

## Oracle User Guide

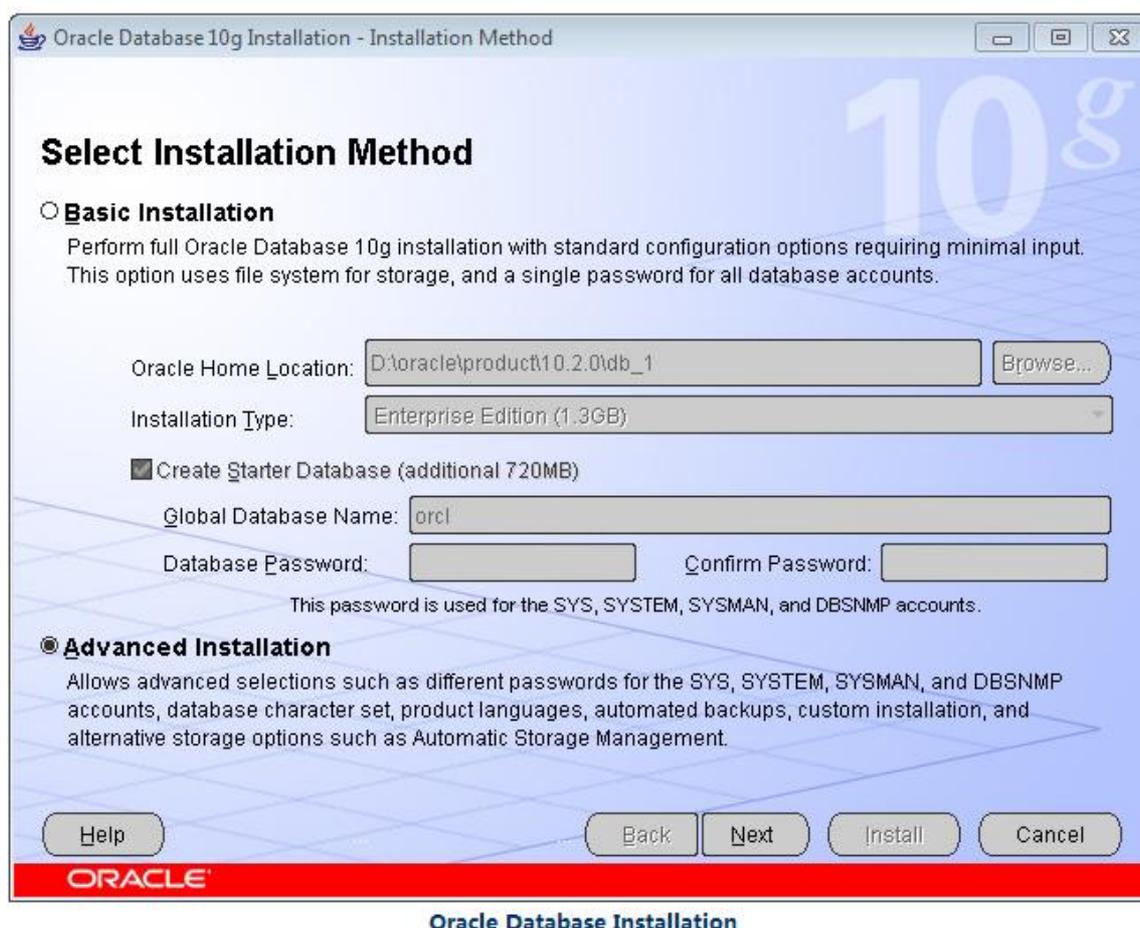
The installation and configuration of Oracle will affect the performance of Oracle directly, and the performance of SuperMap SDX+ for Oracle Plus is affected by Oracle. To improve the performance of SuperMap SDX+, it is needed to optimize the parameters when installing and configuring Oracle database. The follow documents introduces the installation of Oracle, the allocating of the memory and the setting of the parameters.

### Main Contents:

#### Install Oracle

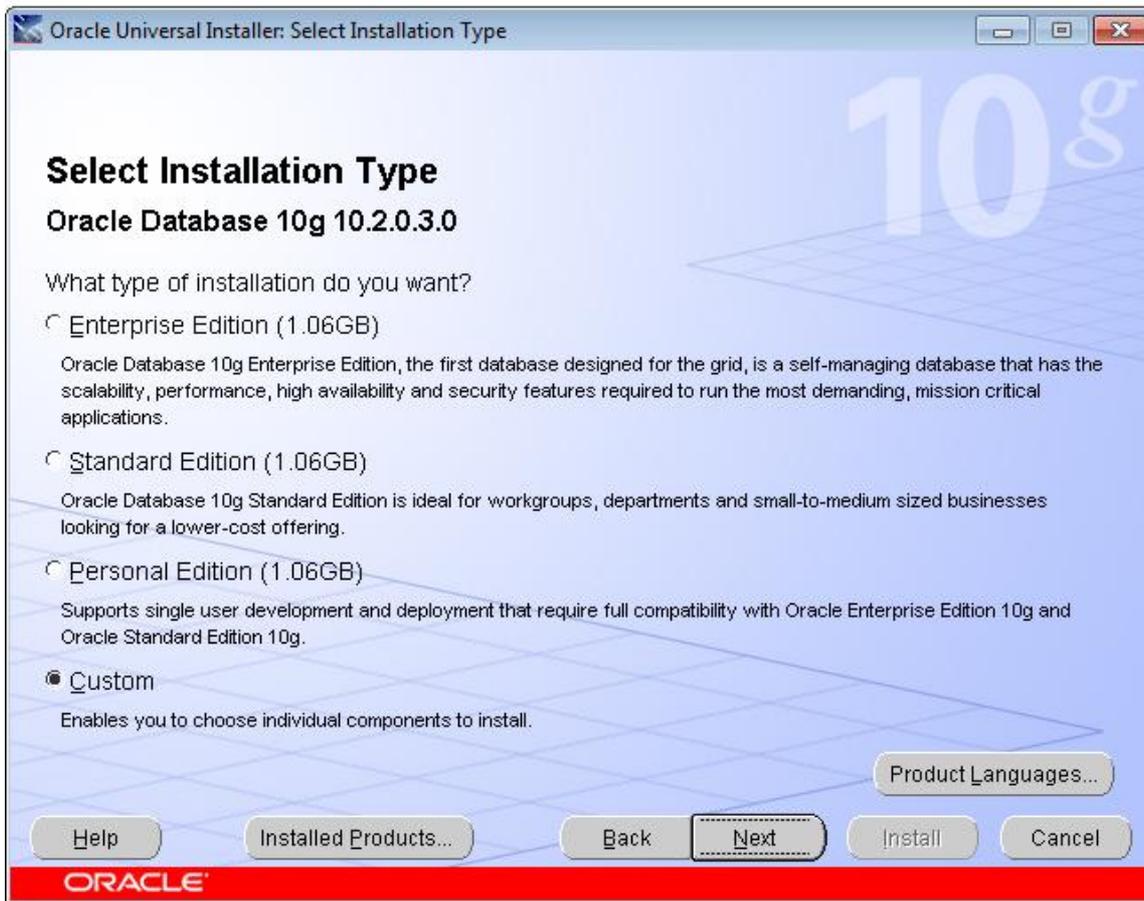
##### 1. Select installation method

Double click setup.exe in the package, the following interface appears, select Advanced Installation. Then click Next.



##### 2. Select installation type

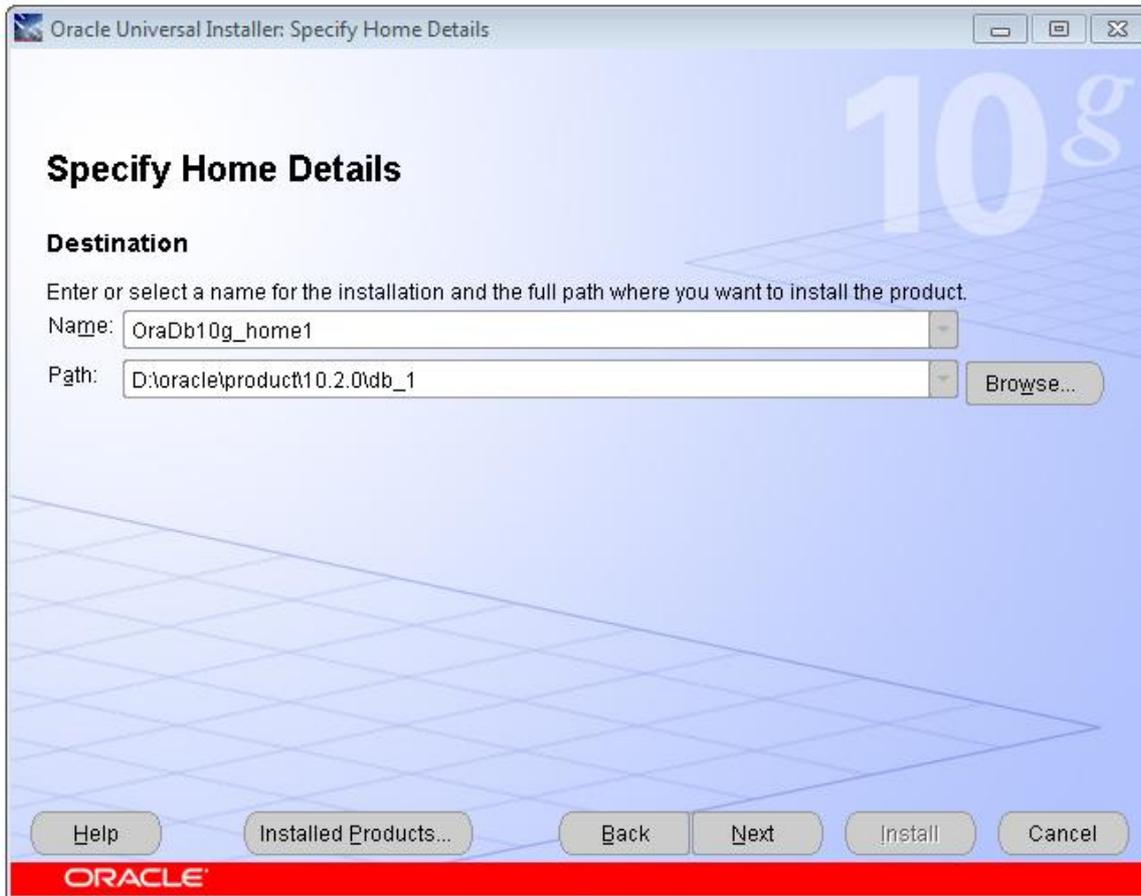
Select Custom, select the components according to your need and set the parameters. This may save disk space and improve the efficiency of Oracle. Click Next.



Select installation type

### 3. Specify home details

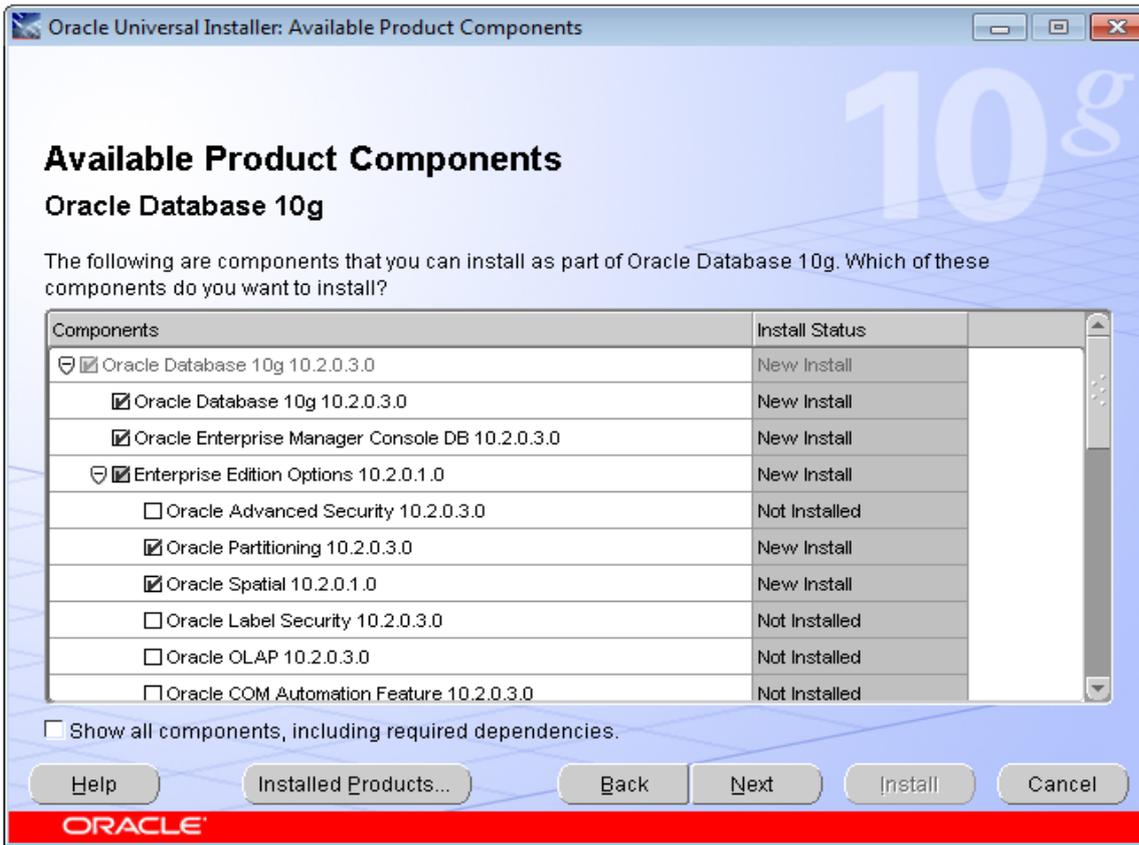
It is recommended to you the default setting since Oracle will detect your machine and select the disk with the maximum free space. The installation directory can be changed. Click Next.



Specify home details

#### 4. Select product components

You can select the components needed here.



