# Oracle® Database

Client Quick Installation Guide

11*g* Release 1 (11.1) for Linux x86-64

**B32286-06**

November 2010

This guide describes how to quickly install Oracle Database 11*g* on Linux x86-64 systems. It includes information about the following:



## 1 Reviewing Information About This Guide

This guide describes how to complete a default installation of Oracle Database Client on a system that does not have any Oracle software installed on it. It describes how to install one of the following installation types:

- Administrator: Enables applications to connect to an Oracle Database instance on the local system or on a remote system. It also provides tools that enable you to administer Oracle Database.
- Runtime: Enables applications to connect to an Oracle Database instance on the local system or on a remote system.
- Instant Client: Enables you to install only the shared libraries required by Oracle Call Interface (OCI), Oracle C++ Call Interface (OCCI), Pro*C, or Java database connectivity (JDBC) OCI applications. This installation type requires much less disk space as compared to the other Oracle Database Client installation types.

  **See Also:** *Oracle Call Interface Programmer's Guide* for more information about Instant Client

This guide does not describe how to install the Custom installation type.

#### Where to Get Additional Installation Information

For more detailed information about installing Oracle Database Client, refer to *Oracle Database Client Installation Guide for Linux*.

This guide is available on the product disc. To access it, use a Web browser to open the `welcome.htm` file located in the top-level directory of the installation media, and then select the **Documentation** tab.

## 2 Logging In to the System as root

Before you install the Oracle software, you must complete several tasks as the `root` user. To log in as the `root` user, complete one of the following procedures:

> **Note:** Unless you intend to complete a silent-mode installation, you must install the software from an X Window System workstation, an X terminal, or a PC or other system with X server software installed.

- Following are the steps for installing the software from an X Window System workstation or X terminal:

  1. Start a local terminal session, for example, an X terminal (`xterm`).
  2. If you are not installing the software on the local system, then enter the following command to enable the remote host to display X applications on the local X server:

     ```
     $ xhost fully_qualified_remote_host_name
     ```

     For example:

     ```
     $ xhost somehost.us.example.com
     ```

  3. If you are not installing the software on the local system, then use the `ssh`, `rlogin`, or `telnet` command to connect to the system where you want to install the software:

     ```
     $ telnet fully_qualified_remote_host_name
     ```

  4. If you are not logged in as the `root` user, then enter the following command to switch user to `root`:

     ```
     $ sudo sh
     password:
     #
     ```

- Following are the steps for installing the software from a PC or other system with X server software:

  > **Note:** If necessary, refer to your X server documentation for more information about completing this procedure. Depending on the X server software that you are using, you may need to complete the tasks in a different order.

  1. Start the X server software.

2. Configure the security settings of the X server software to permit remote hosts to display X applications on the local system.
3. Connect to the remote system where you want to install the software and start a terminal session on that system, for example, an X terminal (`xterm`).
4. If you are not logged in as the `root` user on the remote system, then enter the following command to switch user to `root`:

```
$ sudo sh
password:
#
```

# 3 Checking the Hardware Requirements

The system must meet the following minimum hardware requirements:

- Memory Requirements
- System Architecture
- Disk Space Requirements

## 3.1 Memory Requirements

The following are the memory requirements for installing Oracle Database 11*g* Release 1:

- At least 256 MB of RAM.

  To determine the RAM size, enter the following command:

  ```
  # grep MemTotal /proc/meminfo
  ```

  If the size of the RAM is less than the required size, then you must install more memory before continuing.

- The following table describes the relationship between installed RAM and the configured swap space requirement:

  **Note:** On Linux, the Hugepages feature allocates non-swappable memory for large page tables using memory-mapped files. If you enable Hugepages, then you should deduct the memory allocated to HugePages from the available RAM before calculating swap space.

| Available RAM | Swap Space Required |
|---|---|
| Between 1 GB and 2 GB | 1.5 times the size of RAM |
| Between 2 GB and 16 GB | Equal to the size of RAM |
| More than 16 GB | 16 GB |

To determine the size of the configured swap space, enter the following command:

```
# grep SwapTotal /proc/meminfo
```

If necessary, refer to the operating system documentation for information about how to configure additional swap space.

