Oracle® Agile Engineering Data Management

Installation Manual for Oracle 11g on Unix for Agile e6.1.1

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Preface

The Oracle documentation set includes Adobe® Acrobat™ PDF files. The Oracle Technology Network (OTN) Web site (http://www.oracle.com/technology/documentation/agile.html) contains the latest versions of the Oracle Agile EDM PDF files. You can view or download these manuals from the Web site, or you can ask your Agile administrator if there is an Oracle Documentation folder available on your network from which you can access the documentation (PDF) files.

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Note	Before calling Agile Support about a problem with an Oracle Agile EDM manual, please have the full part number, which is located on the title page.

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Readme

Any last-minute information about Oracle Agile EDM can be found in the Release Notes file on the Oracle Technology Network (OTN) Web site (http://www.oracle.com/technology/documentation/agile_eseries.html)

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Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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Chapter 1

Introduction

This guide describes how to install Oracle 11g and adapt the Oracle database for the use with Agile e6.1.1 running on any of the following operating systems:

- IBM AIX
- HP-UX
- SUSE Linux
- Sun Solaris

Chapter 2

Requirements

AIX

Hardware Requirements

Requirement	Minimum Value
Physical memory (RAM)	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required memory for the Oracle Server installation. To determine the amount of available memory, enter the following command: `/usr/sbin/lsattr -E -l sys0 -a realmem`
Swap space	1-2 GB RAM: 1.5 times the size of RAM 2-8 GB RAM: Equal to the size of RAM > 8GB RAM: 0.75 times the size of RAM To determine the amount of available swap spaces, enter the following command: `/usr/sbin/lsps -a`
Disk space in /tmp	400 MB (409600 KB) To determine the amount of free disk space in the /tmp directory, use the df command: `df -k /tmp`
Disk space for software files	8 GB (8388608 KB). It could be smaller depending on the components chosen to be installed.
Disk space for database files	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required space for the database creation.
System architecture	64-bit If the processor is a 64-bit processor, the following command returns the value 64: `/usr/bin/getconf HARDWARE BITMODE`

Software Requirements

The system has to meet the following minimum software requirements:

- AIX 5L version has to be 5.3, TL 05, Service Pack 06

To determine the distribution and version of AIX installed, enter the following command:

```
oslevel -s
```

The following file-sets must be installed and committed:

- bos.adt.base
- bos.adt.lib
- bos.adt.libm
- bos.perf.libperfstat
- bos.perf.perfstat
- bos.perf.proctools
- xlC.aix50.rte: 8.0.0.7 or later
- xlC.rte: 8.0.0.7 or later

To determine whether the required file sets are installed and committed, enter a command similar to the following:

```
lslpp -l bos.adt.base bos.adt.lib bos.adt.libm bos.perf.perfstat \
bos.perf.libperfstat bos.perf.proctools
```

The following Authorized Problem Analysis Reports (APARs) must be installed:

- IY89080
- IY92037
- IY94343
- IZ01060 or efix for IZ01060
- IZ03260, or efix for IZ03260

To determine whether an APAR is installed, enter a command similar to the following:

```
/usr/sbin/instfix -i -k ""IY89080 IY92037 IY94343 Iz01060 Iz03260"
```

If you use HACMP, then note the following additional requirements:

- AIX: AIX 5.3 TL06 or newer (bosrte.lvm must be at least 5.3.0.60)
- HACMP: Ensure the following versions are installed:
  - HACMP v. 5.3 with PTFS (APAR:IY94307) and cluster.es.clvm installed
  - HACMP APAR: IZ01809

The following are the compiler requirements

- XL C/C++ Enterprise Edition V8.0 for AIX
- gcc 3.4.5

Configure Shell Limits

On AIX systems you do not need to configure kernel parameters. However, Oracle recommends

that you set shell limits and system configuration parameters.

Shell Limit	Recommended Value
Soft FILE size	-1 (Unlimited)
Soft CPU time	-1 (Unlimited) (This is the default value)
Soft DATA segment	-1 (Unlimited)
Soft STACK size	-1 (Unlimited)
Maximum number of PROCESSES allowed per user	Greater than or equal to 2048

To display the current value specified for these shell limits, and to change them if necessary, perform the following steps:

1. Enter the following command:

   ```
   smit chuser
   ```

2. In the User NAME field, enter the user name of the Oracle software owner, for example oracle.
3. Scroll down the list and verify that the value shown for the soft limits listed in the previous table is -1.

   If necessary, edit the existing value. To edit the values, you can use the smit utility. However, to set the value of Soft Real Memory size, you must edit the file /etc/security/limits. If you have permissions to run smit utility, then you automatically have the permissions to edit the limits file.
4. When you have finished making changes, press F10 to exit.

HP-UX

Hardware Requirements

Requirement	Minimum Value

Physical memory (RAM)	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required memory for the Oracle Server installation.
	To determine the RAM size, enter the following command:
	`PA-RISC`
	`grep "Physical:" /var/adm/syslog/syslog.log`
	`Itanium`
	`/usr/contrib/bin/machinfo | grep -i Memory`

Swap space	1-2 GB RAM: 1.5 times the size of RAM 2-8 GB RAM: Equal to the size of RAM > 8GB RAM: 0.75 times the size of RAM To determine the size of the configured swap space, enter the following command:

	`/usr/sbin/swapinfo -a`
Disk space in /tmp	400 MB (409600 KB) To determine the amount of free disk space in the /tmp directory enter the following command: `bdf /tmp`
Disk space for software files	7 GB (7340032 KB). It could be smaller depending on the components chosen to be installed.
Disk space for database files	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1 document to determine the required space for the database creation.
System architecture	64-bit To determine whether the system architecture can run the software, enter the following command: `/bin/getconf KERNEL_BITS`

Software Requirements

The system must meet the following minimum software requirements:

- HP-UX must be
  - HP-UX 11i v2 (11.23) PA-RISC
  - HP-UX 11i v3 (11.31) PA-RISC – only if the machine is used for the Oracle server installation and database creation. Application should be installed on 11i v2 machine.
  - HP-UX 11i v3 (11.31) Itanium

  To determine the distribution and version of HP-UX installed, enter the following command:

  `uname -a`

The following patches must be installed:

HP-UX PA-RISC

- 11.23
  - Mar '07 Patch bundle for HP-UX 11iV2 (B.11.23.0703)
  - PHKL_35478: s700_800 11.23 shmget(2) cumulative patch
  - PHCO_36673: s700_800 11.23 libc cumulative patch
  - PHKL_36853: s700_800 11.23 pstat patch11.31
  - PHSS_35176: For HP C/ANSI C Compiler
  - PHSS_35101: For HP C/ANSI C Compiler
  - PHSS_35103: For HP C/ANSI C and HP aC++ compilers
  - PHSS_35102: For HP aC++ Compiler. It changes the compiler version to A.03.73
- 11.31
  - PHKL_35900: 11.31 evacd performance, kvaddr leak panic
  - PHKL_36248: 11.31 esctl cumulative patch
  - PHKL_36249: 11.31 esdisk cumulative patch

- PHKL_35936: 11.31 call to read(2) or write(2) may incorrectly return -1
- PHKL_38038: ABORT CORRUPTION HANG OTHER PANIC
- HP C/aC++ B.11.31.01 (Swlist Bundle - C.11.31.01) February 2007
- HP C/aC++ A.03.74 (Swlist Bundle - C.11.31.01) February 2007

To determine whether a patch is installed, enter a command similar to the following:

```
/usr/sbin/swlist -l patch | grep PHSS_35979
```

Alternatively, to list all installed patches, enter the following command:
/usr/sbin/swlist -l patch | more

The following are the compiler requirements

- HP C/ANSI C Compiler (A.06.14)
- HP ANSI C compiler (B.11.11.16) - June (AR0606) release
- HP aC++ Compiler (A.06.14)
- C++ (aCC) compiler (A.03.70) - June 2006 (AR0606) release
- GCC compiler gcc 3.4.0 (64-Bit) for 11i v2

HP-UX Itanium

- 11.23
  - Mar '07 Patch bundle for HP-UX 11iV2 (B.11.23.0703)
  - PHKL_35478: s700_800 11.23 shmget(2) cumulative patch
  - PHCO_36673: s700_800 11.23 libc cumulative patch
  - PHKL_36853: s700_800 11.23 pstat patch11.31
  - PHSS_35974: For HP C/ANSI C Compiler
  - PHSS_35975: For HP aC++ Compiler
  - PHSS_35977: For HP C/ANSI C and HP aC++ compilers

- 11.31
  - PHKL_35900: 11.31 evacd performance, kvaddr leak panic
  - PHKL_36248: 11.31 esctl cumulative patch
  - PHKL_36249: 11.31 esdisk cumulative patch
  - PHKL_35936: 11.31 call to read(2) or write(2) may incorrectly return -1
  - PHKL_38038: ABORT CORRUPTION HANG OTHER PANIC
  - HP C/aC++ A.06.12 (Swlist Bundle - C.11.31.01) February 2007

  To determine whether a patch is installed, enter a command similar to the following:

  ```
  /usr/sbin/swlist -l patch | grep PHSS_35979
  ```

  Alternatively, to list all installed patches, enter the following command:
  /usr/sbin/swlist -l patch | more

The following are the compiler requirements

- HP C/ANSI C Compiler (A.06.14)
- HP ANSI C compiler (C.06.10) - June 2006 (AR0606) release
- HP aC++ Compiler (A.06.14)
- C++ (aCC) compiler (C.06.10) - June 2006 (AR0606) release

Creating Required Symbolic Links

Note This task is required only if the Motif 2.1 Development Environment package (X11MotifDevKit.MOTIF21-PRG) is not installed.

To allow successfully relinking Oracle products after installing this software, enter the following commands to create the required X library symbolic links in the /usr/lib directory:

```
# cd /usr/lib
# ln -s libX11.3 libX11.sl
# ln -s libXIE.2 libXIE.sl
# ln -s libXext.3 libXext.sl
# ln -s libXhp11.3 libXhp11.sl
# ln -s libXi.3 libXi.sl
# ln -s libXm.4 libXm.sl
# ln -s libXp.2 libXp.sl
# ln -s libXt.3 libXt.sl
# ln -s libXtst.2 libXtst.sl
```

Kernel Parameters

Verify that the following kernel parameters are set either to the formula or to values greater than, or equal to the recommended value shown:

Parameter	Recommended Value
ksi_alloc_max	(nproc*8)
executable_stack	0
max_thread_proc	1024
maxdsiz	1073741824 (1 GB)
maxdsiz_64bit	2147483648 (2 GB)
maxssiz	134217728 (128 MB)
maxssiz_64bit	1073741824 (1 GB)
maxuprc	((nproc*9)/10)
msgmap	(msgtql+2)
msgmni	(nproc)
msgseg	32767

msgtql	(nproc)
ncsize	(ninode+1024)
nfile	(15*nproc+2048)
nflocks	(nproc)
ninode	(8*nproc+2048)
nkthread	(((nproc*7)/4)+16)
nproc	4096
semmni	(nproc)
semmns	(semmni*2)
semmnu	(nproc-4)
semvmx	32767
shmmax	The size of physical memory or 1073741824 (0X40000000), whichever is greater. **Note** To avoid performance degradation, the value should be greater than or equal to the size of the available memory.
shmmni	512
shmseg	120
vps_ceiling	64

To display the current value or formula specified for these kernel parameters, and to change them if necessary:

- Enter the following command to start the kcweb application:

  ```
  /usr/sbin/kcweb -F
  ```

- Check the value or formula specified for each of these parameters and, if necessary, modify that value or formula.
- If necessary, refer to the kcweb online help for more information about completing this step.

Note If the current value for any parameter is higher than the value listed in this table, then do not change the value of that parameter.

Note If you modify the value of a parameter that is not dynamic, then you must restart the system.

Note MSGMAP and NCALLOUT are obsolete HP_UX 11.31. You need not specify values for these parameters.

Linux x86-64

Hardware Requirements

The system has to meet the following minimum hardware requirements:

Requirement	Minimum Value
Physical memory (RAM)	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required memory for the Oracle Server installation. To determine the RAM size, enter the following command: `grep MemTotal /proc/meminfo`
CPU	x86-64 Architecture To determine whether the system architecture can run the software, enter the following command: `uname -m`
Swap space	1-2 GB RAM: 1.5 times the size of RAM 2-8 GB RAM: Equal to the size of RAM > 8GB RAM: 0.75 times the size of RAM To determine the size of the configured swap space, enter the following command: `grep SwapTotal /proc/meminfo`
Disk space in /tmp	400 MB (409600 KB) To determine the amount of disk space available in the /tmp directory, enter the following command: `df -k /tmp`
Disk space for software files	Between 3.5 GB and 5 GB of disk space for the Oracle software, depending on the installation type
Disk space for database files	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required space for the database creation.

Software Requirements

The system has to meet the following minimum software requirements:

- SUSE Linux Enterprise Server 10.0
- Kernel version 2.6.16.21 or higher has to be installed

  To determine whether the required kernel is installed, enter the following command:

  `uname -r`
- The following packages have to be installed:

- binutils-2.16.91.0.5
- compat-libstdc++-5.0.7-22.2
- gcc-4.1.0
- gcc-c++-4.1.0
- glibc-2.4-31.2
- glibc-32bit-2.4-31.2 (32 bit)
- glibc-devel-2.4
- glibc-devel-32bit-2.4 (32 bit)
- libaio-0.3.104
- libaio-32bit-0.3.104 (32 bit)
- libaio-devel-0.3.104
- libelf-0.8.5
- libgcc-4.1.0
- libstdc++-4.1.0
- libstdc++-devel-4.1.0
- make-3.80
- sysstat-6.0.2

To determine whether the required packages are installed, enter a command similar to the following:

```
rpm -q package_name
```

If a package is not installed, then install it from the Linux distribution media or download the required package version from the Linux vendor's Web site.

Kernel Parameters

Verify that the kernel parameters shown in the following table are set to values greater than or equal to the recommended value. The procedure following the table describes how to verify and set the values.

Parameter	Recommended Value	File
semmsl semmns semopm semmni	250 32000 100 128	/proc/sys/kernel/sem
shmall	2097152	/proc/sys/kernel/shmall
shmmax	Minimum of the following values: Half the size of physical memory (in bytes) 4GB - 1 byte	/proc/sys/kernel/shmmax
shmmni	4096	/proc/sys/kernel/shmmni

file-max	512 * PROCESSES (PROCESSES is taken for the selected teplates for the database)	/proc/sys/fs/file-max
ip_local_port_range	1024 65000	/proc/sys/net/ipv4/ip_local_port_range
rmem_default	262144	/proc/sys/net/core/rmem_default
rmem_max	4194304	/proc/sys/net/core/rmem_max
wmem_default	262144	/proc/sys/net/core/wmem_default
wmem_max	262144	/proc/sys/net/core/wmem_max

Note If the current value for any parameter is higher than the value listed in this table, do not change the value of that parameter!

To view the current value specified for these kernel parameters, and to change them if necessary, follow these steps:

1. Enter commands, similar to the following, to view the current values of the kernel parameters:

   Note Make a note of the current values and identify any values that you must change.

Parameter	Command	Description
semmsl, semmns, semopm and semmni	# /sbin/sysctl -a | grep sem	This command displays the value of the semaphore parameters in the order listed.
shmall, shmmax and shmmni	# /sbin/sysctl -a | grep shm	This command displays details of the shared memory segment sizes.
file-max	# /sbin/sysctl -a | grep file-max	This command displays the maximum number of file-handles.
ip_local_port_range	# /sbin/sysctl -a | grep ip_local_port_range	This command displays a range of port numbers.
rmem_default	/sbin/sysctl -a | grep rmem_default	-
rmem_max	# /sbin/sysctl -a | grep rmem_max	-
wmem_default	# /sbin/sysctl -a | grep wmem_default	-
wmem_max	# /sbin/sysctl -a | grep wmem_max	-

2. If the value of any kernel parameter is different to the recommended value, complete the following steps:

   Using any text editor, create or edit the /etc/sysctl.conf file and add or edit lines similar to the following:

   Note Include lines only for the kernel parameter values that you want to change. For the semaphore parameters (kernel.sem), you must specify all four values. However, if any of the current values are larger than the recommended value specify the larger value.

```
fs.file-max = 512 * PROCESSES
kernel.shmall = 2097152
kernel.shmmax = 2147483648
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 1024 65000
net.core.rmem_default = 262144
net.core.rmem_max = 4194304
net.core.wmem_default = 262144
net.core.wmem_max = 262144
```

Note The minimum value required for shmmax is 0.5 GB. However, Oracle recommends that you set the value of shmmax to 2.0 GB for optimum performance of the system.

Note By specifying the values in the /etc/sysctl.conf file, they persist when you reboot the system.

3. Enter the following command to change the current values of the kernel parameters:

   ```
   /sbin/sysctl -p
   ```

4. Review the output from this command to verify that the values are correct. If the values are incorrect, edit the /etc/sysctl.conf file, then enter this command again.

