How to Install Oracle Database 11R2 on OpenIndiana Hipster

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1 Introduction

This article will describe the installation of Oracle Database 11R2 on OpenIndiana Hipster. Unfortunely is not possible to run Oracle Database version 12 and above because there are some dependencies with proprietary Oracle Solaris softwares. NOTE: It is not recommended to run Oracle Database in OpenIndiana for production environments. Oracle has a restricted list of supported operating systems and unfortunately OpenIndiana is not in it. The purpose of this article is to install the Oracle Database for development environment.

2 Install dependencies

Install dependencies with the following command:

```
$ pfexec pkg install build-essential developer/java/openjdk8 developer/as
```

3 Prepare install

Is strongly recommend install and run Oracle database in a non-root environment. To do it in right way, follow the steps below:

3.1 Create user and groups

Create Oracle's home directory into a ZFS dataset:

```
$ pfexec zfs create rpool/export/home/oracle
```

Add Oracle's group:

```
$ pfexec groupadd oracle
```

Add Oracle's user:

```
$ pfexec useradd -g oracle -s /bin/bash -d /export/home/oracle oracle
```

Deliver the home directory ownership to oracle user:

```
$ pfexec chown oracle /export/home/oracle
```

3.2 Setup project for Oracle user

Now we will give the permission to user create shared memory until 16GB.

```
$ pfexec projadd -U oracle -G oracle -K ”project.max-shm-memory=(priv,1604845568,deny)”
```

```
user.oracle
```

And activate:

```
$ pfexec projmod -A user.oracle
```

4 Download Database Software

Download Oracle Database 11R2 for Solaris from URL:

http://www.oracle.com/technetwork/database/enterprise-edition/downloads/112010-sparc-x64soft-098784.html

Copy files to /export/home/oracle and unpack all:

```
$ unzip solaris.x64_11gR2_database_1of2.zip
```

```
$ unzip solaris.x64_11gR2_database_2of2.zip
```

5 Run the installer

As your user, give permission to any user to connect on your X11 display:

```
$ xhost +
```

Login as oracle user:

```
$ pfexec su - oracle
```

Enter in oracle home directory:

```
$ cd /export/home/oracle
```

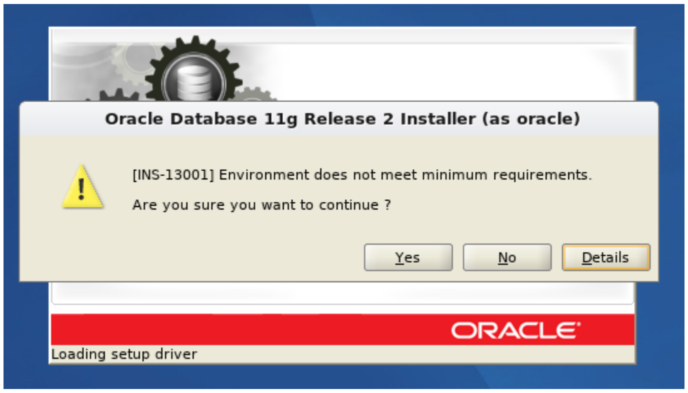
Enter in extracted directory:

```
$ cd database
```

Run the installer with follow command:

```
$ ./runInstaller -jreLoc /usr/jdk/openjdk1.8.0
```

When installer appears, ignore the message of minimum requirements.


Oracle Database 11g Release 2 Installer (as oracle)

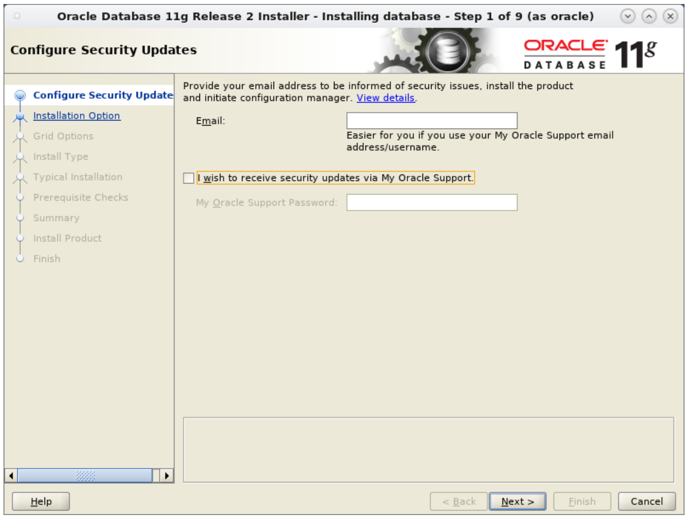
[INS-13001] Environment does not meet minimum requirements.

