



ENOVIA SmarTeam

Oracle 11g R1 Installation Guide for Server and Clients

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Chapter 1: Introduction

Overview

This document outlines the procedures required to install an Oracle Server and Oracle Client for the SmarTeam environment.

This guide assumes knowledge and experience in installing Oracle, including the installation of previous Oracle versions. The main purpose of this document is to highlight the installation procedure and the components of an Oracle database that are required by SmarTeam related applications.

Use of Oracle Components

The Licensed Products you have purchased, as defined in the license agreement applicable to such Licensed Products (the "Program License Agreement"), are shipped with the Oracle Component, as defined in the Oracle Component Sublicense Agreement and subject thereto.

You are authorized to use this Oracle Component only in conjunction with and in support of the Licensed Products you have purchased from SmarTeam, and are authorized to install and use this Oracle Component only in association with your licensed use of the Licensed Products for the storage and management of data used or generated by the Licensed Products and not for any other data management purposes.

Software Location

SmarTeam Corporation supplies Oracle 11g R1 (11.1) Enterprise Edition CDs in the following configurations:

- Oracle 11g release Enterprise Edition - 1 CD
- Oracle 11g release 2 (11.1) Client - 1 CD
- Oracle 11g release 2 (11.1) Documentation, Viewable - 1 CD

Related Documentation

The following document is referred to in this guide. This document can be located on the Oracle 11g R1 Database Documentation CD by clicking index.htm and navigating to Upgrade Information, Upgrade Guide..

Document	Remarks
Oracle Database Upgrade Guide	For upgrading from any Oracle version to Oracle 11g R1.

Internet Site

You are highly recommended to frequently visit our website for the latest updates and plug-in products, including the latest Service Packs, Program Directory (Release Notes) Hotfixes and technical support at <http://www.3ds.com/support/>.

In addition, you will also be able to view any installation known issues.

Chapter 2: Installation Checklist

There are two types of installations for the Oracle 11g R1 software:

- **Oracle Server Installation:** Installs Oracle 11g R1 software on a designated server
- **Oracle Client Installation:** Installs Oracle 11g R1 software on a workstation

Note: The installation process for both are different. You must complete all stages of this checklist to successfully install Oracle 11g R1.

Oracle Server Installation Checklist

*Requirement: M = Mandatory, O = Optional

<input type="checkbox"/>	Item	M/O*	Reference
Stage 1: Pre-Installation			
<input type="checkbox"/>	Define installer privileges as a member of the local Administrator's group	M	See Prerequisites for Oracle Server Installation
<input type="checkbox"/>	Uninstall previous versions of Oracle	M	See Uninstall Previous Versions:
Stage 2: Installation Process			
<input type="checkbox"/>	Install Oracle 11g R1 Server software	M	See Running the Oracle Database Installation
Stage 3: Post Installation			
<input type="checkbox"/>	Adjust the SQLNET.ORA configuration file for SmarTeam applications, e.g., SmarTeam – Multi-site	M	See Adjusting SQLNET.ORA
<input type="checkbox"/>	Apply latest Oracle patch/patchset	M	See Applying Oracle Patches
<input type="checkbox"/>	Create the Oracle database	M	See Creating an Oracle Database
<input type="checkbox"/>	Configure the Oracle Database Initialization Parameters	M	See Configuring Oracle Database Initialization Parameters
<input type="checkbox"/>	Perform the Oracle Server Setup	M	See Oracle Server Setup

Oracle Client Installation

<input type="checkbox"/>	Item	M/O*	Reference
Stage 1: Pre-Installation			
<input type="checkbox"/>	Define installer privileges as a member of the local Administrator's group	M	See Prerequisites for Oracle Server Installation
Stage 2: Installation Process			
<input type="checkbox"/>	Install Oracle 11g R1 Basic Client software	M	See Basic Client
<input type="checkbox"/>	Install Oracle 11g R1 Administrative Task Client	M	See Administrative Tasks Client
Stage 3: Post Installation			
<input type="checkbox"/>	Adjust the SQLNET.ORA configuration file for SmarTeam applications, e.g., SmarTeam – Multi-site	M	See Adjusting SQLNET.ORA for details
<input type="checkbox"/>	Verify that the OLEDB Provider registered successfully, if you are a Microsoft Windows XP user If the OLEDB Provider failed to register, register it	M	See Connecting by SmarTeam to the Oracle Server for details
<input type="checkbox"/>	With the SmarTeam Database Connection Manager, create an alias for your SmarTeam schema in the Oracle database	M	See SmarTeam Database Connection Manager Guide for details
<input type="checkbox"/>	Perform the Oracle Client Setup	M	See Oracle Client Setup for details

Chapter 3: System Requirements

Hardware and Software Requirements

Refer to the Oracle section in the Hardware and Software Requirements documentation. This section provides details of the hardware, software and system requirements required for a successful server and client installation of the Oracle 11g R1 software.

In addition, you determine the size of the specific customer configuration. Contact the SmarTeam support team to obtain the most recent metrics, test results and recommendations.

Server Requirements

This installation presumes that you have the following hardware and software configuration:

- Number of CPUs: 1 (2 are recommended)
- Minimum Processor Type: Pentium III, 700 MHz
- RAM: 512MB
- Hard-disk drive space: 4.5 GB [3GB for installation + 1.5 GB for database]
- OS: Windows 2000 SP3

Notes: Even though Oracle software functions with the minimum system requirements, we highly recommend that you use a computer with higher than the minimum requirements.

Client Requirements

Custom Client

165 MB of free disk space is required for an Oracle Custom client installation.

Administrator Client

510 MB of free disk space is required for an Oracle Administrator client installation.

For other hardware configurations, refer to the requirements recommended by your software vendor, for example, SmarTeam, CAD, and Office.

Order of Installation

Refer to [Chapter 2, Installation Checklist](#) for a detailed list of all the steps that need to be performed.

The installation procedure is split into the following stages:

Stage 1: Consists of analyzing the prerequisites required for installation [Chapter 3, System Requirements](#) and [Client Requirements](#).

Stage 2: Consists of software installation and network configuration followed by some manual changes [Running the Oracle Database Installation](#) and [Oracle Client Installation Process](#).

Stage 3: Consists of creating the Oracle database [Creating an Oracle Database](#) and [Connecting by SmarTeam to the Oracle Server](#).

Compatibility

This describes the compatibility of the different Oracle versions that are supported by SmarTeam. SmarTeam currently supports Oracle 11g R1. It is recommended to have both server and clients with the same version.

In general, all SmarTeam applications can work with different Oracle versions on server and client. However, the following applications must have the same version of Oracle on both client and server:

- SmarTeam – Multi-site Admin Tools applications: DBSiteManager, DataModelPropagator
- The SmarTeam – Editor's DataModelDesigner-family applications, working in the SmarTeam – Multi-site environment

In addition, all Oracle servers, working in the SmarTeam – Multi-site environment, must have the same version.

Prerequisites for Oracle Server Installation

Before installing Oracle 11g R1 software, you must perform the following steps in the order specified for Oracle Server and Oracle Client installations:

■ Privileges Required for Installer User:

The Installer must be a member of the local Administrators group.

Note: Due to a known Oracle server limitation, you must not use a minus sign (-). Naming the Oracle user with a minus (-) sign might cause an error in SmarTeam applications.

■ Uninstall Previous Versions:

Oracle supports multiple Oracle homes of different versions (7.3.4.x, 8.0.x, 8.1.6.x, 8.1.7.x and 9i) working on the same computer. However, we recommend that you de-install previous versions. If you want to use your old databases with Oracle 11g R1, you should upgrade them according to Oracle Database Upgrade Guide.

Note: You cannot upgrade a database, which is prior to Oracle 8.1.7, directly to Oracle10g. Please refer to Oracle 8.17 Migration Guide and Oracle 9i Database Migration Release 2. If you are upgrading existing Oracle software, refer to the relevant native Oracle documentation for the required upgrade procedure.

Chapter 4: Oracle Server Software Installation Process

Installing Oracle 11g R1

This chapter provides a step-by-step description of the installation process for installing Oracle 11g R1 software on a designated server or local workstation.

There are two types of installation types for Oracle 11g R1 software:

- **Database:** Installs Oracle 11g R1 on the server. (see [Running the Oracle Database Installation](#) for details)
- **Client:** Installs Oracle 11g R1 on client machine, but uses a database located on a remote server (see [Running the Client Installation](#) for details)

Buttons

These buttons are available at the bottom of the installation windows:

- **Next:** Confirms your selection in the current window and proceeds to the next window.
- **Previous:** Enables you to return to the previous window.
- **Cancel:** Allows you to exit the installation process.

Running the Oracle Database Installation

The Oracle Database installation process consist of:

- **Installing Oracle 11g R1 Software:** Installs all files on the server. This procedure presumes that you are installing the Oracle Software for the first time and not upgrading.

Note: The Oracle Database installation must be performed on the computer on which Oracle will be installed; installation using a Terminal Server will not succeed.

To begin installing:

SmarTeam provides you with a DVD. Also, you can download Oracle installation CDs from the Oracle OTN.

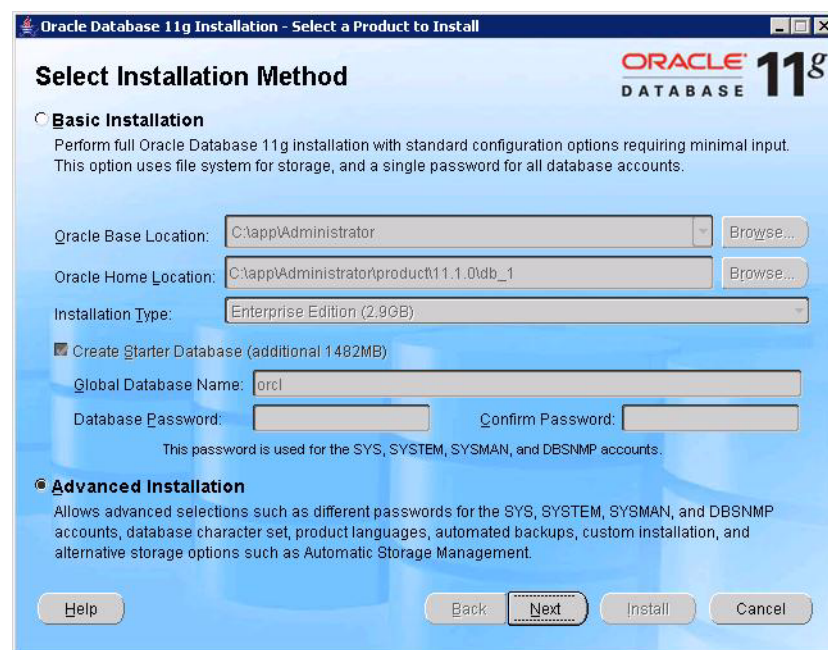
1. Click **Install** to launch the Oracle Universal Installer application.

Note: If you are running the installation from a DVD, the splash screen opens and click **Oracle Database 11g**.



2. In the Select Installation Method window, select **Advanced** from the checkboxes:

- Basic
- Advanced

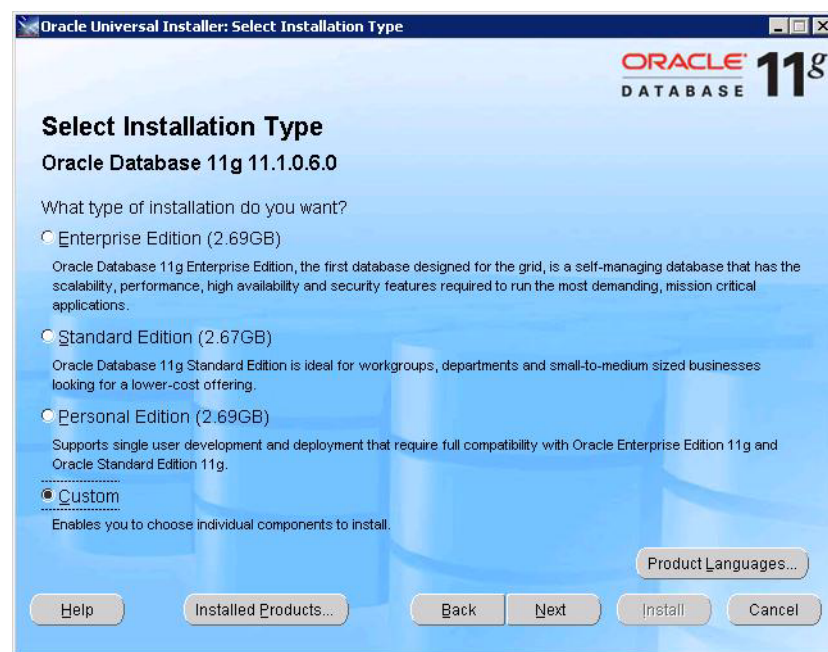


3. In the Select Installation Type window, select **Standard** from the checkboxes:

- Enterprise
- Standard
- Personal
- Custom - Only, if you have a SmarTeam – Multi-site license, select **Custom**
- Click **Next** and proceed with the installation as follows

Notes:

- Do NOT select Enterprise Edition or Personal Edition options as they include forbidden components
- The Custom installation type is essentially an Enterprise Edition installation type. The difference is that the default Enterprise Edition installation installs components that are forbidden to use in accordance with the license agreement. The Custom installation type provides the ability to select the specified list of the Enterprise Edition components that must be installed (required for SmarTeam – Multi-site)
- If you already have Standard Edition installed and need to install Custom for SmarTeam – Multi-site see [Converting the Standard Edition to Enterprise Edition](#)

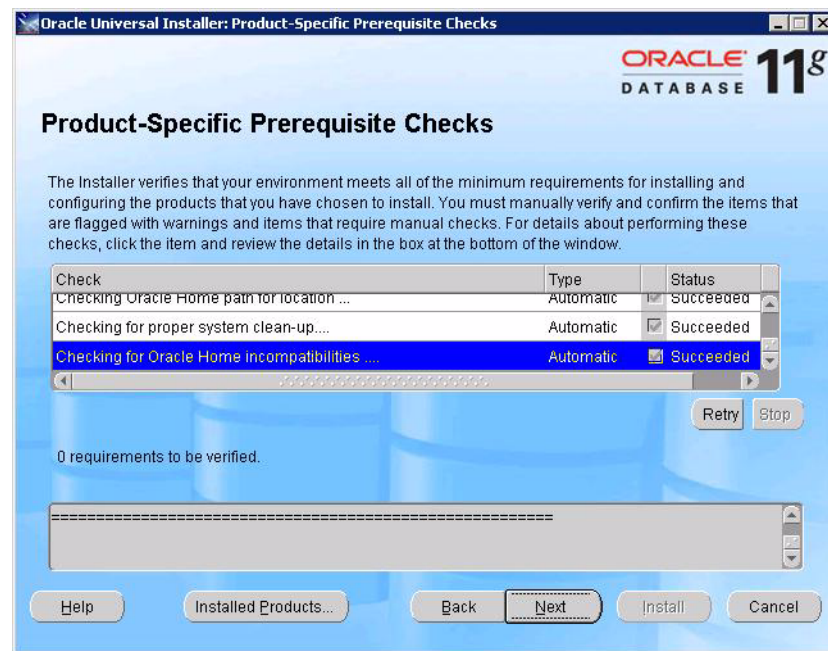


4. In the **Specify Home Details** window the default location of Oracle Base is c:\app\<Windows user>, e.g. c:\app\Administrator.