5. Enter the following command to cause the system to read the /etc/sysctl.conf file when it reboots:

   ```
   /sbin/chkconfig boot.sysctl on
   ```

Set Shell Limits for the Oracle User

To improve the performance of the software on Linux systems, you must increase the following shell limits for the Oracle user:

Shell Limit	Item in limits.conf	Hard Limit
Maximum number of open file descriptors	nofile	65536
Maximum number of processes available to a single user	nproc	16384

To increase the shell limits:

1. Add the following lines to /etc/security/limits.conf file:

   ```
   Oracle soft nproc 2047
   Oracle hard nproc 16384
   Oracle soft nofile 1024
   Oracle hard nofile 65536
   ```

2. Add the following lines to the /etc/pam.d/login file, if it does not already exist:

   ```
   session required /lib/security/pam_limits.so
   session    required     pam_limits.so
   ```

3. Depending on the Oracle user's default shell, make the following changes to the default shell start-up file:

   For the Bourne, Bash, or Korn shell add the following lines to the /etc/profile.local file:

```
if [ $USER = "Oracle" ]; then
if [ $SHELL = "/bin/ksh" ]; then
ulimit -p 16384
ulimit -n 65536
else
ulimit -u 16384 -n 65536
fi
fi
For the C or tcsh shell, add the following lines to the
/etc/csh.login.local file:
if ( $USER == "Oracle" ) then
limit maxproc 16384
limit descriptors 65536
endif
```

Problem Using MEMORY_TARGET by 11g Installation on Linux

Increase the size of /dev/shm mountpoint - to be bigger than the value of initialization parameters MEMORY_TARGET and MEMORY_MAX_TARGET set in the database template file.

For instance, if the value of MEMORY_MAX_TARGET is 4GB in the database template file, increase the size of /dev/shm mountpoint by the following command:

```
mount -t tmpfs shmfs -o size=8g /dev/shm
```

Also, to make this change persistent across system restarts, add an entry in /etc/fstab similar to the following:

```
shmfs /dev/shm tmpfs size=8g 0
```

When AMM (Automatic Memory Management) is enabled - by setting the initialization parameters MEMORY_TARGET and MEMORY_MAX_TARGET - it uses /dev/shm on Linux. If memory_max_target is set over /dev/shm size, you may get the following error message:

ORA-00845: MEMORY_TARGET not supported on this system!

A solution is to increase the /dev/shm mountpoint size.

Solaris

Hardware Requirements

The system has to meet the following minimum hardware requirements:

Requirement	Minimum Value
Physical memory (RAM)	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required memory for the Oracle Server installation. To determine the physical RAM size, enter the following

	command: `/usr/sbin/prtconf | grep "Memory size"`
Swap space	1-2 GB RAM: 1.5 times the size of RAM 2-8 GB RAM: Equal to the size of RAM > 8GB RAM: 0.75 times the size of RAM To determine the size of the configured swap space, enter the following command: `/usr/sbin/swap -s`
Disk space in /tmp	400 MB (409600 KB) To determine the amount of disk space available in the /tmp directory, enter the following command: `df -h /tmp`
Disk space for software files	5 GB (5242880KB)
Disk space for database files	For additional information refer to the Hardware Sizing Recommendation for Agile e6.1.1 document to determine the required space for the database creation.
System architecture	64-bit To determine whether the system architecture can run the software, enter the following command: `/bin/isainfo -kv`

Software Requirements

The system has to meet the following minimum software requirements:

- Solaris 10

The following packages have to be installed:

- SUNWarc
- SUNWbtool
- SUNWhea
- SUNWlibC
- SUNWlibm
- SUNWlibms
- SUNWsprot
- SUNWtoo
- SUNWi1of
- SUNWi1cs
- SUNWi15cs

- SUNWxwfnt

To determine whether the required packages are installed, enter commands similar to the following:

```
pkginfo -i SUNWarc SUNWbtool SUNWhea SUNWlibm SUNWlibms SUNWsprot \
SUNWsprox SUNWtoo SUNWi1of SUNWi1cs SUNWi15cs SUNWxwfnt
```

If a package is not installed, then install it. Refer to your operating system or software documentation for information about installing packages.

The following patches have to be installed:

- 127111-02 SunOS 5.10: libc patch
- 137111-04 SunOS 5.10: kernel patch
- 117837-05: C++ compiler optimizer patch
- 117846-08: C++ compiler Optimization patch
- 118682-01

To determine whether an operating system patch is installed, enter a command similar to the following:

```
# /usr/sbin/patchadd -p | grep patch_number(without version number)
```

For example, to determine if any version of the 111713 patch is installed, use the following command:

```
# /usr/sbin/patchadd -p | grep 111713
```

Kernel Parameters

The kernel parameter and shell limit values shown in the following section are recommended values only. For production database systems, Oracle recommends that you tune these values to optimize the performance of the system. Refer to your operating system documentation for more information about tuning kernel parameters.

Verify that the kernel parameters shown in the following table are set to values greater than, or equal to the recommended value shown. The table also contains the resource controls that replace the /etc/system file for a specific kernel parameter.

Note In Solaris 10 you are not required to make changes to the /etc/system file to implement the System V TPC. Solaris 10 uses the resource control facility for its implementation.

Parameter	Replaced by Resource Control	Recommended Value
noexec_user_stack	NA	1
semsys:seminfo_semmni	project.max-sem-ids	100
semsys:seminfo_semmsl	process.max-sem-nsems	256
shmsys:shminfo_shmmax	project.max-shm-memory	4294967295
shmsys:shminfo_shmmni	project.max-shm-ids	100

Use the following procedure to view the current value specified for resource controls, and to change

them if necessary:

- To view the current values of the resource control, enter the following commands:

```
prctl -n project.max-shm-memory -i project user.root
prctl -n project.max-sem-ids -i project user.root
```

- If you must change any of the current values, then:
  - To modify the value of max-shm-memory to 4 GB:

```
prctl -n project.max-shm-memory -v 4gb -r -i project user.root
```

  - To modify the value of max-sem-ids to 256:

```
prctl -n project.max-sem-ids -v 100 -r -i project user.root
```

Chapter 3

Prepare the System

Setup an Oracle OS User

To create an Oracle account, do the following:

1. Create the dba group for the machine on which Oracle is being installed:

   ```
   groupadd –g 1001 dba
   ```

2. Create an Oracle user “oracle” with the home directory ”/opt/oracle” (the value for ORACLE_BASE too - the directory must be created first) login shell ”/bin/csh” and member of the group "dba":

   ```
   useradd –u 1001 –g dba –d /opt/oracle –s /bin/csh oracle
   ```

3. Log into Oracle and create the subdirectories /opt/oracle/bin, /opt/oracle/product, and /opt/oracle/product/11.1

   If ORACLE_BASE is not set to /opt/oracle, the above mentioned subdirectories have to be created in designated directory.

4. Create the directory, links, and mount points for distribution of the data files depending on the number of disks prepared for Oracle installation. For instance, if you have prepared 3 disks -

- …/data1
- …/data2
- …/data3

The names data1, data2 and data3 are just example. The directory name is up to you. Subdirectories will be created later in these directories by database creation (see Chapter 4).

Setup the Shell Environment Variables for Oracle 11g

To set up the shell environment variables, do the following:

1. Download and uncompress the Oracle Agile Engineering Data Management (Release e6.1.1) from Oracle eDelivery web site.

2. Copy script csh_ORA11.1 from the folder addon/db/unix/scripts to /opt/oracle/bin

   If ORACLE_BASE is not set to /opt/oracle, open the script with editor and change the value for ORACLE_BASE. Then source the script to set the environmental variables.

   ```
   chmod 754 csh_ORA11.1
   source $HOME/csh_ORA11.1
   ```

3. Set file creation permissions with the “umask” command:

   ```
   login:
   umask 022
   ```

4. Verify the environment.
5. Log off and log in as the Oracle user to ensure all environment settings are active.
6. Type env | sort at the Unix prompt to view all environment variables.

Software Item	Requirements
DISPLAY	Set it to the machine name and monitor the station from which you are connecting to the server machine (setenv DISPLAY hostname: 0.0).
LD_LIBRARY_PATH SHLIB_PATH (HP-UX) LIBPATH (AIX)	Required for Oracle products using shared libraries. Must include: $ORACLE_HOME/lib.
ORACLE_BASE	Not required, but recommended as part of an OFA-compliant installation.
ORACLE_HOME	Must be set to the directory where the Oracle software will be installed.
ORACLE_SID	Specifies the instance name, or SID of the Oracle Server. Must be unique for Oracle instances running on the same machine. Oracle Corporation recommends using four characters or less.
ORACLE_TERM	Required by all character mode and Motif mode Oracle products. 386 386x 386u 386s dgd2 dgd4 hftc hft hpterm 3151 ncd220 sun sun5 vt100 vt220 wy50 wy150 xsun xsun5.
ORA_NLS10	Required when creating a database with characters set other than US7ASCII. Set to $ORACLE_HOME/nls/data
PATH	The search path must include: $ORACLE_HOME/bin, /bin, /usr/bin, and /usr/local/bin.
TMPDIR	A directory with free space where the Oracle account has write permission. The default location on Linux is /usr/tmp.

Free Disk Space in the /tmp Directory

The Oracle Installer needs some temporary disk space during the installation in /tmp. To determine the amount of free disk space available in the /tmp directory, enter the following command:

```
df /tmp
```

If there is less than 400 MB disk space available in the /tmp directory, complete one of the following steps:

- Delete unnecessary files from the /tmp directory to achieve the required disk space.
- Set the TEMP and TMPDIR environment variables when setting the Oracle user's environment (described later).
- Extend the file system that contains the /tmp directory. If necessary, contact your system

administrator for information about extending file systems.

If you have determined that the /tmp directory had insufficient free disk space when checking the hardware requirements, enter the following commands to set the TEMP and TMPDIR environment variables. Specify a directory on a file system with sufficient free disk space.

- Bourne, Bash, or Korn shell:

```
TEMP=/directory
TMPDIR=/directory
export TEMP TMPDIR
```

- C shell:

```
setenv TEMP /directory
setenv TMPDIR /directory
```

Copy Database Start and Stop Scripts for the Oracle Server

Note If you install only the Oracle Client you can skip this step.

If not yet done, copy the start and stop scripts from folder addon/db/unix/scripts to the directory /opt/oracle/bin.

- start_plm61
- stop_ plm61
- stop_ plm61_immediate
- stop_ plm61_transactional

Download Oracle Installation Media

Download and uncompress the Oracle Database 11g Release 1 (11.1.0.6.0) for relevant platform from Oracle eDelivery web site.

If Oracle Server and Agile e6.1.1 are installed on different machines and Oracle client needs to be installed, download and uncompress Oracle Database 11g Release 1 Client (11.1.0.6.0) for relevant platform from Oracle eDelivery web site.

Chapter 4

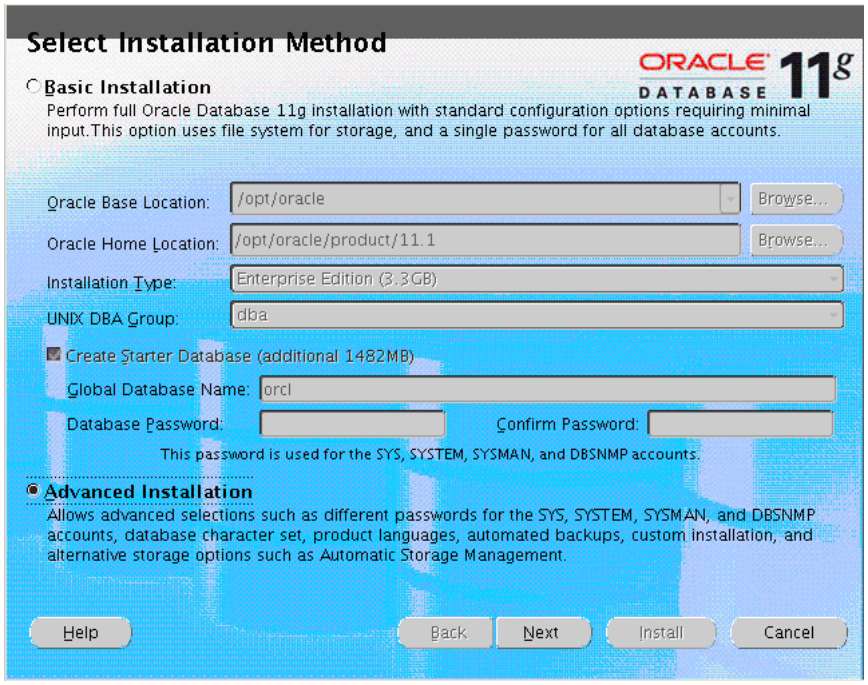
Install Oracle 11g

Install the Oracle Server

1. Log in as the Oracle user.
2. Start the Oracle Installer.

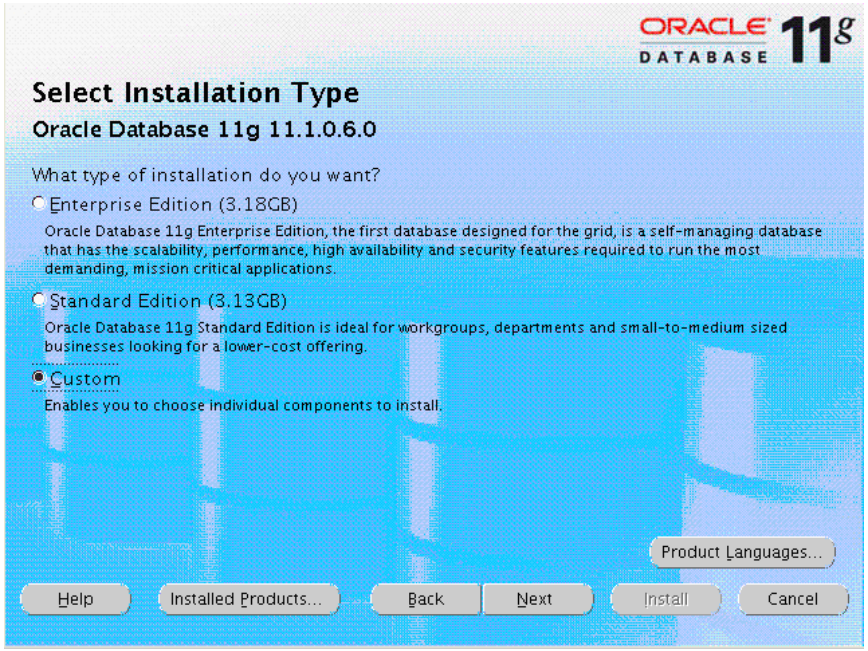
   `./runInstaller`

   The Welcome window is opened.

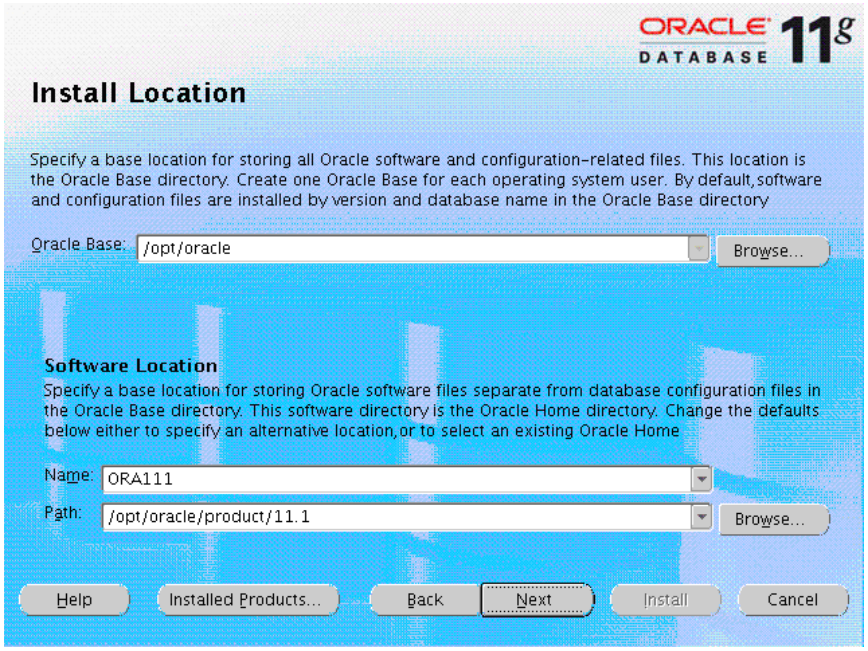


3. Select Advanced Installation and Click Next.

Note	If this is the first installation of the Oracle software, you will be prompted to define the Oracle Inventory directory. Set it to $ORACLE_BASE/oraInventory.

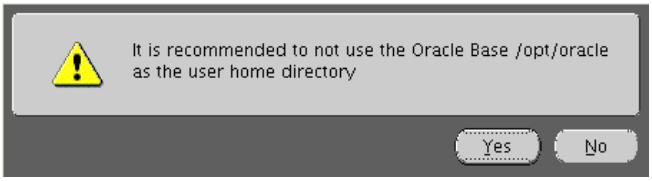


4. Select Custom installation to choose the components to be installed.
5. Click Next.



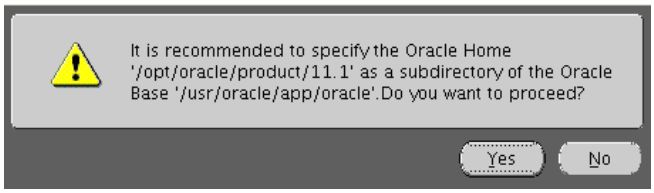
6. Enter the name and the path for ORACLE_HOME.
7. Click Next.

