
# Agile e6.0.1

Installation Manual for Oracle 10g for Agile e6.0.1 on Unix

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**November 02, 2005**

# CONTENTS

# Chapter 1

# Introduction

This guide describes how to install Oracle 10g and adapt the Oracle database for the use with Agile e6 running under 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) | 512 MB (524288 KB) |
| Swap space | 1 GB (1048576 KB) or twice the size of RAM.<br>On systems with 2 GB or more of RAM, the swap space can be between one and two 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 1 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

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

- ❑ 5.2L
  - IY64978 Possible system hang while concurrently renaming and unlinking under JFS. This APAR is currently available from the Fix Central download Web site located at: http://www-1.ibm.com/servers/eserver/support/pseries/aixfixes.html
  - IY63366 Loader may fail to find symbol even though the symbol is present in the symbol table. This can cause applications that use dynamically loaded modules to fail. Prior to APAR availability, an emergency fix is available at: ftp://service.software.ibm.com/aix/efixes/iy63366/
  - IY59082 Heavily loaded systems running JFS2 file systems may hang. AIX 5.2 systems with the kernels filesets (bos.mp, bos.mp64, bos.up) at the 5.2.0.40 level, and using JFS2 file systems should apply the fix for this APAR.

  In addition, customers may need to install one or more of the following emergency fixes:

  - Systems running bos.rte.lvm 5.2.0.41 or later should install APAR IY64691. APAR IY64691 fixes a problem with the "chvg-B" command that can cause data corruption on Big volume groups which were converted from normal volume groups. Prior to APAR availability, obtain the emergency fix for APAR IY64691 from: ftp://service.software.ibm.com/aix/efixes/iy64691/
  - Systems running bos.rte.lvm 5.2.0.50 should install APAR IY65001. APAR IY65001 fixes a possible corruption issue with mirrored logical volumes. This APAR also contains the fix for APAR IY64691. Prior to APAR availability, obtain the emergency fix for APAR IY65001 from: ftp://service.software.ibm.com/aix/efixes/iy65001/
  - Systems running bos.rte.aio 5.2.0.50 should install APAR IY64737. APAR IY64737 fixes a problem where applications that use Asynchronous I/O (AIO) can cause a system hang. Prior to APAR availability, obtain the emergency fix for APAR IY64737 from: ftp://service.software.ibm.com/aix/efixes/iy64737/
- ❑ 5.3L
  - IY58143 Required fixes for AIX 5.3
  - IY59386 ld -m does not produce any output
  - IY60930 Unable to remove routes on 64-bit kernel
  - IY66513 and IY70159 should be applied to AIX 5L v5.3 for any application where the "LDR_CNTRL" environment variable is explicitly set. For example, 8.1.7 32bit Database users may specify "LDR_CNTRL=MAXDATA=0x80000000". See Oracle Bug 4150457 for a detailed problem description.
  - IY68989 is mandatory for all Oracle customers running on AIX 5.3 ML01. This fix address a critical problem introduced in ML01. The symptoms can vary from an Oracle application hang to unexplained corruption of Oracle jar files or Oracle Application Forms.

  **Note:** Since IY66513, IY70159 and IY68989 all affect the same AIX file set, proceed with the following instructions as needed to ensure that all 3 are correctly applied.

  1. If IY66513 and IY70159 have already been applied as efixes, use the AIX "emgr" command to remove them first.
  2. Download and apply the official fixes for IY66513 and IY70159, which are now available. The fileset level for bos.mp64 should now be "bos.mp64.5.3.0.22" or higher.

3. Request and apply the efix for IY68989 from IBM support. Be sure to specify the new file set level for bos.mp64 when requesting the efix.

### Installation notes for AIX 5.3L

When running the Oracle Universal Installer (OUI) the following message or similar may appear:

OUI-18001: The operating system “AIX Version 5300.0x” is not supported."

The circumvention is to run the OUI as follows:

```
./runInstaller -ignoreSysPrereqs
```

### Configuring 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) | 512 MB (524288 KB) |
| Swap space | 1 GB (1048576 KB) or twice the size of RAM.<br>On systems with 2 GB or more of RAM, the swap space can be between one and two 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), June 2003 or later must be installed.
  - HP-UX 11v2 (11.23) PA-RISC

The following patches must be installed:

- 11.11
  - PHCO_28123: cumulative SAM patch
  - PHKL_29198: Psets Enablement Patch; top(1)
  - PHNE_28476 (s/b PHNE_29825): Cumulative STREAMS Patch
  - PHNE_28923 (s/b PHSS_30049): LAN product cumulative patch
  - PHSS_28871: ld(1) and linker tools cumulative patch
  - PHSS_28880: HP aC++ -AA runtime libraries (aCC A.03.50)
  - PHCO_26331 (s/b PHCO_27958): mountall cumulative patch, Dev IDs enabler
  - PHCO_29109 (s/b PHCO_29960): Pthread enhancement and fixes
  - PHKL_25468 (s/b PHKL_30542): eventport (/dev/poll) pseudo driver
  - PHKL_25842: Thread Abort
  - PHKL_25993: thread nostop for NFS, rlimit, Ufalloc fix
  - PHKL_25994: Thread NOSTOP, Psets Enablement, Ufalloc
  - PHKL_25995 (s/b PHKL_30541): ufalloc;VxFS3.5;SPP fragmentation
  - PHKL_26468: Shared synchronization performance support
  - PHKL_28489 (s/b PHKL_27316): copyin EFAULT, LDCD access type

  "s/b" indicates superceded by

- 11.23

  No patches required.

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

- See the following Web site for a list of patches required by Java SDK 1.4.2:
  http://www.hp.com/products1/unix/java/patches/index.html

## Installation notes for HP-UX 11.11

During an installation of Oracle10g 10.1.0.2 (using Oracle Universal Installer (OUI) 10.1.0.2) on an HPUX 11.11 server, the following messages appear:

```
Prerequisite checks failures:
Checking for Jun03GQPK11i_Aux_Patch(B.03.10.29), found Not found. Failed
```

Please ignore this error, because it is caused by an bug in the Oracle Installer.

## 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) |
| max_thread_proc | 256 |
| 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 | (2+msgmni) |
| msgmni | 4096 |
| msgseg | 32767 |
| msgtql | 4096 |
| **ncsize*** | (ninode+vx_ncsize) |
| nfile | (15*nproc+2048) |
| nflocks | 4096 |
| ninode | (8*nproc+2048) |
| nkthread | (((nproc*7)/4)+16) |
| nproc | 4096 |
| **semmap*** | (semmni+2) |
| semmni | 4096 |
| semmns | (semmni*2) |
| semmnu | (nproc-4) |

| | |
|---|---|
| semvmx | 32767 |
| shmmax | The size of physical memory (0X40000000) or 1073741824, whichever is greater. |
| shmmni | 512 |
| shmseg | 120 |
| vps_ceiling | 64 |

**Note:** * MAXSWAPCHUNKS, SEMMAP, and VX_NCSIZE are obsolete on 11.23 PA-RISC and IPF and no 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) | 512 MB (524288 KB) |
| Swap space | 1 GB (1048576 KB) or twice the size of RAM.<br>On systems with 2 GB or more of RAM, the swap space can be between one and two 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 and Service Pack 1
- Kernel version 2.6.5-7.97 or later must be installed
- The following packages must be installed:
  - gcc-3.3.3-43
  - gcc-c++-3.3.3-43
  - glibc-2.3.3-98

- libaio-0.3.98-18
- libaio-devel-0.3.98-18
- make-3.80
- openmotif-libs-2.2.2-519.1

## Installation notes for Suse Linux 9

When running the Oracle Universal Installer (OUI) the following message or similar may appear:

Checking operating system version: must be redhat-2.1, UnitedLinux-1.0 or redhat-3

Failed <<<

The circumvention is to run the OUI as follows:

./runInstaller -ignoreSysPrereqs

## 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<br>semmns<br>semopm<br>semmni | 250<br>32000<br>100<br>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<br>This command displays the value of the semaphore parameters in the order listed. |
| shmall, shmmax and shmmni | # /sbin/sysctl -a \| grep shm<br>This command displays details of the shared memory segment sizes. |
| file-max | # /sbin/sysctl -a \| grep file-max<br>This command displays the maximum number of file-handles. |
| ip_local_port_range | # /sbin/sysctl -a \| grep ip_local_port_range<br>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:

a. 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.