Available product components

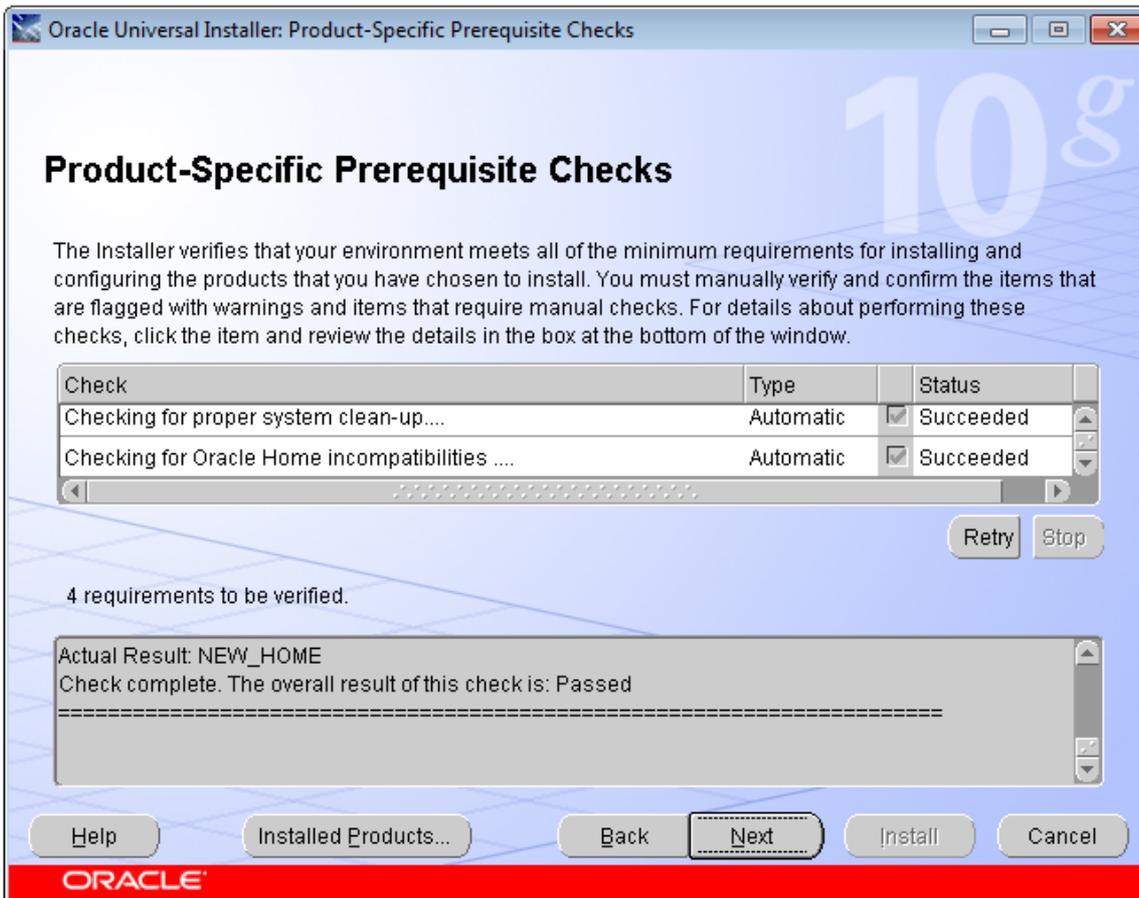
The following are the components list recommended to install:

1. Oracle DataBase 10g is the basic component of Oracle, required.
2. Oracle Enterprise Manager Console DB is the basic component of Oracle, it is recommended to install.
3. In Enterprise Edition Options:
  - Oracle Partitioning is used for manage tables in small partition, it is recommended to install.
  - Oracle Advanced Security: The safeguard of network, it is not needed for common GIS application.
  - Oracle Spatial: whether you need Oracle Spatial.
  - Oracle OLAP: if you have many concurrent users, install it.
4. In Oracle Net Sevices, Oracle Net Listener is required.
5. Oracle Call Interface(OCI), required.
6. Oracle Programmer, it is recommended to install it.
7. Oracle XML Development Kit, it is recommended to install it.
8. In Oracle Windows Interfaces:
  - Oracle ODBC Driver, it is recommended to install it.
  - Oracle Provider for OLE DB, it is recommended to install it.

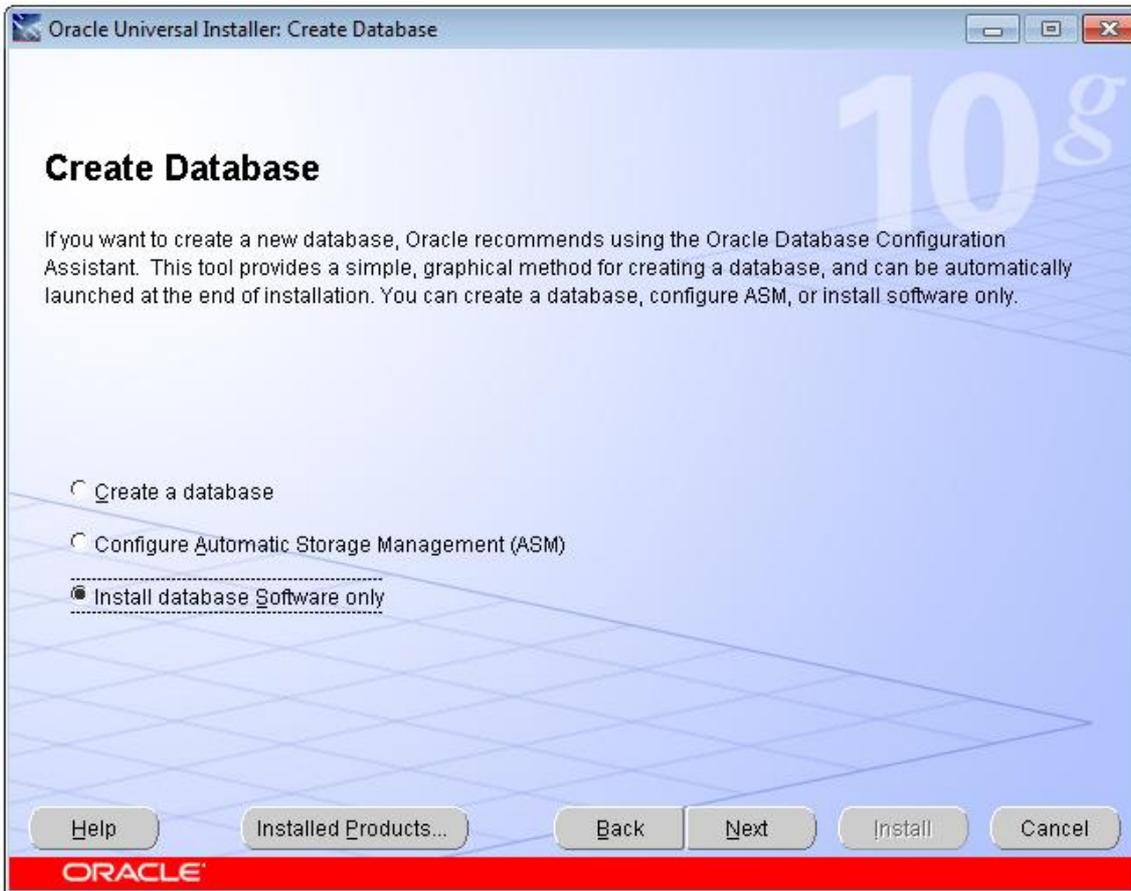
Click Next.

## 5. Create database

When install the software, Oracle will check whether you system meet the requirements for the installation, the creating database interface will appear if the checking succeed. The database created by the default option Create a database may not meet you requirements, you can select Install database Software only, click Next to install the software.



Product-specific prerequisite checks



Create Database

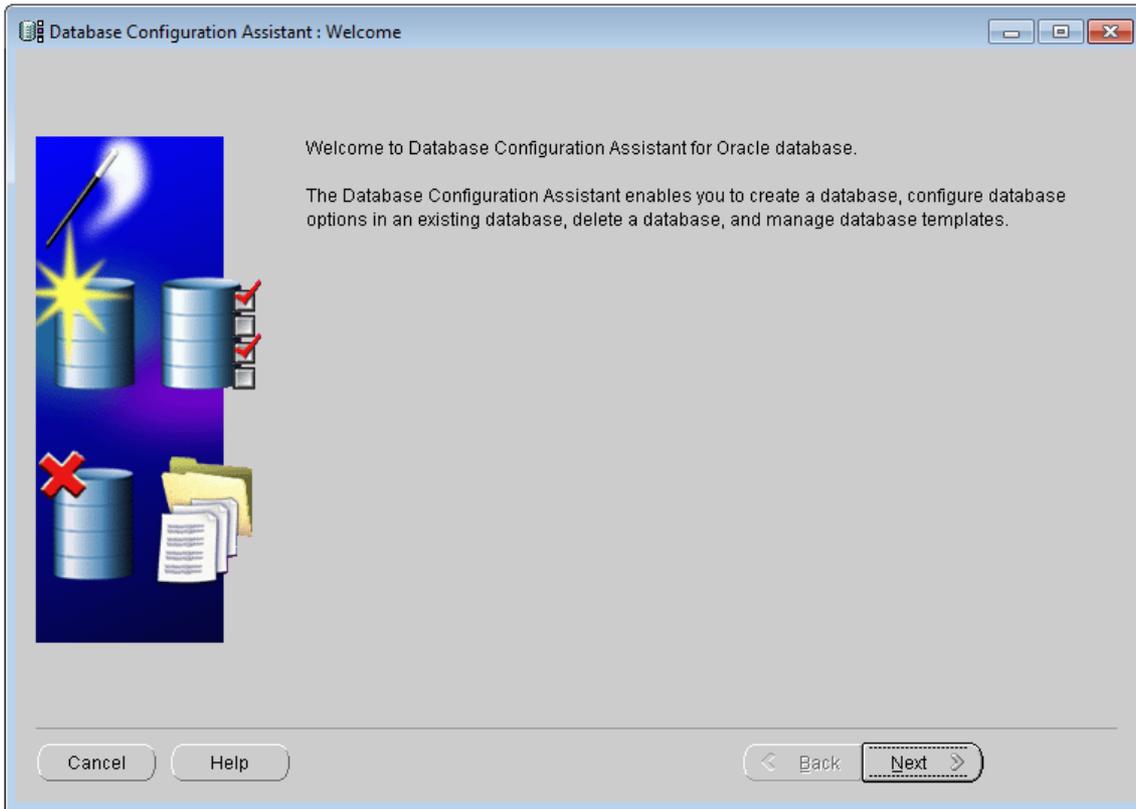
1. After the installation finished, click Exit.

### Configuring Oracle

When Oracle is installed, run Database Configuration Assistant (DBCA) in the start menu to configure Oracle.

In the start menu, click All Programs > Oracle > Configuration and Migration Tools > Database Configuration Assistant, the interface is as the following.

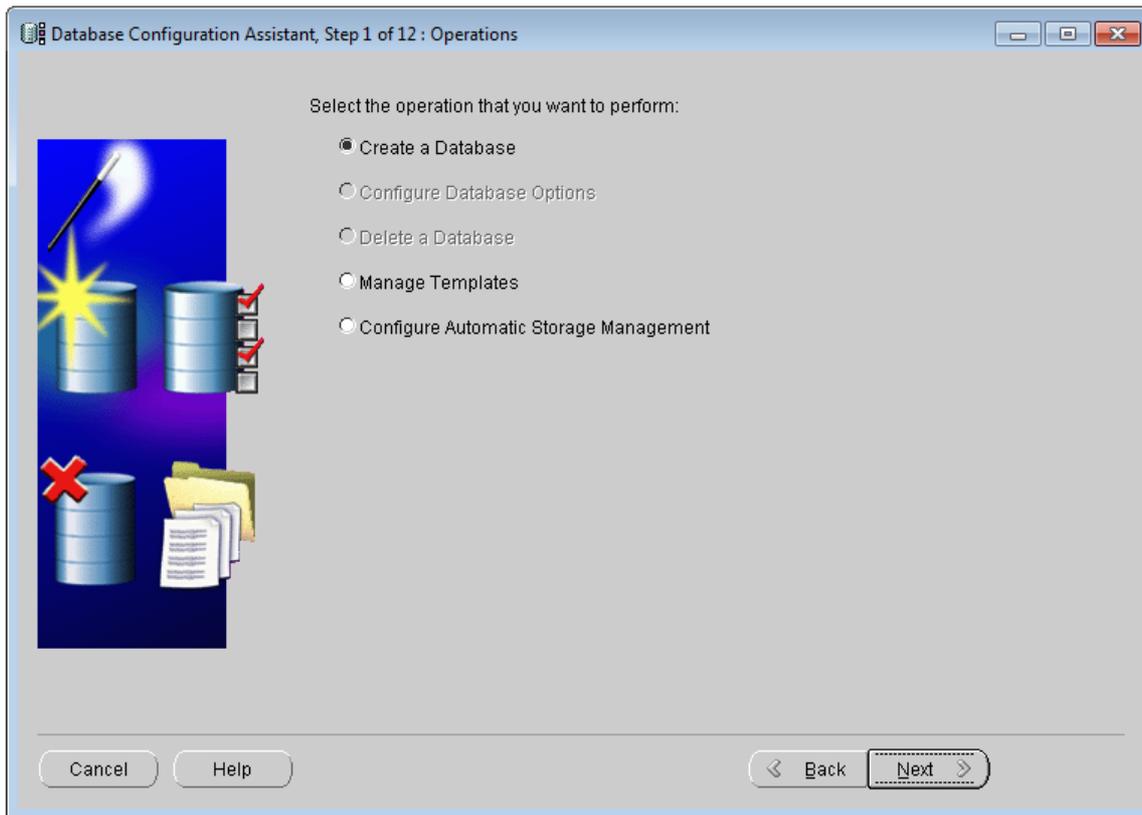
Click Next for the configuration of Oracle, there are 12 steps.



Database Configuration Assistant: Welcome

## 1. Create database

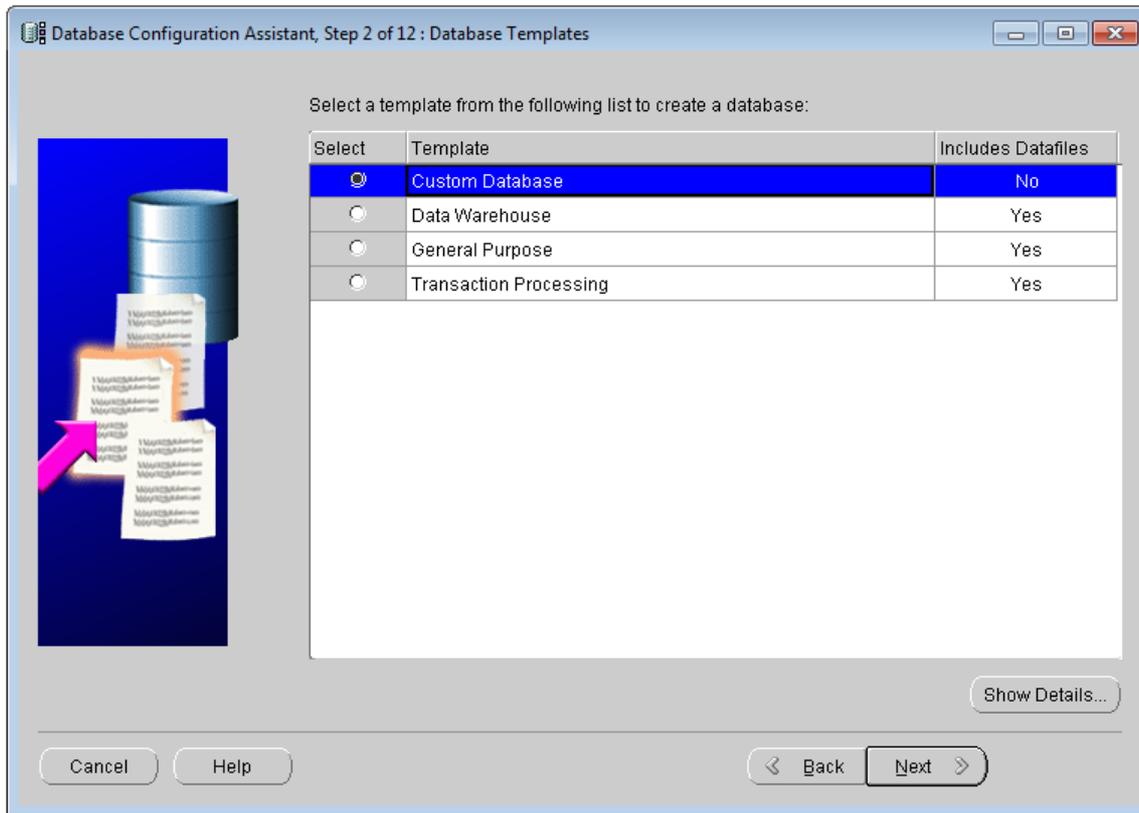
Select Create a Database, click Next.