- Click **Next**

Note: If a previous **Oracle** version is installed, you need to define a different path and name than the ones defined in that version.

5. In the Product-Specific Prerequisite Checks window, verify that all prerequisites have been met.
6. Click **Next**.



Standard Edition Installation

This section is relevant if you selected the Standard Edition in the Installation Types window.

1. In the Select Configuration Option window:
 - Install database software only
 - Click **Next**
2. After completing step 2 of the Oracle Standard Edition installation process, go to [Step 5](#) for further details.

For Custom Installation for SmarTeam – Multi-site go to the next step.

Custom Installation for SmarTeam – Multi-Site

This section is relevant if you have a SmarTeam Multi-Site license and selected Custom in the Installation Types window.

3. In the Available Product Components window, select or clear the relevant components and click **Next**.

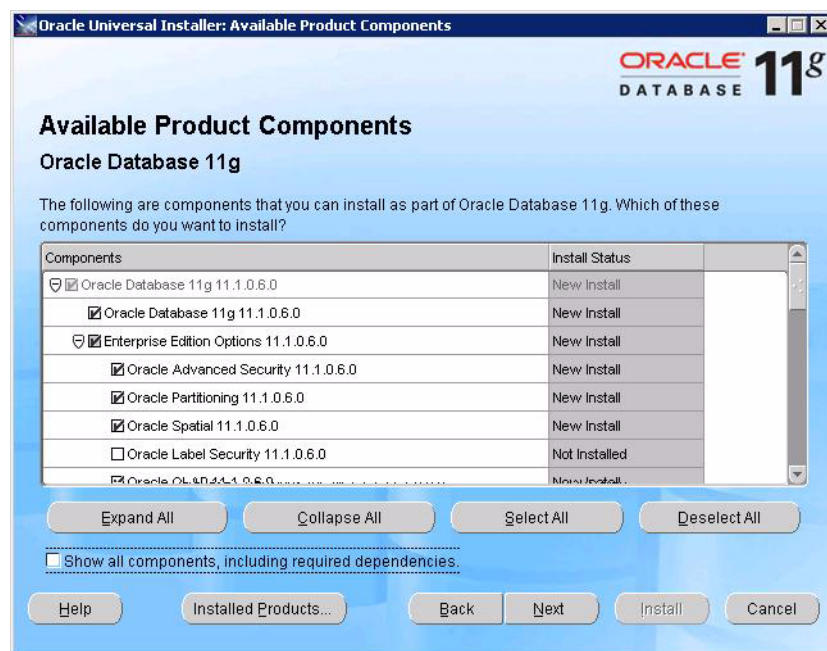
You may not be able to clear some components as they are protected based on the customization of other products in your machine.

If you are not able to remove a particular component (such as Oracle Call interface (OCI) and Oracle XML Development kit), continue selecting and de-selecting and then return to the

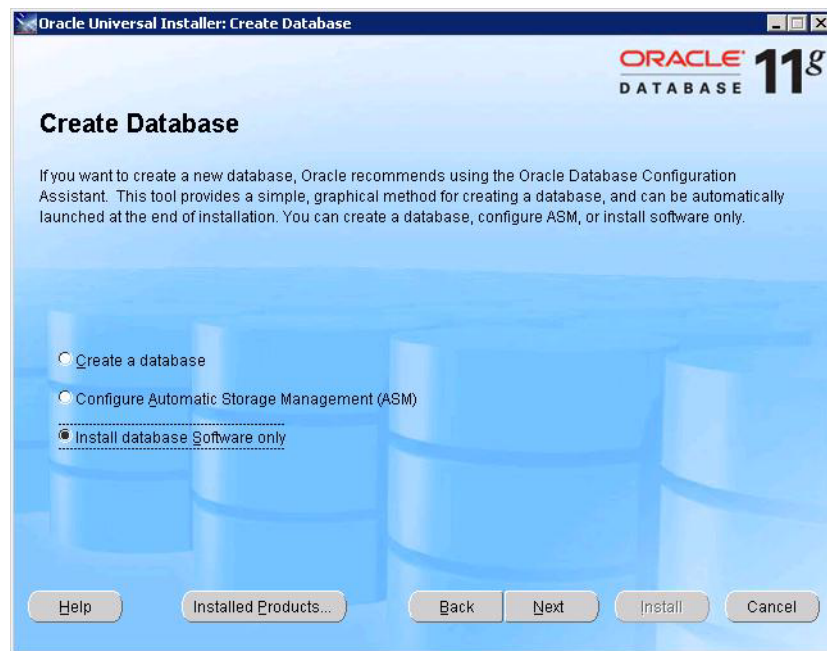
component you could not remove and try again. After completing your selections, recheck your list with the one displayed.

Oracle Database 11g 11.1.0.6.0
Enterprise Edition Options 11.1.0.6.0
Oracle Net Services 11.1.0.6.0 Oracle Net Listener 11.1.0.6.0

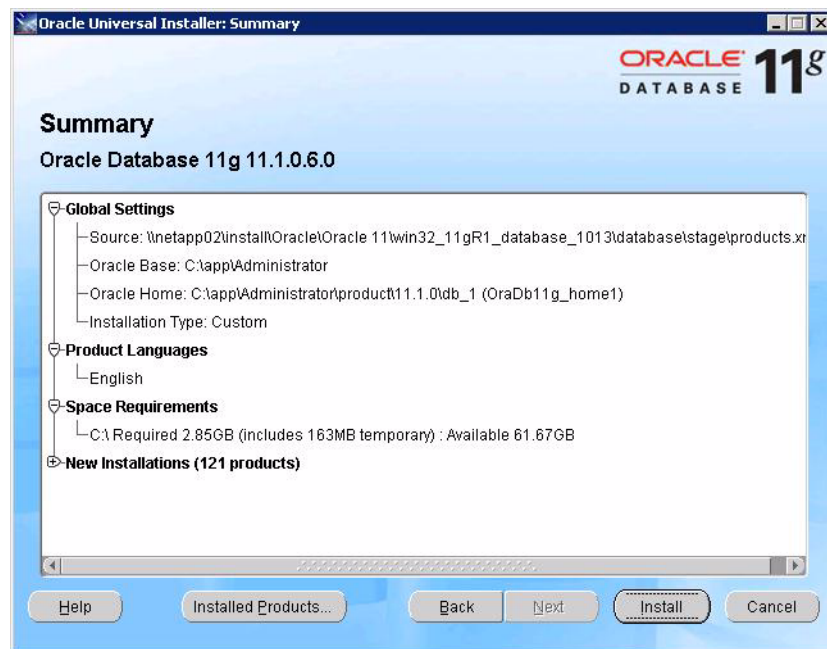
Example of selection (Oracle Net services and Oracle Net Listener selections near the bottom of the pane and cannot be seen in this example).



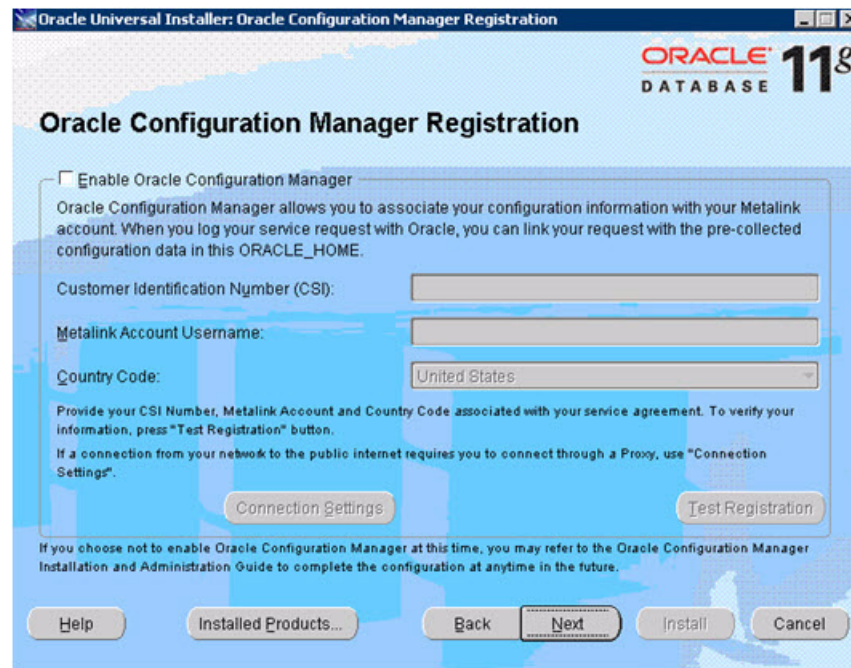
4. In the Create Database window:
 - Select, Install database Software only
 - Click **Next**.



5. In the Summary window, which shows a list of all your selected options and components.
 - If required, make changes by clicking **Previous** to reopen the Available Products Components window
 - Click **Install** to start the Oracle 11g R1 installation

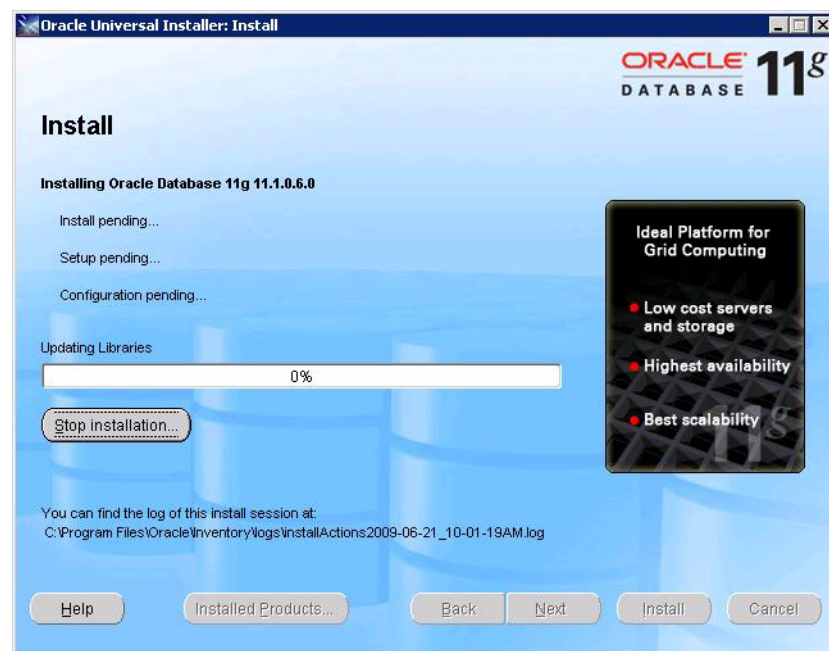


6. If the Oracle Configuration Manager Registration dialog appears, do not select **Enable Oracle Configuration Manager** and click **Next**.

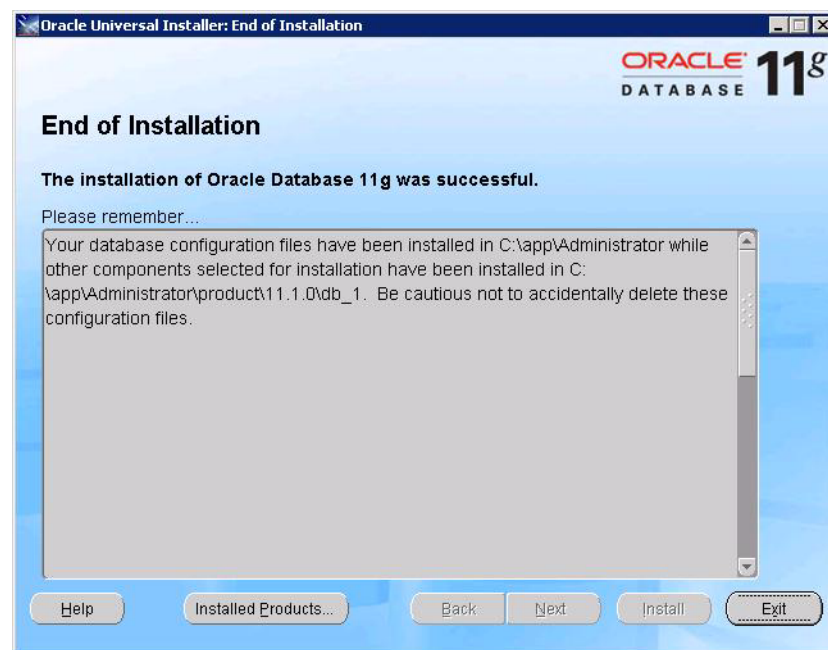


7. During the installation process, the Install window indicates progress for specific installation stages.

At the end of the Oracle 11g Database Installation, the End of Installation window appears.



