

Oracle® Database

Client Quick Installation Guide

12c Release 1 (12.1) for Linux x86-64

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This guide describes how to quickly install Oracle Database Client 12c Release 1 (12.1) on Linux x86-64 systems. It includes information about the following:

- [Reviewing Information About This Guide](#)
- [Logging In to the System as root](#)
- [Configuring Servers for Oracle Database](#)
- [Reviewing Operating System Security Common Practices](#)
- [About Operating System Requirements](#)
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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. It also does not describe how to perform an in-place client upgrade.

Where to Get Additional Installation Information

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

The product documentation for Oracle Database products is available in both HTML and PDF formats online:

<http://docs.oracle.com/>

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 have 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 Configuring Servers for Oracle Database

This section describes the following operating system tasks you must complete before you install Oracle Database:

- [Checking Server Hardware and Memory Configuration](#)
- [General Server Minimum Requirements](#)
- [Server Storage Minimum Requirements](#)
- [Server Memory Minimum Requirements](#)
- [Hardware Requirements for SQL Developer](#)

3.1 Checking Server Hardware and Memory Configuration

Run the following commands to check your current system information:

1. To determine the physical RAM size, enter the following command:

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

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

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

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

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

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

```
# df -h /tmp
```

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

```
# df -h
```

5. To determine the amount of free RAM and disk swap space on the system, enter the following command:

```
# free
```

6. To determine if the system architecture can run the software, enter the following command:

```
# uname -m
```

Verify that the processor architecture matches the Oracle software release to install. For example, you should see the following for a x86-64 bit system:

```
x86_64
```

If you do not see the expected output, then you cannot install the software on this system.

3.2 General Server Minimum Requirements

Ensure the following general minimum requirements on your system:

- Ensure that the system is started with runlevel 3 or runlevel 5.
- Ensure display cards provide at least 1024 x 768 display resolution, so that Oracle Universal Installer displays correctly while performing a system console-based installation

3.3 Server Storage Minimum Requirements

Ensure that your system meets the following minimum storage requirements:

- Ensure that your Linux x86-64 system meets the following disk space requirements for software files:

Table 1 *Disk Space Requirements for Software Files on Linux x86-64*

Installation Type	Disk Space
Instant Client	260 MB
Administrator	1.8 GB
Runtime	1.4 GB

Additional disk space, either on a file system or on an Oracle ASM disk group is required for the fast recovery area if you configure automated backups.

- 400 MB of space in the `/tmp` directory.

If the free space available in the `/tmp` directory is less than what is required, then complete one of the following steps:

- 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.

See Also: [Configuring Oracle Software Owner Environment](#) for more information about setting `TMP` and `TMPDIR`

- Extend the file system that contains the `/tmp` directory.

3.4 Server Memory Minimum Requirements

Ensure that your system meets the following memory requirements:

At least 256 MB of RAM

[Table 2](#) describes the relationship between the installed RAM and the configured swap space recommendation:

Table 2 *Swap Space Requirement for Linux*

RAM	Swap Space
256 MB	3 times the size of RAM
Between 256 MB and 512 MB	2 times the size of RAM
Between 512 MB 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

Note: 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.

3.5 Hardware Requirements for SQL Developer

[Table 3](#) lists the recommended hardware requirements for SQL Developer.

Table 3 *Disk Space Requirements for Software Files on Linux x86*

Resource	Recommended
Memory	1 GB RAM (recommended), 256 MB RAM (minimum)
Display	65536 colors, set to at least 1024 X 768 resolution

4 Reviewing Operating System Security Common Practices

Secure operating systems are an important basis for general system security. Ensure that your operating system deployment is in compliance with common security practices as described in your operating system vendor security guide.

5 About Operating System Requirements

Depending on the products that you intend to install, verify that you have the required operating system kernel and packages installed.

Requirements listed in this document are current as of the date listed on the title page. To obtain the most current information about kernel requirements, see the online version at the following URL:

<http://docs.oracle.com/>

Oracle Universal Installer performs checks your system to verify that it meets the listed operating system package requirements. To ensure that these checks complete successfully, verify the requirements before you start Oracle Universal Installer.

6 Operating System Requirements for x86-64 Linux Platforms

The Linux distributions and packages listed in this section are supported for this release on x86-64.

Identify operating system requirements for Oracle Database installations.

