City of Garland
Creating the GIS Test Database

January 16, 2017

Section 1: Introduction

The City of Garland maintains its spatial data in an ESRI Geodatabase stored in an Oracle 11G database (gis-dbs1). In order to test internal applications, the City has created a test database (test-gis-dbs1) as a copy of the production GIS database. This document describes the process for creating the test geodatabase from the production geodatabase.

1.1 Oracle Tools

Oracle provides several methods to transfer data from one database to another such as Data Pump commands, restoring an RMAN backup or the Clone Database command in Enterprise Manager. However, some methods are very complicated and not all options are appropriate for use with an ESRI geodatabase.

Softwhere Solutions does not recommend using the Data Pump utility to transfer data for an ESRI geodatabase. Oracle provides the Data Pump commands to export (expdp command) the data from one database and the import (impdp command) to import it into another. While this tool works well for non-spatial databases, it does not work for an ESRI geodatabase. The import command has the option to replace an existing table with a new copy, but this does not work when the table has foreign keys such as used in the SDE schema. To prevent this, a DBA will usually drop the user and import the user. Because the ESRI geodatabase stores geometry as the ST_GEOMETRY user defined type (UDT), dropping the SDE schema can corrupt the tables that store spatial data in other schemas (the GIS schema for example). This problem will usually present itself as “Ora-21700 Object Does Not Exist Or Is Marked For Delete”. See the following link on how to avoid the problem https://geonet.esri.com/thread/87844

Instead of using the Data Pump commands, Softwhere Solutions recommends using the Database Configuration Assistant (DBCA) tool to create the test database. This tool creates an exact copy of the whole database and provides a GUI which makes the tool easy to use.

This document describes the steps to use DBCA to copy the production geodatabase to the test geodatabase.

Section 2: Using Database Configuration Assistant (DBCA)

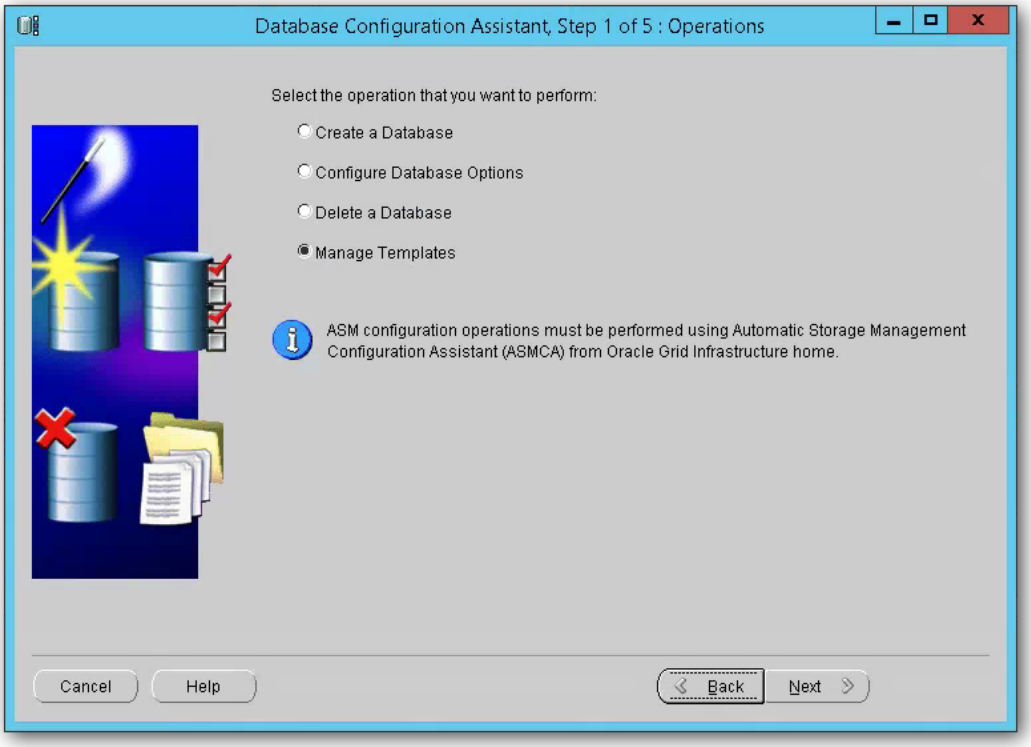
The DBCA tool will create a full copy of the production database. It cannot be used to transfer only a part of the production database.

2.1 Create the Template in Production

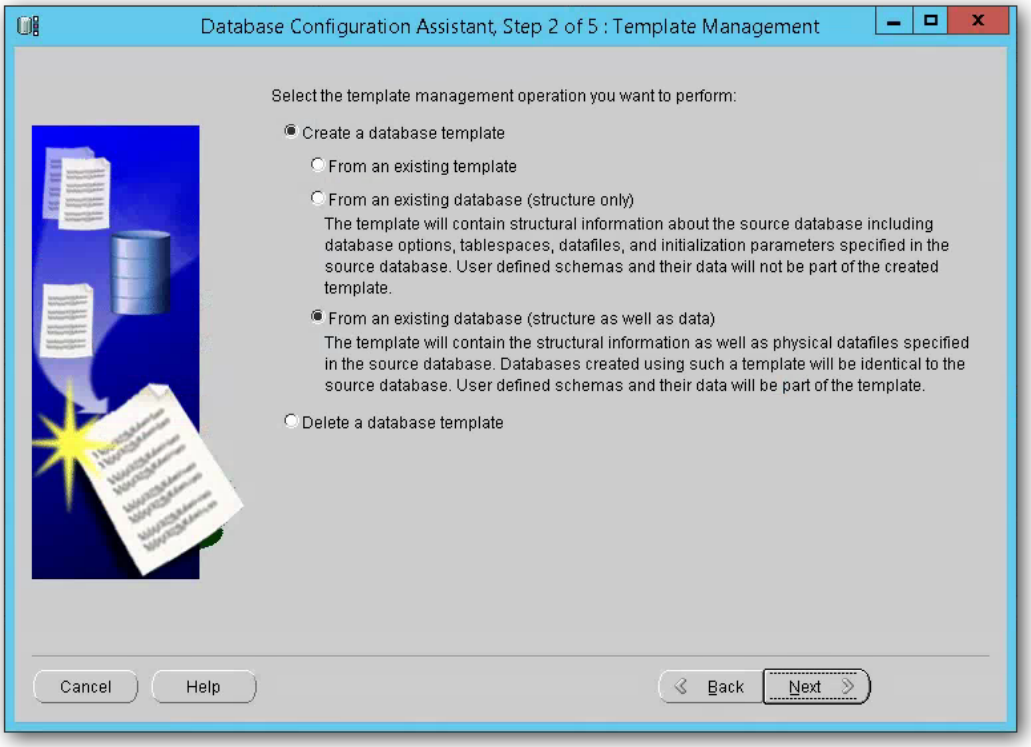
These steps will create a “template” from the production geodatabase. **Note that the production geodatabase will be offline for a short time while the template is created, so this should be run only during scheduled maintenance periods**.