8. Click **Exit** to close the Oracle Universal Installer.



Chapter 5: Database Configuration Assistant Server Post Installation

After completing the Oracle 11g R1 installation process you must perform the following post-installation activities:

- Adjusting SQLNET.ORA
- Applying Oracle patches
- Creating Oracle Listener

Adjusting SQLNET.ORA

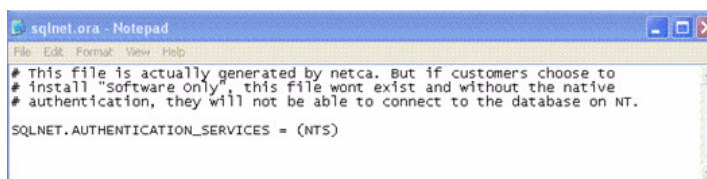
Adjust the configuration file SQLNET.ORA for SmarTeam applications (specifically SmarTeam – Multi-site).

Perform the following adjustments:

- **Disable NAMES.DEFAULT_DOMAIN** by adding # at the beginning of the row. Disabling this option is necessary for SmarTeam – Multi-site to function correctly. Enabling this option affects the Oracle replication global name and service name resolution mechanism.
- **Disable SQLNET.AUTHENTICATION_SERVICES** by setting the value to **NONE**. By setting the option to NTS (default), could prevent the Oracle client from connecting to the database if the client and database are located in different domains and there is no trust relationship between those domains. Thus, it is recommended to disable that option unless there is a special requirement for enabling it, for example, if you are using enterprise-level OS based authentication.

To adjust SQLNET.ORA:

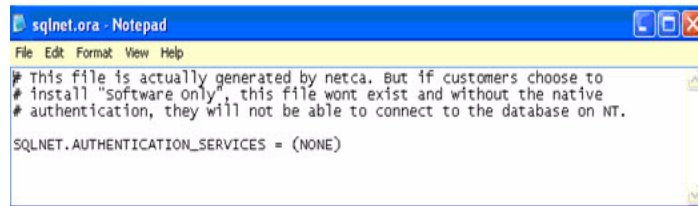
1. Locate file SQLNET.ORA in <Oracle Home>\NETWORK\ADMIN, for example, C:\app\Administrator\product\11.1.0\db_1\NETWORK\admin.
2. Open **SQLNET.ORA** file with any text editor, for example, Microsoft Notepad.



3. Fix the Oracle SQL networking parameters by removing the **NAMES.DEFAULT_DOMAIN** parameter line and setting **SQLNET.AUTHENTICATION_SERVICES** to **NONE**.

Note: If these parameters lines do not appear, no change is required.

If the file SQLNET.ORA does not exist, it is recommended to create it.



Applying Oracle Patches

SmarTeam works with the basic Oracle 11.1 version, but it is recommended to apply the latest available Oracle patch/patchset. A patch/patchset can be downloaded from the Oracle support site metalink.com if you have a valid Oracle Customer Support Identifier. Each patch/patchset has a detailed installation guide.

Creating Oracle Listener

The Oracle listener enables remote clients to connect to Oracle databases. Before creating a database, create the Oracle listener.

1. From the Start menu:
 - Start **Oracle Net Configuration Assistant**
 - Click **Next**

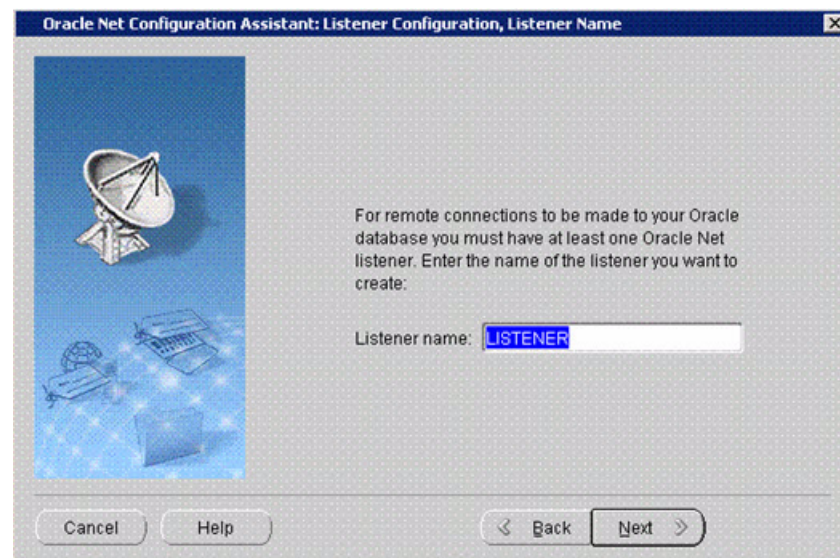


2. In the Listener dialog:
 - Select **Add**
 - Click **Next**



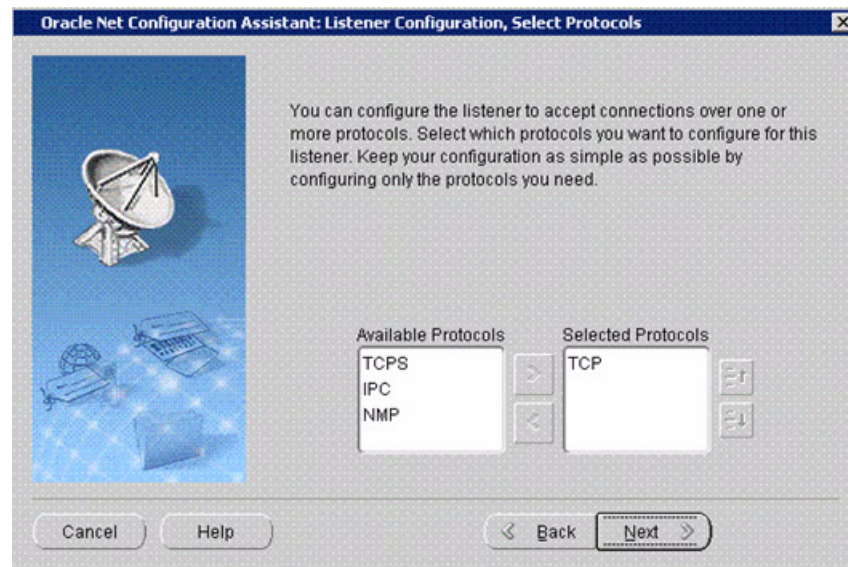
3. In the Listener Name dialog:

- Enter **LISTENER**
- Click **Next**



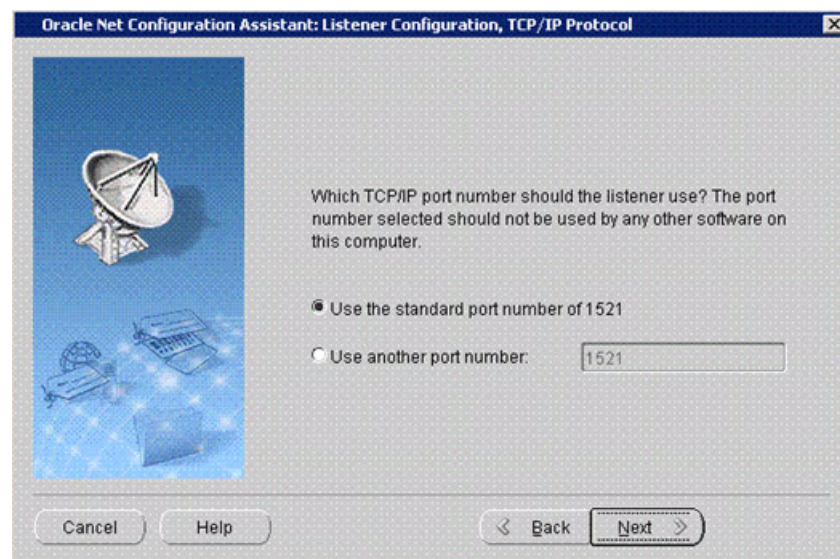
4. In the Select Protocols dialog:

- TCP is a selected protocol
- Click **Next**



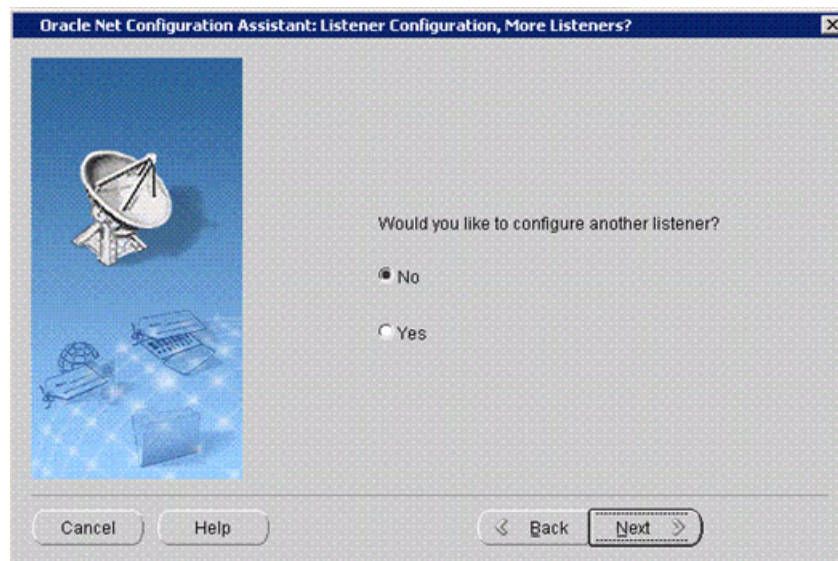
5. In the TCP/IP Protocol window:

- Select **Use the standard port number of 1521**
- Click **Next**



6. In the More Listeners window:

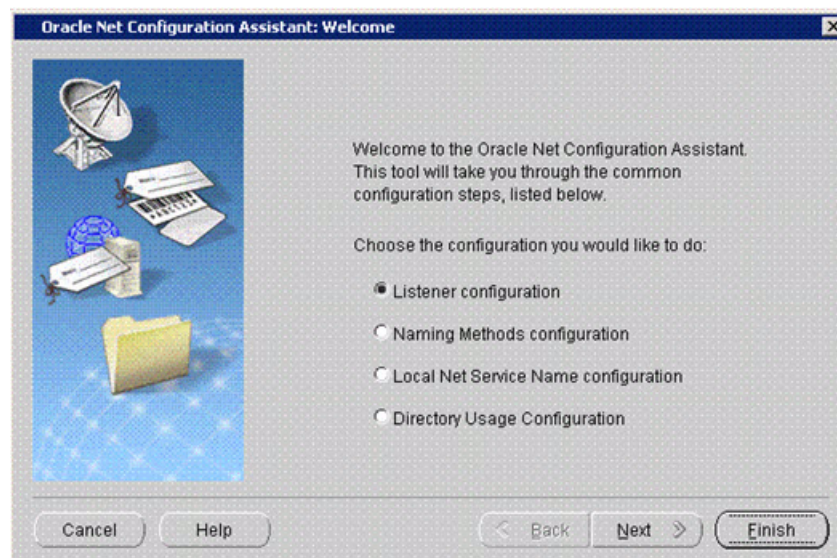
- Select No
- Click Next



7. In the Listener Configuration Done dialog, click **Next**.



8. In the Welcome dialog and click **Finish**.



Setting Up Oracle Databases

Setup activities include the following:

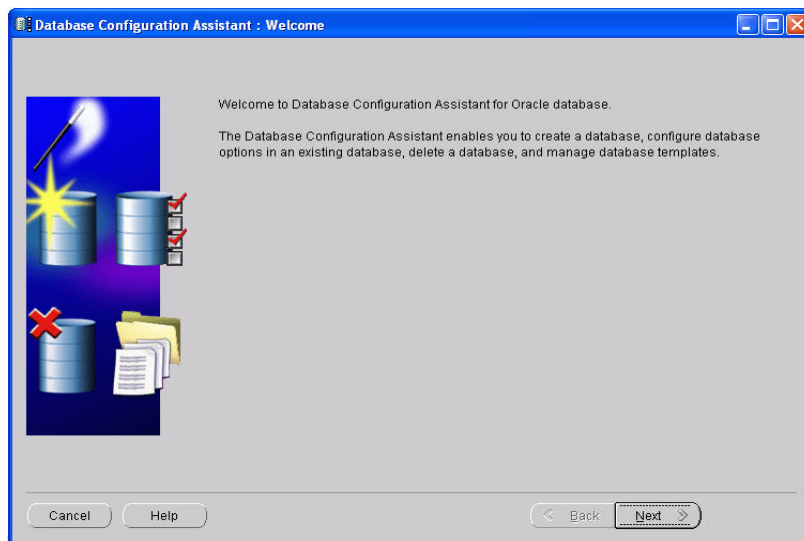
- Creating an Oracle Database
- Configuring Oracle Database Initialization Parameters
- Important Notes
- Oracle Server Setup

Note: Creating the database can be used by creation scripts.

Creating an Oracle Database

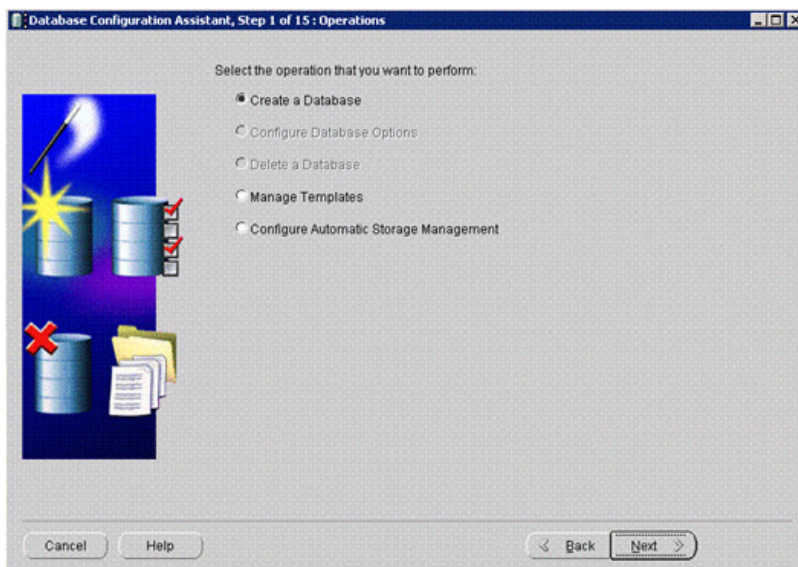
After installing the Retailer Server, the Oracle Database needs to be created.

