



## CHAPTER 4

# Oracle Server Installation

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This chapter describes how to install Oracle 9i or Oracle 10g for use with Cisco ANA 3.6 installation with Service Packs 1 and 2.



### Note

This chapter provides specific guidelines for installing Oracle for use with Cisco ANA. For a full description of Oracle installation, and to be sure you have the most recent documentation, refer to the documentation that came with your Oracle software or refer to the Oracle Corporation web site at <http://www.oracle.com>.

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This chapter includes the following sections:

- [Important Notes Before You Begin](#)
- [Creating an Oracle Database](#)
- [Archiving the Database](#)
- [Configuring the Database Size](#)
- [Starting Up the Listener](#)
- [Post Database Installation Configuration](#)
- [Maintaining the Database](#)

## Important Notes Before You Begin

Oracle 9i Enterprise Edition Release 9.2.0.8 32 bit (or Oracle 10g Enterprise Edition Release 10.2.0.3 64 bit) with the partitioning option must be installed before starting the Cisco ANA installation, according to the standard software installation flow. The Oracle server can be installed on the ANA gateway or on any other remote machine. If the Oracle server is installed on a remote machine, then the Oracle client must be installed on the ANA gateway.

Before you attempt to install Oracle 9i or 10g, please be aware of the following:

- If an Oracle server is installed on the ANA gateway, then no Oracle services may be installed on port 2100. If an Oracle listener was installed on port 2100, you must disable it or change the port number (see [Configuring Listeners' Port Numbers, page 4-3](#)). By default, this port is used by the Oracle XML DB service.
- It is recommended that Oracle user should be called “oracle”, and that it should be part of a group called dba.

- The recommended Oracle 9i for ANA 3.6 Service Packs 1 and 2 is the 32bit version with patch 9.2.0.8. This version is installed by executing `./runInstaller -ignoreSysPrereqs`.
- The recommended Oracle 10g for ANA 3.6 Service Packs 1 and 2 is the 64bit version with patch 10.2.0.3. This version is installed by executing `./runInstaller`.
- The database username and password that relate to the Cisco ANA application are created automatically during installation.




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**Note** To reset the system password, you must re-install Cisco ANA.

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### Download Locations

The Oracle install patches can be downloaded from the following locations:

- Oracle 9.2.0.8 patch can be downloaded from:  
<http://metalink.oracle.com>  
Patchset 4547809
- Oracle 10.2.0.3 patch can be downloaded from:  
<http://metalink.oracle.com>  
Patchset 5337014



**Note**

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After installing the patch 9.2.0.8 or 10.2.0.3, you must change the permissions for the newly installed files, to enable all OS users to use Oracle on the machine. You can do this by executing the following script: `$ORACLE_HOME\install\changePerm.sh`.

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## Creating an Oracle Database



**Note**

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The database instance installation can be performed as part of the Oracle installation or separately using the dbca utility.

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When installing a database instance, you must specify the following parameters:

- The Oracle System Identifier (SID) must be set to "MCDB".
- The temporary tablespace should be named "TEMP".
- SGA area size must be 2 GB, and the buffer cache size must be 1.8 GB.
- The dump folders should be under: `<ORACLE_HOME>/admin/MCDB/`. In most cases, this is the default location, and therefore no special action is required.

For better performance, please make sure you generate statistics for all the tables in the database. Cisco ANA will issue alerts if no statistics are generated, or if the current statistics are more than two weeks old.

The following sections describe:

- [Configuring Listeners' Port Numbers](#)
- [Configuring Memory Settings](#)

## Configuring Listeners' Port Numbers

If Oracle is installed on the ANA gateway, then no Oracle services may be installed on port 2100. If an Oracle listener was installed on port 2100, you must disable it or change the port number. By default, this port is used by the Oracle XML DB service.

The following sections describe:

- [Disabling Database Features](#)
- [Disabling the Oracle XML DB Service](#)
- [Changing the XML DB Listeners' Port Numbers](#)

## Disabling Database Features

The Database Configuration Assistant wizard guides you step-by-step through the Oracle database installation process. When you are prompted to select the features to configure for use in the database, it is recommended to disable all the database features, in addition to removing the Oracle XML DB service.