Are you sure you want to continue ?

Loading setup driver

Figure 1: Ignore the message and click on "Ok" button.

Skip the e-mail step putting empty e-mail address and uncheck for receive security updates.


Oracle Database 11g Release 2 Installer - Installing database - Step 1 of 9 (as oracle)

Configure Security Updates

Provide your email address to be informed of security issues, install the product and initiate configuration manager. View details.

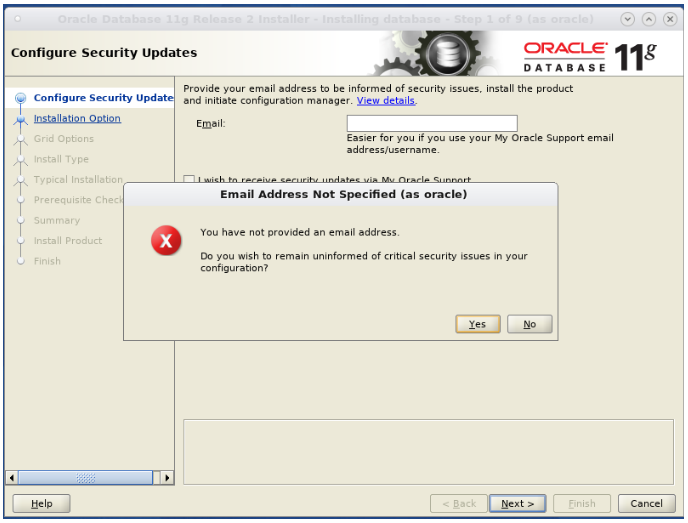
Email:

Easier for you if you use your My Oracle Support email address/username.

□ I wish to receive security updates via My Oracle Support.

My Oracle Support Password:

Figure 2: Ignore all Oracle's contact. Do not accept candy from strangers.



Oracle Database 11g Release 2 Installer - Installing database - Step 1 of 9 (as oracle)

Configure Security Updates

Provide your email address to be informed of security issues, install the product and initiate configuration manager. View details.

Email:

Easier for you if you use your My Oracle Support email address/username.

□ I wish to receive security updates via My Oracle Support

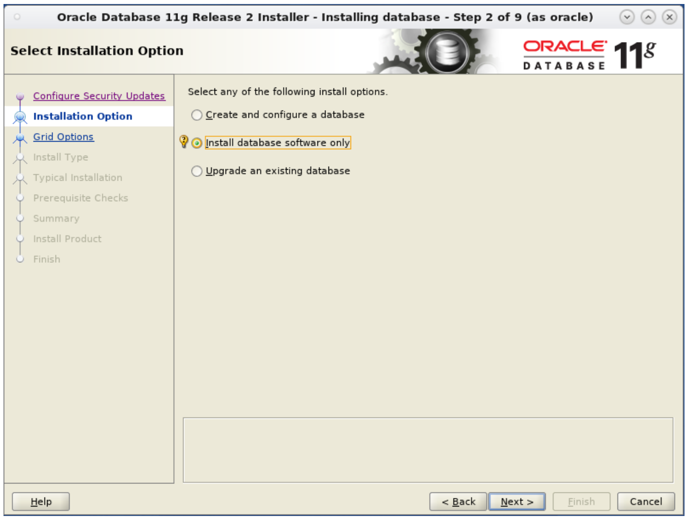
Email Address Not Specified (as oracle)

You have not provided an email address.

Do you wish to remain uninformed of critical security issues in your configuration?

Figure 3: Oracle Please, do not insist.

On "Installation Options" screen, choose "Install database software only".



Oracle Database 11g Release 2 Installer - Installing database - Step 2 of 9 (as oracle)

Select Installation Option

Select any of the following install options.