1. From the **Start** menu:
 - Start **Oracle Database Configuration Assistant** window
 - Click **Next**



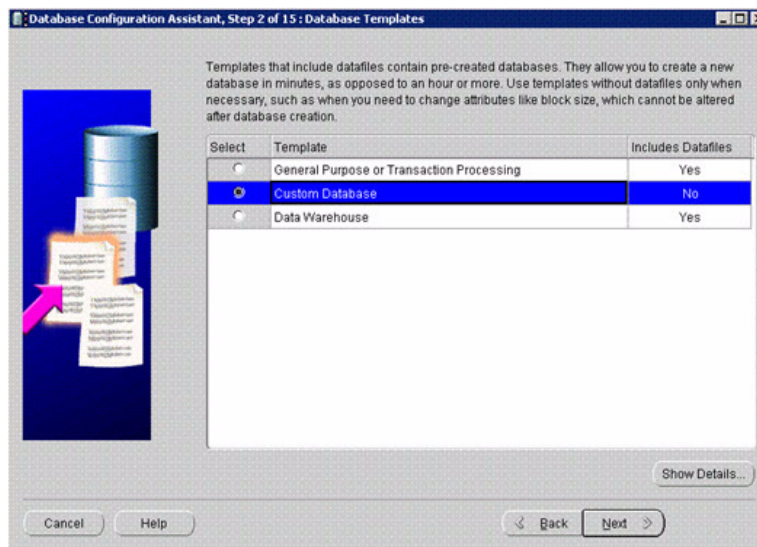
2. In the Oracle Database Configuration Assistant:

- Select **Create a database**
- Click **Next**



3. In the Database Templates window:

- Select **Custom Database**
- Click **Next**

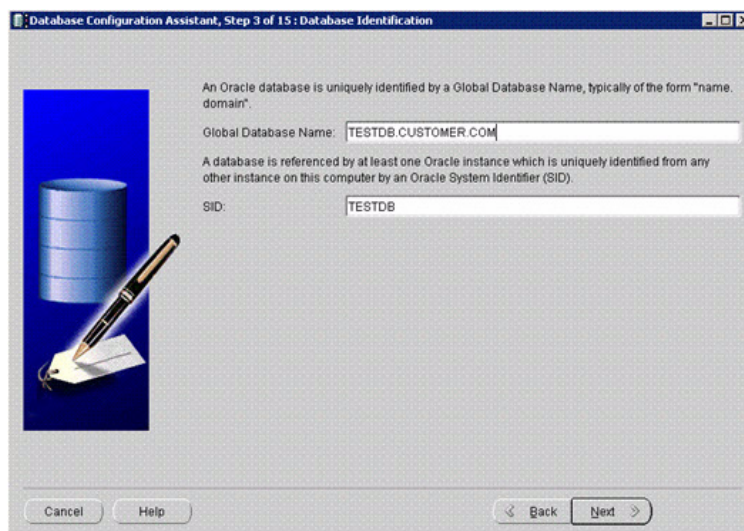


4. In the Database Identification window:

- Choose a **Global Database Name** for your database in the following format **DBNAME.DB_DOMAIN**. For more information, refer to Oracle 11g R1 Concepts

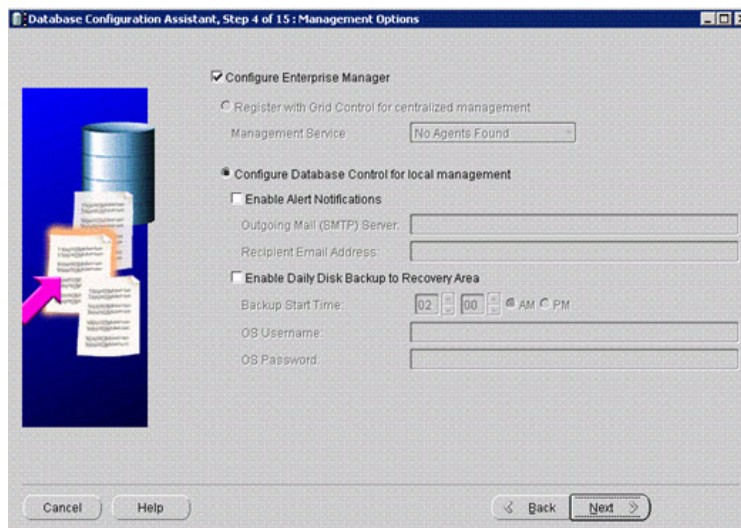
Note: The Global Database Name can include alphanumeric characters and the '_', '#', and '\$' characters. The DBNAME (SID) must include only alphanumeric characters and not be more than 8 characters.

- Click **Next**



5. In the Management Options window:

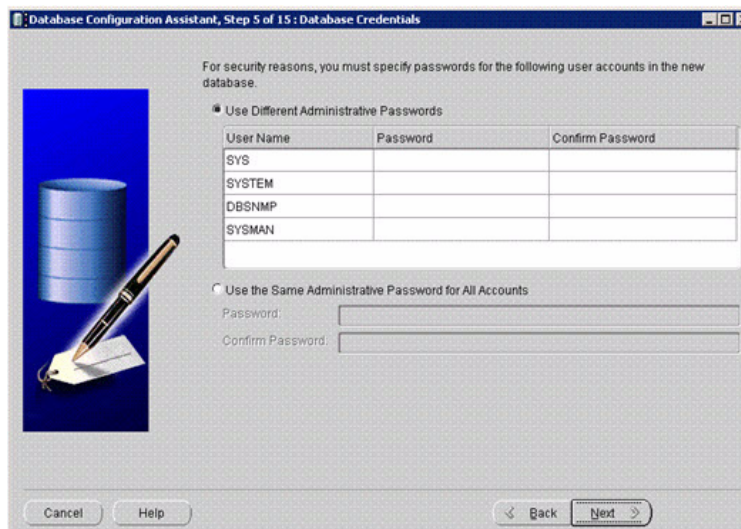
- Select **Configure Enterprise Manager**
- Click **Next**



6. In the Database Credentials window:

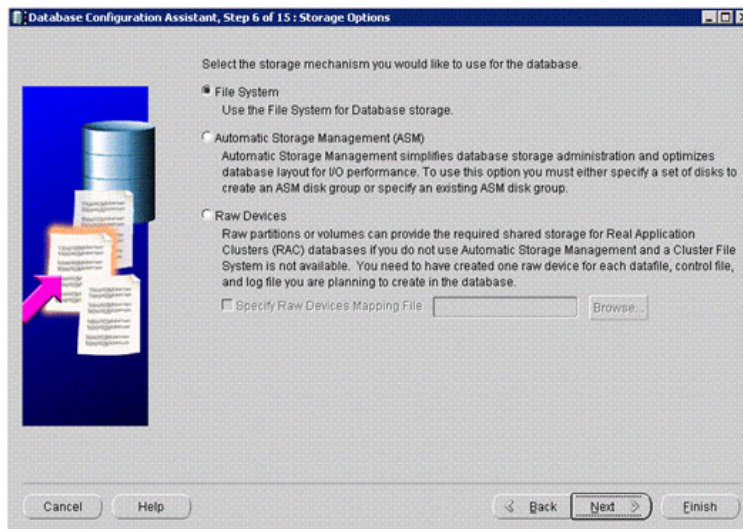
Note: For Oracle 11, all user passwords are case sensitive.

- Set up Oracle administrative users passwords by selecting the Use Different Passwords option
- Click **Next**



7. In the Storage Options window, set up the Oracle storage mechanism:

- Select the **File System** option
- Click **Next**

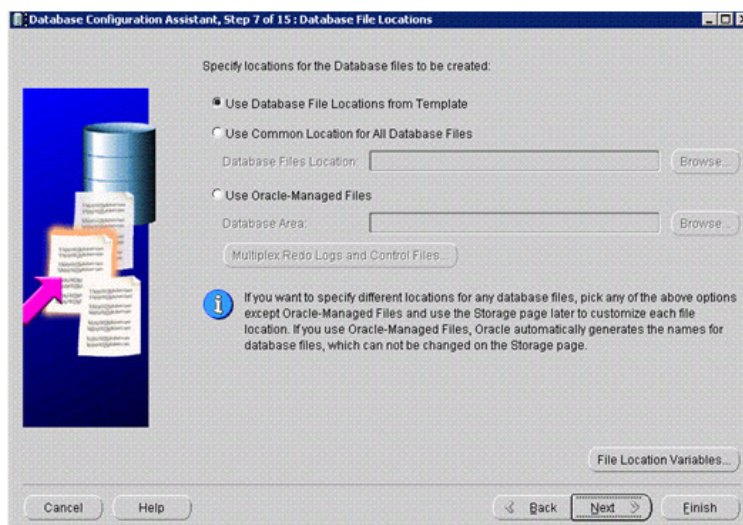


8. In the Database File Locations window, set up the default Oracle data files:

- Select the **Use Database File Locations from Template** option

Note: For Oracle 11, the directories of the Oracle logs are set by default under <Oracle Base>\diag\rdbms\<SID> for example, the alert.log will be located by default at:
<ORACLE_BASE>\diag\rdbms\<SID>\<SID>\trace

- Click **Next**



9. In the Recovery Configuration window:

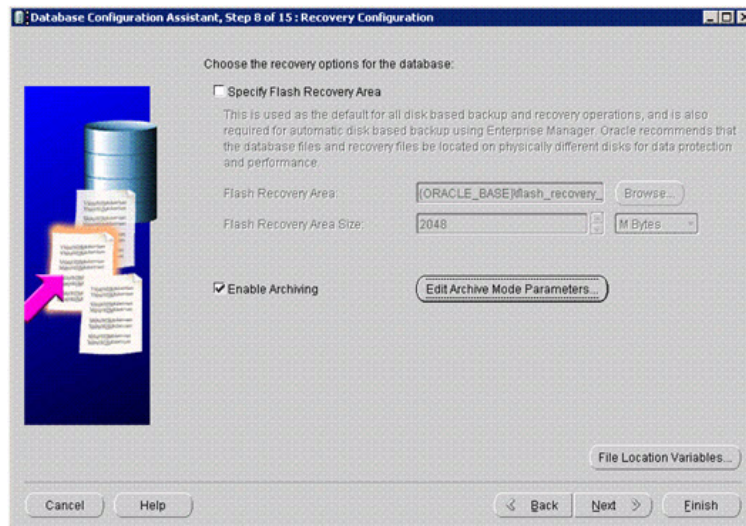
Note: This **Flash Recovery Area** option is not necessary for SmarTeam functionality; it requires additional administration and is recommended if using RMAN for the backup method. If not using RMAN, clear this option.

For production databases:

- Select **Enable Archiving**
- Click the **Edit Archive Mode Parameters** button

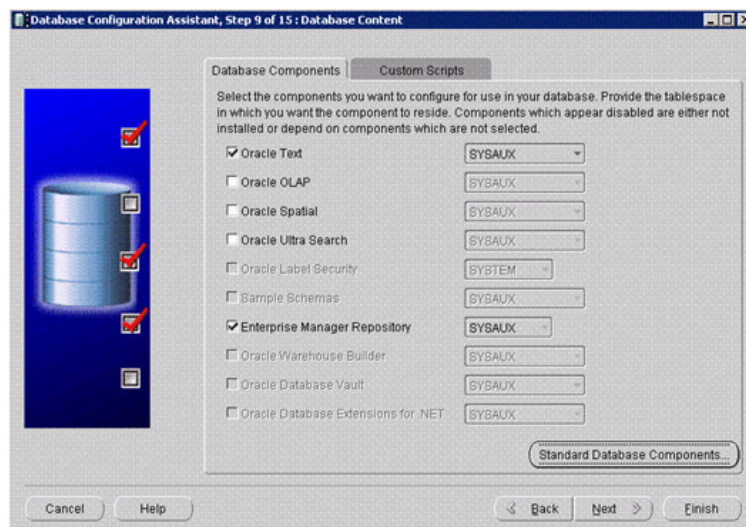
Note: The archive log is required when restoring the database. Therefore, Oracle recommends that the archive files will be located on physically different disks. Take into consideration that the size of this directory needs to be monitored, and archive files deleted constantly, otherwise it will grow.

- Specify folder for **Archive Log Destination**
- Click **OK**
- Click **Next**



10. In the Database Content window:

- Clear the checkboxes:
 - Oracle OLAP
 - Oracle Spatial
 - Oracle Ultra Search
- Click the **Standard Database Components** button

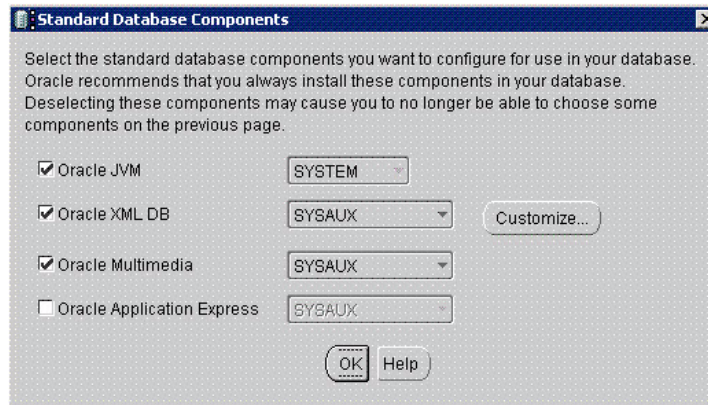


11. In the Standard Database Components dialog:

- Verify the checkboxes are selected for:

- Oracle Multimedia

Note: Oracle JVM and Oracle XML DB are selected automatically



Configuring Oracle Database Initialization Parameters

Before creating the Oracle Database, the parameters need to be set. It is very important to provide correct values for environment requirements such as the number of users and the estimated workload.

Note: The values shown in the windows below are examples and should be replaced with values relevant to the application. For more information, refer to *Oracle Fine-Tuning for SmarTeam Implementers*.

