Oracle® Database Vault

Installation Guide

10*g* Release 2 (10.2) for Linux Itanium

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Oracle Database Vault Installation Guide, 10g Release 2 (10.2) for Linux Itanium

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Preface

The Oracle Database Vault Installation Guide explains how to prepare for, install, and configure Oracle Database Vault with specific instructions for the operating system and Oracle software technology components that Database Vault requires.

Audience

This document is intended for Oracle DBAs as well as System Administrators who are involved in the installation of Oracle Database Vault and its related components.

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Related Documents

For more information, refer to the following documents:

- *Oracle Database Vault Release Notes for Linux Itanium*

- *Oracle Database Vault Administrator's Guide*

- *Oracle Database Installation Guide*

- *Oracle Database Oracle Clusterware and Oracle Real Application Clusters Installation Guide for Linux*

- *Oracle Database Oracle Clusterware and Oracle Real Application Clusters Administration and Deployment Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Part I

Oracle Database Vault Installation

Part I introduces you to Oracle Database Vault installation concepts, requirements, and steps. This part contains the following chapters:

1

Oracle Database Vault Installation Overview

Oracle Database Vault enables you to secure business data in ways that were not possible before. Database Vault uses a multifactored and multilayered approach to implementing database security.

This chapter provides an overview of the Database Vault installation process. This chapter includes the following sections:

- Database Vault Installation Environment
- Database Vault Accounts
- Installation Considerations

Database Vault Installation Environment

Oracle Database Vault can be installed as an option to the following:

- Oracle Database 10*g* Release 2 (10.2.0.3) standalone installation
- Oracle Database 10*g* Release 2 (10.2.0.3) with Oracle Real Application Clusters (RAC)

Database Vault Accounts

Database Vault prompts for two accounts that you can create during installation. These are the Database Vault Owner and the Database Vault Account Manager accounts. You must supply an account name and password for the Database Vault Owner during installation. Creating a Database Vault Account Manager is optional.

Database Vault Owner

The Database Vault Owner account is granted the `DV_OWNER` role. This account can manage Database Vault roles and configuration.

The Database Vault Owner user name can be a minimum of 2, and a maximum of 30 characters long. The account password can be a minimum of 8, and a maximum of 30 characters.

The password that you choose for the Database Vault Owner account must be a secure one. The following password restrictions are enforced:

- The password must include at least one alphabet, one digit, and one nonalphanumeric character (symbol).
- The password cannot be the same as the account name.

■ The password cannot contain any consecutive repeating characters.

Database Vault Account Manager

The Database Vault Account Manager is granted the `DV_ACCTMGR` role. This account is used to manage database user accounts. The Database Vault Account Manager is created to facilitate separation of duties. If you do not opt to create the Database Vault Account Manager account, then the `DV_ACCTMGR` role is granted to the Database Vault Owner account by default.

The Database Vault Account Manager user name can be a minimum of 2, and a maximum of 30 characters long. The account password can be a minimum of 8, and a maximum of 30 characters.

The same password restrictions that apply to Database Vault Owner are applicable to Database Vault Account Manager as well.

Default Audit Policy and Initialization Parameters

Oracle Database Vault installs a baseline database auditing policy. This policy covers the access control configuration information stored in Database Vault database tables, information stored in Oracle Catalog (rollback segments, tablespaces, and so on), the use of system privileges, and Oracle Label Security configuration.

> **See Also:** *Oracle Database Vault Administrator's Guide* for more information on the database audit policy

When you install Oracle Database Vault, the security specific database initialization parameters are initialized with default values. These security specific initialization parameters are listed in Appendix E

Installation Considerations

This section contains information that you should consider before deciding how to install this product. It contains the following sections:

■ Hardware and Software Certification

■ Multiple Oracle Homes

Hardware and Software Certification

The platform-specific hardware and software requirements included in this installation guide were current at the time this guide was published. However, because new platforms and operating system software versions might be certified after this guide is published, review the certification matrix on the Oracle*MetaLink* Web site for the most up-to-date list of certified hardware platforms and operating system versions. The Oracle*MetaLink* Web site is available at the following URL:

http://metalink.oracle.com

If you do not have a current Oracle Support Services contract, then you can access the same information at the following Web site:

http://www.oracle.com/technology/support/metalink/content.html

Multiple Oracle Homes

This product supports multiple Oracle homes. This means that you can install this release or previous releases of the software more than once on the same system, in different Oracle home directories.

2

Installing Oracle Database Vault as an Option

This chapter includes an overview of the major steps required to install Oracle Database Vault into an existing Oracle Database 10*g* release 2 (10.2.0.3) database. These procedures transform an existing Oracle Database system (including associated applications) into an Oracle Database Vault system. Databases upgraded using the procedures described in this chapter can work almost in the same manner as in earlier releases and, optionally, can leverage new Oracle Database Vault functionality. For a list of changes that Database Vault makes, refer to Appendix E, "Initialization Parameters" and the *Oracle Database Vault Administrator's Guide*.

> **Note:** In order to upgrade a pre-10*g* release 2 Oracle Database to Oracle Database Vault, you first need to upgrade the database to a 10*g* release 2 (10.2.0.3) database.

> **See Also:** *Oracle Database Upgrade Guide* for information about upgrading your Oracle Database to Oracle Database 10*g* release 2.

This chapter covers the following topics:

- Preinstallation and Installation Tasks
- Postinstallation Tasks
- Removing Oracle Software

Preinstallation and Installation Tasks

This section covers the following topics:

- Become Familiar with the Features of Oracle Database Vault
- Check the Hardware Requirements
- Check the Operating System Requirements
- Check Kernel Parameters
- Check the Database Requirements
- Prepare a Backup Strategy
- Verify That Oracle Clusterware Is Running (RAC Only)
- Stop Existing Oracle Processes
- Configure the Oracle User's Environment

- Run Oracle Universal Installer to Install

Become Familiar with the Features of Oracle Database Vault

Before you plan the upgrade process, become familiar with the features of Oracle Database Vault. The *Oracle Database Vault Administrator's Guide* discusses the basic features of Oracle Database Vault.

Check the Hardware Requirements

The system must meet the following minimum hardware requirements:

- At least 1024 MB of physical RAM
- The following table describes the relationship between installed RAM and the configured swap space requirement.

RAM	Swap Space
Between 1024 MB and 2048 MB	1.5 times the size of RAM
Between 2049 MB and 8192 MB	Equal to the size of RAM
More than 8192 MB	0.75 times the size of RAM

- 400 MB of disk space in the `/tmp` directory
- Between 1.5 GB and 3.5 GB of disk space for the Oracle software, depending on the installation type
- 1.2 GB of disk space for a preconfigured database that uses file system storage (optional)

> **Note:** The disk space requirement for databases that use Automatic Storage Management or raw device storage is described later in this chapter.

Additional disk space, either on a file system or in an Automatic Storage Management disk group, is required for the flash recovery area if you choose to configure automated backups.

To ensure that the system meets these requirements:

1. To determine the physical RAM size, enter the following command:

   ```
   # grep MemTotal /proc/meminfo
   ```

   If the size of the physical RAM is less than the required size, then you must install more memory before continuing.

2. To determine the size of the configured swap space, enter the following command:

   ```
   # grep SwapTotal /proc/meminfo
   ```

   If necessary, refer to the operating system documentation for information about how to configure additional swap space.