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

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

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.

c. 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) | 512 MB (524288 KB) |
| Swap space | 1 GB (1048576 KB) or twice the size of RAM. |

| | |
|---|---|
| | On systems with 2 GB or more of RAM, the swap space can be between one and two 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 8 or Solaris 9.

The following packages must be installed:

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

The following patches must be installed:

- Patches for Solaris 8
  - All of the patches included in the J2SE Patch Cluster for Solaris 8:
  - 108528-23, SunOS 5.8: kernel update patch
  - 108652-66, X11 6.4.1: Xsun patch
  - 108773-18, SunOS 5.8: IIIM and X I/O Method patch
  - 108921-16, CDE 1.4: dtwm patch
  - 108940-53, Motif 1.2.7 and 2.1.1: Runtime lib. patch for Solaris 8

- 108987-13, SunOS 5.8: Patch for patchadd and patchrm
- 108989-02, /usr/kernel/sys/acctctl & /.../exacctsys patch
- 108993-18, SunOS 5.8: LDAP2 client, libc, libthread ... lib.patch
- 109147-24, SunOS 5.8: linker patch
- 110386-03, SunOS 5.8: RBAC Feature Patch
- 111023-02, SunOS 5.8: /kernel/fs/mntfs and ... sparcv9/mntfs
- 111111-03, SunOS 5.8: /usr/bin/nawk patch
- 111308-03, SunOS 5.8: /usr/lib/libmtmalloc.so.1 patch
- 111310-01, SunOS 5.8: /usr/lib/libdhcpagent.so.1 patch
- 112396-02, SunOS 5.8: /usr/bin/fgrep patch
- The following additional patches:
  111721-04, SunOS 5.8: Math Library (libm) patch
  112003-03, SunOS 5.8: Unable to load fontset in 64-bit Solaris 8 iso-1 or iso-15
  112138-01, SunOS 5.8: usr/bin/domainname patch

❑ Patches for Solaris 9:

- 112233-11: SunOS 5.9: Kernel Patch
- 111722-04: SunOS 5.9: Math Library (libm) patch

## Installation notes for Solaris 10

When running the Oracle Universal Installer (OUI) the following message or similar may appear:

OUI-18001: The operating system “Solaris Version 5.10” is not supported."

The circumvention is to run the OUI as follows:

./runInstaller -ignoreSysPrereqs

1. Select 'Do not create a starter database' when installing Oracle 10g.
2. During installation, the warning message 'SUNWsprox package not installed' can be ignored as it is no longer provided separately. Press Continue to resume the installation.
3. Add this line in the init.ora parameter file (patch will be released soon):
   enable_NUMA_optimization=FALSE (SPARC only)
4. Download and install patch 4163208 (SPARC) or 4186426 (x86) from metalink.oracle.com.
5. If you have an End User Solaris 10 distribution, install the SUNWuiu8 package prior to installing the 10g client.

## Kernel Parameters

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

| Parameter | Recommended Value |
|---|---|
| semsys:seminfo_semmni | 100 |

| | |
|---|---|
| semsys:seminfo_semmns | 1024 |
| semsys:seminfo_semmsl | 256 |
| semsys:seminfo_semvmx | 32767 |
| shmsys:shminfo_shmmax | 4294967295 |
| shmsys:shminfo_shmmin1 | 1 |
| shmsys:shminfo_shmmni | 100 |
| shmsys:shminfo_shmseg | 10 |

# Chapter 3
# Preparing the System

## Setting 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/10.1:

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

## Setting up the shell environment variables for Oracle 10g

To set up the shell environment variables, follow the steps:

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_ORA10.1

   source $HOME/csh_ORA10.1

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 the environment variables.

| Software Item | Requirements |
|---|---|
| DISPLAY | Set it to the machine name and monitor of the station from which you are connecting to the server machine (setenv DISPLAY hostname:0.0). |
| LD_LIBRARY_PATH<br>SHLIB_PATH (HP-UX)<br>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_NLS33 | Required when creating a database with character other set than US7ASCII. Set to $ORACLE_HOME/ocommon/nls/admin/data. |
| PATH | The search path must include: $ORACLE_HOME/bin, /bin, /usr/bin, and /usr/local/bin. |
| TWO_TASK | Should be undefined when installing the Oracle8 Server. |
| TMPDIR | A directory with free space available where the Oracle account has write permission. The default location on Linux is /usr/tmp. |
| LINK_CNTRL | If on AIX 4.3.X, set:<br>setenv LINK_CNTRL L_PTHREADS_D7 |

