Agile e6.0.2

Installation Manual for Oracle 10g for Agile e6.0.2 on Unix

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REVISIONS

Revision	Date	Pages Effected	Description
A	30/03/2006	All	Initial document

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Chapter 1

Introduction

This guide describes how to install Oracle 10g and adapt the Oracle database for the use with Agile e6 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)	1024 MB (1048576 KB)
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
Disk space in /tmp	400 MB (409600 KB)
Disk space for software files	4 GB (4194304 KB). This value includes 1 GB (1048576 KB) of disk space required to install the Oracle database 10g products from the companion CD (optional, but recommended).
Disk space for database files	1.2 GB (1258290 KB)
System architecture	64-bit

Software Requirements

The system must meet the following minimum software requirements:

- ❑ AIX 5L version must be
  - 5.2 maintenance level 4 or higher
  - 5.3 maintenance level 2 or higher

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: 7.0.0.4 or higher
- ❑ xlC.rte: 7.0.0.1 or higher

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

- 5.2L ML4
    - IY63133: large percentage of CPU time spent in ldata_balance routine
    - IY64978: deadlock with concurrent renaming and unlinking under JFS
    - IY63366: dlsym returns null even for valid symbol in AIX520 ML-4
    - IY64691: chvg -b can cause corruption and crash
    - IY64737: AIO can hang in knotunlock
    - IY65001: mklvcopy on a striped lv is failing to update lvcb
- 5.3L ML2
    - IY58143: REQUIRED UPDATE FOR AIX 5.3
    - IY59386: libdepend.mk files are all empty
    - IY60930: Unable to delete network routes
    - IY66513: LDR_CNTRL turns on undesirable option when initialized with incorrect value
    - IY70159: krtl relocation problem
    - IY68989: eFix for write to mmapped space hangs

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

HP-UX

Hardware Requirements

Requirement	Minimum Value
Physical memory (RAM)	1024 MB (1048576 KB)
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
Disk space in /tmp	400 MB (409600 KB)

Disk space for software files	3.5 GB (3670016 KB). This value includes 1 GB (1048576 KB) of disk space required to install the Oracle database 10*g* products from the companion CD (optional, but recommended).
Disk space for database files	1.2 GB (1258290 KB)
System architecture	64-bit

Software Requirements

The system must meet the following minimum software requirements:

- ❑ HP-UX must be
  - HP-UX 11i (11.11) PA-RISC

  HP-UX 11i Quality Pack (GOLDQPK11i), Dec 2004 or later must be installed.

  If GOLDQPK is not installed then these two patch kits need to be installed:
  GOLDAPPS11i, December 2004 or later
  GOLDBASE11i, December 2004 or later
  - HP-UX 11v2 (11.23) PA-RISC

The following patches must be installed:

- ❑ 11.11
  - PHNE_31097: ONC/NFS general release/performance patch
  - PHSS_31221: HP aC++ -AA runtime libraries (aCC A.03.60)
  - PHSS_30970: ld(1) and linker tools cumulative patch
- ❑ 11.23
  - PHSS_31849: linker + fdp cumulative patch
  - PHSS_31852: aC++ Runtime (PA A.03.61)

You must install any additional recommended patches for Java SDK 1.4.2.

- ❑ Refer to the following website for more information about additional patches that may be required by JDK 1.4.2:
  http://www.hp.com/products1/unix/java/patches/index.html

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)
maxswapchunks*	16384
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
semmap*	(semmni+2)
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

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: * MAXSWAPCHUNKS, SEMMAP, and VX_NCSIZE are obsolete on 11.23 PA-RISC and IPF and do not longer need to be set
Set NCSIZE = (NINODE+1024)

Linux

Hardware Requirements

The system must meet the following minimum hardware requirements:

Requirement	Minimum Value
Physical memory (RAM)	1024 MB (1048576 KB)
CPU	x86 Architecture
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
Disk space in /tmp	400 MB (409600 KB)
Disk space for software files	2.5 GB (2621440 KB). This value includes 1 GB (1048576 KB) of disk space required to install the Oracle database 10*g* products from the companion CD (optional, but recommended).
Disk space for database files	1.2 GB (1258290 KB)

Software Requirements

The system must meet the following minimum software requirements:

- ❑ SUSE Linux Enterprise Server 9.0 with SP 2 or higher
- ❑ Kernel version 2.6.5-7.201 or higher must be installed
- ❑ The following packages must be installed:
    - binutils-2.15.90.0.1.1-32.5
    - gcc-3.3.3-43.24
    - gcc-c++-3.3.3-43.24
    - glibc-2.3.3-98.28
    - gnome-libs-1.4.1.7-671.1
    - libstdc++-3.3.3-43.24
    - libstdc++-devel-3.3.3-43.24
    - make-3.80-184.1

- pdksh-5.2.14-780.1
- sysstat-5.0.1-35.1

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 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	Half the size of physical memory (in bytes)	/proc/sys/kernel/shmmax
shmmni	4096	/proc/sys/kernel/shmmni
file-max	65536	/proc/sys/fs/file-max
ip_local_port_range	1024 65000	/proc/sys/net/ipv4/ip_local_port_range

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
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.

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.

```
kernel.shmall = 2097152
kernel.shmmax = 2147483648
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
fs.file-max = 65536
net.ipv4.ip_local_port_range = 1024 65000
```

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 line to the /etc/pam.d/login file, if it does not already exist:

session required /lib/security/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
```

Solaris

Hardware Requirements

The system must meet the following minimum hardware requirements:

Requirement	Minimum Value
Physical memory (RAM)	1024 MB (1048576 KB)
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
Disk space in /tmp	400 MB (409600 KB)
Disk space for software files	2.5 GB (2621440 KB). This value includes 1 GB (1048576 KB) of disk space required to install the Oracle Database 10*g* Products from the Companion CD (optional, but recommended).
Disk space for database files	1.2 GB (1258290 KB)

System architecture	64-bit

Software Requirements

The system must meet the following minimum software requirements:

- ❑ Solaris 9 Update 6 or later

or

- ❑ Solaris 10

The following packages must be installed:

- ❑ SUNWarc
- ❑ SUNWbtool
- ❑ SUNWhea
- ❑ SUNWi1cs
- ❑ SUNWi15cs
- ❑ SUNWi1of
- ❑ SUNWlibm
- ❑ SUNWlibms
- ❑ SUNWsprot
- ❑ SUNWsprox (Not applicable to Solaris 10)
- ❑ SUNWtoo
- ❑ SUNWxwfnt

The following patches must be installed:

- ❑ Patches for Solaris 9:
    - 112233-11, SunOS 5.9: Kernel Patch
    - 111722-04, SunOS 5.9: Math Library (libm) patch

  The following additional patches are required for Numa Systems:
    - 115675-01, SunOS 5.9: liblgrp API
    - 113471-08, SunOS 5.9: Miscellaneous SunOS Commands Patch
    - 115675-01, SunOS 5.9: /usr/lib/liblgrp.so Patch
- ❑ Patches for Solaris 10:
    - None

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.

Solaris 9

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

Parameter	Recommended Value
noexec_user_stack	1
semsys:seminfo_semmni	100
semsys:seminfo_semmns	1024
semsys:seminfo_semmsl	256
semsys:seminfo_semvmx	32767
shmsys:shminfo_shmmax	4294967295
shmsys:shminfo_shmmni	100

Solaris 10

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

Chapter 3
Prepare the System

Set up 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 ”/app/Oracle” (the directory must be created first) login shell ”/bin/csh” and member of the group "dba":

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

3. Log into Oracle and create the directories /app/oracle/bin, /app/oracle/product, and /app/oracle/product/10.2.
4. Create the directory, links, and mount points for distribution of the data files:

   /app/oracle/mnt1/oradata/plm60

   /app/oracle/mnt2/oradata/plm60

   /app/oracle/mnt3/oradata/plm60

Set up the Shell Environment Variables for Oracle 10g

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

1. Copy scripts from the folder doc/oracleAddOn/unix/scripts to $HOME

   Take a look at the script (vi) and if necessary, change the value for ORACLE_BASE or/and ORACLE_HOME and then source the script:

   chmod 754 csh_ORA10.2

   source $HOME/csh_ORA10.2

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

   login:

   umask 022

3. Verify the environment.
4. Log off and log in as the Oracle user to ensure all environment settings are active.
5. 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 doc/OracleAddOn/unix/scripts/bin to the directory /app/Oracle/bin. The default environment file ~/csh_ORA10.2 includes the directory in the search path.