3. To determine the available RAM and swap space, enter the following command:

   ```
   # free
   ```

where, *n* is the number of seconds to delay for the next iterations and *i* is the number of iterations you want to test.

> **Note:** Oracle recomends that you take multiple values for the available RAM and swap space before freezing on a value. This is because the available RAM and swap space keep changing depending on the user interactions with the computer.

4. To determine the amount of disk space available in the `/tmp` directory, enter the following command:

```
# df -h /tmp
```

If there is less than 400 MB of free disk space available in the `/tmp` directory, then complete one of the following steps:

- Delete unnecessary files from the `/tmp` directory to meet the disk space requirement.

- Set the `TEMP` and `TMPDIR` environment variables when setting the `oracle` user's environment (described later).

- Extend the file system that contains the `/tmp` directory. If necessary, contact your system administrator for information about extending file systems.

5. To determine the amount of free disk space on the system, enter the following command:

```
# df -h
```

The following table shows the approximate disk space requirements for software files for each installation type:

Installation Type	Requirement for Software Files (GB)
Enterprise Edition	1.85
Standard Edition	1.85
Custom (maximum)	1.99

6. To determine whether the system architecture can run the software, enter the following command:

```
# grep "model name" /proc/cpuinfo
```

> **Note:** This command displays the processor type. Verify that the processor architecture matches the Oracle software release that you want to install. If you do not see the expected output, then you cannot install the software on this system.

Check the Operating System Requirements

Depending on the products that you intend to install, verify that the following software is installed on the system. The procedure following the table describes how to verify whether these requirements are addressed.

> **Note:** Oracle Universal Installer performs checks on your system to verify that it meets the listed requirements. To ensure that these checks pass, verify the requirements before you start Oracle Universal Installer.

Item	Requirement
Operating system	One of the following operating system versions: ■ Red Hat Enterprise Linux AS/ES 3.0 (Update 4 or later) ■ Red Hat Linux 4.0 (Update 1 or later) ■ SUSE Linux Enterprise Server 9.0 with SP2 or later
Kernel version	The system must be running the following kernel version (or a later version): **Red Hat Enterprise Linux 3.0:** 2.4.21-20.EL **Red Hat Enterprise Linux 4.0:** 2.6.9-11.EL **SUSE Linux Enterprise Server 9.0:** 2.6.5-139

To ensure that the system meets these requirements:

1. To determine which distribution and version of Linux is installed, enter the following command:

    ```
    # cat /etc/issue
    ```

    > **Note:** Only the distributions and versions listed in the previous table are supported. Do not install the software on other versions of Linux.

2. To determine whether the required kernel is installed, enter the following command:

    ```
    # uname -r
    ```

    The following is sample output displayed by running this command on a Red Hat Enterprise Linux 3.0 system:

    ```
    2.4.21-20.EL
    ```

    In this example, the output shows the kernel version (2.4.21) and errata level (20.EL) on the system.

    If the kernel version does not meet the requirement specified earlier in this section, then contact the operating system vendor for information about obtaining and installing kernel updates.

3. To determine whether the required packages are installed, enter commands similar to the following:

    ```
    # rpm -q package_name
    ```

If a package is not installed, then install it from your Linux distribution media or download the required package version from your Linux vendor's Web site.

4. If you require a CSD for WebSphere MQ, then refer to the following Web site for download and installation information:

   `http://www.ibm.com/software/integration/mqfamily/support/summary/lin.html`

Check Kernel Parameters

> **Note:** The kernel parameter and shell limit values shown in the following section are recommended values only. For production database systems, Oracle recommends that you tune these values to optimize the performance of the system. Refer to your operating system documentation for more information about tuning kernel parameters.

Verify that the kernel parameters shown in the following table are set to values greater than or equal to the recommended value shown. The procedure following the table describes how to verify and set the values.

Parameter	Value	File
semmsl	250	`/proc/sys/kernel/sem`
semmns	32000	
semopm	100	
semmni	128	
shmall	2097152	`/proc/sys/kernel/shmall`
shmmax	Half the size of physical memory (in bytes)	`/proc/sys/kernel/shmmax`
shmmni	4096	`/proc/sys/kernel/shmmni`
file-max	65536	`/proc/sys/fs/file-max`
ip_local_port_range	Minimum:1024 Maximum: 65000	`/proc/sys/net/ipv4/ip_local_port_range`
rmem_default	1048576	`/proc/sys/net/core/rmem_default`
rmem_max	1048576	`/proc/sys/net/core/rmem_max`
wmem_default	262144	`/proc/sys/net/core/wmem_default`
wmem_max	262144	`/proc/sys/net/core/wmem_max`

> **Note:** If the current value for any parameter is higher than the value listed in this table, then do not change the value of that parameter.

To view the current value specified for these kernel parameters, and to change them if necessary:

1. Enter the commands shown in the following table to view the current values of the kernel parameters:

> **Note:** Make a note of the current values and identify any values that you must change.

Parameter	Command
semmsl, semmns, semopm, and semmni	`# /sbin/sysctl -a	grep sem` This command displays the value of the semaphore parameters in the order listed.
shmall, shmmax, and shmmni	`# /sbin/sysctl -a	grep shm` This command displays the details of the shared memory segment sizes.
file-max	`# /sbin/sysctl -a	grep file-max` This command displays the maximum number of file handles.
ip_local_port_range	`# /sbin/sysctl -a	grep ip_local_port_range` This command displays a range of port numbers.
rmem_default	`# /sbin/sysctl -a	grep rmem_default`
rmem_max	`# /sbin/sysctl -a	grep rmem_max`
wmem_default	`# /sbin/sysctl -a	grep wmem_default`
wmem_max	`# /sbin/sysctl -a	grep wmem_max`

2. If the value of any kernel parameter is different from the recommended value, then complete the following procedure:

Using any text editor, create or edit the `/etc/sysctl.conf` file, and add or edit lines similar to the following:

> **Note:** Include lines only for the kernel parameter values that you want to change. For the semaphore parameters (`kernel.sem`), you must specify all four values. However, if any of the current values are larger than the recommended value, then specify the larger value.

```
kernel.shmall = 2097152
kernel.shmmax = 2147483648
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
fs.file-max = 65536
net.ipv4.ip_local_port_range = 1024 65000
net.core.rmem_default = 1048576
net.core.rmem_max = 1048576
net.core.wmem_default = 262144
net.core.wmem_max = 262144
```

By specifying the values in the `/etc/sysctl.conf` file, they persist when you restart the system.

