

Veritas™ Cluster Server Database Agent for Oracle Configuration Guide

Windows 2000, Windows Server 2003

5.0

Veritas Cluster Server Database Agent for Oracle, Configuration Guide

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Veritas Cluster Server 5.0

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Introduction

VCS database agents monitor specific resources within an enterprise application, determine the status of these resources, and start or stop them according to external events. The VCS database agent for Oracle provides high availability for Oracle in a VCS cluster.

About the VCS database agent for Oracle

The VCS database agent for Oracle monitors the Oracle database and listener services, brings them online, and takes them offline.

The package contains two VCS agents:

- The Oracle agent, which monitors the Oracle database services.
- The Netlsnr agent, which monitors the listener services.

Both agents work together to provide high availability for Oracle.

Oracle agent

The Oracle agent monitors the database processes. The agent brings the Oracle database services online, monitors their status, and takes them offline. Specific agent operations include:

- Online—Starts the Oracle service.
- Offline—Stops the Oracle service. The operation also stops all the services that are dependent on the Oracle service.
- Monitor—Verifies the status of Oracle services. The agent provides two levels of application monitoring: basic and detail.
 - Basic monitoring: The agent queries the Service Control Manager (SCM) to verify that Oracle services are continuously active.
 - Detail monitoring: The agent runs a SQL script to verify the status of the database. Detail monitoring is optional. It updates a temporary table in the Oracle database to verify the availability of the database instance. See “[Configuring detail monitoring](#)” on page 59 for instructions on configuring detail monitoring for an Oracle database.
- Clean—Forcibly stops the Oracle database.
- Info—Provides static and dynamic information about the state of the database. See “[Info entry point](#)” on page 11 for more information.
- Action—Performs predefined actions on a resource. See “[Action entry point](#)” on page 12 for more information.

Netlsnr agent

The Netlsnr agent monitors the listener process. The agent controls the listener for the database. The listener is a server process that listens to incoming client connection requests and manages traffic to the database.

The Netlsnr agent brings the listener services online, monitors their status, and takes them offline. Specific agent operations include:

- Online—Starts the listener service.
- Offline—Stops the listener service.
- Monitor—Queries the SCM for the status of the listener service.
- Clean—Forcibly stops the listener service.

Info entry point

The Info entry point provides static and dynamic information about the state of the database.

The entry point retrieves the following static information:

Version	InstanceNo	InstanceName
HostName	StartupTime	Parallel
Thread	InstanceRole	

The entry point retrieves the following dynamic information:

InstanceStatus	Logins	DatabaseStatus
ShutdownPending		

You can add additional attributes by adding `sql` statements to the file `%VCS_HOME%\bin\Oracle\scripts\info\db_info.sql`. For example:

```
select 'static:HostName:'||host_name from v$instance;  
select 'dynamic:ShutdownPending:'||shutdown_pending from  
v$instance;
```

The format of the selected record must be as follows:

```
attribute_type:userkey_name:userkey_value
```

The variable *attribute_type* can take the value `static` and/or `dynamic`.

Action entry point

The Action entry point enables you to perform predefined actions on a resource.

To perform an action on a resource, type the following command:

```
C:\> hares -action <res> <token> [-actionargs <arg1> ...] [-sys  
<system>] [-clus <cluster>]
```

[Table 1-1](#) includes the actions that the agent supports.

Table 1-1 Actions supported by Oracle agent

Token for Action	Description
VRTS_GetInstanceName	Retrieves the name of the configured instance.
VRTS_GetRunningServices	Retrieves the list of processes monitored by the agent.
DBRestrict	Changes the database session to enable the RESTRICTED mode.
DBUndoRestrict	Changes the database session to disable the RESTRICTED mode.
DBSuspend	Suspends a database.
DBResume	Resumes a suspended database.
DBTbspBackup	Backs up a tablespace; <code>actionargs</code> contains name of the tablespace to be backed up.

You can also add custom actions for the agent. For further information, refer to the *Veritas Cluster Server Agent Developer's Guide*.

Supported version and operating system

- Oracle 9i, Release 2 (9.2.0.2) Standard Edition or Enterprise Edition
or
Oracle 10g, Release 1 (10.1.0.2) Standard Edition or Enterprise Edition
with
Windows 2000 Server, Advanced Server, or Datacenter Server (all require Service Pack 4 with Update Rollup1)
or
Windows Server 2003 (Standard Edition, Enterprise Edition, or Datacenter Edition) (SP 1 supported, but not required for all editions)
- Storage Foundation HA 5.0 for Windows (SFW HA) with the Veritas Cluster Server Database Agent for Oracle

Note: SFW HA support for Oracle is limited to 32-bit versions of the operating system.

How the agent makes Oracle highly available

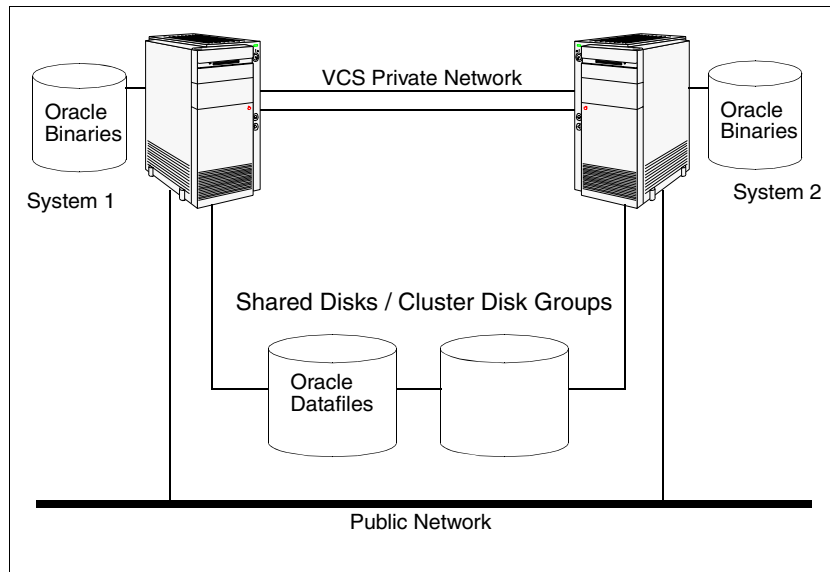
In the basic monitoring mode, the database agent for Oracle detects a failure if the database or a listener service is not running. In the detail monitoring mode, the agent detects failure if a preconfigured SQL script cannot execute or access the database or if the listener service is not running.

When the agent detects a failure, the Oracle service group switches to the next available system listed in the service group's SystemList attribute. VCS starts the configured Oracle and listener services on the new system, thus ensuring high availability for the Oracle services and data.

Typical Oracle configuration in a VCS cluster

In a typical configuration, VCS is configured in a two-node cluster (System 1 and System 2). Oracle is installed on both systems, and the data to be used by Oracle is installed on shared storage. The Oracle database agent is installed on both systems.

Figure 1-1 Typical Oracle configuration in a VCS cluster



Setting up an Oracle cluster

Setting up an Oracle cluster in a VCS environment involves the following tasks.

- Setting up a VCS cluster. See the *Veritas Cluster Server Administrator's Guide* for more information.
- Installing and configuring Oracle. See “[Installing and configuring Oracle](#)” on page 17.
- Installing the Oracle agent. See “[Installing the Oracle agent](#)” on page 41.
- Configuring the Oracle service group. See “[Configuring the Oracle service group](#)” on page 43.

Each task is described in detail in subsequent chapters.

Installing and configuring Oracle

This chapter describes how to install and configure Oracle and its components in a VCS cluster. For specific instructions on how to install Oracle, see the Oracle documentation.

Prerequisites

- Verify all nodes have adequate resources to run Oracle and SFW HA 5.0.
- Verify that SFW HA is installed on all nodes in the cluster. Refer to the *Storage Foundation and High Availability Solutions, Installation and Upgrade Guide* for installation steps.
- Verify you have run the VCS Configuration Wizard (VCW) to configure VCS on all nodes. Refer to the *Veritas Cluster Server Administrator's Guide* for configuration instructions.
- Verify the network and the systems support the TCP/IP protocol.
- Create volumes on the shared cluster disk groups before installing Oracle. See “[Managing storage using SFW](#)” on page 18 for instructions.
- Log on as domain administrator to install Oracle binaries.

Note: After creating the database, you must log on to Oracle with database administrator privileges and complete the installation procedure on all nodes in the cluster.

Managing storage using SFW

Storage Foundation for Windows (SFW) manages data by creating disk groups from physical disks. These disk groups are further divided into volumes, which can be mounted from the cluster nodes.

Symantec recommends creating three volumes on shared disks, one each for the following:

- database files
- control files
- log files, including the redo logs and archive logs

Perform the following tasks to create volumes and make them accessible from cluster nodes:

- Create disk groups. See “[Creating disk groups](#)” on page 18.
- Create volumes on disk groups. See “[Creating volumes](#)” on page 20.
- Mount volumes. See “[Mounting volumes](#)” on page 25.

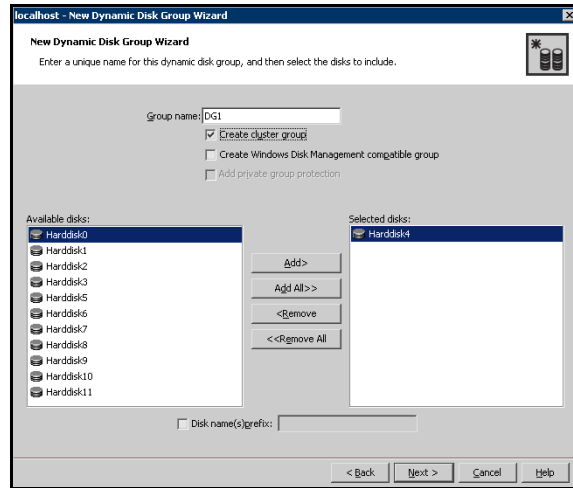
Creating disk groups

This section describes how to create disk groups.

To create a disk group

- 1 Open the VEA console by clicking **Start > All Programs > Symantec > Veritas Storage Foundation > Veritas Enterprise Administrator** and select a profile if prompted.
- 2 Click **Connect to a Host or Domain**.
- 3 In the Connect dialog box, select the host name from the pull-down menu and click **Connect**.
To connect to the local system, select **localhost**. Provide the user name, password, and domain if prompted.
- 4 To start the New Dynamic Disk Group wizard, expand the tree view under the host node, right click the **Disk Groups** icon, and select **New Dynamic Disk Group** from the context menu.
- 5 In the Welcome screen of the New Dynamic Disk Group wizard, click **Next**.

6 Specify the information related to the disk group and click **Next**.



Group name	Type a unique name for the disk group.
Create cluster group	Check this option.
Available disks	Select the disks to include in the disk group and Add . The selected disks appear in the Selected disks box. Optionally, check the Disk names prefix check box and enter a disk name prefix to give the disks in the disk group a specific identifier. For example, entering TestGroup as the prefix for a disk group that contains three disks creates TestGroup1, TestGroup2, and TestGroup3 as internal names for the disks in the disk group.

7 Click **Next** to accept the confirmation screen with the selected disks.

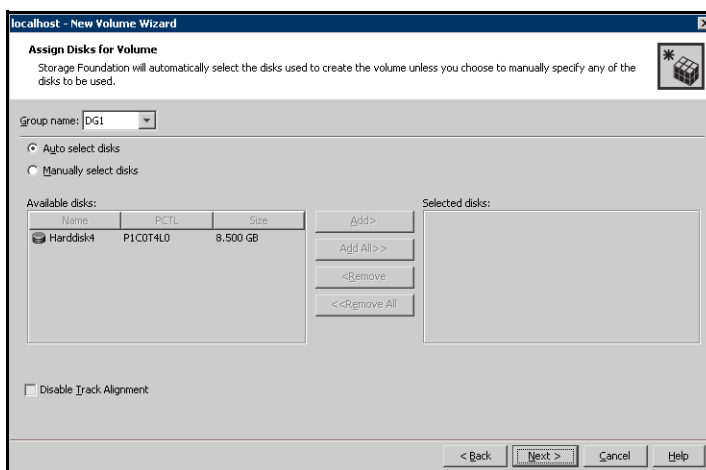
8 Click **Finish** to create the new disk group..
 The newly created disk group is imported on the system where you ran the wizard.