   If Oracle Base is the same as user home directory, you will get the following warning message:



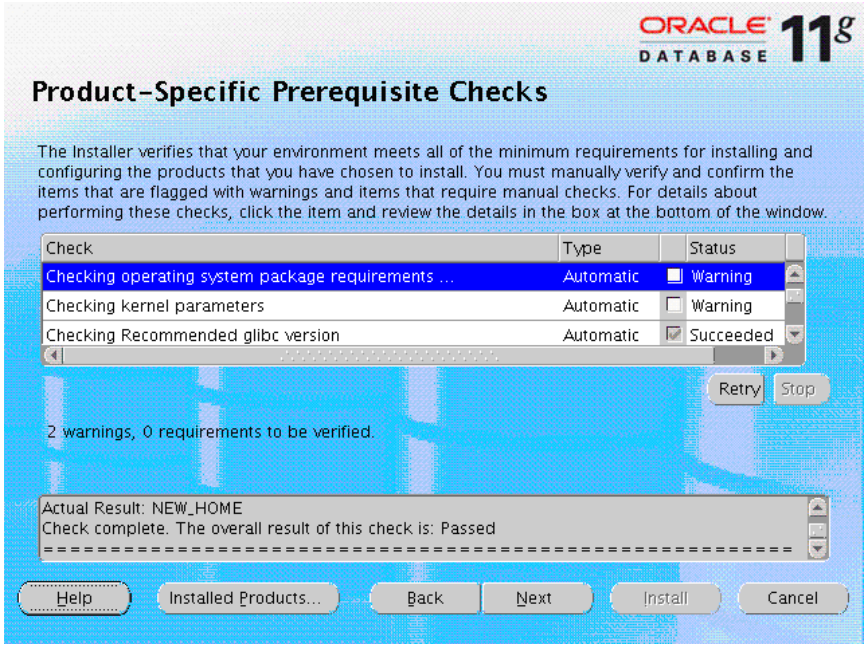
It is not critical if you ignore the warning. But if possible, avoid having the same directory for Oracle Base and user home.

If the Oracle Home is not a subdirectory of the Oracle Base directory, you will get the following warning message:



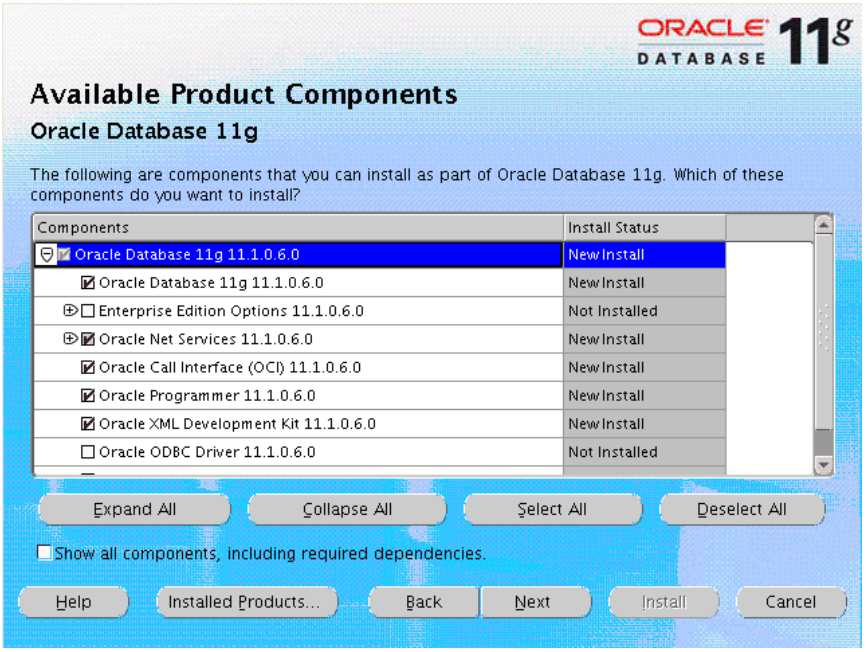
It is not critical if you ignore the warning. But if possible, specify the Oracle Home directory as a subdirectory of Oracle Base.

8. Oracle Universal Installer (OUI) performs prerequisite checks.

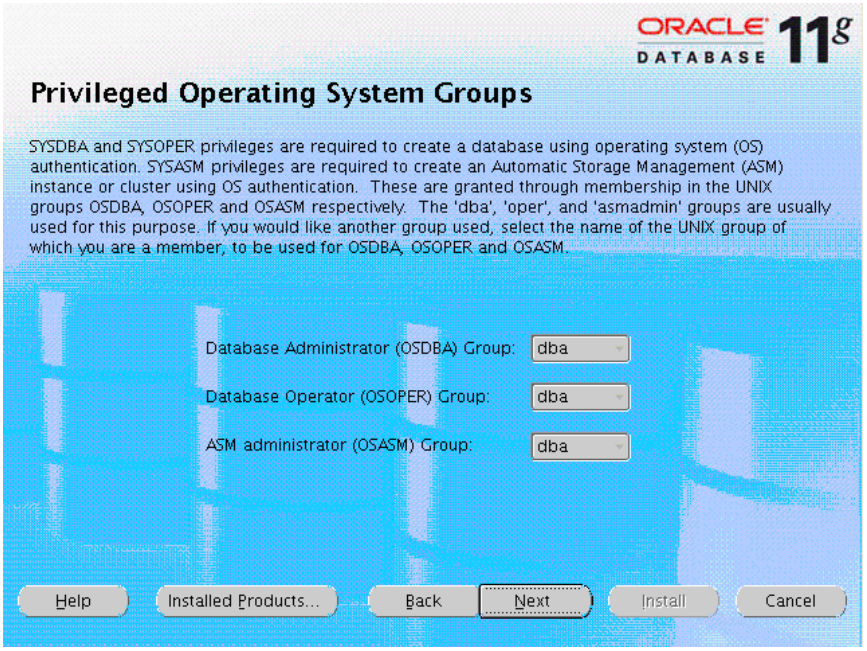


The Installer verifies that your environment meets all of the minimum requirements for installing and configuring 11g. The overall result of the check must be 'Passed'. If some checks have failed, cancel the installation and verify once again if your system satisfies hardware and software requirements. Then start the installation again.

9. Click Next to proceed.

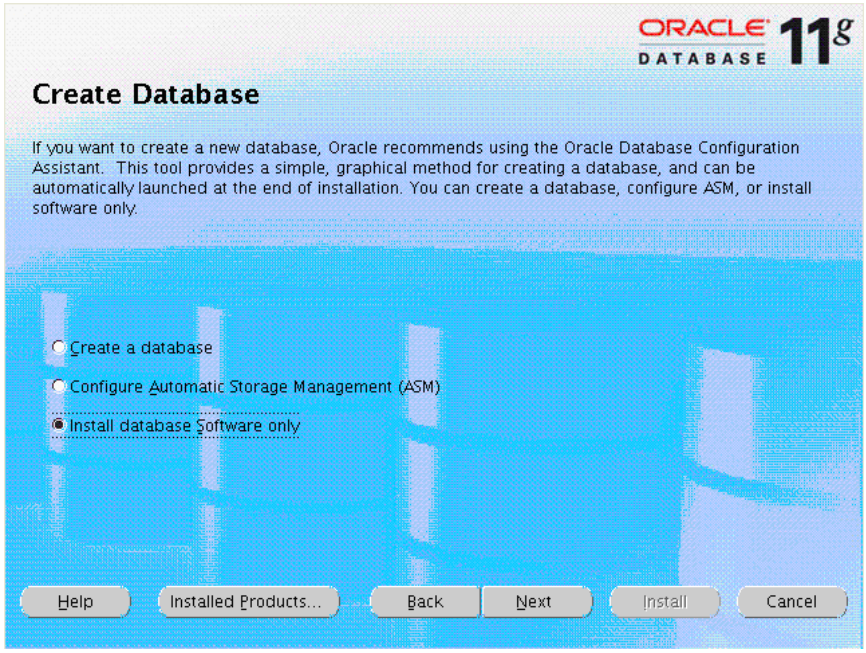


10. Select the components you want to install from the product list and click Next.
11. Enter the dba group.



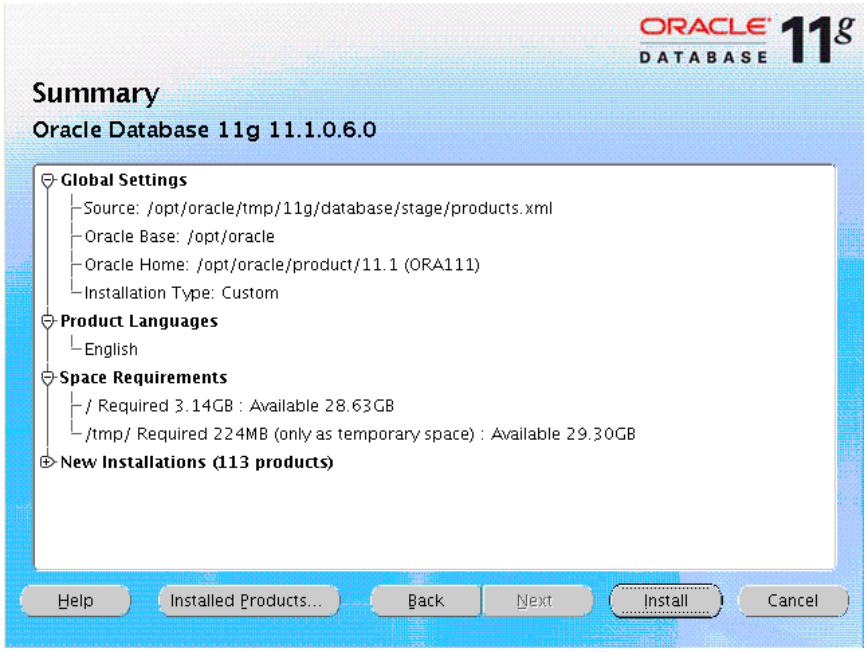
12. Click Next.

    The Create database window is opened.



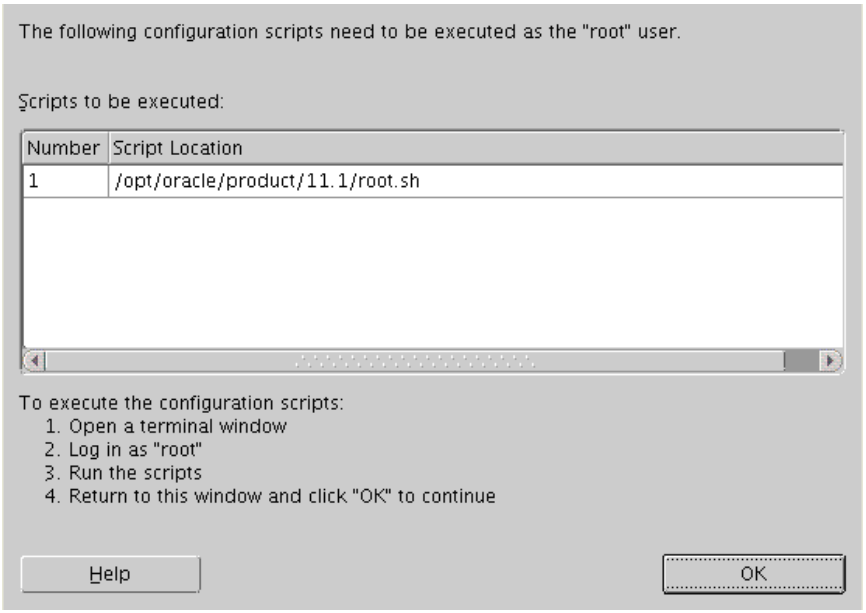
Note Select Install database Software only in the Create Database window, and then click Next to continue. (Database will be created later in a separate step.)

In the Summary window, review the options you have chosen. If necessary, click Previous to perform changes.



13. If the options are correct, click Install to start the installation. The Install window shows the install process.

The installation may take some time. The Execute Configuration Scripts window appears and you are asked to execute a script as user “root”.



14. Open a second terminal, log on as “root” user, and run the script, e.g.:

```
cd /opt/oracle/product/11.1
./root.sh
```

Note	/opt/oracle/product/11.1 is the path in the example – you should go to the directory mentioned in the Execute Configuration scripts window.

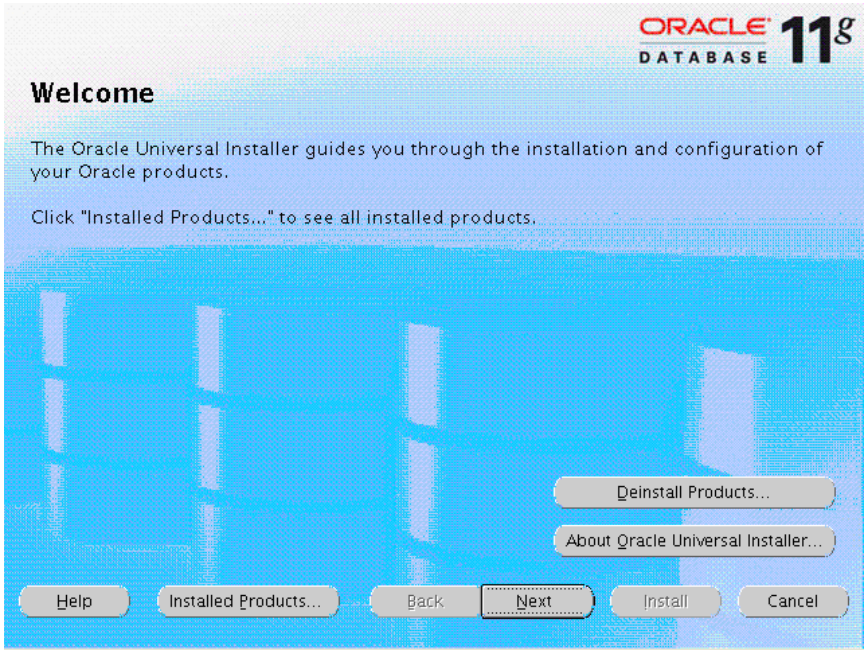
Install the Oracle Client

Note	The Oracle client only needs to be installed when the Oracle Server and Agile e6.1.1 are installed on different machines.

1. Log in as the Oracle user.
2. Start the Oracle Installer.

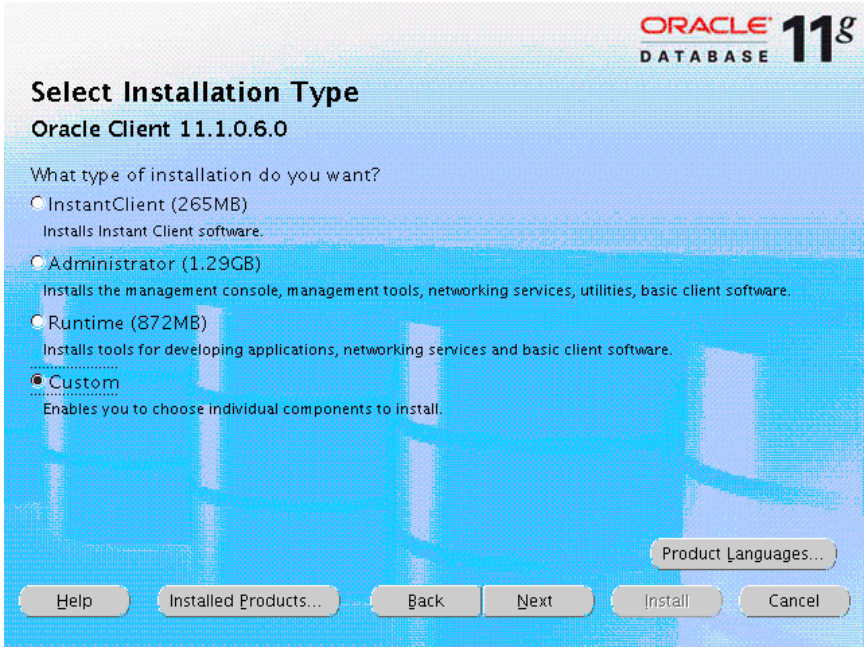
   ```
   ./runInstaller
   ```

   The Welcome window is opened.

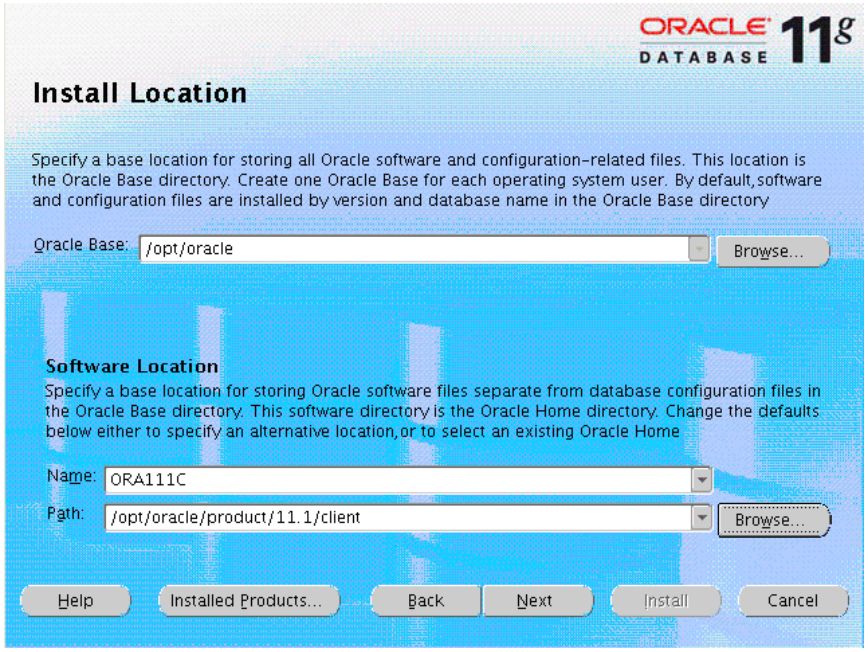


3. Click Next.

Note If this is the first installation of the Oracle software, you will be prompted to define the Oracle Inventory directory. Set it to $ORACLE_BASE/oraInventory.