```
start_PLM60

stop_PLM60

stop_PLM60_immediate

stop_PLM60_transactional

stop_PLM60_abort
```

Mount CDs to Your File System

AIX

1. If necessary, enter a command similar to the following to dismount the currently mounted disc, then remove it from the drive:

   ```
   umount <mount point>
   ```

2. Insert the disc into the CD-ROM or DVD-ROM drive.
3. To mount the disc enter a command similar to the following:

   ```
   /usr/sbin/mount -rv cdrfs <device name> <mount point>
   ```

4. To run the rootpre.sh script, enter one of the following commands:

   CD-ROM installation: # /cdrom/rootpre.sh

   DVD-ROM installation: # /cdrom/db/rootpre.sh

HP-UX

1. If necessary, enter a command similar to the following to dismount the currently mounted disc, then remove it from the drive:

   /usr/sbin/umount <mount point>

2. Insert the disc into the CD-ROM or DVD-ROM drive.
3. To mount the disc enter commands similar to the following:

   su - root

   /usr/sbin/mount -F cdfs -o rr <device name> <mount point>

Linux

1. If necessary, enter a command similar to the following to dismount the currently mounted disc, then remove it from the drive:

   eject /media/cdrom

   Note: The pathname /media/cdrom can differ depending on the installed type of drive. E.g. /media/cdrecord if you have a CD writer installed, or /media/dvd if you have a DVD-ROM installed.

2. Insert the disc into the CD-ROM or DVD-ROM drive.
3. To verify that the disc mounted automatically, enter a command similar to the following:

   ls /media/cdrom

4. If this command fails to display the contents of the disc, enter a command similar to the following:

   mount -t iso9660 /dev/cdrom /media/cdrom

Solaris

The operating system should automatically recognize the inserted CD and mount it to /cdrom or /CDROM. To release the CD use the command eject /cdrom.

