copied to standby node using the cloracpy command.
- Carry out registration of the SYSTEM user's password by the clorapass command in every non-global zone.
- Oracle listeners' IP address is set up according to the use existence or nonexistence of the GIs resource on non-global zone. When you don't use GIs resource, specify the IP address of non-global zone. When you use a GIs resource, specify the virtual IP (taking over IP).
- In order to use ASM in Oracle Solaris Zones environment, for the specification of Oracle Database, it is necessary to add a proc priocntl privilege toward non-global zone in advance. Execute the following commands.

```
# zonecfg -z <zone name> set limitpriv=default,proc_priocntl
```

## B.3 Maintenance Procedure

---

This section explains maintenance procedure of Oracle and PRIMECLUSTER Wizard for Oracle in non-global zone.

### B.3.1 Oracle Maintenance

---

To stop Oracle of non-global zone for maintenance work, such as cold backup, it is necessary to interrupt Oracle monitoring temporarily. Refer to the following chapter.

- [3.5 Oracle maintenance](#)



Note at the time of the Oracle maintenance work in non-global zone.

- In the above-mentioned chapter, although it is indicated that both the maintenance mode of PRIMECLUSTER and stop monitoring / restart monitoring command of PRIMECLUSTER Wizard for Oracle(hvoradisable, hvoraenable) are used, use only command of PRIMECLUSTER Wizard for Oracle(hvoradisable, hvoraenable) in non-global zone.

## **B.3.2 Patch Application to PRIMECLUSTER Wizard for Oracle**

---

When applying a patch to PRIMECLUSTER Wizard for Oracle in non-global zone, set non-global zone as single user mode.

At this time, use maintenance mode in global zone. Refer to "13.5.1 Maintenance Operations on the Non-Global Zone" of "PRIMECLUSTER Installation and Administration Guide".

## **B.3.3 Troubleshooting Information**

---

If the failure about Oracle and PRIMECLUSTER Wizard for Oracle that are operated in non-global zone occur, login the non-global zone by zlogin from a global zone, and collect troubleshooting Information using the clgetoralog command. Refer to the following chapters.

- [4.5 clgetoralog - Oracle Troubleshooting Information Collection](#)

## **B.4 Uninstallation Procedure**

---

About the uninstallation procedure of PRIMECLUSTER Wizard for Oracle, refer to the "PRIMECLUSTER Wizard for Oracle Installation Guide". About the back out procedure of patch, refer to the README provided with the patch.