On SUSE systems only, enter the following command to ensure that the system reads the `/etc/sysctl.conf` file when it restarts:

```
# /sbin/chkconfig boot.sysctl on
```

Setting Shell Limits for the oracle User

To improve the performance of the software on Linux systems, you must increase the following shell limits for the `oracle` user:

Shell Limit	Item in limits.conf	Hard Limit
Maximum number of open file descriptors	`nofile`	65536
Maximum number of processes available to a single user	`nproc`	16384

To increase the shell limits:

1. Add the following lines to the `/etc/security/limits.conf` file:

```
oracle               soft    nproc   2047
oracle               hard    nproc   16384
oracle               soft    nofile  1024
oracle               hard    nofile  65536
```

2. Add or edit the following line in the `/etc/pam.d/login` file, if it does not already exist:

```
session    required    /lib/security/pam_limits.so
```

3. Depending on the `oracle` user's default shell, make the following changes to the default shell start-up file:

   - For the Bourne, Bash, or Korn shell, add the following lines to the `/etc/profile` file (or the file on SUSE systems)`/etc/profile.local`:

   ```
   if [ $USER = "oracle" ]; then
           if [ $SHELL = "/bin/ksh" ]; then
                   ulimit -p 16384
                   ulimit -n 65536
           else
                   ulimit -u 16384 -n 65536
           fi
   fi
   ```

   - For the C shell (`csh` or `tcsh`), add the following lines to the `/etc/csh.login` file (or the file on SUSE systems)`/etc/csh.login.local`:

   ```
   if ( $USER == "oracle" ) then
           limit maxproc 16384
           limit descriptors 65536
   endif
   ```

Check the Database Requirements

In order to install Oracle Database Vault, you must be running the Enterprise Edition of Oracle Database 10*g* release 2 (10.2.0.3). The database should also have Oracle Enterprise Manager Console DB 10.2.0.3.0 installed. In addition, the Database Vault installer requires write access to the files, `oratab` and `oraInst.loc`.

A listener must have been configured for the existing database. Oracle Net Configuration Assistant configures the listener when you first install the database. You can also use Oracle Enterprise Manager to administer listeners.

You must have an existing password file for the database. The password file authentication parameter, `REMOTE_LOGIN_PASSWORDFILE` must have been set to `EXCLUSIVE` or `SHARED`.

You can set the `REMOTE_LOGIN_PASSWORDFILE` parameter in the `init.ora` file. Use the `orapwd` utility to create and manage password files.

> **See Also:** *Oracle Database Administrator's Guide* for more information on creating and maintaining a password file

The following topics discuss applying the 10.2.0.3 patch set and installing the required components:

- Install Oracle Enterprise Manager Console DB
- Apply Oracle Database Release 10.2.0.3 Patch Set

Install Oracle Enterprise Manager Console DB

Before installing Oracle Database Vault, you should ensure that Oracle Enterprise Manager Console DB 10.2.0.3.0 is installed. Oracle Enterprise Manager Console DB is installed using the Oracle Universal Installer (OUI). The following steps summarize installing Oracle Enterprise Manager Console DB:

1. Run Oracle Universal Installer (OUI) and perform a custom installation to install Oracle Enterprise Manager Console DB 10.2.0.1.0. Add Oracle Enterprise Manager Console DB from the list of available product components.

2. Apply the Oracle Database release 10.2.0.3 patch set.

> **Note:** You can configure the database to use Enterprise Manager Database Control by using Database Configuration Assistant (DBCA). However, configuring Enterprise Manager Database Control is not a prerequisite for installing Oracle Database Vault.

Apply Oracle Database Release 10.2.0.3 Patch Set

To install Oracle Database Vault, you need to upgrade the database to Oracle Database release 10.2.0.3. Oracle strongly recommends that you back up your database before performing any upgrade or installation.

> **See Also:** *Oracle Database Backup and Recovery User's Guide* for information on database backups

This section covers the following topics:

Patch Set Overview

You can apply the Oracle Database release 10.2.0.3 patch set to the following Oracle Database 10*g* release 2 installations:

- Oracle Database
- Oracle Real Application Clusters
- Oracle Database Client

- Oracle Database Companion CD

- Oracle Clusterware

- Oracle Database Vault

Oracle Universal Installer Version Requirements

This patch set includes Oracle Universal Installer release 10.2.0.3, which is also installed when you install this patch set. This is to ensure that your Oracle home can be patched in the future. You should not use the Installer from the earlier maintenance release media or Oracle home.

This is not a complete software distribution. You must install it in an existing Oracle Database 10*g* release 2 (10.2.0.1 or 10.2.0.2) installation.

Patch Set Documentation

There are two documents related to this release of the Oracle Database patch set:

- *Oracle Database Patch Set Notes, 10g Release 2 (10.2.0.3) Patch Set for Linux Itanium*

- *Oracle Database List of Bugs Fixed, 10g Release 2 (10.2.0.3) Patch Set*

Both of these documents are included with the patch set. In addition, they are available on the Oracle*Metalink* Web site:

http://metalink.oracle.com

Prepare a Backup Strategy

Oracle strongly recommends that you back up your database before performing any upgrade or installation. The ultimate success of your upgrade depends heavily on the design and execution of an appropriate backup strategy. To develop a backup strategy, consider the following questions:

- How long can the production database remain inoperable before business consequences become intolerable?

- What backup strategy should be used to meet your availability requirements?

- Are backups archived in a safe, offsite location?

- How quickly can backups be restored (including backups in offsite storage)?

- Have recovery procedures been tested successfully?

Your backup strategy should answer all of these questions and include procedures for successfully backing up and recovering your database.

> **See Also:** *Oracle Database Backup and Recovery User's Guide* for information on database backups

Verify That Oracle Clusterware Is Running (RAC Only)

Oracle Clusterware should be running for the Database Vault installer to find the existing Real Application Clusters (RAC) databases. If you have stopped Oracle Clusterware, then you should restart it before running Oracle Universal Installer. Use the following command to start Oracle Clusterware:

```
$CRS_HOME/bin/crsctl start crs
```

> **Note:**
>
> - You must run the `crsctl` command as the `root` user. You need to run this command on all cluster nodes.
>
> - The `crsctl start crs` command also starts the database. You will need to shut down the database before running Oracle Universal Installer.

Stop Existing Oracle Processes

Stop all processes running in the Oracle home. You must complete this task to enable Oracle Universal Installer to relink certain executables and libraries. For RAC databases, you need to stop the processes on all nodes.

Stop the processes in the following order:

1. Stop the Enterprise Manager Database Control Process
2. Stop the iSQL*Plus Process
3. Shut Down All Database Instances
4. Stop Existing Listeners

Stop the Enterprise Manager Database Control Process

Stop the Enterprise Manager Database Control process, if it is running. Use the following command:

```
$ORACLE_HOME/bin/emctl stop dbconsole
```

Stop the iSQL*Plus Process

Stop the iSQL*Plus process, using the following command:

```
$ORACLE_HOME/bin/isqlplusctl stop
```

Shut Down All Database Instances

Shut down all database instances running from the Oracle home directory into which Oracle Database Vault is to be installed.

```
sqlplus SYS "AS SYSDBA"
Enter password:
SQL> shutdown immediate
```

Stop Existing Listeners

Oracle Universal Installer configures and starts a default Oracle Net listener using TCP/IP port 1521. However, if an existing Oracle Net listener process is using the same port or key value, then Oracle Universal Installer can only configure the new listener, it cannot start it. To ensure that the new listener process starts during the installation, you must shut down any existing listeners before starting Oracle Universal Installer.

To determine whether an existing listener process is running and to shut it down if necessary:

1. Switch user to `oracle`:

   ```
   # su - oracle
   ```

2. Enter the following command to determine whether a listener process is running and to identify its name and the Oracle home directory in which it is installed:

```
$ ps -ef | grep tnslsnr
```

This command displays information about the Oracle Net listeners running on the system:

```
... oracle_home1/bin/tnslsnr LISTENER -inherit
```

In this example, *oracle_home1* is the Oracle home directory where the listener is installed and LISTENER is the listener name.

> **Note:** If no Oracle Net listeners are running, then refer to the "Configure the Oracle User's Environment" section on page 2-11 to continue.