## 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 of 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 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
```

## Copying database start and stop scripts for the Oracle Server

Skip this step if you only install the Oracle Client.

If not already 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_ORA10.1** includes the directory in the search path.

start_PLM60

stop_PLM60

stop_PLM60_immediate

stop_PLM60_transactional

stop_PLM60_abort

## Mounting CDs To Your File System

### AIX

1. If necessary, enter a command similar to 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 following to eject the currently mounted disc, then remove it from the drive:
   ```
   # eject /media/cdrom
   ```

   **Note:** Note: The pathname /media/cdrom can differ, depending on the installed drive type. 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
# Installing Oracle 10g

## Installing the Oracle Server

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

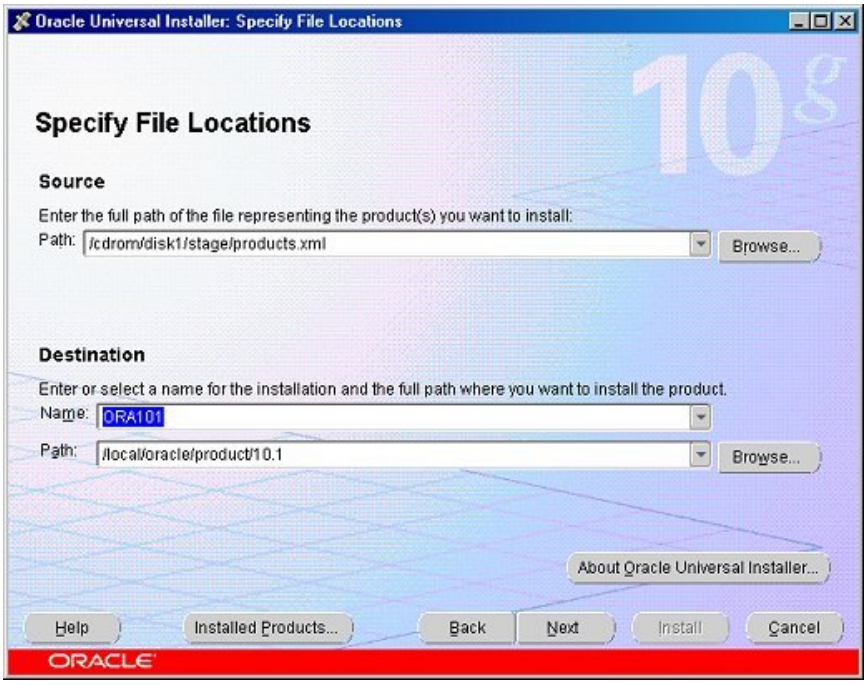
   For example, type: /cdrom/runInstaller

   The **Welcome** window is opened.

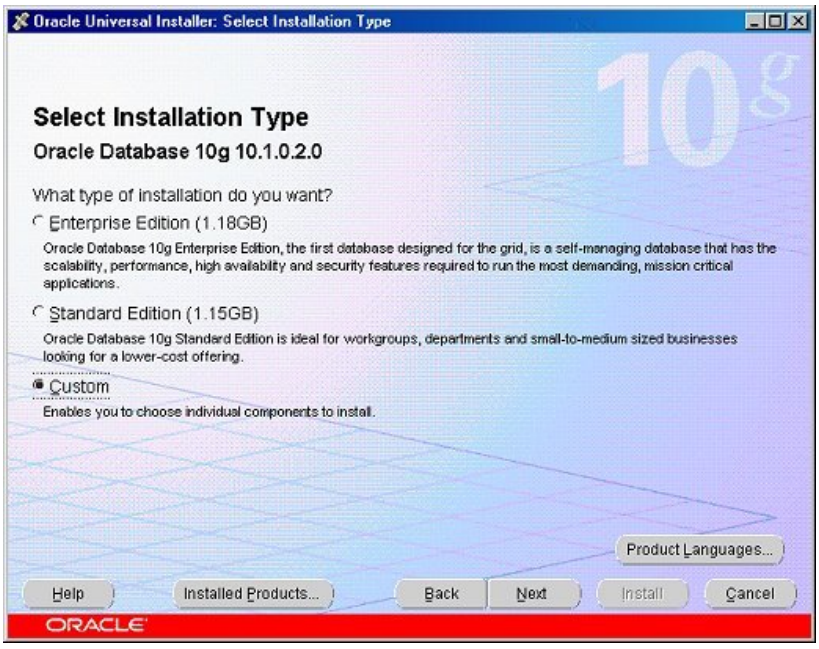

3. Click **Next**.

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

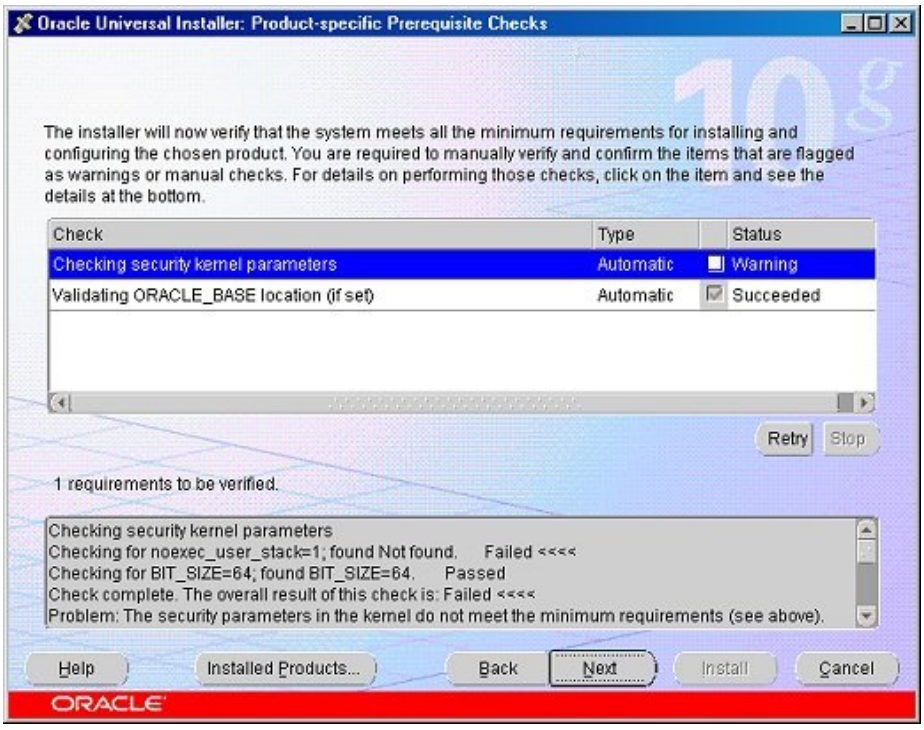
4. Enter name and path for ORACLE_HOME and verify if the path to products.xml is valid.




5. Click **Next**.
6. Select **Custom** installation to choose which components to be installed.

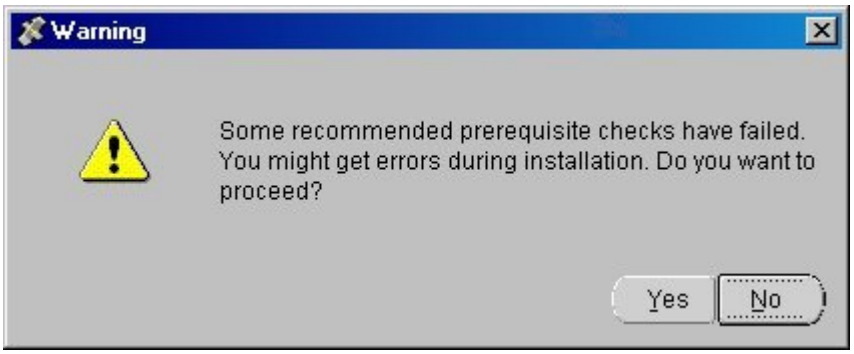



7. Click **Next**.
8. Oracle will check OS requirements. Ignore the message '**kernel parameter noexec_user_stack not found**' and click **Next**.

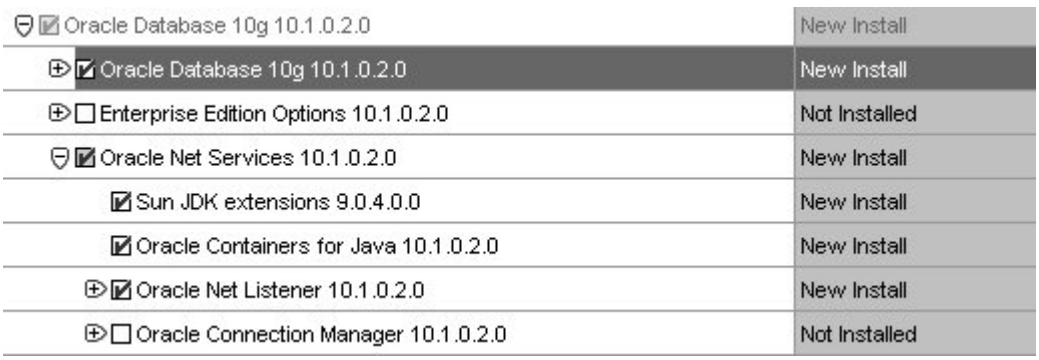



You will be prompted that not all requirements are met. If only **noexec_user_stack** is not set, you can continue by clicking on **Yes**.

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

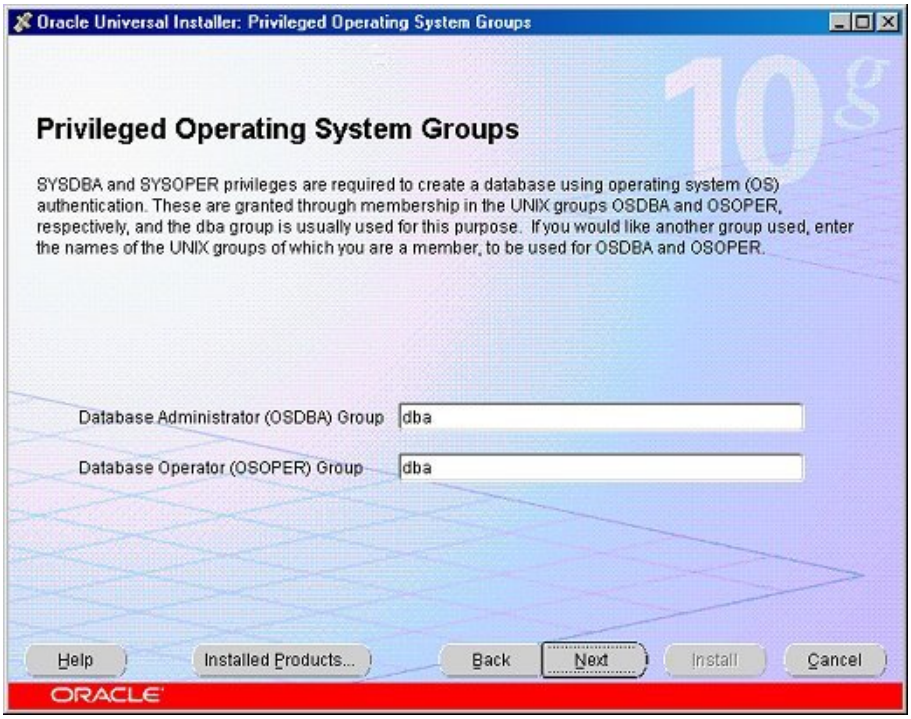



**9.** Select the components you want to install from the product list and click **Next**:



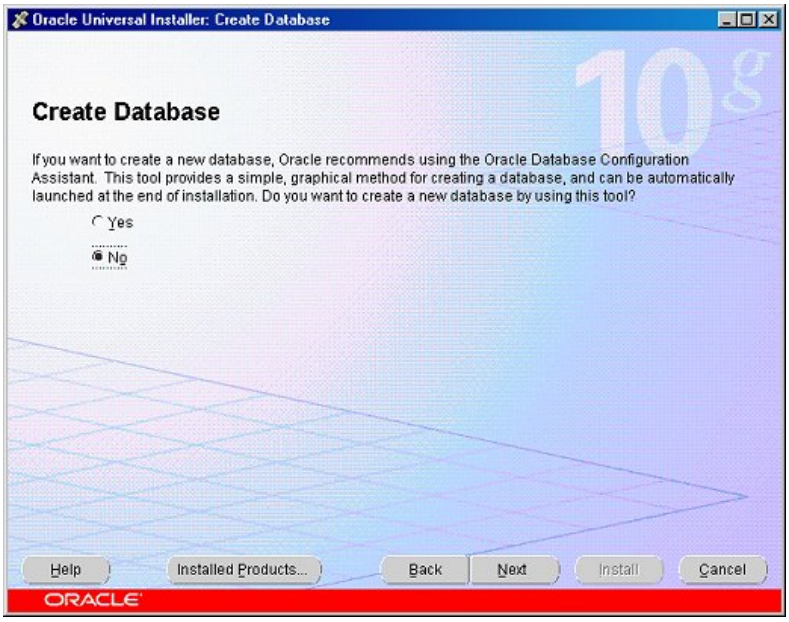
| | |
|---|---|
| ⊖ ☑ Oracle Enterprise Manager 10g Database Control 10.1.0.2.0 | New Install |
| ☑ Sun JDK extensions 9.0.4.0.0 | New Install |
| ☑ Oracle Containers for Java 10.1.0.2.0 | New Install |
| ☐ Oracle Development Kit 10.1.0.2.0 | Not Installed |
| ⊕ ☐ Oracle Transparent Gateways 10.1.0.2.0 | Not Installed |
| ⊕ ☐ iSQL*Plus 10.1.0.2.0 | Not Installed |
| ☐ Legato Networker Single Server 10.1.0.2.0 | Not Installed |

**10.** Enter the **dba** group



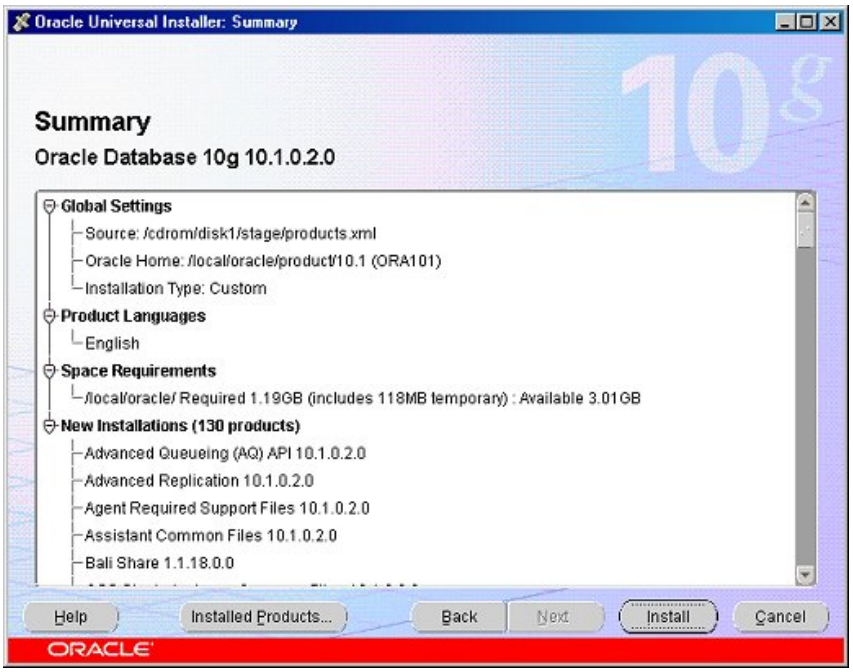

**11.** Click **Next**

The Create database window is opened.




**12.** IMPORTANT: Select **No i**n the **Create Database** window, and then click **Next** to continue. (You will create the database later in a separate step.)

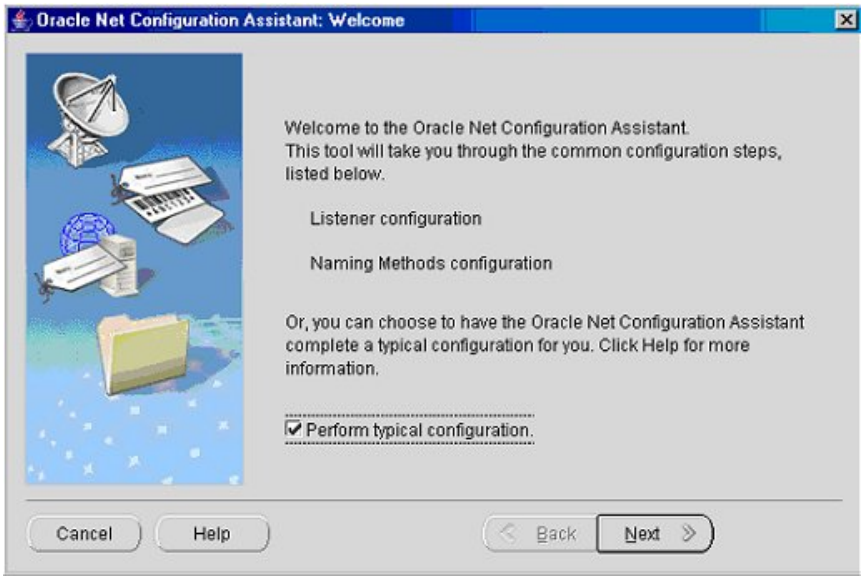
In the **Summary** window, review the options you have chosen. If necessary, click **Previous** to perform changes.




**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. After the installation is completed, the **Oracle Net Configuration Assistant** is opened.

**14.** Select **Perform typical configuration** and click **Next**




You are asked to execute a script as user root.

**15.** Open a second terminal by the root user and run the script:

```
# cd /app/oracle/product/9.2
# ./root.sh
```

## Installing the Oracle Client

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

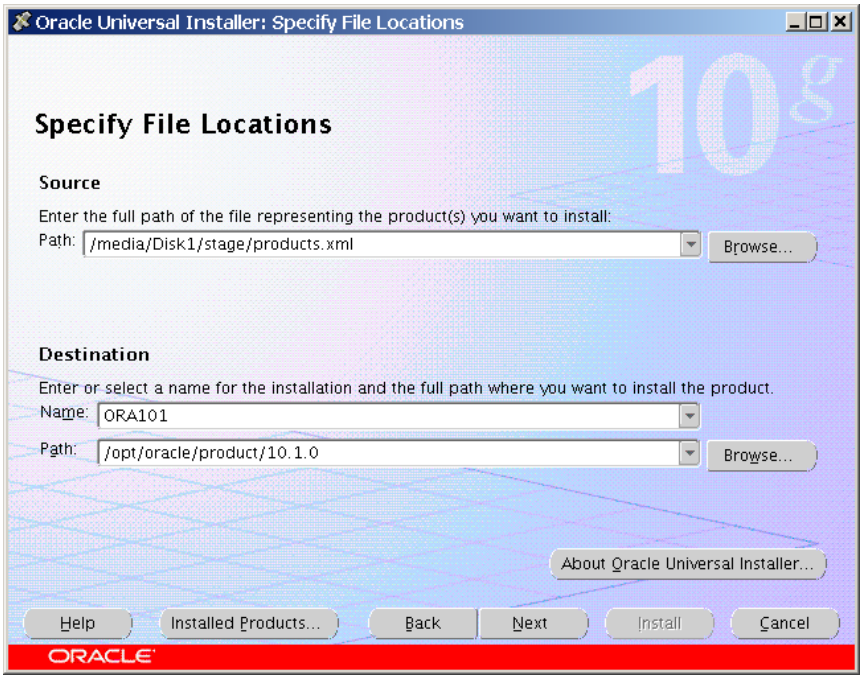
   For example, type: /cdrom/runInstaller

   The **Welcome** window is opened.

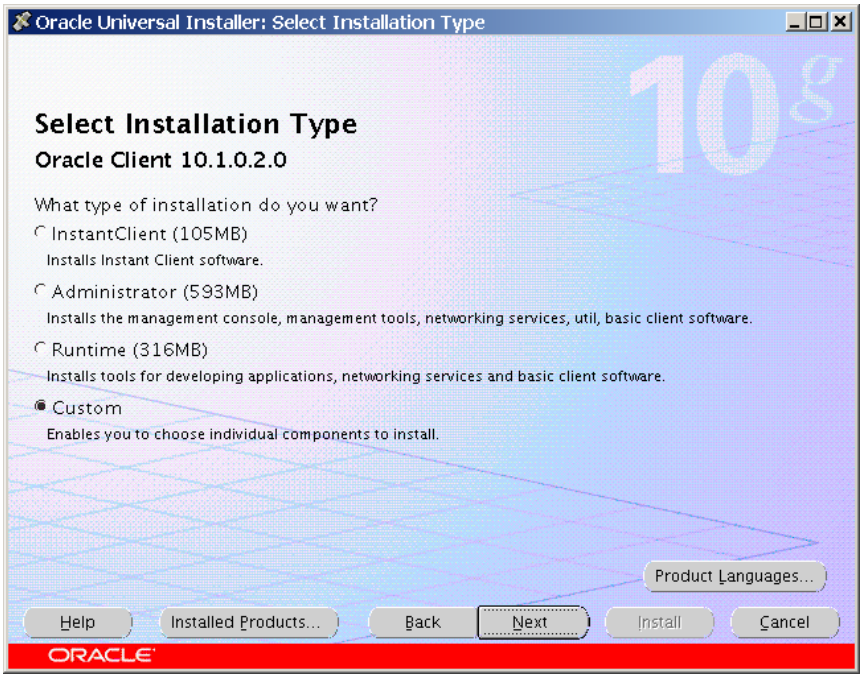

3. Click **Next.**

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

4. Enter name and path for ORACLE_HOME and verify if the path to products.xml is valid.




5. Click **Next**.
6. Select **Custom** installation to choose which components to be installed.

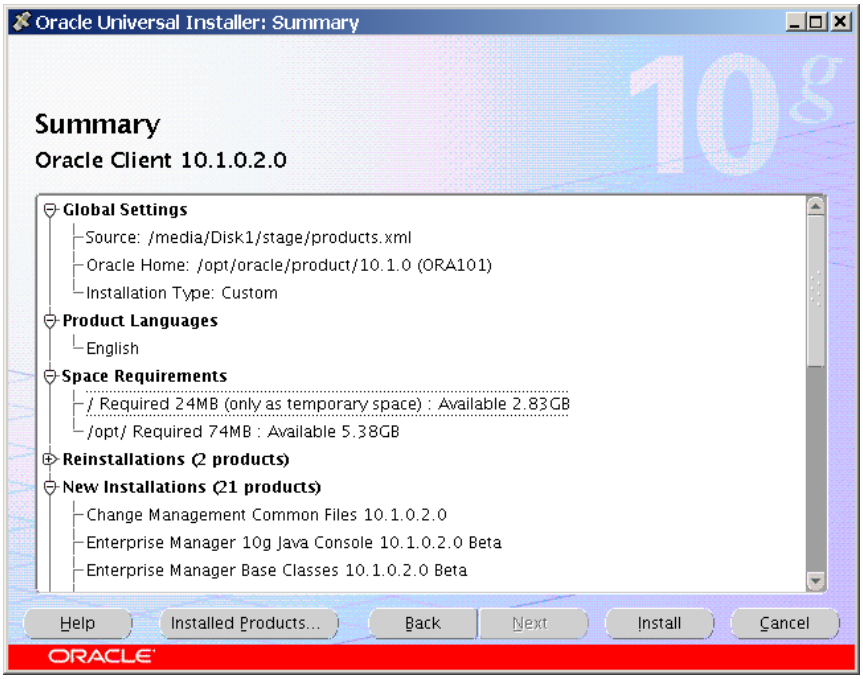



7. Click **Next**.
8. Select the components you want to install from the product list and click **Next**:

| | |
|---|---|
| Oracle Client 10.1.0.2.0 | New Install |
| Oracle SQLJ 10.1.0.2.0 | Not Installed |
| Oracle Network Utilities 10.1.0.2.0 | New Install |
| Oracle Database Utilities 10.1.0.2.0 | New Install |
| Oracle Java Utilities 10.1.0.2.0 | Not Installed |
| SQL*Plus 10.1.0.2.0 | New Install |
| Oracle JDBC/OCI Interfaces 10.1.0.2.0 | New Install |
| Oracle JDBC/THIN Interfaces 10.1.0.2.0 | New Install |
| Oracle Internet Directory Client 10.1.0.2.0 | Not Installed |
| Oracle Call Interfaces 10.1.0.2.0 | New Install |
| Oracle Programmer 10.1.0.2.0 | New Install |
| Oracle XML Developer's Kit 10.1.0.2.0 | Not Installed |
| Oracle10i for UNIX Documentation 10.1.0.2.0 | Not Installed |
| Oracle One-Off Patch Installer 10.1.0.2.0 | New Install |
| Oracle Advanced Security 10.1.0.2.0 | Not Installed |
| Enterprise Manager 10g Java Console 10.1.0.2.0 Beta | New Install |
| OLAP Analytic Workspace Manager 10.1.0.2.0 | Not Installed |

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

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




**10.** Click **Exit at** the **End of Installation** window to close the Oracle Installer

## Installing Patches

After successful Oracle installation you have to apply the 10.1.0.4 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 (section 7.4.2), 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. Create a patch subdirectory, as the oracle user in the home directory of that user:

   ```
   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 p4163362_10104_SOLARIS64.zip (the example is for Solaris OS)