4. Select Custom installation to choose the components to be installed and click Next.

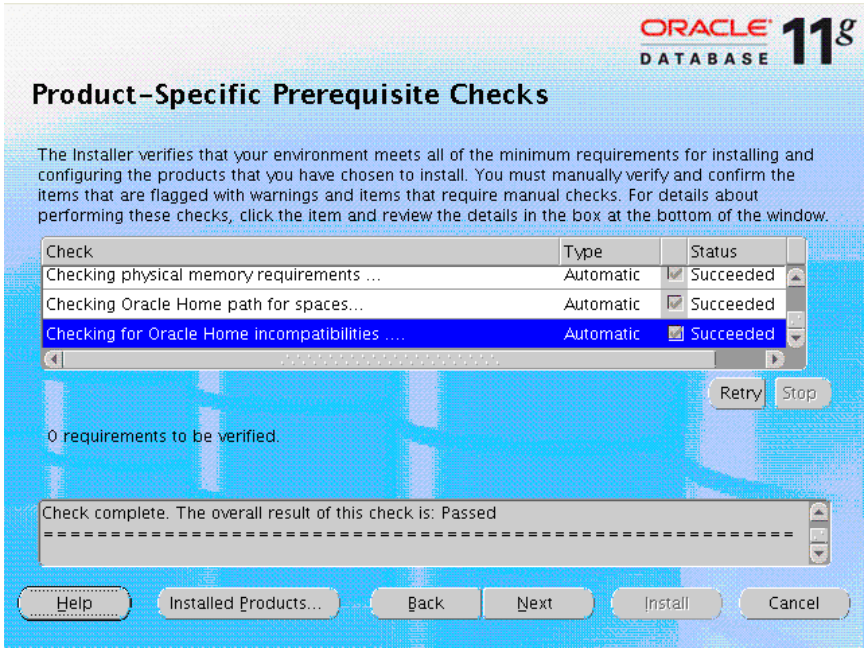


5. Enter the name and the path for ORACLE_HOME and click Next.

   If the directory for Oracle Base is the same as the user home directory, you will get the following warning message:

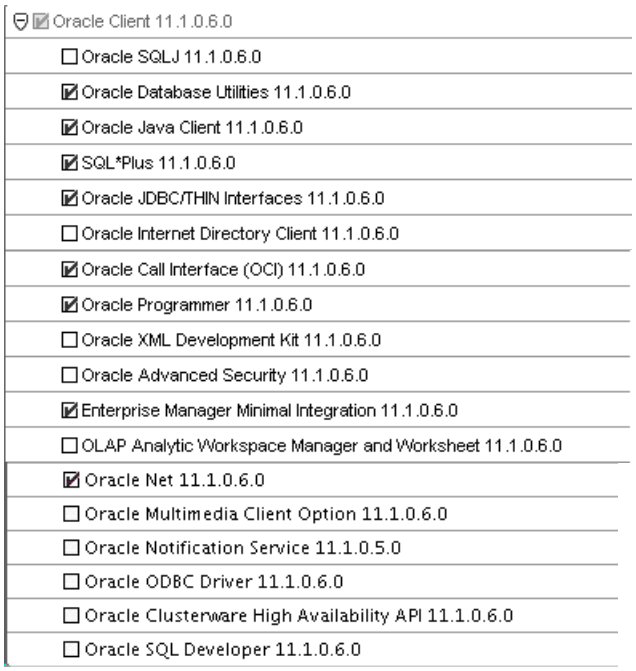
   It is not critical if you ignore the warning. But if possible, avoid having the same directory for Oracle Base and user home.

6. Oracle Universal Installer (OUI) performs prerequisite checks.



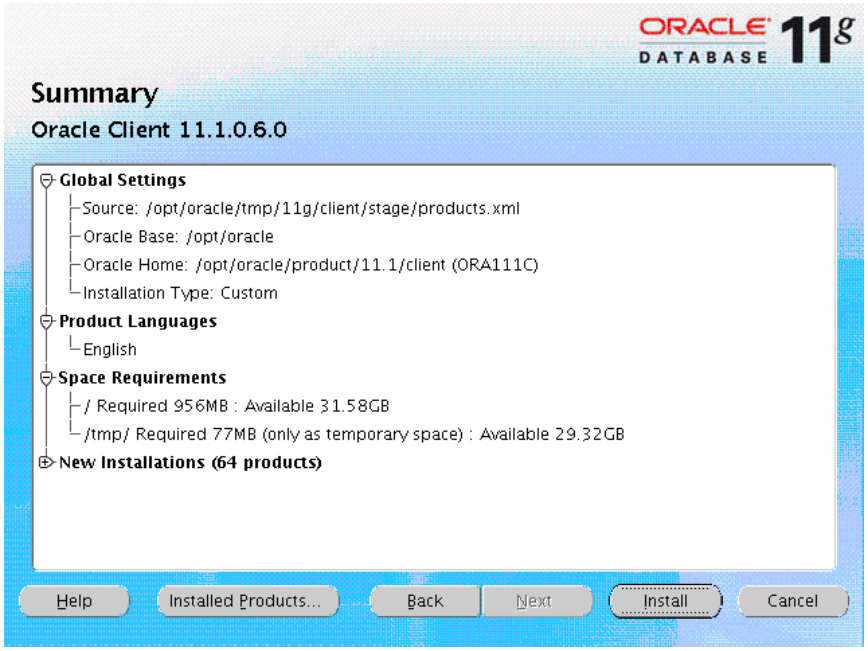
The Installer verifies that your environment meets all of the minimum requirements for 11g installing and configuring. The overall result of the check must be 'Passed'. If some checks have failed, cancel the installation and verify once again if your system meets the hardware and software requirements. Then start the installation again.

7. Click Next to proceed.
8. Select the components you want to install from the product list and click Next.



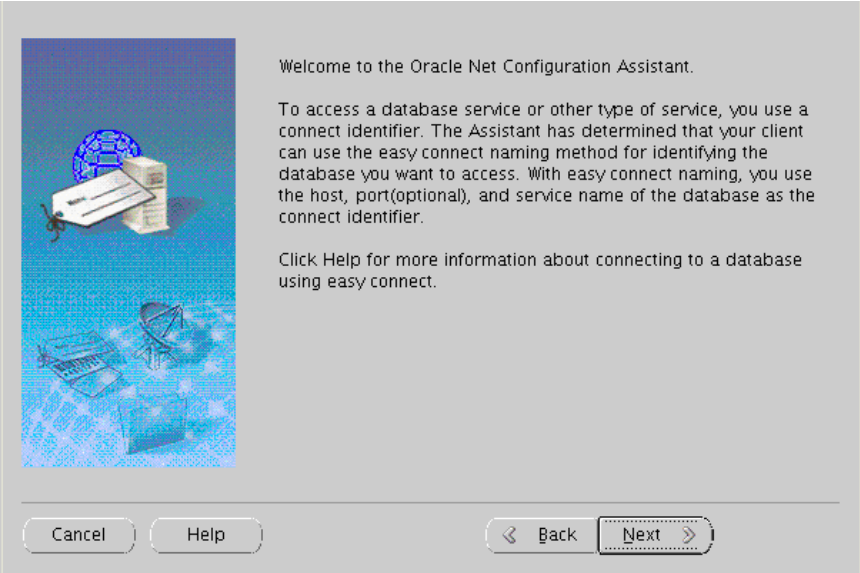
9. In the Summary window, review the options you have chosen. If necessary, click Back to change them.
10. If the options are correct, click Install to start the installation.

    The Install window shows the install process.

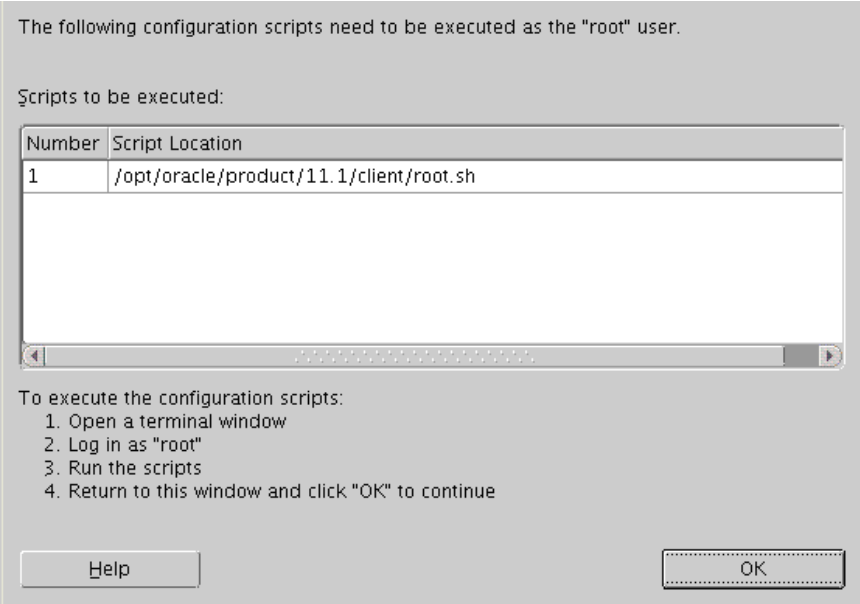


11. The installation may take some time. After the installation is completed, the Oracle Net Configuration Assistant is opened. Select Perform typical configuration and click Next.

12. Click Next again and then Finish.



13. At the end of the installation you are prompted to execute a script as user “root”.



14. Open a second terminal, log on as user “root”, and run the script:

```
cd /opt/oracle/product/11.1/client
./root.sh
```

/opt/oracle/product/11.1/client is the path in the example – you should go to the directory mentioned in the Execute Configuration scripts window

Installing Patch 11.1.0.7

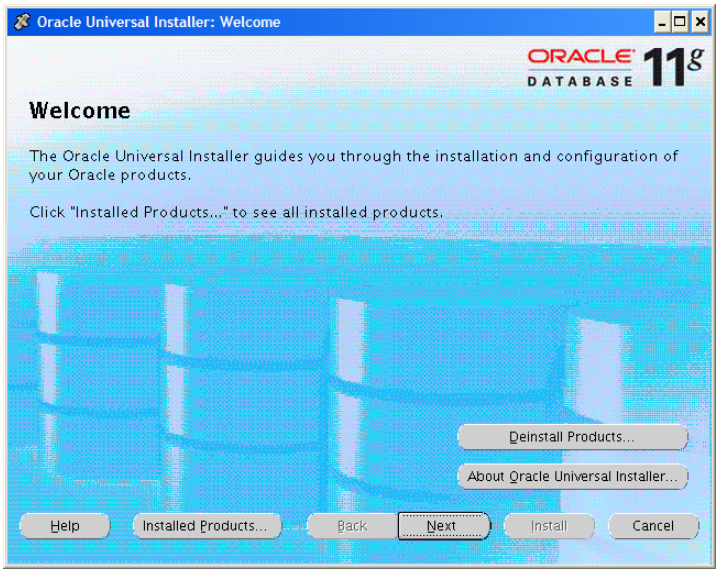
1. Download and uncompress the Oracle® Database 11g Release 1 (11.1.0.7.0) Patch Set for Agile Engineering Data Management (Release e6.1.1) for relevant platforms from Oracle eDelivery web site. The file contains the directory Agile_e611_db_patches_<os_name>

(e.g. Agile_e611_db_patches_LINUX64)

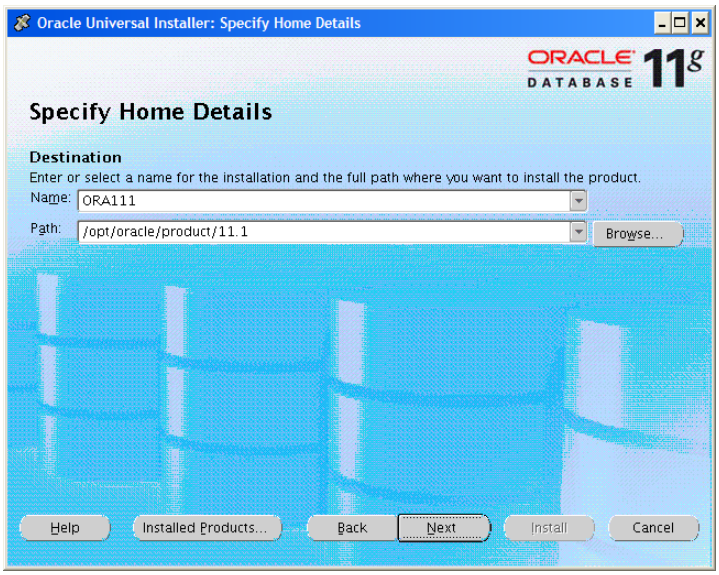
2. Start Oracle Universal Installer by executing the binary 'runInstaller' from downloaded patch set.

Agile_e611_db_patches_<os_name>/database/11_1_0_7/Disk1/runInstaller

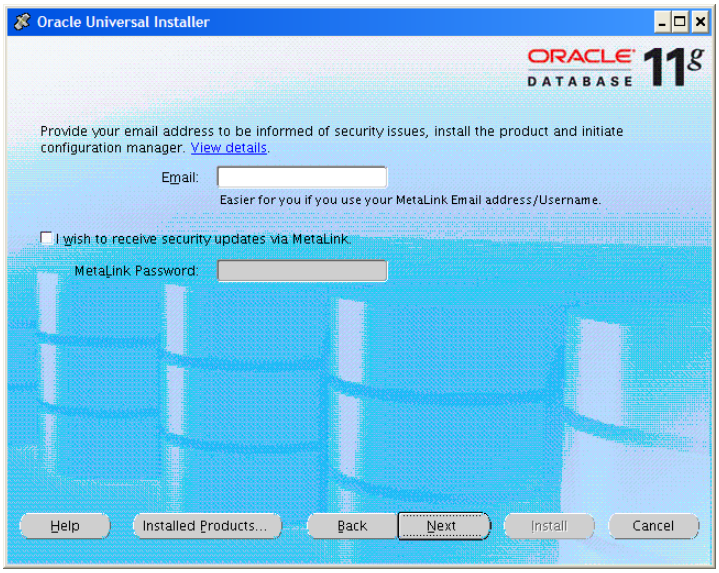
3. Click Next when the Welcome screen appears.



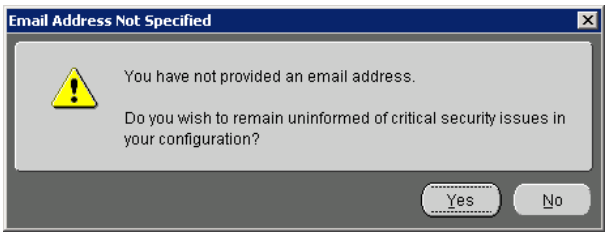
5. Select Oracle Home (where database/client was installed in the previous steps) name and path and click Next.



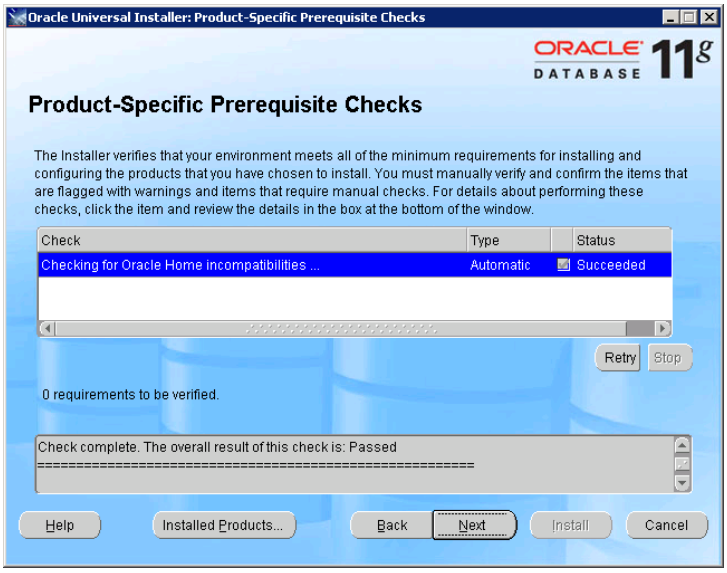
6. Provide email and/or Metalink password if you like to be informed of security issues and to receive security update via Metalink (optional fields, could be left blank). Click Next to continue.



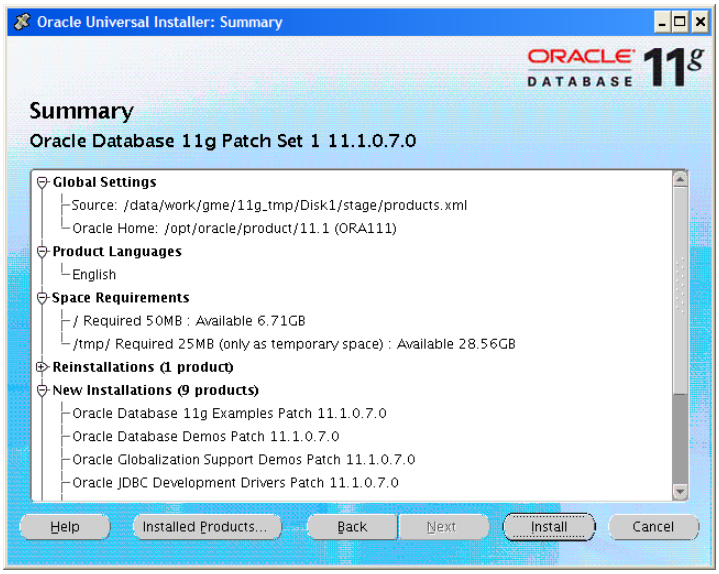
7. If you haven't provided email/password in the previous step, you will get the following warning. You can ignore it by clicking Yes.