- Remote into the GIS-DBS1 server and start the Database Configuration Assistant
    - Start > All Programs > Oracle > Configuration and Migration Tools > Database Configuration Assistant.

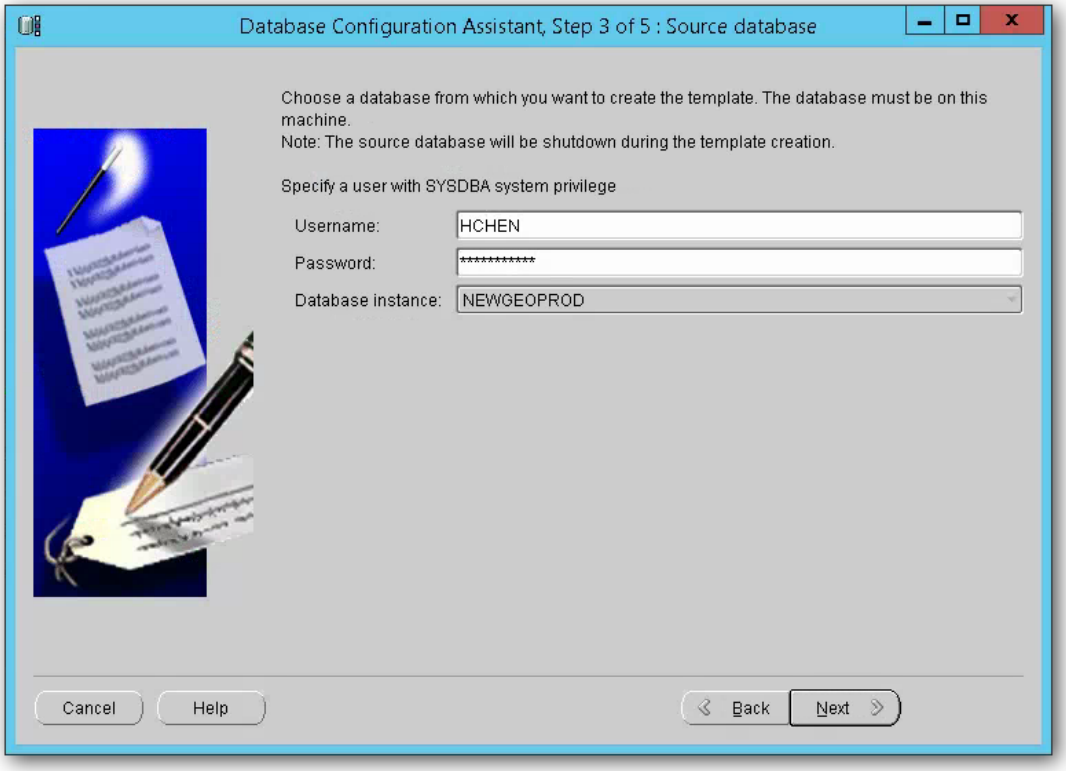
- Manage Templates



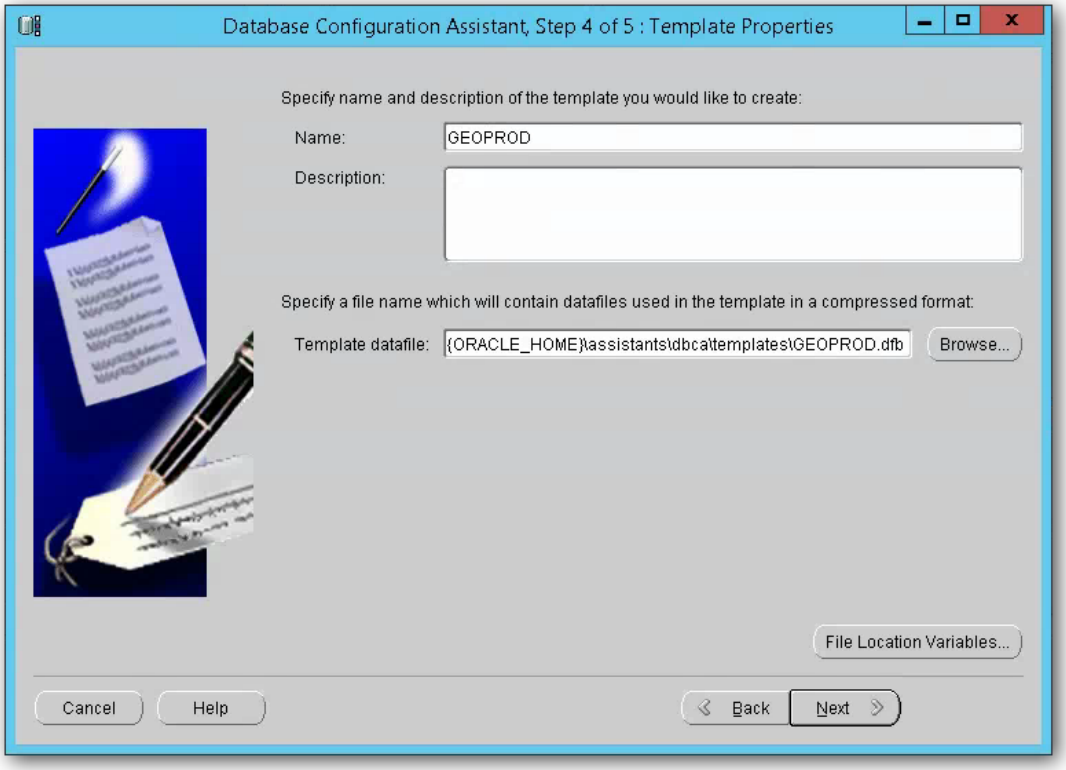
- Select Structure and Data for an existing database