   Otherwise do the following step 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

   ```
   cd Disk1
   ```

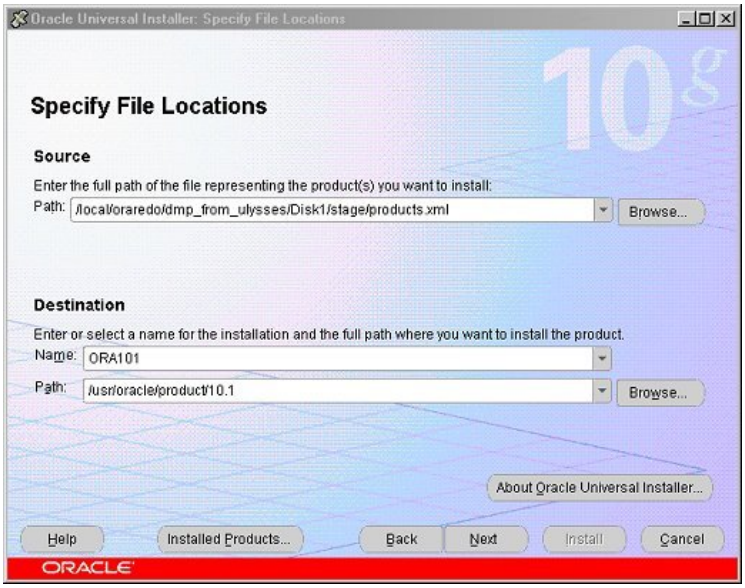
3. Start the Oracle Installer

   ```
   ./runInstaller
   ```

   The **Welcome** window is opened

4. Click **Next**.

   The Specify File Locations window is opened.




5. Check if Oracle Home is selected and click **Next**.
6. Check the summary window and click **Install**.
7. Click **Exit at** the **End of Installation** window to close the Oracle Installer.

## Creating the Database

The database will be created by using the Database Configuration Assistant (DBCA) templates, which are provided in folder **doc/OracleAddOn/unix/templates**. 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.

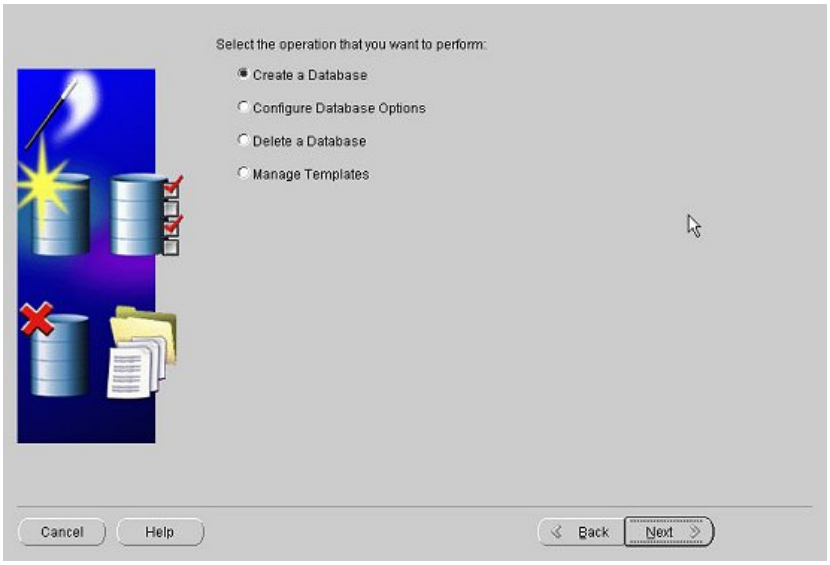
| Template Name | Description |
|---|---|
| Plm_laptop | small sized database especially designed for laptop installations |
| Plm_test | database designed for test installations<br>number of concurrent users < 40<br>no archiving |
| Plm_prod_small | database designed for productive use<br>number of concurrent users < 40<br>archiving |
| Plm_prod_medium | database designed for productive use<br>number of concurrent users: 40 - 80<br>archiving |
| Plm_prod_large | database designed for productive use<br>number of concurrent users: 80 – 120<br>archiving |
| Plm_prod_huge | database designed for productive use<br>number of concurrent users: 120 - 150<br>archiving |

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.