Creating volumes

This section describes how to create dynamic volumes.

To create dynamic volumes

- 1 If the VEA console is not already open, click **Start > All Programs > Symantec > Veritas Storage Foundation > Veritas Enterprise Administrator** and select a profile if prompted.
- 2 Click **Connect to a Host or Domain**.
- 3 In the Connect dialog box select the host name from the pull-down menu and click **Connect**.
To connect to the local system, select **localhost**. Provide the user name, password, and domain if prompted.
- 4 To start the New Volume wizard, expand the tree view under the host node to display all the disk groups. Right click a disk group and select **New Volume** from the context menu.
- 5 At the New Volume wizard opening screen, click **Next**.
- 6 In the Assign Disks for Volume panel, assign disks to the volume, and then click **Next**. Make sure the appropriate disk group name appears in the Group name drop-down list.



Group name

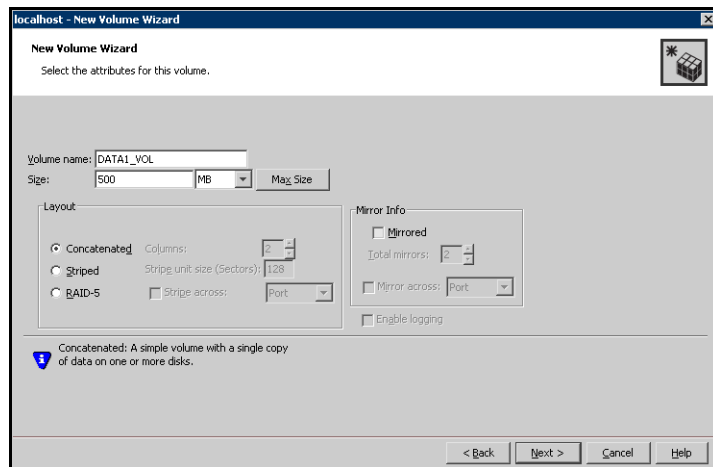
From the drop-down list, select the disk group on which to create a volume.

Auto select disks

Automatic disk selection is the default setting.

- Manually select disks To manually select the disks, click this option and use the **Add** and **Remove** buttons to move the appropriate disks to the Selected disks list. Manual selection of disks is recommended.
- Disable Track Alignment You may check Disable Track Alignment check box to disable track alignment for the volume. Disabling Track Alignment means that the volume does not store blocks of data in alignment with the boundaries of the physical track of the disk.

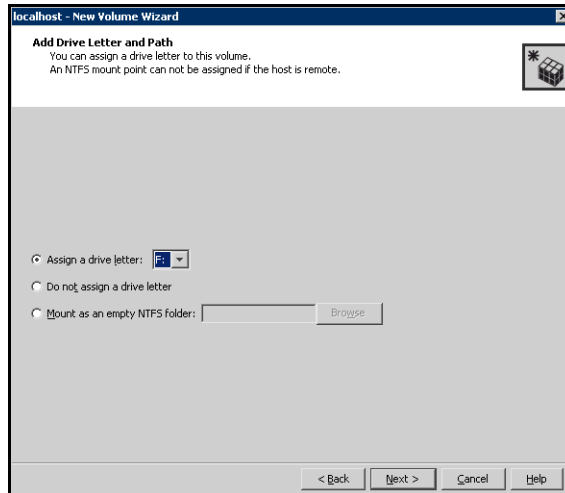
7 Specify the attributes for the volume and click **Next**.



- Volume name Type a name for the volume. The name is limited to 18 ASCII characters and cannot contain spaces or forward or backward slashes.
- Size Specify the size for the volume.
If you click on the **Max Size** button, a size appears in the Size box that represents the maximum possible volume size for that layout in the dynamic disk group.
- Layout Allow the default Concatenated layout or specify the layout preferences for the volume, if applicable. To select mirrored striped, click both the **Mirrored** checkbox and the **Striped** radio button.
If you are creating a striped volume, the Columns and Stripe unit size boxes need to have entries. Defaults are provided.

Mirror Info Specify the mirror information for the volume, if applicable.

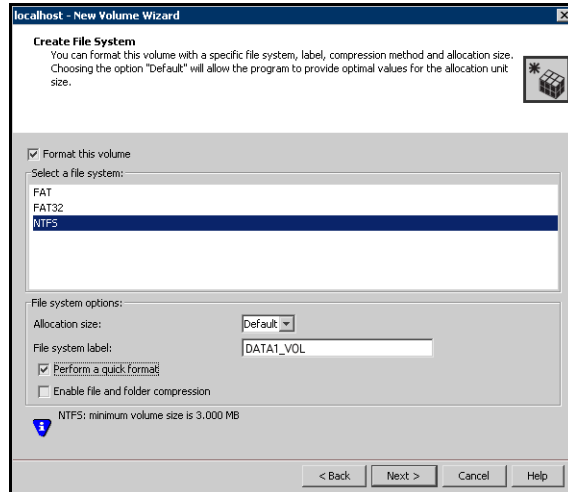
- 8 In the Add Drive Letter and Path dialog box, assign a drive letter or mount point to the volume and then click **Next**.



Assign a drive letter To assign a drive letter, select this option, and from the drop-down list select the drive letter to be assigned. Verify the availability of the drive letter on all the systems before assigning it. You must use the same drive letter or mount point on all the systems in the cluster.

Mount as an empty NTFS folder To mount the volume as a folder, select this option, and click **Browse** to locate an empty folder on the shared disk.

9 Create a file system on the new volume and then click **Next**.



Format this volume	Check this option, if not already checked.
Select a file system	Click NTFS .
Allocation size	From the drop-down list select an allocation size or accept the default.
File system label	Type a label for the volume. This is optional. SFW makes the volume name the file system label.
Perform a quick format	Select Perform a quick format if you want to save time.
Enable file or folder compression	Select this option to save disk space. Note that compression consumes system resources and performs encryption and decryption, which may result in reduced system performance.

- 10 Review the information in the Summary panel and click **Finish** to create the new volume.
- 11 Repeat [step 1](#) through [step 10](#) for all the volumes to be created.

Installing and configuring Oracle

The strategy for installing Oracle into a VCS cluster is aimed at ensuring that installations on all cluster systems are uniform. This involves installing the Oracle binaries locally on each system and installing the Oracle control files, datafiles, and log files, and the flash recovery area on shared storage.

Note: Before installing Oracle, create volumes on shared disks. Symantec recommends at least three volumes on shared disks, one each for control files, log files, and database files. See [“Creating volumes”](#) on page 20.

Overview of tasks

You must perform these tasks on each node that will host the Oracle service group.

- Mount volumes for the Oracle installation. See [“Mounting volumes”](#) on page 25.
- Install Oracle binaries. See [“Installing Oracle”](#) on page 26.
- Create the database on shared disks. See [“Creating the database on shared disks”](#) on page 28.
- Create a virtual IP address for the databases and the listeners. See [“Creating a virtual IP address”](#) on page 30.
- Create the listener service. See [“Creating the listener service”](#) on page 30.
- Configure the listeners to use the virtual IP address. See [“Configuring the listeners to use the virtual IP address”](#) on page 30.
- Associate the database with the listener service. See [“Associating the database with the listener”](#) on page 31.
- Configure the database. See [“Configuring the databases”](#) on page 32.
- Configure the listeners to use the same virtual IP address. See [“Configuring the listeners to use the virtual IP address”](#) on page 30.
- Make sure that the Oracle registry points to the correct location of the initialization parameter file. See [“Verifying the initialization file settings”](#) on page 37.
- Unmount the volumes. See [“Unmounting the volumes”](#) on page 39.
- Delete the virtual IP address. See [“Removing the virtual IP address”](#) on page 39.

Mounting volumes

Mounting a volume involves importing the disk group and assigning a drive letter or the folder path. Unmounting a volume involves removing the drive letter or the folder path and deporting the disk group.

To mount a volume

- 1 Open the Veritas Enterprise Administrator. Click **Start > All Programs > Symantec > Veritas Storage Foundation > Veritas Enterprise Administrator**.
- 2 If the disk group is not imported, import it. From the VEA console's tree view, right-click the disk group and select **Import Dynamic Group** from the context menu.
- 3 Right-click the volume, and then click **File System > Change Drive Letter and Path**.
- 4 In the Drive Letter and Paths dialog box, click **Add**.
- 5 In the Assign Drive Letter panel, choose one of the following options depending on whether you want to assign a drive letter to the volume or mount it as a folder, and click **OK**.
 - To assign a drive letter
Select **Assign a Drive Letter** and select a drive letter from the drop-down list.
 - To mount the volume as a folder
Select **Mount as an empty NTFS folder** and click **Browse** to locate an empty folder on the shared disk.

You must ensure that you use the same disk on all the nodes. To identify a disk, run `vmgetdrive -details` from the command prompt on one node. Note the disk number and signature of the disk. Rerun the command on the second node and identify the disk that has the same signature as the one on the first node. Once you have identified two identical disks, assign the same drive letter to the volumes on each disk.

- 6 Repeat [step 3](#) through [step 5](#) for all the volumes to be mounted.

Installing Oracle

Install Oracle from the Oracle software disc. The installer screens and options may vary slightly for different versions of Oracle.

Install the Oracle program files on a local disk and the Oracle data files on shared storage managed using SFW. Install all log files, including redo logs and archive logs, on the same volume.

Specify the same parameters on all nodes. For example, the database name, file locations, database credentials, must be the same on all nodes.

To install Oracle

- 1 Verify the shared drives created to store Oracle data are mounted on the node where you run the wizard. See “[Mounting volumes](#)” on page 25.
- 2 Insert the Oracle software disc in a drive connected to the node and run the Setup program.
- 3 From the browser menu, click **Install/Deinstall Products**.
- 4 Read the information in the Welcome panel and click **Next**.
- 5 Complete the following instructions depending on the version of Oracle:
For Oracle 9i
 - In the File Locations dialog box, type or select a name and a path on the local disk, for the Oracle Home, and click **Next**.
 - This will install the Oracle binaries on the local disk. Use the same *Oracle_Home* name and path on all nodes.
 - In the Available Products panel, select the **Oracle 9i Database option** and click **Next**.
 - In the Installation Types panel, select the **Enterprise Edition** option and click **Next**.
 - In the Database Configuration panel, select the **Customized** or **Software Only** option and click **Next**. Select the **Customized** option if you want to migrate earlier databases to Oracle 9i.
 - If you chose the **Customized** option, then on the Database Identification panel, select or type a unique name and SID for the global database and click **Next**.**For Oracle 10g**
 - In the Available Products panel, select the **Oracle 10g Database** option and click **Next**.
 - Choose the **Basic** or **Advanced** installation type.
For Basic installation:

- In the **Oracle Home Location** box, type or select a name and a path on the local disk for the Oracle Home.
This installs the Oracle binaries on the local disk. Use the same *Oracle_Home* name and path on all nodes.
 - Select **Enterprise Edition**.
 - Uncheck the **Create Starter Database** check box and click **Next**.
- For Advanced installation:
- Select the destination directory for the Oracle installation and click **Next**.
 - Select **Enterprise Edition** and click **Next**.
 - Select **Do not create a starter database**.

- 6 Follow the wizard instructions, select options as per your configuration, and complete the installation.

The Oracle installation also adds a Perl package. Make sure the path of the Perl package appears as the first value in the PERL5LIB environment variable.