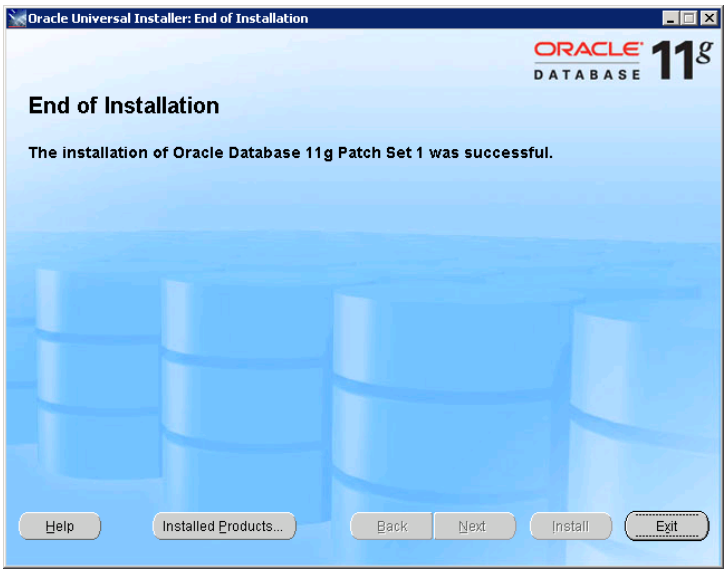
8. If the prerequisite checks passed, click Next. If any of checks has failed, see the details in the box below. Abort the installation by click on Cancel, ensure that all prerequisites are met and start the patch installation again.



9. The summary window appears. Click Next to begin the installation.



10. Click on Exit when the installation is finished.



Database Creation

The database will be created by using the Database Configuration Assistant (DBCA) templates. DBCA templates include database options, initialization parameters, and storage information for data files, table spaces, control files and redo logs.

Five different templates are predefined to meet different requirements according to purpose, size and number of the Agile e6.1.1 database installations. If you install a RAC database, you must only use the RAC database templates (see the table below).

Template Name	Description
plm_demo	database designed for test installations no archiving
plm_prod_small	database designed for productive use max number of concurrent users: 40 archiving enabled
plm_prod_medium	database designed for productive use max number of concurrent users: 80 archiving enabled
plm_prod_large	database designed for productive use max number of concurrent users: 120 archiving enabled
plm_prod_Xlarge	database designed for productive use max number of concurrent users: 150 archiving enabled
RAC_plm_demo	RAC database only database designed for test installations no archiving
RAC_plm_prod_small	RAC database only database designed for productive use max number of concurrent users: 40 archiving enabled
RAC_plm_prod_medium	RAC database only database designed for productive use max number of concurrent users: 80 archiving enabled
RAC_plm_prod_large	RAC database only database designed for productive use max number of concurrent users: 120 archiving enabled
RAC_plm_prod_Xlarge	RAC database only database designed for productive use max number of concurrent users: 150 archiving enabled

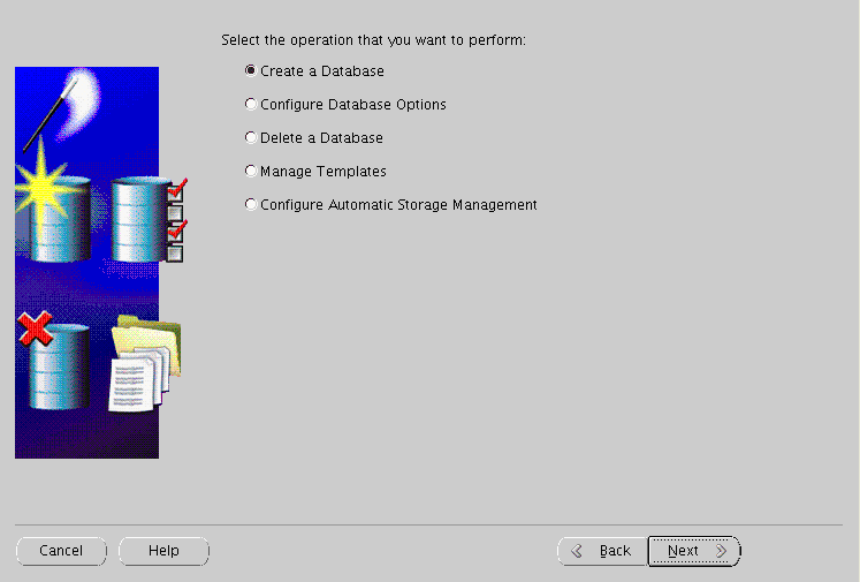
Additional information on significant database parameters and settings of each template can be

found in the Appendix. Decide which template corresponds approximately to your needs. It is also possible to adapt any of the values during the database creation process. All templates are in **addon/db/unix/templates** directory.

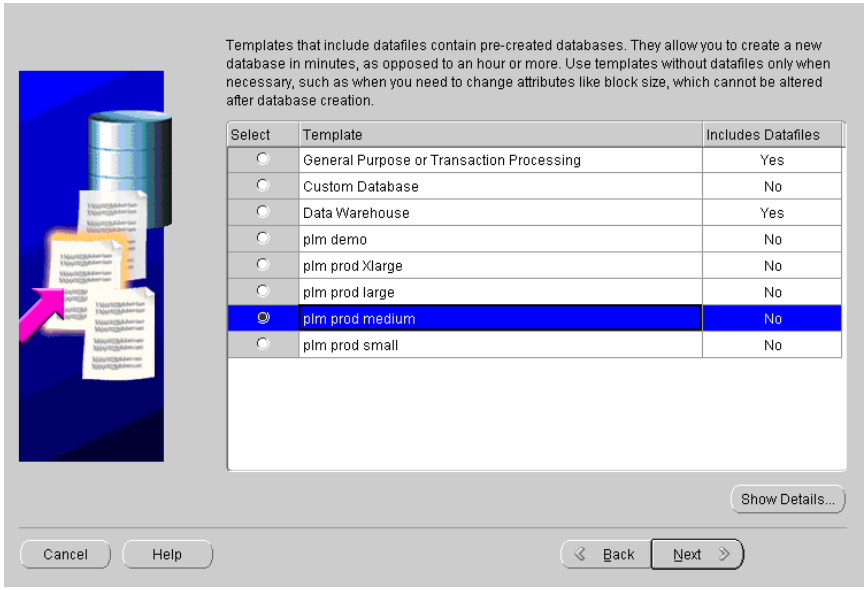
1. Refer to the downloaded media pack - Oracle Agile Engineering Data Management (Release e6.1.1).
2. Copy the required DBCA template file from addon/db/unix/templates (e.g. plm_prod_medium.dbt) to $ORACLE_HOME/assistants/dbca/templates directory.
3. Start the Oracle Database Configuration Assistant

   `$ORACLE_HOME/bin/dbca`

   An introduction window is opened.
4. Click Next to start the database configuration.
5. Select Create a database and click Next.

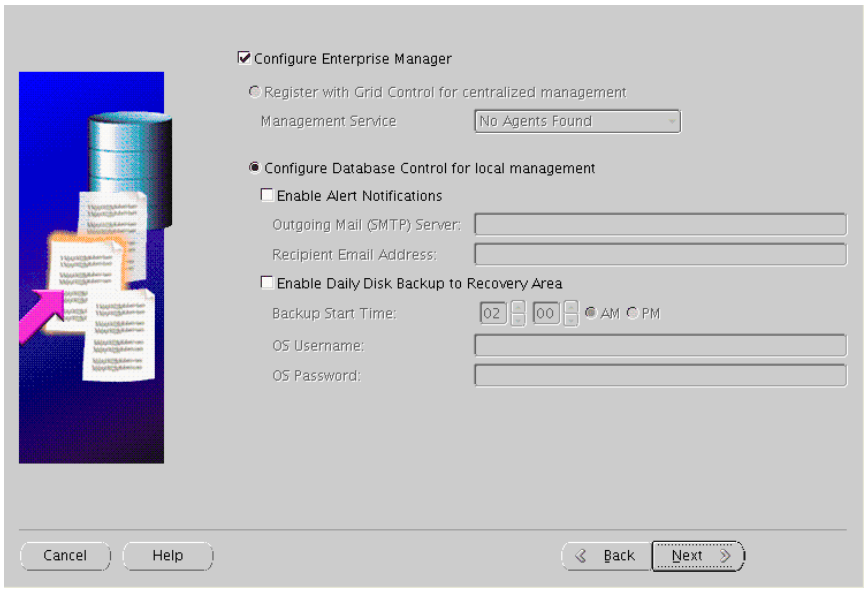


A list of different templates is provided. You should also see the template that you have chosen and copied in step 1.



6. Select the template you want to use and click Next.
7. Enter the global database name and SID (default: plm61) and click Next.

   The next window provides the possibility to centrally manage Oracle databases using Oracle Enterprise Manager Database Control.
8. Select this option and click Next.

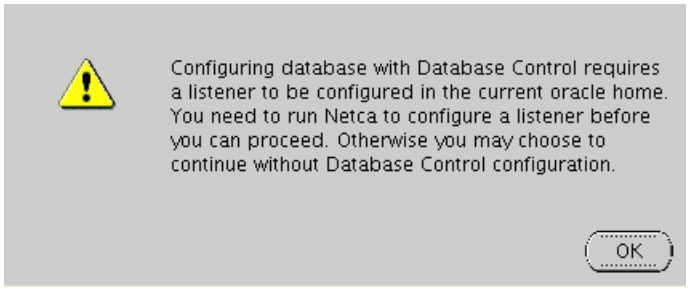


9. Select this option and click Next.

   You are prompted that a listener has to be configured first - prior to configuring database by dbca.

   If there is already a configured listener for this Oracle Home, this step will be skipped (no

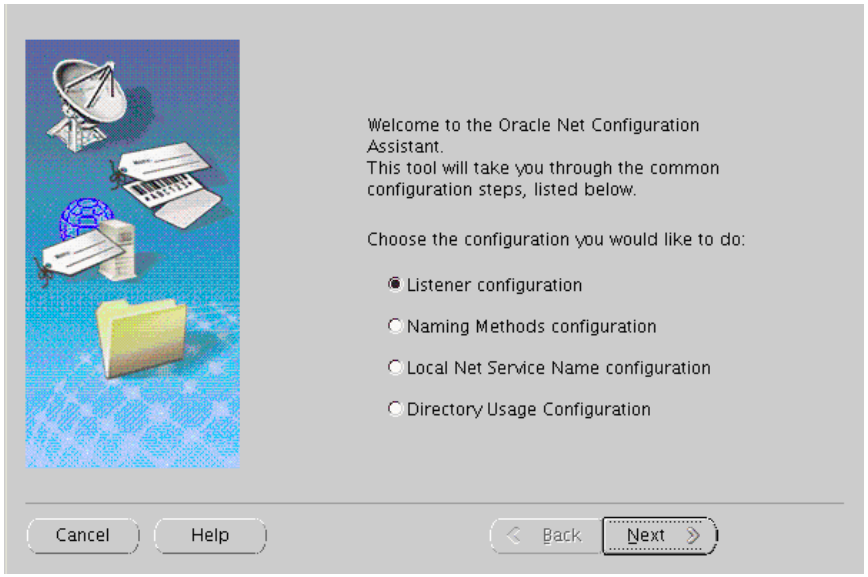
warning message appears) and by click on Next, you will see the screen from step 18. In this case skip the steps 9-17 and go to step 18



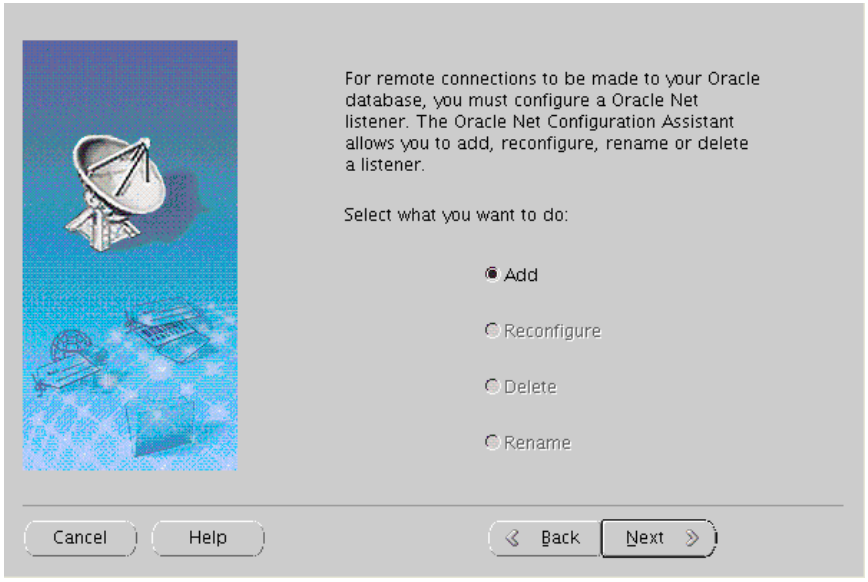
10. Click OK and close the warning message.
11. Start the Oracle Net Configuration Assistant

    `netca`

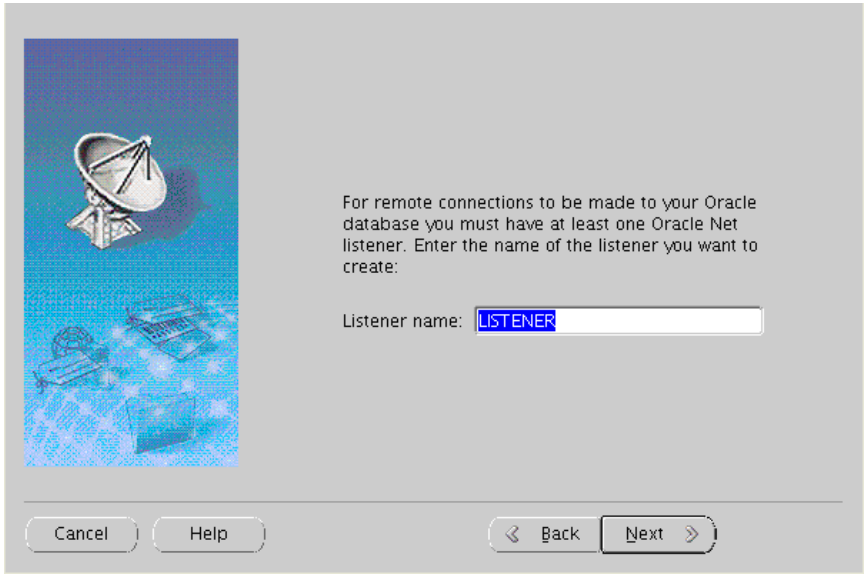
    An introduction window is opened.



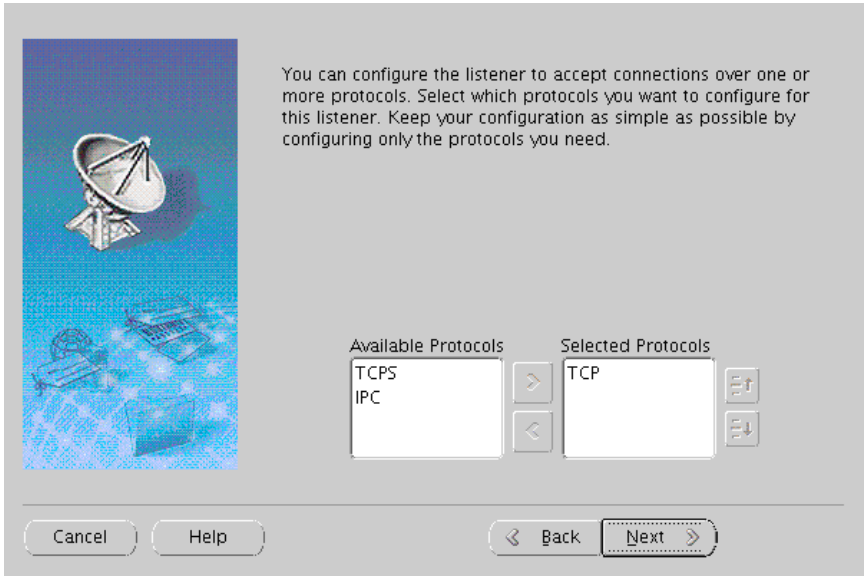
12. Select Listener configuration and click Next.



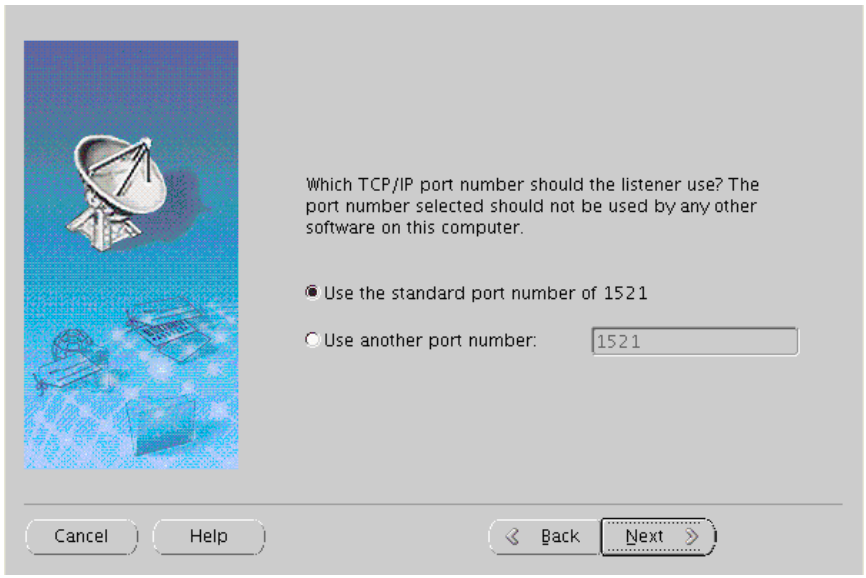
13. Select Add from the list and click Next.