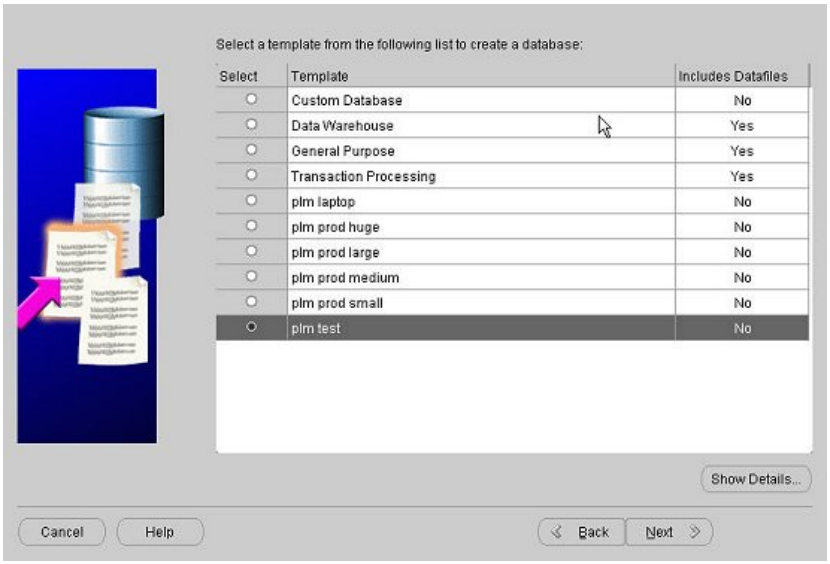
1. Copy the DBCA template file (e.g. plm_test.dbt) to {ORACLE_HOME}/assistants/dbca/templates.
2. Start the Oracle Database Configuration Assistant

   /app/oracle/product/10.1/bin/dbca

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

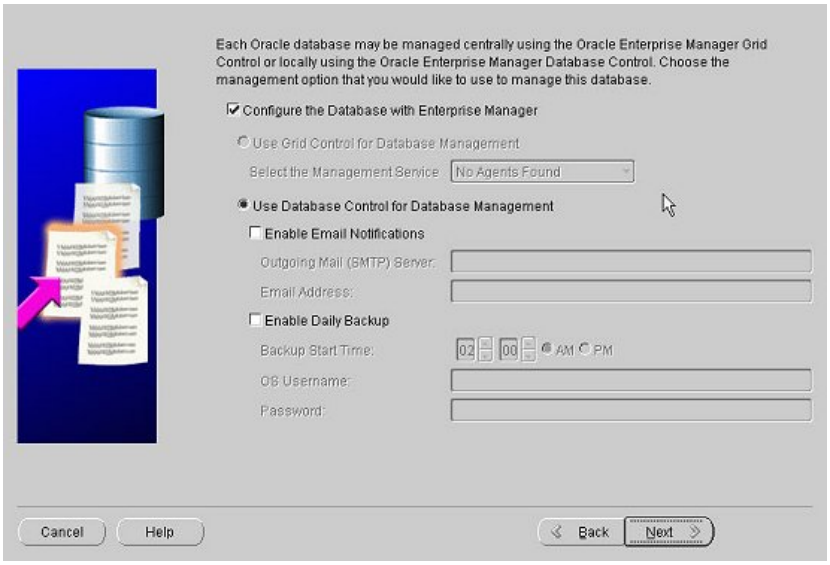



A list of different templates is provided. You should also see the template that you have chosen and copied in the step above.




5. Select the template you want to use and click **Next**.
6. 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**.
7. Select this option and click **Next**

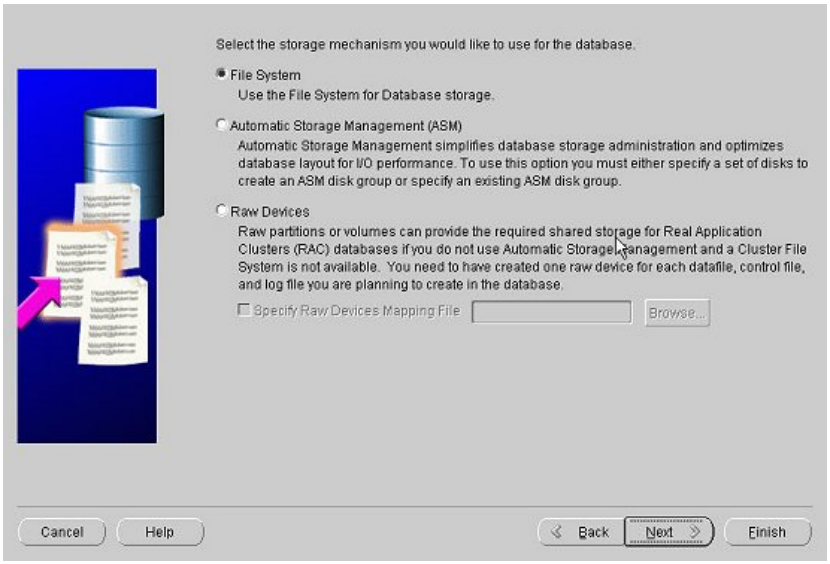



**8.** Enter passwords for SYS, SYSTEM, SYSMAN and DBSNMP. It is highly recommended to use different passwords for these accounts. Click **Next.**

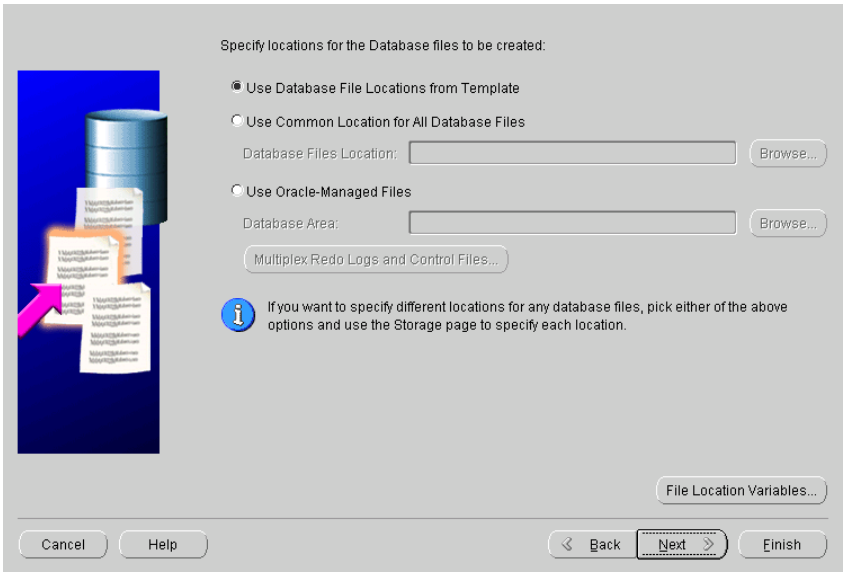
The next window provides the possibility to register your database with directory service.

**9.** Select **No**, don't register the database and click **Next**.

**10.** Select **File System** for database storage and click **Next**.

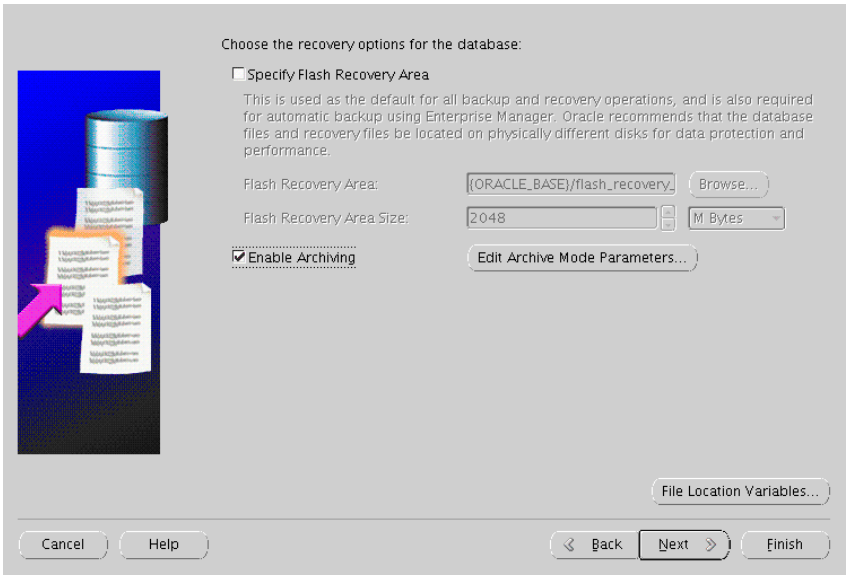



**11.** On the next window, choose **Use Database File Locations from the Template** and click **Next**.




**12.** Deselect the option **Specify Flash Recovery Area** in the next window. 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**.