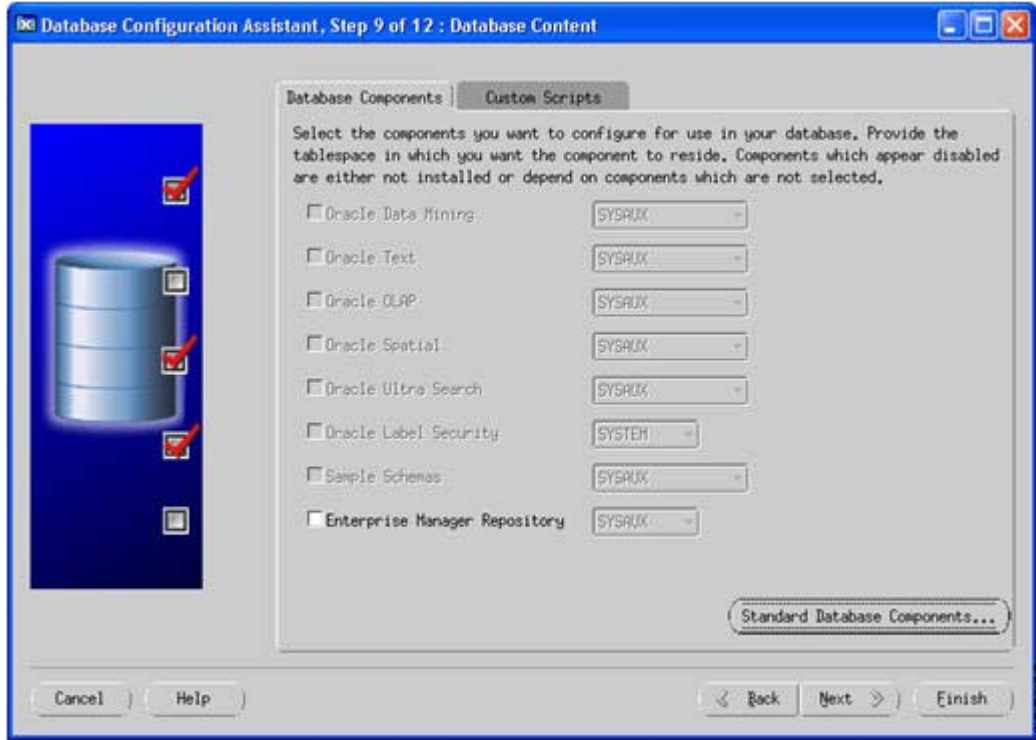
The following figures illustrate the steps of the wizard that enable you to disable database features for Oracle 9i and Oracle 10g:

**Figure 4-1** *Disabling Database Features for Oracle 9i*



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Figure 4-2 Disabling Database Components for Oracle 10g



## Disabling the Oracle XML DB Service

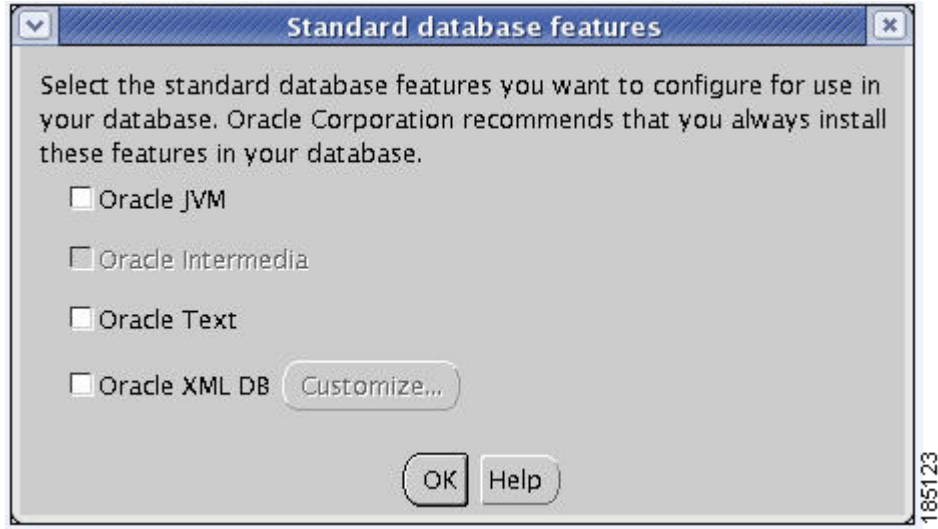
The following procedures describe how to disable the Oracle XML DB service during the database creation, for Oracle 9i and Oracle 10g installations.

To disable the Oracle XML DB service for an Oracle 9i installation:

- Step 1** In Step 4 of the Database Configuration Assistant wizard, click the **Standard Database Features** button (see [Figure 4-1](#)).

The following dialog box opens, asking you to select the standard database features to configure for use in your database.