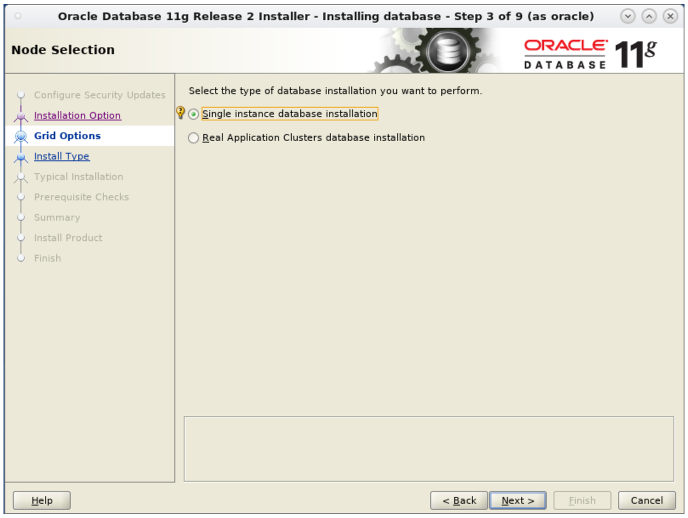
○ Create and configure a database

● Install database software only

○ Upgrade an existing database

Figure 4: Installation Options screen.

On "Grid Options" screen, choose "Single Instance database installation".



Oracle Database 11g Release 2 Installer - Installing database - Step 3 of 9 (as oracle)

Node Selection

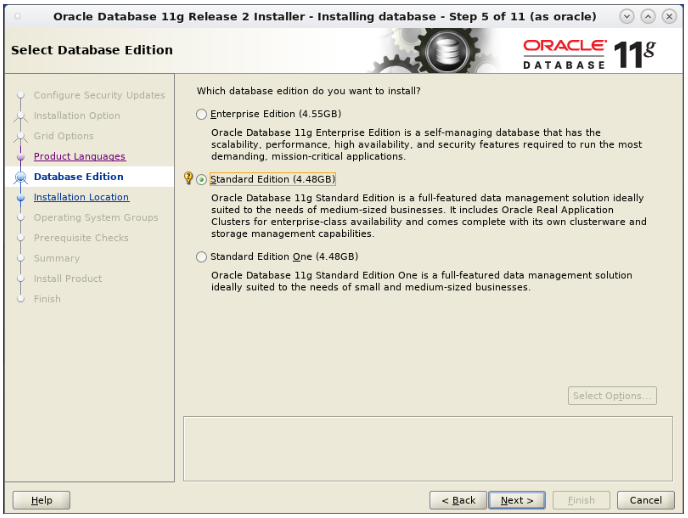
Select the type of database installation you want to perform.

● Single instance database installation

○ Real Application Clusters database installation

Figure 5: Grid Options screen

On ”Database Edition” screen, choose ”Standard Edition (4.48 GB)”.



Oracle Database 11g Release 2 Installer - Installing database - Step 5 of 11 (as oracle)

Select Database Edition

Which database edition do you want to install?

○ Enterprise Edition (4.55GB)

Oracle Database 11g Enterprise Edition is a self-managing database that has the scalability, performance, high availability, and security features required to run the most demanding, mission-critical applications.

● Standard Edition (4.48GB)

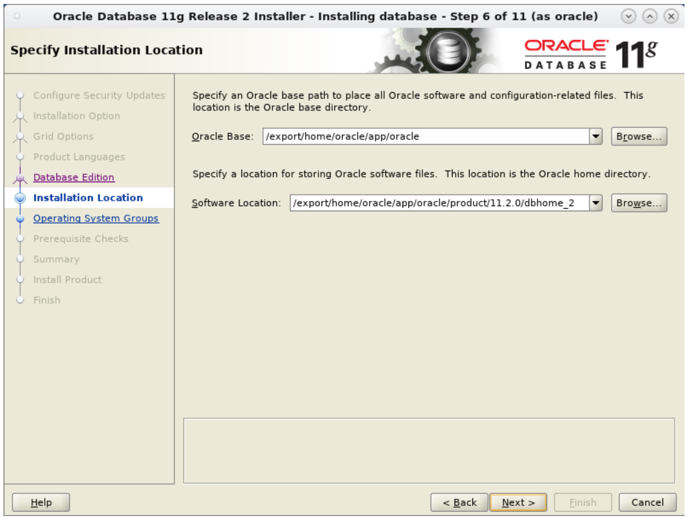
Oracle Database 11g Standard Edition is a full-featured data management solution ideally suited to the needs of medium-sized businesses. It includes Oracle Real Application Clusters for enterprise-class availability and comes complete with its own clusterware and storage management capabilities.