If the automatic mount does not run, use the following commands with root privileges to mount the CD:

mount -r -F hsfs device_name /cdrom

mount -r -F /dev/... /cdrom

Chapter 4

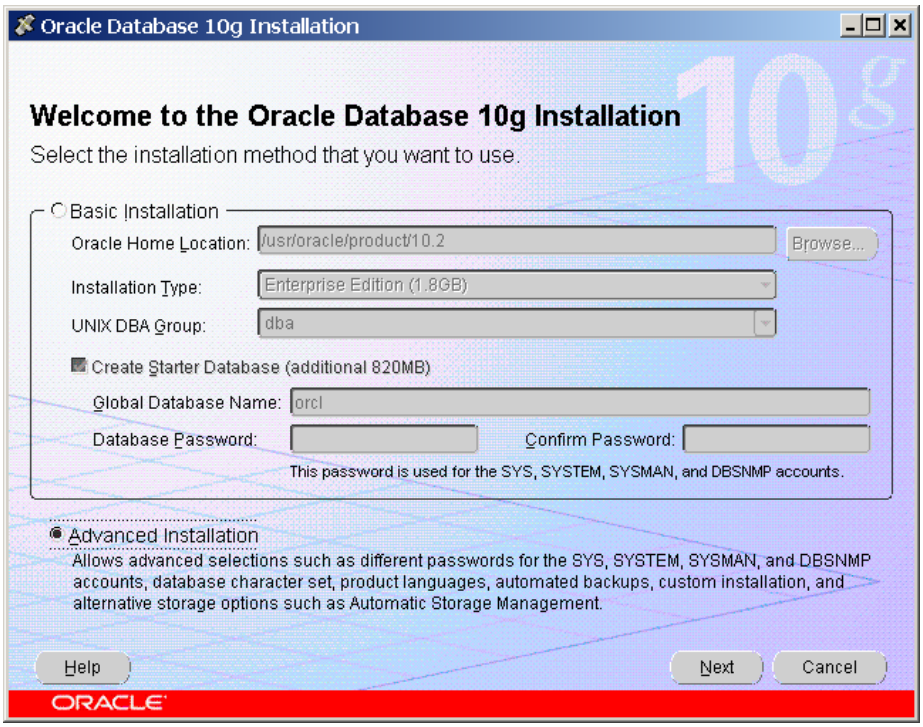
Install Oracle 10g

Install the Oracle Server

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

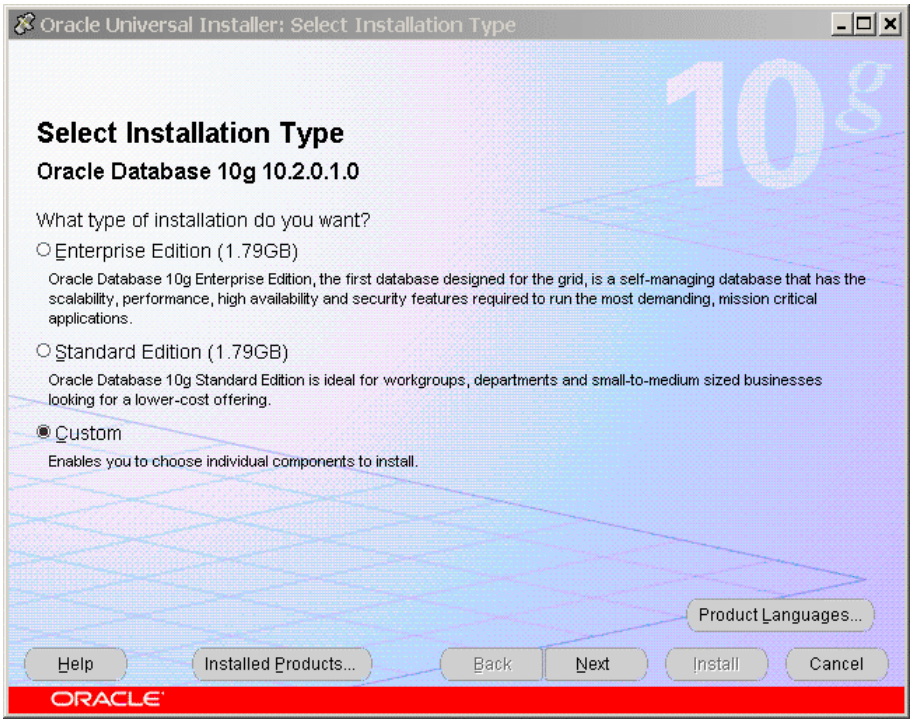
   For example, type: /cdrom/database/runInstaller

   The Welcome window is opened.

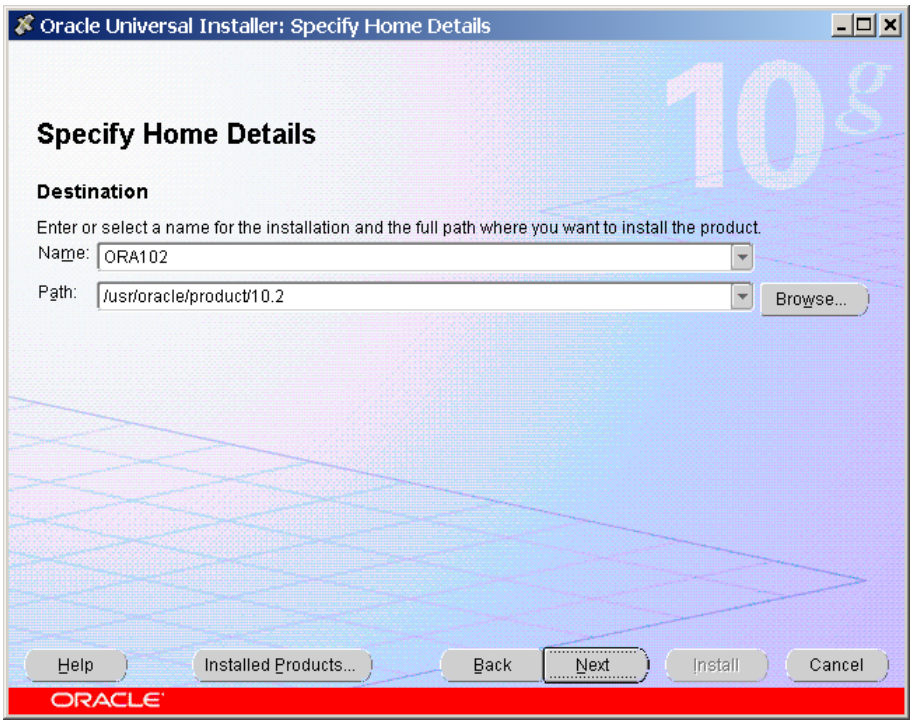


3. Select Advanced Installation and Click Next.

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.

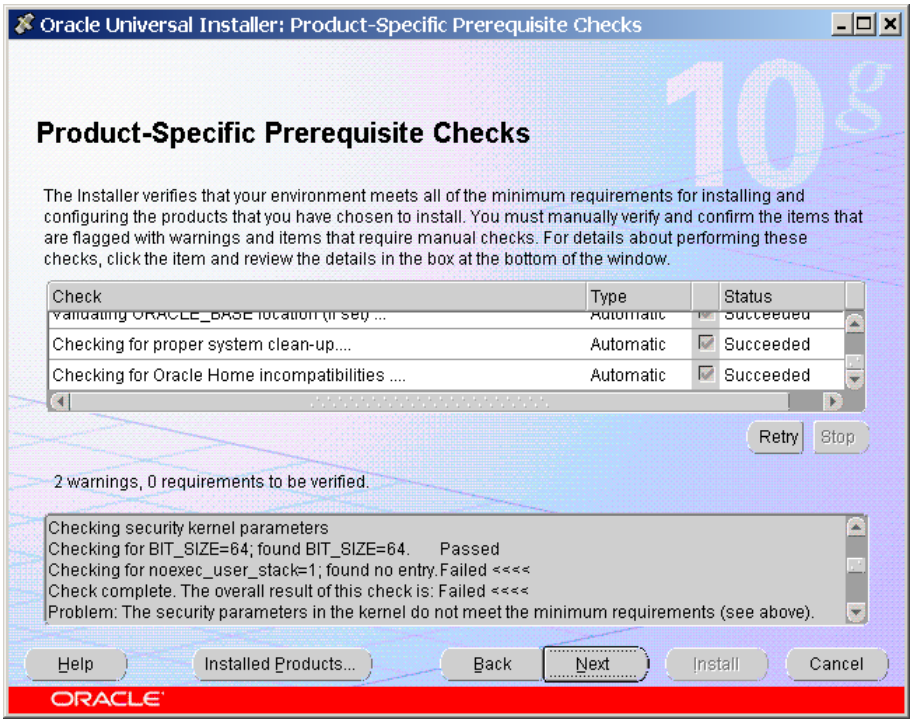


4. Select Custom installation to choose the components to be installed.
5. Click Next.

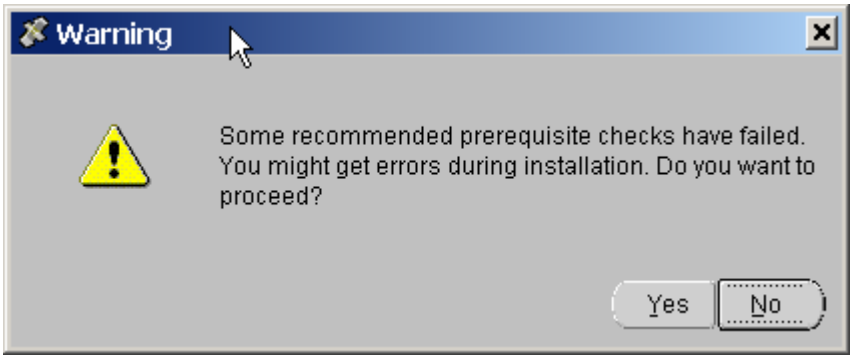


6. Enter the name and the path for ORACLE_HOME.
7. Click Next.

8. Select the components you want to install from the product list and click Next.
9. Oracle will check the OS requirements. Ignore the message 'kernel parameter noexec_user_stack not found' and click Next.

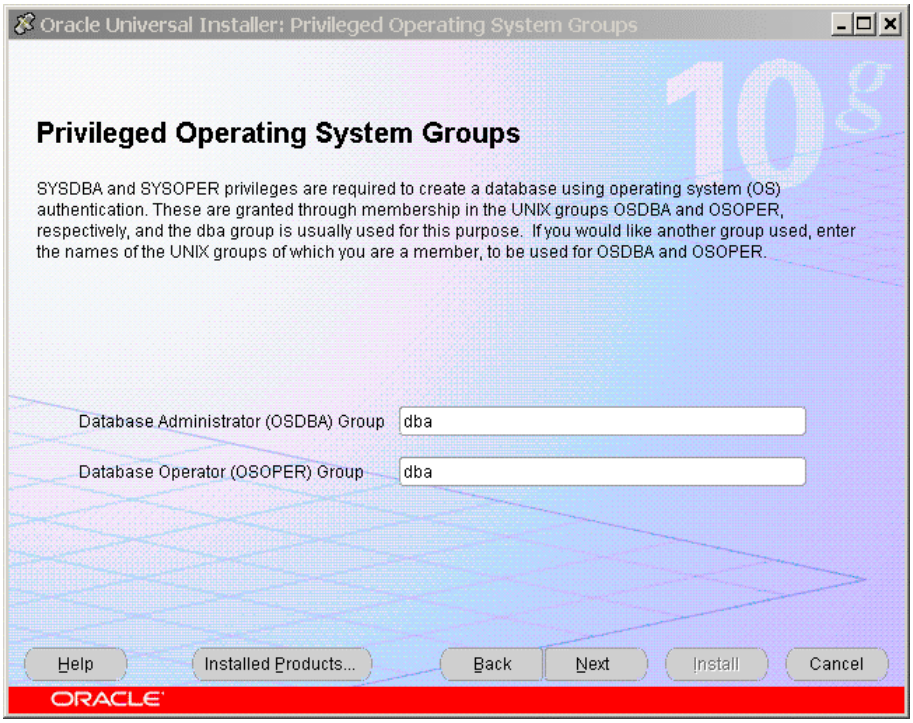


If some other checks fail, stop the installation and check once again if all requirements are met (see Requirements chapter above).



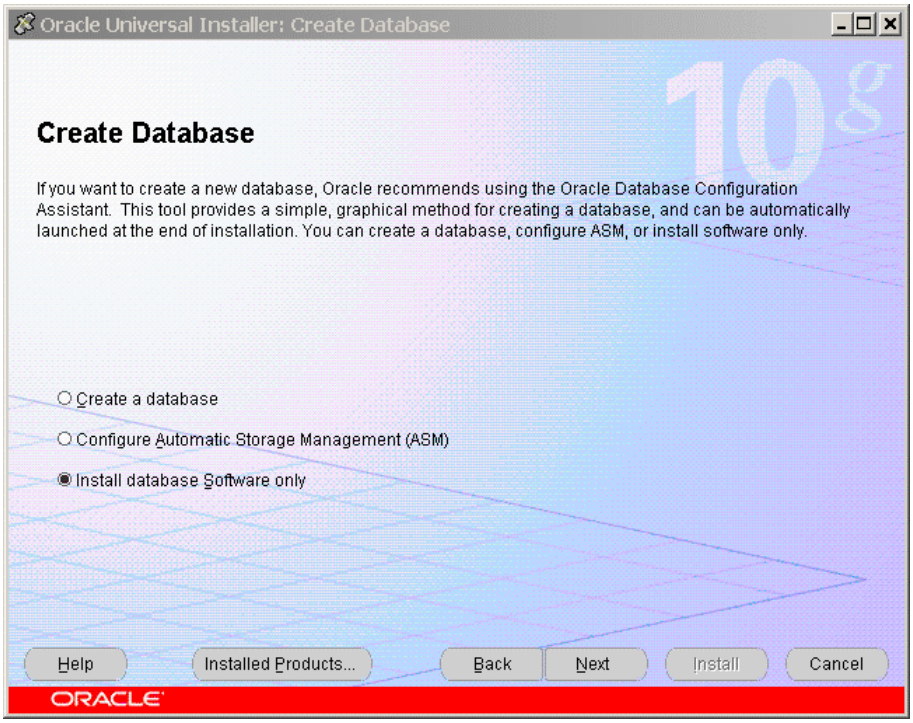
You will be prompted that not all requirements are met. If only noexec_user_stack is not set, you can continue by clicking Yes.

10. Enter the dba group.



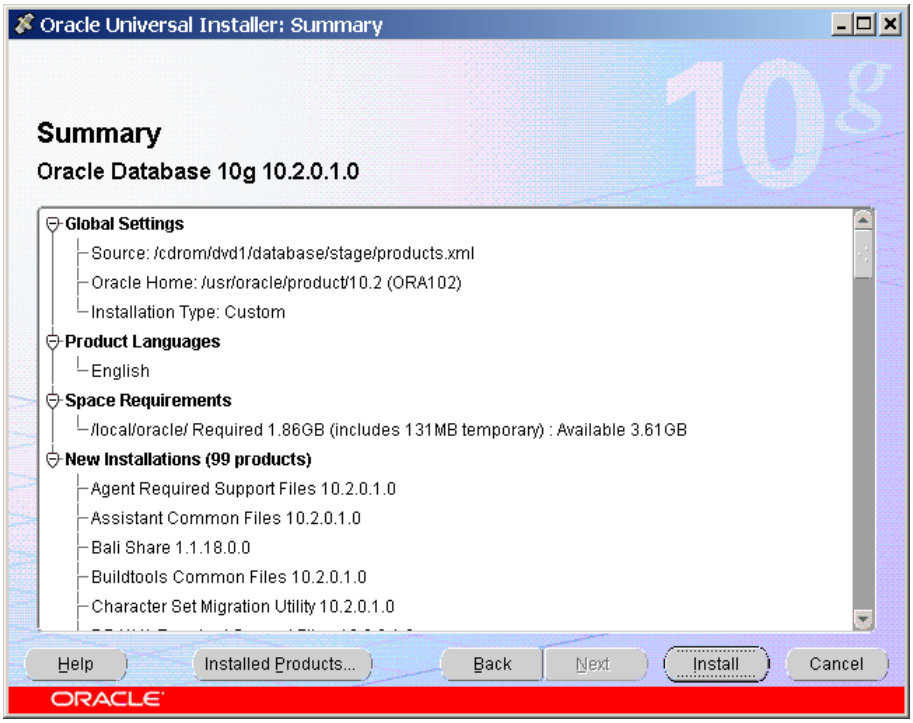
11. Click Next.

The Create database window is opened.



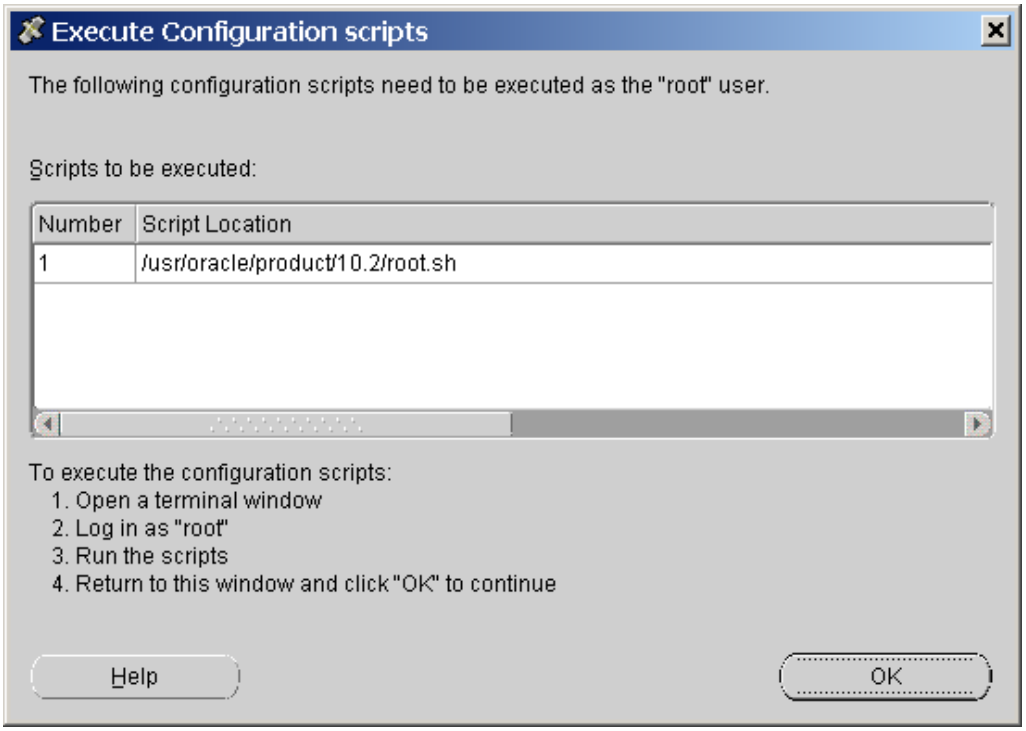
Note: Select Install database Software only in the Create Database window, and then click Next to continue. (You will create the database later in a separate step.)

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



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

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



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