**Figure 4-3** Disabling Oracle XML DB for Oracle 9i



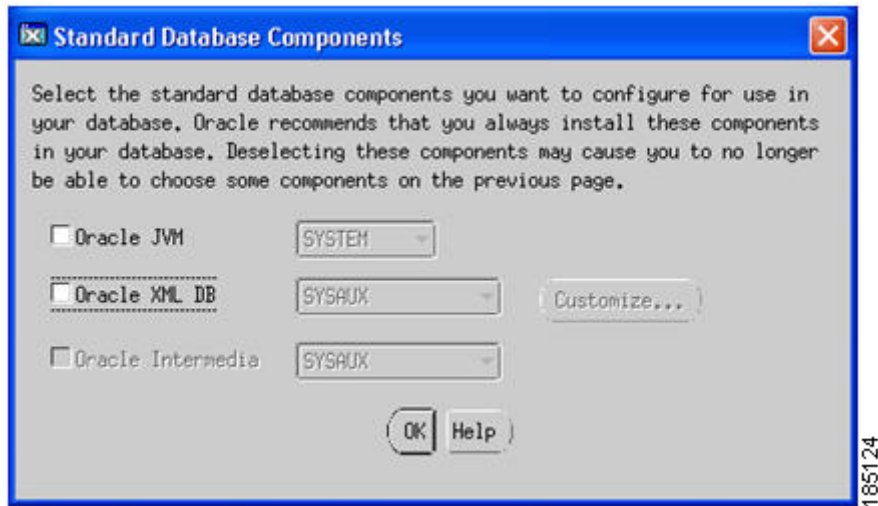
**Step 2** Deselect the **Oracle XML DB** check box, and click **OK**.

To disable the Oracle XML DB service for an Oracle 10g installation:

**Step 1** In Step 9 of the Database Configuration Assistant wizard, click the **Standard Database Components** button (see [Figure 4-2](#)).

The following dialog box opens, asking you to select the standard database components to configure for use in your database.

**Figure 4-4** Disabling Oracle XML DB for Oracle 10g



**Step 2** Deselect the **Oracle XML DB** check box, and click **OK**.

## Changing the XML DB Listeners' Port Numbers

The following describes how to change the port numbers of the XML DB listeners, if required.

**Note**

You must change the FTP port number if an Oracle listener was installed by default on port 2100.

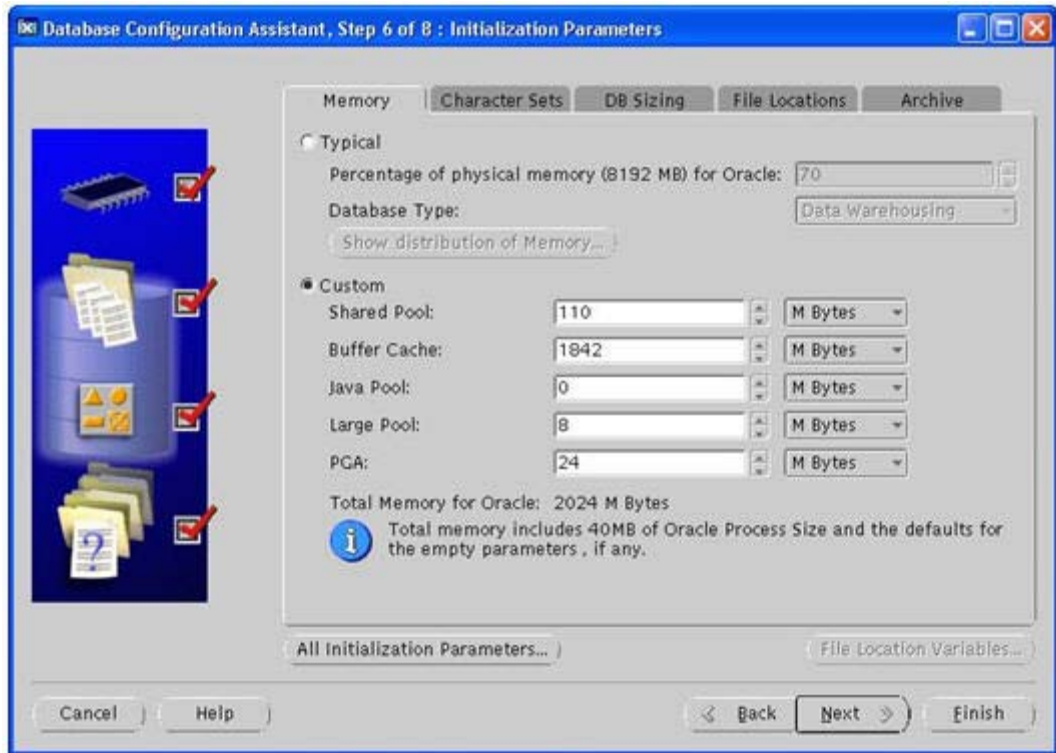
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- Step 1** Enter `sqlplus USER/PASSWORD` to log in to Oracle SQL.
- Step 2** Enter `call dbms_xdb.cfg_update(updateXML(dbms_xdb.cfg_get(), '/xdbconfig/sysconfig/protocolconfig/httpconfig/http-port/text()', 8083));`  
to change the HTTP port from 8080 to 8083.
- Step 3** Enter `call dbms_xdb.cfg_update(updateXML( dbms_xdb.cfg_get(), '/xdbconfig/sysconfig/protocolconfig/ftpconfig/ftp-port/text()' , 2111));`  
to change the FTP port from 2100 to 2111.
- Step 4** Refresh the settings by entering `exec dbms_xdb.cfg_refresh.`
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## Configuring Memory Settings