The tabs in the Initialization Parameters window, with the corresponding parameters are:

Tab	Parameter
Memory	Database memory allocation
Sizing	Data Block sizing
Character Sets	Database character set
Connection Mode	Clients connection- dedicated connection or shared

1. In the **Memory** tab of the Database Configuration Assistant, set up the Database memory parameters.

- Typical:

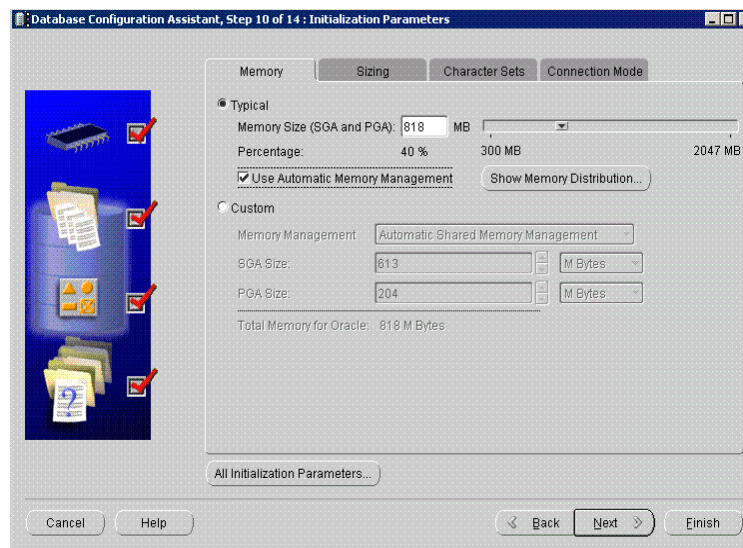
- Select a value for the total of physical memory. If the server is running Oracle only , you should specify more than the default of 40% of the memory for the machine. For example, for a 2GB machine, you can specify up to 75% of the memory to be used by Oracle, by entering a memory size of 1500M.

- Select **Use Automatic Memory Management**

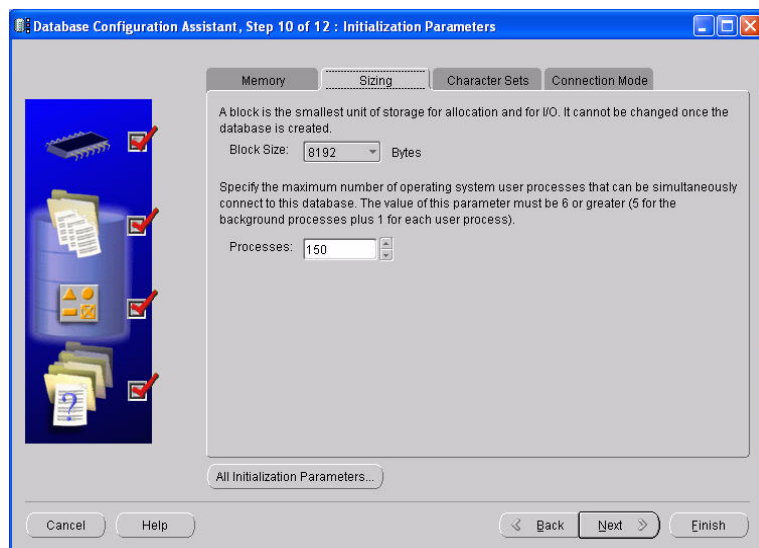
- Custom:

- Select a value for the sizes of each of the Custom settings

- Click **Next**



2. In the **DB Sizing** tab of the Database Configuration Assistant, the option exists to change the default values accordingly. SmarTeam does not have any special requirements for those parameters.



3. In the **Character Set** tab, you can set the database character set to one of the options according to the guidelines below and set the database national character set.

The options are:

- **Use the default**

The default character set is obtained by the Oracle Database Creation Assistance application from the OS regional settings. Therefore, for Windows operation systems, it is usually set to **WE8MSWIN1252**, which is acceptable for all West European languages (English is always included).

- **Use Unicode (do not use)**

Note: Do not use this option. Currently, SmarTeam does not support Unicode as a database character set. Selecting Unicode while working with double-byte languages (Chinese, Japanese) or specific characters of the Western languages (special French or German letters) may result in data corruption.

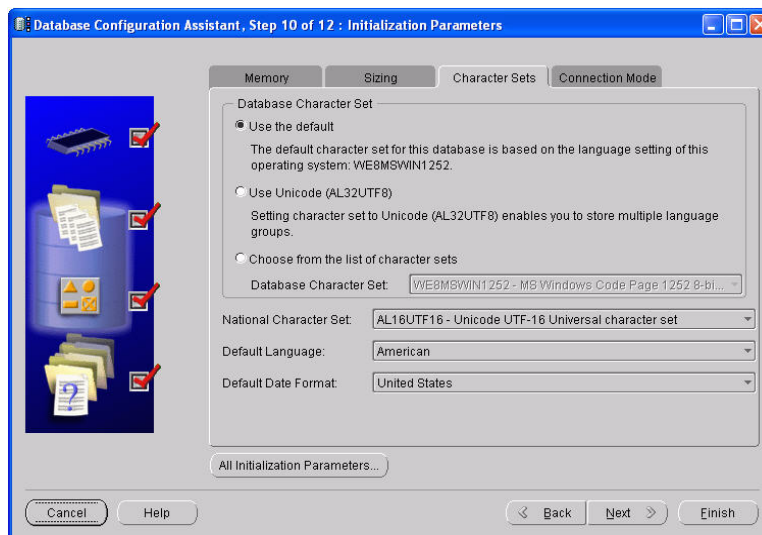
■ Choose from the list of character sets

If you are going to use character set different from the default, for example if you plan to import a dump file from another Oracle database, you should configure the character set for the new Oracle database to be compatible with the character set in the Oracle database in which your dump file was created. For multi-byte languages such as Japanese, Chinese and Korean, their unique character-set must be used.

IMPORTANT! If you are planning to use the database in the SmarTeam – Multi-site system, all sites must have the same character set.

■ National Character Set

For most cases, retain the default setting.

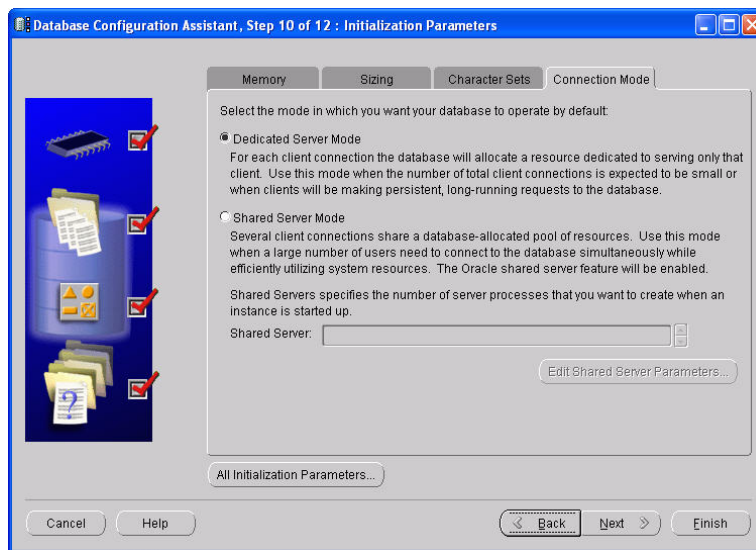


4. In the Connection Mode tab, select the default mode for your database:

- **Dedicated Server Mode** provides better performance when you have sufficient resources on your computer to support all users
- **Shared Server Mode** is preferable if your system is likely to be overloaded by too many user connections

Note: It is recommended that you employ an experienced DBA to set this option. Usually, start with dedicated server mode, and only if you have problems in connecting multiple users (over 200-300) concurrently- consider changing this parameter.

■ Click Next



Note: Usually there is no need to alter the initialization parameters (executed via the "All Initialization Parameters" button).

5. In the Security Settings window:

Note: By default Oracle 11 requires you to change the password every 180 days. If you want retain this behavior, select "Keep the enhanced Oracle 11g default security settings (recommended)...."

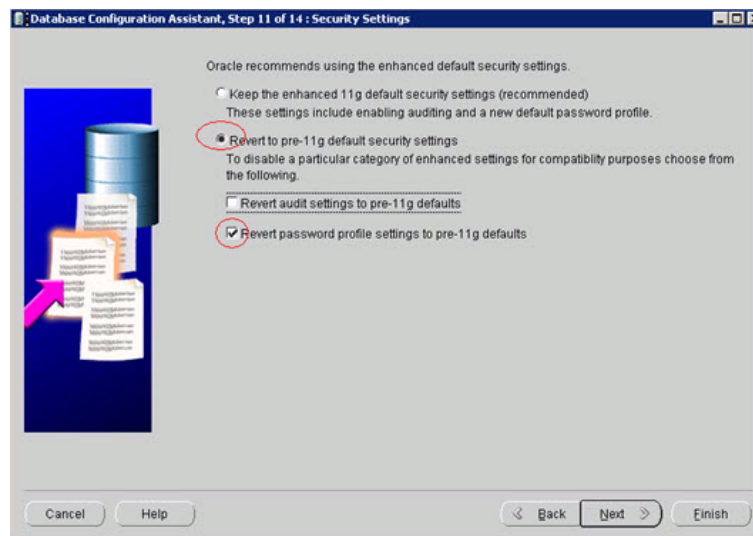
■ Click **Next**

OR

■ Disable the expiry of passwords:

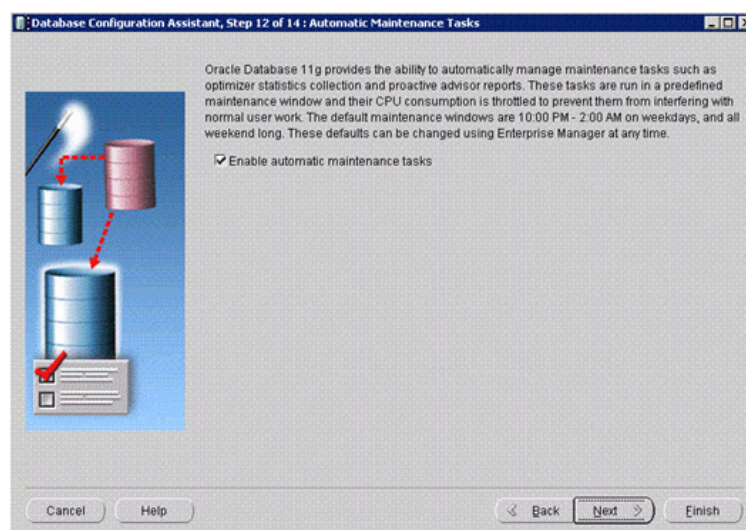
- Select **Revert to Pre-11g default** security settings
- Clear **Revert audit settings to Pre-11g default** to maintain the new auditing capabilities
- Select **Revert password profile settings to Pre-11g defaults**

■ Click **Next**



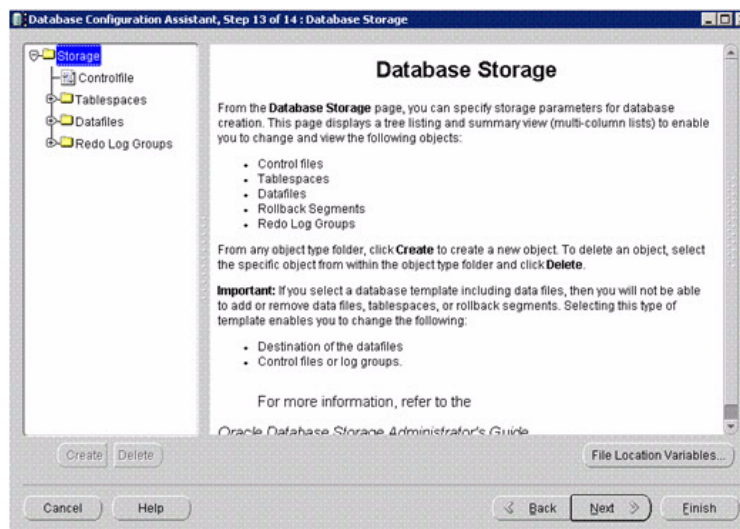
6. In the Automatic Maintenance Tasks window:

- Select **Enable automatic maintenance tasks**
- Click **Next**



7. In the Database Storage window specify the storage parameters for database creation:

- In the **Storage Parameter** tree, select an object type
- Click **Create/Delete** to create/delete an object from the tree
- If you select the **Controlfile** node:
 - In the Controlfile, the Controlfile General tab window appears, it is recommended that you deploy the control files through your physical devices in order to protect them from media crash. For example, C:\ and E:



8. Expand **Tablespace** branch as shown in the left pane.

The default Oracle tablespaces and parameters are displayed. You can add new tablespaces on this page as well. It is recommended, however, to leave the USERS tablespace as the default tablespace. If you decide to use the USERS tablespace as a working tablespace you should enlarge it, as shown in the example in the next step. You can also consider redeployment of tablespaces through your physical devices in order to improve performance. From Oracle 10g and above, the tablespaces are by default automatically enlarged, if needed.