Database Configuration Assistant: Select operation

## 2. Select database templates

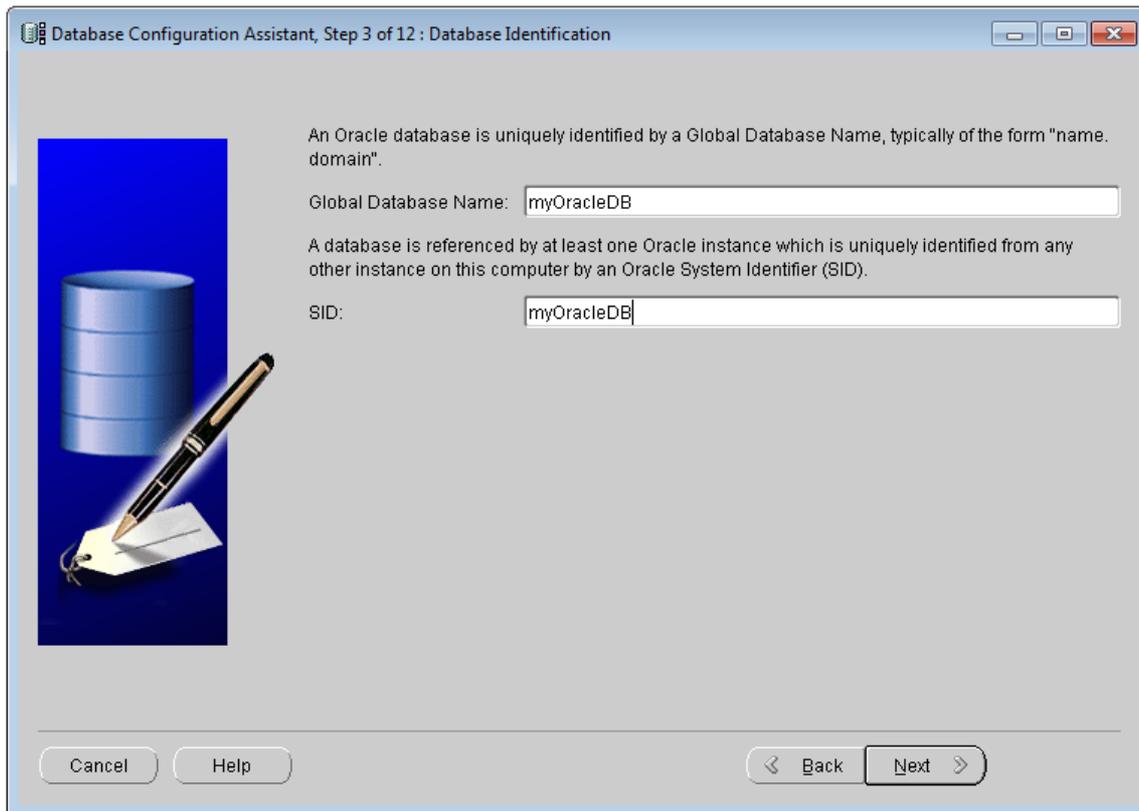
Select Custom Database because we need the Oracle database for SuperMap SDX+. Click Next.



Database Configuration Assistant: Database templates

### 3. Database Identification

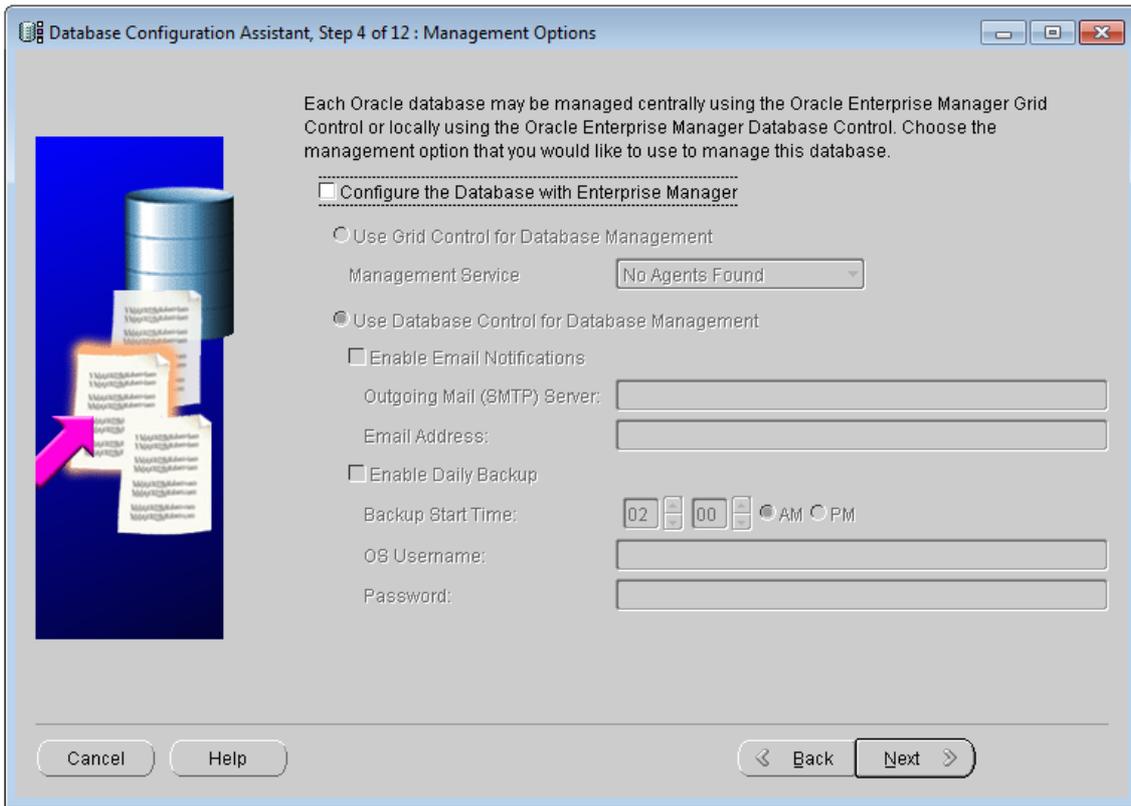
Name the Global Database and the SID, as shown below. Click Next.



Database Configuration Assistant: Database Identification

#### 4. Management Options

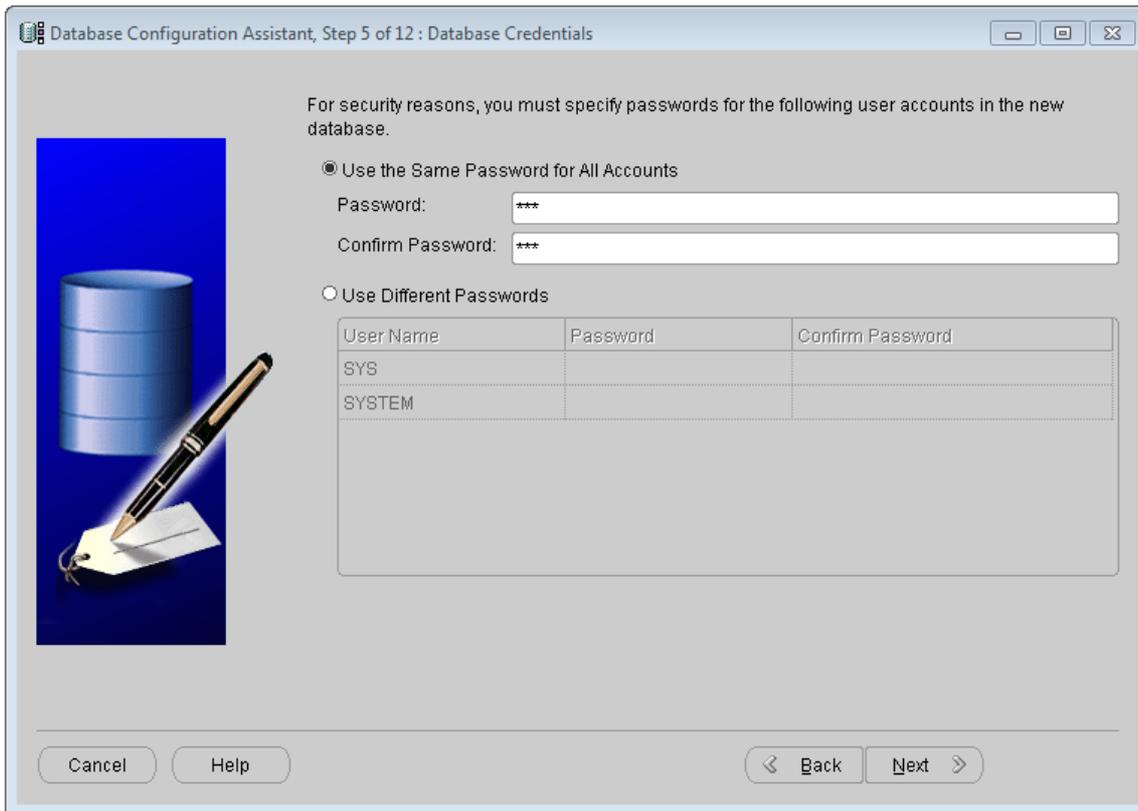
Uncheck Configure the database with Enterprise Manager, as shown below. Click Next.



Database Configuration Assistant: Management Options

## 5. Database Credentials

Input the password for the database account in the Password text box. You can use different passwords, as shown below. Click Next.



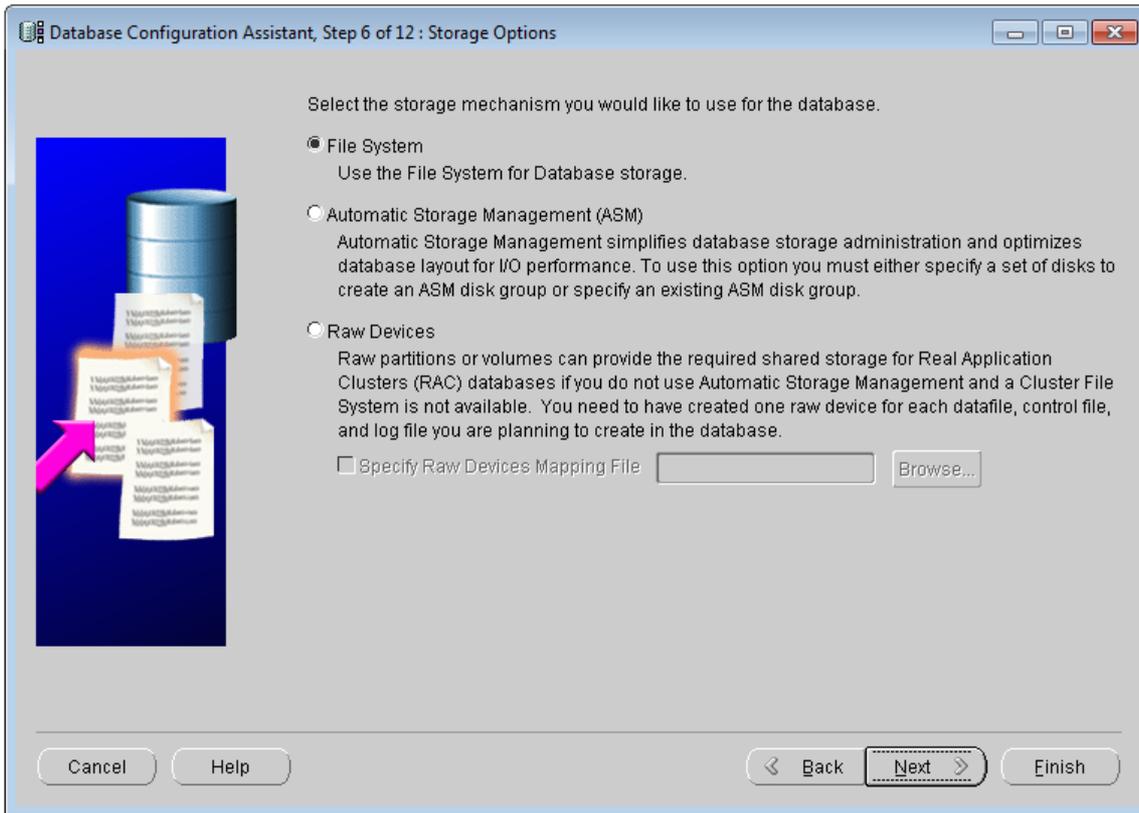
Database Configuration Assistant: Database Credentials

## 6. Storage Options

The system provides three database mechanisms, in which Automatic Storage Management (ASM) and RAW Devices are used for advanced server, for normal PCs, just select File System.

- File System: Save and maintain single instance database file in the current file system directory.
- Automatic Storage Management (ASM): With ASM, the database just need to manage a few disk packs and there is no need to manage numerous database files, if you select this option, it is needed to specify a group of disk packs to create a ASM disk packs or specify an existing ASM disk packs.
- RAW Devices: The disk or disk partition not managed by file system. You can select this option when you site have at least the same raw disk partitions with Oracle data file.