3. Set the ORACLE_HOME environment variable to specify the appropriate Oracle home directory for the listener:

   ■ Bourne, Bash, or Korn shell:

   ```
   $ ORACLE_HOME=oracle_home1
   $ export ORACLE_HOME
   ```

   ■ C or tcsh shell:

   ```
   % setenv ORACLE_HOME oracle_home1
   ```

4. Enter the following command to identify the TCP/IP port number and IPC key value that the listener is using:

```
$ $ORACLE_HOME/bin/lsnrctl status listenername
```

> **Note:** If the listener uses the default name LISTENER, then you do not have to specify the listener name in this command.

5. Enter a command similar to the following to stop the listener process:

```
$ $ORACLE_HOME/bin/lsnrctl stop listenername
```

6. Repeat this procedure to stop all listeners running on this system.

> **Note:** If you are installing Database Vault for Oracle Real Application Clusters (RAC), then you need to shut down all Oracle processes on all cluster nodes. See Appendix A, "How to Stop Processes in an Existing Oracle Real Application Clusters Database" for more details.

Configure the Oracle User's Environment

Run Oracle Universal Installer (OUI) using the account that owns the Oracle software. This is usually the oracle account.

However, before you start Oracle Universal Installer you must configure the environment of the oracle user. To configure the environment, you must:

- Set the default file mode creation mask (umask) to 022 in the shell startup file.

- Set the DISPLAY environment variable.

> **Note:** Ensure that the PATH variable contains $ORACLE_HOME/bin before /usr/X11R6/bin.

To set the oracle user's environment:

1. Start a new terminal session, for example, an X terminal (xterm).

2. Enter the following command to ensure that X Window applications can display on this system:

   ```
   $ xhost fully_qualified_remote_host_name
   ```

   For example:

   ```
   $ xhost somehost.us.acme.com
   ```

3. If you are not already logged in to the system where you want to install the software, then log in to that system as the oracle user.

4. If you are not logged in as the oracle user, then switch user to oracle:

   ```
   $ su - oracle
   ```

5. To determine the default shell for the oracle user, enter the following command:

   ```
   $ echo $SHELL
   ```

6. Open the oracle user's shell startup file in any text editor:

   > **Note:** On Red Hat Linux, .bash_profile is the user startup file for the Bash shell.

   - Bourne shell (sh), Bash shell (bash), or Korn shell (ksh):

     ```
     $ vi .bash_profile
     ```

   - C shell (csh or tcsh):

     ```
     % vi .login
     ```

7. Enter or edit the following line, specifying a value of 022 for the default file mode creation mask:

   ```
   umask 022
   ```

8. If the ORACLE_SID, ORACLE_HOME, or ORACLE_BASE environment variable is set in the file, then remove the corresponding lines from the file.

9. Save the file, and exit from the editor.

10. To run the shell startup script, enter one of the following commands:

    - Bash shell on Red Hat Enterprise Linux:

      ```
      $ . ./.bash_profile
      ```

    - Bourne, Bash, or Korn shell:

```
$ . ./.profile
```

- C shell:

```
% source ./.login
```

11. If you are not installing the software on the local system, then enter a command similar to the following to direct X applications to display on the local system:

   - Bourne, Bash, or Korn shell:

```
$ DISPLAY=local_host:0.0 ; export DISPLAY
```

   - C shell:

```
% setenv DISPLAY local_host:0.0
```

   In this example, `local_host` is the host name or IP address of the system that you want to use to display Oracle Universal Installer (your workstation or PC).

12. If you determined that the `/tmp` directory has less than 400 MB of free disk space, then identify a file system with at least 400 MB of free space and set the `TEMP` and `TMPDIR` environment variables to specify a temporary directory on this file system:

   a. Use the `df -k` command to identify a suitable file system with sufficient free space.

   b. If necessary, enter commands similar to the following to create a temporary directory on the file system that you identified, and set the appropriate permissions on the directory:

```
$ su - root
# mkdir /mount_point/tmp
# chmod a+wr /mount_point/tmp
# exit
```

   c. Enter commands similar to the following to set the `TEMP` and `TMPDIR` environment variables:

      * Bourne, Bash, or Korn shell:

```
$ TEMP=/mount_point/tmp
$ TMPDIR=/mount_point/tmp
$ export TEMP TMPDIR
```

      * C shell:

```
% setenv TEMP /mount_point/tmp
% setenv TMPDIR /mount_point/tmp
```

13. Enter commands similar to the following to set the `ORACLE_BASE` and ORACLE_SID environment variables:

   - Bourne, Bash, or Korn shell:

```
$ ORACLE_BASE=/u01/app/oracle
$ ORACLE_SID=sales
$ export ORACLE_BASE ORACLE_SID
```

   - C shell:

```
% setenv ORACLE_BASE /u01/app/oracle
% setenv ORACLE_SID sales
```

In these examples, `/u01/app/oracle` is the Oracle base directory that you created or identified earlier and `sales` is the name that you want to call the database (typically no more than five characters).

14. Enter the following commands to ensure that the `ORACLE_HOME` and `TNS_ADMIN` environment variables are not set:

   ■ Bourne, Bash, or Korn shell:

   ```
   $ unset ORACLE_HOME
   $ unset TNS_ADMIN
   ```

   ■ C shell:

   ```
   % unsetenv ORACLE_HOME
   % unsetenv TNS_ADMIN
   ```

15. To verify that the environment has been set correctly, enter the following commands:

   ```
   $ umask
   $ env | more
   ```

   Verify that the `umask` command displays a value of `22`, `022`, or `0022` and the environment variables that you set in this section have the correct values.

Run Oracle Universal Installer to Install

Run Oracle Universal Installer (OUI) to install Oracle Database Vault into an existing Oracle Database 10*g* release 2 (10.2.0.3) database. You should run the installer as the software owner account that owns the current `ORACLE_HOME` environment. This is normally the `oracle` account.

Log in as the `oracle` user. Alternatively, switch user to `oracle` using the `su` command. Change your current directory to the directory containing the installation files. Start Oracle Universal Installer.

```
./runInstaller
```

The following steps discuss the options you need to select:

1. In the Specify Installation Details screen, you need to specify the path to the Oracle home that contains the existing Oracle Database. The **Destination Path** box lists the Oracle home paths of all Oracle Database release 2 (10.2.0.3) Enterprise Edition databases registered with the system.

   Select the Oracle home corresponding to the database into which you want to install Oracle Database Vault.

> **Note:**
>
> - If an Oracle home does not have an Enterprise Edition of Oracle Database release 10.2.0.3 installed, then it is not displayed. You must ensure that the Oracle home has an Enterprise Edition of Oracle Database release 10.2.0.3 installed.
>
> - If an Oracle home does not have Oracle Enterprise Manager Console DB 10.2.0.3.0 installed, then it is not displayed. You must ensure that the Oracle home has Oracle Enterprise Manager Console DB 10.2.0.3.0 installed.
>
> - If an Oracle home contains an Automatic Storage Management (ASM) instance, then it is not displayed. You cannot install Oracle Database Vault into an Oracle home that also contains an ASM instance.
>
> - If an Oracle home already contains Oracle Database Vault, then it is not displayed. You cannot install Oracle Database Vault into an Oracle home more than once.

2. Enter a user name for the Database Vault Owner account in the **Database Vault Owner** field. The user name can be a minimum of 2 and maximum of 30 characters long.