To modify the path of the Perl variable

- 1 Right-click **My Computers** and then click **Properties**.
- 2 In the **System Properties** window, on the **Advanced** tab, click **Environment Variables**.
- 3 In the **System Variables** area of the **Environment Variables** window, double-click the PERL5LIB variable name to edit it.
- 4 In the **Variable Value** field, add the path of the Perl package installed by Symantec such that it is the first value in the definition. For example, add the path `C:\Program Files\Veritas\VRTSPerl\lib;` as the first value in the definition. Note that you must add a semi-colon at the end of the path.

After the Oracle installation is complete, verify if the Oracle home path (the path that you set while installing Oracle) is included in the Path environment variable. If not, then you have to manually add the Oracle home path to the Path variable, on all the cluster nodes.

To add the oracle home path to the Path variable

- 1 Right-click **My Computers** and then click **Properties**.
- 2 In the **System Properties** window, on the **Advanced** tab, click **Environment Variables**.
- 3 In the **System Variables** area of the **Environment Variables** window, double-click the Path variable name to edit it.

- 4 In the **Variable Value** field, add the Oracle home path.
- 5 Repeat steps 1 to 5 on all the cluster nodes.

Creating the database on shared disks

When run from the first node, this process creates an Oracle database on shared disks. Before running this process from other nodes, rename the directories containing the control files, redo log files, and the database files so that you create new files from each node.

For example, if the Oracle database was created at the path `H:\Oracle\Data`, rename it to `H:\Oracle\Data_old`. You can delete these renamed directories after installing and configuring Oracle on all nodes in the cluster.

To create a database on a shared disk

- 1 Start the Database Configuration Assistant (**Start > All Programs > Oracle-Oracle_Home > Configuration and Migration Tools > Database Configuration Assistant**). This launches the database installer.
- 2 In the Welcome panel, click **Next**.
- 3 In the Operation panel, select **Create a database** and click **Next**.
- 4 Complete the following instructions depending on the Oracle version.
For Oracle 9i
 - In the Database Templates panel, select **New Database** and click **Next**.
 - Install the initialization file on the shared disk. In the Initialization Parameters dialog box, click the **File Locations** tab.
In the **Initialization Parameter Filename** box, enter a path on the shared disk for the PFILE. If you create an SPFILE, in the **Server Parameters Filename** field, enter a path on the shared disk for the SPFILE.**For Oracle 10g**
 - In the Database Templates panel, select the **Custom Database** option and click **Next**.
 - Choose to install the database on the shared disk.
 - Choose to install the initialization parameter files on the local disk.
- 5 Follow the wizard instructions and select other options as per your desired database configuration.
- 6 Install the control files, data files, and log files on the shared disk. In the Database Storage panel, specify the locations of control files, data files, and redo log files.
In the left pane, expand the **Storage** folder.

- Enter a path on the shared disk for each control file.
To do so, click **Controlfile** and click the **General** tab in the right pane. In the **File Directory** field, enter a path on the shared disk.
 - Enter a path on the shared disk for each data file.
To do so, expand the **Datafiles** folder in the left pane. Select a data file, and click the **General** tab in the right pane. In the **File Directory** field, enter a path on the shared disk.
 - Enter a path on the shared disk for each redo log file
To do so, expand the **Redo Log Groups** folder in the left pane. Select a redo log group and click the **General** tab in the right pane. In the **File Directory** field, enter a path on the shared disk.
 - Click **Next**.
- 7 Select the **Create database** and the **Generate Database Creation Scripts** options and click **Finish**.
 - 8 Follow the wizard instructions and complete the installation.

Creating a virtual IP address

All databases and listeners configured must use the same virtual IP. Create a virtual IP address that can be set for all databases and listeners.

To create a virtual IP address

- 1 Open the **Network Connections (Start > Settings > Network Connections)**.
- 2 Right-click the public network connection to be used and then click **Properties**.
- 3 Select **Internet Protocol (TCP/IP)** and click **Properties**.
- 4 Click **Advanced**, and on the IP Settings tab, under IP addresses, click **Add** to add a virtual IP address and subnet mask.

Creating the listener service

Create a listener service using the Net Configuration Assistant. Refer to the Oracle documentation for instructions. Make a note of the listener name; you will need it in subsequent configuration tasks.

Configuring the listeners to use the virtual IP address

In the file listener.ora file, change the host name to the virtual IP address that you created.

Replace

```
HOST=machine_name
```

with

```
HOST=virtual_IP_address
```

The default location of the file listener.ora is

```
%ORACLE_HOME%\NETWORK\ADMIN\.
```

Associating the database with the listener

Use these instructions to associate all the databases with the listeners.

Prerequisite

Ensure that the initialization parameter file contains the following entries:

- SERVICE_NAMES (the name of the database service)
- INSTANCE_NAME (the name of the database instance)

These parameters are created during installation or database creation.

To associate the database with the listener

- 1 Use one of the following ways to configure the new attribute listener_alias:

Run the following SQL command:

```
SQL> ALTER SYSTEM SET LOCAL_LISTENER='<listener_alias>'
scope=spfile;
```

OR

Add the following entry to the initialization parameter file (pfile/spfile):

```
LOCAL_LISTENER = <listener_alias>
```

- 2 Define the parameter listener_alias. If your Oracle configuration uses the file tnsnames.ora, edit the file as instructed below. The default location of tnsnames.ora is %ORACLE_HOME%\NETWORK\ADMIN.

Add the following to tnsnames.ora file:

```
<listener_alias>=
(DESCRIPTION =
  (ADDRESS=(Protocol=TCP) (HOST=virtual_IP_address) (Port=1521))
)
```

- 3 Stop and restart the database.

The listener_alias parameter gets appended by the default domain name specified in the file sqlnet.ora.

Configuring the databases

Configuring the databases involves setting parameters in Oracle configuration files. It involves setting the same virtual IP address for all the databases and configuring the databases to use the OS authentication model of Oracle.

Updating the tnsnames.ora files

If your configuration has a tnsnames.ora file, edit the file as instructed below. The default location of the file is `%ORACLE_HOME%\NETWORK\ADMIN\`.

Change the host name for all the TCP protocol address databases to the virtual IP address that you created.

Replace

```
HOST=machine_name
```

with

```
HOST=virtual_IP_address
```

If you use a PFILE (initSID.ora)

Configure the PFILE to use the virtual IP address for the service group and set the database to use the OS authentication model of Oracle.

- 1 Edit the dispatchers parameter by adding or editing the HOST parameter. If the ADDRESS tag does not appear, add it. The edited dispatchers parameter should look like:

```
dispatchers = '(ADDRESS=(Protocol=TCP)
(HOST=virtual_IP_address) (other entries))'
```

The variable *virtual_IP_address* represents the virtual IP address that you created.

For example:

```
dispatchers = '(ADDRESS=(Protocol=TCP) (HOST=10.100.101.102)
(SERVICE=Data1XDB)'
```

- 2 Configure the attribute `remote_login_passwordfile`. Symantec recommends setting the attribute to `NONE` so that the database uses OS authentication and the configuration does not require a password file. A sample entry appears as:

```
remote_login_passwordfile = 'NONE'
```

If you use an SPFILE

- If you use an SPFILE on Oracle 10g, proceed to “[Modifying the SPFILE \(Oracle 9i and 10g\)](#)” on page 33.
- If you use an SPFILE on Oracle 9i, first modify the PFILE to point to the SPFILE as instructed in “[Modifying the PFILE \(Oracle 9i only\)](#)” on page 33, then update the SPFILE as instructed in “[Modifying the SPFILE \(Oracle 9i and 10g\)](#)” on page 33.

Modifying the PFILE (Oracle 9i only)

On Oracle 9i, edit the PFILE so that it points to the SPFILE. The PFILE must contain only the following entry:

```
SPFILE = spfile_location
```

The variable *spfile_location* represents the fully qualified path of the SPFILE on the shared disk.

Modifying the SPFILE (Oracle 9i and 10g)

VCS requires a customized version of the SPFILE, which cannot be edited. But, you can create a PFILE from the SPFILE, edit the PFILE, and convert it to an SPFILE again.

- 1 Log on to the Oracle database as administrator and create a temporary PFILE from the SPFILE.

```
C:\> sqlplus "/as sysdba"
```

```
SQL> create pfile='tmp_pfile_name' from spfile='spfile_name';
```

For example:

```
SQL> create
```

```
pfile='C:\oracle\product\10.1.0\Db_1\database\tempPFILE.ora' from  
spfile='C:\oracle\product\10.1.0\Db_1\database\SPFILEProd.ora';
```

- 2 Edit the dispatchers parameter by adding or editing the HOST parameter. If the ADDRESS tag does not appear, add it. The edited dispatchers parameter should look like:

```
dispatchers = '(ADDRESS=(Protocol=TCP) (HOST=virtual_IP_address)  
(other entries))'
```

The variable *virtual_IP_address* represents the virtual IP address that you created.

For example:

```
dispatchers = '(ADDRESS=(Protocol=TCP) (HOST=10.100.101.102)  
(SERVICE=Data1XDB)'
```

- 3 Configure the attribute `remote_login_passwordfile`. Symantec recommends setting the attribute to NONE so that the database uses OS

authentication and the configuration does not require a password file. A sample entry appears as:

```
remote_login_passwordfile = 'NONE'
```

- 4 Create a temporary SPFILE from the edited PFILE.

```
SQL> create spfile= 'tmp_spfile' from  
pfile='temp_pfile_name';
```

For example:

```
SQL> create spfile=  
'C:\oracle\product\10.1.0\Db_1\database\temp_SPFILE  
Prod.ora'  
from  
pfile='C:\oracle\product\10.1.0\Db_1\database\tempPF  
ILE.ora';
```

- 5 Stop the database service.
- 6 Back up the original SPFILE by renaming it. For example, rename SPFILEProd.ora to original_SPFILE.ora.
- 7 Delete the original SPFILE (SPFILEProd.ora).
- 8 Rename the temporary SPFILE (temp_SPFILE.ora) to the name of the original SPFILE (SPFILEProd.ora).
- 9 Start the database service.

Moving the initialization file to shared disks (Oracle 10g)

For Oracle 10g, move the initialization files to the shared disk and configure the SPFILE to start a database instance.

- 1 Verify which of the following initialization files exist in your configuration. The default location of these files is `%ORACLE_HOME%\database`.

- SPFILESID.ora
- SPFILE.ora
- initSID.ora

The variable *SID* represents the database instance.

- 2 Move the initialization files from the local disk to the shared disk, preferably at the same location as the database control files.

- 3 Create a PFILE to specify the location of the SPFILE. The PFILE must be in the same directory on the shared disk as the SPFILE.

Modify the PFILE so that it contain only the following entry:

```
SPFILE = spfile_location
```

The variable *spfile_location* represents the fully qualified path of the SPFILE on the shared disk.

For example, if your SPFILE is located at path `H:\Oracle\Data`, create a PFILE `sp_init.ora` in the same location `H:\Oracle\Data` with the following parameter:

```
SPFILE = H:\Oracle\Data\spfileSID.ora
```

Setting the Oracle database parameters

- 1 Set the Oracle database parameters using the `oradim` utility. Type the following at the command-prompt:

```
set ORACLE_SID=SID
```

The variable *SID* represents the database instance.

- 2 Run the following command:

```
%ORACLE_HOME%\bin\oradim -edit -sid SID -pfile  
"pfile_location_on_shared_disk" -startmode auto -timeout 100  
-shuttype srvc,inst -shutmode i
```

The variable *SID* represents the database instance.

This command performs the following tasks:

- Sets the `-startmode` parameter to start the database instance automatically when Oracle service is started.
- Sets the `-timeout` parameter to 100. The timeout parameter specifies the maximum wait time (in seconds) for the database shutdown to complete before the service for a particular *SID* stops.
- Sets the `-shuttype` parameter to stop both the database instance and the service while shutting the database.
- Sets the `-shutmode` parameter to shut the database instance as soon as the VCS database agent for Oracle requests.