```
cd /usr/Oracle/product/10.2

./root.sh
```

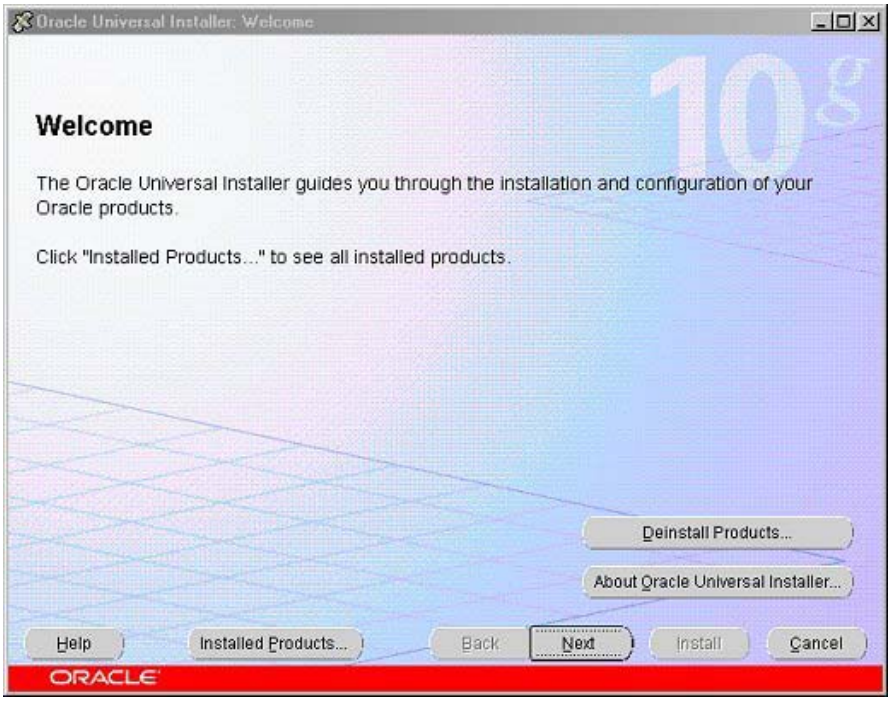
Note: /usr/Oracle/product/10.2 is the path in the example – you should go to the directory mentioned in the Execute Configuration scripts window.

Install the Oracle Client

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

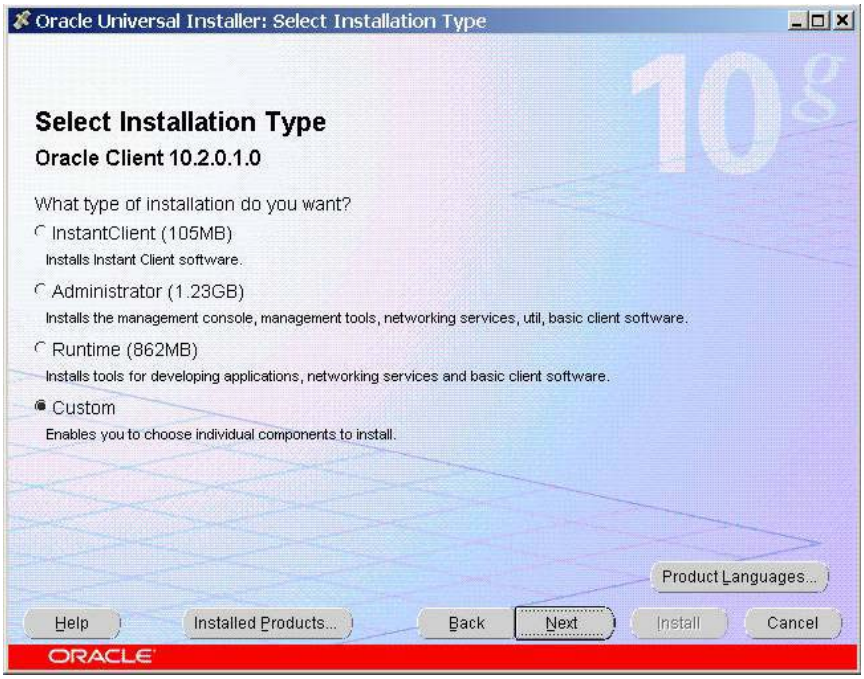
   For example, type: /cdrom/database/runInstaller

   The Welcome window is opened.

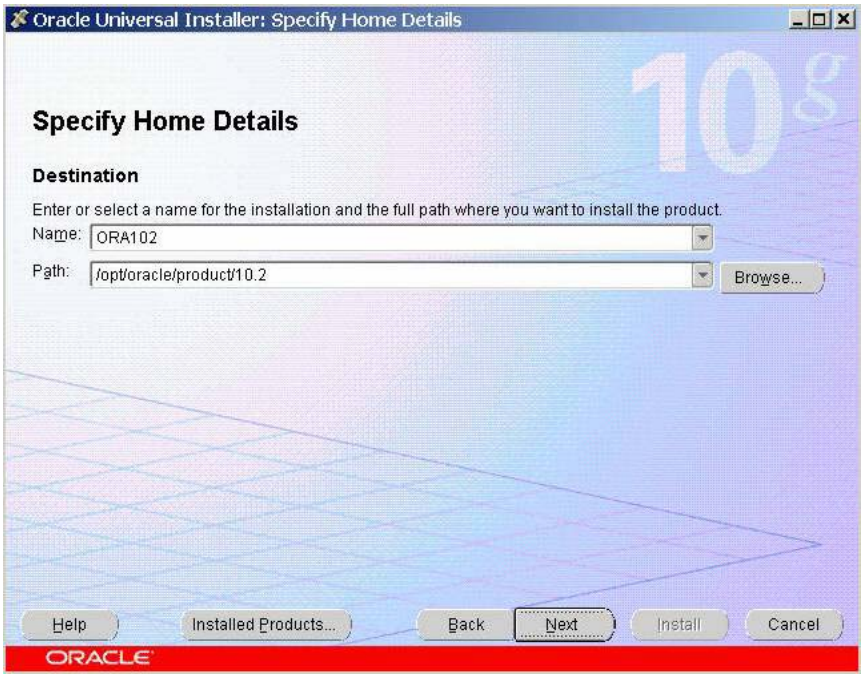


3. Click Next.

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.



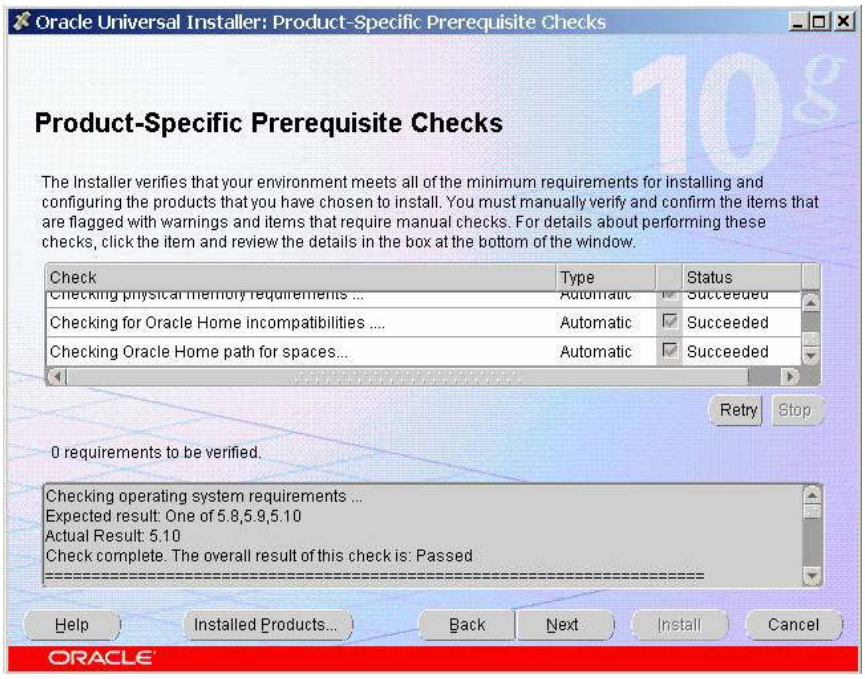
4. Select Custom installation to choose the components to be installed and click Next.



5. Enter the name and the path for ORACLE_HOME and click Next.
6. Select the components you want to install from the product list and click Next:

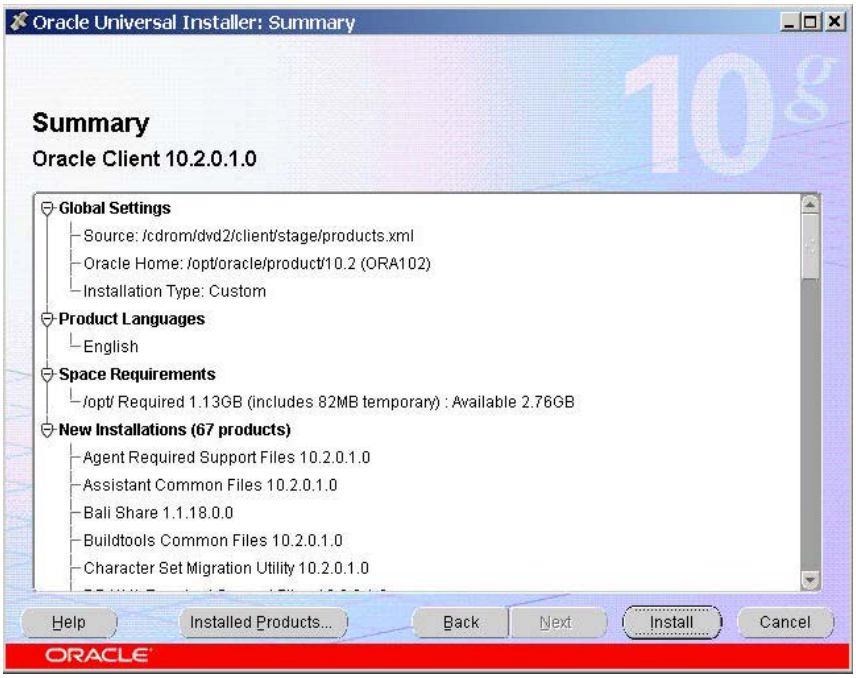
Oracle Client 10.2.0.1.0	New Install
Oracle SQLJ 10.2.0.1.0	Not Installed
Oracle Database Utilities 10.2.0.1.0	New Install
Oracle Java Client 10.2.0.1.0	New Install
SQL*Plus 10.2.0.1.0	New Install
Oracle JDBC/THIN Interfaces 10.2.0.1.0	New Install
Oracle Internet Directory Client 10.2.0.1.0	Not Installed
Oracle Call Interface (OCI) 10.2.0.1.0	New Install
Oracle Programmer 10.2.0.1.0	New Install
Oracle XML Development Kit 10.2.0.1.0	Not Installed
Oracle Advanced Security 10.2.0.1.0	Not Installed
Enterprise Manager 10g Java Console 10.2.0.1.0	New Install
OLAP Analytic Workspace Manager and Worksheet 10.2.0.1.0	Not Installed
Oracle Net 10.2.0.1.0	New Install
Oracle interMedia Client Option 10.2.0.1.0	Not Installed
Oracle Notification Service 10.1.0.3.0	Not Installed
Oracle ODBC Driver 10.2.0.1.0	Not Installed
Oracle Clusterware High Availability API 10.2.0.1.0	Not Installed

7. Oracle will check OS requirements. If the overall status is 'Passed', click Next. If some checks fail, stop the installation and check once again if all requirements are met (see Requirements chapter above).

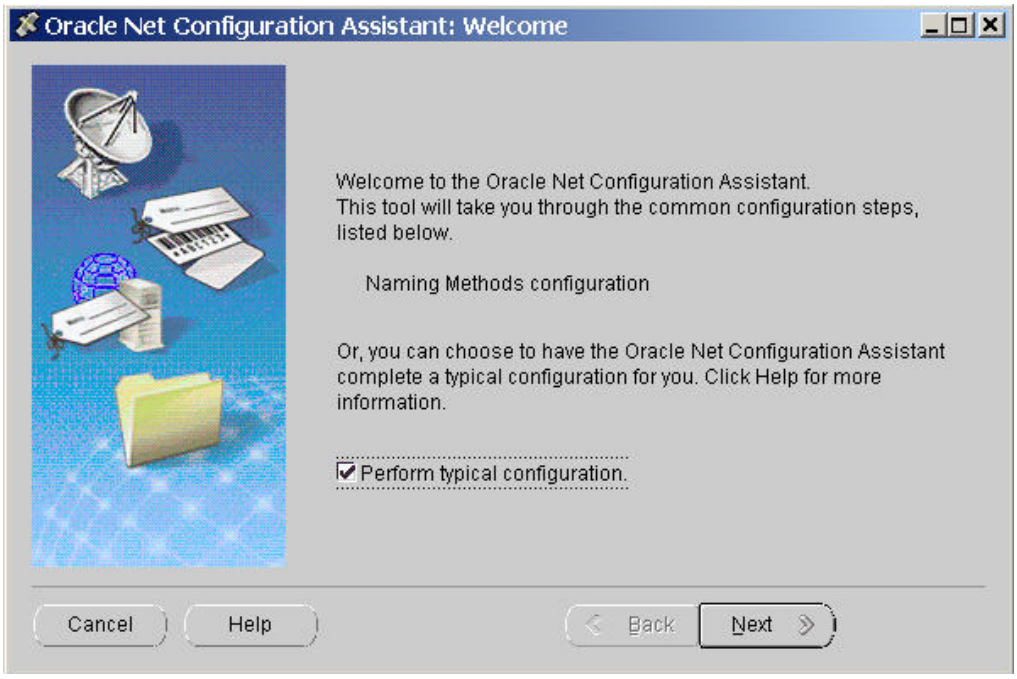


8. In the Summary window, review the options you have chosen. If necessary, click Back to perform changes.

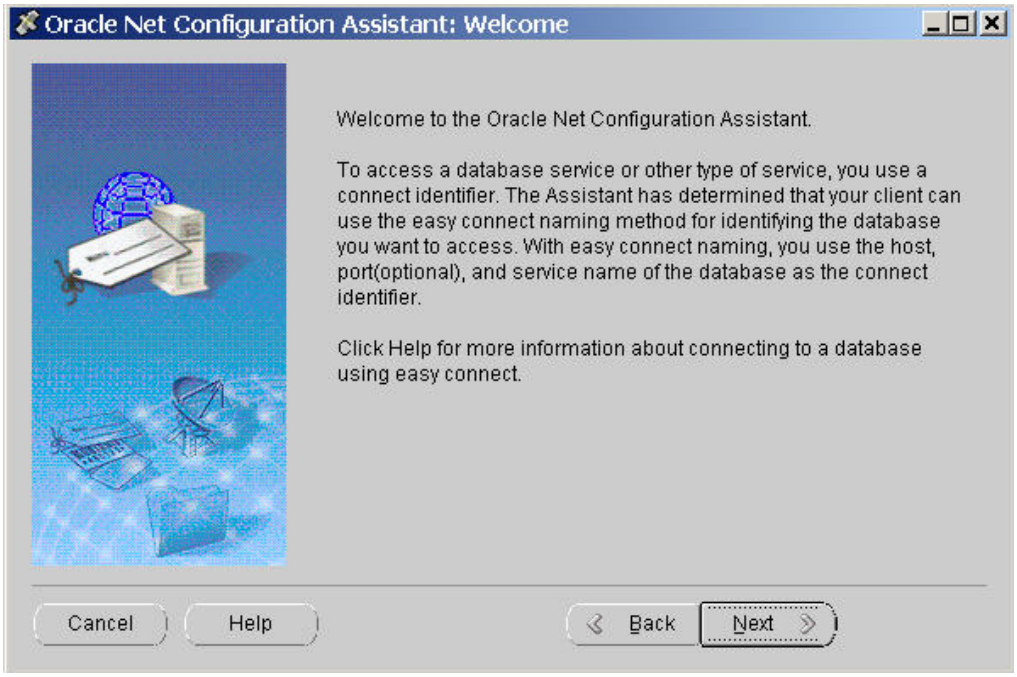
If the options are correct, click Install to start the installation. The Install window shows the install process.



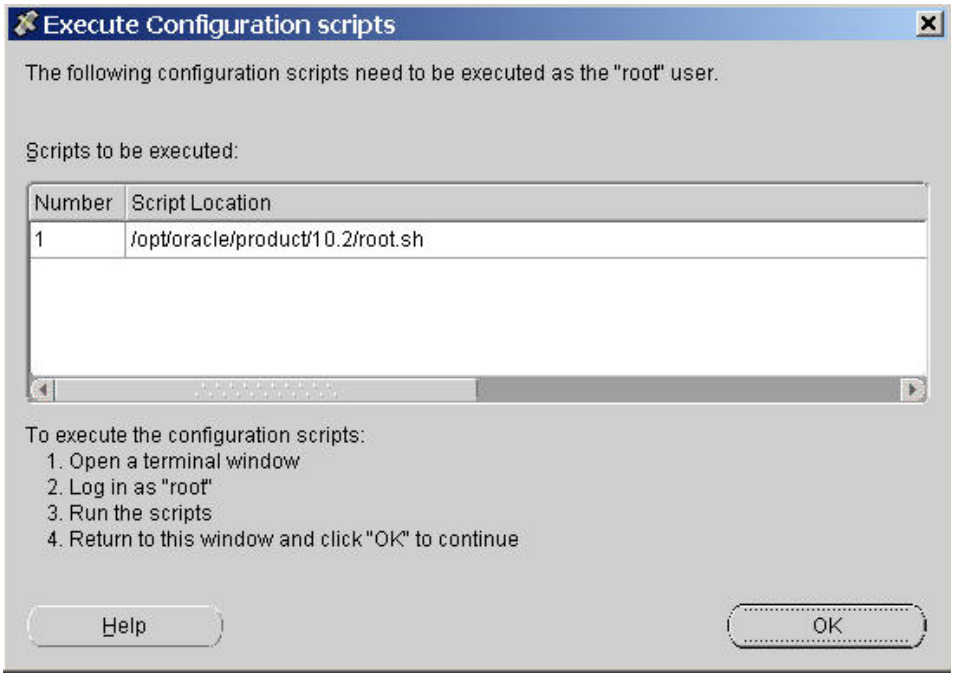
9. The installation may take some time. After the installation is completed, the Oracle Net Configuration Assistant is opened. Select Perform typical configuration and click Next.



10. Click Next again and then Finish.



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



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