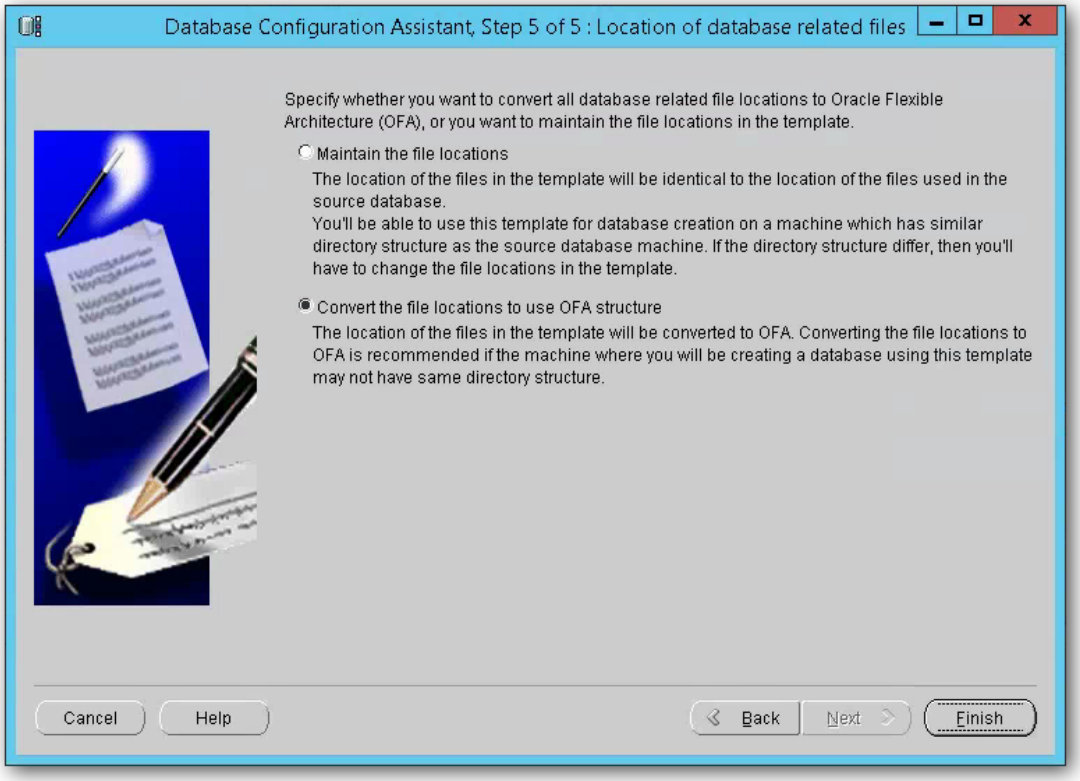
- Login as account with DBA privileges

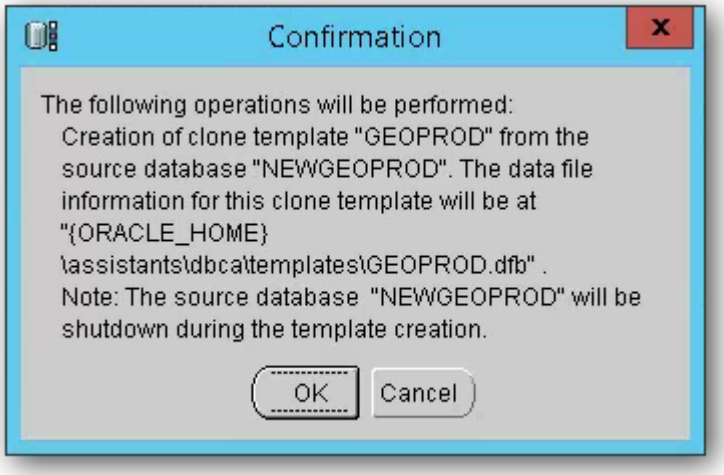


- Enter a name for the template



- Use OFA structure





Note that the production database will be down for about 15 minutes during backup

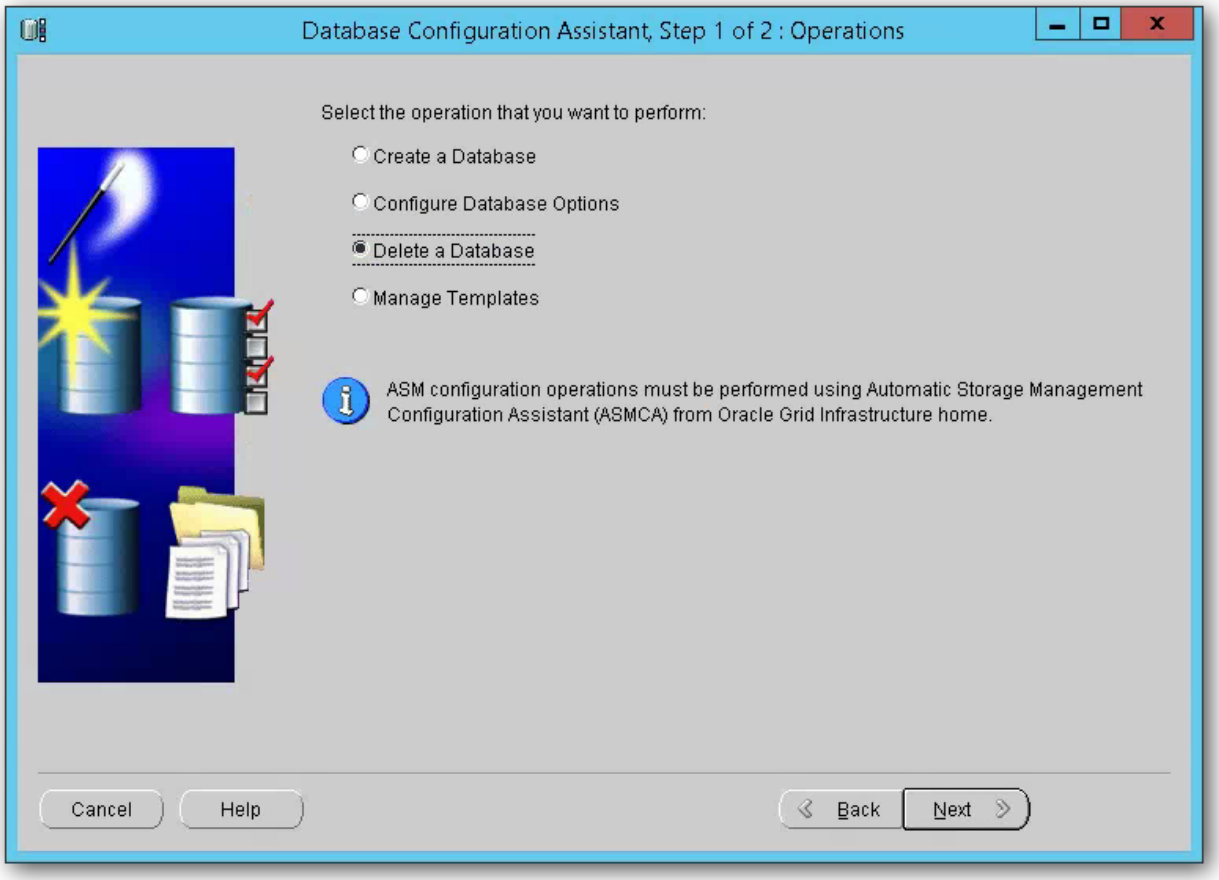
The template files are created in
c:\app\oracle\product\11.2.0\dbhome_1\assistants\dbca\templates