Verifying the initialization file settings

If a PFILE is used:

- 1 Open the Registry Editor.
From the **Start** menu, choose **Run**. In the **Open** field, enter **regedit** and click **OK**.
- 2 Double-click the `ORA_SID_PFILE` registry key at `HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME_ID\`.
The variable `SID` represents the database instance.
- 3 Verify that the Value data field specifies the fully qualified path of the PFILE along with the file name.

If an SPFILE is used:

- 1 Stop and restart the database services.
- 2 Run `sqlplus.exe`.
- 3 Connect to the database.
- 4 Verify the following query returns the correct shared disk path for the SPFILE.

```
select value from v$parameter where name = 'spfile';
```

Configuring the Oracle and listener services

Set the startup type of the Oracle database and Listener services to manual and configure the Log On properties for the Oracle services.

- 1 Open the **Services** applet (**Start > All Programs > Administrative Tools > Services**).
- 2 Set the startup type of the Oracle database service to manual and configure its Log On properties:
 - Double-click the Oracle database service. In the SCM, Oracle database services appear as OracleService*SID*, where *SID* represents the database instance.
 - In the **Properties** window, click the **General** tab.
 - From the **Startup Type** drop-down list, select **Manual**.
 - Click **Stop** to stop the service.
 - Click the **Log On** tab.
 - Choose **This Account**.
 - Enter the credentials of the user in whose context Oracle was installed.
 - Click the **General** tab and click **Start** to start the service with the new Log On properties. Click **OK**.
- 3 Set the startup type of the Listener service to manual.
 - In the Services applet, double-click the listener service. Listener services appear as OracleOra_HomeTNSListenerName, where *Ora_Home* represents the Oracle home directory and *ListenerName* is the name of the listener set during the installation.
 - In the **Properties** window, click the **General** tab.
 - From the **Startup Type** drop-down list, select **Manual** and click **OK**.

Unmounting the volumes

Unmount the volumes only if you plan to install Oracle on more nodes. If this is the last node for the Oracle installation, do not unmount the volumes.

Before unmounting volumes, stop the database and listener services.

To unmount the volume

- 1 Open the Veritas Enterprise Administrator. Click **Start > All Programs > Symantec > Veritas Storage Foundation > Veritas Enterprise Administrator**.
- 2 From the VEA console's tree view, right-click on the volume, and then click **File System > Change Drive Letter and Path**.
- 3 In the Drive Letter and Paths dialog box, select **Remove**.
- 4 Click **OK**.
- 5 Repeat [step 2](#) through [step 4](#) for all the volumes to be unmounted.
- 6 From the VEA console's tree view, right-click the disk and then click **Deport Dynamic Group**.

Removing the virtual IP address

Remove the IP address if you plan to install Oracle on more nodes.

To remove the virtual IP address

- 1 Open the **Network Connections (Start > Settings > Network Connections)**.
- 2 Right-click the public network connection to be used and click **Properties**.
- 3 Select **Internet Protocol (TCP/IP)** and click **Properties**.
- 4 Click **Advanced** and on the IP Settings tab, under IP Addresses, select the virtual IP address that you added and click **Remove**.

Repeat the instructions in section "[Installing and configuring Oracle](#)" on page 24 on each node in the cluster. If you have installed the Oracle agent, proceed to "[Configuring the Oracle service group](#)" on page 43. Otherwise, proceed to "[Installing the Oracle agent](#)" on page 41.

Installing the Oracle agent

This chapter describes how to install the VCS database agent for Oracle in a VCS cluster. Follow these instructions if you did not install the agent while installing Storage Foundation HA for Windows.

Prerequisites

- Verify you have SFW HA installed on all cluster nodes.
- Verify you have local administrator privileges on the node where you are installing the agent.
- Verify Oracle is installed and configured identically on all nodes in the cluster.

Installing the agent

This section instructs you on installing the Oracle agent.

Repeat these steps on all systems where the VCS database agent for Oracle is to be installed.

To install the agent

- 1 Start the installer for SFW. In the Add/Remove Programs applet, click **Storage Foundation 5.0 for Windows** and click **Change**.
- 2 In the Storage Foundation 5.0 for Windows dialog box, choose the **Add or Remove** option and click **Next**.
- 3 In the SFW product options dialog box, click **Next**.

- 4 Check the **Veritas Cluster Server Database Agent for Oracle** check box and click **Next**.
The disk space required for the installation is displayed toward the bottom of the screen. When you add or remove an option, the total space changes.
- 5 The installer validates the system for prerequisites. After the system is accepted, click **Next**.
If a system is rejected, the **Comments** column displays the cause for rejecting the system. Highlight the system to view a detailed information about the failure in the **Details** box. Resolve the error, highlight the system from the list, and click **Validate Again**.
- 6 An informational message appears if you selected the DMP option. Review the information and click **OK** to continue.
- 7 Review the summary of your selections and click **Update** to start the installation.
- 8 The installer displays the status of installation.
- 9 After the installation is complete, review the installation report and click **Next**.
- 10 Click **Finish**.

After the agent is successfully installed in the cluster, proceed to “[Configuring the Oracle service group](#)” on page 43 to configure the agent.

Configuring the Oracle service group

Configuring the Oracle database agent involves creating the Oracle service group, its resources, and defining attribute values for the configured resources. VCS provides several ways to configure the Oracle agent: the agent configuration wizard, the Java and Web consoles, and the command line. This chapter provides instructions on how to use the agent configuration wizard to configure the agent.

Oracle configurations in VCS

You can set up Oracle in different ways in a VCS environment.

- **Single Oracle instance configuration:** Provides high availability for an Oracle instance associated with a listener.
- **Multiple Oracle instances (single listener) configuration:** Provides high availability for one or more Oracle instances sharing a common listener.
- **Multiple Oracle instances (multiple listeners) configuration:** Provides high availability for one or more Oracle instances that are configured to one or more listeners.

Configuring the agent using the agent configuration wizard

VCS provides an agent configuration wizard that guides you through the process of configuring the Oracle agent. The wizard creates and modifies Oracle service groups.

This section describes the steps required to create a new Oracle service group using the wizard. To modify an existing service group, see “[Modifying an Oracle service group](#)” on page 57.

Before configuring the Oracle agent, review the resource type and the attribute definitions of the Oracle agents, described in “[Resource type definitions](#)” on page 73. For sample configuration file and resource dependency graph of the Oracle service group, see “[Sample configuration](#)” on page 79.

Prerequisites

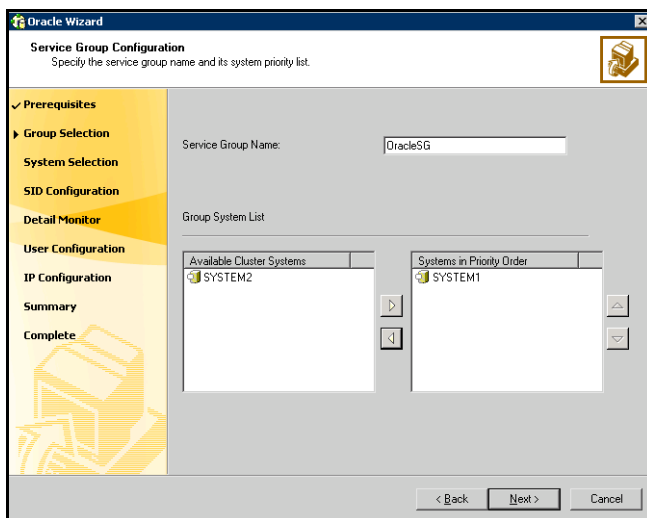
- You must be a Cluster Administrator. This user classification is required to create and configure a service group.
- You must be a Local or Domain Administrator on the node where you run the wizard.
- Verify that SFW HA, along with the VCS database agent for Oracle, is installed on all cluster nodes. See [“Installing the Oracle agent”](#) on page 41 for instructions.
- Verify a VCS cluster is configured using VCS Configuration Wizard (VCW).
- Verify that the Veritas High Availability engine (HAD) is running on the system from where you run the wizard.
- Mount the shared drives containing the data files, control files, and redo log files. Unmount the drives from other systems in the cluster.
- Assign the virtual IP address on the system where you run the wizard. Remove the virtual IP address from other systems
- Mount the database and start the Oracle instance on the node running the wizard.
- Make sure that you have the following information ready; the wizard will prompt you for this information:
 - The databases and listeners to be monitored by VCS.
 - For the instances to be monitored in detail, name and location of the respective SQL files.
 - A valid domain name, user name, and password with which the database service was configured for the database.

Configuration instructions

This section describes how to create an Oracle service group.

To create an Oracle service group

- 1 Start the Oracle configuration wizard. Click **Start > All Programs > Symantec > Veritas Cluster Server > Configuration Wizards > Database Agent for Oracle > Oracle Configuration Wizard**.
- 2 In the Welcome panel click **Next**.
- 3 In the Wizard Options panel, select **Create service group** and click **Next**.
- 4 In the Service Group Configuration panel, complete the following and click **Next**. The wizard starts validating your configuration. Various messages indicate the validation status.



Service Group Name

Type a name for the Oracle service group.

Available Cluster Systems

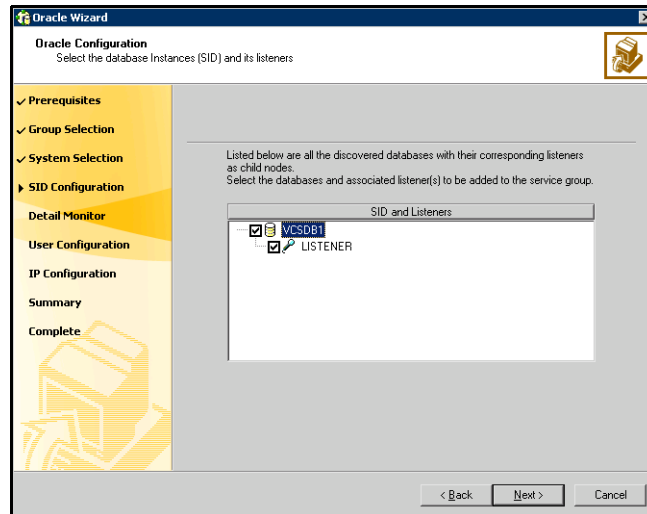
Select the systems on which to configure the service group and click the right arrow to move the systems to the Systems in Priority Order box.

The Systems in Priority Order box represents the service group's system list. The system at the top of the list has the highest priority while the system at the bottom of the list has the lowest priority.

To remove a system from the service group's system list, select a system in the Systems in Priority Order box and click the left arrow.

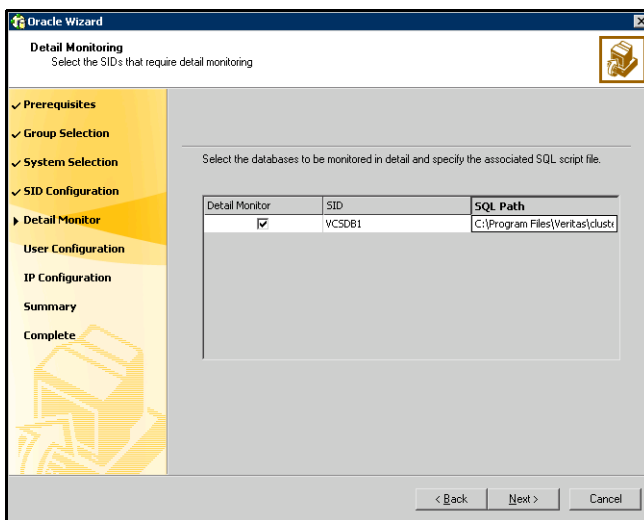
To change a system's priority in the service group's system list, select the system from the Systems in Priority Order box, and click the up and down arrows.

- 5 In the Oracle Configuration panel, select the SIDs and the associated listeners to be added to the service group, and click **Next**.



The SID is a system identifier that uniquely identifies the Oracle database instance, while the listener is the name of the corresponding listener service.

- 6 On the Detail Monitoring panel, configure detail monitoring for the Oracle database if required, and click **Next**.