○ Standard Edition One (4.48GB)

Oracle Database 11g Standard Edition One is a full-featured data management solution ideally suited to the needs of small and medium-sized businesses.

Figure 6: Database Edition screen

On ”Installation location screen”, leave the default values.



Oracle Database 11g Release 2 Installer - Installing database - Step 6 of 11 (as oracle)

Specify Installation Location

Specify an Oracle base path to place all Oracle software and configuration-related files. This location is the Oracle base directory.

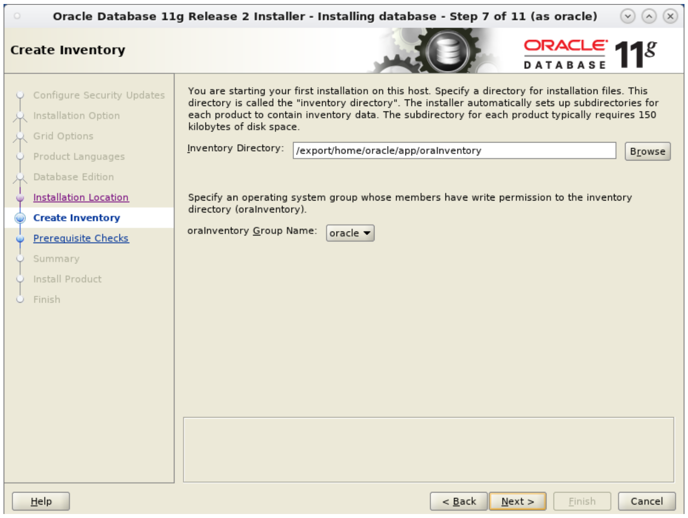
Oracle Base: /export/home/oracle/app/oracle [Browse...]

Specify a location for storing Oracle software files. This location is the Oracle home directory.

Software Location: /export/home/oracle/app/oracle/product/11.2.0/dbhome_2 [Browse...]

Figure 7: Installation location screen

On ”Create Inventory Screen”, leave the default values.



Oracle Database 11g Release 2 Installer - Installing database - Step 7 of 11 (as oracle)

Create Inventory

You are starting your first installation on this host. Specify a directory for installation files. This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.

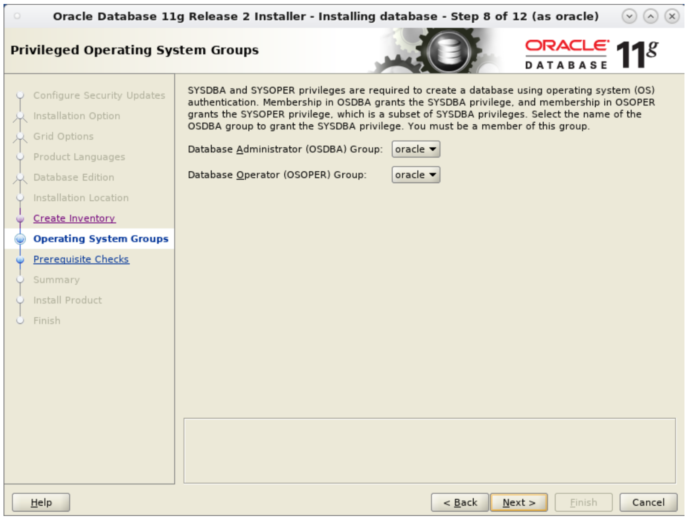
Inventory Directory: /export/home/oracle/app/oraInventory [Browse]

Specify an operating system group whose members have write permission to the inventory directory (oraInventory).

oraInventory Group Name: oracle

Figure 8: Create Inventory screen

On ”Operating System Groups”, leave the default values (oracle group).