Memory settings are configured in the Initialization Parameters page of the Database Configuration Assistant wizard.

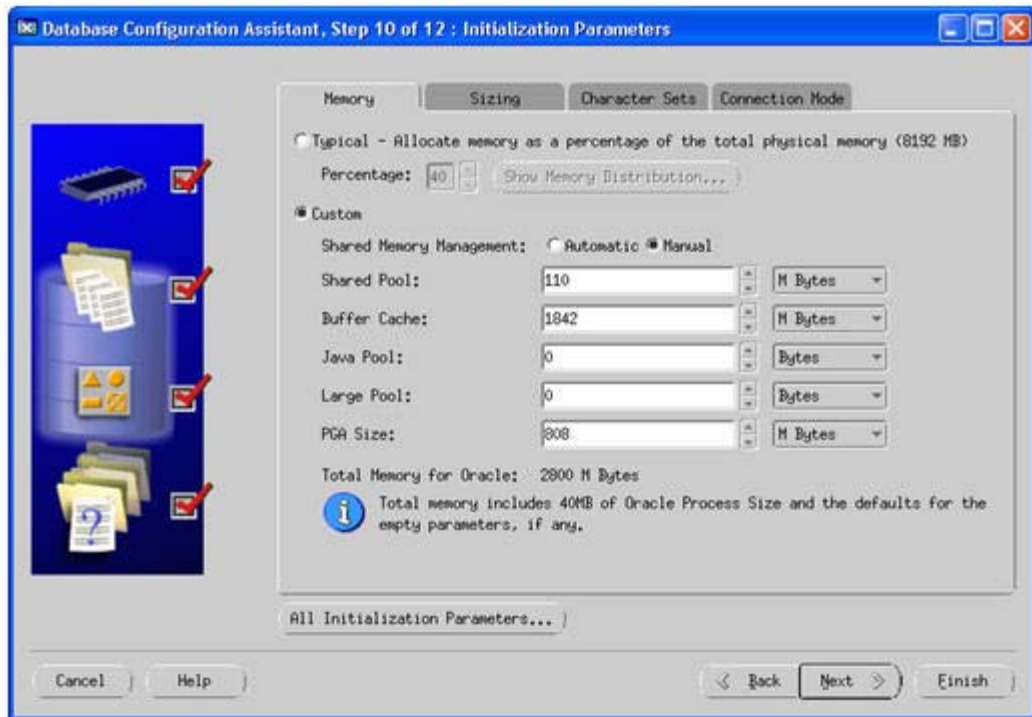
[Figure 4-5](#) and [Figure 4-6](#) illustrate the recommended memory settings for Oracle 9i and Oracle 10g installations.

Figure 4-5 Configuring Memory Settings for Oracle 9i



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Figure 4-6 Configuring Memory Settings for Oracle 10g



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# Archiving the Database

The Database Configuration Assistant wizard enables you to configure the settings required for archiving the database.



**Note** The directory containing archive logs must be permitted for updates (such as read and write permissions) for an ANA OS user. See [Maintaining Archive Logs Disk Space](#), page 4-14.