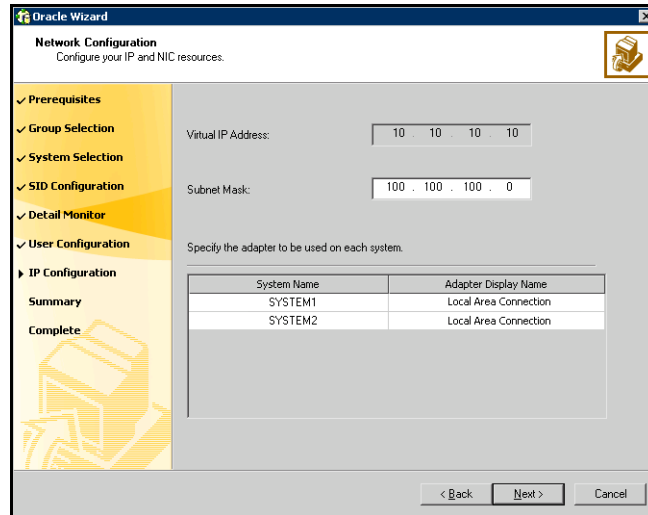


Detail Monitor Check the Detail Monitor option corresponding to each database that you want to configure detail monitoring for.

SQL Path Type the path of the SQL file that will query the database to validate the status. Click the icon next to the field to browse for the SQL file.
A sample SQL file, check.sql, is located at
`%VCS_HOME%\bin\Oracle\.`

- 7 In the Domain and User selection panel, type a valid domain name, user name, and password with which the database service was configured for the database and click **Next**. See “[Configuring the Oracle and listener services](#)” on page 38 for more information.

- 8 On the Network Configuration panel, specify the network related information and click **Next**.
 The wizard discovers and displays the virtual IP address for the Oracle Server.

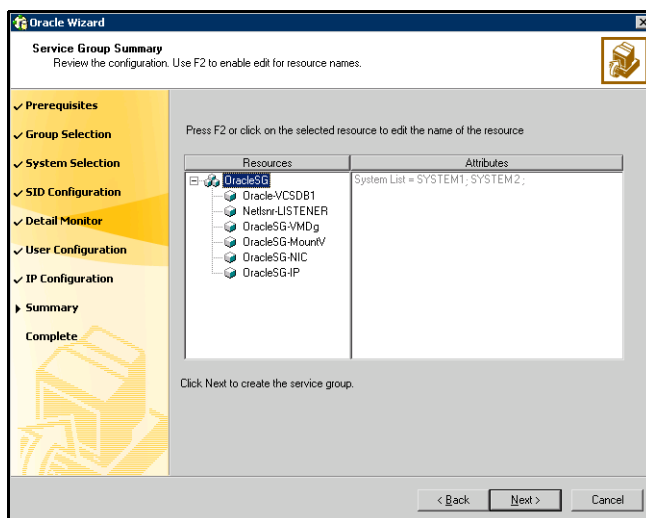


Subnet Mask Type the subnet mask to which the virtual IP belongs.

Adapter Display Name For each system in the cluster, select the public network adapter. Select the Adapter Name field to view the adapters associated with a system.

The wizard displays all TCP/IP enabled adapters on a system, including the private network adapters, if they are TCP/IP enabled. Make sure that you select the adapters to be assigned to the public network, and not those assigned to the private network.

- 9 Review the configuration on the Summary panel and click **Next**.



Resources Lists the configured resources. Click on a resource to view its attributes and their configured values in the Attributes box. The wizard assigns unique names to the resources. To edit a resource name, select the resource name and click on it, or press the F2 key. After the edit, press the Esc key to cancel the changes, or press the Enter key to confirm the changes.

- 10 In the confirmation dialog box, click **Yes**. Click **No** if you wish to review your settings.
- 11 The wizard starts running commands to create the Oracle service group. On the Completing the Oracle Configuration panel, check **Bring the service group online** to bring the service group online on the local system, and click **Finish**. The Oracle service group is created in your cluster.

After verifying that the service group comes online on the node, remove the virtual IP address that you created earlier.

To remove the virtual IP address

- 1 Take the Oracle service group offline on the node.
- 2 Remove the virtual IP address. See “[Removing the virtual IP address](#)” on page 39 for instructions.
- 3 Bring the Oracle service group online.

Configuring dependent services

If the database service has other dependent services, make sure the dependent services are running on the node where the database service is online. Note that the online agent operation brings only the database service online and not the dependent services.

For example, on Oracle 10g, the DBConsole service corresponding to an Oracle database has a dependency on the database service. That is, for the Enterprise Manager to manage the databases, you must make sure the DBConsole service is running on the node where the database service is online.

To configure a dependent service

- 1 For the dependent service, add a GenericService resource manually.
- 2 Make the GenericService resource dependent on the corresponding Oracle resource.
- 3 Set the Critical attribute to False if the Oracle service group must not fail over when the GenericService resource faults.

Refer to the *Veritas Cluster Server Administrator's Guide* for configuration instructions.

Verifying the Oracle service group configuration

This section provides steps to verify an Oracle service group configuration by bringing the service group online, taking it offline, and switching the service group to another cluster node.

Bringing the service group online

Perform the following steps to bring the service group online from the VCS Java or Web Console.

To bring a service group online from the Java Console

- 1 In the Cluster Explorer configuration tree, select the Oracle service group to be taken online.
- 2 Right-click the service group and select to online the service group on the system. (Right-click > Online > *system_name*)

To bring a service group online from the Web Console

- 1 On the **Service Group** page (**Cluster Summary > All Groups > Service Group**), click **Online**.
- 2 In the Online Group dialog box, select the system on which to bring the service group online.
- 3 To run PreOnline script, select the **Run PreOnline Script** check box.
- 4 Click **OK**.

Taking the service group offline

Perform the following steps to take the service group offline from the VCS Java or Web Console.

To take a service group offline from the Java Console

- 1 On the **Service Groups** tab of the Cluster Explorer configuration tree, right-click the service group.
or
Select the cluster in the Cluster Explorer configuration tree, select the **Service Groups** tab, and right-click the service group icon in the view panel.
- 2 Choose **Offline**, and choose the appropriate system from the pop-up menu. (Right-click > Offline > *system_name*)

To take a service group offline from the Web Console

- 1 On the **Service Group** page (**Cluster Summary > All Groups > Service Group**), click **Offline**. This opens the Offline Group dialog box.
- 2 Select the system on which to take the service group offline.
- 3 Click **OK**.

Switching the service group

The process of switching a service group involves taking it offline on its current system and bringing it online on another system.

To switch a service group from the Java Console

- 1 In the **Service Groups** tab of the Cluster Explorer configuration tree, right-click the service group.
or
Select the cluster in the Cluster Explorer configuration tree, select the Service Groups tab, and right-click the service group icon in the view panel.
- 2 Choose **Switch To**, and choose the appropriate system from the pop-up menu. (Right-click > Switch To > *system_name*)

To switch a service group from the Web Console

- 1 From the Service Group page (**Cluster Summary > All Groups > Service Group**), click **Switch**.
- 2 In the Switch Group dialog box, select the system to switch the service group to.
- 3 Click **OK**.

Disabling the service group

To disable the agent, you must change the Oracle service group to an OFFLINE state. You can stop the application completely or switch the agent to another system.

To disable a service group from the Java Console

- 1 In the **Service Groups** tab of the Cluster Explorer configuration tree, right-click the service group.
or
Select the cluster in the Cluster Explorer configuration tree, select the **Service Groups** tab, and right-click the service group icon in the view panel.
- 2 Choose **Disable**, and choose the appropriate system from the pop-up menu.

To disable a service group from the Web Console

- 1 In the **Service Group** page (**Cluster Summary > All Groups > Service Group**), click **Disable**. This opens the Disable Group dialog box.
- 2 Select the system on which to disable the service group. To disable the service group on all systems, click **All Systems**.

Administering the Oracle service group

This chapter describes the administrative tasks you can perform on Oracle service groups such as modifying the service group configuration and deleting a service group. The chapter also describes steps to configure detail monitoring for an Oracle database.

Modifying an Oracle service group

The following steps describe how to modify the configuration of the service groups using the configuration wizard.

Prerequisites

- If the Oracle service group is online, you must run the wizard from a node on which the service group is online. You can then use the wizard to add resources to and remove them from the configuration. You cannot change resource attributes.
You can however enable and disable the SIDs and listeners to be monitored in detail and change their detail monitoring options when the Oracle service group is online.
- To change the resource attributes, you must take the service group offline. However, the MountV and VMDg resources for the service group should be online on the node where you run the wizard and offline on all other nodes.
- If you are running the wizard to remove a node from the service group's system list, do not run the wizard on the node being removed.

Instructions

To modify an Oracle service group

- 1 Start the Oracle configuration wizard. Click **Start > All Programs > Symantec > Veritas Cluster Server > Configuration Wizards > Database Agent for Oracle > Oracle Configuration Wizard**.
- 2 Review the prerequisites and click **Next**.
- 3 In the Wizard Options panel, click **Modify service group**, select the service group to modify, and click **Next**.
- 4 Follow the wizard instructions and make desired modifications to the service group configuration. See [“Configuring the agent using the agent configuration wizard”](#) on page 44 for instructions.

Deleting an Oracle service group

The following steps describe how to delete an Oracle service group using the configuration wizard.

To delete an Oracle service group

- 1 Start the Oracle configuration wizard. Click **Start > All Programs > Symantec > Veritas Cluster Server > Configuration Wizards > Database Agent for Oracle > Oracle Configuration Wizard**.
- 2 Review the prerequisites and click **Next**.
- 3 In the Wizard Options panel, click **Delete service group**, select the service group to delete, and click **Next**.
- 4 In the Service Group Summary panel, click **Next**.
- 5 On the message that informs you that the wizard will run commands to delete the service group, click **Yes** to delete the service group and then click **Finish**.

Configuring detail monitoring

Use the detail monitoring capability of VCS database agent for Oracle to monitor the status of a database. Before setting up detail monitoring, you must have the agent running at the basic level of monitoring, that is, the DetailMonitor attribute must be set to 0.

The Oracle agent uses a script to monitor the status of the database. A sample SQL script, located at %VCS_HOME%\bin\Oracle\check.sql, is provided with the agent for the purpose. If the script is successfully executed during monitoring, the agent considers the database instance available. If the execution fails, the database instance is considered not available and the service group faults and fails over to the failover nodes. You can customize the script to meet your configuration requirements.

Note: You must use a separate script for each Oracle service group that exists in the cluster. The script must exist on all the nodes in the service group.

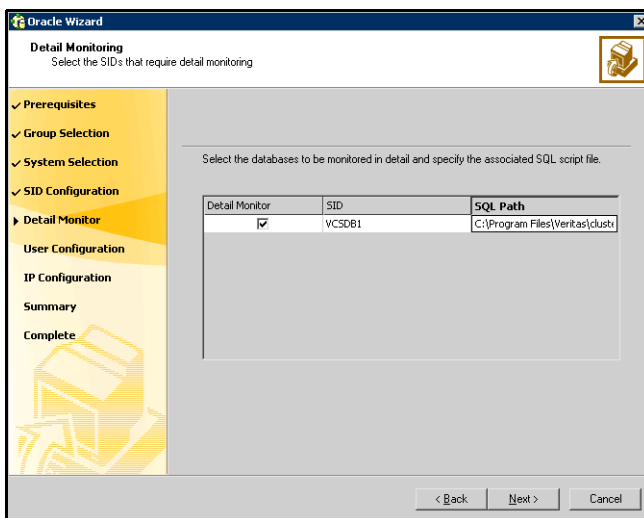
Enabling detail monitoring

The following steps describe how to enable detail monitoring using the configuration wizard.

To enable detail monitoring

- 1 Start the Oracle configuration wizard. Click **Start > All Programs > Symantec > Veritas Cluster Server > Configuration Wizards > Database Agent for Oracle > Oracle Configuration Wizard**.
- 2 Review the prerequisites and click **Next**.
- 3 In the Wizard Options panel, click **Modify service group**, select the service group configured for the instance to be monitored in detail, and click **Next**.
- 4 In the Oracle Configuration panel, select the SIDs to be configured along with their respective listeners and click **Next**.