2.2 Removing the Old Test Database

If the GeoTest1 database already exists on the server, use the DBCA tool to remove the stale test database. Note that this step will permanently remove the database and no data or procedures in the test database can be recovered.

- Remote into the TEST-GIS-DBS1 server and start the Database Configuration Assistant
  - Start > All Programs > Oracle > Configuration and Migration Tools > Database Configuration Assistant.

- Select “Delete a Database”



- Complete the Wizard

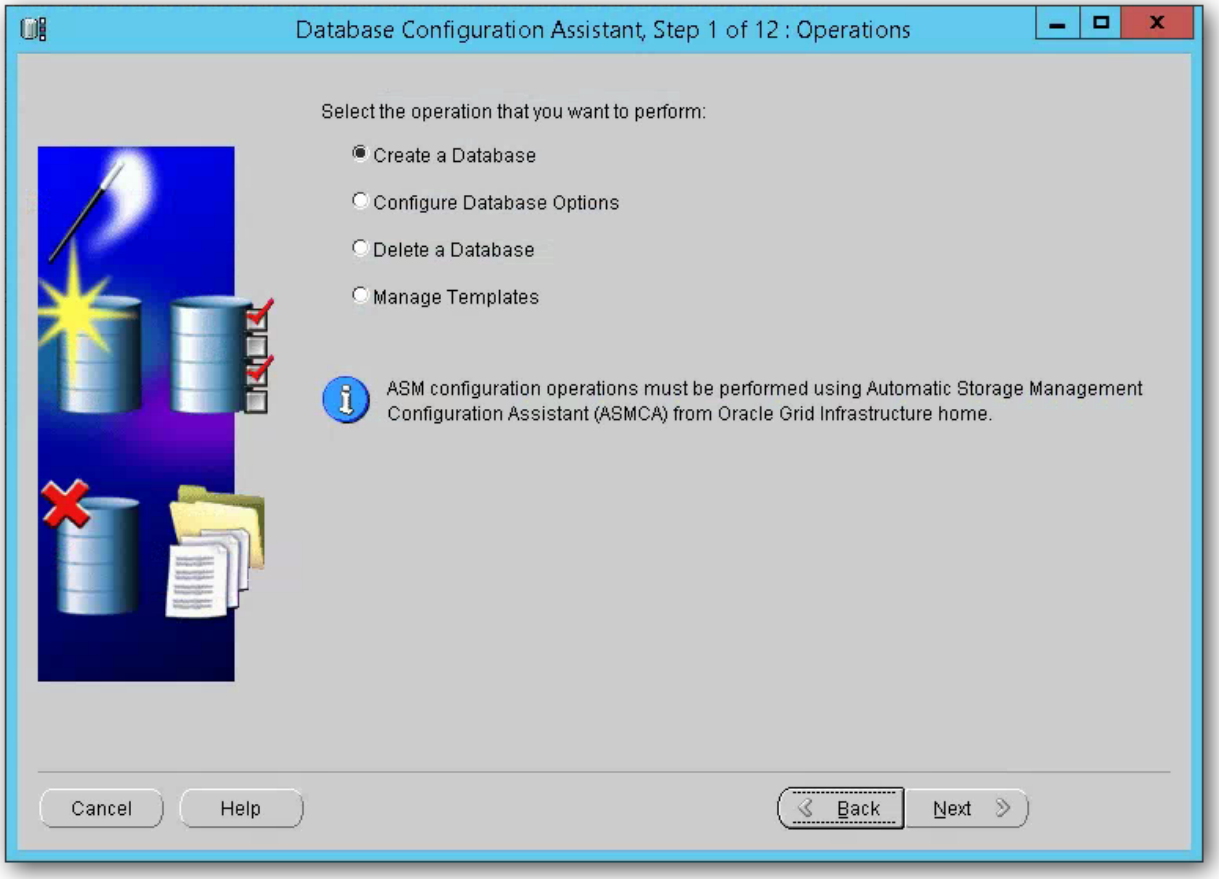
2.3 Create the Test Database

To create the GEOTEST1 database on TEST-GIS_DBS1

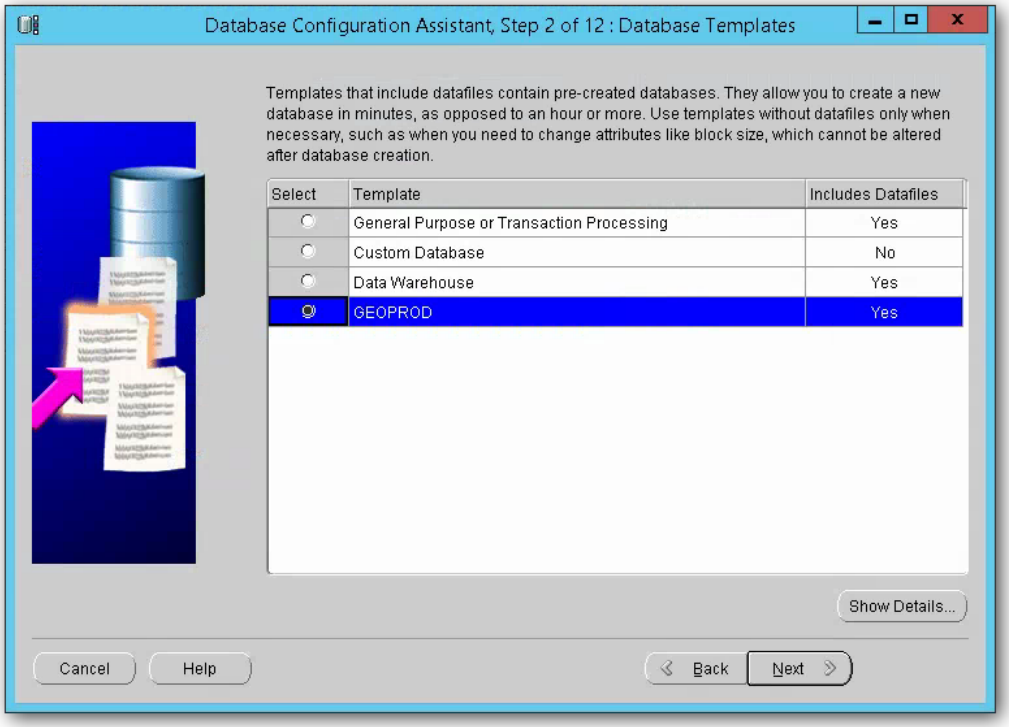
- Close the DBCA
  - Note that DBCA only recognizes templates copied before it starts
- Copy the template files