```
cd /opt/oracle/product/10.2

./root.sh
```

Note: /opt/oracle/product/10.2 is the path in the example – you should go to the directory mentioned in the Execute Configuration scripts window

Install the Oracle Patch

After the successful installation of Oracle you have to apply the 10.2.0.2 patch. If possible, create the database **after** you have installed the patches. If the database was created before the patches were installed, see the README.html, which comes with the Oracle patch for the necessary task to adapt the database.

The Oracle Patch DVD supplied by Agile contains the decompressed patches, so that Oracle can be installed directly from the DVD.

1. Login as “oracle” user and create a patch subdirectory in the oracle user home directory:

```
cd ~oracle
mkdir patch
cd patch
```

❑ You only need to do the following step if you get the patch files from Oracle:

Copy the patch into that directory and unzip it:
unzip p4547817_10202_SOLARIS64.zip (the example is for Solaris OS)

❑ Otherwise, do the following if you use the Agile Oracle Patch DVD:

Mount the Agile Oracle Patch DVD, change to the patches subdirectory and then change to the corresponding subdirectory for your UNIX System:

AIX64-5L for AIX

HP64 for HP-UX

Linux for SUSE Linux Enterprise Server

SOLARIS64 for Solaris

Continue with the next steps.

2. Execute the following command:

```
cd Disk1
```

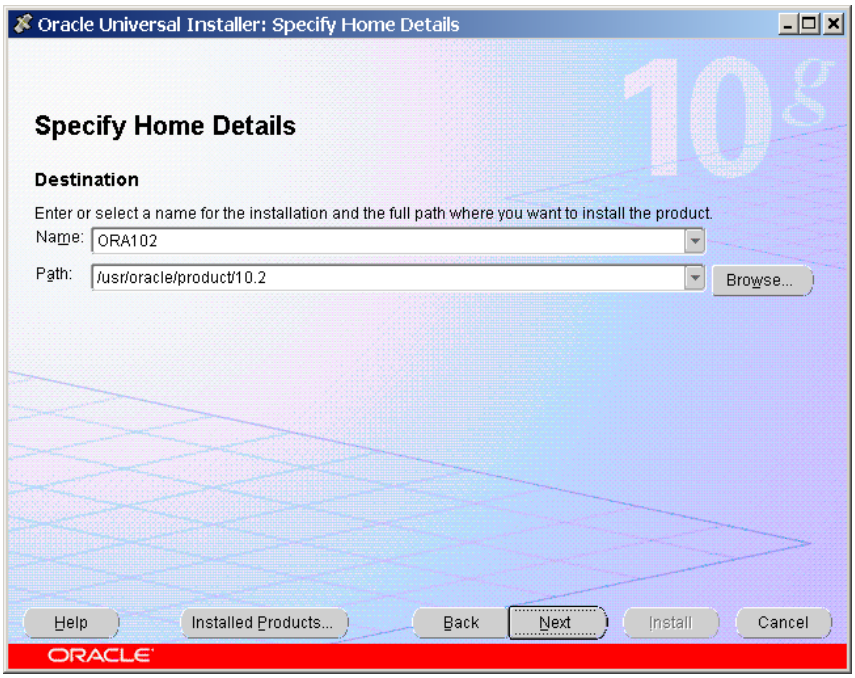
3. Start the Oracle Installer.

```
./runInstaller
```

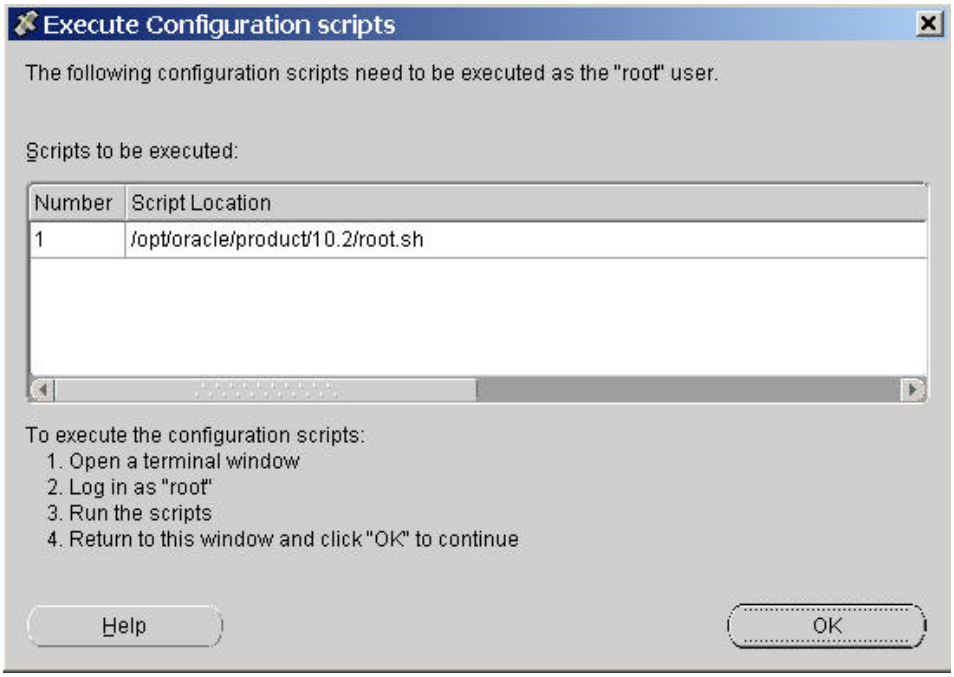
The Welcome window is opened.

4. Click Next.

The Specify Home Details window is opened.



5. Check if selected Oracle home name and path are correct and click Next.
6. Check the summary window and click Install.
7. At the end of the installation you are prompted to execute a script as user “root”.



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

cd /opt/oracle/product/10.2

./root.sh

You can overwrite dbhome, oraenv and coraenv (click ‘y’ every time when asked) during execution of root.sh.

/opt/oracle/product/10.2 is the path in the example – you should go to the directory mentioned in the Execute Configuration scripts window.

9. Apply a second patch for AIX.

10. Go back to the patches/AIX64-L5 on the Oracle Patch DVD supplied by Agile (only applicable for OS AIX).

11. Change to the second patch directory (only applicable for OS AIX):

cd 5087548

12. Ensure that the directory containing the opatch script appears in your $PATH; then enter the following command (only applicable for OS AIX):

opatch apply

Note: The opatch command can be found in the $ORACLE_HOME/OPatch directory.

13. Change your directory to $ORACLE_HOME/install.

cd $ORACLE_HOME/install

14. Run changePerm.sh.

./changePerm.sh

You will be asked if you want to continue – click 'y'. Next you should see the message:

Finished running the script successfully.

If an error message is displayed, review the mentioned log file for details.

You can ignore the message: Cannot open lib/stubs

The following message in the log file can be ignored as well: chmod: WARNING: can't change rdbms/admin/externaljob.ora

> **Note:** In Oracle Database 10g Release 2, the Oracle Home was locked down by setting umask to 007 prior to installation. This had the affect of removing read,write,execute permissions for others on most files and directories.
> This script will relax the permissions on most files and directories in the installed Oracle Home, and allow "others" to access files within the database Oracle Home.
> Some of the directories and files (like log, trace, etc.,) will still have restricted access.

15. Change some additional Permissions on Solaris and AIX