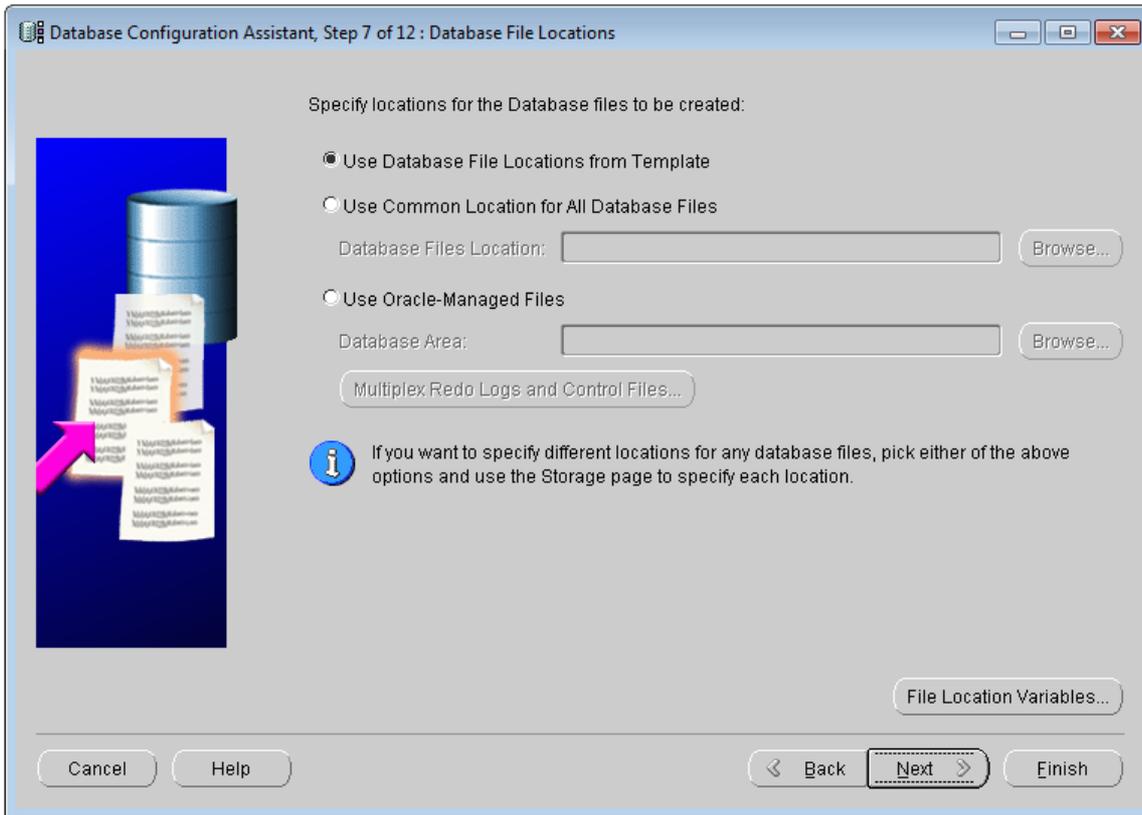
Click Next.



Database Configuration Assistant: Storage Options

## 7. Database File Locations

Specify locations for the Database files to be created, for more details, please refer to the help of Oracle. Here, we used the default option, that is Use Database File Locations from Template, click Next.

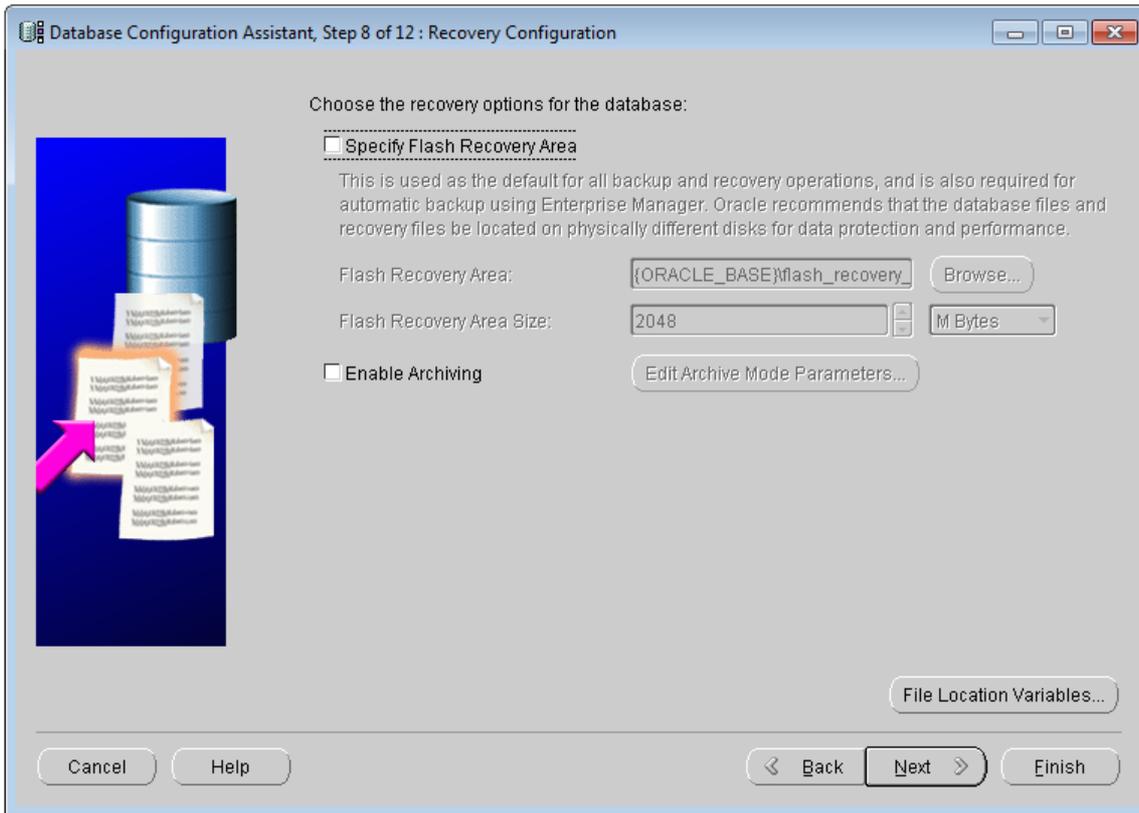


Database Configuration Assistant: Database File Locations

## 8. Recovery Configuration

Specify flash recovery area and enable archiving.

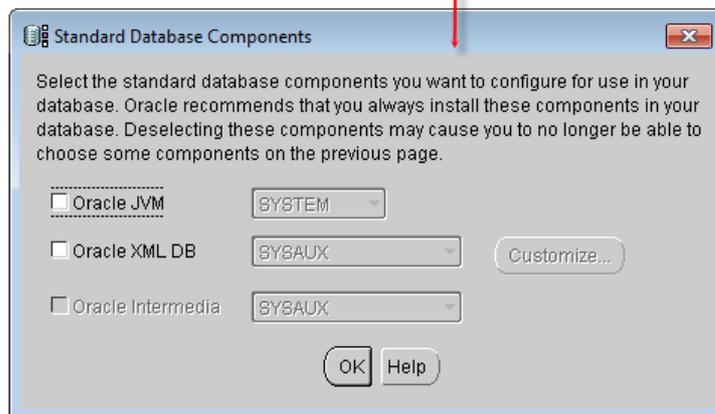
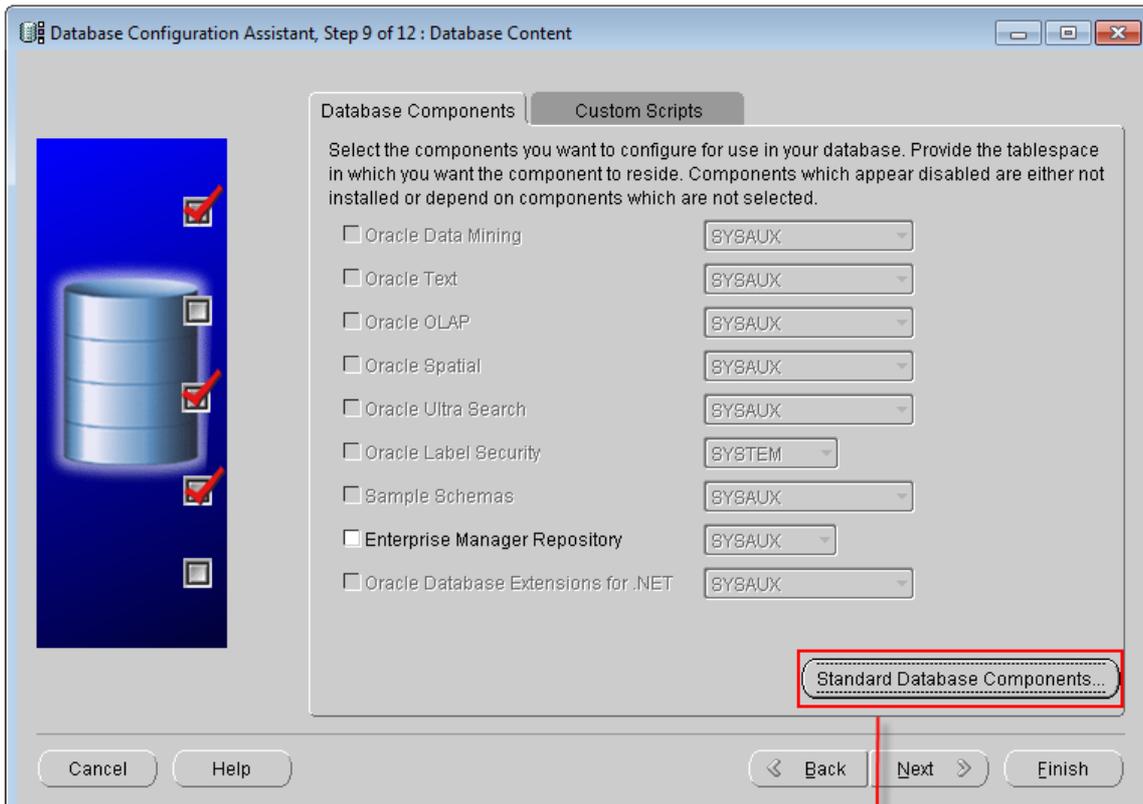
Check Specify Flash Recovery Area can ensure the security of the data, but it will degrade the performance. Click Next.



Database Configuration Assistant: Recovery Configuration

## 9. Database Content

Uncheck Oracle Data Mining, Oracle Spatial and Enterprise Manager Repository. Click Standard Database Components..., uncheck Oracle JVM and Oracle XML DB in the dialog box appears, click OK. Click Next.



Database Configuration Assistant: Database Content

## 10. Initialization Parameters

The parameter settings in this step will affect the performance of the database tremendously. Note the settings of the 5 aspects.

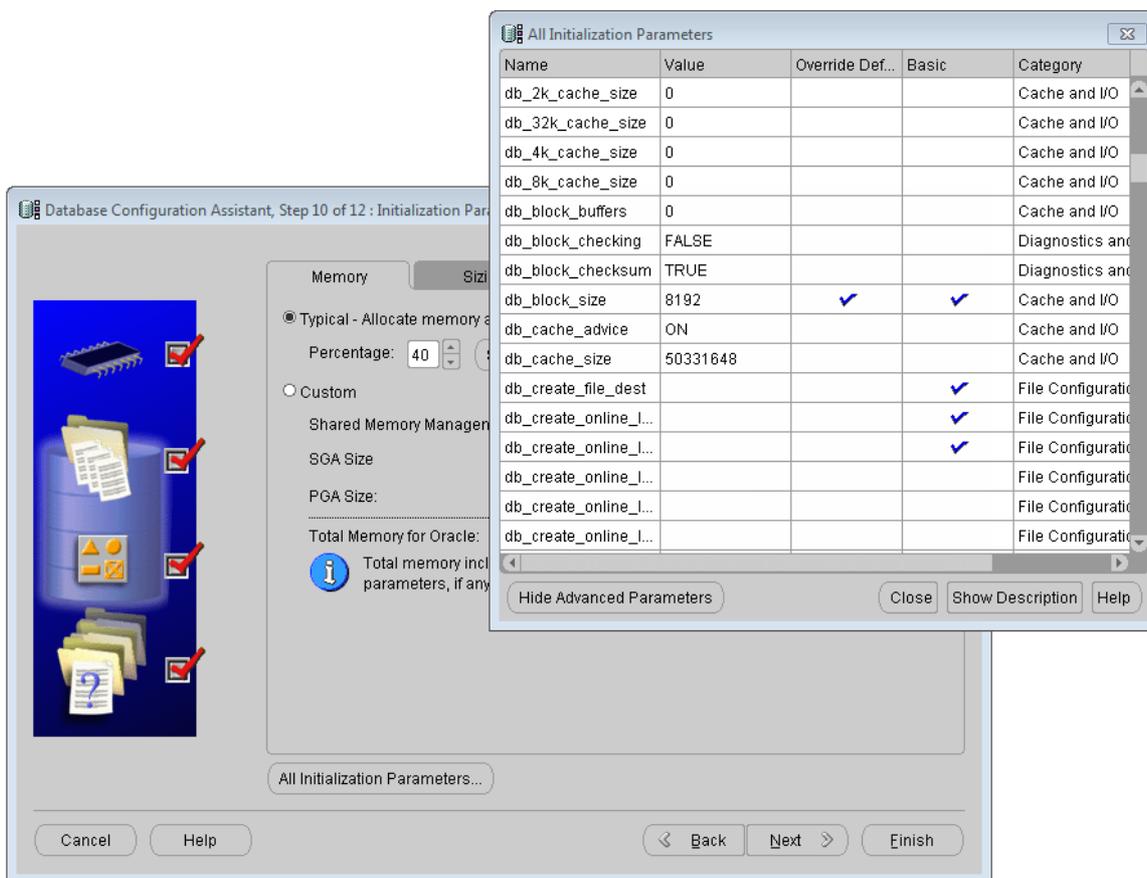
- o All Initialization Parameters

Click All Initialization Parameters..., then click Display Advanced Parameters, as shown below. Most of the initialization parameters can be optimized to improve the performance of the database, it is recommended to modify `cpu_count` and `db_file_multiblock_read_count`.

cpu\_count is the number of CPUs assigned to Oracle database, the default is 1, you can magnify this value if you machine has multi-core CPU, for dual-core CPU machine, the value of cpu\_count can be set as 2, this may improve the speed of Oracle.

db\_file\_multiblock\_read\_count affects the number of Blocks read at a time when performing full table scan, the default value is 16, the maximum value supported by Oracle is no large than 128. You can change it according to your system environment. This value is affected by the maximum ability of the system I/O:

$\text{Max}(\text{db\_file\_multiblock\_read\_count}) = \text{Max}(\text{System I/O}) / \text{db\_block\_size}$ , usually, it can be changed to 32 or greater.



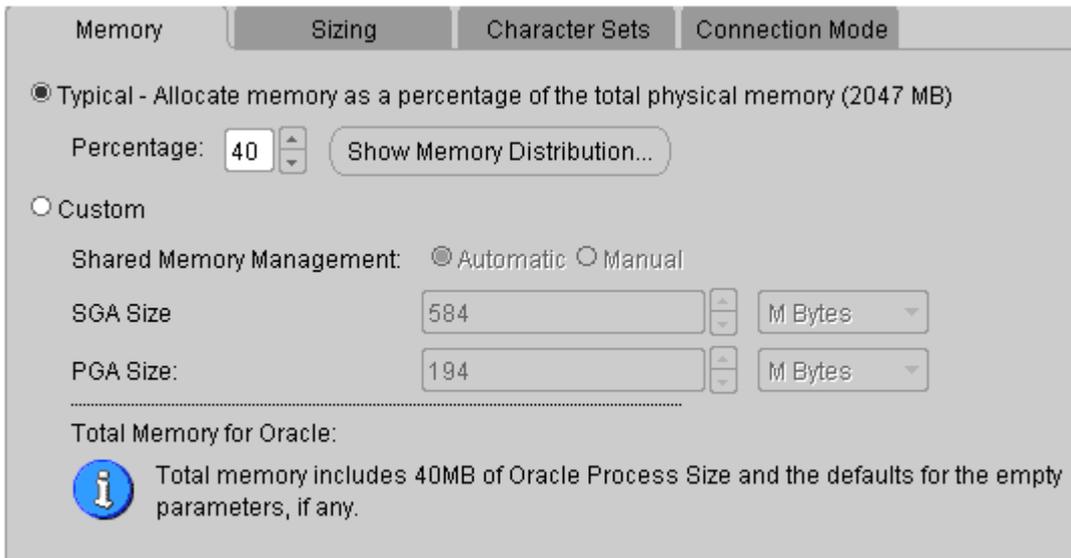
Database Configuration Assistant: All Initialization Parameters

o Memory

The memory assigned to Oracle, for normal servers, it can be 1G to 2G, if you memory is no more than 1G, it is recommended the memory assigned to Oracle should not be higher than 60%.