Copy the template files (GEOPROD.*) from the C:\app\oracle\product\11.2.0\dbhome_1\assistants\dbca\templates on the GIS_DBS1 server to the E:\app\oracle\product\11.2.0\dbhome_1\assistants\dbca\templates directory on the TEST-GIS-DBS1 server.

- Remote into the TEST-GIS-DBS1 server and start the Database Configuration Assistant
  - Start > All Programs > Oracle > Configuration and Migration Tools > Database Configuration Assistant.
- Create a Database Operation

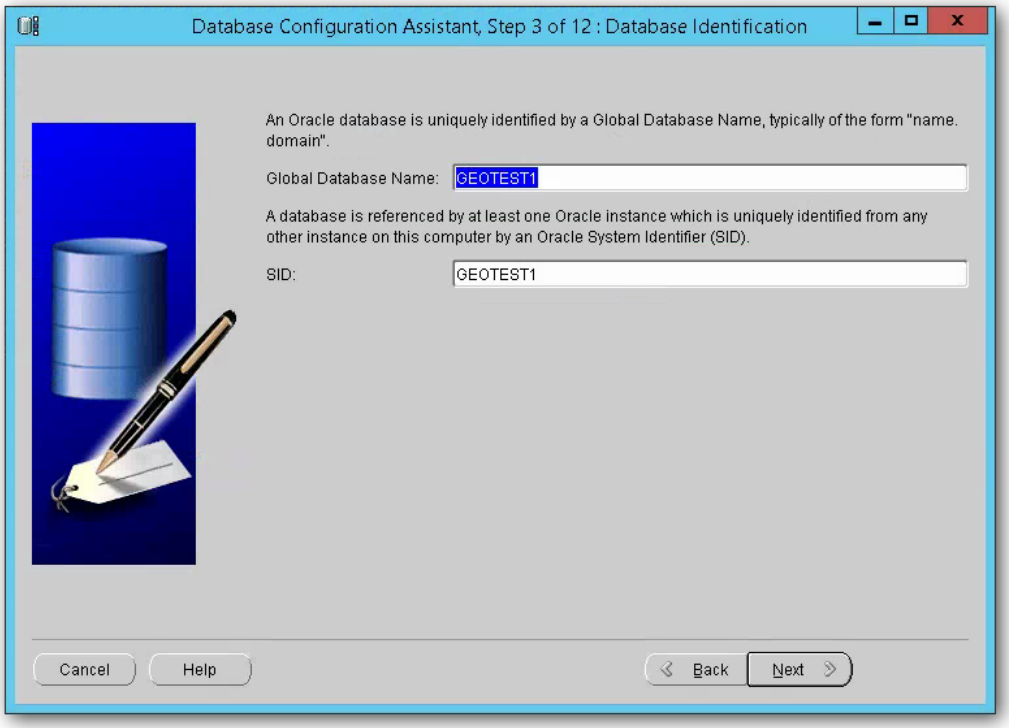


- Select the GEOPROD template

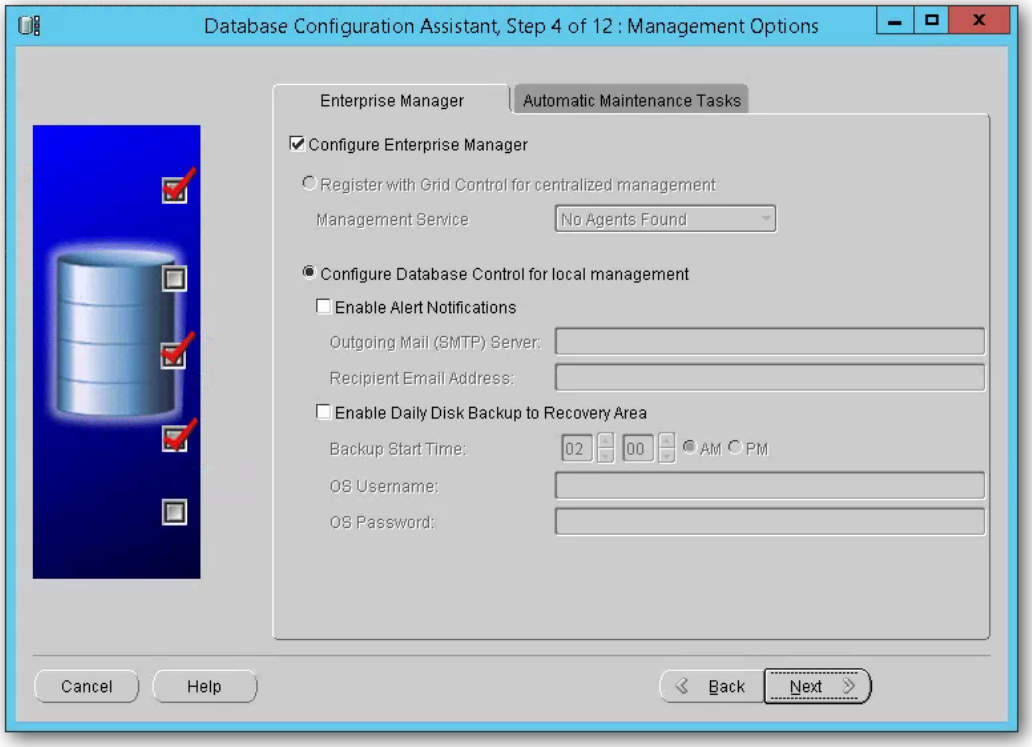


If the template is not present, then close DBCA and be sure you copied the files into the correct folder in the previous steps.