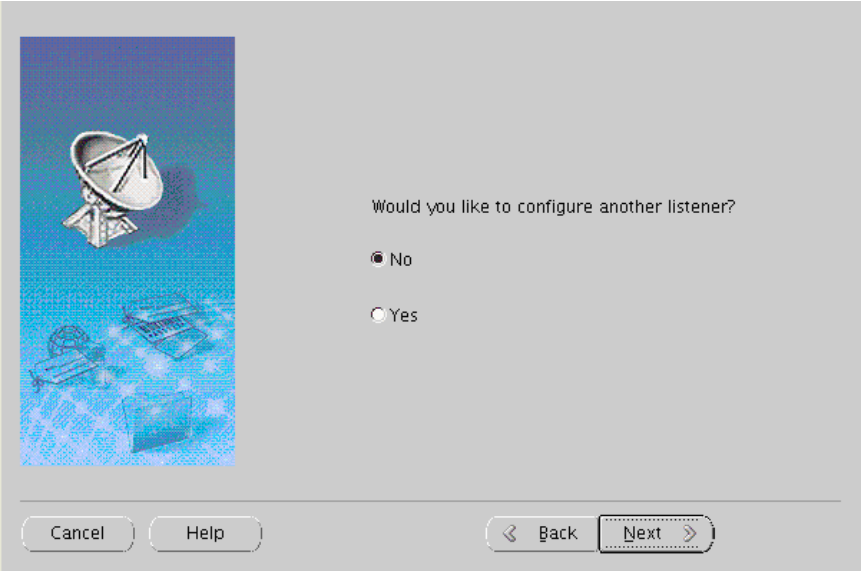
14. Choose a name for the listener (e.g. LISTENER) and click Next



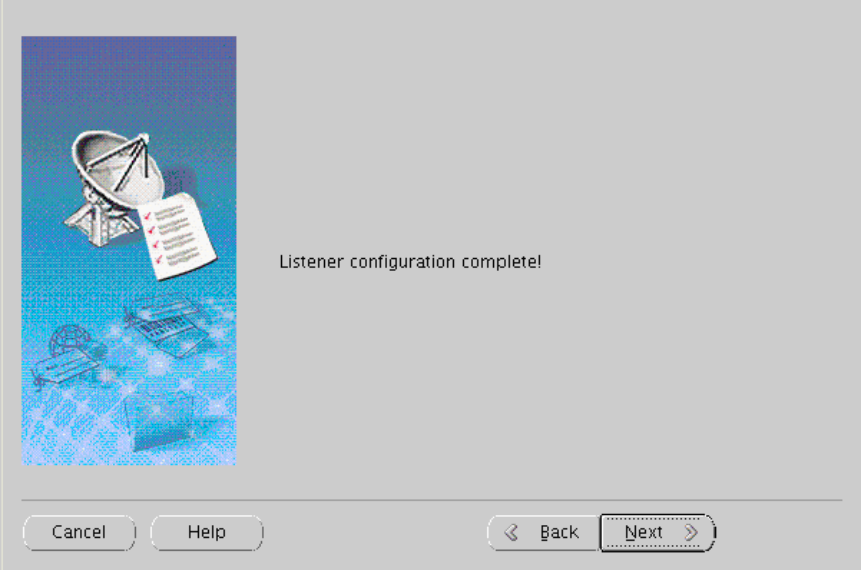
15. Select TCP from Available Protocols (selected by default) and click Next.



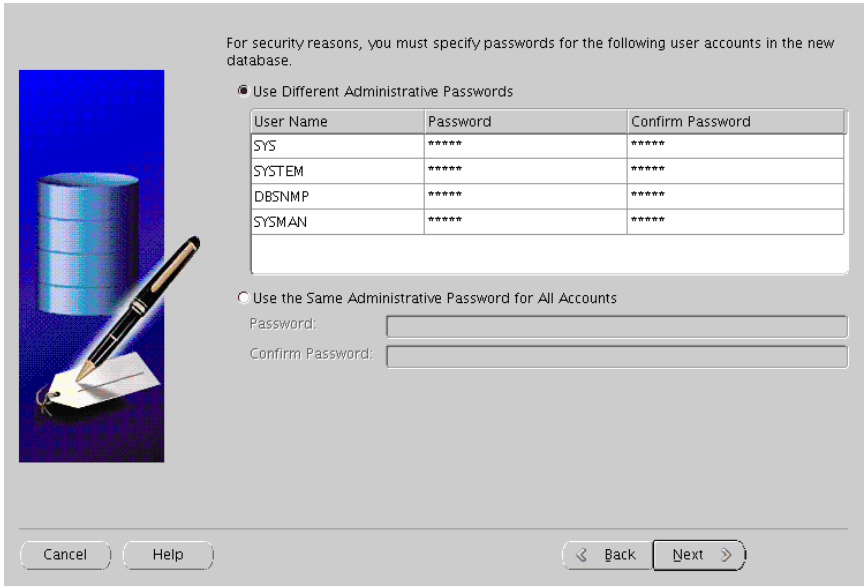
16. Select the standard port – 1251 – for listener and click Next.



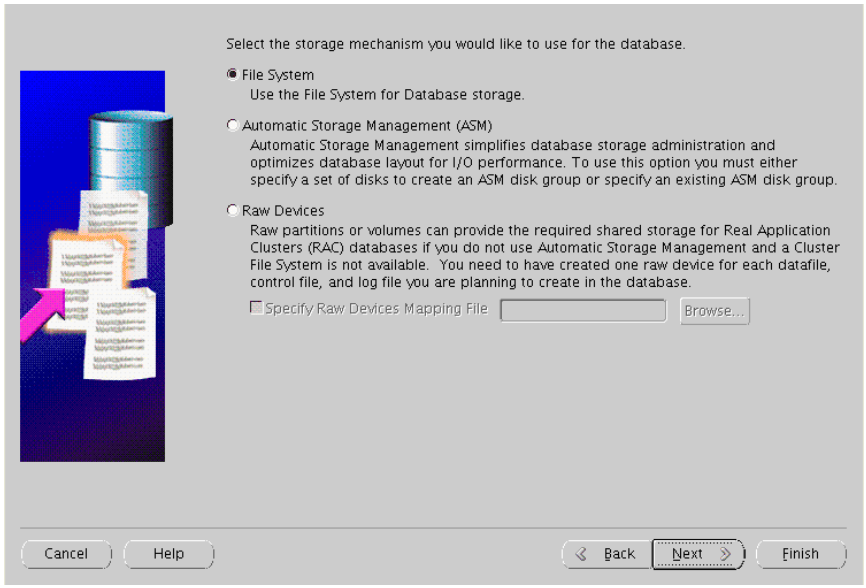
17. Select not to configure another listener and click Next.



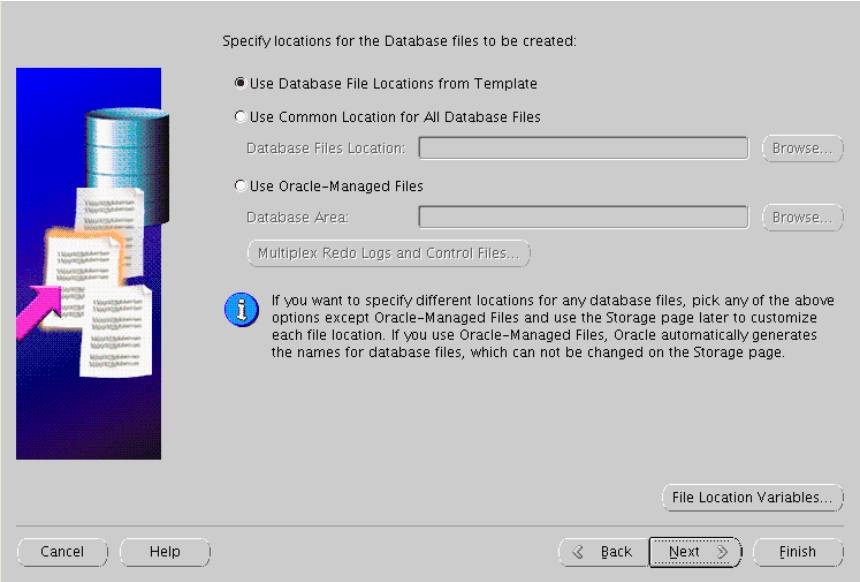
18. Click on Next and then Finish. Listener configuration is completed.
19. Go back to the dbca and click Next.



20. Enter passwords for SYS, SYSTEM, SYSMAN and DBSNMP. It is highly recommended to use different passwords for these accounts. Click Next.
21. Select File System for database storage and click Next.

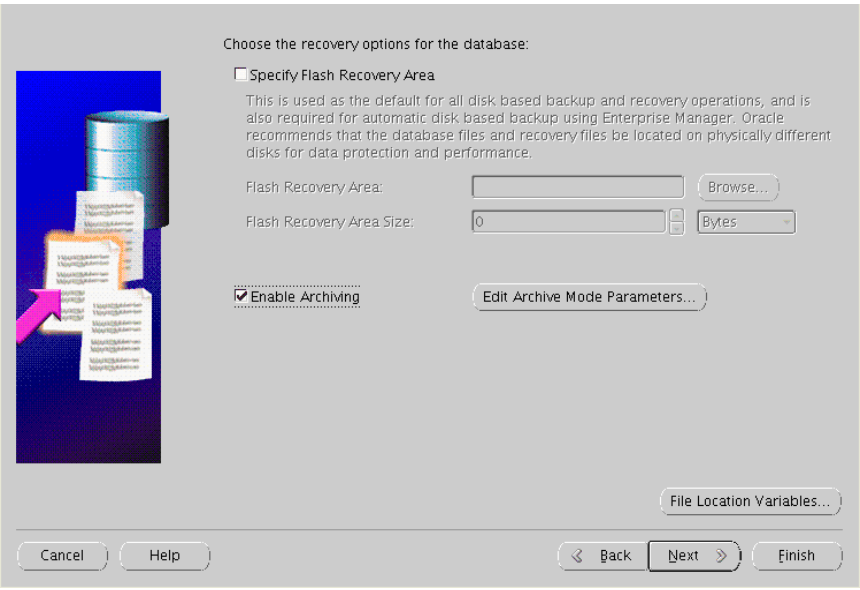


22. In the next window, choose Use Database File Locations from Template and click Next.



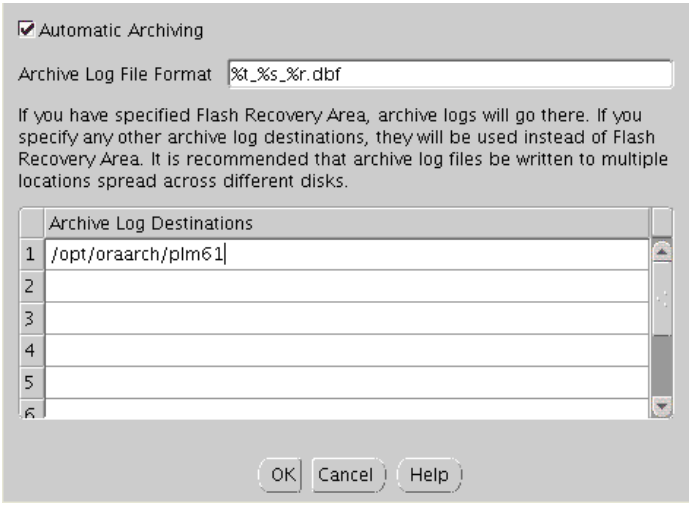
23. Deselect the option Specify Flash Recovery Area in the next window. Depending on your backup strategy and used template, archiving could be enabled. Click Next.

Note For productive database it is highly recommended to archive the database. The destination of the archive directory can be specified by clicking on the Edit Archive Mode Parameters button.



24. If you have enabled archiving and not specified at least one Archive Log Destination, the following error message appears:

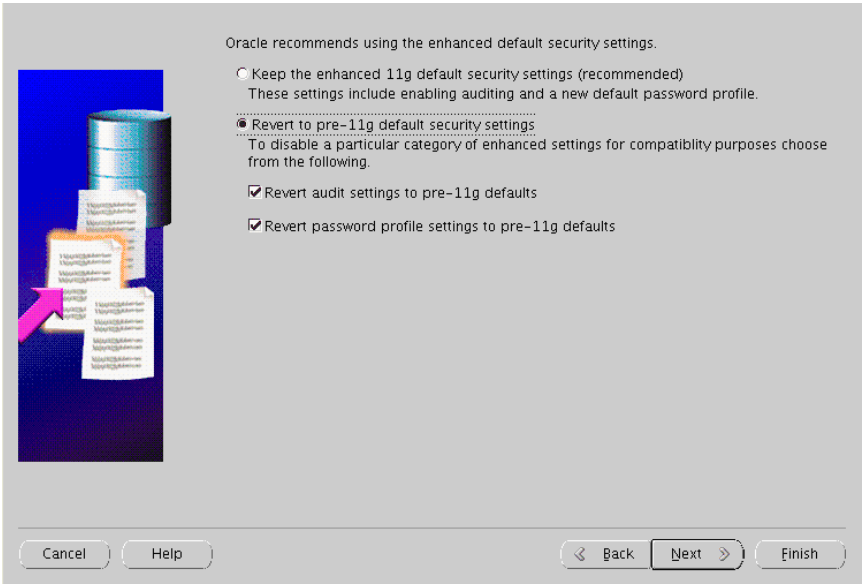
To specify Archive Log Destination, click on Edit Archive Mode Parameters and provide at least one archiving destination. Confirm with OK and then click Next.



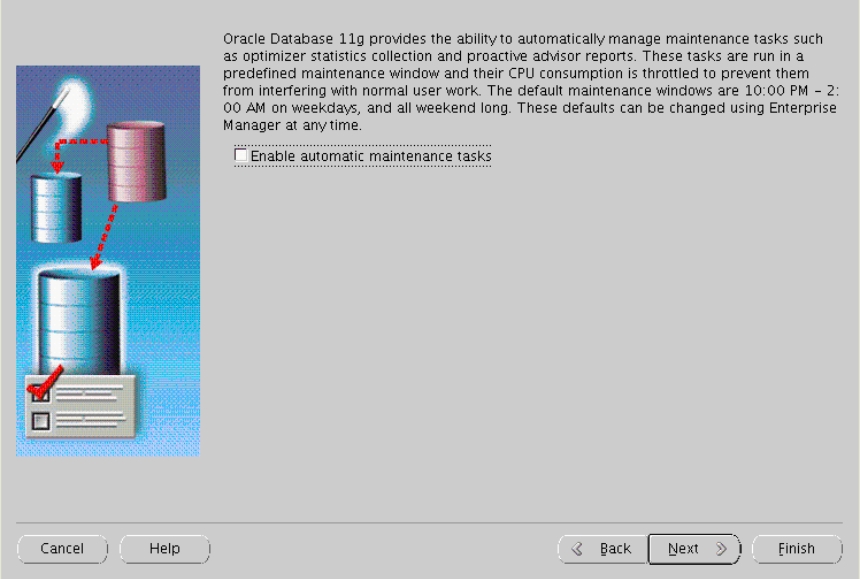
25. The next window provides database features as well as the possibility to run custom scripts after database creation. It is not recommended to change the settings provided by the template. Click Next.
26. The next window provides diverse database parameters. You can navigate to the settings of memory, character sets, database sizing, and connection mode. Usually all parameters are set by selected template and you don't need to change them, but experienced users could modify some parameters depending on the current case.

27. In the next Window – setting defaults for audit and password profiles – choose the second option – Revert to pre-11g default security settings and ensure that both checkboxes under this option are checked. Click Next.

Note Database passwords case-sensitivity is disabled (set by the parameter **sec_case_sensitive_logon**). Do not enable it after database creation.



28. Uncheck the box Enable automatic maintenance tasks and click Next.



29. Click File Location Variables on the next window.

30. Enter value for variables in the table. As values you should provide the directories created in Chapter 3 (in this example /data1, /data2, /data3). DBCA will create subdirectory oradata/plm61 in these directories where database data files will be created. See the table for detailed information on predefined file destination variables.

Variable	Description
ORADATA1	Directory for data files of tablespaces EDB, EDB_LOB, EDB_TMPIDX
ORADATA2	Directory for data files of tablespaces EDB_IDX, EDB_TMP
ORADATA3	Directory for data files of temporary tablespace TEMP
ORADATA4	Directory for data files of undo tablespace
ORADATA5	Directory for data files of tablespaces SYSTEM, TOOLS, USERS
ORAARCH	Directory for Archive log files
REDO1	Directory for redo log files
REDO2	Directory for redo log files

Follow the instructions below to set the value for variables by different number of disks.