- [Supported Oracle Linux 7 and Red Hat Enterprise Linux 7 Distributions for x86-64](#)
- [Supported Oracle Linux 6 and Red Hat Enterprise Linux 6 Distributions for x86-64](#)
- [Supported Oracle Linux 5 and Red Hat Enterprise Linux 5 Distributions for x86-64](#)
- [Supported SUSE Distributions for x86-64](#)
- [Supported NeoKylin Linux Advanced Server Distributions for x86-64](#)

Note:

- The Unbreakable Enterprise Kernel for Oracle Linux can be installed on x86-64 servers running either Oracle Linux 5 Update 5, or Red Hat Enterprise Linux 5 Update 5. As of Oracle Linux 5 Update 6, the Unbreakable Enterprise Kernel for Oracle Linux is the default system kernel. An x86 (32-bit) release of Oracle Linux including the Unbreakable Enterprise Kernel for Oracle Linux is available with Oracle Linux 5 update 7 and later.
 - The 32-bit packages listed in the following sections are required only for 32-bit client installs.
 - Oracle Universal Installer requires an X Window System (for example, `libx`). The `libx` packages are part of a default Linux installation. If you install Linux using an Oracle RDBMS Server 12cR1 Pre-Install RPM, then the `libx` packages are installed as part of that RPM. If you perform an install on a system with a reduced set of packages, then you must ensure that `libx` is installed.
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-

Note: The platform-specific hardware and software requirements included in this guide were current when this guide was published. However, because new platforms and operating system software versions may be certified after this guide is published, review the certification matrix on the My Oracle Support website for the most up-to-date list of certified hardware platforms and operating system versions:

<https://support.oracle.com/>

6.1 Supported Oracle Linux 7 and Red Hat Enterprise Linux 7 Distributions for x86-64

Use the following information to check supported Oracle Linux 7 and Red Hat Linux 7 distributions:

Note: Starting with Oracle Database 12c Release 1 (12.1.0.2), Oracle Linux 7 and Red Hat Enterprise Linux 7 are supported on Linux x86-64 systems.

Table 4 x86-64 Supported Linux 7 Operating System Requirements

Item	Requirements
Oracle Linux 7	<p>Subscribe to the Oracle Linux 7 channel on the Unbreakable Linux Network, or configure a yum repository from the Oracle Linux yum server website, and then install the Oracle Preinstallation RPM. This RPM installs all required kernel packages for Oracle Grid Infrastructure and Oracle Database installations, and performs other system configuration.</p> <p>Supported distributions:</p> <ul style="list-style-type: none"> ■ Oracle Linux 7 with the Unbreakable Enterprise kernel: 3.8.13-33.el7uek.x86_64 or later ■ Oracle Linux 7 with the Red Hat Compatible kernel: 3.10.0-123.el7.x86_64 or later
Red Hat Enterprise Linux 7	<p>Supported distributions:</p> <ul style="list-style-type: none"> ■ Red Hat Enterprise Linux 7: 3.10.0-123.el7.x86_64 or later
Packages for Oracle Linux 7 and Red Hat Enterprise Linux 7	<p>The following packages (or later versions) must be installed:</p> <pre> binutils-2.23.52.0.1-12.el7.x86_64 compat-libcap1-1.10-3.el7.x86_64 compat-libstdc++-33-3.2.3-71.el7.i686 compat-libstdc++-33-3.2.3-71.el7.x86_64 gcc-4.8.2-3.el7.x86_64 gcc-c++-4.8.2-3.el7.x86_64 glibc-2.17-36.el7.i686 glibc-2.17-36.el7.x86_64 glibc-devel-2.17-36.el7.i686 glibc-devel-2.17-36.el7.x86_64 ksh libaio-0.3.109-9.el7.i686 libaio-0.3.109-9.el7.x86_64 libaio-devel-0.3.109-9.el7.i686 libaio-devel-0.3.109-9.el7.x86_64 libgcc-4.8.2-3.el7.i686 libgcc-4.8.2-3.el7.x86_64 libstdc++-4.8.2-3.el7.i686 libstdc++-4.8.2-3.el7.x86_64 libstdc++-devel-4.8.2-3.el7.i686 libstdc++-devel-4.8.2-3.el7.x86_64 libXi-1.7.2-1.el7.i686 libXi-1.7.2-1.el7.x86_64 libXtst-1.2.2-1.el7.i686 libXtst-1.2.2-1.el7.x86_64 make-3.82-19.el7.x86_64 sysstat-10.1.5-1.el7.x86_64 </pre>

6.2 Supported Oracle Linux 6 and Red Hat Enterprise Linux 6 Distributions for x86-64

Use the following information to check supported Oracle Linux 6 and Red Hat Linux 6 distributions:

Table 5 x86-64 Supported Linux 6 Operating System Requirements

Item	Requirements
Oracle Linux 6	<p>Subscribe to the Oracle Linux 6 channel on the Unbreakable Linux Network, or configure a yum repository from the Oracle Linux yum server website, and then install the Oracle RDBMS Pre-Install RPM. This RPM installs all required kernel packages for Oracle Database installations, and performs other system configuration.</p> <p>Supported distributions:</p> <ul style="list-style-type: none"> ■ Oracle Linux 6 with the Unbreakable Enterprise Kernel (UEK): <ul style="list-style-type: none"> Update 2 or higher, 2.6.39-200.24.1.el6uek.x86_64 or later UEK2 kernels Update 4 or higher, 3.8.13-16 or later UEK3 kernels Update 7 or higher, 4.1.12-32 or later UEK4 kernels ■ Oracle Linux 6 with the Red Hat Compatible kernel: 2.6.32-71.el6.x86_64 or later
Red Hat Enterprise Linux 6	<p>Supported distributions:</p> <ul style="list-style-type: none"> ■ Red Hat Enterprise Linux 6: 2.6.32-71.el6.x86_64 or later
Packages for Oracle Linux 6 and Red Hat Enterprise Linux 6	<p>The following packages (or later versions) must be installed:</p> <pre> binutils-2.20.51.0.2-5.11.el6 (x86_64) compat-libcap1-1.10-1 (x86_64) compat-libstdc++-33-3.2.3-69.el6 (x86_64) compat-libstdc++-33-3.2.3-69.el6 (i686) gcc-4.4.4-13.el6 (x86_64) gcc-c++-4.4.4-13.el6 (x86_64) glibc-2.12-1.7.el6 (i686) glibc-2.12-1.7.el6 (x86_64) glibc-devel-2.12-1.7.el6 (x86_64) glibc-devel-2.12-1.7.el6 (i686) ksh libgcc-4.4.4-13.el6 (i686) libgcc-4.4.4-13.el6 (x86_64) libstdc++-4.4.4-13.el6 (x86_64) libstdc++-4.4.4-13.el6 (i686) libstdc++-devel-4.4.4-13.el6 (x86_64) libstdc++-devel-4.4.4-13.el6 (i686) libaio-0.3.107-10.el6 (x86_64) libaio-0.3.107-10.el6 (i686) libaio-devel-0.3.107-10.el6 (x86_64) libaio-devel-0.3.107-10.el6 (i686) libXext-1.1 (x86_64) libXext-1.1 (i686) libXtst-1.0.99.2 (x86_64) libXtst-1.0.99.2 (i686) libX11-1.3 (x86_64) libX11-1.3 (i686) libXau-1.0.5 (x86_64) libXau-1.0.5 (i686) libxcb-1.5 (x86_64) libxcb-1.5 (i686) libXi-1.3 (x86_64) libXi-1.3 (i686) make-3.81-19.el6 sysstat-9.0.4-11.el6 (x86_64) </pre>

6.3 Supported Oracle Linux 5 and Red Hat Enterprise Linux 5 Distributions for x86-64

Use the following information to check supported Oracle Linux 5 and Red Hat Linux 5 distributions:

Table 6 x86-64 Supported Linux 5 Operating System Requirements

Item	Requirements
Oracle Linux 5	<p>Subscribe to the Oracle Linux 5 channel on the Unbreakable Linux Network, and then install the Oracle Validated RPM. This RPM installs all required kernel packages for Oracle Grid Infrastructure and Oracle Database installations, and performs other system configuration.</p> <p>Supported distributions:</p> <ul style="list-style-type: none"> ■ Oracle Linux 5 Update 6 with the Unbreakable Enterprise kernel: 2.6.32-100.0.19 or later ■ Oracle Linux 5 Update 6 with the Red Hat compatible kernel: 2.6.18-238.0.0.0.1.el5 or later
Red Hat Enterprise Linux 5	<p>Supported distributions:</p> <ul style="list-style-type: none"> ■ Red Hat Enterprise Linux 5 Update 6: 2.6.18-238.0.0.0.1.el5 or later
Package requirements for Oracle Linux 5 and Red Hat Enterprise Linux 5	<p>The following packages (or later versions) must be installed:</p> <pre>binutils-2.17.50.0.6 compat-libstdc++-33-3.2.3 compat-libstdc++-33-3.2.3 (32 bit) gcc-4.1.2 gcc-c++-4.1.2 glibc-2.5-58 glibc-2.5-58 (32 bit) glibc-devel-2.5-58 glibc-devel-2.5-58 (32 bit) ksh libaio-0.3.106 libaio-0.3.106 (32 bit) libaio-devel-0.3.106 libaio-devel-0.3.106 (32 bit) libgcc-4.1.2 libgcc-4.1.2 (32 bit) libstdc++-4.1.2 libstdc++-4.1.2 (32 bit) libstdc++-devel 4.1.2 libXext-1.0.1 libXext-1.0.1 (32 bit) libXtst-1.0.1 libXtst-1.0.1 (32 bit) libX11-1.0.3 libX11-1.0.3 (32 bit) libXau-1.0.1 libXau-1.0.1 (32 bit) libXi-1.0.1 libXi-1.0.1 (32 bit) make-3.81 sysstat-7.0.2</pre>