```
cd$ORACLE_HOME/lib32

chmod 755 libclntsh.so.10.1
```

Only follow these steps if you have installed the patch after the database (10.2.0.1) creation!

1. Backup the database !!! OS Backup is recommended.
2. Log in as sysdba using SQL*Plus sqlplus /nolog.
3. Connect sys/oracle as sysdba.
4. Startup database in migrate mode - startup upgrade.
5. Enable spool – spool patch.log.
6. Run script catupgrd.sql.
7. @$ORACLE_HOME/rdbms/admin/catupgrd.sql.
8. Disable spooling – spool off.
9. Review the log file patch.log for errors.
10. Shutdown database by immediate shutdown and start it for normal operation by startup.
11. Run the file $ORACLE_HOME/rdbms/admin/utlrp.sql to recompile invalid PL/SQL packages @$ORACLE_HOME/rdbms/admin/utlrp.sql

> **Note:** Substitute {ORACLE_HOME} with the path of your Oracle home directory.

Create the Database

Using the Database Configuration Assistant (DBCA) templates, which are provided in the folder doc/OracleAddOn/unix/templates, the database will be create. DBCA templates include database options, initialization parameters, and storage information for data files, tablespaces, control files, and redo logs.

Six different templates are predefined to meet different requirements according to the purpose and size of the Agile e6 database installation.

Template Name	Description
plm_laptop	Small sized database especially designed for laptop installations.
plm_test	Database designed for test installations. Number of concurrent users < 40. No archiving.
plm_prod_small	Database designed for productive use. Number of concurrent users < 40. Archiving.
plm_prod_medium	Database designed for productive use. Number of concurrent users: 40 – 80. Archiving.
plm_prod_large	Database designed for productive use. Number of concurrent users: 80 – 120. Archiving.
plm_prod_huge	Database designed for productive use. Number of concurrent users: 120 – 150. Archiving.

Additional information on significant database parameters and settings of each template can be found in the Appendix. Decide which template corresponds to your needs. It is also possible to adapt any of the values during the database creation process.

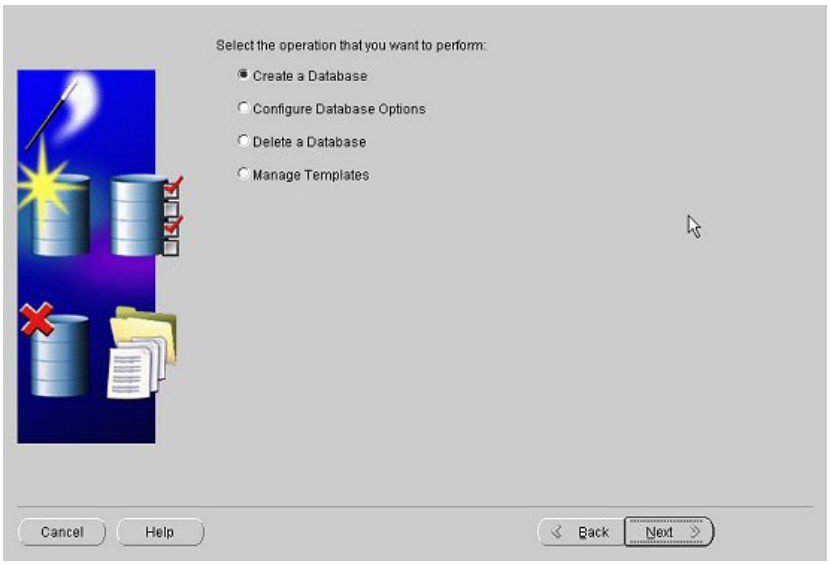
Copy the DBCA template file (e.g. plm_test.dbt) to {ORACLE_HOME}/assistants/dbca/templates.

1. Start the Oracle Database Configuration Assistant