- Number of disks: 1 (there is only one directory – e.g. /data1)

  Disk1: ORADATA1, ORADATA2, ORADATA3, ORADATA4, ORADATA5, REDO1, REDO2, ORAARCH – all variables will be set to /disk1

- Number of disks: 2 (there are two directories – e.g. /data1, /data2)

Disk1: ORADATA1, ORADATA4, ORADATA5, REDO1 – they get the value of /data1

Disk2: ORADATA2, ORADATA3, ORAARCH, REDO2 – they get the value of /data2

- Number of disks: 3

  Disk1: ORADATA1, ORADATA5

  Disk2: ORADATA2, ORADATA4, REDO1

  Disk3: ORADATA3, ORAARCH, REDO2

- Number of disks: 4

  Disk1: ORADATA1, REDO1

  Disk2: ORADATA2, REDO2

  Disk3: ORADATA3, ORAARCH

  Disk4: ORADATA4, ORADATA5

- Number of disks: 5

  Disk1: ORADATA1, REDO1

  Disk2: ORADATA2, ORAARCH

  Disk3: ORADATA3, ORADATA5

  Disk4: ORADATA4

  Disk5: REDO2

- Number of disks: 6

  Disk1: ORADATA1

  Disk2: ORADATA2, ORAARCH

  Disk3: ORADATA3

  Disk4: ORADATA4

  Disk5: ORADATA5, REDO1

  Disk6: REDO2

- Number of disks: 7

  Disk1: ORADATA1

  Disk2: ORADATA2

  Disk3: ORADATA3

  Disk4: ORADATA4

  Disk5: ORADATA5, ORAARCH

  Disk6: REDO1

  Disk7: REDO2

- Number of disks: 8

  Disk1: ORADATA1

  Disk2: ORADATA2

Disk3: ORADATA3

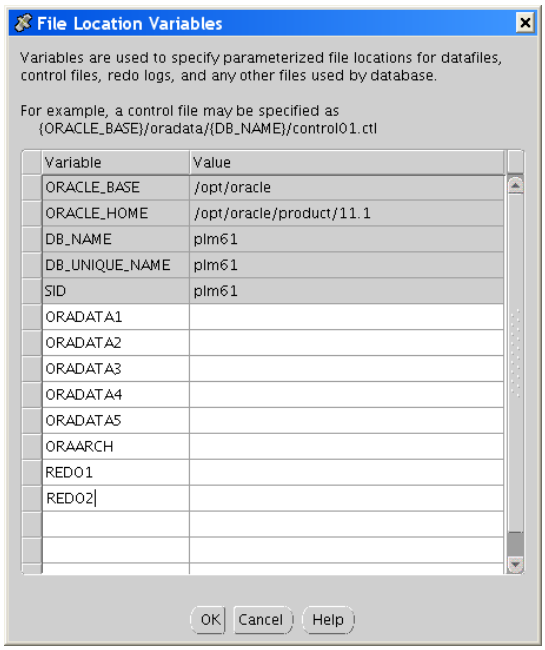
Disk4: ORADATA4

Disk5: ORADATA5

Disk6: ORAARCH

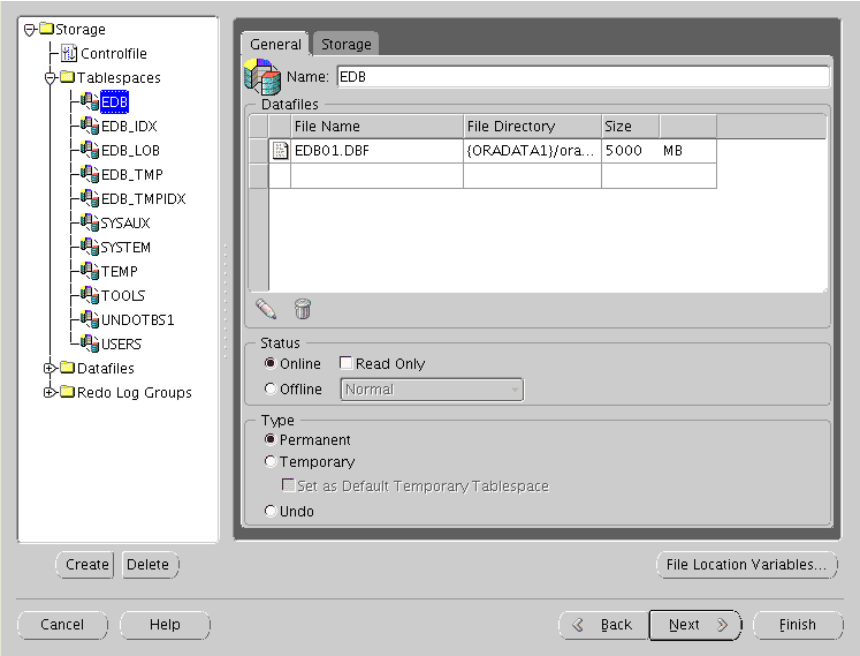
Disk7: REDO1

Disk8: REDO2



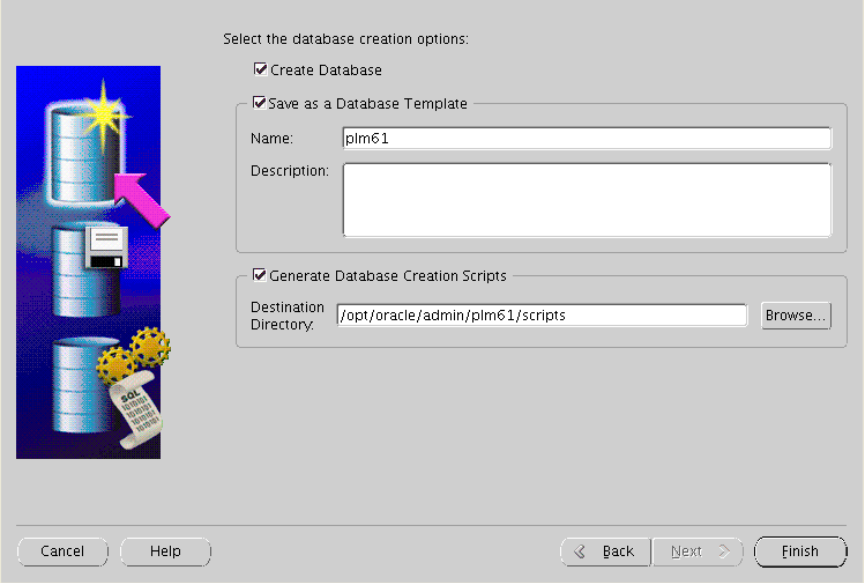
31. Click OK when you have finished.

    The storage parameters for control files, table spaces, data files, rollback segments, and redo log files can be reviewed and modified. Double-click an object in the left window section if you want to edit and modify the settings in the right window section. The required new table spaces can be created.



Note The predefined values are recommended by Oracle according to the chosen kind of database installation.

32. When you have finished click Next.
33. Select Create Database to start the database creation immediately.

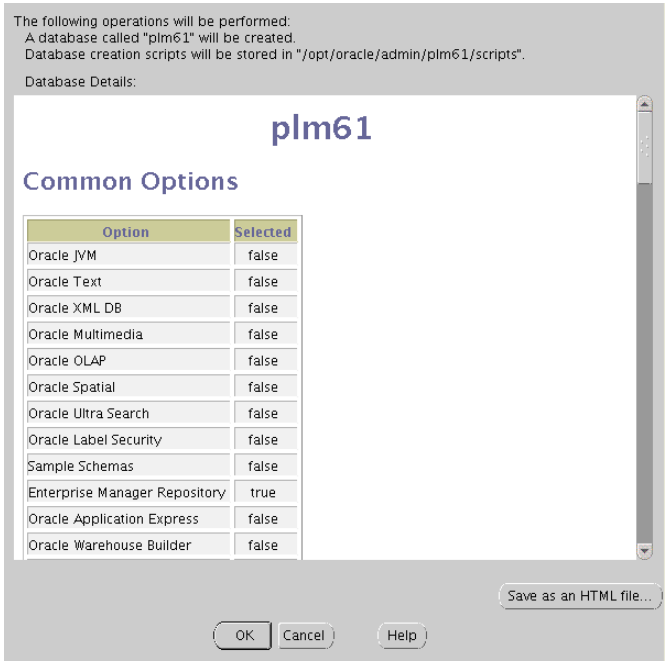


Note It is recommended to choose the option Generate Database Creation Scripts and to define a destination directory (default: $ORACLE_HOME/admin/plm61/scripts). Those scripts are useful for future reference or use.

If you have changed any of the default values from the template, check Save as a Database Template and save the template with the appropriate name.

34. Click Finish.

    A summary of the database parameter is displayed.



35. Click Save as HTML file… for future reference and click OK.

    The database creation process is started.

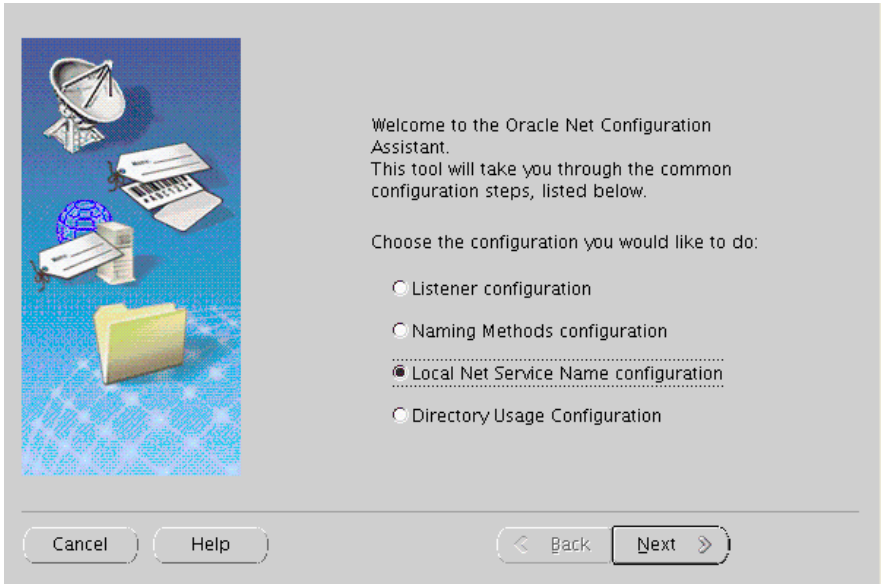
36. Click Exit to finish the process.

Configure tnsnames.ora and sqlnet.ora

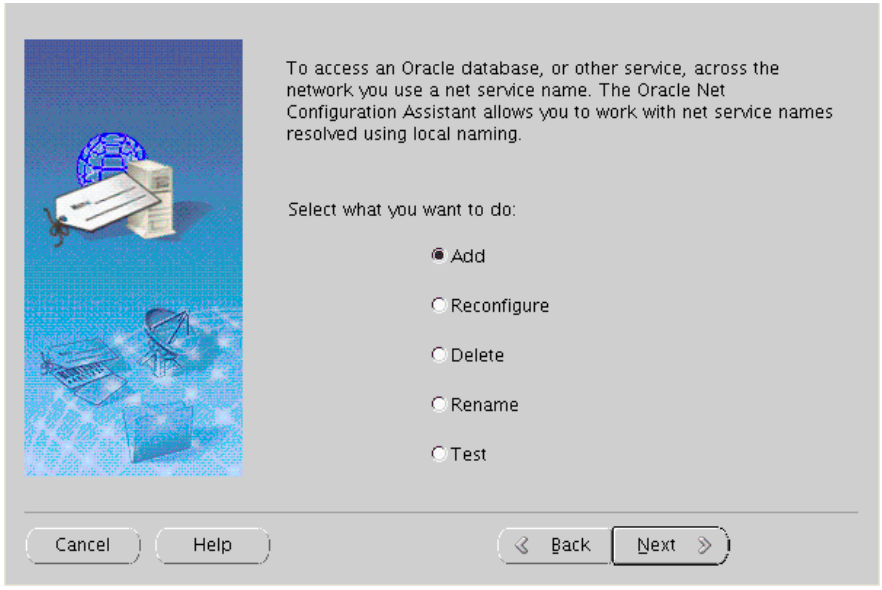
1. Start Oracle Net Services Configuration Tool

   `netca`

2. Select Local Net Service configuration. Click on Next.

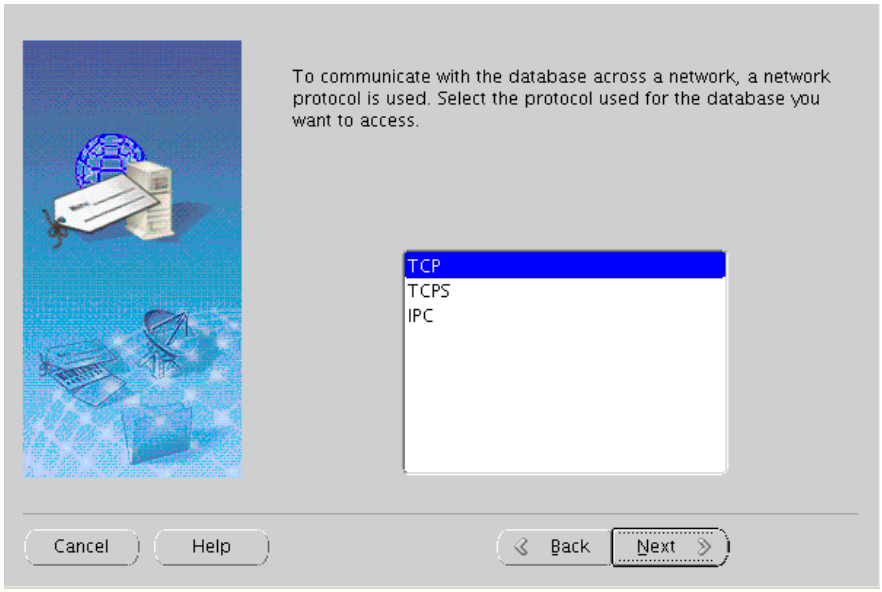


3. Select Add and click on Next.

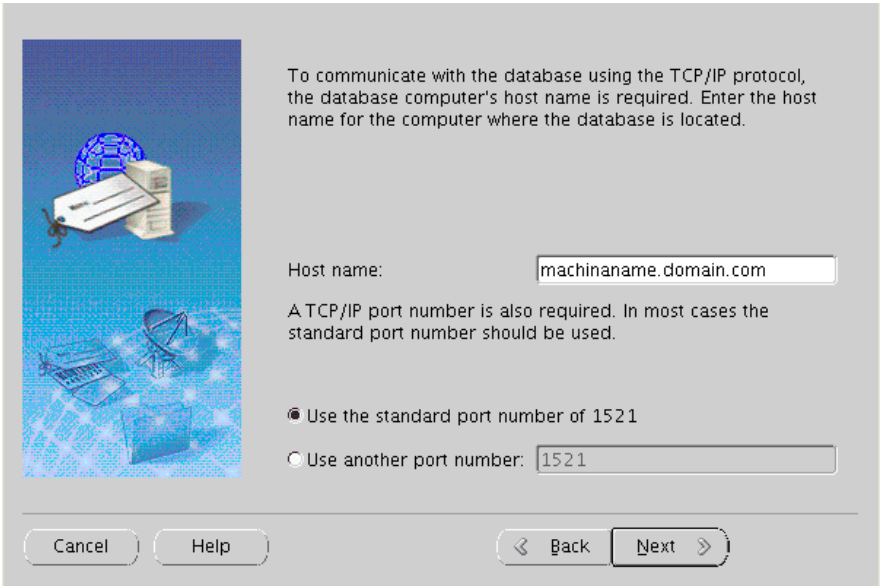


4. Enter the Service Name – plm61.domain.com, where <domain.com> is your domain name and click Next.

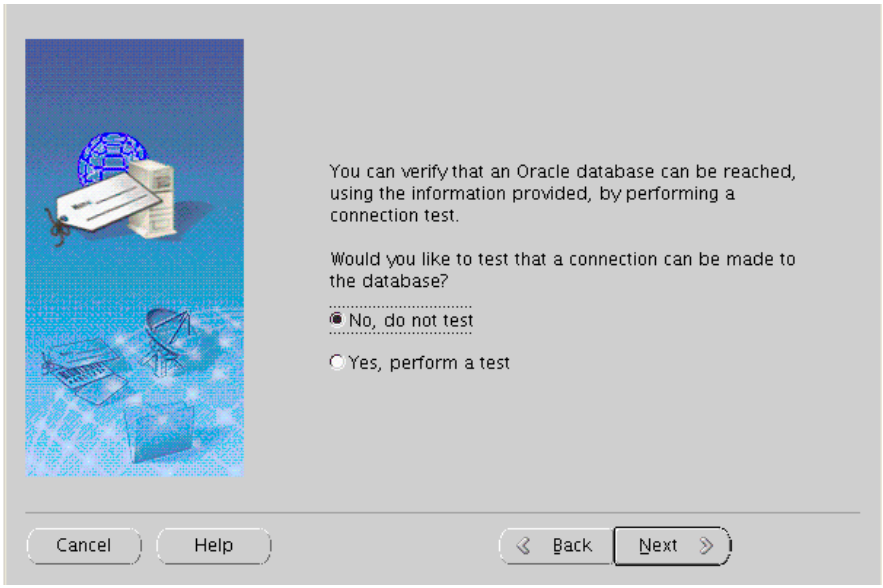
5. Select TCP protocol and click Next.