Privileged Operating System Groups

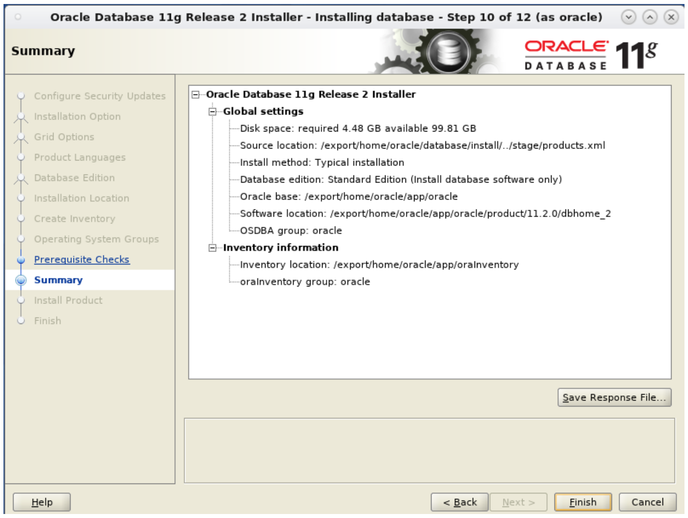
SYSDBA and SYSOPER privileges are required to create a database using operating system (OS) authentication. Membership in OSDBA grants the SYSDBA privilege, and membership in OSOPER grants the SYSOPER privilege, which is a subset of SYSDBA privileges. Select the name of the OSDBA group to grant the SYSDBA privilege. You must be a member of this group.

Database Administrator (OSDBA) Group: oracle

Database Operator (OSOPER) Group: oracle

Figure 9: Operating System Groups screen

Check installation on "Summary" screen, and click on "Finish" button.

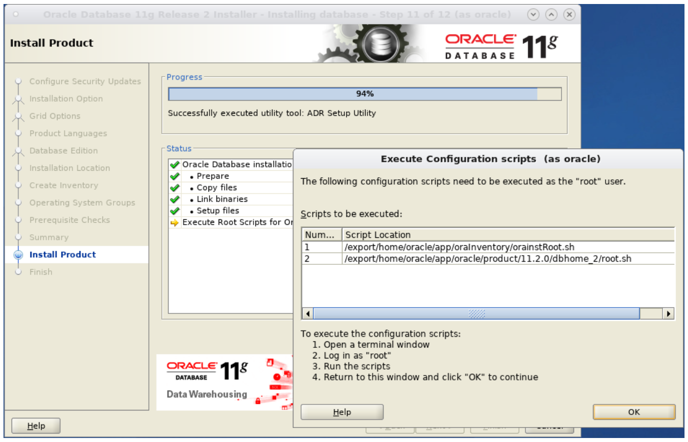


Summary

- Oracle Database 11g Release 2 Installer
  - Global settings
    - Disk space: required 4.48 GB available 99.81 GB
    - Source location: /export/home/oracle/database/install/../stage/products.xml
    - Install method: Typical installation
    - Database edition: Standard Edition (Install database software only)
    - Oracle base: /export/home/oracle/app/oracle
    - Software location: /export/home/oracle/app/oracle/product/11.2.0/dbhome_2
    - OSDBA group: oracle
  - Inventory information
    - Inventory location: /export/home/oracle/app/oraInventory
    - oraInventory group: oracle

Figure 10: Summary of installation

When screen "Execute Configuration Scripts" appears, run as root the follows commands:



Successfully executed utility tool: ADR Setup Utility

✓ Oracle Database installatio
✓ • Prepare
✓ • Copy files
✓ • Link binaries
✓ • Setup files
Execute Root Scripts for Or

Execute Configuration scripts (as oracle)

The following configuration scripts need to be executed as the "root" user.

Scripts to be executed:

Num...	Script Location
1	/export/home/oracle/app/oraInventory/orainstRoot.sh
2	/export/home/oracle/app/oracle/product/11.2.0/dbhome_2/root.sh

To execute the configuration scripts:
1. Open a terminal window
2. Log in as "root"
3. Run the scripts
4. Return to this window and click "OK" to continue

Figure 11: Execute configuration scripts screen

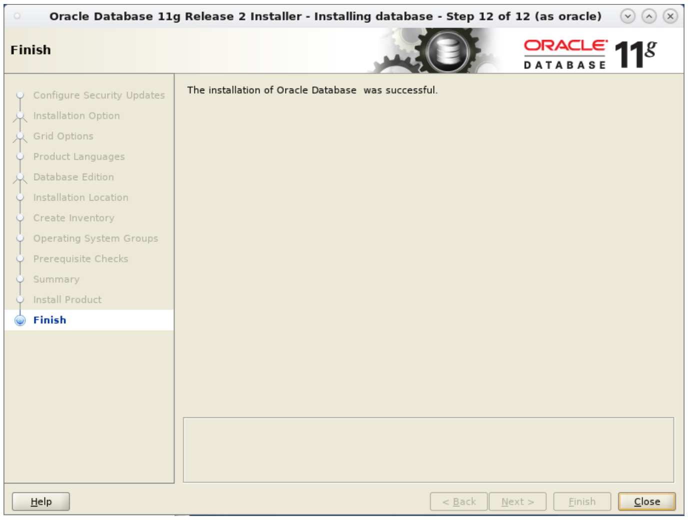
# /export/home/oracle/app/oraInventory/orainstRoot.sh