3. Enter a password for the Database Vault Owner account in the **Database Vault Owner Password** field. The password can be a minimum of 8 and a maximum of 30 characters. The password must include at least one alphabet, one digit, and one nonalphanumeric character (symbol). It cannot be the same as the account names for either the Database Vault owner or the Database Vault account manager. It cannot contain any consecutive repeating characters.

4. Reenter the password in the **Confirm Password** field.

5. Select **Create a Separate Account Manager** if you want to create a separate Account Manager to manage Oracle Database Vault accounts.

6. In the **Database Vault Account Manager** field, enter a user name for the Database Vault Account Manager if you have chosen to select the **Create a Separate Account Manager** check box. The user name can be a minimum of 2 and a maximum of 30 characters.

7. Enter a password for the Database Vault Account Manager account in the **Account Manager Password** field. The password can be a minimum of 8 and a maximum of 30 characters. The password must include at least one alphabet, one digit, and one nonalphanumeric character (symbol). It cannot be the same as the account names for either the Database Vault owner or the Database Vault account manager. It cannot contain any consecutive repeating characters.

8. Reenter the password in the **Confirm Password** field. Click **Next**.

9. The Select Existing Database screen is displayed. A list of all databases running from the selected Oracle home is displayed. Select the database into which you wish to install Oracle Database Vault.

> **Note:**
>
> - If the selected Oracle home contains more than one database, then Operating System (OS) authentication is turned off for all the databases in the Oracle home.
>
> - Oracle recommends that you install Oracle Database Vault into an Oracle home containing only a single database.
>
> - If a database is not listed, then check to make sure that you have followed the instructions under "Check the Database Requirements" on page 2-7.

10. Enter the existing SYS user password for the selected database in the **Existing Database SYS Password** field.

11. Reenter the SYS password in the **Confirm Password** field. Click **Next**.

> **Note:** At this point, the database requirements are validated.

12. You are prompted to shut down all Oracle processes running from the Oracle home before proceeding. Shut down the Oracle processes, if you have not already done so.

> **See Also:** "Stop Existing Oracle Processes" on page 2-10 for more information on stopping existing Oracle processes

13. Product-specific prerequisite checks are performed. Confirm that all tests have passed. Click **Next** to continue.

14. The Summary screen is displayed with the installation details. Verify the details and click **Install**.

15. The Installation screen is displayed. After the installation completes, the Database Vault Configuration Assistant (DVCA) is run automatically. DVCA helps configure the Database Vault installation.

Postinstallation Tasks

This section lists the tasks to perform after you have completed an upgrade of your database. The following topics are discussed:

- Back Up the Database

- Update Environment Variables After the Upgrade (UNIX Systems Only)

- Change Passwords for Oracle-Supplied Accounts

- Enable or Disable Connections with the SYSDBA Privilege

- Start the Listener and Database on Other Nodes (RAC Only)

- Run DVCA to Set Instance Parameters and Lock Out SYSDBA Sessions (RAC Only)

Back Up the Database

Make sure you perform a full backup of the production database. See *Oracle Database Backup and Recovery User's Guide* for details on backing up a database.

Update Environment Variables After the Upgrade (UNIX Systems Only)

Make sure that the following environment variables point to the correct Oracle Database Vault directories:

- `ORACLE_HOME`

- `PATH`

- `ORA_NLS10`

> **Note:** The `ORA_NLS10` environment variable replaces the `ORA_NLS33` environment variable, so you may need to unset `ORA_NLS33` and set `ORA_NLS10`.

- `LD_LIBRARY_PATH`

Change Passwords for Oracle-Supplied Accounts

Oracle strongly recommends that you change the password for each account after installation. This enables you to effectively implement the strong security provided by Oracle Database Vault.

> **Note:** If you are creating a database using Database Configuration Assistant, you can unlock accounts after the database is created by clicking **Password Management** before you exit from Database Configuration Assistant.

Using SQL*Plus to Unlock Accounts and Reset Passwords

To unlock and reset user account passwords using SQL*Plus:

1. Start SQL*Plus and log in using the Database Vault Account Manager account. If you did not create the Database Vault Account Manager account during installation, then you will need to log in using the Database Vault Owner account.

2. Enter a command similar to the following, where *account* is the user account that you want to unlock and *password* is the new password:

```
SQL> ALTER USER account [ IDENTIFIED BY password ] ACCOUNT UNLOCK;
```

In this example:

- The `ACCOUNT UNLOCK` clause unlocks the account.

- The `IDENTIFED BY` *password* clause resets the password.

> **Note:** If you unlock an account but do not reset the password, then the password remains expired. The first time someone connects as that user, they must change the user's password.
>
> To permit unauthenticated access to your data through HTTP, unlock the `ANONYMOUS` user account.

Enable or Disable Connections with the SYSDBA Privilege

In a default Database Vault installation, the operating system authentication to the database is disabled. In addition, connections to the database using the SYSDBA privilege (that is, those that use the AS SYSDBA clause) are disabled. This is a security feature and is implemented to prevent misuse of the SYSDBA privilege.

If a password file has been created using the orapwd utility with the nosysdba flag set to y (Yes) (the default action of a Database Vault installation), users will not be able to log in to an Oracle Database Vault instance using the SYS account or any account with SYSDBA privilege using the AS SYSDBA clause. You can reenable the ability to connect with the SYSDBA privilege by re-creating the password file with the nosysdba flag set to n (No). You might need to reenable the ability to connect with SYSDBA privileges, if certain products or utilities require it's use.

When you re-create the password file, any accounts other than SYS that were granted the SYSDBA or SYSOPER privileges will have those privileges removed. You will need to regrant the privileges for these accounts after you have re-created the password file.

Use the following syntax to run orapwd:

```
orapwd file=filename password=password [entries=users] force=y/n nosysdba=y/n
```

Where:

- file: Name of password file (mandatory)

- password: Password for SYS (mandatory). Enter at least six alphanumeric characters.

- entries: Maximum number of distinct DBA users

- force: Whether to overwrite the existing file (optional). Enter y (for yes) or n (for no)

- nosysdba: Whether to enable or disable the SYS logon (optional for Oracle Database Vault only). Enter y (for yes) or n (for no)

  The default is no, so if you omit this flag, the password file will be created enabling SYSDBA access for Oracle Database Vault instances.

For example:

```
orapwd file=$ORACLE_HOME/dbs/orapworcl password=5hjk99 force=y nosysdba=n
```

Note: Do not insert spaces around the equal (=) character.

See Also: *Oracle Database Administrator's Guide* for more information on using the orapwd utility.

Enabling or Disabling Connecting with SYSDBA on Oracle Real Application Clusters Systems

Under a cluster file system and raw devices, the password file under $ORACLE_HOME is in a symbolic link that points to the shared storage location in the default configuration. In this case, the orapwd command you issue affects all nodes.

Enabling or Disabling Connecting with SYSDBA on Automatic Storage Management Systems

For Automatic Storage Management systems, you need to update each node to enable or disable the SYSDBA connection privilege by using the orapwd utility.

Start the Listener and Database on Other Nodes (RAC Only)

You need to start the listener and database on all RAC nodes other than the one on which the installation is performed. Use the following commands to start the listener and the database:

> **Note:** You need to enable SYSDBA connections on all nodes before running these commands. See "Enable or Disable Connections with the SYSDBA Privilege" on page 2-18 for more information on enabling SYSDBA connections.

```
$ORACLE_HOME/bin/lsnrctl start LISTENER_nodename
srvctl start instance -d sid -i instance_name -c "SYS/password AS SYSDBA"
```

> **Note:** You must use the Server Control (srvctl) utility to start and stop Oracle Database Vault RAC instances. Do not use SQL*Plus to start and stop RAC instances. You need to enable SYSDBA connections before you can use the srvctl command.