SGA: System Global Area

PGA: Program Global Area

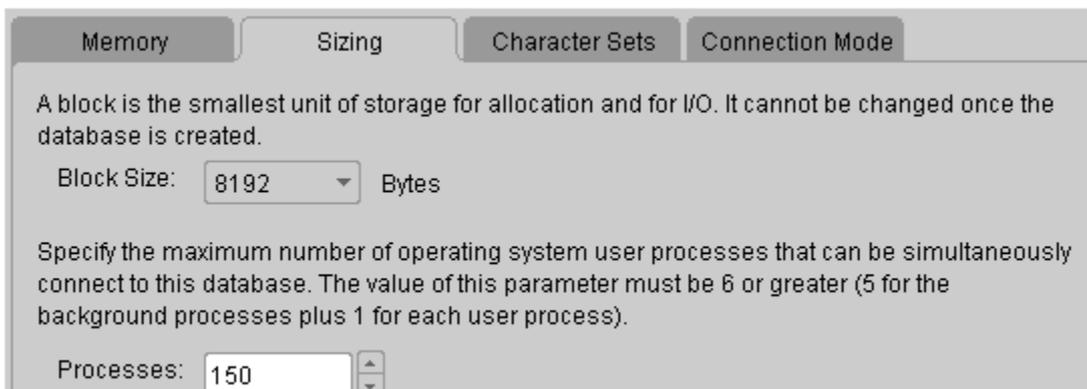


**Database Configuration Assistant: Initialization Parameters-Memory**

- o Sizing

Block Size: Use the default value. Oracle database saves the data in these blocks. Each block corresponds to a physical database space with specific bit on the disk.

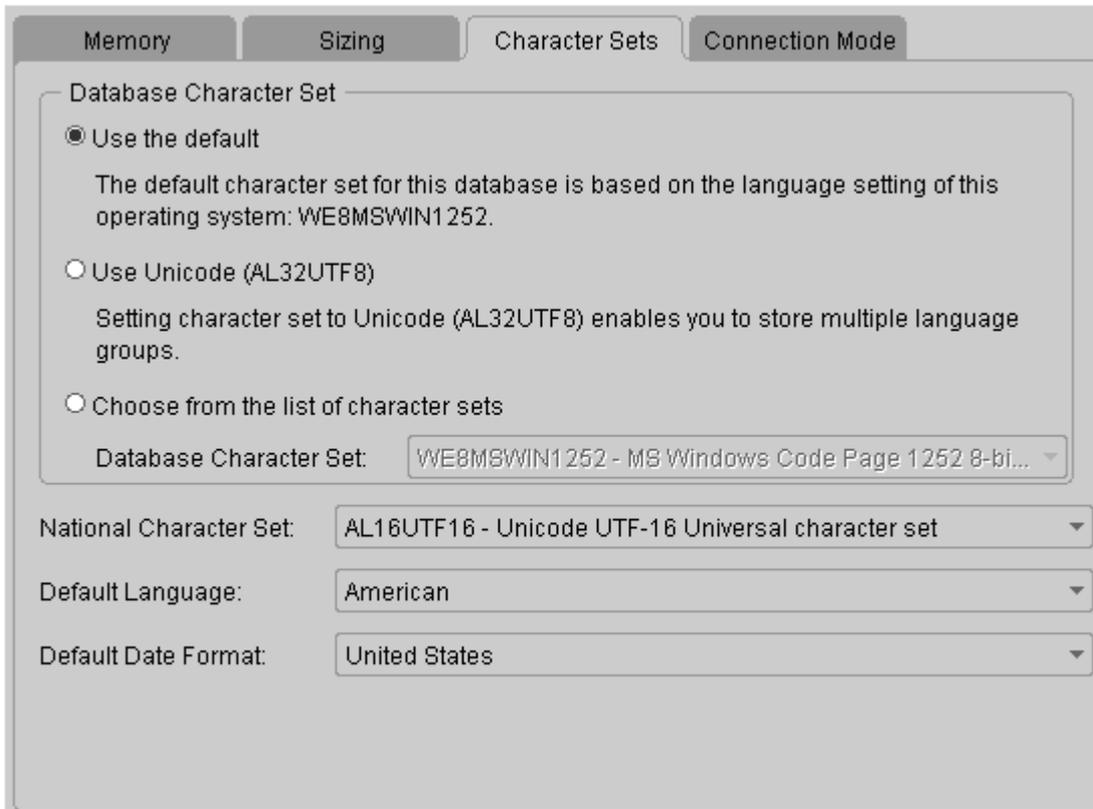
Processes: You can specify the maximum user processes connected to Oracle. You can set a relatively large value if there are many concurrent users.



**Database Configuration Assistant: Initialization Parameters-Sizing**

- o Character Sets

Select Use the default.



**Database Configuration Assistant: Initialization Parameters-Character Sets**

- o Connection Mode

Two connection modes are provided: Dedicated Server Mode and Shared Server Mode.

**Dedicated Server Mode:** In this mode, Oracle database requires each user process has a dedicated server process, each client has a server process. Oracle Net returns the current server process address to the client. Then the client sent the connecting request to the server address again.

It is recommended to select the dedicated server mode in the following circumstance:

- (1) Use database in the data warehouse environment.
- (2) There are only a few clients connected to your database.
- (3) Database clients will send lasting and long hour running requests.

Shared Server Mode: Also called multi-thread server mode, in this mode, the Oracle database configuration allows multiple user processes to share a few server processes, thus supporting more users.

It is recommended to select the shared server mode in the following circumstance:

(1) When using database in the on-line transaction processing (OLTP) environment, shared server mode can benefit the on-line transaction processing application a lot.

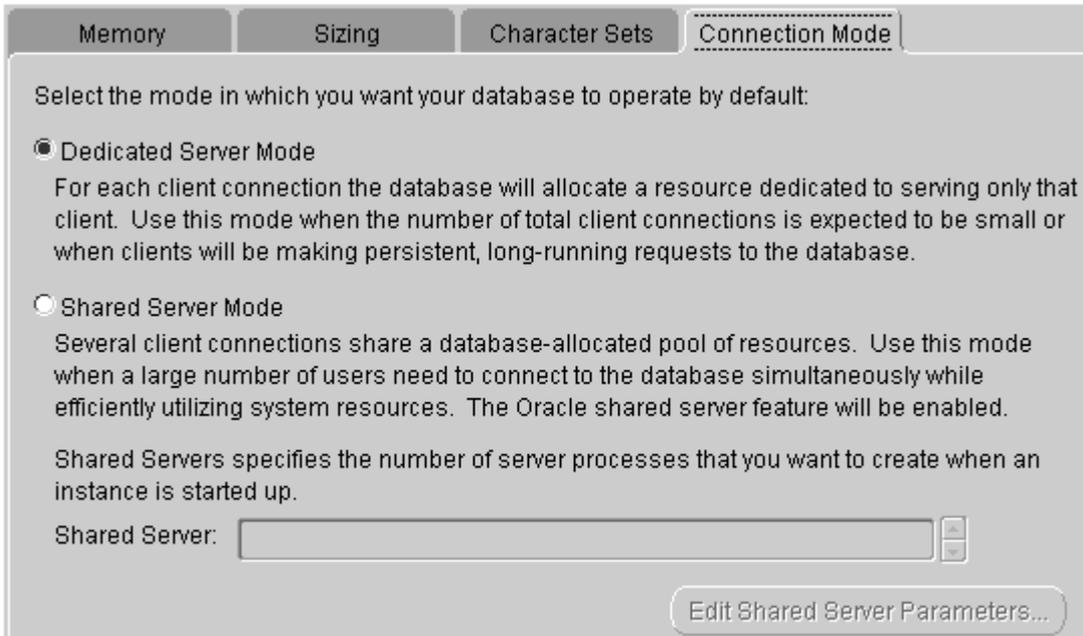
(2) Multiple users need to connect to the database and use the system resources effectively.

(3) Memory limitation. Compared with dedicated server, the use of shared server memory is relatively small when the number of users increases. In shared server mode, the memory used is generally in proportion to the number of users. Shared server can adjust and optimize the whole system performance, so you can choose shared server if it is needed to control the optimization of the database highly.

(4) If you want to use the functionalities of Oracle Net, such as connection sharing, connection concentration and load balancing.

(5) If you need to manage and use system resources efficiently.

(6) connection is predictable with fast speed, for example, Web application.

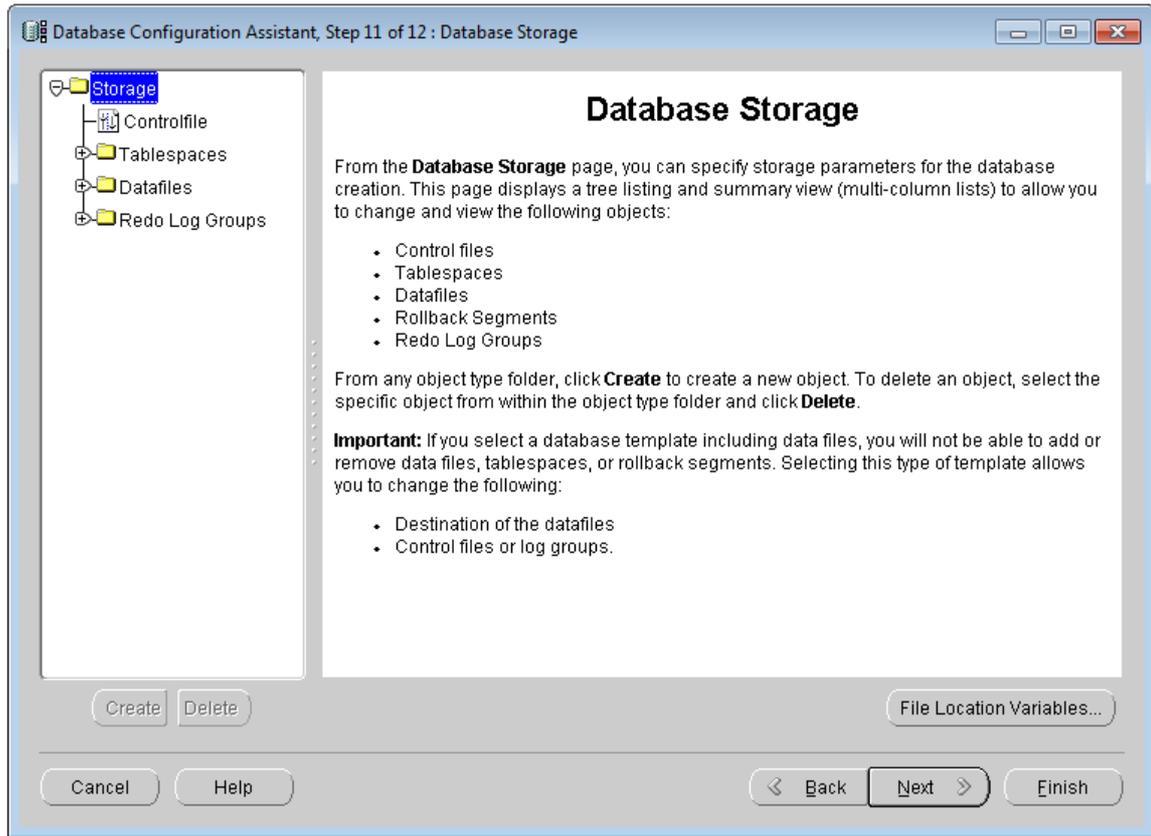


**Database Configuration Assistant: Initialization Parameters-Connection Mode**

Click Next.

## 11. Database Storage

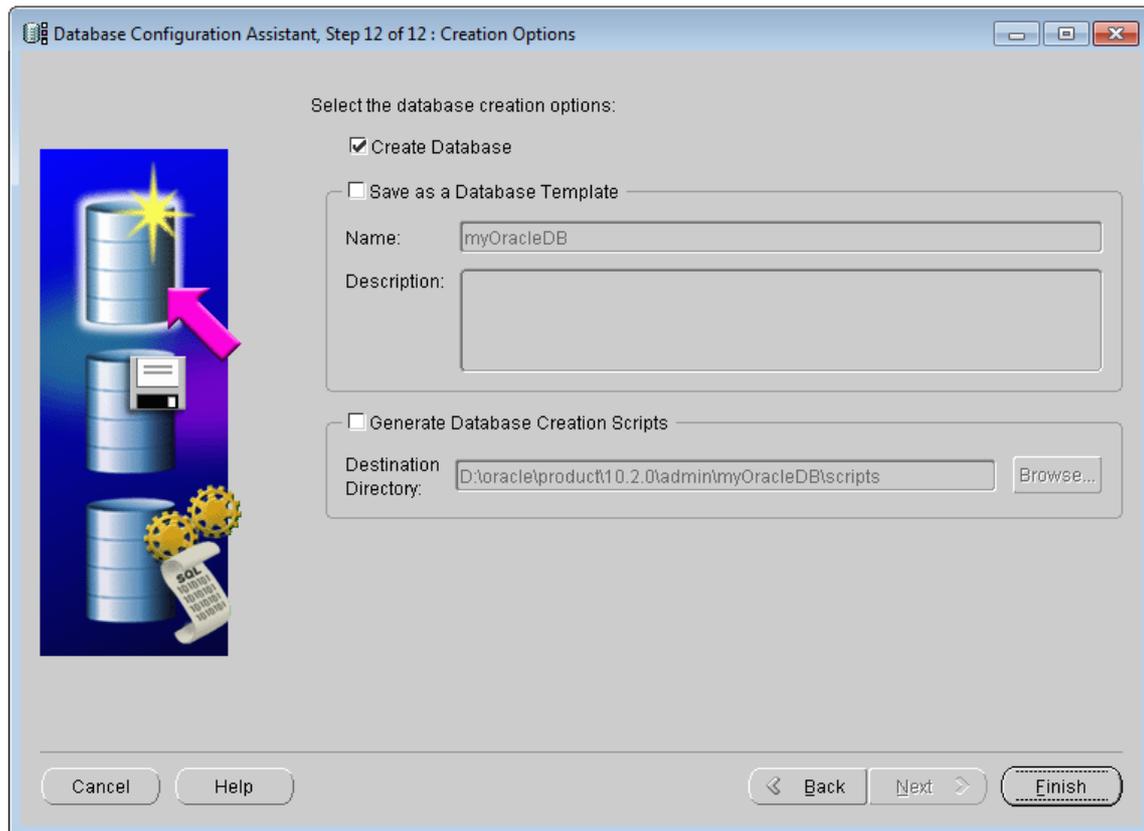
You can specify the storage parameter of the database here, it is recommended to use the default parameter, as shown below. Click next.