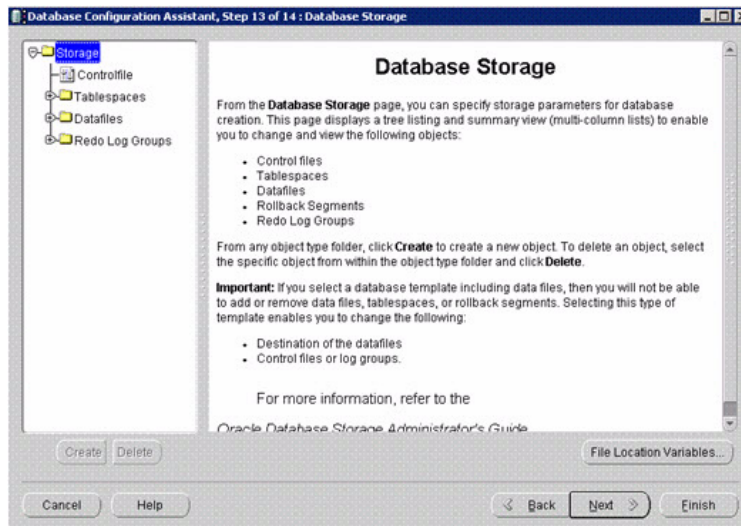
9. To enlarge the working tablespace, change the size of the datafile of the tablespace and/or add another datafile.
10. Set up Oracle database REDO logs according to your environment needs. The default values are sufficient for most installations:
 - Set the Tablespace Storage Parameter
 - Click **OK**
 - Click **Next**

Important Notes

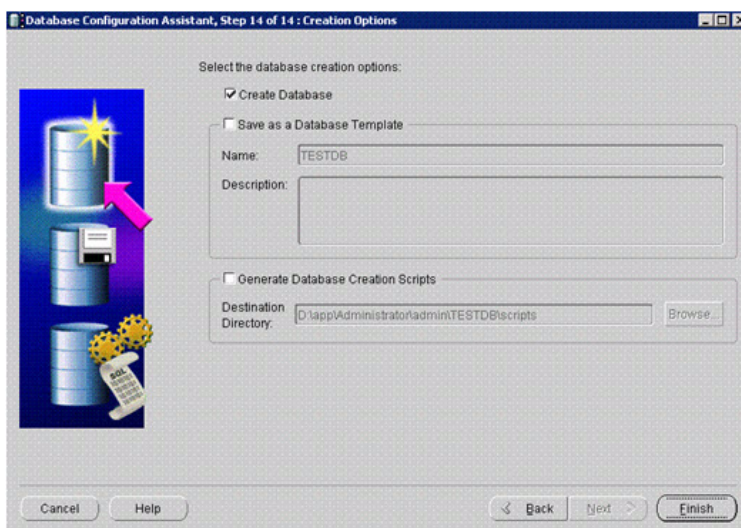
- Consider separating tables and indexes through distinct tablespaces for better performance. You can use SmartDBRepairing utility to do this. If you decide to move indexes to another tablespace – INDX by default – you have to enlarge it beforehand.
 - SmarTeam – Multi-site database site requires larger SYSTEM tablespace than a regular database. For more information about specific requirements for SmarTeam applications, refer to the respective installation guides and other documentation. You can perform all these tasks after the database creation has been completed.
 - Oracle recommends setting tablespace storage parameters to **AUTOMATIC** allocation (**LOCALLY** managed tablespace). This is set by default for all tablespaces in the installation. If you want to create additional tablespaces it is recommended to leave that default value as well.
11. In the Storage tab pane of the Database Storage window:
 - Select the **Value** radio button

- Type a storage value in the field
- Select a storage value size in megabytes or kilobytes from the dropdown list
- Click **OK**

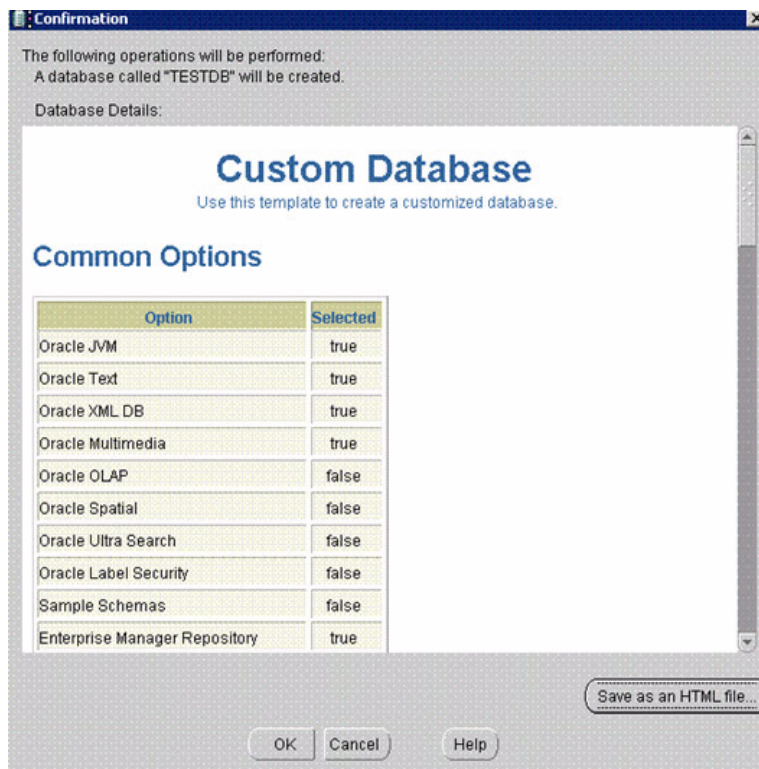
12. In the Database Storage window, click **Next**.



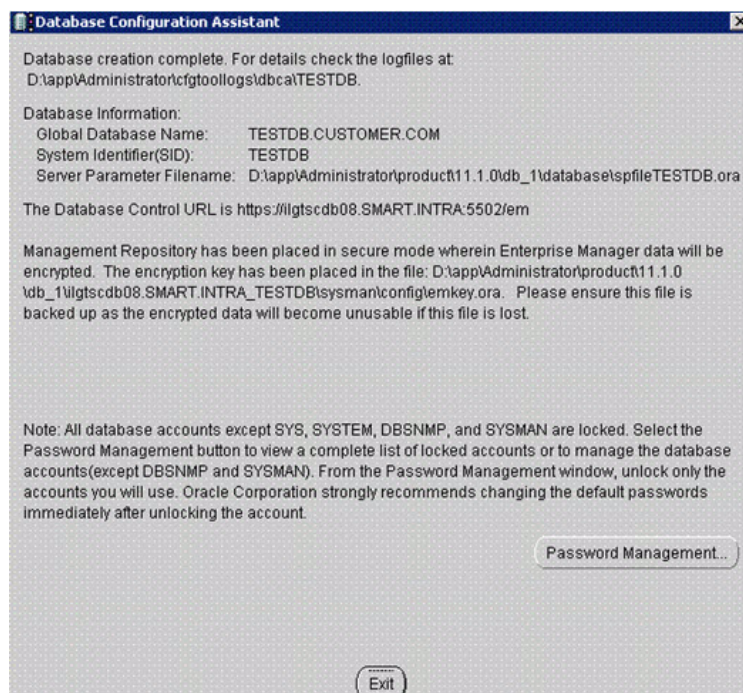
13. In the Creation Options window, if you finished setting up the database parameters, click **Finish**.



14. Before Oracle creates the database, it displays the actions it is going to perform.
If you approve, click **OK** or **Cancel** to return to the parameter modification window.
During database creation, Oracle displays a progress window.



15. After the database was successfully created, a summary dialog appears.



16. After the database is created, disable the RECYCLE BIN functionality by performing the following procedure:

- Log in SQL*plus as SYSTEM database user;

If you are using an SP file:

- Run the command: `alter system set RECYCLEBIN=OFF SCOPE=BOTH;`

If you are using INIT.ORA:

- Run the command: `in INIT.ORA: _RECYCLEBIN=OFF`

Note: Using the recycle bin feature may cause problems for functioning of all data model management utilities and SmarTeam - Multi-site and result in data model corruption.

17. By default, passwords expire after 180 days (if you selected the security management **Keep the enhanced 11g default security setting**). Otherwise, set the password life time to unlimited by performing the following steps:
 - Log in SQL*plus as SYSTEM database user
 - Run the command: `alter profile "DEFAULT" limit PASSWORD_LIFE_TIME UNLIMITED`

Oracle Server Setup

This section explains how to create, or select an existing Oracle SmarTeam Database schema for the Oracle Instance you have created.

Oracle Database Schema

A SmarTeam database on Oracle is an Oracle database schema, which contains basic SmarTeam, objects such as tables, indexes, packages and triggers. In general, an Oracle database can contain several SmarTeam databases. However, performance problems can occur in such a configuration. SmarTeam users connected to one schema may affect the performance of another SmarTeam schema. Also, it may be difficult to determine the origin of the performance problem when users, who are connected to several SmarTeam schemas, obstruct each other's picture.

Single SmarTeam Database Schema in Oracle Instance

To avoid performance problems, it is recommended that you use only one SmarTeam schema in an Oracle database production environment. Use multiple SmarTeam schemas where performance is not relevant, for example, in a test or development environment.

Note: In any case, if the SmarTeam Database schema participates in a SmarTeam – Multi-site environment, it should be the only one in an Oracle instance.

Database Privileges for SmarTeam Database Schema

A SmarTeam Database schema can be created using SQL*Plus, Database Control or other third-party applications. In any case, SmarTeam requires the following minimal system privileges to be granted to a SmarTeam Database schema:

- CONNECT
- RESOURCE
- CREATE VIEW

Note: Some DBAs may consider granting RESOURCE privilege to a regular database user too risky. In that case, they can grant quotas on certain tablespaces according to their security rules. They should grant quota on the SYSTEM table space in a SmarTeam – Multi-site environment in any circumstances.

If a SmarTeam database user has been created in advance and contains SmarTeam data, you can continue using it in Multi-site environment.

Note: It is highly recommended not to grant DBA privileges to a SmarTeam Database schema or to choose a built-in Oracle DBA user, SYS or SYSTEM, to be the SmarTeam Database schema.

Creating a SmarTeam Database

A SmarTeam database is usually created by either copying it from another source database by the SmartDBExplorer utility or by the Create/Modify Database functionality of the SmarTeam Data Model Designer and its family applications. While data is copied to Oracle schema you may encounter error messages related to lack of space in the SmarTeam user default table space, for example:

`"Unable to extend table %s.%s by %s in tablespace %s".`

If this occurs, you should enlarge the SmarTeam default tablespace so that it can contain all data and leave 50% free space. For this purpose, use SQL*PLUS or other third-party applications. As an example, standard SmDemo database (tables and indexes) may take about 200 MB.

Chapter 6: Oracle Client Installation Process

Installing Oracle 11g R1 Client

This section describes the installation of Oracle clients, including:

- Basic Client
- Administrative Tasks Client

Before-Installation Activities

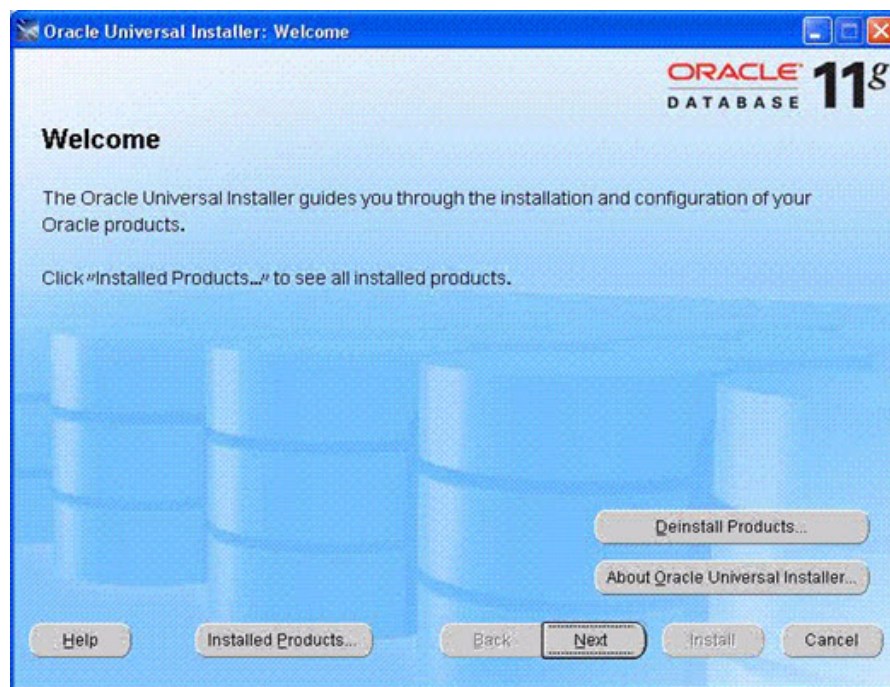
See [Client Requirements](#) for details.

Running the Client Installation

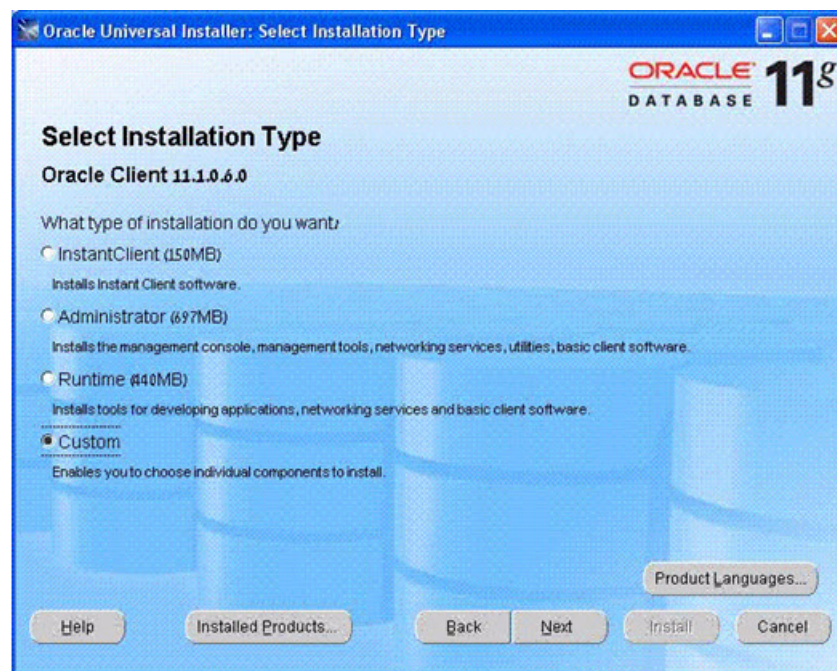
This section describes the Oracle Client installation procedure.

To begin installing:

- 1** Insert the Oracle 11g Release 1 (11.1) – Oracle 11g R1 Client CD and launch the Oracle Universal Installer application.
- 2** In the **Welcome** window:
 - Click **Next** to start the Oracle client installation.



- 3 In the **Select Installation Type** window, select **Custom**.