Run DVCA to Set Instance Parameters and Lock Out SYSDBA Sessions (RAC Only)

After installing Database Vault for a Real Application Clusters (RAC) instance, you need to run Database Vault Configuration Assistant (DVCA) with the -action optionrac switch on all other RAC nodes. This sets instance parameters and disables SYSDBA operating system authentication.

You need to run this command on all RAC nodes other than the node on which the Database Vault installation is performed. This step is required to enable the enhanced security features provided by Oracle Database Vault.

> **Note:** The listener and database instance should be running on the nodes on which you run DVCA.

Use the following syntax to run DVCA:

```
# dvca -action optionrac -racnode host_name -oh oracle_home -jdbc_str
jdbc_connection_string -sys_passwd sys_password \
[-logfile ./dvca.log] [-silent] [-nodecrypt] [-lockout]
```

Where:

- action: The action to perform. optionrac performs the action of updating the instance parameters for the RAC instance and optionally disabling SYSDBA operating system access for the instance.

- racnode: The host name of the RAC node on which the action is being performed. Do not include the domain name with the host name.

- oh: The Oracle home for the RAC instance.

- `jdbc_str`: The JDBC connection string used to connect to the database. For example, `"jdbc:oracle:oci:@orcl1"`.

- `sys_password`: The password for the SYS user.

- `logfile`: Optionally, specify a log file name and location. You can enter an absolute path or a path that is relative to the location of the `$ORACLE_HOME/bin` directory.

- `silent`: Required if you are not running DVCA in an xterm window.

- `nodecrypt`: Reads plaintext passwords as passed on the command line.

- `lockout`: Used to disable SYSDBA operating system authentication.

Note: You can reenable SYSDBA access by re-creating the password file with the `nosysdba` flag set to n (No). The `orapwd` utility enables you to do this.

Removing Oracle Software

Use Oracle Universal Installer (OUI) to remove Oracle software from an Oracle home. The following list summarizes the steps involved:

1. Log in as the user that owns the Oracle software. This is usually the `oracle` user.

2. Shut down all processes running in the Oracle home.

3. Start Oracle Universal Installer as follows:

   `$ $ORACLE_HOME/oui/bin/runInstaller`

4. In the Welcome screen, select **Deinstall Products**. The Inventory screen appears. This screen lists all the Oracle homes on the system.

5. Select the Oracle home and the products that you wish to remove. Click **Remove**.

See Also: Refer to the *Oracle Database Installation Guide* for details on removing Oracle software

---

Note: You cannot remove or uninstall the Database Vault option. However, you can disable Oracle Database Vault. Refer to *Oracle Database Vault Administrator's Guide* for more details.

You can also remove the entire Oracle home, as discussed earlier in this section.

Part II

Appendixes

Part II includes the appendixes. The contents of this part are:

- Appendix A, "How to Stop Processes in an Existing Oracle Real Application Clusters Database"

- Appendix B, "Using Response Files"

- Appendix C, "Running DVCA After Creating a Database Vault Database"

- Appendix D, "Database Listener Security Recommendations"

- Appendix E, "Initialization Parameters"

- Appendix F, "Enabling Oracle Database Vault Administrator Accessibility"

A

How to Stop Processes in an Existing Oracle Real Application Clusters Database

This appendix describes how to stop all processes in an Oracle Real Application Clusters (RAC) database, in preparation for installing Database Vault.

> **Note:** Before you make any changes to the Oracle software, Oracle recommends that you create a backup of the Oracle Database installation.

Shut down the following Oracle Database services before modifying the Oracle Database software:

> **Note:** You must perform these steps in the order listed.

1. Shut down any processes in the Oracle home on each node that can access a database. For example, you need to shut down Oracle Enterprise Manager Database Control.

   ```
   $ORACLE_HOME/bin/emctl stop dbconsole
   ```

   > **Note:** Before you shut down any processes that are monitored by Enterprise Manager Grid Control, set a blackout in Grid Control for the processes that you intend to shut down. This is necessary so that the availability records for these processes indicate that the shutdown was planned downtime, rather than an unplanned system outage.

2. Shut down all RAC instances on all nodes. To shut down all RAC instances for a database, enter the following command, where *db_name* is the name of the database:

   ```
   $ oracle_home/bin/srvctl stop database -d db_name -c "SYS/password AS SYSDBA"
   ```

3. Stop all node applications on all nodes. To stop node applications running on a node, enter the following command, where *node* is the name of the node where the applications are running:

   ```
   $ oracle_home/bin/srvctl stop nodeapps -n node -c "SYS/password AS SYSDBA"
   ```

B

Using Response Files

This appendix describes how to install Oracle Database Vault using a response file. It includes the following topics:

- How Response Files Work
- Installing Database Vault Using a Response File
- Troubleshooting Silent Mode Installation

How Response Files Work

You can automate the installation and configuration of Oracle software by specifying a response file when you start Oracle Universal Installer. Oracle Universal Installer uses the values contained in the response file to provide answers to some or all of Oracle Universal Installer prompts.

Typically, Oracle Universal Installer runs in interactive mode, which means that it prompts you to provide information in graphical user interface (GUI) screens. When you use response files to provide this information, you run Oracle Universal Installer at a command prompt using the silent mode.

During a silent mode installation, Oracle Universal Installer does not display any screens. Instead, it displays progress information in the terminal that you used to start it.

You define the settings for a silent mode installation by entering values for the variables listed in the response file. For instance, to specify the Oracle home, you would supply the appropriate value for the ORACLE_HOME variable, as in the following example:

```
ORACLE_HOME = "/home/Oracle/OraDBHome1"
```

Another way of specifying the response file's variable settings is to pass them as command line arguments when you run Oracle Universal Installer. For example:

```
$ /directory_path/runInstaller -silent "ORACLE_HOME=/home/Oracle/OraDBHome1" ...
```

In this command, *directory_path* is the path to the `database` directory on the DVD or the path to the `Disk1` directory on the hard drive.

This method is particularly useful if you do not want to embed sensitive information, such as passwords, in the response file. For example:

```
$ /directory_path/runInstaller -silent "s_ownerPasswd=binks342" ...
```

Ensure that you enclose the variable and its setting in double quotation marks (" ").

> **See Also:** *Oracle Universal Installer and OPatch User's Guide* for more information about response file formats

General Procedure for Using Response Files

The following are the general steps to install and configure Oracle products using Oracle Universal Installer in silent mode:

> **Note:** You must complete all required preinstallation tasks on a system before running Oracle Universal Installer in silent mode.

1. Verify that the `oraInst.loc` file exists in the `/etc` directory.

2. Prepare a response file.

3. Run Oracle Universal Installer in silent mode.

Installing Database Vault Using a Response File

Use the following steps to install Database Vault using a response file:

> **Note:** The `oraInst.loc` file should already be present in the `/etc` directory, by default. This is because Oracle Database Vault is installed into an existing Oracle Database installation.

1. Prepare the Response File

2. Run Oracle Universal Installer Using the Response File

Prepare the Response File

Oracle Database Vault comes with a response file template (`dv.rsp`) that you can edit to customize your installation. You can use this response file for silent mode installations.