And after, the second and last script:

# /export/home/oracle/app/oracle/product/11.2.0/dbhome_1/root.sh

Hit enter when you get confirmation of binary paths (/usr/local/bin). On finish of script, back to "Execute Configuration Scripts" screen and click on "OK" button to continue.

The final screen will be shown. Reboot the OpenIndiana.



The installation of Oracle Database was successful.

Figure 12: Finish install screen

6 Create a Database Instance

As your user, give permission to any user to connect on your X11 display:

```
$ xhost +
```

Login as oracle user:

```
$ pfexec su - oracle
```

Enter in oracle home directory:

```
$ cd /export/home/oracle/app/oracle/product/11.2.0/dbhome_1/bin
```

In order to create a new instance of database, execute the follow command:

```
./dbca -silent -createDatabase -templateName General_Purpose.dbc -
gdbname orcl -sid orcl -responseFile NO_VALUE -characterSet AL32UTF8
-memoryPercentage 30 -emConfiguration LOCAL
```

Answer to DBCA the password for SYS, SYSTEM, DBSNMP and SYSMAN accounts.

7 Creating Oracle Environment Script

In order to run correctly Oracle tools, you will need to write a simple shellscript containing the environment variables to put some directories in PATH and another informations.

Create a directory to put all util scripts:

$ mkdir /export/home/oracle/app/scripts

Use your favorite text editor to create a file nammed env.sh with the follows content:

```
#!/bin/sh
ORACLE_SID=orcl
ORACLE_BASE=/export/home/oracle/app/oracle/product/11.2.0
ORACLE_HOME=$ORACLE_BASE/dbhome_1
PATH=$PATH:$ORACLE_HOME/bin
LD_LIBRARY_PATH=$ORACLE_HOME/lib:$ORACLE_HOME/javavm/admin/
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/jdk/jre/lib/i386/
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/jdk/jre/lib/amd64
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/ctx/lib
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/owb/bin/admin
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/instantclient
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/inventory/Scripts/ext/lib
export LD_LIBRARY_PATH
export ORACLE_SID
export ORACLE_BASE
export ORACLE_HOME
export PATH
```

Give permission to script with:

$ chmod +x /export/home/oracle/app/scripts/env.sh

7.1 Configuring Listener

Create the file /export/home/oracle/app/oracle/product/11.2.0/network/admin/listener.ora with following content:

```
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
      (ADDRESS = (PROTOCOL = TCP)(HOST = localhost)(PORT = 1521))
    )
  )

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = orcl)
      (ORACLE_HOME =/export/home/oracle/app/oracle/product/11.2.0/dbhome_1)
      (SID_NAME = orcl)
    )
  )
ADR_BASE_LISTENER = /export/home/oracle/app/oracle
```

Create the file /export/home/oracle/app/oracle/product/11.2.0/network/admin/sqlnet.ora with follow contens:

```
NAMES.DIRECTORY_PATH= (TNSNAMES, EZCONNECT)
ADR_BASE = /export/home/oracle/app/oracle
```

Create the file /export/home/oracle/app/oracle/product/11.2.0/network/admin/tnsnames.ora with follow content:

```
ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = localhost)(PORT = 1521))
      (CONNECT_DATA =
        (SERVER = DEDICATED)
        (SERVICE_NAME = orcl)
        (SID = orcl)
      )
    )
```

7.2 Script to start and stop database

Now, we will create a script to start and stop Oracle Database instance. Create the file /export/home/oracle/app/scripts/orcl.sh with contents:

```
#!/sbin/sh
source /export/home/oracle/app/scripts/env.sh
case "$1" in
'start')
        sqlplus '/ as sysdba' <<EOF
        startup;
        exit;
EOF
        lsnrctl start;
;;
```

```
’stop’)
        sqlplus ’/ as sysdba’ <<EOF
        shutdown;
        exit;
EOF
        lsnrctl stop;
;;
*)
        echo $”Usage: $0 {start|stop}”
        exit 1
;;
esac
```