To determine the available RAM and swap space, enter the following command:

```
# free
```

> **Note:** Oracle recommends that you take multiple values for the available RAM and swap space before finalizing a value. This is because the available RAM and swap space keep changing depending on the user interactions with the computer.

## 3.2 System Architecture

To determine whether the system architecture can run the software, enter the following command:

```
# uname -m
```

> **Note:** This command displays the processor type. Verify that the processor architecture matches the Oracle software release that you want to install. If you do not see the expected output, then you cannot install the software on this system.

## 3.3 Disk Space Requirements

The following are the disk space requirements for installing Oracle Database 11*g* Release 1:

- The minimum disk space requirement for a client install in the `/tmp` directory is 130 MB.

  To determine the amount of disk space available in the `/tmp` directory, enter the following command:

  ```
  # df -k /tmp
  ```

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

  - Delete unnecessary files from the `/tmp` directory to meet the disk space requirement.
  - Set the `TMP` 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 the system administrator for information about extending file systems.

- Between 34 MB and 820 MB of disk space for the Oracle software, depending on the installation type

  To determine the amount of free disk space on the system, enter the following command:

  ```
  # df -k
  ```

  The following table describes the disk space requirements for software files for each installation type:

| Installation Type | Requirement for Software Files (MB) |
|---|---|
| Instant Client | 265 |
| Administrator | 1.29 (GB) |
| Runtime | 890 |
| Custom (maximum) | 1.02 (GB) |

# 4 Checking the Software Requirements

Depending on the products that you intend to install, verify that the following software are installed on the system.



## 4.1 Operating System Requirements

The following are the operating sytem requirements for Oracle Database 11*g* Release 1:

- Asianux 2 SP2
- Asianux 3
- Oracle Linux 4
- Oracle Linux 5
- Red Hat Enterprise Linux 4
- Red Hat Enterprise Linux 5
- SUSE Linux Enterprise Server 10

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

```
# cat /proc/version
```

> **Note:** Only the distributions and versions listed in the earlier itemized list are supported. Do not install the software on other versions of Linux.

## 4.2 Kernel Requirements

The following are the Kernel requirements for Oracle Database 11*g* Release 1:

- For Asianux 2, Oracle Linux 4, and Red Hat Enterprise Linux 4:

  2.6.9 or later

- For Asianux 3, Oracle Linux 5, and Red Hat Enterprise Linux 5:

  2.6.18 or later

- For SUSE Linux Enterprise Server 10:

  2.6.16.21

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

```
# uname -r
```

The following is a sample output displayed by running this command on a Red Hat Enterprise Linux 4.0 system:

```
2.6.9-34.0.1.0.11.ELsmp
```

In this example, the output shows the kernel version (`2.6.9`) and errata level (`34.0.1.0.11`) on the system.

If the kernel version does not meet the requirement specified earlier in this section, then contact the operating system vendor for information about obtaining and installing kernel updates.

## 4.3 Package Requirements

The following are the list of packages required for Oracle Database 11*g* Release 1:

- The following or later version of packages for Asianux 2, Oracle Linux 4, and Red Hat Enterprise Linux 4 should be installed:

```
binutils-2.15.92.0.2
compat-libstdc++-33-3.2.3
compat-libstdc++-33-3.2.3 (32 bit)
elfutils-libelf-0.97
elfutils-libelf-devel-0.97
gcc-3.4.5
gcc-c++-3.4.5
glibc-2.3.4-2.19
glibc-2.3.4-2.19 (32 bit)
glibc-common-2.3.4
glibc-devel-2.3.4
glibc-devel-2.3.4 (32-bit)
libaio-0.3.105
libaio-0.3.105 (32 bit)
libaio-devel-0.3.105
libgcc-3.4.5
libgcc-3.4.5 (32-bit)
libstdc++-3.4.5
libstdc++-3.4.5 (32 bit)
libstdc++-devel 3.4.5
make-3.80
numactl-0.6.4.x86_64
sysstat-5.0.5
```