- 5 In the Detail Monitoring dialog box, specify information to enable detail monitoring, and click **Next**.



Detail Monitor Check the Detail Monitor option corresponding to each database that you want to configure detail monitoring for.

SQL Path Type the path of the SQL file that will query the database to validate the status. Click the icon next to the field to browse for the SQL file.
A sample SQL file, check.sql, is located at
`%VCS_HOME%\bin\Oracle\.`

- 6 In the Domain and User selection panel, type a valid domain name, user name, password, and then click **Next**.
- 7 Follow the wizard instructions and accept the default values in the subsequent dialog boxes. See [“Configuring the agent using the agent configuration wizard”](#) on page 44 for instructions.

Disabling detail monitoring

The following steps describe how to disable detail monitoring using the configuration wizard.

To disable detail monitoring

- 1 Start the Oracle configuration wizard. Click **Start > All Programs > Symantec > Veritas Cluster Server > Configuration Wizards > Database Agent for Oracle > Oracle Configuration Wizard**.
- 2 Review the prerequisites and click **Next**.
- 3 In the Wizard Options panel, click **Modify service group**, select the service group configured for the instance for which detail monitoring is being disabled, and click **Next**.
- 4 In the Oracle Configuration panel, click **Next**.
- 5 In the Detail Monitoring Configuration panel, uncheck the check box corresponding to the Oracle Server instance for which detail monitoring is being disabled and click **Next**.
- 6 Follow the wizard instructions and accept the default values in the subsequent dialog boxes. See “[Configuring the agent using the agent configuration wizard](#)” on page 44 for instructions.

Troubleshooting the Oracle agent

This chapter lists some commonly encountered problems with the Oracle agent and some possible solutions. It also lists the error messages associated with the VCS database agent for Oracle. Each message includes a description and a recommended solution, if applicable.

Troubleshooting common problems

Occasionally you may encounter problems when using the Oracle database agent. [Table 6-1](#) describes the most common problems and provides standard workarounds.

Table 6-1 Common problems when using Oracle database agent

Error	Description
The Oracle service starts, but does not start the database.	<p>Make sure the Oracle database parameter <code>startmode</code> is set to <code>auto</code>.</p> <p>Make sure the path of the initialization file is set correctly.</p> <p>Verify access to the shared disk.</p>
Clients cannot connect to the virtual IP address set for the service group.	Make sure that the listener service is running. Verify that the listener is configured with virtual IP address in the host location.
Clients get disconnected during failover.	Configure Transparent Application Failover (TAF) for the client in the <code>tnsnames.ora</code> file. For more information on TAF, see the Oracle documentation.
Resource returns offline during detail monitoring.	<p>This could occur because the database is offline or has not been mounted or opened properly. Check the error in the log file for further details.</p> <p>Verify the configuration definition of the agent. Make sure that the correct file name is specified in the configuration. Verify access to sqlplus from the command prompt.</p>
The sqlplus script cannot be run because sqlplus returns a process error.	If the script timed out, increase the timeout value set in the attribute <code>SQLTimeOut</code> . Otherwise, try recreating the Oracle service using the <code>oradim</code> utility.
The Oracle wizard could not locate PFILE or SPFILE for a database.	Make sure the initialization file settings are configured correctly. See “Verifying the initialization file settings” on page 37.
Could not locate the PFILE entry in the registry.	<p>Recreate the registry entry by running the following command:</p> <pre>%ORACLE_HOME%\bin\oradim -edit -sid SID -pfile "initialization_file"</pre>

Table 6-1 Common problems when using Oracle database agent (Continued)

Error	Description
<p>The Oracle service starts, but the database does not start when a non-default SPFILE is used.</p>	<p>Start the database using the command-line.</p> <ol style="list-style-type: none"> 1 Start SQL*Plus. <code>sqlplus /nolog</code> 2 Connect to the database as SYSDBA. <code>connect username/password as sysdba</code> 3 Type: <code>startup pfile="initialization_file"</code> The variable <i>initialization_file</i> represents the name of the PFILE that you created to point to the non-default SPFILE on the shared disk (see “Moving the initialization file to shared disks (Oracle 10g)” on page 35). You must specify the fully qualified path of the file, along with its name. 4 If the database is mounted and does not open, type: <code>alter database open;</code> <p>Refer to the Oracle documentation for more information.</p>
<p>Listener service does not start after configuring the virtual IP address.</p>	<p>Make sure the virtual IP address is configured correctly for the listeners.</p> <p>Another possible cause is that the listener.ora file is corrupted.</p> <p>Solution:</p> <ol style="list-style-type: none"> 1 Stop the listener services on the node. 2 Rename the listener.ora file. 3 Recreate the listeners using the Net Configuration Assistant. 4 Bring up the virtual IP on the node. 5 Configure the virtual IP address for the newly created listeners using the Net Manager. 6 Restart the listener services. 7 Run <code>lsnrctl status</code> command for each listener to verify the virtual IP address. <p>Refer to the Oracle documentation for instructions on using the Net Configuration Assistant and the Net Manager.</p>

Table 6-1 Common problems when using Oracle database agent (Continued)

Error	Description
The VRTSWeb service does not start.	Make sure the path of the Perl package installed by Veritas appears as the first entry in the definition of the PERL5LIB environment variable. See “To modify the path of the Perl variable” on page 27 for instructions.

VCS logging

VCS generates two error message logs: the engine logs and the agent logs. Log file names are appended by letters. Letter A indicates the first log file, B the second, C the third, and so on.

The agent log is located at %VCS_HOME%\log\agent_A.txt. The format of agent log messages is:

```
Timestamp (Year/MM/DD) | Mnemonic | Severity | UMI | Agent Type |
Resource Name | Entry Point | Message Text
```

A typical agent log resembles:

```
2005/05/10 09:32:44 VCS NOTICE V-16-20046-5 Oracle:
Oracle-DATA1:online:Service status is Running
```

Here,

- Timestamp denotes the date and time when the message was logged.
- Mnemonic denotes which Symantec product logs the message. For VCS database agent for Oracle, mnemonic is 'VCS'.
- Severity denotes the seriousness of the message. Severity of the VCS error messages is classified into the following types:
 - CRITICAL indicates a critical error within a VCS process. Contact Technical Support immediately.
 - ERROR indicates failure of a cluster component, unanticipated state change, or termination or unsuccessful completion of a VCS action.
 - WARNING indicates a warning or error, but not an actual fault.
 - NOTE informs the user that VCS has initiated an action.
 - INFO informs the user of various state messages or comments. Of these, CRITICAL, ERROR, and WARNING indicate actual errors. NOTE and INFO provide additional information.
- UMI or Unique Message ID is a combination of Originator ID, Category ID, and Message ID. For example, the UMI for a message generated by the Oracle agent would resemble: V-16-20046-5
 Originator ID for all VCS products is 'V-16.' Category ID for Oracle agent is 20046, for Netlsnr agent is 20047. Message ID is a unique number assigned to the message text.
- Message text denotes the actual message string.

You can view these message logs using Notepad or any text editor. All messages are logged to the engine and the agent logs. Messages of type CRITICAL and ERROR are written to the Windows event log.

Error messages and descriptions

[Table 6-2](#) and [Table 6-3](#) lists the messages of type ERROR and WARNING. Each message includes a description and a recommended solution, if applicable.

Oracle agent

Table 6-2 Oracle agent error messages

Message	Description
Cannot open service handle.	<p>The agent could not open the Service Control Manager handle. This may occur because of an invalid service name.</p> <p>Solution: Verify that the correct service name is specified in the configuration definition of the agent.</p>
Cannot close service handle.	<p>The agent could not close the Service Control Manager handle.</p> <p>Solution: Verify that the specified service is running.</p>
Cannot start service.	<p>The agent could not start the specified service. This may occur because of the following:</p> <ul style="list-style-type: none"> ■ The specified SCM handle does not have access to the service. or ■ The specified handle is invalid. <p>Solution: Verify that the service name in the configuration file is the same as the name displayed by the SCM. Verify that the specified service is supported by the host. Verify that the service is listed in the SCM window.</p>
Cannot stop the service.	<p>The agent could not stop the specified service. This may occur because of the following:</p> <ul style="list-style-type: none"> ■ The specified service was not opened successfully. or ■ The specified service was not opened with the required access. <p>Solution: Verify that the service was opened successfully. Check the access with which the service was opened.</p>

Table 6-2 Oracle agent error messages (Continued)

Message	Description
Wait for mutex failed.	The wait function for mutex failed. This message is followed by an error code. Check the error code for more information.
Wait for mutex abandoned.	The mutex object is was not released by the thread that owned the mutex object before the thread terminated. This indicates a possibility that the SQL script is not terminated. Solution: Verify that the SQL script executed correctly.
Cannot wait for mutex object.	The agent could not acquire mutex for the resource. This may occur if two or more Oracle resources configured. Solution: Verify that the SQL script executed correctly.
Failed to decrypt password.	The agent could not decrypt the domain password. Solution: Verify that the password was encrypted using the VCS Encrypt utility.
No domain specified in argument list.	The attribute Domain is not configured for the resource. Solution: Verify that the correct Domain is defined in the configuration file.
No username specified in argument list.	The attribute UserName is not configured for the resource. Solution: Verify that the correct UserName is defined in the configuration file.
No password specified in argument list.	The attribute Password is not configured for the resource. Solution: Verify that the password is encrypted using the VCS Encrypt utility. Verify that the correct encrypted password is defined in the configuration file.
No SID specified in argument list.	The configuration definition of the agent does not contain a value for the attribute SID. Solution: Verify that the attribute SID is correctly defined in the configuration file.
SQL*Plus process exited with error <i>error_code</i> .	The agent could not execute the SQL*Plus process correctly. See the associated error code for more information.

Table 6-2 Oracle agent error messages (Continued)

Message	Description
Invalid filename in argument list <i>file_name</i> .	The SQL script for the resource is incorrectly defined in the filename. Solution: Verify that the attribute SQLFile is correctly defined in the configuration file. Verify the validity of the file name and path.
An Oracle error occurred.	An error occurred while generating the SQL script. This is an Oracle error and the corresponding error number and error message is logged to the agent log.

Netlsnr agent

Table 6-3 Netlsnr agent error messages

Message	Description
Cannot open service handle.	The agent could not open the Service Control Manager handle. This may occur because of an invalid service name. Solution: Verify that the correct service name is specified in the configuration definition of the agent.
Cannot start service.	The agent could not start the specified service. This may occur because of the following: <ul style="list-style-type: none"> ■ The specified SCM handle does not have access to the service. or ■ The specified handle is invalid. Solution: Verify that the service name in the configuration file is the same as the name displayed by the SCM. Verify that the specified service is supported by the host. Verify that the service is listed in the SCM window.

Table 6-3 Netlsnr agent error messages (Continued)

Message	Description
Cannot stop the service.	<p>The agent could not stop the specified service. This may occur because of the following:</p> <ul style="list-style-type: none"> ■ The specified service was not opened successfully. ■ The specified service was not opened with the required access. <p>Solution: Verify that the service was opened successfully. Check the access with which the service was opened.</p>
Cannot close service handle.	<p>The agent could not close the Service Control Manager handle.</p> <p>Solution: Verify that the specified service is running.</p>

Resource type definitions

This appendix lists the resource type definitions and attribute definitions of the Oracle and Netlsnr agents.

The resource type represents the VCS configuration definition of the agent and specifies how the agent is defined in the configuration file main.cf. The Attribute Definitions table explains the attributes associated with the agent. The Required attributes table lists the attributes that must be configured for the agent to function properly.