Give executable permission:

```
$ chmod +x /export/home/oracle/app/scripts/orcl.sh
```

Now, to start database:

```
$ /export/home/oracle/app/scripts/orcl.sh start
```

To stop:

```
$ /export/home/oracle/app/scripts/orcl.sh stop
```

8 Create a SMF Service

Now we need to create SMF service, to start/stop our database with ”svcadm” command line.
First create a file nammed ”oracle.xml” in /export/home/oracle/app/scripts with the follow content:

```
<?xml version=”1.0”?>
<!DOCTYPE service_bundle SYSTEM ”/usr/share/lib/xml/dtd/service_bundle.dtd.1”>
<service_bundle type=’manifest’ name=’SUNWoracle:services’>

<service
    name=’database/oracle’
    type=’service’
    version=’1’>

    <dependency
        name=’filesystem_minimal’
        grouping=’require_all’
        restart_on=’none’
        type='service'>
        <service_fmri value='svc:/system/filesystem/minimal' />
    </dependency>

    <dependency
        name='fs-local'
        grouping='require_all'
        restart_on='none'
        type='service'>
                <service_fmri value='svc:/system/filesystem/local' />
    </dependency>

    <dependency
        name='autofs'
        grouping='require_all'
        restart_on='none'
        type='service'>
                <service_fmri value='svc:/system/filesystem/autofs' />
    </dependency>

    <dependency
        name='name-services'
        grouping='optional_all'
        restart_on='none'
        type='service'>
                <service_fmri value='svc:/milestone/name-services' />
    </dependency>

    <dependency
        name='loopback'
        grouping='optional_all'
        restart_on='error'
        type='service'>
        <service_fmri value='svc:/network/loopback' />
    </dependency>

    <dependency
        name='network'
        grouping='optional_all'
        restart_on='error'
        type='service'>
        <service_fmri value='svc:/milestone/network' />
    </dependency>

    <instance name='default' enabled='true' >
```

```
        <exec_method
            type='method'
            name='start'
            exec='/lib/svc/method/oracle start'
            timeout_seconds='300' >
            <method_context>
                <method_credential user='oracle' group='oracle' />
            </method_context>
        </exec_method>

        <exec_method
            type='method'
            name='stop'
            exec='/lib/svc/method/oracle stop'
            timeout_seconds='300' >
            <method_context>
                <method_credential user='oracle' group='oracle' />
            </method_context>
        </exec_method>

                <property_group name='startd' type='framework'>
            <propval name='duration' type='astring' value='transient' />
        </property_group>
        <property_group name='config' type='application'>
            <propval name='assembled' type='boolean' value='false' />
        </property_group>

        <property_group name='startup' type='application' />

        <template>
            <common_name>
                <loctext xml:lang='C'>
                    Oracle Database
                </loctext>
            </common_name>
        </template>

    </instance>

    <stability value='Stable' />

</service>
</service_bundle>
```

Now, create the "method" script called "oracle" in /lib/svc/method/oracle with follow content:

```
#!/sbin/sh

# Include commons functions of  SMF
. /lib/svc/share/smf_include.sh
# SMF_FMRI is the name of the target service. This allows multiple instances
# to use the same script.

getproparg() {
   val=‘svcprop −p $1 $SMF_FMRI‘
   [ −n ”$val” ] && echo $val
}

if [ −z $SMF_FMRI ]; then
   echo ”SMF framework variables are not initialized.”
   exit $SMF_EXIT_ERR
fi

case ”$1” in
’start’)
        /export/home/oracle/app/scripts/orcl.sh start
   ;;
’stop’)
        /export/home/oracle/app/scripts/orcl.sh stop
   ;;
*)
   echo $”Usage: $0 {start|stop}”
   exit 1
   ;;
esac
exit $SMF_EXIT_OK
```

Give permission to script:

$ pfexec chmod +x /lib/svc/method/oracle

Import xml to SVC:

$ pfexec svccfg import /export/home/oracle/app/scripts/oracle.xml

To start service:

$ pfexec svcadm enable oracle

To stop service:

```
$ pfexec svcadm disable oracle
```

To get status:

```
$ pfexec svcs -xv oracle
```