- The following or later version of packages for Asianux 3, Oracle Linux 5, and Red Hat Enterprise Linux 5 should be installed:

```
binutils-2.17.50.0.6
compat-libstdc++-33-3.2.3
compat-libstdc++-33-3.2.3 (32 bit)
elfutils-libelf-0.125
elfutils-libelf-devel-0.125
gcc-4.1.1
gcc-c++-4.1.1
```

```
glibc-2.5-12
glibc-2.5-12 (32 bit)
glibc-common-2.5
glibc-devel-2.5
glibc-devel-2.5-12 (32 bit)
libaio-0.3.106
libaio-0.3.106 (32 bit)
libaio-devel-0.3.106
libgcc-4.1.1
libgcc-4.1.1 (32 bit)
libstdc++-4.1.1
libstdc++-4.1.1 (32 bit)
libstdc++-devel 4.1.1
make-3.81
numactl-devel-0.9.8.x86_64
sysstat-7.0.0
```

- The following or later version of packages for SUSE Linux Enterprise Server 10 should be installed:

```
binutils-2.16.91.0.5
compat-libstdc++-5.0.7-22.2
gcc-4.1.0
gcc-c++-4.1.0
glibc-2.4-31.2
glibc-32bit-2.4-31.2 (32 bit)
glibc-devel-2.4
glibc-devel-32bit-2.4 (32 bit)
libaio-0.3.104
libaio-32bit-0.3.104 (32 bit)
libaio-devel-0.3.104
libelf-0.8.5
libgcc-4.1.0
libstdc++-4.1.0
libstdc++-devel-4.1.0
make-3.80
numactl-0.9.6.x86_64
sysstat-6.0.2
```

**Note:** If you did not perform a default Linux installation, you intend to use LDAP, and you want to use the scripts `odisrvreg`, `oidca`, or `schemasync`, then install the Korn shell RPM for the Linux distribution

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

```
# rpm -q package_name
```

**Note:** The `numa` package link for Linux x86-64 is `/usr/lib64/`.

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

## 4.4 Compiler Requirements

The following are the compiler requirements for Pro*C/C++ , Oracle Call Interface, Oracle C++ Call Interface, and Oracle XML Developer's Kit (XDK) with Oracle Database 11*g* Release 1:

Intel C++ Compiler 9.1 or later and the version of GNU C and C++ compilers listed under the "Package Requirements" on page 6 are supported with these products.

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**Note:** Intel Compiler v9.1 can be used only with gcc 3.4.5 or gcc 4.0 or gcc 4.1 standard template libraries to build Oracle C++ Call Interface (OCCI) applications.

Oracle XML Developer's Kit is supported with the same compilers as OCCI.

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## 4.5 Additional Software Requirements

Depending on the components you want to use, you must ensure that the following software are installed:

- Oracle ODBC Drivers
- Oracle JDBC/OCI Drivers
- Browser Requirements

### 4.5.1 Oracle ODBC Drivers

If you intend to use ODBC, then you should install the most recent ODBC Driver Manager for Linux. You can download and install the Driver Manager from the following URL:

`http://www.unixodbc.org`

Linux RPMs are available on the site. You do not require ODBC Driver Manager to install Oracle Database. To use ODBC, you must also install the following additional 64-bit ODBC RPMs, depending on your operating system.

- On Asianux 2, Oracle Linux 4, and Red Hat Enterprise Linux 4:

```
unixODBC-2.2.11 (32 bit) or later
unixODBC-devel-2.2.11 (64 bit) or later
unixODBC-2.2.11 (64 bit ) or later
```

- On Asianux 3, Oracle Linux 5, and Red Hat Enterprise Linux 5:

```
unixODBC-2.2.11 (32 bit) or later
unixODBC-devel-2.2.11 (64 bit) or later
unixODBC-2.2.11 (64 bit ) or later
```

- On SUSE 10:

```
unixODBC-32bit-2.2.11 (32 bit) or later
unixODBC-2.2.11 (64 bit ) or later
unixODBC-devel-2.2.11 (64 bit) or later
```

### 4.5.2 Oracle JDBC/OCI Drivers

You can use `Sun JDK 1.5.0-06 with the JNDI extension` JDK versions with the Oracle Java Database Connectivity and Oracle Call Interface drivers. However, these are not mandatory for the installation.