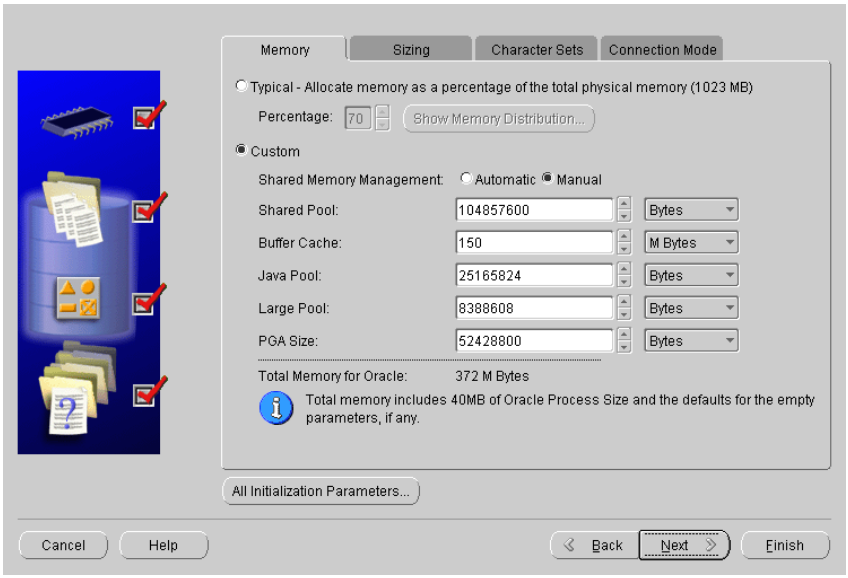



The next window provides database features as well as the possibility to run custom scripts after database creation. It is not recommended to change the settings provided by the template.

**13.** Click **Next**.

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

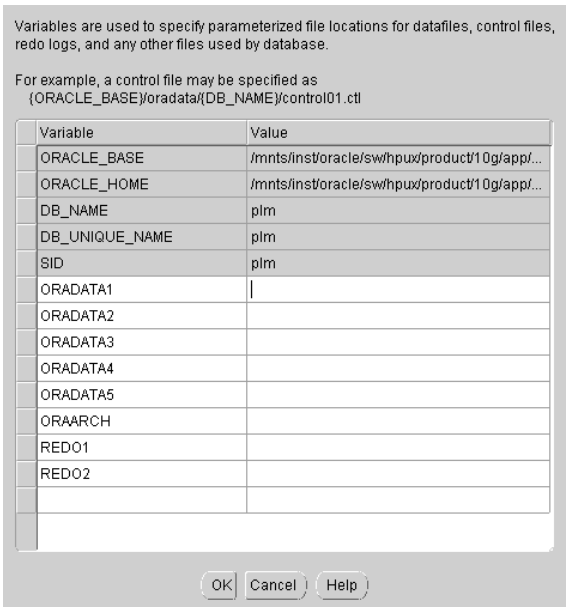
**14.** Check if the connection mode is set to **Dedicated Server Mode** in folder **Connection Mode**




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

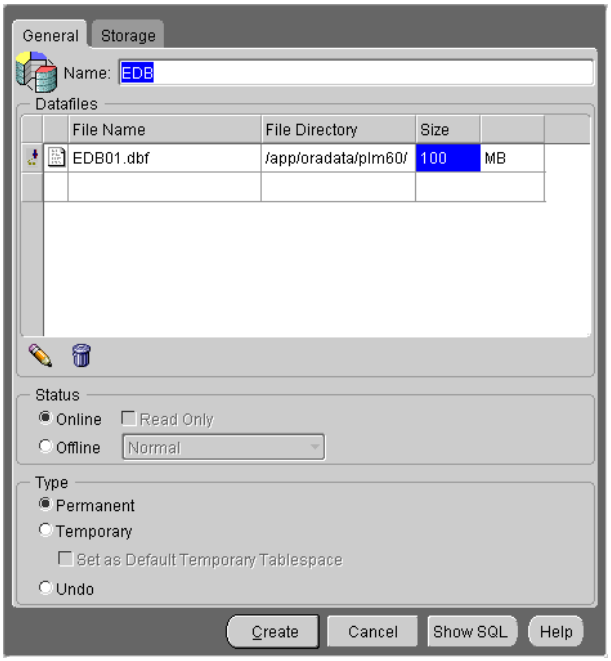
15. Click **Next.**
16. Click **File Location Variables** in the next window.
17. Review and adapt the file location to your system. Enter variables mentioned in the table below, as well as the values for them. See table for detailed information on predefined file destination variables.

| 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.

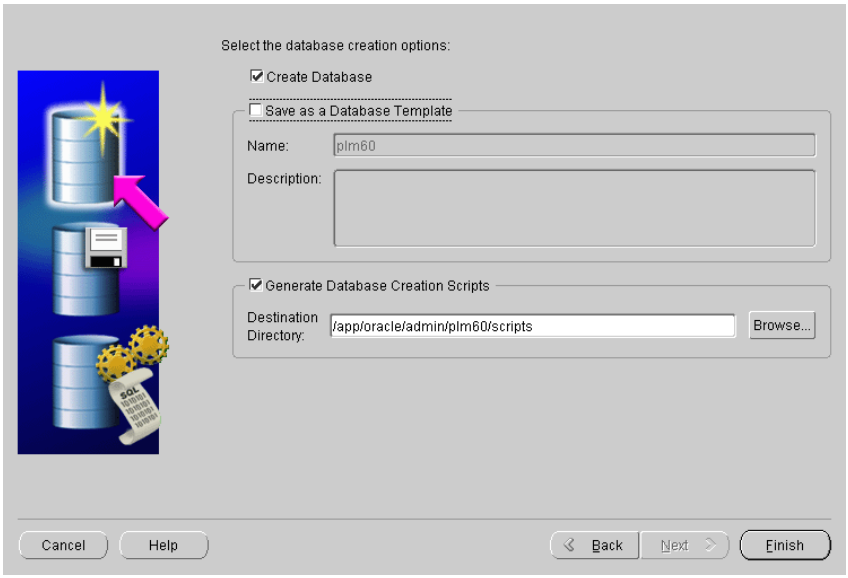
**18.** Double-click an object on the left window section if you want to edit and modify the settings in the right window section. The required new tablespaces can be created.




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

**19.** Click **Next**.

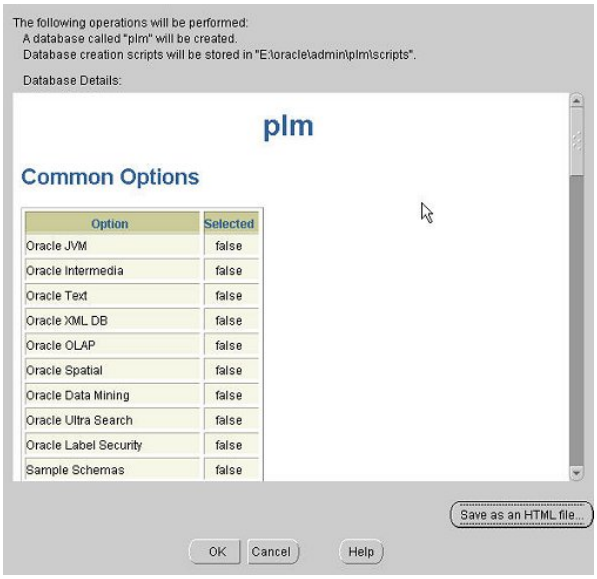
**20.** Select **Create Database** to start the database creation immediately.