```
$ORACLE_HOME/bin/dbca
```

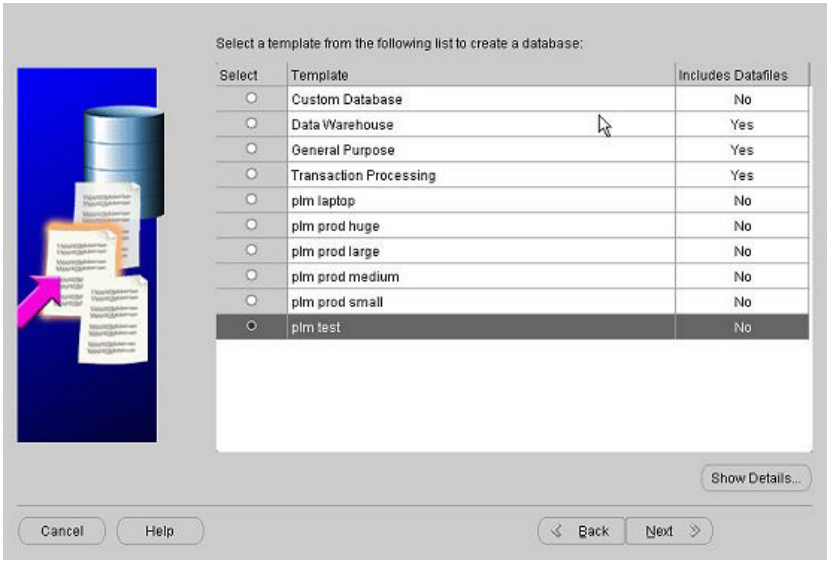
An introduction window is opened.

2. To start the database configuration click Next.



3. Select Create a Database and click Next.

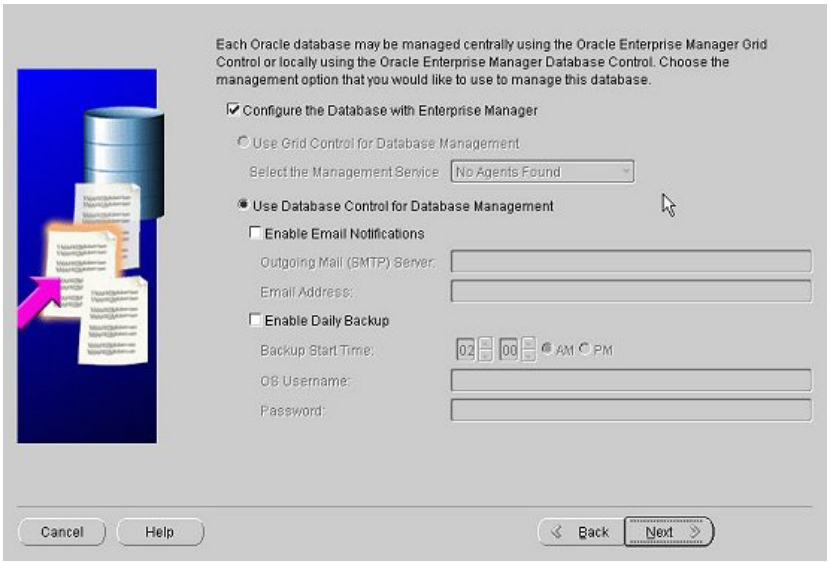
   A list of different templates is provided. You should also see the template that you have chosen and copied in the step above.



4. Select the template you want to use and click Next.
5. Check if the global database name and SID (default: plm60) are correct and click Next.

   The next window provides the possibility to centrally manage Oracle databases using Oracle Enterprise Manager Database Control.

6. Select this option and click Next.

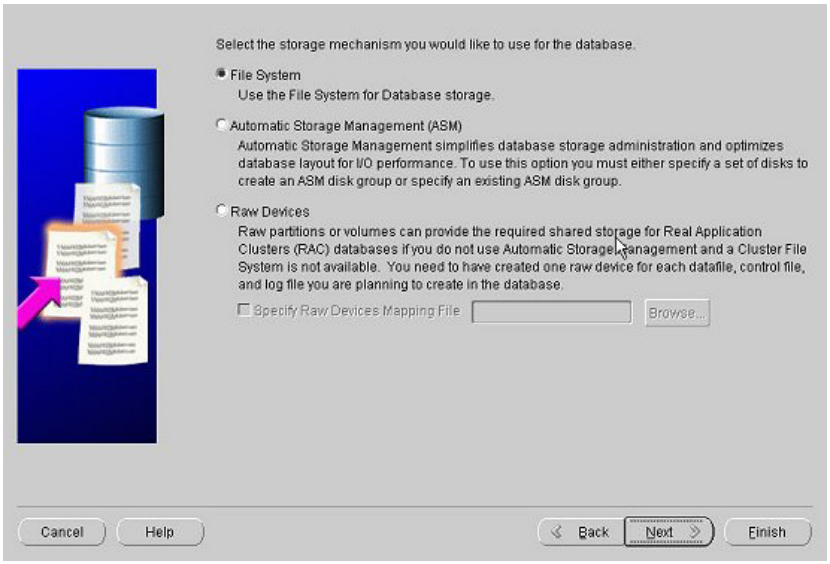


7. Enter passwords for SYS, SYSTEM, SYSMAN and DBSNMP. It is highly recommended to use different passwords for these accounts. Click Next.

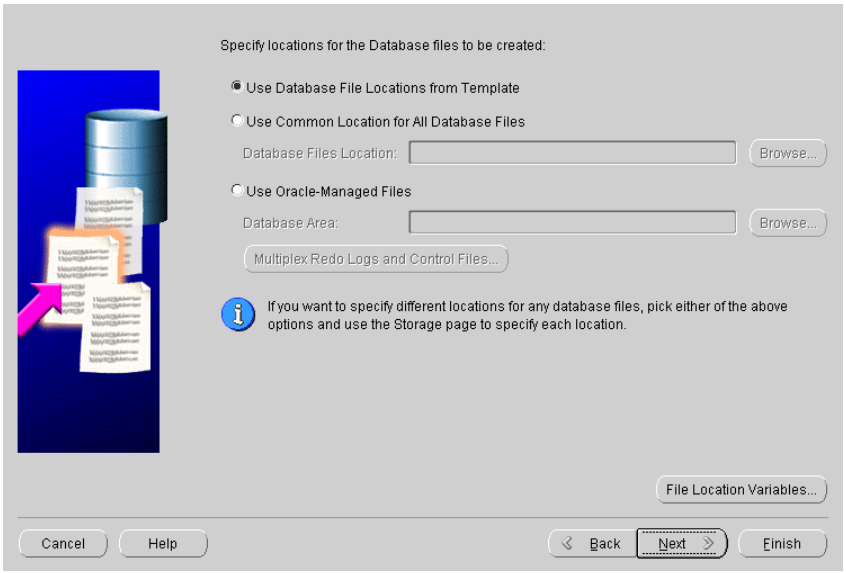
   The next window provides the possibility to register your database with directory service.

8. Select No, do not register the database and click Next.

9. Select File System for database storage and click Next.

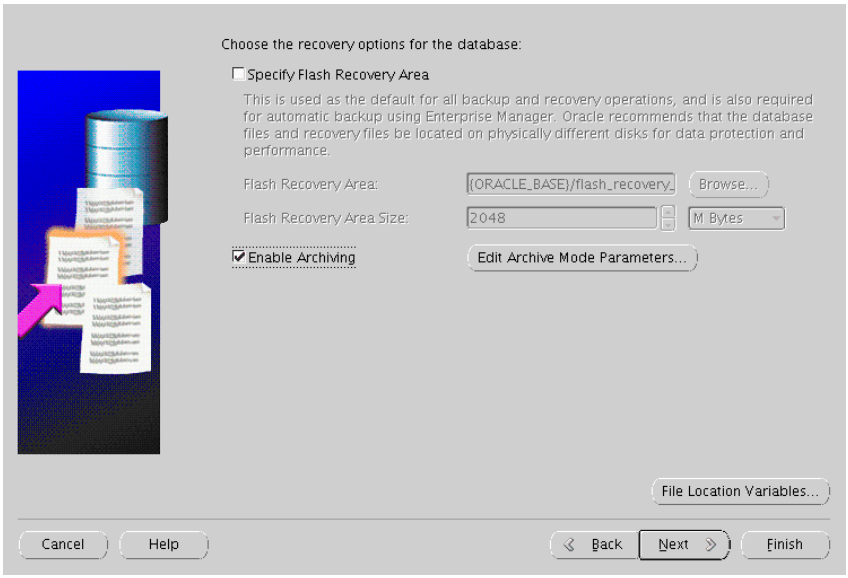


10. In the next window, choose Use Database File Locations from Template and click Next.



11. In the next window deselect the option Specify Flash Recovery Area. Depending on your backup strategy and used template, archiving could be enabled.

Note: For productive installations it is highly recommended to archive the database. The archive log mode and the destination of the archive directory could be specified by clicking on the Edit Archive Mode Parameters button. Click Next.

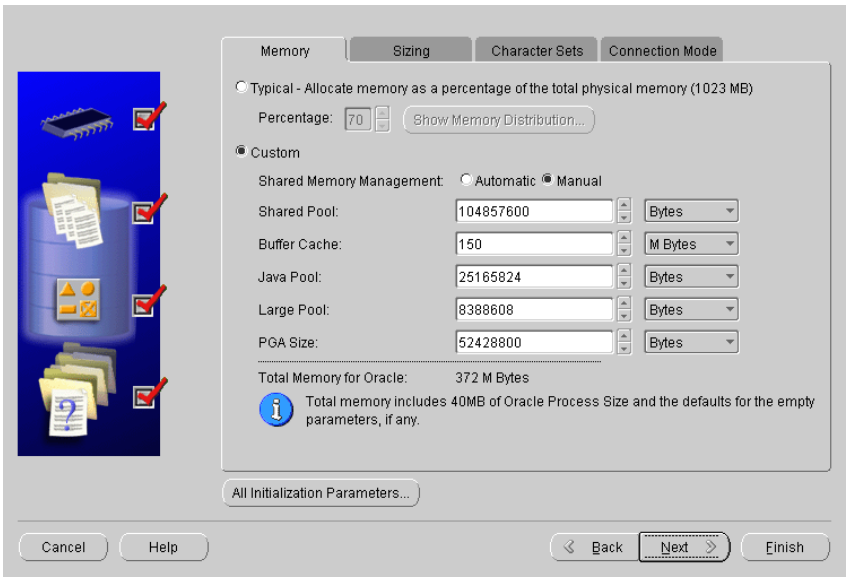


The next window provides database features as well as the possibility to run custom scripts after database creation. It is not recommended to change the settings provided by the template.

12. Click Next.

The next window provides diverse database parameters. You can navigate to the setting of memory, character sets, databases sizing, and connection mode.

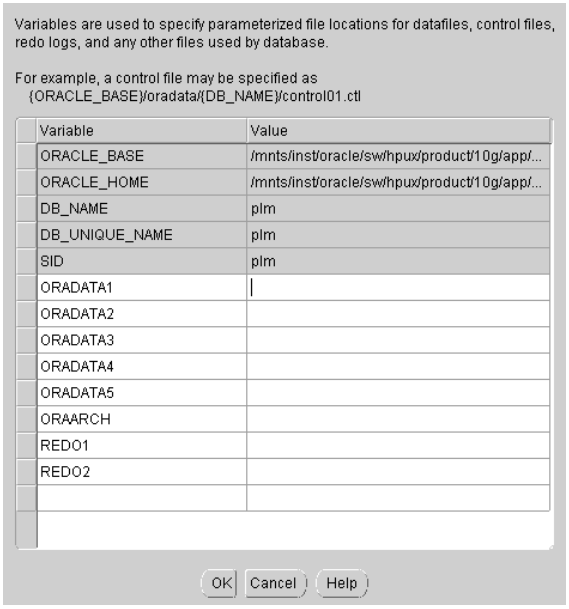
13. Check if the connection mode is set to Dedicated Server Mode in folder Connection Mode.



The values are recommended by Agile for the selected kind of database installation.

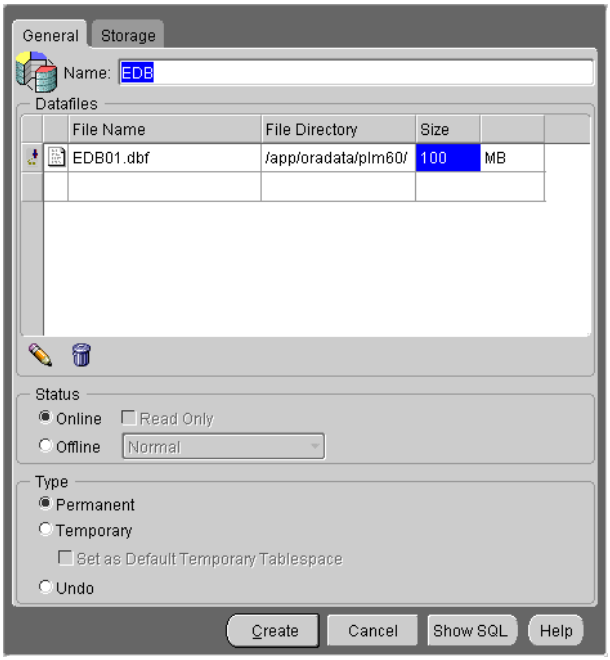
14. Click Next.
15. In the next window click File Location Variables.
16. Review and adapt the file location of your system. Enter variables mentioned in the table below, as well as the values for them. See table for detailed information on predefined file destination variables.

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



The storage parameters for control files, tablespaces, data files, rollback segments, and redo log files can be reviewed and modified.

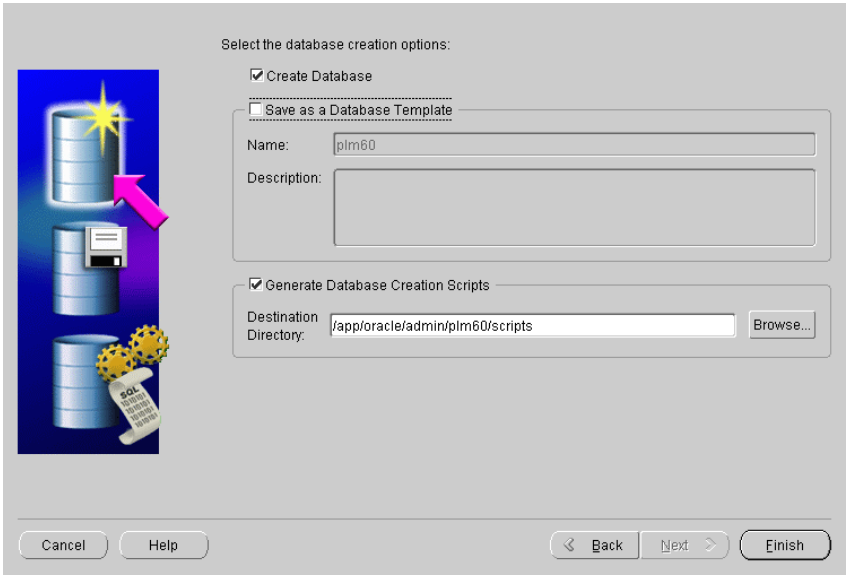
17. Double-click an object on the left window section if you want to edit and modify the settings in the right window section. The required new tablespaces can be created. Click OK.



Note: The values are recommended by Agile for the selected kind of database installation.

18. Click Create.

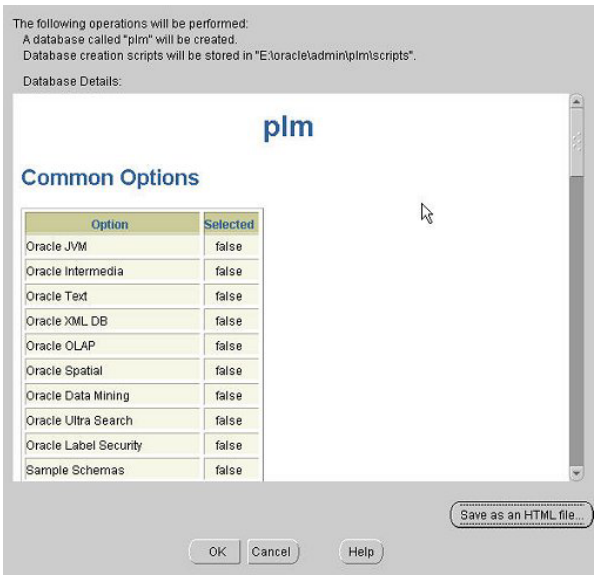
19. To immediately start the database creation click Create Database in the next window.



It is recommended to choose the option Generate Database Creation Scripts and to define a destination directory (default: {ORACLE_HOME}/admin/plm60/scripts). Those scripts are useful for future reference or use.

20. Click Finish.

A summary of the database parameter is displayed.



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

The database creation process is started.

22. Click Exit to finish the process.

Configure the Oracle Listener

1. Copy the listener configuration files from Agile e6 DVD, in the doc/oracleAddOn/unix directory, to your installation.

cp listener.ora /app/oracle/product/10.2/network/admin

cp tnsnames.ora /app/oracle/product/10.2/network/admin

cp tnsnav.ora /app/oracle/product/10.2/network/admin

cp sqlnet.ora /app/oracle/product/10.2/network/admin

2. Adapt the configuration files (especially, tnsnames.ora and listener.ora to reflect the correct hostname and other information).

3. Start the listener and test the database connection.

lsnrctl start

tnsping plm60

sqlplus system@plm60

About the Directory Structure

The Oracle Software is placed in the directory $ORACLE_HOME, which contains the network configuration, trace and log files.

$ORACLE_HOME -> /app/Oracle/product/10.2

$ORACLE_HOME/network/admin

$ORACLE_HOME/network/trace

$ORACLE_HOME/network/log

The directory $ORACLE_HOME/dbs contains the server parameter files.

- $ORACLE_HOME/dbs/spfileplm60.ora
- /app/Oracle/admin contains the create scripts, the log trace and init files of all databases /app/Oracle/admin/plm60.
- bdump: alert_PLM60.log alert file, background process trace files
- If an error occurs, always consult the alert file first. You can see every start and stop of the instance and every log switch. Errors are included in the file.
- cdump: core dump files
- create: database create scripts
- pfile: instance parameter files
- udump: user SQL traces

Chapter 5

Modify the Oracle Database

Create a Database User and Role

You will need to create the Agile e6 database user and role and provide the necessary privileges and quotas. You can do this by using the commands in the following section, 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.
2. Select role from dba_roles where role='AGILE_E_ROLE'.
3. If the string 'AGILE_E_ROLE' is returned, the role already exists. Skip the role creation and continue with the user creation. Otherwise, the role does not exist and has to be created by:

```
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 CLUSTER 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. Create a database user (named, e.g. plm):

```
CREATE USER PLM

IDENTIFIED BY <PASSWORD>

DEFAULT TABLESPACE "EDB"

TEMPORARY TABLESPACE "TEMP"
```

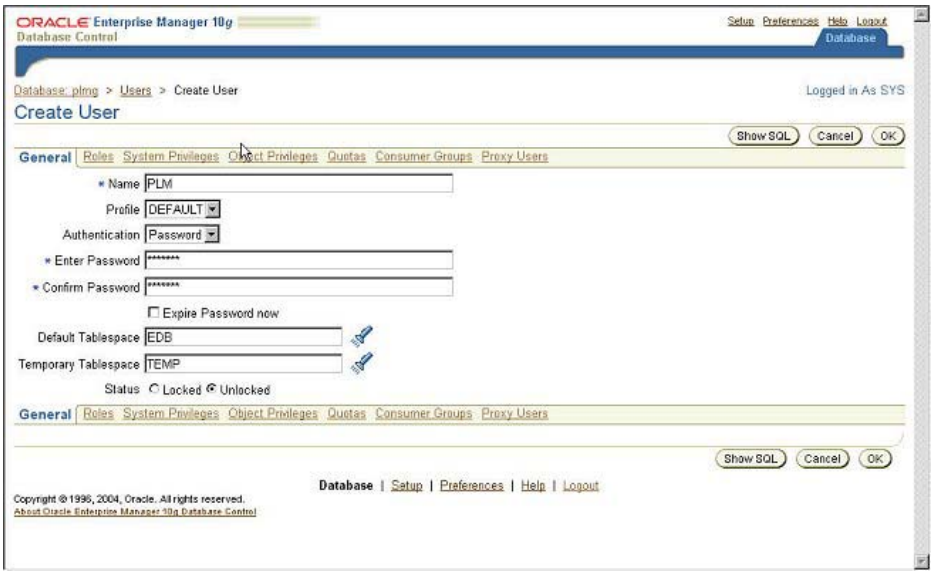
```
PROFILE DEFAULT
QUOTA UNLIMITED ON "EDB"
QUOTA UNLIMITED ON "EDB_IDX"
QUOTA UNLIMITED ON "EDB_TMP"
QUOTA UNLIMITED ON "EDB_TMPIDX"
QUOTA UNLIMITED ON "EDB_LOB"
ACCOUNT UNLOCK;
GRANT "AGILE_E_ROLE" TO PLM;

ALTER USER PLM DEFAULT ROLE AGILE_E_ROLE;
```

A default script (cre_plm_usr.sql) with these commands can be found on the Agile e6 DVD in the directory doc/OracleAddOn/sql.

Use Enterprise Manager Database Control to Create a User

1. Start the Enterprise Manager Database Control. By default it can be invoked on localhost:1158/em, but it can be configured manually to use another port. Click Login.

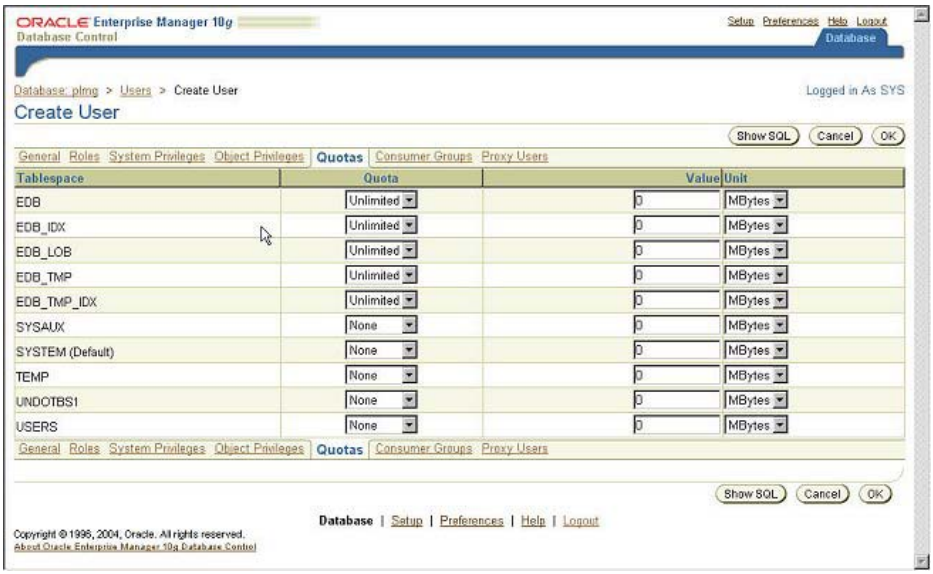
2. In the next window click on Administration and in the security section on Users.
3. Click Create.



4. Select the General tab and insert a user name and password, and assign default and temporary tablespace.
5. Select the Roles tab, then the Modify button. Select role AGILE_E_ROLE from the list with available roles and click the Move button, to move it to the Selected Roles. Click OK

(Role AGILE_E_ROLE should have been created in a previous section.)

6. Select the Quota tab and assign unlimited quota on EDB, EDB_IDX, EDB_LOB, EDB_TMP and EDB_TMPIDX.



7. To finish the database user creation click OK.

Import the Database Dump

Import the Agile e6 dump using the following commands and then check the log file for errors.

```
imp plm/plm@plm60 file=plm60.dmp log=plm60.log buffer=132000 commit=y statistics=none full=y
```

commit=y	Rollback segments cannot get too small
analyze=n	No statistics will be created
buffer=132000	Necessary for lobs and 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 a directory, which will be used for the Oracle Data Pump Export/Import Utility, with two subdirectories - system and user (e.g. /mnt/Oracle/dump/system; /mnt/Oracle/dump/user).
2. Open an sqlplus session and connect as system.

   ```
   sqlplus system/<system password>
   ```

3. Run the script ddl_pump_dir.sql. This script can be found on the Agile e6 DVD in the directory doc/OracleAddOn/sql.

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

4. Enter the path to the main directory created in step 1 (e.g. /mnt/Oracle/dump).

   The script will create two directory objects:

   - for system users
   - for normal users

And it assigns the rights for the second directory to user “PLM”.

Compile All Invalid Objects in Schema PLM

After importing the Agile e6 dump, some objects might be invalid. This could be verified as follows:

1. Open an 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 says ‘no rows selected’ then no invalid objects exist. Otherwise, you have to run the script compile_all.sql, which can be found on the Agile Oracle Add-On CD.

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

2. Verify again that there are no invalid objects by:

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

Create Statistics

In Oracle 10g 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. Agile 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 on all tables and indexes in db schema PLM:

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

2. Calculate statistics on 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 must be available to support the cost based optimizer. If tables and indexes are modified or created, statistics must be established.

1. 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);
   ```

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

   ```
   SQL> EXECUTE DBMS_STATS.GATHER_TABLE_STATS(ownname=> 'PLM_ENTW', tabname=>
   'T_MASTER_DAT', partname=> NULL , estimate_percent=> 10 ,cascade=> true);
   ```

Statistic information can be viewed e.g. in USER_TABLES and USER_INDEXES. These views provide information like average row length and number of rows.

Chapter 6

Appendix A

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

Template “plm_laptop”

Parameter/Setting	Value
db_block_size	4 k
db_cache_size (buffer)	48 MB
db_file_multiblock_read_count	8
shared_pool_size	80 MB
open_cursors	600
processes	40
pga_aggregate_target	50 MB
Tablespaces	managed locally
EDB	25 MB
EDB_IDX	25 MB
EDB_LOB	5 MB
EDB_TMP	1 MB
EDB_TMP_IDX	1 MB
Redolog file size	5 MB
archiveLogMode	FALSE

Template “plm_test”

Parameter/Setting	Value
db_block_size	8 k
db_cache_size (buffer)	150 MB
db_file_multiblock_read_count	8

shared_pool_size	100 MB
open_cursors	600
processes	80
pga_aggregate_target	50 MB
Tablespaces	managed locally
EDB	100 MB
EDB_IDX	100 MB
EDB_LOB	5 MB
EDB_TMP	5 MB
EDB_TMP_IDX	5 MB
Redolog file size	10 MB
archiveLogMode	FALSE

Template “plm_prod_small” 40 Users Max

Parameter/Setting	Value
db_block_size	8 k
db_cache_size (buffer)	200 MB
db_file_multiblock_read_count	8
shared_pool_size	100 MB
open_cursors	600
processes	100
pga_aggregate_target	50 MB
Tablespaces	managed locally
EDB	300 MB
EDB_IDX	300 MB
EDB_LOB	5 MB
EDB_TMP	5 MB
EDB_TMP_IDX	5 MB

Redolog file size	10 MB
archiveLogMode	TRUE

Template “plm_prod_medium” 80 Users Max

Parameter/Setting	Value
db_block_size	8 k
db_cache_size (buffer)	500 MB
db_file_multiblock_read_count	8
shared_pool_size	120 MB
open_cursors	600
processes	180
pga_aggregate_target	110 MB
Tablespaces	managed locally
EDB	1,5 GB
EDB_IDX	1,5 GB
EDB_LOB	5 MB
EDB_TMP	5 MB
EDB_TMP_IDX	5 MB
Redolog file size	10 MB
archiveLogMode	TRUE

Template “plm_prod_large” 120 User Max

Parameter/Setting	Value
db_block_size	8 k
db_cache_size (buffer)	1 GB
db_file_multiblock_read_count	8
shared_pool_size	160 MB
open_cursors	600

processes	260
pga_aggregate_target	160 MB
Tablespaces	managed locally
EDB	2 data files, each 1,5 GB
EDB_IDX	2 data files, each 1,5 GB
EDB_LOB	5 MB
EDB_TMP	10 MB
EDB_TMP_IDX	10 MB
Redolog file size	10 MB
archiveLogMode	TRUE

Template “plm_prod_huge” 150 Users Max

Parameter/Setting	Value
db_block_size	8 k
db_cache_size (buffer)	1 GB
db_file_multiblock_read_count	8
shared_pool_size	200 MB
open_cursors	600
processes	320
pga_aggregate_target	200
Tablespaces	managed locally
EDB	2 data files, each 1,5 GB
EDB_IDX	2 data files, each 1,5 GB
EDB_LOB	5 MB
EDB_TMP	10 MB
EDB_TMP_IDX	10 MB
Redolog file size	10 MB
archiveLogMode	TRUE