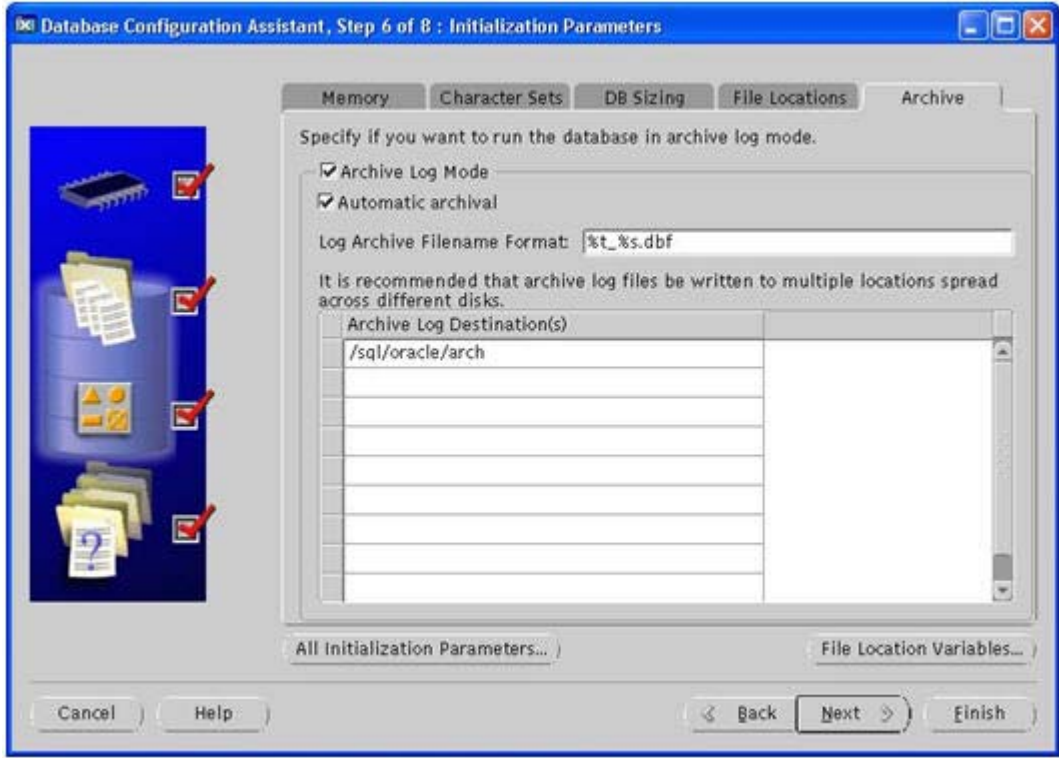
The following sections describe:

- [Archiving Logs for Oracle 9i](#)
- [Archiving Logs for Oracle 10g](#)
- [Configuring Database Storage \(Redo Logs\)](#)

## Archiving Logs for Oracle 9i

In the Archive tab of the Initialization Parameters page in the Database Configuration Assistant wizard (see [Figure 4-7](#)), you can configure the settings for archiving the database logs for an Oracle 9i installation.

**Figure 4-7** Configuring Archive Settings for Oracle 9i



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Do the following in the Archive tab to configure the database log settings:

- Step 1** Select the **Archive Log Mode** check box to run the database in archive log mode.
- Step 2** Select the **Automatic Archival** check box.
- Step 3** Specify the archive log filename format in the field provided.
- Step 4** Specify the destination directory/directories that will contain the archive logs.