The `dv.rsp` file is located in the `response` directory on the installation media. Use the following steps to copy and modify the response file:

1. Copy the response file from the `response` directory to a directory on your system.

   ```
   $ cp /directory_path/response/dv.rsp local_directory
   ```

   In this example, *directory_path* is the path to the `database` directory on the installation media. *local_directory* is the path to a directory on your disk.

2. Open the response file in a text editor:

   ```
   $ vi local_directory/dv.rsp
   ```

   The response file contains variables that store information required by Oracle Universal Installer. You need to set these variable values in the file. For example, you need to specify values for the Oracle home location, Database Vault owner name, and other such information required by Oracle Universal Installer.

The response file contains two parts. You should edit the variables only in the first part. The second part of the file contains preset variables, which must not be edited. This instruction is also provided in the response file.

Some of the variables are mandatory while others are optional. The mandatory variables must be supplied for a successful installation. Each variable is explained within the response file. Examples are also provided within the response file.

The following excerpt from the response file shows instructions related to setting the Oracle home variable:

```
#------------------------------------------------------------------------------
--
#Name      : ORACLE_HOME
#Datatype  : String
#Description: Complete path of the existing 10.2.0.3.0 database Oracle
#            Home into which Oracle Database Vault will be installed.
#
#Requirement: 1) Must have Oracle Database Enterprise Edition release
#                10.2.0.3.0 installed.
#             2) Must have Oracle Enterprise Manager Console DB version
#                10.2.0.3.0 installed.
#             3) Cannot contain an Automatic Storage Management(ASM) instance.
#             4) Cannot contain Oracle Database Vault.
#
#Example: ORACLE_HOME = "C:\OHOME1"
#------------------------------------------------------------------------------
--
ORACLE_HOME=<Value Required>
```

Lines starting with a pound sign (#) are comment entries. If you wish to omit an optional variable, you can comment it by adding a pound sign (#) at the beginning of the line. You cannot comment lines containing mandatory variables, like ORACLE_HOME.

Remember that you can specify sensitive information, such as passwords, at the command line rather than within the response file. "How Response Files Work" on page B-1 explains this method.

> **See Also:**   *Oracle Universal Installer and OPatch User's Guide* for more information about response file formats

3. Follow the instructions in the file to edit it. Save and close the file.

> **Note:**   Oracle Universal Installer fails if you do not correctly configure the response file. Refer to the "Troubleshooting Silent Mode Installation" section on page B-4 for more information about troubleshooting a failed silent mode installation.

4. Change the permissions on the file to 700:

```
$ chmod 700 /local_dir/response_file.rsp
```

> **Caution:** A fully specified response file for an Oracle Database Vault installation contains the passwords for database administrative accounts. Ensure that only the Oracle software owner user can view or modify response files or consider deleting them after the installation succeeds.

Run Oracle Universal Installer Using the Response File

Now, you are ready to run Oracle Universal Installer at the command line, specifying the response file you created, to perform the installation. The Oracle Universal Installer executable, `runInstaller`, provides several options. For help information on the full set of these options, run `runInstaller` with the `-help` option. For example:

$ directory_path/runInstaller -help

To run Oracle Universal using a response file:

1. Complete the preinstallation tasks listed in Chapter 2, "Installing Oracle Database Vault as an Option".

    > **See Also:** Frequently Asked Questions in the *Oracle Database Vault Release Notes for Linux Itanium* for a checklist of the preinstallation requirements

2. Log in as the Oracle software owner user (typically `oracle`).

3. To start Oracle Universal Installer in silent mode, enter a command similar to the following:

    > **Note:** Do not specify a relative path to the response file. If you specify a relative path, Oracle Universal Installer fails.

    $ /*directory_path*/runInstaller -silent -responseFile *responsefilename*

    In this example:

    -   *directory_path* is the path to the `database` directory on the DVD or the path to the `Disk1` directory on the hard disk.

    -   `-silent` indicates that you want to run Oracle Universal Installer in silent mode.

    -   *responsefilename* is the full path and file name of the installation response file that you configured.

    > **Note:** For more information about other options for the `runInstaller` command, enter the following command:
    >
    > $ /*directory_path*/runInstaller -help

Troubleshooting Silent Mode Installation

To determine whether a silent mode installation succeeds or fails, refer to the following log file:

/oraInventory_location/logs/silentInstall*date_time*.log

The *oraInventory_location* can be found in the /etc/oraInst.loc file. The inventory_loc parameter in the oraInst.loc file specifies the location of the oraInventory directory.

A silent installation fails in the following conditions:

- You do not specify a response file

- You specify an incorrect or incomplete response file

- Oracle Universal Installer encounters an error, such as insufficient disk space

- The Database Vault installation prerequisites have not been met

Oracle Universal Installer or configuration assistant validates the response file at run time. If the validation fails, the silent mode installation or configuration process ends. Oracle Universal Installer treats values for parameters that are of the wrong context, format, or type as if no value was specified in the file.

C

Running DVCA After Creating a Database Vault Database

You should run Database Vault Configuration Assistant (DVCA) after creating a new Oracle Database Vault database, if any of the following conditions is true:

- Database Vault is installed into an Oracle home that has more than one database. You need to run DVCA on the other databases in the Oracle home. This enables Database Vault security for those databases. The databases should meet the prerequisites for installing Oracle Database Vault, as discussed in "Preinstallation and Installation Tasks" on page 2-1.

- Database Configuration Assistant (DBCA) is used to create a new Database Vault database in an Oracle home that already has a Database Vault database. DVCA loads the Database Vault schema objects into the new database, creates the `DV_OWNER` and optional `DV_ACCTMGR` accounts, and deploys the Database Vault Administrator application for the database.

Use the following syntax to run the DVCA utility:

```
$ORACLE_HOME/bin/dvca -action option [-racnode host_name] -oh oracle_home
-jdbc_str jdbc_connection_string -sys_passwd SYS_password -owner_account
DV_owner_account_name -owner_passwd DV_owner_account_password [-acctmgr_account
DV_account_manager_account_name] [-acctmgr_passwd DV_account_manager_password]
[-logfile ./dvca.log] [-silent] [-nodecrypt][-lockout] [-languages
{["en"],["de"],["es"],["fr"],["it"],["ja"],["ko"],["pt_BR"],["zh_CN"],["zh_TW"]}]
```

Where:

- `action`: The action to perform. `option` creates the Database Vault schema objects, creates the `DV_OWNER` account and the optional `DV_ACCTMGR` account, and deploys the Database Vault Administrator application.

- `racnode`: The host name of the Real Application Clusters (RAC) node on which the action is being performed. Do not include the domain name with the host name.Use this option if this is a RAC database.

- `oh`: The Oracle home for the database.

- `jdbc_str`: The JDBC connection string used to connect to the database. For example, `jdbc:oracle:oci:@orcl1`, where `orcl1` is the net service name in the `tnsnames.ora` file (`$ORACLE_HOME/network/admin/tnsnames.ora`).

- `sys_passwd`: Password for user `SYS`

- `owner_account`: Oracle Database Vault Owner account name

- `owner_passwd`: Oracle Database Vault owner account password

- `acctmgr_account`: (Optional) Oracle Database Vault Account Manager user

- `acctmgr_passwd`: Oracle Database Vault Account Manager password (if a user name has been specified)

- `logfile`: Optionally, specify a log file name and location. You can enter an absolute path or a path that is relative to the location of the `$ORACLE_HOME/bin` directory

- `silent`: Required if you are not running DVCA in an xterm window

- `nodecrypt`: Reads plaintext passwords as passed on the command line. You must use this option if you are passing plaintext passwords to the command.