It is recommended to choose also 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.

**21.** Click **Finish.**

A summary of the database parameter is displayed.




**22.** Click **Save as HTML file** for future reference and click **OK**.
The database creation process is started.

**23.** Click **Exit** to finish the process.

## Configuring the Oracle Listener

1. Copy the listener configuration files from Agile Oracle Patch DVD, in the **doc/OracleAddOn/unix** directory, to your installation.

   ```
   cp listener.ora /app/oracle/product/10.1/network/admin
   cp tnsnames.ora /app/oracle/product/10.1/network/admin
   cp tnsnav.ora /app/oracle/product/10.1/network/admin
   cp sqlnet.ora /app/oracle/product/10.1/network/admin
   ```

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

3. Start 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/10.1
$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

# Modifying the Oracle Database

## Creating a Database User

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

### Using SQL to create a user

Create a database user (named, for example, plm):

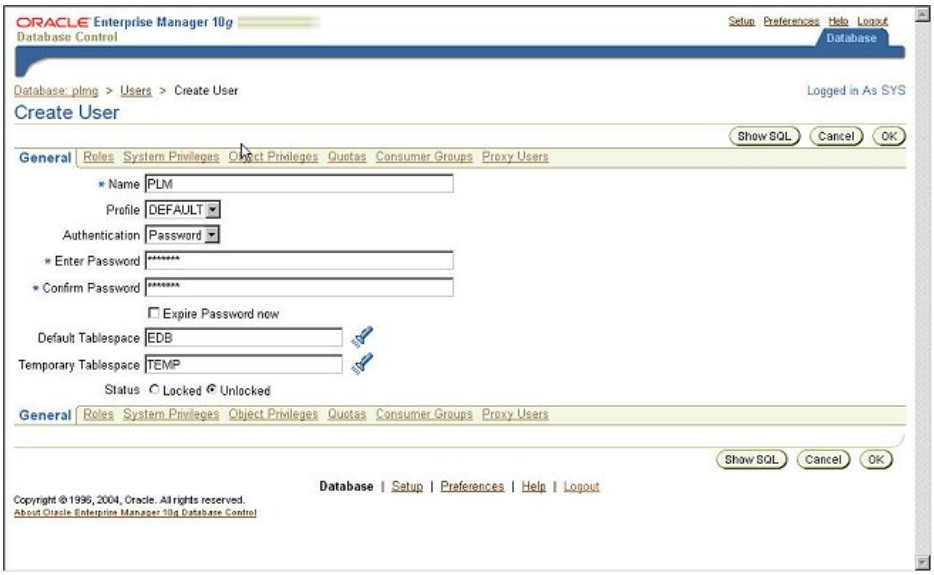
```
CREATE USER PLM
IDENTIFIED BY <PASSWORD>
DEFAULT TABLESPACE "EDB"
TEMPORARY TABLESPACE "TEMP"
PROFILE DEFAULT
QUOTA UNLIMITED ON "EDB"
QUOTA UNLIMITED ON "EDB_IDX"
QUOTA UNLIMITED ON "EDB_TMP"
QUOTA UNLIMITED ON "EDB_TMPIDX"
QUOTA UNLIMITED ON "EDB_LOB"
ACCOUNT UNLOCK;
GRANT "CONNECT" TO PLM;
GRANT CREATE PROCEDURE TO PLM;
GRANT CREATE VIEW TO PLM;
GRANT CREATE TRIGGER TO PLM;
ALTER USER PLM DEFAULT ROLE ALL;
```

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

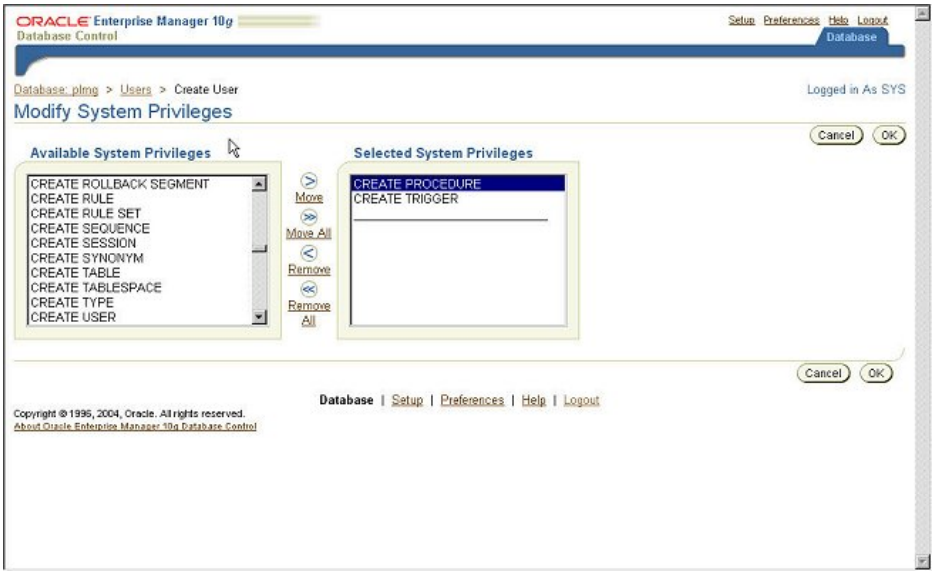
### Using Enterprise Manager Database Control to create a user

1. Start the **Enterprise Manager Database Control**.
   By default it can be invoked on localhost:5500/em, but it can be configured manually to use another port.

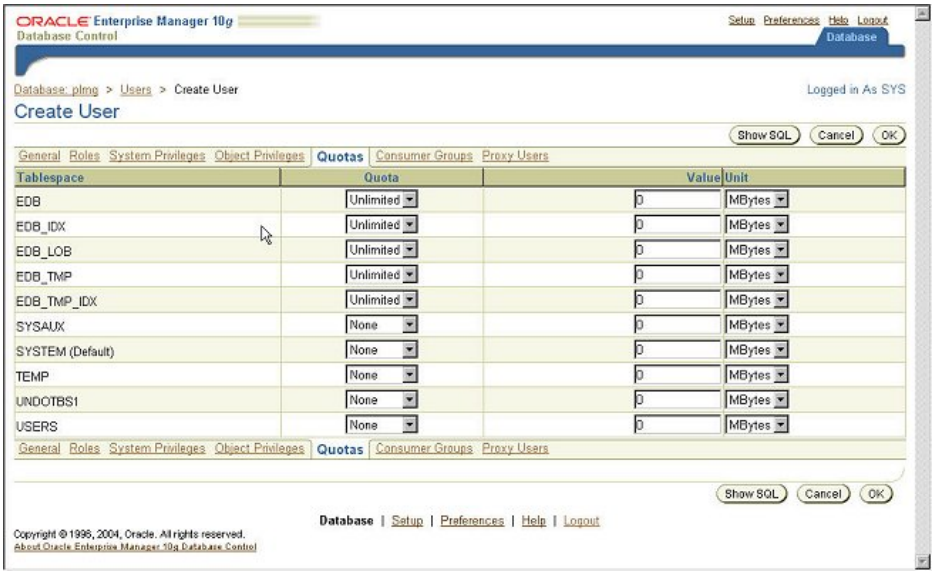

2. Click on **Administration** and then on **Users** under Security section.
3. Click **Create**.




4. Click on the **General** tab and insert a user name and password, and assign default and temporary tablespaces.
5. Click the **Roles** tab and grant the **CONNECT** role to the user.
6. Click on the **System Privileges** tab, and grant the privileges **CREATE PROCEDURE CREATE VIEW** and **CREATE TRIGGER**.




**7.** Click the **Quota** tab and assign unlimited quota on EDB, EDB_IDX, EDB_LOB, EDB_TMP and EDB_TMPIDX.




**8.** Click **OK** to finish the database user creation.

## Importing the Database Dump

Import the Agile e6 dump using the following commands, and then check the logfile 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, 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 /mnt/oracle/dump/system; /mnt/oracle/dump/user)
2. Open a 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 Patch DVD in the **doc/OracleAddOn/sql** directory.

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

4. Enter the path to the main directory created in Step 1. (for instance /mnt/oracle/dump)

   The script will create two directory objects – one for system users and one for normal users and will give rights on 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 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. 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 once 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, there must be statistics 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 | locally managed |
| 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 | locally managed |
| 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 | locally managed |
| 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 | locally managed |
| 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 | locally managed |
| 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 | locally managed |
| 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 |