- 4 In the **Specify Home Details** window, the default location of Oracle Base is:

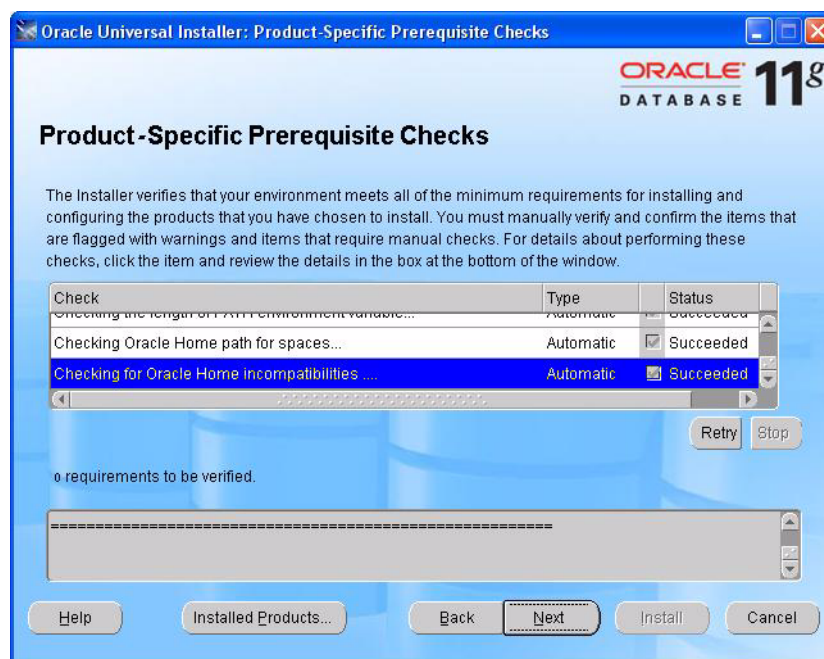
c:\app\<Windows user>, e.g. c:\app\Administrator.

- If you require it, change the Oracle Base location **Oracle Home** name and path
- Click **Next**.

Note: If a previous **Oracle** version is installed, you need to define a different path and name than defined in that version.



- 5 In the Product-Specific Prerequisite Checks window, click **Next**.



Client Installation Types

You are prompted to select the type of client you want to install. The choice of client depends on the purpose of the installation.

To use Oracle with SmarTeam optimally, it is recommended to use the Custom option to perform the two types of client installations:

- Basic Client
- Administrative Tasks Client

Basic Client

This type of Client supports basic SmarTeam functionality only. Select the Custom Client option and choose the following items, as shown.

- Oracle Net 11.1.0.6.0
- Oracle Windows Interfaces 11.1.0.6.0
 - Oracle Provider for OLE DB 11.1.0.6.0

Note: The Custom Client procedure is used to install the Basic Client because the Oracle Runtime Client procedure does not install the Oracle OLE DB Provider, which is a necessary component for SmarTeam, and, furthermore, it installs many space-consuming components not related to SmarTeam applications.

Administrative Tasks Client

This type of Client is used for Oracle advanced usage and maintenance and for SmarTeam Multi-site administrative functionality. Select the Custom Client option and choose the following items, as shown.

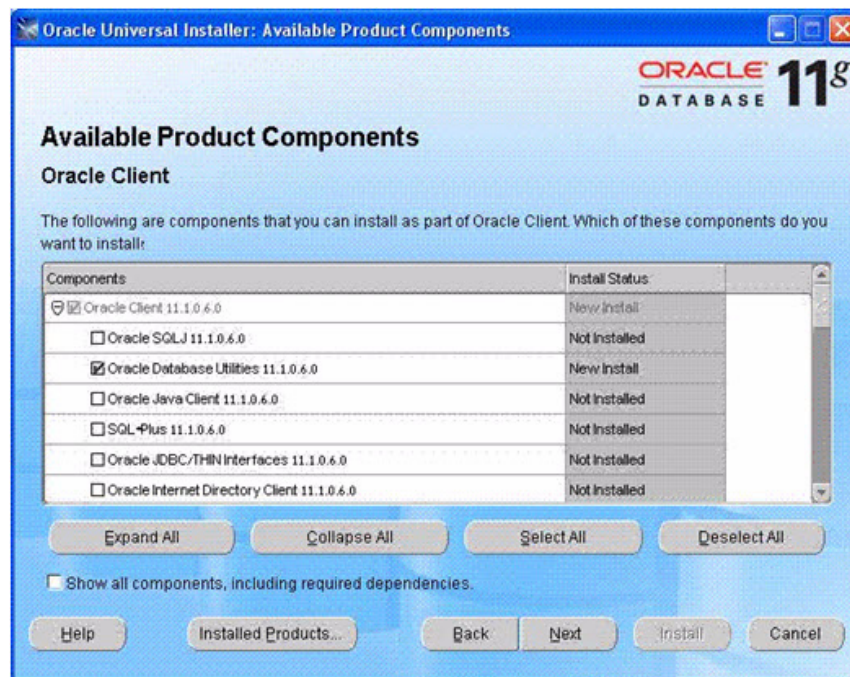
- Oracle Net 11.1.0.6.0
- Oracle Windows Interfaces 11.1.0.6.0
 - Oracle Provider for OLE DB 11.1.0.6.0
- Oracle Database Utilities 11.1.0.6.0

Notes:

- The Custom Client procedure is used to install the Administrative Tasks Client because the Oracle Administrator Client procedure installs many components not related to SmarTeam applications and requires a lot of space.
- The Administrator Client option can be used to set up Oracle client if you are going to use the machine for Oracle management and/or SmarTeam Multi-site management. However, the Administrator Client Installation installs many components not related to SmarTeam applications and requires a lot of space.
- It is not recommended to use the Runtime Client option.

6 In the Available Product Components window, according to which Client Installation type you select, see [Client Installation Types](#) for details

- Select the relevant Oracle Product Components checkboxes.
- Click **Next**.



- 7 The Summary window, shows a list of all your selected options and components.
 - If required, make changes by clicking **Previous** to reopen the Available Products Components window
 - Click **Install** to start the Oracle 11g R1 installation

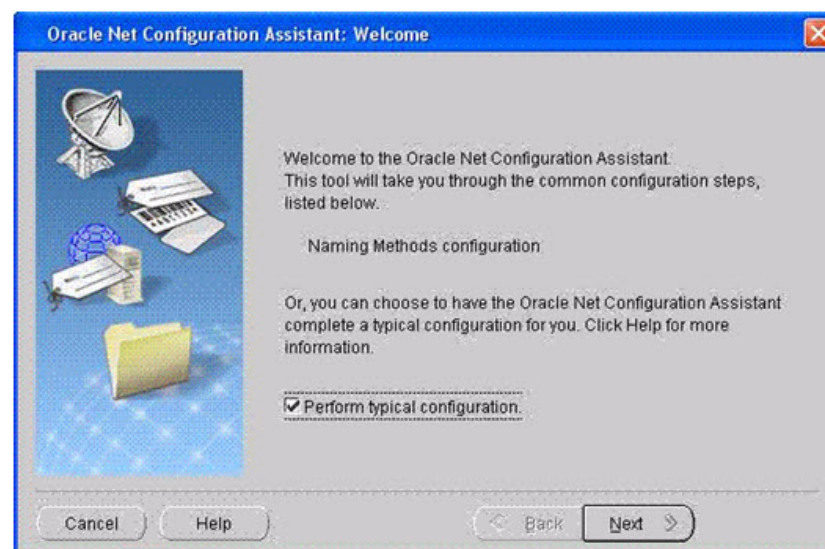


During the installation process, the Install window indicates progress for specific installation stages.



Exiting Oracle Installer

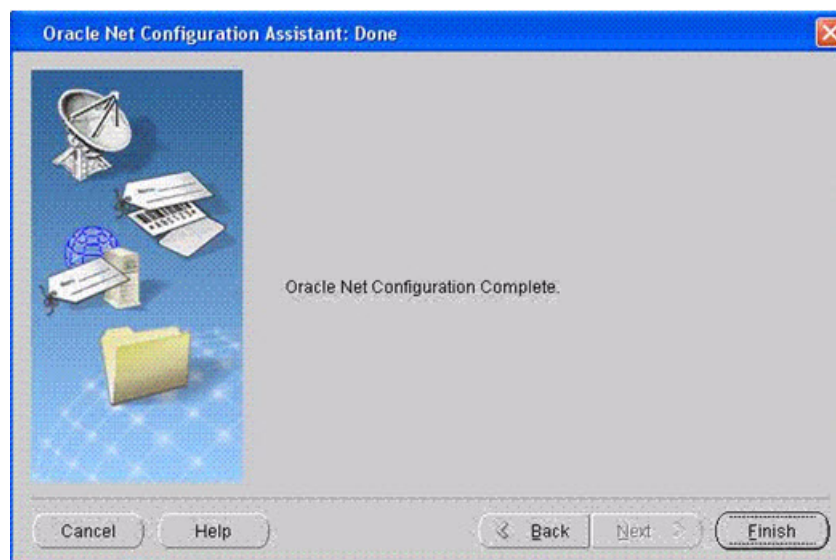
1. In the Welcome window:
 - Select **Perform typical configuration**
 - Click **Next**



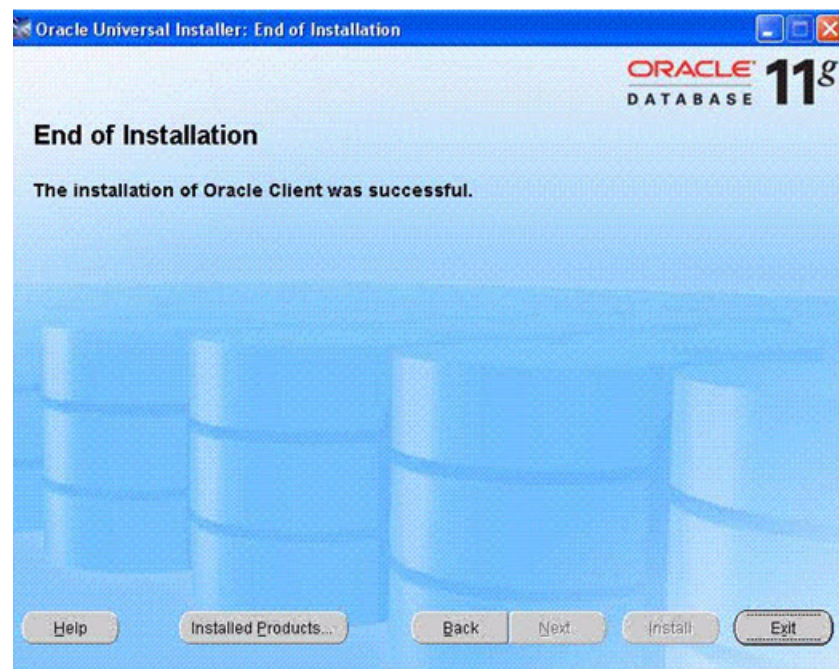
2. In the Database Service window, click **Next**.



3. In the Oracle Net Configuration Complete window, click **Finish**.



Oracle 11g R1 Runtime Client Installation has been successfully completed, click **Exit** and proceed to the [Oracle Client Post Installation](#) in [Chapter 7](#).



Chapter 7: Oracle Client Post Installation

After completing the Oracle 11g R1 Client installation process, you must perform the following tasks as described in this chapter.

Adjusting SQLNET.ORA

For further information see [Adjusting SQLNET.ORA](#).

Note: Failing to perform post-installation activities may cause future problems in functioning of SmarTeam applications.

Connecting by SmarTeam to the Oracle Server

SmarTeam uses the ADO (OLE DB) Provider to connect to databases. Accordingly, you need to use the SmarTeam Database Connection Manager to create an Alias for your SmarTeam schema in Oracle database.

Oracle Client Setup

Use the following operations to set up an Oracle Client:

1. Create **Net Service** to the database you are going to use in your SmarTeam application, using either Net Manager application or manually editing the TNSNames.ORA configuration file.
2. Use SmarTeam Database Connection Manager to set up connection to your SmarTeam database.

Chapter 8: Troubleshooting

Installation Troubleshooting

Please see the Web site <http://www.3ds.com/support/> for the latest information on troubleshooting.

Uninstalling Oracle Server

IMPORTANT! It is highly recommended to perform a backup of your databases and network configuration files prior to uninstalling Oracle Server.

To uninstall Oracle Server, perform the following actions:

1. Shutdown the databases.
2. Shutdown non-database services like Listener services, Oracle Intelligent Agent services.
3. Launch Oracle Universal Installer and use the Deinstall option, which removes the Oracle software from your computer.
4. After deinstallation, cleanup the registry.
5. Restart the computer.
6. Delete Oracle folders.

Uninstalling Oracle Client

To uninstall Oracle Client perform following:

1. Launch Oracle Universal Installer and select the Deinstall option.
Oracle 11g R1 software is removed from your computer.
2. Cleanup the registry after deinstallation.
3. Restart the computer.
4. Delete remaining Oracle folders.

Converting the Standard Edition to Enterprise Edition

If you install SmarTeam - Multi-site at a later date you need to perform the following instructions to convert your Oracle Standard Edition database to Oracle Enterprise Edition:

To convert Oracle Standard to Oracle Enterprise edition:

1. Backup the database.
2. Deinstall the Oracle Standard Edition software.
3. Install the Oracle Enterprise Edition software (optionally on Unix in a new ORACLE_HOME), by selecting Custom (for further details see [Custom Installation for SmarTeam – Multi-Site](#)).
4. If you have an existing database, point your ORACLE_SID to this pre-existing database.
5. Startup the database.
6. Run the "catalog.sql" and "catproc.sql" scripts).

Your database now uses the customized version of the Oracle Enterprise Edition software.

Appendix A: Oracle Fine Tuning for SmarTeam – Editor Implementer

Introduction

This Appendix is designed to assist an organization's Application Engineer or System Administrator to fine-tune your Oracle database to provide better performance for the SmarTeam environment.