- `lockout`: Disables `SYSDBA` operating system authentication

- `languages`: Declares the language content to load, defaults to `"en"` (English). You can specify multiple languages. Include each language in quotation marks with commas separating different languages. Enclose the list of languages in braces. For example, `-languages {"en","fr","ja"}`.

  The following lists the language key:

  - `de`: German

  - `en`: English

  - `es`: Spanish

  - `fr`: French

  - `it`: Italian

  - `ja`: Japanese

  - `ko`: Korean

  - `pt_BR`: Brazilian Portuguese

  - `zh_CN`: Simplified Chinese

  - `zh_TW`: Traditional Chinese

  Note:

  - If the Oracle system identifier (SID) of the database is more than 8 characters, then you would need to update the Net service name in the `tnsnames.ora` file before running DVCA. See *Oracle Database Vault Release Notes for Linux Itanium* for more information.

  - DVCA should also be run before and after installing database options like Spatial, Java, and Intermedia. See *Oracle Database Vault Administrator's Guide* for more details.

D

Database Listener Security Recommendations

This appendix lists the security recommendations for protecting the database listener.

Security Checklist for the Database Listener

The following configuration guidelines help enhance the security for your database listener:

- The database listener configuration file, `listener.ora`, and the supporting OracleNet configuration file, `tnsnames.ora`, should have the `ADMIN_RESTRICTIONS_LISTENER_SID=ON` protection enabled.

- The database listener configuration file, `listener.ora`, and the supporting OracleNet configuration file, `tnsnames.ora`, should have the `PLSExtProc` listener disabled.

- The listener should be configured to listen on a non-standard port. This means that the default port (1521) should be changed.

- The listener should be password protected or leverage operating system (OS) authentication based on the organizational security policy.

- The listener should use a unique name, which should be different from the default name.

- The `listener.ora` file should have the following parameter set:

  `INBOUND_CONNECT_TIMEOUT_ListenerName = 10`

- The `sqlnet.ora` file should have the following parameters set:

  ```
  SQLNET.INBOUND_CONNECT_TIMEOUT  = 12
  SQLNET.EXPIRE_TIME = 10
  ```

- The listener should have logging enabled as follows:

  ```
  LOGGING_LISTENER = ON
  LOG_STATUS = ON
  LOG_DIRECTORY_ListenerName = Directory_owned_by_Oracle_account
  LOG_FILE_ListenerName = File_owned_by_Oracle_account
  ```

> **Note:** Only the owner and the DBA group should have permissions over the LOG_DIRECTORY.The owner should have read and write access to the LOG_DIRECTORY and the DBA group should have read access to it.
>
> Only the owner and the DBA group should have read and write permissions over the LOG_FILE.

- The listener should have tracing enabled as follows:

```
TRACE_DIRECTORY_ListenerName = Directory_owned_by_Oracle_account
TRACE_FILE_ListenerName = File_owned_by_Oracle_account
TRACE_LEVEL = user
TRACE_FILELEN_ListenerName = 512
TRACE_FILENO_ListenerName = 1000
TRACE_TIMESTAMP_ListenerName = dd-mon-yyyy hh:mi:ss:mil
```

> **Note:** Only the owner and the DBA group should have read and write permissions over the TRACE_DIRECTORY.
>
> Only the owner and the DBA group should have read and write permissions over the TRACE_FILE.

E

Initialization Parameters

When you install Oracle Database Vault, the security specific database initialization parameters are initialized with default values. The following list shows the default values for these security specific initialization parameters:

```
REMOTE_LOGIN_PASSWORDFILE = default, EXCLUSIVE
AUDIT_SYS_OPERATIONS = TRUE
REMOTE_OS_AUTHENT = FALSE
REMOTE_OS_ROLES = FALSE
OS_ROLES = FALSE
OS_AUTHENT_PREFIX = ''
SQL92_SECURITY = TRUE
O7_DICTIONARY_ACCESSIBILITY = FALSE
```

F

Enabling Oracle Database Vault Administrator Accessibility

As part of the effort to make Oracle products, services, and supporting documentation accessible and usable to the disabled community, Oracle Database Vault Administrator offers several features that make management data available to users of assistive technology. To enable these features and provide for full accessibility, you must modify two configuration settings, which are described in the following sections:

- Enabling Oracle Database Vault Administrator Accessibility Mode
- Providing Textual Descriptions of Database Vault Administrator Charts

Enabling Oracle Database Vault Administrator Accessibility Mode

Oracle Database Vault Administrator takes advantage of user interface development technologies that improve the responsiveness of some user operations. For example, when you navigate to a new record set in a table, Oracle Database Vault Administrator does not redisplay the entire HTML page. However, this performance-improving technology is generally not supported by screen readers. To disable this feature, and as a result, make the Database Vault Administrator HTML pages more accessible for disabled users, use the following procedure.

To enable the display of an entire HTML page:

1. Locate the `uix-config.xml` configuration file.

   To locate the `uix-config.xml` file in an Oracle Database 10*g* installation, change directory to the following location in the Oracle home:

   ```
   $ORACLE_HOME/dv/jlib/dva_webapp/dva_webapp/WEB-INF/
   ```

2. Open the `uix-config.xml` file using a text editor and locate the following entry:

   ```
   <!-- An alternate configuration that disables accessibility features  -->
   <default-configuration>
     <accessibility-mode>inaccessible</accessibility-mode>
   </default-configuration>
   ```

3. Change the value of the accessibility-mode property from `inaccessible` to `accessible`.

4. Save and close the uix-config.xml file.

5. Restart Database Vault Administrator.

   > **See Also:** For more information on starting Oracle Database Vault Administrator, refer to *Oracle Database Vault Administrator's Guide*.

Providing Textual Descriptions of Database Vault Administrator Charts

In the Monitor page of the Database Vault Administrator, a chart is used to display security policy data. However, charts do not convey information in a manner that can be read by a screen reader. To remedy this problem, you can configure Database Vault Administrator to provide a complete textual representation of each chart. By default, support for the textual representation of charts is disabled. When textual description for charts is enabled, Database Vault Administrator displays a textual representation of the chart data.

To enable the textual representation of charts:

1. Locate the `web.xml` configuration file.

    To locate the `web.xml` file in a Oracle Database 10*g* installation, change directory to the following location in the Oracle home:

    ```
    $ORACLE_HOME/dv/jlib/dva_webapp/dva_webapp/WEB-INF/
    ```

2. Open the `web.xml` file with your favorite text editor and locate the following six lines of the file:

    ```
    <!-- Uncomment this to enable textual chart descriptions
    <context-param>
    <param-name>enableChartDescription</param-name>
    <param-value>true</param-value>
    </context-param>
    -->
    ```

3. Remove comments from this section by deleting the first line and the last line of this section so that the section consists of only these four lines:

    ```
    <context-param>
    <param-name>enableChartDescription</param-name>
    <param-value>true</param-value>
    </context-param>
    ```

4. Save and exit the `web.xml` file.

5. Restart Database Vault Administrator.

    > **See Also:** For more information on starting Oracle Database Vault Administrator, refer to *Oracle Database Vault Administrator's Guide*.

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