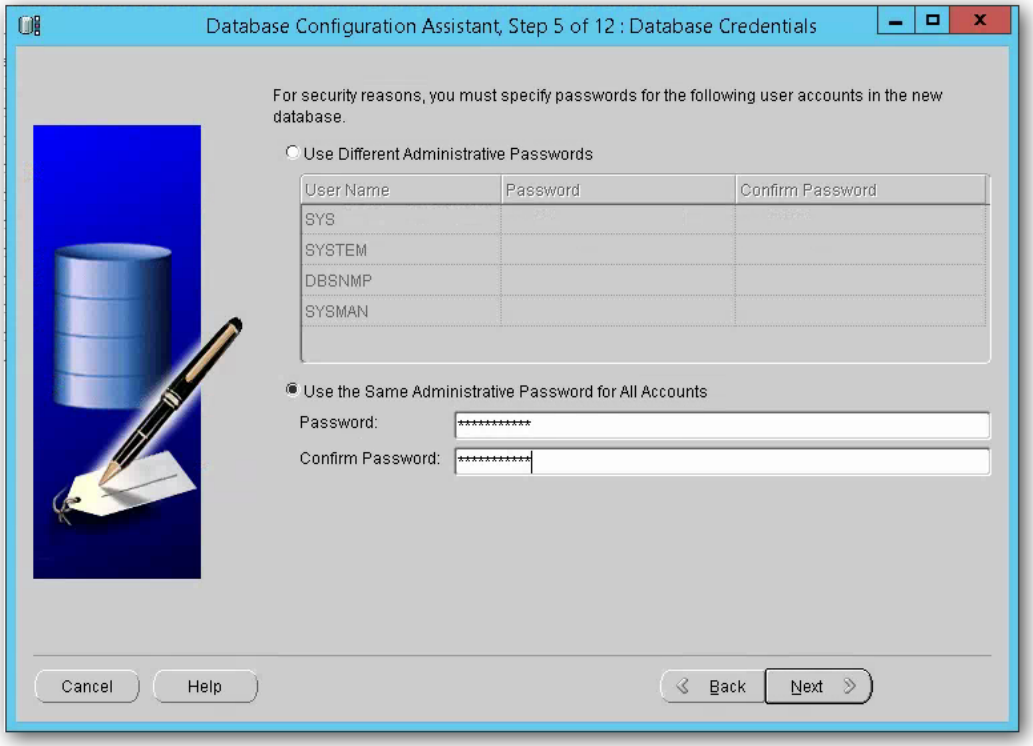
- Enter GEOTEST1 as database name



- Management Options – use defaults

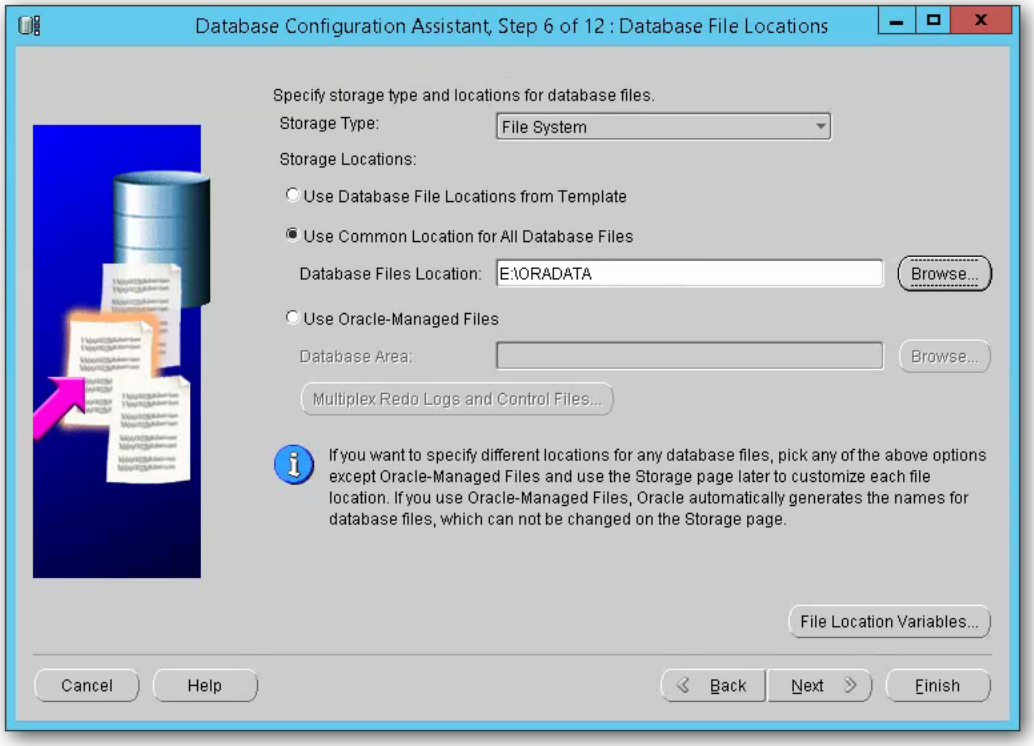


- Database Credentials



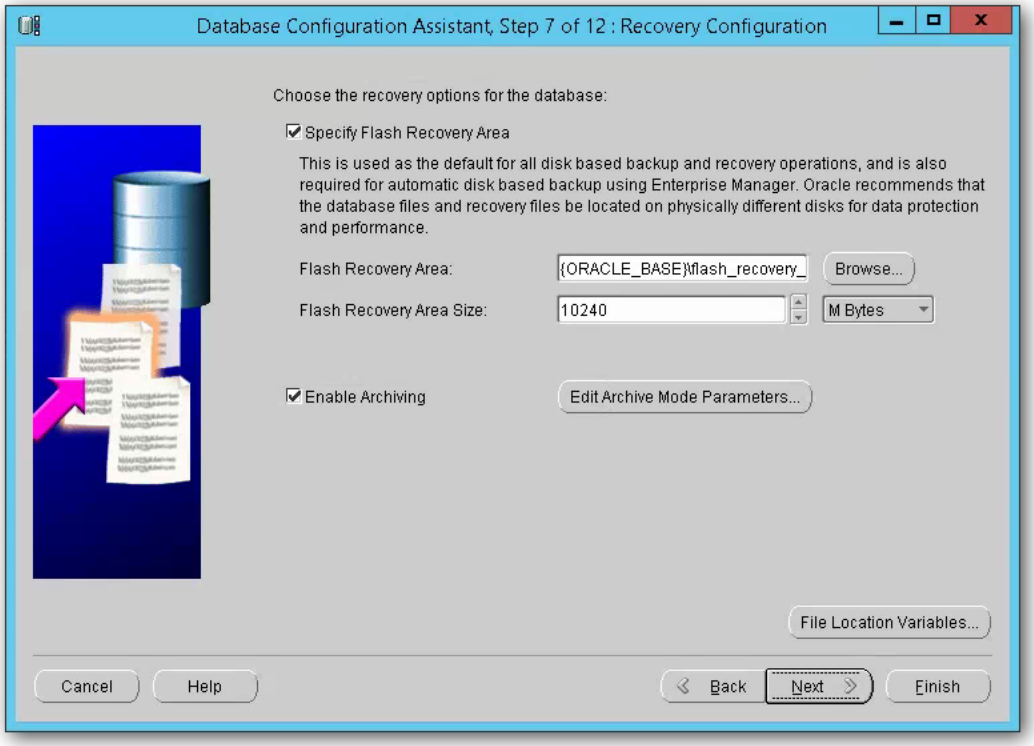
Enter the password for the database such as “password123”