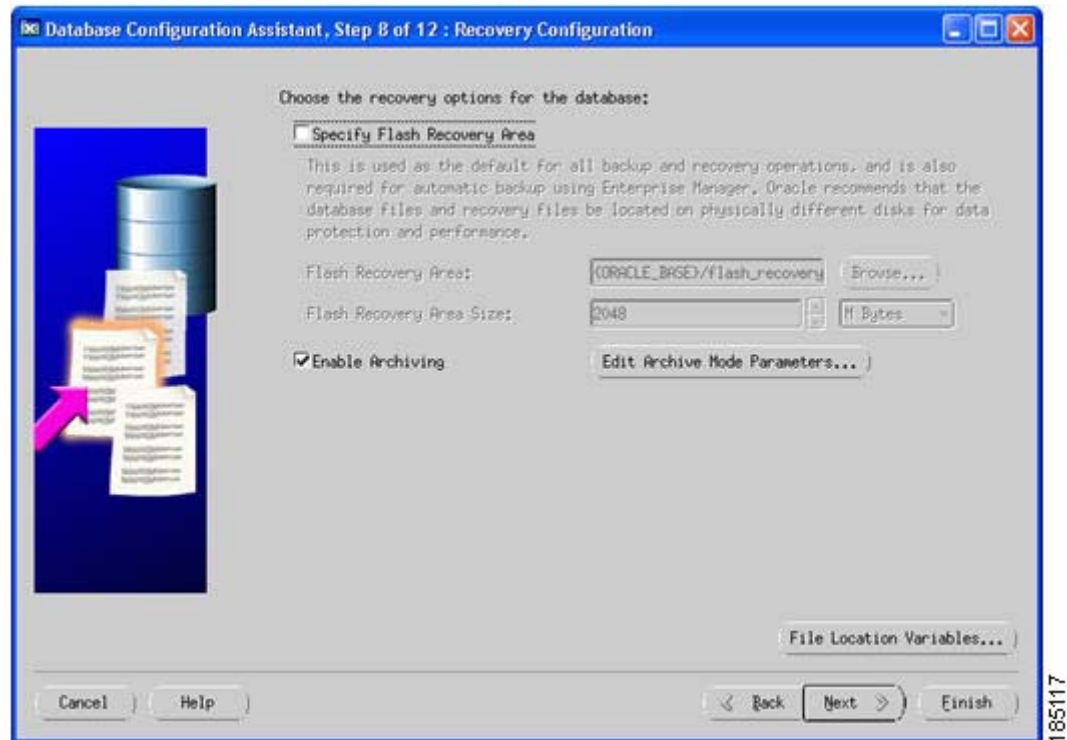


**Note** The archive log files should reside on a separate physical disc to the Oracle data files.

## Archiving Logs for Oracle 10g

In the Recovery Configuration page in the Database Configuration Assistant wizard (see [Figure 4-8](#)), you can configure the settings for recovering the database logs for an Oracle 10g installation.

**Figure 4-8** Configuring Archive Settings for Oracle 10g



**Note**

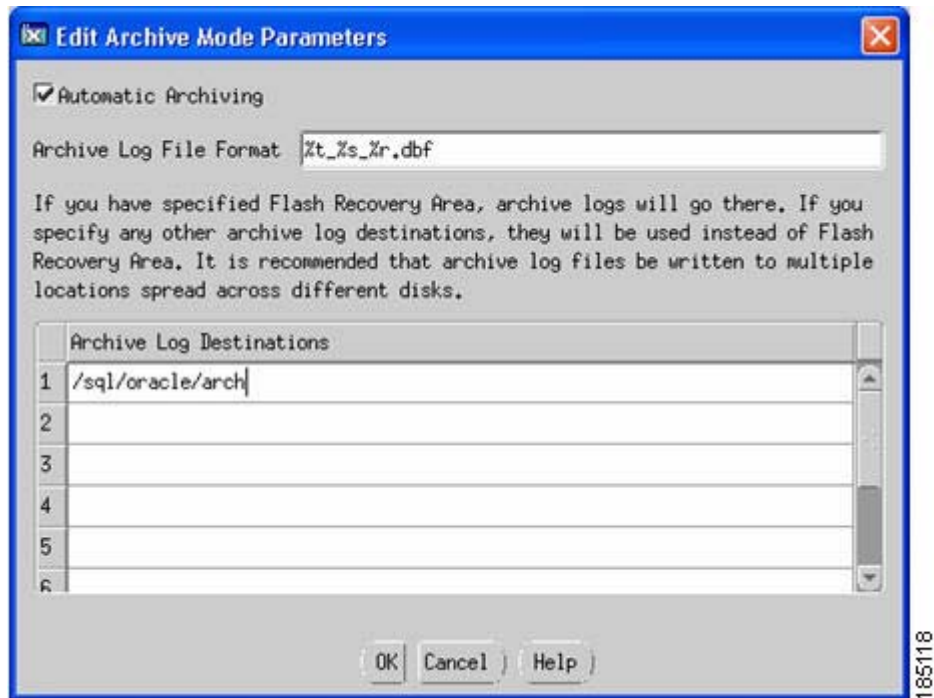
Cisco ANA does not require the **Flash Recovery Area** to be enabled. This feature is available in case the database administrator thinks it may be useful.

Do the following to configure the database recovery options:

- Step 1** Select the **Enable Archiving** check box to enable the archiving feature, then click the **Edit Archive Mode Parameters** button.

The Edit Archive Mode Parameters dialog box is displayed.

**Figure 4-9** Edit Archive Mode Parameters



- Step 2** Select the **Automatic Archiving** check box.
- Step 3** Specify the archive log filename format in the field provided.
- Step 4** Specify the destination directory/directories that will contain the archive logs.