### 4.5.3 Browser Requirements

Web browsers must support Java Script and the HTML 4.0 and CSS 1.0 standards. The following Web browsers are supported for Oracle Enterprise Manager Database Control:

- Netscape Navigator 7.2
- Netscape Navigator 8.1
- Mozilla version 1.7
- Microsoft Internet Explorer 6.0 SP2
- Microsoft Internet Explorer 7.0
- Firefox 1.0.4
- Firefox 1.5
- Firefox 2.0

## 5 Creating Required Operating System Groups and Users

The following local operating system groups and users are required if you are installing Oracle Database:

- The Oracle Inventory group (typically, `oinstall`)
- The Oracle software owner (typically, `oracle`)

To determine whether these groups and users already exist, and if necessary, to create them, follow these steps:

1. To determine whether the `oinstall` group exists, enter the following command:

   ```
   # more /etc/oraInst.loc
   ```

   If the output of this command shows the `oinstall` group name, then the group already exists.

   If the `oraInst.loc` file exists, then the output from this command is similar to the following:

   ```
   inventory_loc=/u01/app/oraInventory
   inst_group=oinstall
   ```

   The `inst_group` parameter shows the name of the Oracle Inventory group, typically `oinstall`.

2. If necessary, enter the following commands to create the `oinstall` group:

   ```
   # /usr/sbin/groupadd oinstall
   ```

3. To determine whether the `oracle` user exists and belongs to the correct groups, enter the following command:

   ```
   # id oracle
   ```

If the `oracle` user exists, then this command displays information about the groups to which the user belongs. The output should be similar to the following, indicating that `oinstall` is the primary group and `dba` is a secondary group:

```
uid=440(oracle) gid=200(oinstall) groups=201(dba),202(oper)
```

4. If necessary, complete one of the following actions:
   - If the `oracle` user exists, but its primary group is not `oinstall` or it is not a member of the `dba` group, then enter the following command:

     ```
     # /usr/sbin/usermod -g oinstall -G dba oracle
     ```

   - If the `oracle` user does not exist, enter the following command to create it:

     ```
     # /usr/sbin/useradd -g oinstall -G dba oracle
     ```

     This command creates the `oracle` user and specifies `oinstall` as the primary group and `dba` as the secondary group.
5. Enter the following command to set the password of the `oracle` user:

   ```
   # passwd oracle
   ```

# 6 Creating Required Directories

> **Note:** If you do not want to create a separate Oracle data file directory, then you can install the data files in a subdirectory of the Oracle base directory. However, this is not recommended for production databases.

To create the Oracle base directory:

1. Enter the following command to display information about all mounted file systems:

   ```
   # df -h
   ```

   This command displays information about all the file systems mounted on the system, including:
   - The physical device name
   - The total amount, used amount, and available amount of disk space
   - The mount point directory for that file system
2. From the display, identify either one or two file systems that meet the disk space requirements mentioned earlier in this section.
3. Note the name of the mount point directory for each file system that you identified.
4. Enter commands similar to the following to create the recommended subdirectories in the mount point directory that you identified and set the appropriate owner, group, and permissions on them:

   ```
   # mkdir -p /mount_point/app/
   # chown -R oracle:oinstall /mount_point/app/
   # chmod -R 775 /mount_point/app/
   ```

For example:

```
# mkdir -p /u01/app/
# chown -R oracle:oinstall /u01/app/
# chmod -R 775 /u01/app/
```

# 7 Configuring the oracle User's Environment

You run Oracle Universal Installer from the `oracle` account. However, before you start Oracle Universal Installer you must configure the environment of the `oracle` user. To configure the environment, you must:

- Set the default file mode creation mask (umask) to 022 in the shell startup file.
- Set the `DISPLAY` environment variable.