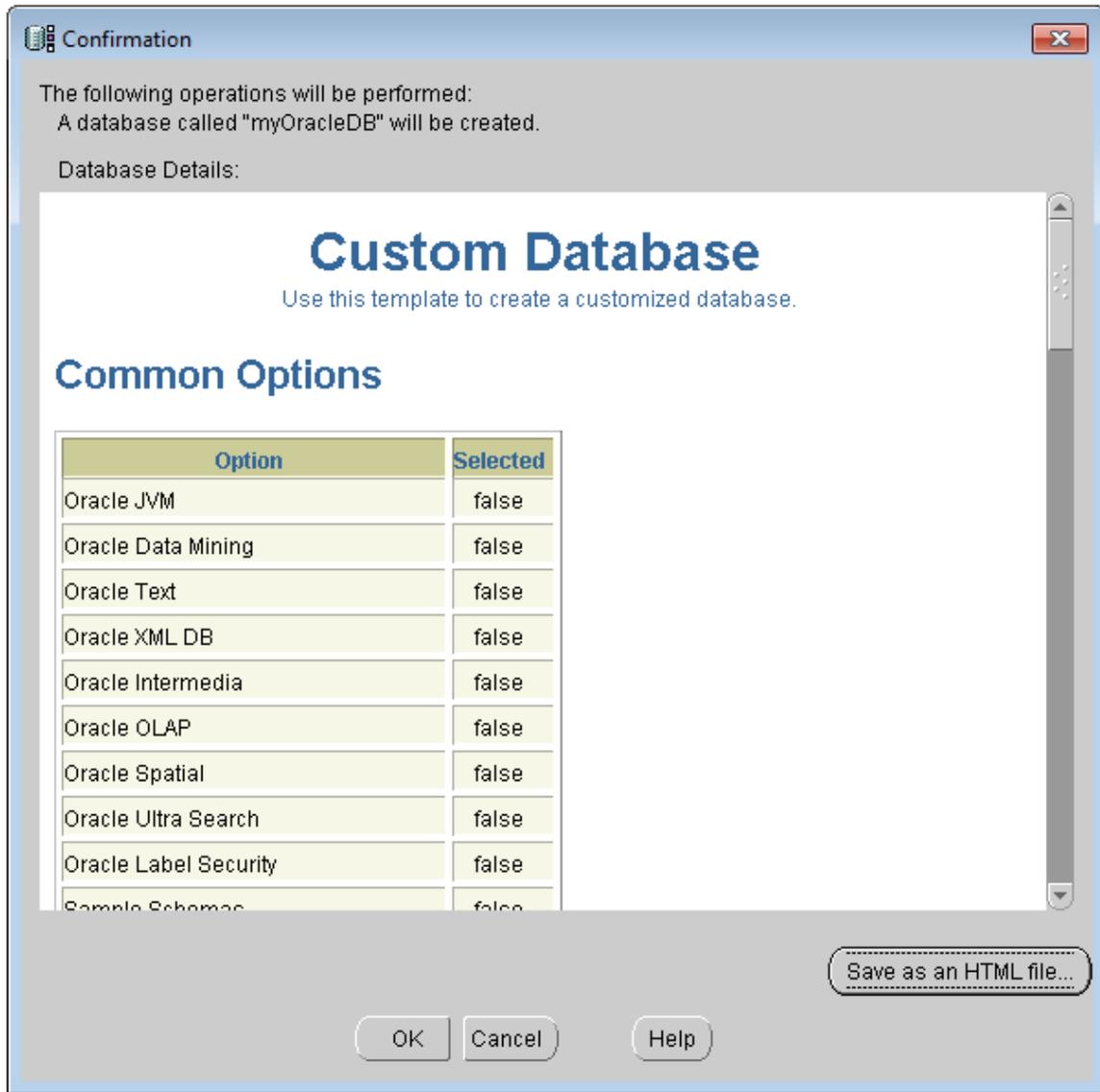
Database Configuration Assistant: Database Storage

## 12. Creation Options

Click Finish. The Confirmation window appears, click OK.



Database Configuration Assistant: Creation Options



Database Configuration Assistant: Confirmation

## Note

- It is not recommended to install multiple Oracle instances (databases) on a server, this may lower the performance of the database.
- After the creating of the Oracle database, it may occupy some process and memory, it is recommended to change the two services of Oracle to manual, you can open the service window in Control Panel > System and Security > Administrative Tools > Service, and change the startup type to Manual.

 OracleOraDb10g_home1TNSListener	Started	Manual	Local System...
 OracleServiceMYORACLEDB	Started	Manual	Local System...

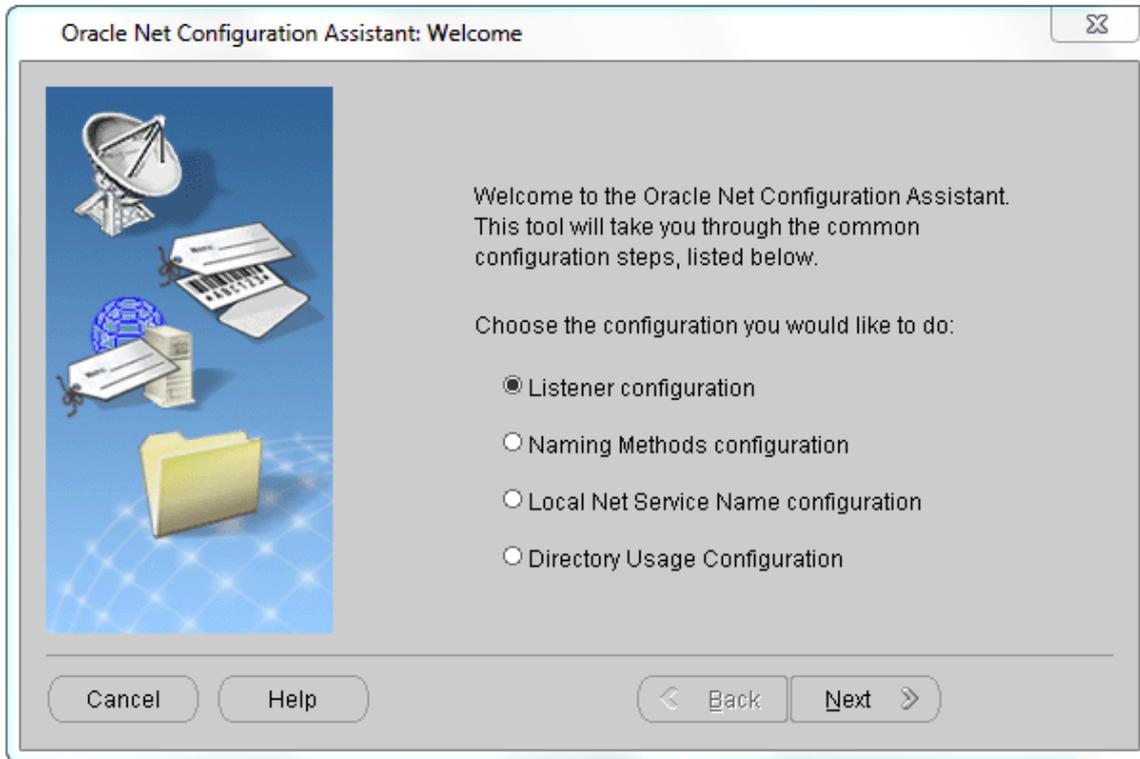
Change the startup type of the Oracle services

## Listener configuration

When the Oracle configuration finished, go on to the listener configuration.

Listener is a process representing the client application receive request. The listener is used to listen to the client request on the specified protocol address.

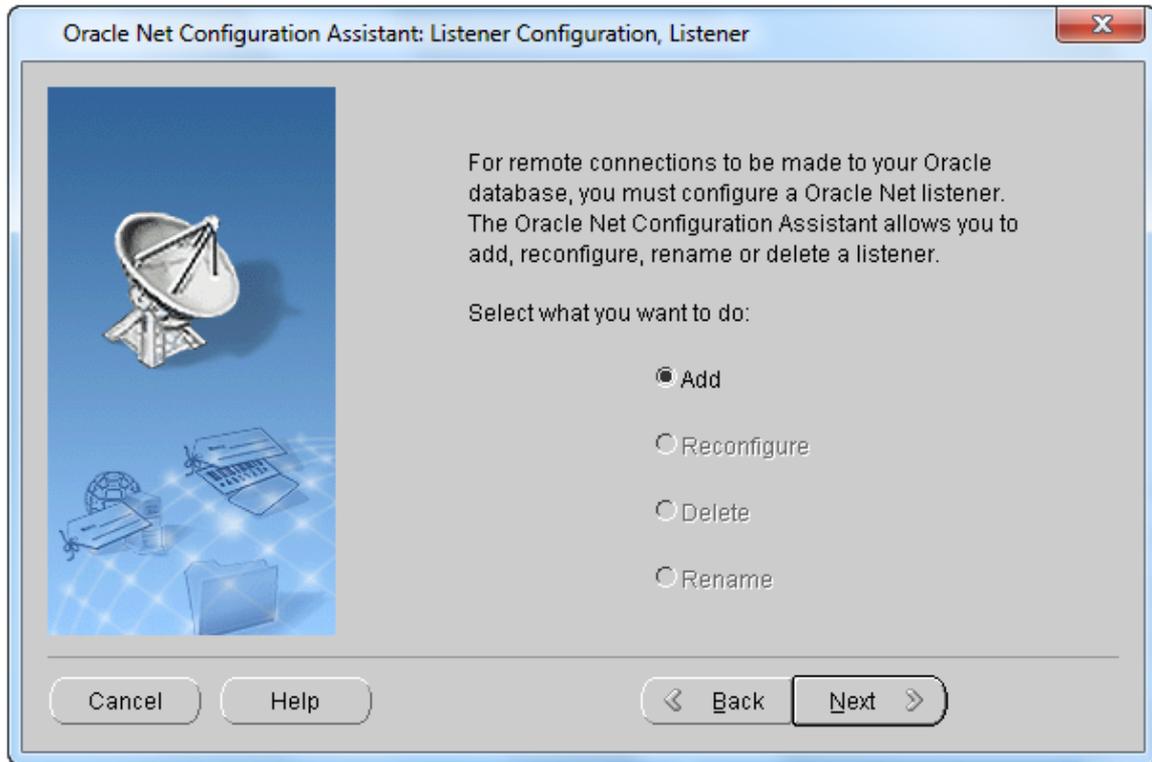
Run Net Configuration Assistant: Start > All Programs > Oracle > Configuration and Migration Tools > Net Configuration Assistant, the Oracle Net Configuration Assistant: Welcome window appears, select Listener configuration, as shown below. Click Next.



**Oracle Net Configuration Assistant: Welcome**

1. Add listener

Select Add, click Next.



**Add listener**

## 2. Set listener name

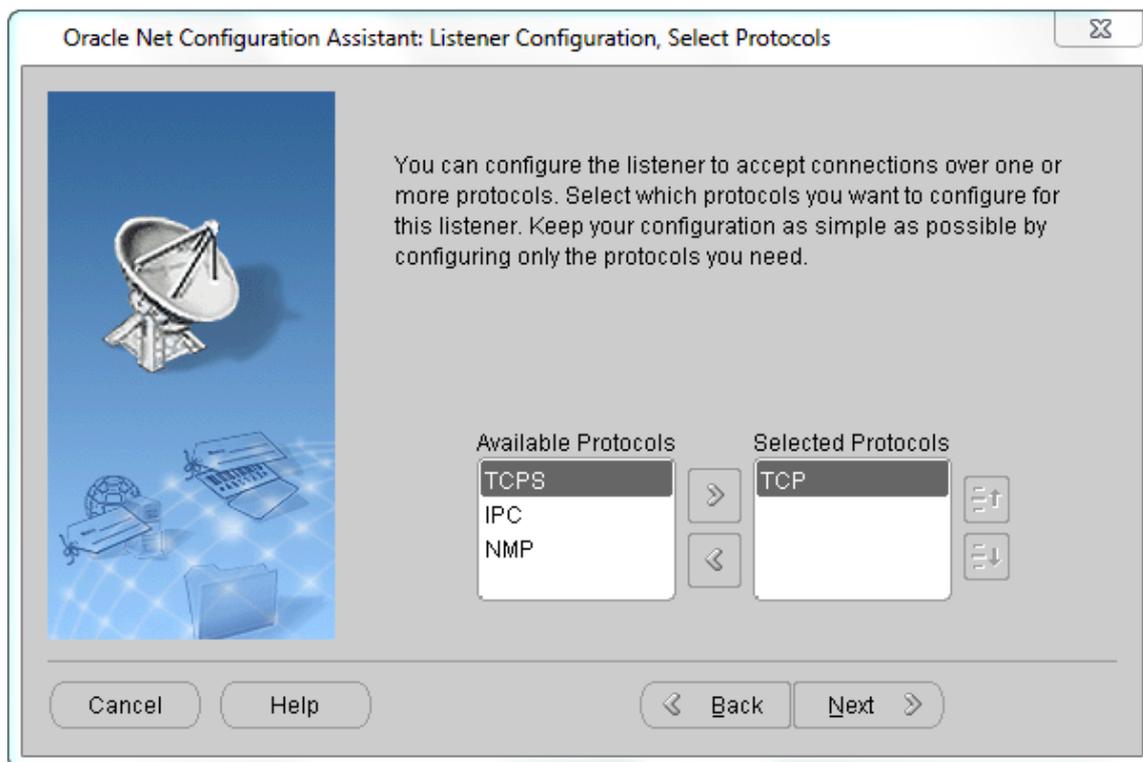
Input the name of the listener not used currently. The name should not larger than 138 characters, click Next.