**Note** If a **Flash Recovery Area** was specified by the database administrator, the archive logs will go there; otherwise, any other specified **archive log destinations will be used. It is recommended that archive log files should be written to multiple locations spread across different disks.**

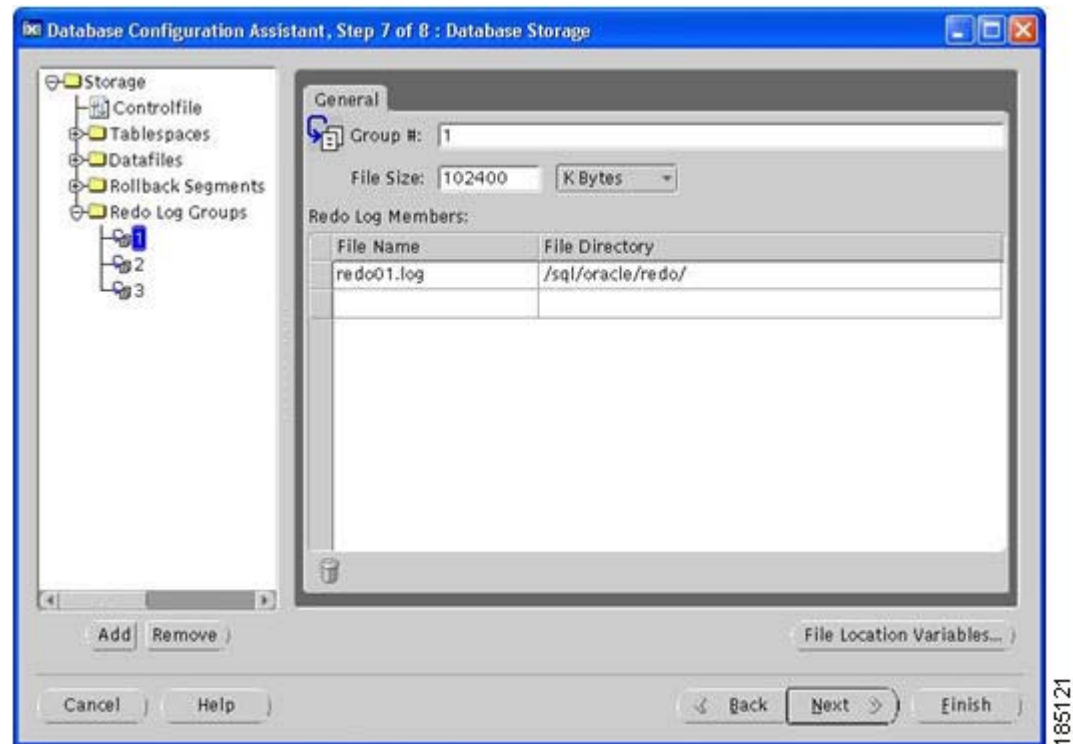
## Configuring Database Storage (Redo Logs)

In the Database Storage page in the Database Configuration Assistant wizard, you can configure the Redo Log settings for an Oracle 9i or Oracle 10g installation, as illustrated in [Figure 4-10](#).


**Note**

The Redo log file size must be 100 MB, and it must reside on a separate physical disc from the Oracle data files.

**Figure 4-10** Configuring Database Storage Settings



## Configuring the Database Size

This section describes how to specify the size of the database depending on the length of time required to store historical events. To do this, you must estimate the size of the events history log, and calculate the number of data files required in the database.

The following topics describe:

- [Defining the Events History Size](#)
- [Defining the Data files in the Database](#)
- [Recommended Disks' Structure](#)

## Defining the Events History Size

Table 4-1 provides an example of how to calculate the size of the events history.

**Table 4-1** Events History Size

Events/Sec	Seconds Per Day	Event Size	Bytes in GB	GB of Data Per Day
35	86400	800 (bytes)	1073741824	2.25 GB

The size of the stored data is determined mainly by the number of stored events. In the above example, one event uses 800 bytes. If the maximum supported event rate of 35 events per second is used, the size of the database grows by 2.25 GB per day.



**Note**

The size of the events history, and the period of time for which alarms will be stored in the history, must be specified in the Cisco ANA registry. Changes to the registry should only be carried out with the support of Cisco. For details, please contact the Cisco Project Manager or Cisco Account Team.

## Defining the Data files in the Database

Table 4-2 illustrates how to calculate the number of data files required in the database assuming an events rate of 35 events per second, based on 2 week, 4 week, and 12 week periods.

**Table 4-2** Defining Data Files in the Database

Events Rate	Period (Days)	DB Size	No. of Data Files	Comments
35 events/sec	14 (2 weeks)	32 GB	1	This is the default system configuration.
35 events/sec	28 (4 weeks)	64 GB	2	Assuming a hard disk size of 146 GB, 1 physical hard disk can be used for 2 Oracle data files.
35 events/sec	84 (12 weeks)	192 GB	6	Assuming a hard disk size of 146 GB, two physical hard disks can be used for 6 Oracle data files.