6. Enter the fully qualified machine name – where Oracle database is - and click Next.

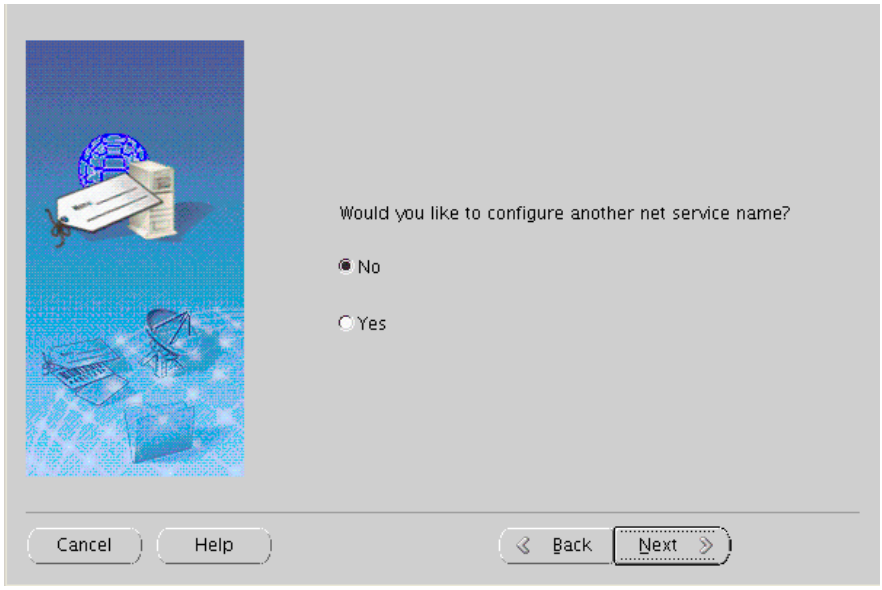


7. Select not to perform test and click on Next.

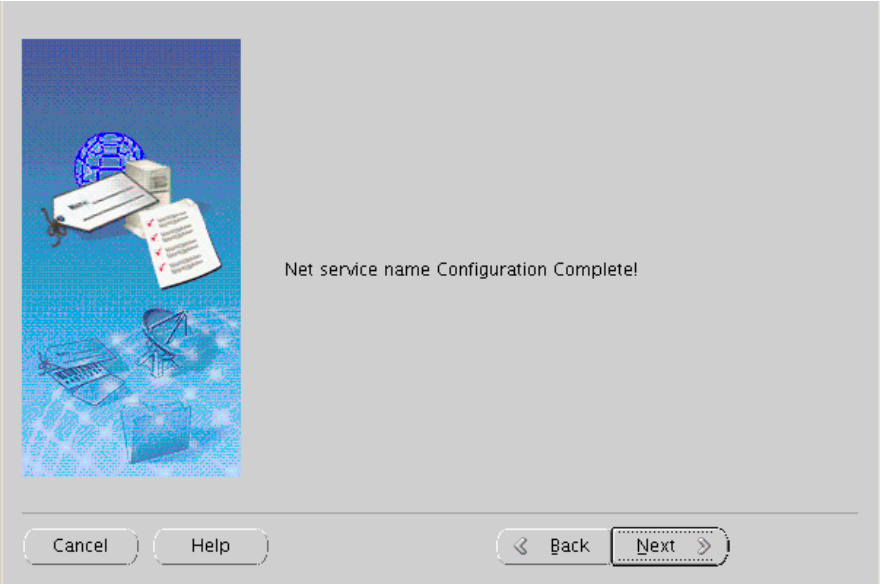


8. Finally, select the Net Service Name – plm61 and click Next.

9. Select not to configure another service and click Next.



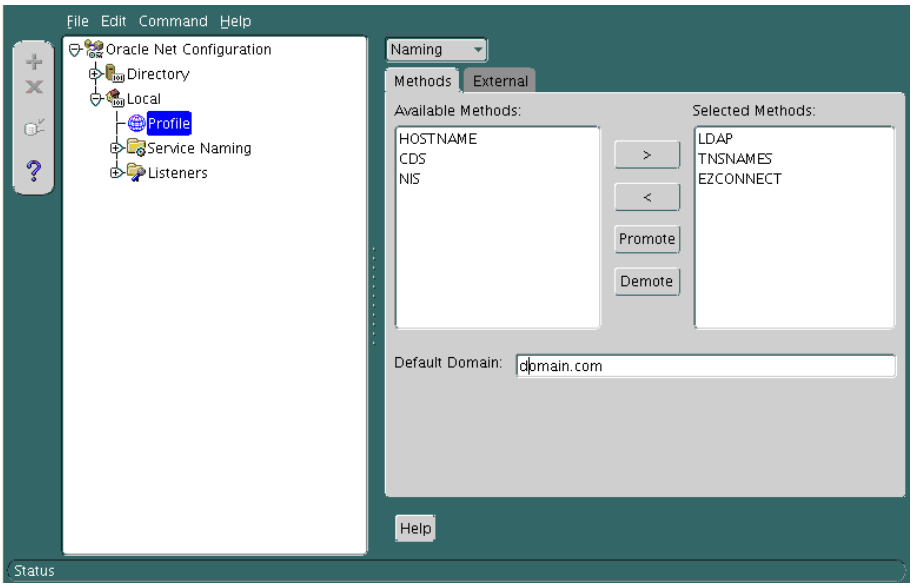
10. Net service name configuration complete. Click on Next and then on Finish to quit.



11. Start the Oracle Net Manager

    ```
    netmgr
    ```

12. Expand view for Local and click on Profile.



13. Enter your domain name in the field Default Domain
14. Save the configuration by File->Save Network Configuration from the main menu and exit the Net Manager by click on File->Exit.
15. Test the database connection.

    ```
    sqlplus system@plm61/<SYSTEM password>
    ```

Chapter 5

Modify the Oracle Database

Create a Database User and Role

You will need to create the Agile e6.1.1 database user and role and provide the necessary privileges and quotas. You can do this using the following commands or using the Oracle Enterprise Manager Database Control as described in the section below.

Use SQL to Create a Role

1. Check if the plm role exists – open sqlplus session, connect as SYSTEM and execute

   ```
   select role from dba_roles where role='AGILE_E_ROLE';
   ```

2. If string 'AGILE_E_ROLE' is returned, the role exists. Thus, skip the role creation and continue with the user creation. Otherwise, the role has to be created.
3. Use the sql code below to create the role AGILE_E_ROLE:

   create role AGILE_E_ROLE;

   ```
   GRANT CONNECT TO AGILE_E_ROLE;
   GRANT CREATE TABLE TO AGILE_E_ROLE;
   GRANT CREATE VIEW TO AGILE_E_ROLE;
   GRANT CREATE SYNONYM TO AGILE_E_ROLE;
   GRANT CREATE DATABASE LINK TO AGILE_E_ROLE;
   GRANT CREATE SEQUENCE TO AGILE_E_ROLE;
   GRANT ALTER SESSION TO AGILE_E_ROLE;
   GRANT CREATE PROCEDURE TO AGILE_E_ROLE;
   GRANT CREATE TRIGGER TO AGILE_E_ROLE;
   GRANT ALL ON DIRECTORY ORA_DMP TO AGILE_E_ROLE;
   ```

Use SQL to Create a User

1. Use the sql code below to create the plm schema (named, e.g. PLM):

   ```
   CREATE USER PLM
   IDENTIFIED BY <PASSWORD>
   DEFAULT TABLESPACE "EDB"
   TEMPORARY TABLESPACE "TEMP"
   PROFILE DEFAULT
   QUOTA UNLIMITED ON "EDB"
   QUOTA UNLIMITED ON "EDB_IDX"
   QUOTA UNLIMITED ON "EDB_TMP"
   QUOTA UNLIMITED ON "EDB_TMPIDX"
   QUOTA UNLIMITED ON "EDB_LOB"
   ```

```
ACCOUNT UNLOCK;
GRANT "AGILE_E_ROLE" TO PLM;
ALTER USER PLM DEFAULT ROLE AGILE_E_ROLE;
```

You can create AGILE_E_ROLE role and plm schema also by executing the script cre_plm_usr.sql in directory addon/db/sql

SQL>@<full path to the file cre_plm_usr.sql>

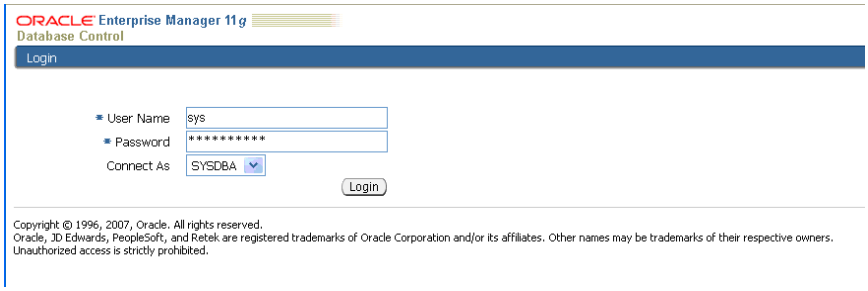
Username (e.g. PLM) and password have to be provided.

Use the Enterprise Manager Database Control to Create a User

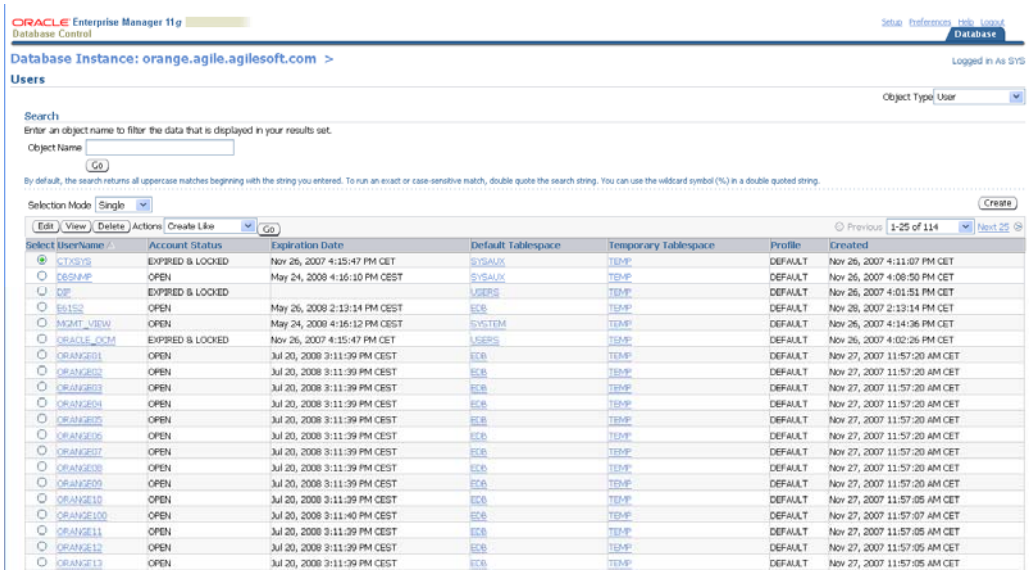
1. Start the Enterprise Manager Database Control.

   By default it can be invoked on https://localhost.localdomain:5501/em/console, but it can be configured manually to use another port.

2. Click on Login.



3. Click on Server tab and in the security section on Users.
4. Click Create.

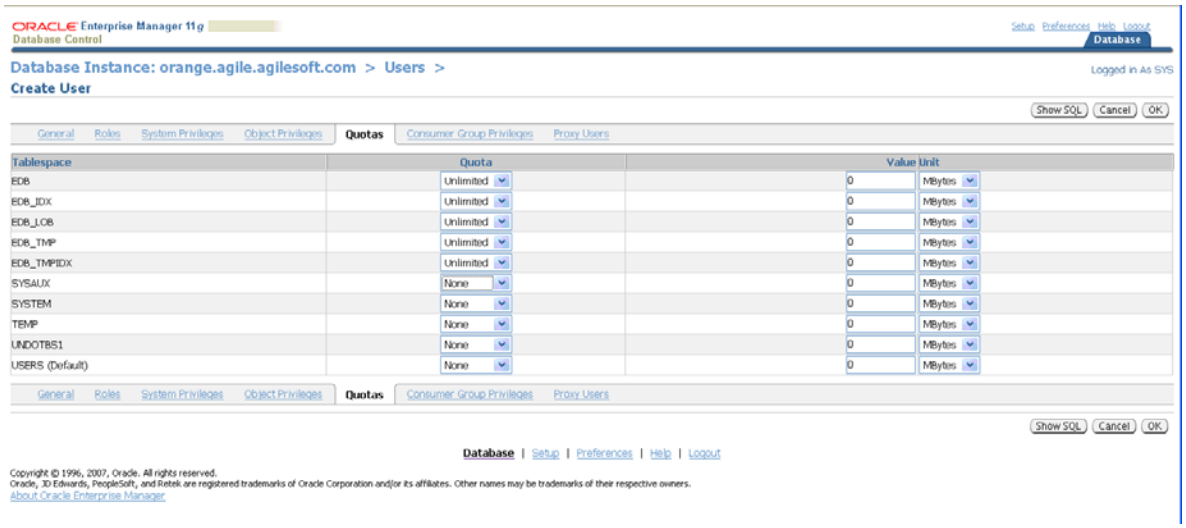


5. Click on the General tab and insert a user name and password, and assign the default and temporary table space.
6. In the Roles tab click Edit List.
7. Select role AGILE_E_ROLE from the list with available roles and click Move.

   The role is moved to the Selected Roles.
8. Click OK.

Role AGILE_E_ROLE should have been created in the previous step.

9. Open the Quotas tab and assign unlimited quota to EDB, EDB_IDX, EDB_LOB, EDB_TMP and EDB_TMPIDX.



10. Click OK to finish the database user creation.

Import the Database Dump

1. Import the Agile e6.1.1 dump using the following commands, and then check the logfile for errors. Make sure that the correct value is set for the environment variable NLS_LANG (value

from the file csh_ORA11.1 - AMERICAN_AMERICA.WE8MSWIN1252).

```
imp plm/plm@plm61 file=plm61.dmp log=plm61.log buffer=500000 commit=y
statistics=none full=y
```

commit=y	Rollback segments cannot get too small
statistics=n	No statistics will be created
buffer=500000	Necessary for lobs, better performance
full=y	Imports full dump even if the dump was exported by different user

Create Directories for Oracle Data Pump Utility

1. Create directory which will be used for Oracle Data Pump Export/Import Utility with two subdirectories - system and user (for instance d:\ora_dmp\system; d:\ora_dmp\user).
2. Open a sqlplus session and connect as 'system'.

   ```
   sqlplus system/<system password>
   ```
3. Run the script ddl_pump_dir.sql which is located in addon/db/sql directory

   ```
   SQL>@<full path to the file ddl_pump_dir.sql>
   ```
4. Enter the path to the main directory created under step 1 (for instance d:\ora_dmp).

   The script will create two directory objects – one for system users and one for normal users and will give rights for the second directory to user PLM.

Compile All Invalid Objects in Schema PLM

After importing the Agile e6.1.1 dump some objects might be invalid. This can be verified in the following way:

1. Open a sqlplus session and connect as 'system'.

   ```
   sqlplus system/<system password>
   SQL>select * from dba_objects where status <> 'VALID' and owner='PLM';
   ```

   If the returned message is 'no rows selected', then you have no invalid objects.
2. Otherwise, you have to run the script compile_all.sql which is located in addon/db/sql directory.

   ```
   SQL>@<full path to the file compile_all.sql> <parameter>
   ```

   Note Parameter = SQL user; e.g. PLM. The parameter has to be entered in upper case only.
3. Verify once again that there are no invalid objects:

   ```
   SQL>select * from dba_objects where status <> 'VALID' and owner='PLM';
   ```

Gather Statistics

In Oracle 11g the default value for the OPTIMIZER_MODE initialization parameter is ALL_ROWS, which means that a cost-based approach will be used for all SQL statements. Oracle highly recommends creating statistics in order to avoid performance loss. This should be done after the dump import and has to be repeated periodically.

1. Calculate statistics of all tables and indexes in db schema PLM:

```
SQL> EXECUTE DBMS_STATS.GATHER_SCHEMA_STATS('PLM',CASCADE =>true);
```

2. Calculate statistics of all tables and indexes in db schema PLM with 5% of the rows:

```
SQL> EXECUTE DBMS_STATS.GATHER_SCHEMA_STATS('PLM', estimate_percent =>
5, CASCADE =>true);
```

3. Drop all statistics of PLM schema objects. Optimizer is now running in rule mode.

```
SQL> EXECUTE DBMS_STATS.DELETE_SCHEMA_STATS('PLM');
```

   For all schema objects, statistics have to be available to support the cost based optimizer. If tables and indexes are modified or created, statistics must be established.

4. Calculate statistics on all tables without statistics and their indexes in db schema PLM with 5% of the rows:

```
SQL> EXECUTE DBMS_STATS.GATHER_SCHEMA_STATS(ownname => 'PLM',options
=> 'GATHER EMPTY', estimate_percent => 5, CASCADE =>true);
```

5. Calculate statistics on tables t_master_dat and their indexes in db schema PLM_ENTW with 10% of the rows:

```
SQL> exec sys.dbms_stats.gather_table_stats(ownname=> 'PLM_ENTW',
tabname=> 'T_MASTER_DAT', partname=> NULL , estimate_percent=> 10
,cascade=> true);
```

Note	Statistic information can be viewed, e.g. in user_tables and user_indexes. These views provide information about e.g. average width of the row and number of rows.

Chapter 6

Appendix

The most significant parameters of the predefined Database Configuration Assistant templates are referenced in the following.

Template “plm_demo”

Parameter/Setting	Value
db_block_size	8 k
memory_target	400 MB
db_file_multiblock_read_count	8
open_cursors	600
processes	80
tablespaces	locally managed
EDB	500 MB
EDB_IDX	500 MB
EDB_LOB	150 MB
EDB_TMP	150 MB
EDB_TMP_IDX	150 MB
Redolog file size	5 MB
archiveLogMode	FALSE

Template “plm_prod_small” 40 Users Max

Parameter/Setting	Value
db_block_size	8 k
memory_target	600 MB
db_file_multiblock_read_count	8
open_cursors	600
processes	100
tablespaces	locally managed
EDB	2000 MB
EDB_IDX	2000 MB

EDB_LOB	500 MB
EDB_TMP	500 MB
EDB_TMP_IDX	500 MB
redolog file size	10 MB
archiveLogMode	TRUE

Template "plm_prod_medium" 80 Users Max

Parameter/Setting	Value
db_block_size	8 k
memory_target	1050 MB
db_file_multiblock_read_count	8
open_cursors	600
processes	180
tablespaces	locally managed
EDB	5000 MB
EDB_IDX	5000 MB
EDB_LOB	1000 MB
EDB_TMP	1000 MB
EDB_TMP_IDX	1000 MB
redolog file size	10 MB
archiveLogMode	TRUE

Template "plm_prod_large" 120 User Max

Parameter/Setting	Value
db_block_size	8 k
memory_target	1600 MB
db_file_multiblock_read_count	8
open_cursors	600
processes	260
table spaces	locally managed
EDB	10000 MB
EDB_IDX	10000 MB
EDB_LOB	2000 MB

EDB_TMP	2000 MB
EDB_TMP_IDX	2000 MB
redolog file size	10 MB
archiveLogMode	TRUE

Template "plm_prod_Xlarge" 150 Users and More

Parameter/Setting	Value
db_block_size	8 k
memory_target	2000 MB
db_file_multiblock_read_count	8
open_cursors	600
processes	320
table spaces	locally managed
EDB	20000 MB
EDB_IDX	20000 MB
EDB_LOB	5000 MB
EDB_TMP	5000 MB
EDB_TMP_IDX	5000 MB
redolog file size	10 MB
archiveLogMode	TRUE