- Enter File Locations

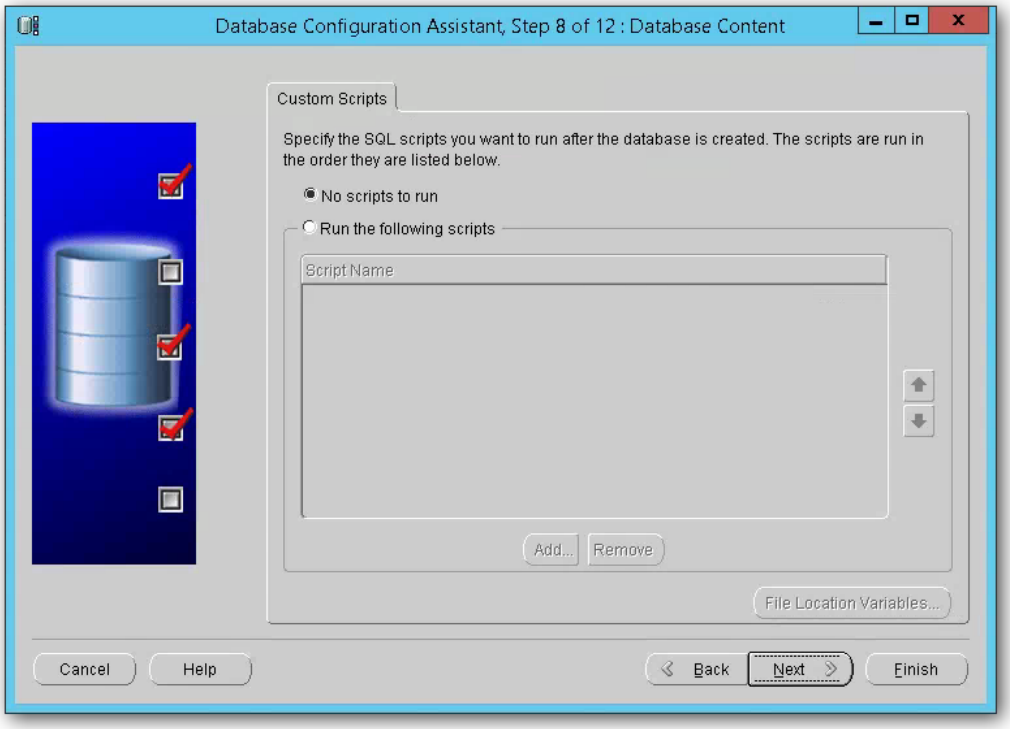


Enter E:\ORADATA

- Recovery Configuration

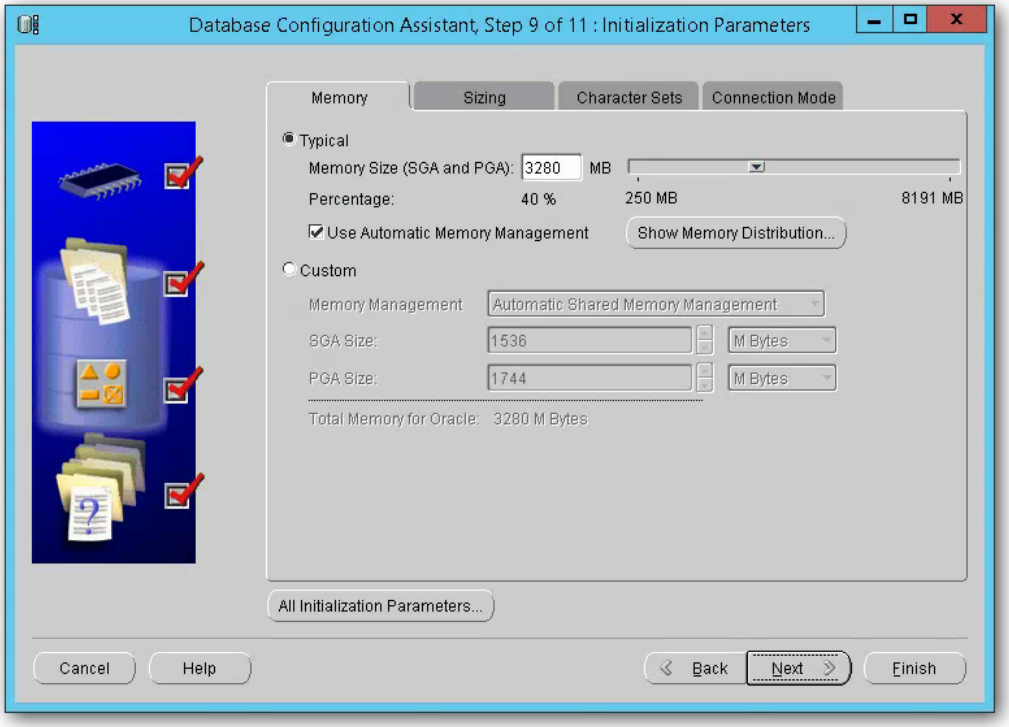


- No Scripts



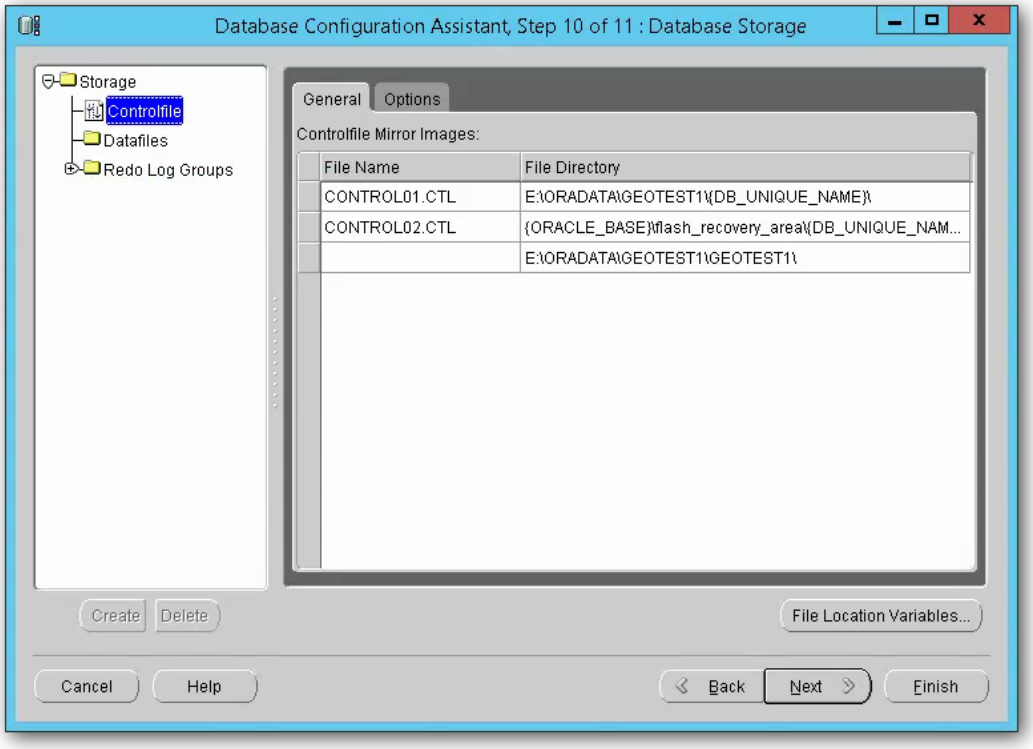
Accept Defaults

- Initialization



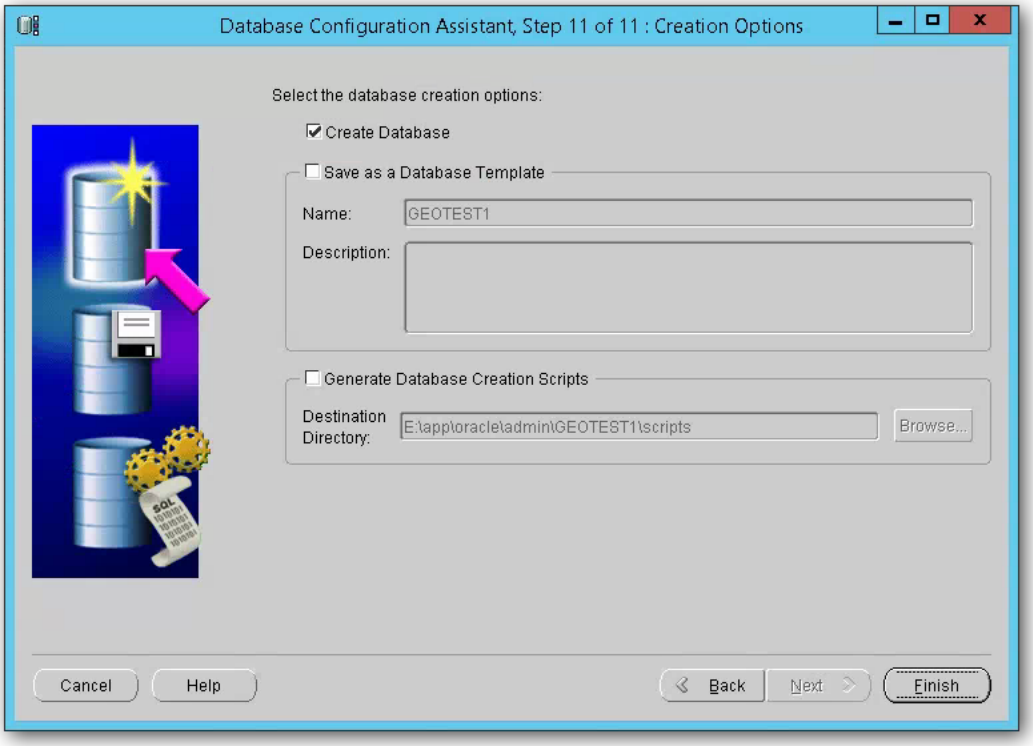
Accept Defaults

- Storage



Accept Defaults

- Finish



This step may take more than an hour to run.

2.4 Fix User Accounts

The database will be created but it is not ready to use since users will be expired and locked out. When they try to connect to the test databases, users will see an error like

2.4.1 Reset Passwords

This step will copy the passwords from the production database

2.4.1.1 Generate the create user script

- Connect to the NEWGEOPROD database **as SYSDBA** using SQL Developer or SQL Plus
- Run the following commands

```
set head off
set pages 0
set long 9999999

select
   dbms_metadata.get_ddl('USER', username) || '/'
usercreate
from
   dba_users;
```

This will create the Create User commands for each user in the production database. This script must be changed before running in the test database

- Using a text editor, make the following changes to the script
  - Replace “Create User” with “Alter User”
  - Remove the entries for SYS and SYSTEM from the script since those were created from DBCA
  - Remove “Password Expire” from the script

2.4.1.2 Run the alter user script on TEST

- Connect to the GEOTEST1 database **as SYSDBA** using SQL Developer or SQL Plus
- Run the edited Alter User script

This will unexpire the passwords, but the accounts will still be locked.

2.4.2 Unlock Accounts

This step will unlock the user accounts

- Connect to the GEOTEST1 database **as SYSDBA** using SQL Developer or SQL Plus
- Run the SQL to generate the commands to unlock accounts

```
select 'alter user '|| username ||' account unlock;' from dba_users where account_status
like '%LOCK%';
```

The SQL will produce results like “alter user HCHEN account unlock”

- Copy the results of the previous step and run the commands

The Test GIS Database will be ready for use.