**Set listener name**

### 3. Select Protocols

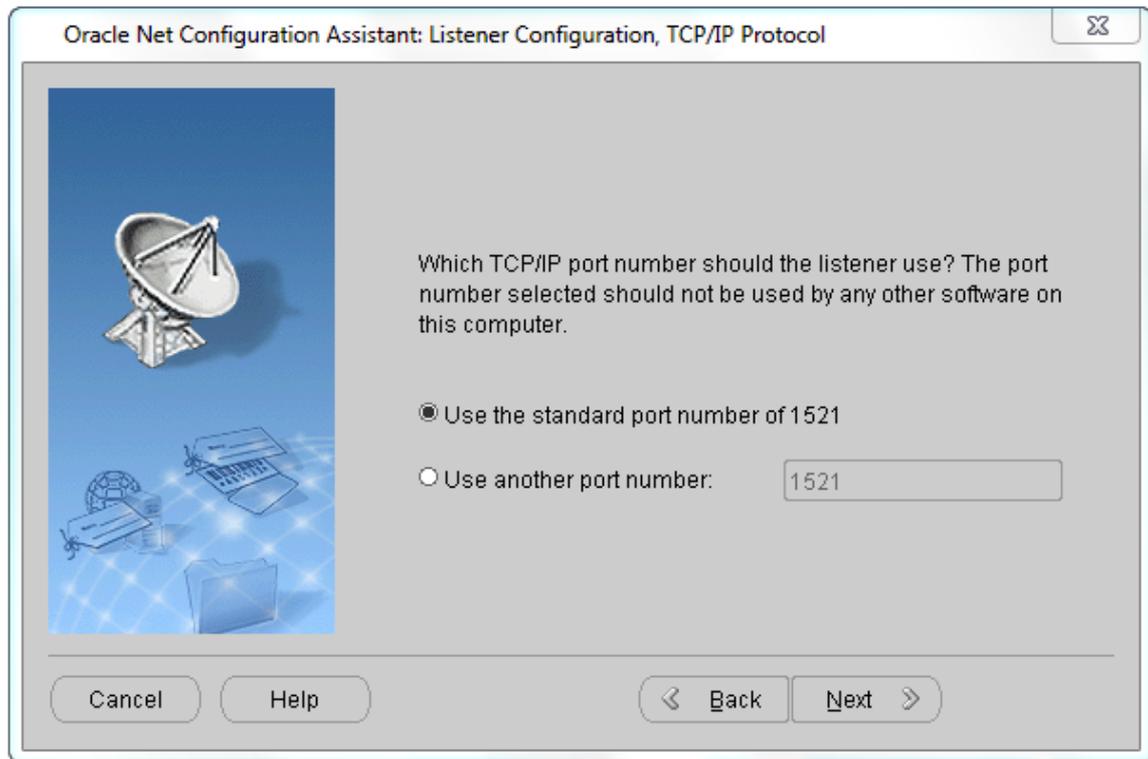
Select one or more protocols to accept connection, then click Next.



**Select Protocols**

#### 4. Select port number

TCP/IP identifies the protocol address of the listener with port number, select the port number to use, here we use the default port number 1521. Click Next.



Select TCP/IP protocol port number

#### 5. Whether to configure other listeners

Select Yes if you want to configure other listeners, select No otherwise, click Next. When the listener configuration completed, click Finish.

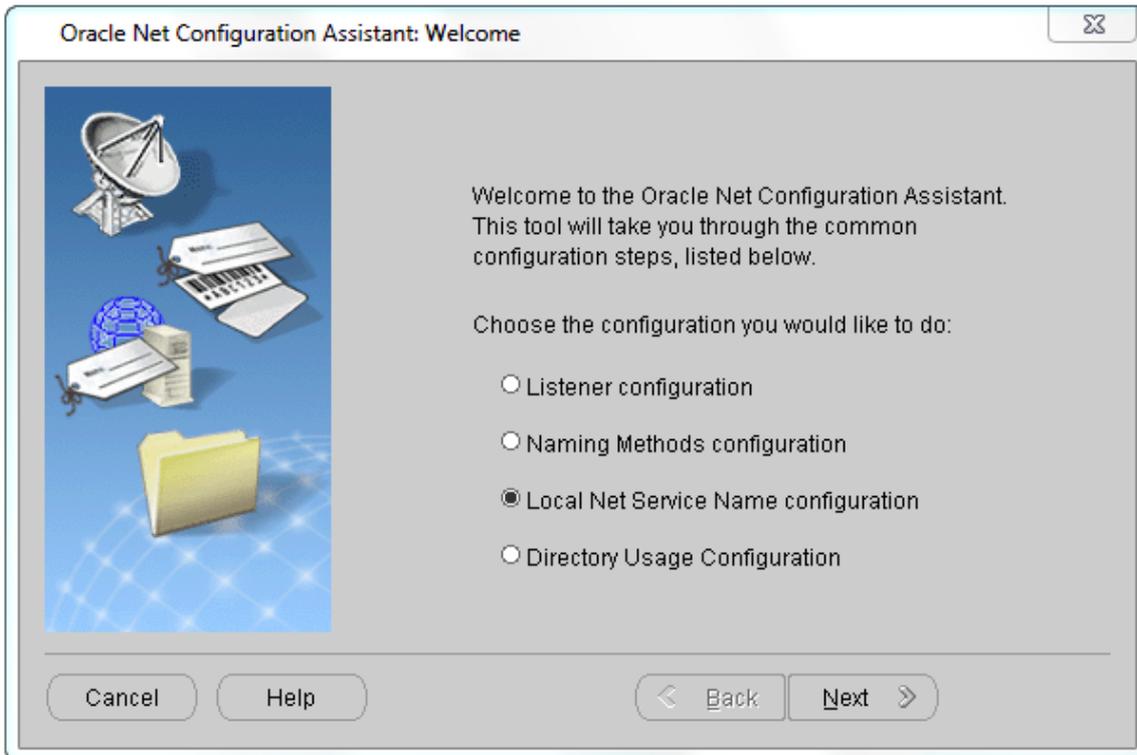


**Whether to configure more listener**

### Local Net Service Configuration

When the listener configuring completed, you need to configure the local Net Service Name.

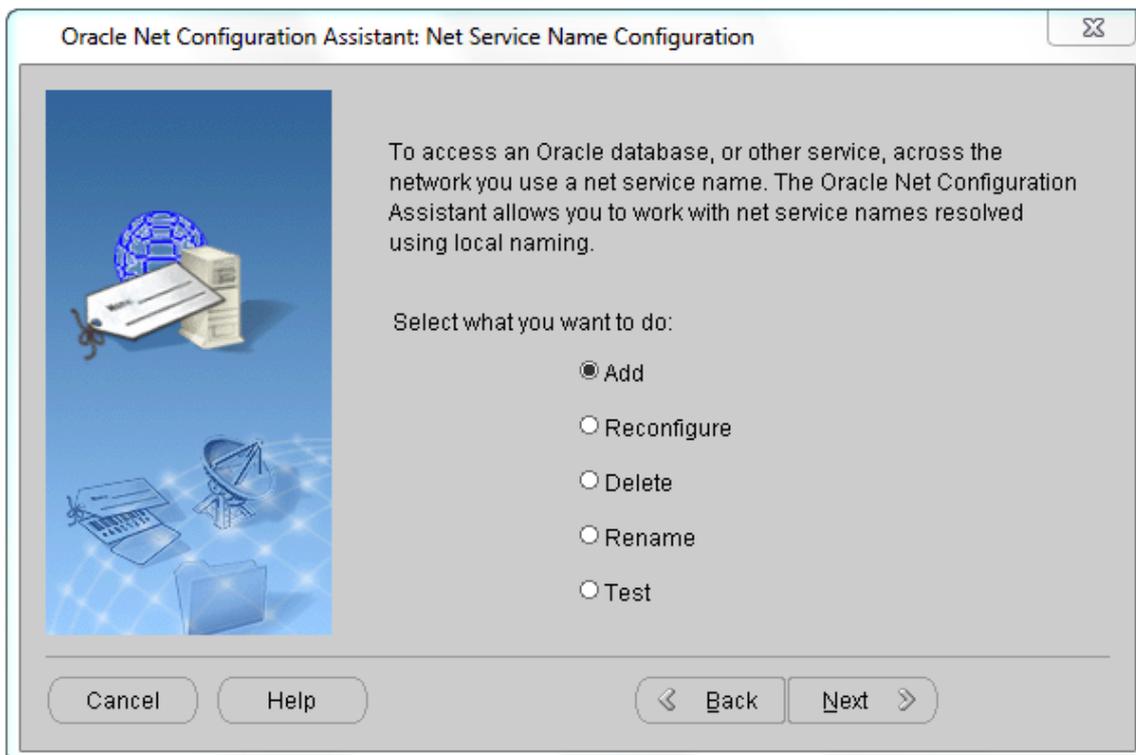
Run Net Configuration Assistant: Start > All Programs > Oracle > Configuration and Migration Tools > Net Configuration Assistant. In the Oracle Net Configuration Assistant: Welcome window, select Local Net Service Name configuration, as shown below. Click Next.



**Oracle Net Configuration Assistant: Welcome - Local Net service name configuration**

1. Add Net service name

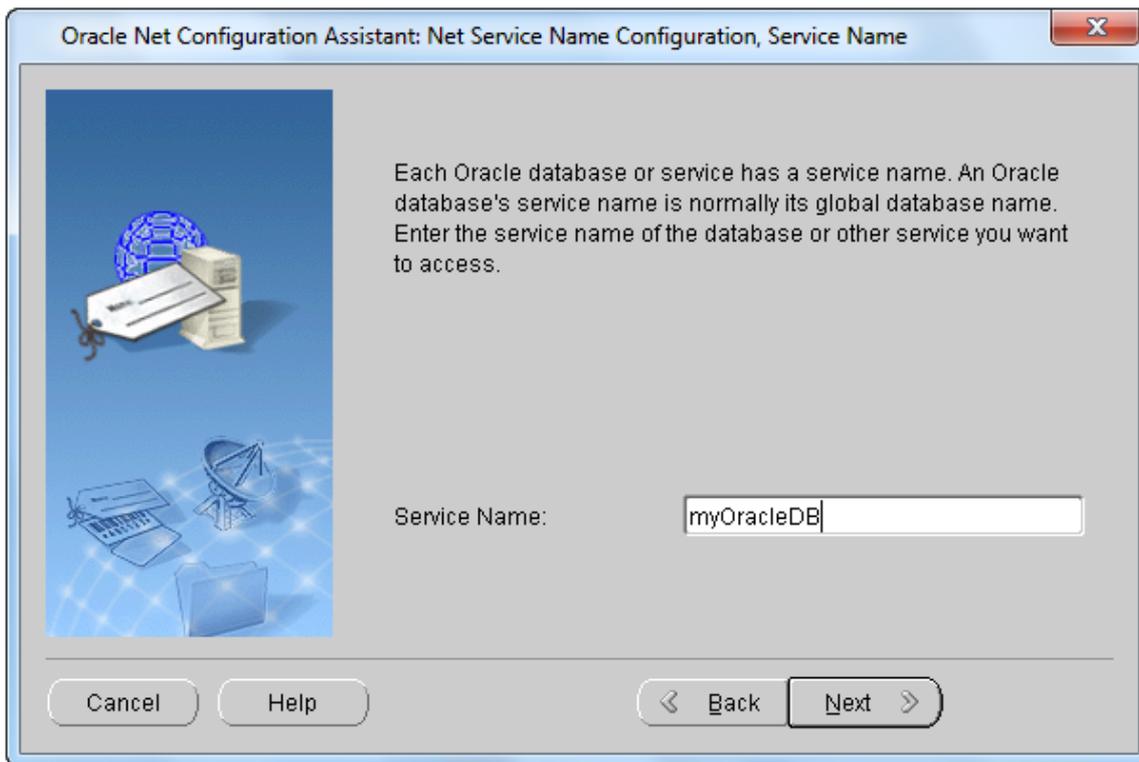
Select Add, click next.



**Add Net service name**

## 2. Service name

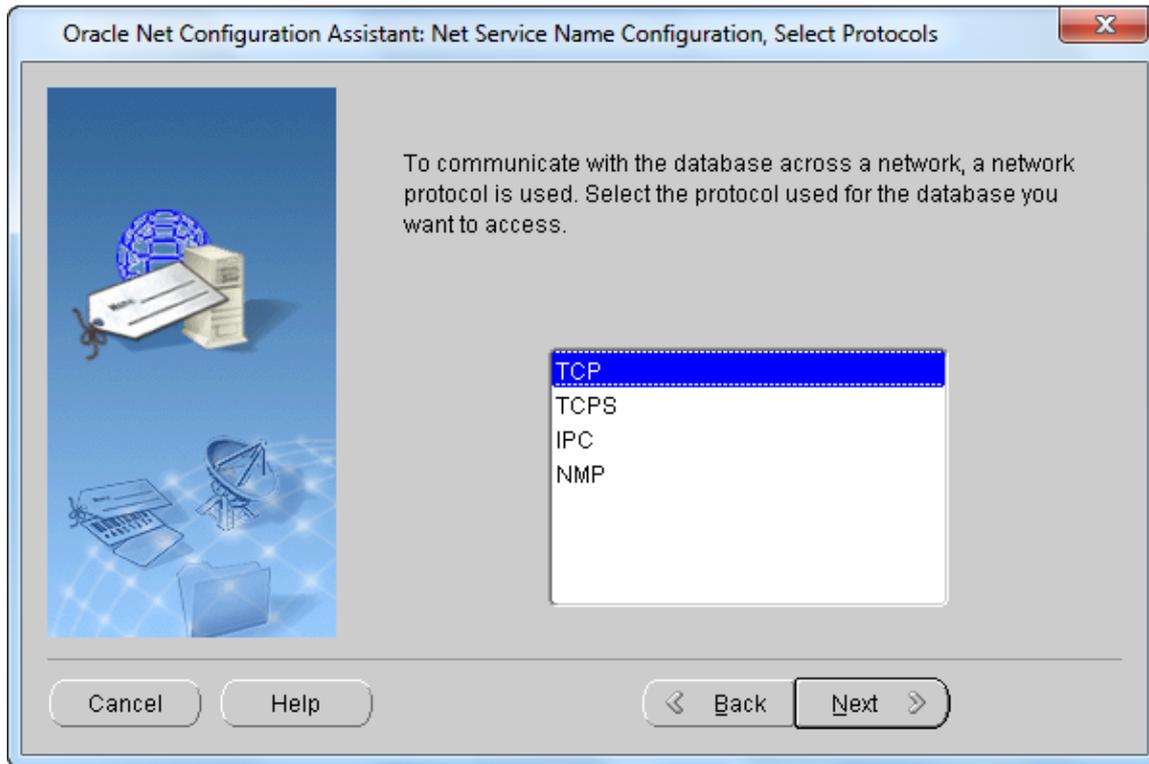
Input the name identify the database service, click next.



**Input service name**

## 3. Select Protocols

Select the protocol used for the database you want to use, click Next.