This Appendix assumes that the SmarTeam implementer possesses knowledge and experience in setting up and tuning of Oracle database. The main purpose of this document is to describe basic considerations for Oracle Tuning techniques that are required by SmarTeam-related applications and to suggest some ideas that may help in difficult situations.

IMPORTANT! Incorrect handling of Oracle Tuning may cause serious performance degradation. It is recommended therefore to perform tuning in a test environment at first. Prior to tuning the production system, make a cold backup of your database(s). We have refrained from making any tuning suggestions that may have a dangerous effect on the system if implemented improperly. If the system still does not reach your expected performance goals, contact SmarTeam support.

This Appendix applies to Oracle 11g, Release 1(Oracle 11.1).

In general, it is recommended to apply the latest available Oracle patch/patchset. Please consult SmarTeam support for information on the most applicable Oracle patch/patchset.

If nothing is said about specific versions, the same approach should be applied.

Note: SmarTeam Corporation will try to keep this information up to date by applying knowledge obtained from QA testing and customer experience. Please check for the most recent version of this document on our Web site.

Essentials

Configuring Oracle Parameters

Since Oracle 9i, Oracle supports the SPFILE configuration file feature, which can replace using the INIT*.ORA configuration file. The SPFILE is a binary-text file; it can be edited only using Oracle utilities. One of the benefits of using it is that you can start up the database from a remote computer, without having to access to INIT*.ORA.

It is generally recommended to use SPFILE for maintaining Oracle configuration. While using SPFILE it is also recommended to keep INIT*.ORA file updated with the latest configuration from SPFILE.

The file's default location is <ORACLE_HOME>\<ORACLE_PRODUCT>\database.

For more information on using SPFILE refer to native Oracle documentation or Oracle metalink support site.

Init*.ora

Note: The information in this section is provided for backward compatibility.

The init.ora file is Oracle's initialization file.

The file can be named init.ora or init<sid>.ora where sid refers to the Oracle SID provided during the Oracle database configuration.

The file's default location is:

<ORACLE_HOME>\ADMIN\<ORACLE_SID>\PFILE\init<SID>.ora.

Use a text editor, such as Notepad, to open the init<SID>.ora file. The path in this file points to the location of the init.ora file used by Oracle for initialization when the database starts. You can locate this file for editing according to the indicated path.

DB_BLOCK_SIZE

In most cases the DB_BLOCK_SIZE value will be OK.

This value cannot be changed after the database is created, and should never be changed in the init*.ora or SPFILE configuration files.

User Defined Indexes

To improve Search operation performance, it is advised that you create indexes for the columns on which commonly used searches are based.

The indexes you define depend on the specific customer database and usage.

You can create these indexes using an Oracle command. This creation runs fast on the typical SmarTeam database. Check the performance with or without an index.

Case-Sensitive Queries

By default Oracle indexes are case-sensitive. You may experience performance degradation during searches and Lifecycle operations when a case-sensitive file name or directory name attribute is used. You can overcome this limitation by creating functional-based indexes. This technique can be useful in general for searches on any case-sensitive attribute.

In the following example, the functional-based index is created on the TN_DOCUMENTATION table, FILE_NAME attribute.

Before creating functional-based indexes, the following SQL statements should be run in SQLPlus by a user with DBA authorization.

```
ALTER SYSTEM SET QUERY_REWRITE_ENABLED=TRUE;
ALTER SYSTEM SET QUERY_REWRITE_INTEGRITY=TRUSTED;
```

Perform the following statements to create the functional-based indices:

```
CREATE INDEX SMARTEAM.TN_DOCUMENTS_IFUNC
ON SMARTEAM.TN_DOCUMENTS (UPPER (FILE_NAME))
```

You are required to collect statistics on the schema after creating functional-based indexes.

Note: The DataModelDesigner/Upgrade-family applications may delete user defined indexes when changing the data model or during an upgrade operation. Verify that all user defined indexes still exist after the DataModelDesigner/Upgradefamily applications have been executed. Re-create them, if necessary.

Memory Tuning

Oracle allocates two main types of memory:

SGA (System Global Area) - an area within the Oracle server's computer RAM that is used for the benefit of connected Oracle users, and is pre-allocated according to specific parameters (as described in this document).

PGA - memory allocated per connected session

Since Oracle 11g, there is one memory parameter that includes both. There is no longer a need to declare the SGA_TARGET, SGA_MAX_SIZE and PGA_AGGREGATE_TARGET parameter.

The new parameters are MEMORY_TARGET and MEMORY_MAX_TARGET. The MEMORY_TARGET parameter can be changed dynamically (using ALTER SYSTEM). It cannot exceed the value of MEMORY_MAX_TARGET

MEMORY_TARGET of 1.2G is sufficient up to 50 concurrent users.

Log Buffer

The **LOG_BUFFER** parameter is important for data flushing to REDO logs. If its size is small, transactions will process slowly (more physical disk reads), if its too big, changes will be lost in the case of recovery.

The suitable size for the SmarTeam application is 10mb-100mb. Verify that the log buffer is not written more than once per minute.

MTS

Oracle has an MTS (Multi-Thread Server) option, not commonly required, that makes servers available to support more user connections in a memory-limited environment. This option makes systems more complex, increasing the risk of making mistakes, therefore it is recommended to avoid using it until you have more than 200 users. Afterwards, test and compare if it's worth implementing it.

For details of setting up MTS, refer to the Oracle documentation.

Overall Memory Calculation

For best performance, the Oracle server should be a dedicated server.

The amount of RAM required depends on the number of expected users connected to that database.

Oracle server should have at least 1GB RAM, preferably 2GB, which is sufficient in most cases. There is rarely a need for more than 4GB RAM.

Because the operating system requires 130MB-200MB RAM, these amounts will leave enough memory for Oracle.

Each session connected uses memory from the Oracle instance, and also up to 8MB of the operating system (note, this value got much larger since Oracle 9i).

Advanced Oracle Memory Tuning

1) Simple Advisory of Memory Tuning

Select the `V$MEMORY_TARGET_ADVICE` view, which gives you the information you need to modify the `MEMORY_TARGET` parameter. For example, if you increase `memory_target` by X, how will it affect the physical reads? This view gives the estimates, based on statistics collected during the normal run of the database.

2) Memory over 2GB per Oracle Process

For Windows operating system, by default, each single process is limited to using 2GB of the memory.

If the server has 4GB memory and you want more than 2GB (actually 1.8G) of memory for Oracle, before you increase the values perform the following:

Add flag `/3GB` to `c:\boot.ini` and restart the server. This is performed to enable Oracle to use more than 2GB of memory (up to 3GB maximum).

3) MEMORY_MAX_TARGET

If you want to change `memory_target` to be more than `memory_max_target`, you will need to first add the `memory_max_target` to the parameter file:

For the change to become effective, you need to bounce the database.

4) Oracle Tuning for Oracle 11g Full Table Scan Selects Large Tables

Due to Oracle 11g internal changes, there can be performance problems when running full table scan- selects without using an index, on large tables.

Note that if you use "match case" and you have a regular index, it will not be usable (only a function based index can be used in this case).

Full table scans are common, especially with SmarTeam – Web Editor; but it depends on the specific customer customization. The results can mean up to five times slower performance.

Oracle 11g behavior workaround:

The best option is to declare indexes according to your selections, see [User Defined Indexes](#) section for details.

I/O Tuning and Data Processing

General Settings

Consider setting the `init.ora` parameter `LOG_CHECKPOINT_TIMEOUT` to 0 to disable it

i.e. `LOG_CHECKPOINT_TIMEOUT=0`

The parameter `OPEN_CURSORS` should be 300 (default).

For Oracle 10g and above

It is very important to set the `RECYCLEBIN` parameter to `FALSE`, by issuing the following command in SQLPlus as `SYSTEM` user:

```
ALTER SYSTEM SET "RECYCLEBIN"=FALSE;
```

Failure to do that may cause data model change applications and SmarTeam - Multi-site applications to fail.

Tables and Indexes

The SmarTeam data model requires maintenance for both tables and indexes. Indexes should be rebuilt periodically in order to make them balanced (for example, once a week) and it is recommended to put some SmarTeam tables into the Oracle cache.

Rebuilding Indexes

It is recommended to rebuild indexes periodically in order to balance them. You can do it using either using SmarTeam's SmartDBRepairing utility or manually using dynamically created sql script. Once indexes have been rebuilt, it is recommended to re-collect statistics.

Table Caching

Oracle maintains a mechanism that allows a performance improvement when extracting information from tables. When the Buffer Cache reaches its size limit, Oracle performs a memory-releasing procedure, flushing less recently used tables to the disk to obtain additional space. Typically, tables

that are constantly accessed are not flushed. Tables that were flushed and then accessed again are reloaded to memory, a costly procedure. There are several important tables in the SmarTeam - Editor that are frequently used and should not be flushed by the procedure from their location in the Buffer Cache.

You can ensure that those tables are cached immediately after restart by using Database Control, third-party applications, or the SQLPlus command:

```
ALTER TABLE TABLE_NAME STORAGE (BUFFER_POOL KEEP) CACHE;
```

After any data model changes, (using either the SmarTeam Data Model Designer or a SmarTeam upgrade), connect to SQLPlus as a SmarTeam - Editor user and execute the following entries:

```
ALTER TABLE TDM_LAST_OBJECT_ID STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE OBJECT_LOCKING STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_MULTI_TAB STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_TITLES STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_QUERY_DEFINITION STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_QUERY_DESCRIPTION STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_QUERY_RESULT_LIST STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_CLASS STORAGE (BUFFER_POOL KEEP) CACHE;
ALTER TABLE TDM_CLASS_HIERARCHY STORAGE (BUFFER_POOL KEEP) CACHE;
```

In the case you have other frequently used tables, like some user-defined classes, you may consider placing them into cache as well. However, you need to be careful - if you place too many tables into cache, there will be not enough space in memory and the operation will not have impact on performance. It is recommended to use this option after analyzing Oracle sql traces and with accordance with Oracle run-time counters like CACHE HIT RATIO.

Collecting Statistics

The cost-based optimizer collects information about the database structure and decides the best execution plan for user commands in order to save time.

Since Oracle 11g statistics are collected automatically. Oracle provides several methods to collect statistics. The most advanced one is using DBMS_STATS package. The correct syntax is following (run it in SQLPlus, connected as a database user with DBA privileges, i.e. SYSTEM):

```
exec DBMS_STATS.GATHER_SCHEMA_STATS (ownname=> 'SMARTEAM');
```

It is recommended to run the statistics after an upgrade.

REDO Logs

Oracle sets three 100 MB REDO LOG groups from Oracle 11g by default and that is sufficient for most configurations.

Rollbacks

The UNDO tablespace is required for processing un-committed transactions. The UNDO tablespace is automatically managed. The UNDO tablespace should be set large enough for any unexpected growth, for example, 500 MB.

Backup and Recovery

If a customer wants to be able to restore his database after a crash, the customer must enforce a backup policy.

This section is relevant when using **ARCHIVE LOG MODE**.

If a customer has a dual CPU or more than two, it is possible to improve recovery processing by setting the parameter **FAST_START_PARALLEL_ROLLBACK = LOW** in the init*.ora file.

Replication

When Oracle replication is used in a SmarTeam - Multi-site environment, the following parameters should be used:

```
PROCESSES=..Add 12 to the current value
GLOBAL_NAMES=TRUE
OPEN_LINKS=4Add 2 per additional site
JOB_QUEUE_PROCESSES=3 Add 1 per additional site
(limited to 36)
PARALLEL_MAX_SERVERS=10
PARALLEL_MIN_SERVERS=2
```

Applying Configuration Changes

Working with SPFILE

The change to configuration parameters usually occurs in the Enterprise Manager application. In that case you will be prompted to restart the database.

If you change configuration parameters using SQLPlus, Database Control or third-party applications, you should specify the SCOPE of the change, and proceed accordingly.

Working with INIT*.ORA

To apply changes made to the init.ora file, save your changes then close the file. For your changes to take effect, either restart the computer or proceed as follows:

1. From the command prompt type SQLPlus to start the Oracle Server Manager.
2. From the SQLPlus prompt type the following string:

```
connect user/password@<service_name> as SYSDBA
```


where

service_name is the name provided to connect to the database, e.g., **smar-tora.smarteam.com**.

For example: **connect** sys/man@smartora.smarteam.com **as SYSDBA**

The message **Connected** is displayed.

3. .Type shutdown immediate to shutdown the database.

4. After the database is completely shutdown, type startup.

If the startup command does not work because the init*.ora file is not found, enter the following command:

```
startup pfile=<Full path>'<init*.ora >'
```

General Recommendations

- The database server should be a server dedicated for Oracle.
- For media fault tolerance, you may consider different methods such as RAID5.
- To ensure availability of the database for the end-users you may consider using clustering solutions.
- For improved performance, you may consider putting every datafile (tablespace) on a separate physical disk. Please remember that putting datafiles on different logical disks of the same physical disk does not improve performance at all.
- Additional redolog files from each single redolog group should reside on different physical disks for backup purposes in case of disk failure.
- Copies of the control files should reside on different physical disks for backup purposes in case of disk failure.
- Periodic database backup should be performed as described in the **Oracle Backup and Recovery Guide** provided by **SmarTeam**.

Data Model Designer Performance Improvement Tips

With large SmarTeam databases (more than several gigabytes), using the SmarTeam Data Model Designer and its family applications can take a long time because of the large number of operations required to change the data model, for example, copying records.

Here are some tips that may help in improving the performance of data model changes processing:

- Set the ARCHIVELOG to off prior to starting the SmarTeam Data Model Designer operations. In the case of failure, an alternative restore procedure must be implemented: for example, the Export operation in the case of regular SmarTeam database and the Restoring from Cold Backup operation in the case of SmarTeam - Multi-site.
- Verify that you have 40% free space in the tablespaces to insure the proper operation of the SmarTeam Data Model Designer (Since Oracle 11g the tablespaces are automatically extended, there is no need to check one by one).

More Performance Improvement Tips

The following parameter can be changed from the default to improve performance in Oracle 11g. It is seldom changed

- Set the `SESSION_CACHED_CURSORS` parameter to its optimal value, by default the value is 50. Try using 0.