**Note**

- The two hard disks of the gateway are limited to a maximum of 64 GB for database data files. The remaining space is needed for OS swap, backup and restore procedures, and database archive logs. To utilize the full hard disk size of 146 GB, external storage must be used.
- The maximum size of a data file for Oracle 9i 8 kb block size is 32 GB. Although the maximum size of a data file for Oracle 10g 8 kb block size is 32 TB, it is recommended to limit it to 32 GB.

## Recommended Disks' Structure



### Note

- **Important:** The first data file is created while running the **sheer-conf.pl** script (see [Post Database Installation Configuration, page 4-14](#)). This script must be run after the ANA gateway installation (see [Chapter 5, “Installing a Gateway”](#)).
- You can create additional data files only after the Cisco ANA installation is completed (see [Adding Data Files to the Tablespace, page 4-14](#)).

### On a T2000

The recommended disk structure for an Oracle server installed on a T2000 machine is as follows:

- Disk 1 (146 GB): Approximately 40 GB should be used by OS files, and 100 GB can be used by 2 Oracle data files.
- Disk 2 should be used for redo logs and archiving, and not for Oracle data files.
- Disk 3 (146 GB): Can be used by three Oracle data files.
- Disk 4 (146 GB): Can be used by three Oracle data files.

### On a V490

The recommended disk structure for an Oracle server installed on a V490 machine is as follows:

- Disk 1 (146 GB): Approximately 40 GB should be used by OS files, and 100 GB can be used by 2 Oracle data files.
- Disk 2 should be used for redo logs and archiving, and not for Oracle data files.



### Note

Since a V490 can hold only two disks, it should use an SCSI channel for external storage, or Oracle should be installed on a remote machine to enable support for more than 28 days of events history.

## Starting Up the Listener

After the database has been created, the Oracle listener should be started to enable the sheer configuration script to connect to the database, as described in the following procedure:

**Step 1** Check if the Oracle listener is up by entering the following command:

```
ps -ef | grep ora
```

The following should be displayed:

```
oracle 17327      1    0   Aug 02 ?                0:00 /export/home/oracle/Ora920/bin/tnslsnr
LISTENER -inherit
```

**Step 2** If the Oracle listener is down, start it up as follows:

- a. Log in as user oracle.
- b. Enter `lsnrctl start`.

# Post Database Installation Configuration

After the database has been installed, the **sheer-conf.pl** script must be run to prepare all necessary database objects. The script creates a schema name “SHEER” which cannot be changed. The script also creates a default tablespace with the name “SHEER” which is used by the SHEER schema. The tablespace is created with one data file with a default maximum size of 34 GB. Additional data files can be added after running this script (see [Adding Data Files to the Tablespace](#), page 4-14).

## Maintaining the Database

After database installation, maintaining the database may involve:

- [Maintaining Archive Logs Disk Space](#)—Making sure there is sufficient space on a disk to store a large volume of archive logs caused by the large number of Cisco ANA updates to the database.
- [Adding Data Files to the Tablespace](#)—Adding data files to enable to the storage of the events history for a longer period of time.



### Note

**Important:** For information on how to back up and restore the database, please refer to the *Cisco Active Network Abstraction Administrator Guide, 3.6 Service Pack 2, Appendix A*.

## Maintaining Archive Logs Disk Space

The large number of Cisco ANA updates to the database cause the archive logs volume to expand rapidly and consume a large amount of space on the disk’s partition. To maintain space on the disk’s partition, archive log files should be deleted periodically. Archive log files can only be deleted from the system if the user has permission to do this. By default, the Cisco ANA OS user does not have permission to delete files. You can change the permissions to enable OS users to delete the archive log files, by executing the following script:

```
$ORACLE_HOME\install\changePerm.sh.
```



### Note

On a remote Oracle server, the archive log files should be deleted manually.

## Adding Data Files to the Tablespace

After the Cisco ANA installation is completed, and the database has been installed, the **sheer-conf.pl** script creates a default tablespace with one data file with a default maximum size of 34 GB.

Depending on the events rate per second, you may need to add more data files. For example, at an events rate of 35 events per second, if you want to store the events history for 3 months, 6 data files are required (see [Table 4-2 on page 4-12](#)).

Additional data files can be added after running the **sheer-conf.pl** script, as follows:

- To add a data file to the existing tablespace for Oracle9i, run the following command:

```
alter tablespace SHEER add datafile '<NEW-DATA-FILE-FULL_PATH>' size 100M autoextend
on next 5M;
```

- To add a data file to the existing tablespace for Oracle10g, run the following command:

```
alter tablespace SHEER add datafile '<NEW-DATA-FILE-FULL_PATH>' size 100M autoextend  
on next 5M maxsize 34G;
```