Oracle agent

Type definition

```
type Oracle (  
    static keylist LogDbg = { DBG_1 }  
    static i18nstr ArgList[] = { ServiceName, DelayAfterOnline,  
        DelayAfterOffline, DetailMonitor, IndepthMonitorCount, SID,  
        Domain, UserName, EncryptedPasswd, SQLFile, SQLTimeOut }  
    str ServiceName  
    int DelayAfterOnline = 20  
    int DelayAfterOffline = 20  
    boolean DetailMonitor = 0  
    int IndepthMonitorCount = 5  
    str SID  
    str Domain  
    str UserName  
    str EncryptedPasswd  
    str SQLFile  
    int SQLTimeOut = 20  
)
```

Attribute definitions

Table A-1 Oracle agent - required attributes

Required Attribute	Type and Dimension	Definition
ServiceName	string-scalar	The name of the Oracle service set during the installation of Oracle. The service name is specified in the format OracleService <i>SID</i> , where <i>SID</i> represents the database instance.
Domain	string-scalar	The name of the domain to which the user belongs in whose context Oracle was installed.
SID	string-scalar	A system identifier that uniquely identifies the Oracle database instance to be monitored in detail.
UserName	string-scalar	The name of the domain user in whose context Oracle was installed.
EncryptedPasswd	string-scalar	The encrypted password for the user identified by UserName. The password must be encrypted with the VCS Encrypt utility.

Table A-2 Oracle agent - optional attributes

Optional Attributes	Type and Dimension	Definition
DelayAfterOffline	integer-scalar	Number of seconds the agent waits to start the monitoring routine after Oracle is taken offline. Default = 20
DelayAfterOnline	integer-scalar	Number of seconds the agent waits to start the monitoring routine after Oracle is brought online. Default = 20

Table A-2 Oracle agent - optional attributes (Continued)

Optional Attributes	Type and Dimension	Definition
DetailMonitor	boolean-scalar	<p>A flag that defines whether the agent monitors Oracle in detail by trying to verify access to the database by running a SQL script. The value 1 indicates that the agent will monitor Oracle in detail. The value 0 indicates that the agent will not.</p> <p>Default = 0</p> <p>If the DetailMonitor flag is set to 1, the following attributes must be defined:</p> <ul style="list-style-type: none"> ■ SID ■ SQLFile
IndepthMonitorCount	integer-scalar	<p>An integer that defines the monitor interval between two consecutive detail monitoring cycles. If this attribute is set to 5, the agent monitors the application in detail after every five monitor intervals.</p> <p>Default = 5</p>
SQLTimeOut	integer-scalar	<p>The number of seconds the agent waits for the SQL script to return a value during detail monitoring. If this limit exceeds, the resource is declared faulted.</p> <p>Default = 20</p>
SQLFile	string-scalar	<p>The name of SQL script to be used for detail monitoring, along with its complete path. The agent verifies the existence of this file.</p> <p>A sample file, check.sql, is located at %VCS_HOME%\bin\Oracle\. The sample file contents are:</p> <pre style="margin-left: 40px;">select * from v\$database;</pre> <p>Do not include any spool commands within the SQL script.</p> <p>If an Oracle error occurs during execution, the error is logged to the agent log. If debug logging is also enabled for the resource, the output of the SQL script is also logged to the agent log.</p>

Netlsnr agent

Type definition

```

type Netlsnr (
    static i18nstr ArgList[] = { ServiceName, DelayAfterOnline,
        DelayAfterOffline }
    str ServiceName
    int DelayAfterOnline = 20
    int DelayAfterOffline = 20
)

```

Attribute definitions

Table A-3 Netlsnr agent - required attributes

Required Attribute	Type and Dimension	Definition
ServiceName	string-scalar	The name of the configured listener service. The service name is specified in the format <i>OracleOraHomeTNSListenerName</i> , where <i>OraHome</i> represents the Oracle home set during the installation and <i>ListenerName</i> represents the name of the configured listener.

Table A-4 Netlsnr agent - optional attributes

Optional Attributes	Type and Dimension	Definition
DelayAfterOffline	integer-scalar	Number of seconds the agent waits to start the monitor routine after the listener is taken offline. Default = 20
DelayAfterOnline	integer-scalar	Number of seconds the agent waits to start the monitor routine after the listener is brought online. Default = 20

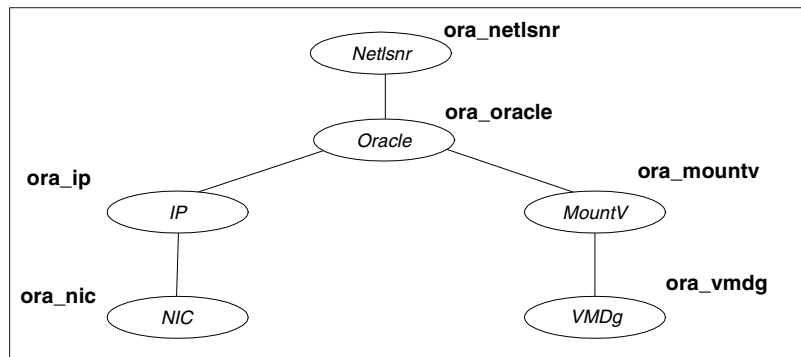
Sample configuration

This appendix describes a typical service group configured to monitor the state of Oracle in a VCS cluster. The sample dependency graph depicts the resource types, resources, and resource dependencies within the service group. The sample configuration file (main.cf) is also included for your reference. Review the dependency carefully before configuring the agent. For more information about VCS resource types, see the *Veritas Cluster Server Bundled Agents Reference Guide*.

Resource dependency graph

In the sample configuration shown in the dependency graph below, the shared disk group is configured using the Volume Manager (VMDg) agent. The shared volume on which Oracle shared data is installed is mounted as drive G:\ using the MountV agent. The service group IP address for the server is configured using the IP and NIC resource types. The Oracle resource can be started after each of these resources is brought online.

Figure B-1 Sample Oracle service group resource dependency graph



Sample configuration file

```
include "types.cf"

cluster oraclus (
    UserNames = { admin = "lF[YcdW`eaYbddX^Z`" }
    Administrators = { admin }
)

system VCSW2K67 (
)

system VCSW2K68 (
)

group OraVM (
    SystemList = { VCSW2K67 = 1, VCSW2K68 = 2 }
)

IP Ora_IP (
    Address = "172.29.10.254"
    SubNetMask = "255.255.255.0"
    MACAddress @VCSW2K67 = "00-02-B3-02-AE-81"
    MACAddress @VCSW2K68 = "00-D0-B7-8E-D8-35"
)

MountV Ora_MountV (
    MountPath = "G:"
    VolumeName = Oracle
    VMDGResName = Ora_VMDg
)

NIC Ora_NIC (
    MACAddress @VCSW2K67 = "00-02-B3-02-AE-81"
    MACAddress @VCSW2K68 = "00-D0-B7-8E-D8-35"
)

Netlsnr Ora_Netlsnr(
    ServiceName = OracleOraHome92TNSListener
)

Oracle Ora_Oracle
    ServiceName = OracleServiceOra
    DetailMonitor = 1
    SID = Ora
    Domain = vcsnet
    UserName = Administrator
    EncryptedPasswd = FTLrITi
    SQLFile = "D:\\Program Files\\Veritas\\cluster
server\\bin\\Oracle\\check.SQL"
```

```
)  
  
VMDg Ora_VMDg (  
    DiskGroupName = VCSDG  
    ForceDeport = 1  
    ListMountedVolumes = 1  
    ListApplications = 1  
)  
  
Ora_IP requires Ora_NIC  
Ora_MountV requires Ora_VMDg  
Ora_Oracle requires Ora_IP  
Ora_Oracle requires Ora_MountV  
Ora_Netlsnr requires Ora_Oracle
```


Oracle Enterprise Manager 10g Grid Control with VCS

Oracle Enterprise Manager (OEM) 10g allows users to manage Oracle components, including Oracle databases, through the Grid Control Management interface.

This appendix covers general instructions on how to install the Oracle 10g Grid Control Management Agent, and detailed step-by-step instructions on how to set up the Oracle Enterprise Manager 10g Grid Control to enable users to manage Oracle databases from the Oracle Enterprise Manager console, in a VCS cluster.

Supported software and operating system

- Oracle 10g, Release 2 (10.2.0.1.0) Standard Edition or Enterprise Edition with
Windows 2000 Server, Advanced Server, or Datacenter Server (all require Service Pack 4 with Update Rollup1)
or
Windows Server 2003 (Standard Edition, Enterprise Edition, or Datacenter Edition) (SP 1 required, SP2 supported, but not required for all editions)
- Oracle Enterprise Manager 10g Grid Control Release 10.1.0.3
- Storage Foundation HA 5.0 for Windows (SFW HA) with the Veritas Cluster Server Database Agent for Oracle

Note: SFW HA support for Oracle is limited to 32-bit versions of the operating system.

Installation and configuration tasks

Perform the following steps to configure Oracle Enterprise Manager 10g Grid Control to monitor databases in a VCS environment:

- Install the Oracle Enterprise Manager. See [“Installing Oracle Enterprise Manager server”](#) on page 85.
- Install Oracle binaries. See [“Installing Oracle”](#) on page 85.
- Install the Oracle Management Agent. See [“Installing the Oracle management agent”](#) on page 86.
- Create and configure the Oracle database and listener. See [“Creating and configuring Oracle database and listener”](#) on page 86.
- Add the Lanman resource for the virtual network name and bring it online. See [“Configuring a virtual network name”](#) on page 87.
- Configure the listener for the virtual network name. See [“Configuring the listener for virtual network name”](#) on page 88.
- Configure the database service for the virtual network name. See [“Configuring the database service for virtual network name”](#) on page 88.
- Configure an additional Oracle Management Agent listening on a virtual network name. See [“Configuring an additional Oracle management agent”](#) on page 90.
- Add the database to the Oracle Enterprise Manager 10g Grid Control. See [“Adding the database to the OEM 10g Grid Control”](#) on page 90.
- Add a GenericService resource for the Additional Management Agent. See [“Click **Next** and follow the instructions to complete the database configuration. After you configure the database successfully, the tools icon will appear as .”](#) on page 91.

Installing Oracle Enterprise Manager server

Install the Enterprise Manager server on a separate server. The Enterprise Manager server should not be a part of the cluster.

To install the Enterprise Manager server

- 1 From the Oracle Enterprise Manager CD, double-click Setup.exe to launch the Oracle Universal Installer.
- 2 On the Welcome panel, click **Next**.
- 3 On the Specify File Locations panel, specify the appropriate paths required for the installation and click **Next**.
- 4 On the Select a Product to Install panel, choose **Enterprise Manager 10g Grid Control Using a New Database 10.1.0.3.0** and click **Next**.
- 5 Follow the instructions of the installer. Refer to the Oracle product documentation for more information. At the end of the installation, make a note of the information displayed on the Summary page. You may need this information to complete the configuration.

Installing Oracle

Install Oracle on all the cluster nodes. Follow the instructions given on pages 17 to 27 of the *VCS 5.0 Database Agent for Oracle Configuration Guide*.

After the Oracle installation is complete, verify if the Oracle home path (the path that you set while installing Oracle) is included in the Path environment variable. If not, then you have to manually add the Oracle home entry to the Path variable, on all the cluster nodes.

To add the oracle home to the Path variable

- 1 Right-click **My Computers** and click **Properties**.
- 2 In the **System Properties** window, click the **Advanced** tab.
- 3 Click **Environment Variables**.
- 4 In the **System Variables** area of the Environment Variables window, double-click the Path variable name to edit it.
- 5 In the **Variable Value** field, add the Oracle home path.
- 6 Repeat steps 1 to 5 on all the cluster nodes.

Installing the Oracle management agent

Install the Oracle Management Agent on all the cluster nodes under the same Oracle home path.