To set the `oracle` user's environment:

1. Start a new terminal session, for example, an X terminal (`xterm`).
2. Enter the following command to ensure that X Window applications can display on this system:

   ```
   $ xhost fully_qualified_remote_host_name
   ```

   For example:

   ```
   $ xhost somehost.us.example.com
   ```

3. If you are not already logged in to the system where you want to install the software, then log in to that system as the `oracle` user.
4. If you are not logged in as the `oracle` user, then switch user to `oracle`:

   ```
   $ su - oracle
   ```

5. To determine the default shell for the `oracle` user, enter the following command:

   ```
   $ echo $SHELL
   ```

6. To run the shell startup script, enter one of the following commands:
   - Bash shell:

     ```
     $ . ./.bash_profile
     ```

   - Bourne or Korn shell:

     ```
     $ . ./.profile
     ```

   - C shell:

     ```
     % source ./.login
     ```

7. If you are not installing the software on the local computer, then run the following command on the remote machine to set the `DISPLAY` variable:
   - Bourne, Bash or Korn shell:

     ```
     $ export DISPLAY=local_host:0.0
     ```

   - C shell:

     ```
     % setenv DISPLAY local_host:0.0
     ```

In this example, `local_host` is the host name or IP address of the local computer that you want to use to display Oracle Universal Installer.

Run the following command on the remote machine to check if the shell and the DISPLAY environmental variable are set correctly:

```
echo $SHELL
echo $DISPLAY
```

Now to enable X applications, run the following commands on the local computer:

```
$ xhost + fully_qualified_remote_host_name
```

To verify that X applications display is set properly, run a X11 based program that comes with the operating system such as `xclock`:

```
$ xclock_path
```

In this example, `xclock_path` is the directory path. For example, you can find `xclock` at `/usr/X11R6/bin/xclocks`. If the `DISPLAY` variable is set properly, then you can see `xclock` on your computer screen.

> **See Also:** PC-X Server or Operating System vendor documents for further assistance.

8. If you determined that the `/tmp` directory has less than 400 MB of free disk space, then identify a file system with at least 400 MB of free space and set the `TMP` and `TMPDIR` environment variables to specify a temporary directory on this file system:

   a. To determine the free disk space on each mounted file system use the following command:

   ```
   # df -k /tmp
   ```

   b. If necessary, enter commands similar to the following to create a temporary directory on the file system that you identified, and set the appropriate permissions on the directory:

   ```
   $ sudo mkdir /mount_point/tmp
   $ sudo chmod a+wr /mount_point/tmp
   # exit
   ```

   c. Enter commands similar to the following to set the `TMP` and `TMPDIR` environment variables:

   * Bourne, Bash, or Korn shell:

   ```
   $ TMP=/mount_point/tmp
   $ TMPDIR=/mount_point/tmp
   $ export TMP TMPDIR
   ```

   * C shell:

   ```
   % setenv TMP /mount_point/tmp
   % setenv TMPDIR /mount_point/tmp
   ```

9. Enter commands similar to the following to set the `ORACLE_BASE and ORACLE_SID` environment variables:

- Bourne, Bash, or Korn shell:

```
$ ORACLE_BASE=/u01/app/oracle
$ ORACLE_SID=sales
$ export ORACLE_BASE ORACLE_SID
```

- C shell:

```
% setenv ORACLE_BASE /u01/app/oracle
% setenv ORACLE_SID sales
```

In these examples, `/u01/app/oracle` is the Oracle base directory that you created or identified earlier and `sales` is the name that you want to call the database (typically no more than five characters).