Select Protocols

#### 4. TCP/IP Protocols

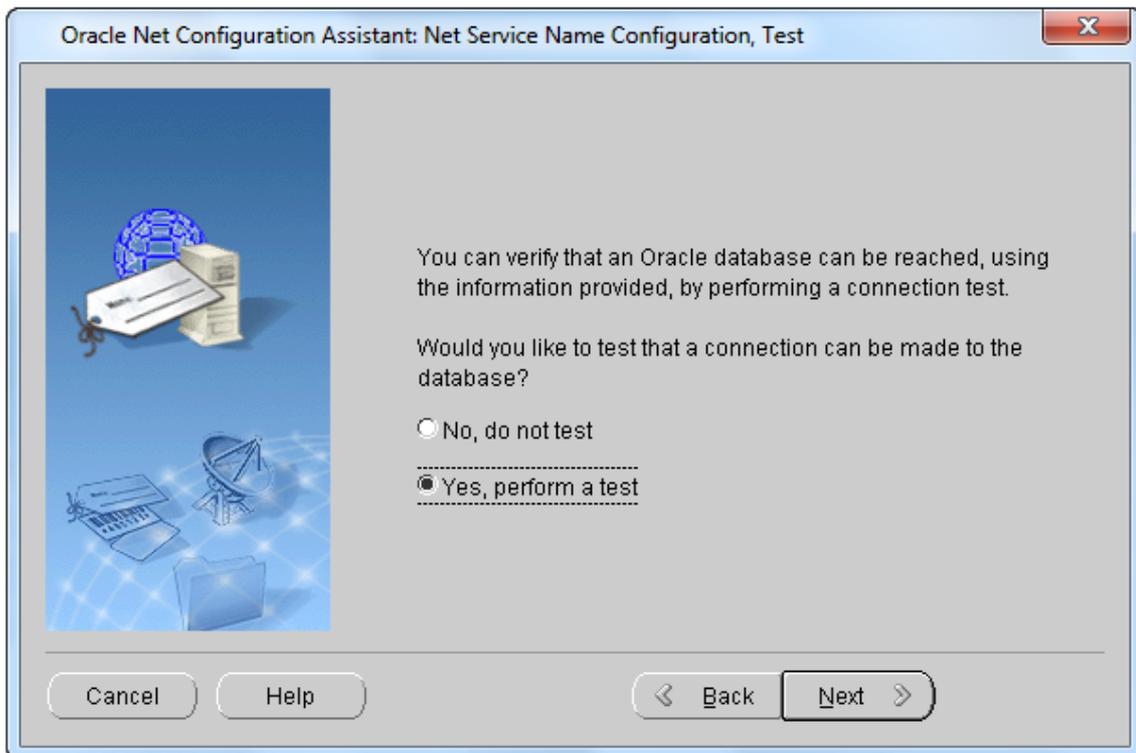
TCP/IP identifies the protocol address of the listener with port number, the port number should be the same with the port number of the listener. The host name is the host name of the computer with the listener. Click Next.



**TCP/IP Protocols**

5. Connection test

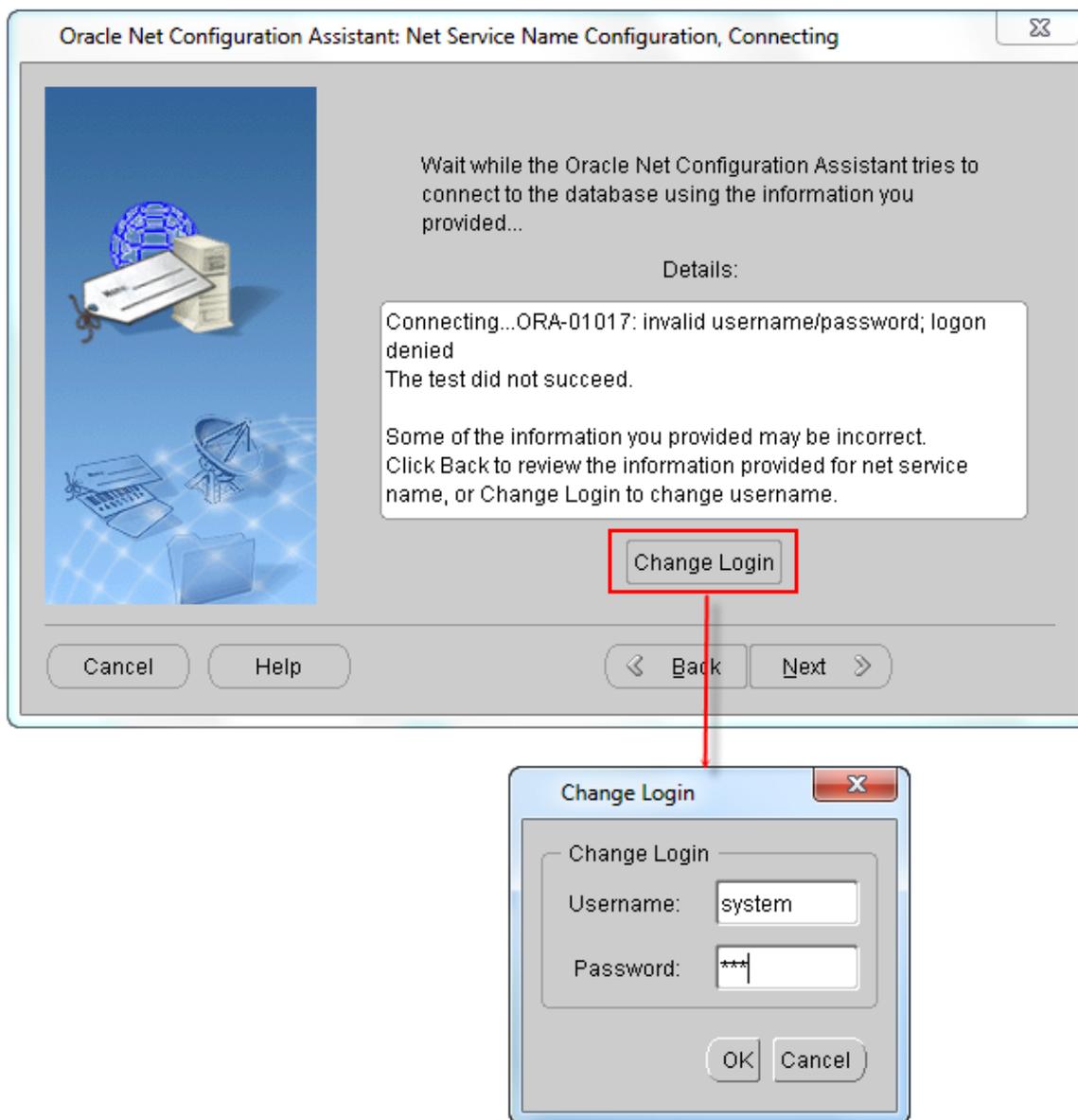
You can verify that an Oracle database can be reached by performing a connection test. As shown below. Then click Next.



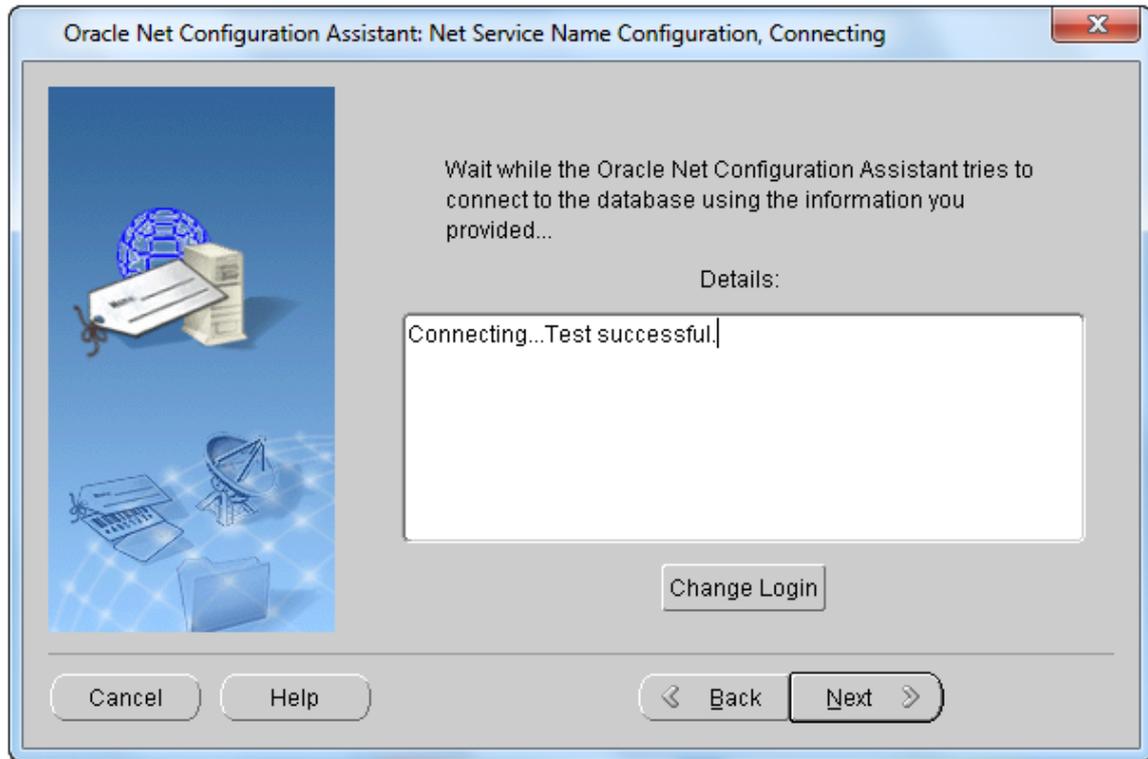
**Whether to perform connection test**

## 6. Connection

Test the network service name information. In the test, Oracle Net Configuration Assistant tries to connect to long-distance database service and create connection, then finish the connection. If the information "invalid password, login is rejected" appears, click the Change Login button, input you password in the Change Login dialog box, input the password you set. Click OK and the connection will be successful.



**Connecting failed, change login information**

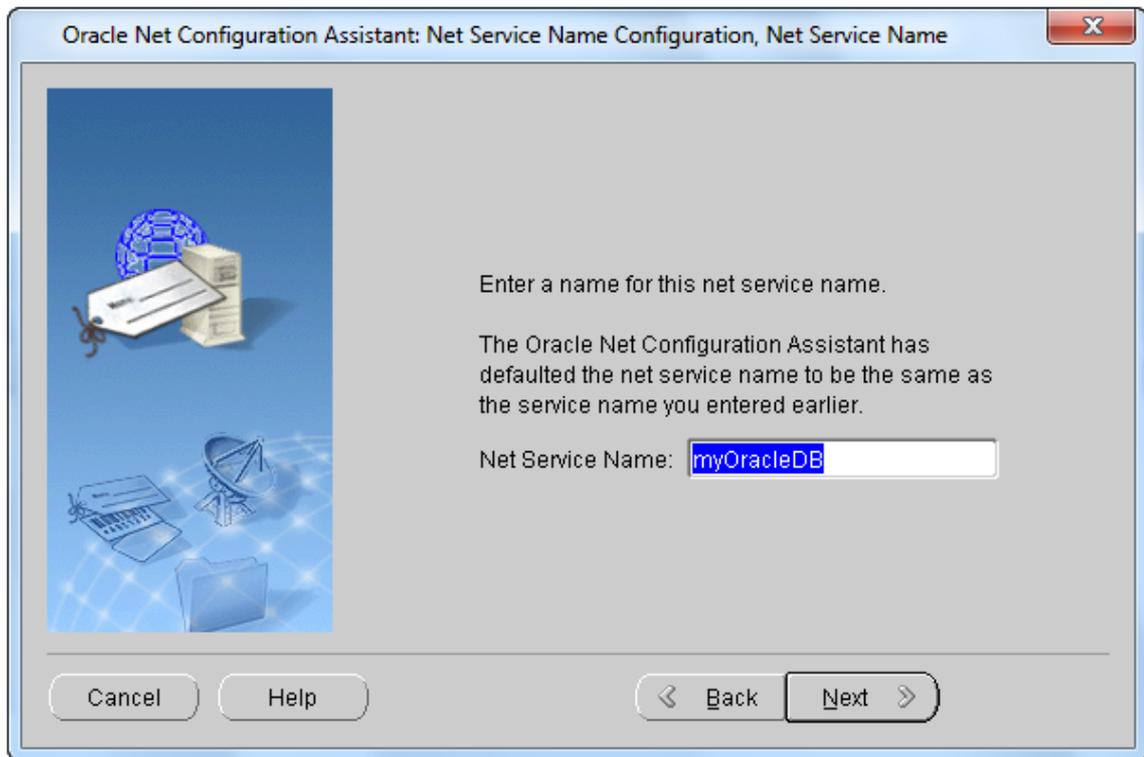


**Test successful**

Click Next.

## 7. Net service name

Input the service name, use the service name input before by default, click Next.



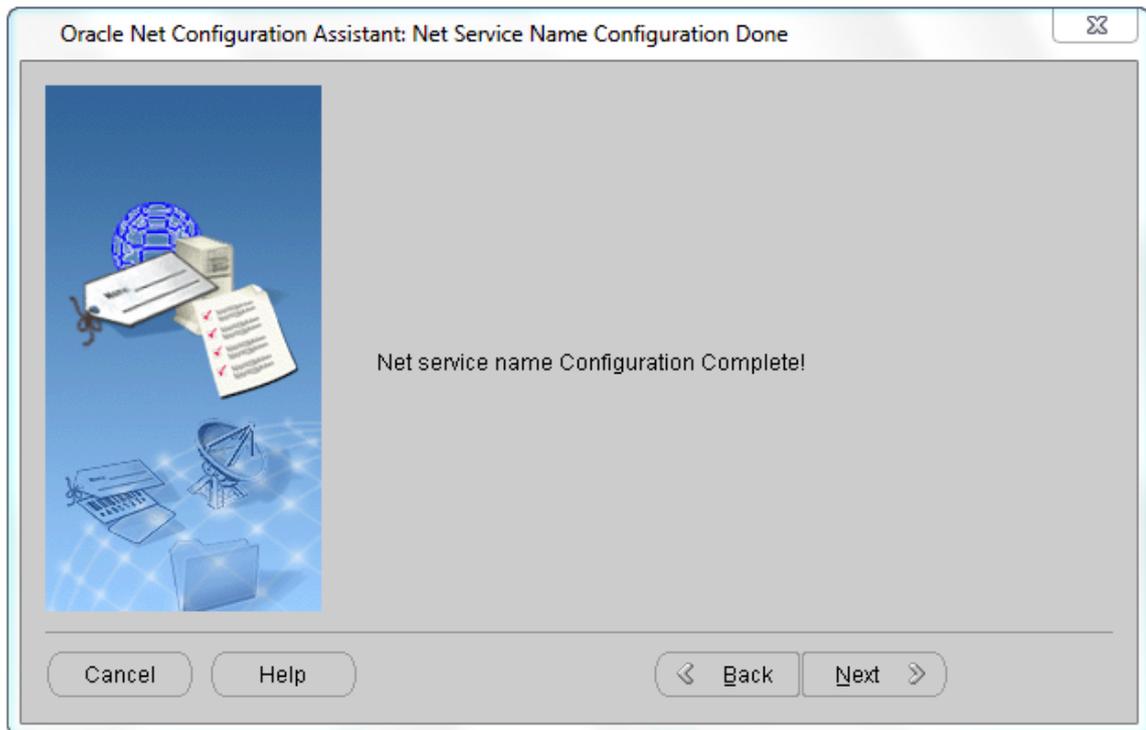
**Net service name**

8. Whether to configure another Net service name

As shown below. Then click Next and complete the configuration.



**Whether to configure another Net service name**



**Net service name configuration completed**