To install the Oracle Management Agent

- 1 From the Oracle Enterprise Manager CD, double-click Setup.exe to launch the Oracle Universal Installer.
- 2 On the Welcome panel, click **Next**.
- 3 On the Specify File Locations panel, specify the appropriate paths required for the installation and click **Next**.
- 4 On the Select a Product to Install panel, choose **Additional Management Agent 10.1.0.3.0** and click **Next**.
- 5 On the Specify Oracle Management Service Location panel, specify the host name (the Enterprise Manager Server name) and the port (default port) that the Management Agent should use to communicate with the Enterprise Management service.
- 6 The installer might display a Warning. Click **OK** to continue.
- 7 Click **Next**. Follow the instructions of the installer to complete the installation.
- 8 Repeat steps 1 to 7 on all the cluster nodes.

You must install the Oracle Additional Management Agent under the same Oracle Home Path on all the cluster nodes.

Creating and configuring Oracle database and listener

Before you proceed, ensure that you have installed the VCS Database Agent for Oracle. See [“Installing the Oracle agent”](#) on page 41 for instructions.

To create and configure an Oracle database and a listener

- 1 Create a virtual IP address for the databases and the listeners. See [“Creating a virtual IP address”](#) on page 30 for instructions.
- 2 Create a Listener service. See [“Creating the listener service”](#) on page 30 for more instructions.
- 3 Configure the listener to use the virtual IP address. See [“Configuring the listeners to use the virtual IP address”](#) on page 30 for instructions.

- 4 Use the Oracle Database Configuration Assistant (DBCA) to create the database.
 - Start the Database Configuration Assistant (**Start > All Programs > Oracle-Oracle_Home > Configuration and Migration Tools > Database Configuration Assistant**). This launches the database installer.
 - On the Welcome panel, click **Next**.
 - On the Operation panel, click **Create a database** and click **Next**.
 - On the Database Templates panel, click **Custom Database** and click **Next**.
 - On the Management Options panel (Step 4 of 12), choose **Use Grid Control for Database Management**.
 - Click **Next**. Follow the installer instructions and select other options as per your desired database configuration. See [“Creating the database on shared disks”](#) on page 28 for instructions.
- 5 Configure the database on the shared disk. Follow the instructions given on pages 32 to 40 of the *VCS 5.0 Database Agent for Oracle Configuration Guide* with one exception. On page 38, Configuring the Oracle and Listener Services, step 2, bullet 6, choose **Local System Account** instead of **This Account**.
- 6 Repeat [step 1](#) to [step 5](#) on all the cluster nodes.
- 7 Configure the Oracle Service group. Refer to Chapter 4, “Configuring the Oracle Service Group” pages 43 to 51 of the *VCS 5.0 Database Agent for Oracle Configuration Guide* for more information.

Configuring a virtual network name

See the *Veritas Cluster Server Administrator's Guide* for more information on how to create a resource, bring the resource online, and link a resource.

To configure a virtual network name

- 1 Create a Lanman resource with the virtual server name.
- 2 Specify the attribute IPResName. The value of this attribute should be the IP resource name of the service group.
Resource names are case-sensitive in VCS.
- 3 Create a dependency with the Lanman resource as the parent resource and the IP resource as the child resource.
- 4 Enable the Lanman resource and bring it online. This will bring the virtual network name online.

- 5 Create a dependency with the Oracle resource as the parent resource and the Lanman resource as the child resource.
- 6 Remove the dependency between the Oracle resource and the IP resource.

Configuring the listener for virtual network name

Perform these steps on all the cluster nodes. Ensure that the service group is online on the node on which you perform these steps.

To configure the listener for the virtual network name

- 1 Offline the listener service resource on the node.
- 2 In the listener.ora file, change the host name to the network name from the Lanman resource that you created.
Replace
`HOST=virtual_IP_address`
with
`HOST=network_name`
The default location of the file listener.ora is
`%ORACLE_HOME%\NETWORK\ADMIN\.`
- 3 Remove the database entries in SID_LIST, if any.
- 4 Save and close the configuration.
- 5 Online the listener service resource on the node.

Configuring the database service for virtual network name

Perform these steps to configure the database service for the virtual network name.

To configure the database service for virtual network name

- 1 If the file "tnsnames.ora" does not contain entries for Database Service and Network Name, then create these entries using the Net Configuration Assistant. You must create these entries on all the cluster nodes.
- 2 Associate the database with the listener.
 - Ensure that the initialization parameter file contains the following entries:
 - SERVICE_NAMES (the name of the database service)
 - INSTANCE_NAME (the name of the database instance)

Example SQL queries to ensure these entries:

```
show parameter INSTANCE_NAME
show parameter SERVICE_NAME
```

These parameters are created during installation or database creation.

- Use one of the following ways to configure the new attribute listener_alias:

Run the following SQL command:

```
SQL> ALTER SYSTEM SET
LOCAL_LISTENER='<listener_alias>' scope=spfile;
OR
```

Add the following entry to the initialization parameter file (pfile/spfile):

```
LOCAL_LISTENER = <listener_alias>
```

- Define the parameter listener_alias. If your Oracle configuration uses the file tnsnames.ora, edit the file as instructed below. The default location of tnsnames.ora is %ORACLE_HOME%\NETWORK\ADMIN.

Add the following to tnsnames.ora file:

```
<listener_alias>=
(DESCRIPTION =
(AADDRESS=(Protocol=TCP)(HOST=virtual_name)(Port=default port))
)
```

The listener_alias parameter gets appended by the default domain name specified in the file sqlnet.ora.

- Offline, and then online, the listener service, and database service resources.
- 3 Edit the initialization parameter file. For the dispatchers parameter, replace the virtual IP address with virtual name for dispatchers. See pages 33 to 34 of the *VCS 5.0 Database Agent for Oracle Configuration Guide* for more information.

Configuring an additional Oracle management agent

Configure an additional Oracle Management Agent for the virtual server. Note that this agent is in addition to the agent that you installed earlier. The agent that you installed in “[Installing the Oracle management agent](#)” on page 86 is for the physical node, and this agent is for the virtual host.

Perform these steps on all the nodes. Make sure that the Oracle service group is online on the node on which you perform these steps.

To configure an additional Oracle Management Agent

- 1 At the command prompt, type the following commands:
 - `C:\> cd [Management Agent home]/bin`
 - `C:\[Management Agent home]/bin>emctl deploy agent [-n WindowsServiceName] AGENTSTATE_dir AGENTSTATE_hostname:port DeployHostName:port`

Where,

WindowsServiceName: the new service which is used for the HA of additional management agent. (We will create a GenericService resource for this later.)

AGENTSTATE_dir: a new directory

AGENTSTATE_hostname: virtual host name

port: a new port

DeployHostName: physical FQDN of the host

port: default port



Example:

```
C:\Oracle\product\10.1.0\em_1\bin>emctl deploy agent -n OraEm10gOneVCSHost E:\Oracle\product\10.1.0\em_1\vcshost\vcshost:1831 vcs2h283.vcsnet.com:1830
```
- 2 Start the Management Agent service (“OraEm10gOneVCSHost” in the above example) for the management agent and make sure it starts.
- 3 Stop the Management Agent service on this node.
- 4 Repeat steps 1 to 3 on the next node.

Adding the database to the OEM 10g Grid Control

Perform these steps to add the database to the OEM 10g Grid Control.

To add the database to the OEM 10g Grid Control

- 1 Access the OEM Grid control using the following URL:
<http://<EM server.domainName>:7777/em>
- 2 Logon with user as sysman. The Enterprise Management Server will discover the virtual network in its target host. You have to remove the listener and the database for the physical node and add the listener and database for the virtual network name.
- 3 On the Enterprise Manager console, click **Targets** and then click **All Targets**.
- 4 Choose the database for the physical node, and click **Remove**. Click **Yes** to confirm the database removal. Remove the listener for the physical node in a similar way.
- 5 On the Enterprise Manager console, click **Targets** and then click **Databases**.
- 6 Click **Add**. The Enterprise Management Server will prompt you to select a host for which you want to add the database.
- 7 Choose the virtual network name and click **Continue**. The Enterprise Manager will discover the targets on that machine. Check if the database and listener names displayed are the ones that you wish to manage from the Enterprise Management Server.
- 8 Under Databases, click on the tools icon (under Configure)  to configure the database.
- 9 Specify the Database name and the Monitor Password. This password is later used when you login to the database to monitor it.
- 10 Click **Next** and follow the instructions to complete the database configuration. After you configure the database successfully, the tools icon will appear as  .

Making the additional agent highly available

Add a GenericService resource to make the additional agent highly available.

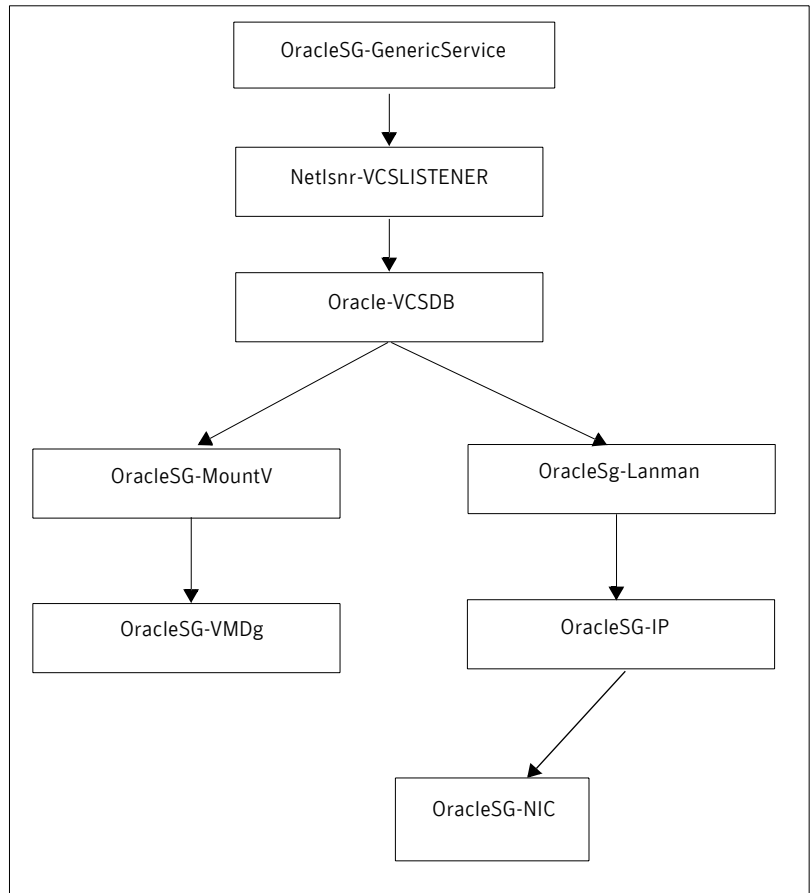
To make the additional agent highly available

- 1 Set the startup type for the additional agent service to Manual, on all the nodes. You must do this before configuring GenericService resource.
- 2 Create a GenericService resource for the Oracle Management Agent service. (This is the service for the additional agent that you created in [“Configuring an additional Oracle management agent”](#) on page 90).
- 3 Specify the attributes DelayAfterOnline and DelayAfterOffline. Set the value as 30 seconds.

Sometimes the GenericService resource may go into an unknown state. This is because the Oracle agent service takes some time in coming up. The workaround for this is to increase the attributes DelayAfterOnline and DelayAfterOffline, or probe the resource after the Windows service has started.

- 4 Create a dependency with the GenericService resource as the parent resource and the Netlsnr resource as the child resource.
- 5 Enable the GenericService resource and bring it online.

Sample Configuration



Notes:

- The sequence in which database and the additional management agent is created is not critical as long as everything is configured with the virtual server.
- The additional Oracle Management Agent service will not come online till the network name (Lanman) is online on the same node.
- The Oracle Management Agent (for the physical node) can be online on both the nodes. It's only the additional Oracle Management Agent (for the virtual server) that needs to be online on one of the two nodes as it depends on the virtual network name. So that the host information is always available.

- Failover time may increase after the Management Agent is added to the VCS cluster group. After Oracle service group is failed over to the other node, the Enterprise Manager agent service should be restarted on the Enterprise Manager Server in order to connect to the database using Enterprise Manager.

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