10. Enter the following commands to ensure that the `ORACLE_HOME` and `TNS_ADMIN` environment variables are not set:

- Bourne, Bash, or Korn shell:

```
$ unset ORACLE_HOME
$ unset TNS_ADMIN
```

- C shell:

```
% unsetenv ORACLE_HOME
% unsetenv TNS_ADMIN
```

---

**Note:** If the `ORACLE_HOME` environment variable is set, then Oracle Universal Installer uses the value that it specifies as the default path for the Oracle home directory. However, if you set the `ORACLE_BASE` environment variable, then Oracle recommends that you unset the `ORACLE_HOME` environment variable and choose the default path suggested by Oracle Universal Installer.

---

# 8 Mounting the Product Disc

On most Linux systems, the product disc mounts automatically when you insert it into the drive. If the disc does not mount automatically, then follow these steps to mount it:

1. Enter a command similar to the following to eject the currently mounted disc, then remove it from the drive:

- Asianux, Oracle Linux, and Red Hat Enterprise Linux:

```
$ sudo eject /mnt/dvd
```

- SUSE:

```
# eject /media/dvd
```

In these examples, `/mnt/dvd` and `/media/dvd` are the mount point directories for the disc drive.

2. Insert the DVD into the disc drive.

3. To verify that the disc mounted automatically, enter a command similar to the following:

- Asianux, Oracle Linux, and Red Hat Enterprise Linux:

```
# ls /mnt/dvd
```

- SUSE:

```
# ls /media/dvd
```

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

   - Asianux, Oracle Linux, and Red Hat Enterprise Linux:

```
# mount -t iso9660 /dev/dvd /mnt/dvd
```

   - SUSE:

```
# mount -t iso9660 /dev/dvd /media/dvd
```

   In these examples, `/mnt/dvd` and `/media/dvd` are the mount point directories for the disc drive.

# 9 Installing Oracle Database Client

After configuring the `oracle` user's environment, start Oracle Universal Installer and install Oracle Database as follows:

- To start Oracle Universal Installer, enter the following command:

```
$ /mount_point/db/runInstaller
```

  If Oracle Universal Installer does not start, then refer to *Oracle Database Installation Guide for Linux* for information about how to troubleshoot X Window display problems.

- The following table describes the recommended action for each Oracle Universal Installer screen. Use the following guidelines to complete the installation:
  - If you need more assistance, or if you want to choose an option that is not a default, then click **Help** for additional information.
  - If you encounter errors while installing or linking the software, then refer to *Oracle Database Installation Guide for Linux* for information about troubleshooting.

  ---

  **Note:** If you have completed the tasks listed previously, then you can complete the installation by choosing the default values on most screens.

  ---

  1. In the Select a Product to Install screen, select the product that you want to install: Oracle Database 11g, Oracle Client, or Oracle Clusterware.

     In order to install Oracle Client, select **Oracle Client** and click **Next**.

  2. In the Select Installation Type screen, select the type of installation that you want: Instant Client, Administrator, Runtime, or Custom and click **Next**.

  3. In the Product-specific Prerequisite Checks screen, correct any errors that Oracle Universal Installer may have found, and then click **Next**.

  4. In the Summary screen, check the installed components listing and click **Install**.

5. If you have selected the Administrator or Runtime installation type, then Net Configuration Assistant is invoked as a part of the installation. Click **Next** to complete the installation You should then start the Net Configuration Assistant to complete configuration process.
6. In the Oracle Net Configuration Assistant: Welcome screen, either select **Perform typical configuration** to use a default configuration, or select the **Naming Methods** configuration option. Then click **Next**. (The remaining steps in this procedure assume you are using Naming Methods.)
7. Answer the remaining prompts to complete the configuration.
8. On the Execute Configuration Scripts screen, read the instructions and then run the script mentioned on this screen. Click **OK** to continue.
9. In the End of Installation screen, click **Exit**, then click **Yes** to exit from Oracle Universal Installer.

## 10 What to Do Next?

After you have successfully installed Oracle Database Client, refer to *Oracle Database Client Installation Guide for Linux* for information about required and optional postinstallation steps.

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Oracle Database Client Quick Installation Guide, 11*g* Release 1 (11.1) for Linux x86-64
B32286-06