6.4 Supported SUSE Distributions for x86-64

Use the following information to check supported SUSE distributions:

Note: Starting with Oracle Database 12c Release 1 (12.1.0.2), SUSE Linux Enterprise Server 12 is certified on Linux x86-64 systems.

Table 7 *x86-64 Supported SUSE Operating System Requirements*

Item	Requirements
SUSE Linux Enterprise Server 11	Supported distribution: <ul style="list-style-type: none">■ SUSE Linux Enterprise Server 11 SP2: 3.0.13-0.27 or later

Table 7 (Cont.) x86-64 Supported SUSE Operating System Requirements

Item	Requirements
SUSE Linux Enterprise Server 12	Supported distribution: <ul style="list-style-type: none"><li data-bbox="732 285 1369 310">■ SUSE Linux Enterprise Server 12 SP1: 3.12.49-11 or later
SUSE 11	The following packages (or later versions) must be installed: binutils-2.21.1-0.7.25 gcc-4.3-62.198 gcc-c++-4.3-62.198 glibc-2.11.3-17.31.1 glibc-devel-2.11.3-17.31.1 ksh-93u-0.6.1 libaio-0.3.109-0.1.46 libaio-devel-0.3.109-0.1.46 libcap1-1.10-6.10 libstdc++33-3.3.3-11.9 libstdc++33-32bit-3.3.3-11.9 libstdc++43-devel-4.3.4_20091019-0.22.17 libstdc++46-4.6.1_20110701-0.13.9 libgcc46-4.6.1_20110701-0.13.9 make-3.81 sysstat-8.1.5-7.32.1 xorg-x11-libs-32bit-7.4 xorg-x11-libs-7.4 xorg-x11-libX11-32bit-7.4 xorg-x11-libX11-7.4 xorg-x11-libXau-32bit-7.4 xorg-x11-libXau-7.4 xorg-x11-libxcb-32bit-7.4 xorg-x11-libxcb-7.4 xorg-x11-libXext-32bit-7.4 xorg-x11-libXext-7.4

Table 7 (Cont.) x86-64 Supported SUSE Operating System Requirements

Item	Requirements
SUSE 12	<p>The following packages (or later versions) must be installed:</p> <p>binutils-2.25.0-13.1 gcc-4.8-6.189 gcc48-4.8.5-24.1 glibc-2.19-31.9 glibc-32bit-2.19-31.9 glibc-devel-2.19-31.9.x86_64 glibc-devel-32bit-2.19-31.9.x86_64 mksh-50-2.13 libaio1-0.3.109-17.15 libaio-devel-0.3.109-17.15 libcap1-1.10-59.61 libstdc++48-devel-4.8.5-24.1.x86_64 libstdc++48-devel-32bit-4.8.5-24.1.x86_64 libstdc++6-5.2.1+r226025-4.1.x86_64 libstdc++6-32bit-5.2.1+r226025-4.1.x86_64 libstdc++-devel-4.8-6.189.x86_64 libstdc++-devel-32bit-4.8-6.189.x86_64 libgcc_s1-5.2.1+r226025-4.1.x86_64 libgcc_s1-32bit-5.2.1+r226025-4.1.x86_64 make-4.0-4.1.x86_64 sysstat-10.2.1-3.1.x86_64 xorg-x11-driver-video-7.6_1-14.30.x86_64 xorg-x11-server-7.6_1.15.2-36.21.x86_64 xorg-x11-essentials-7.6_1-14.17.noarch xorg-x11-Xvnc-1.4.3-7.2.x86_64 xorg-x11-fonts-core-7.6-29.45.noarch xorg-x11-7.6_1-14.17.noarch xorg-x11-server-extra-7.6_1.15.2-36.21.x86_64 xorg-x11-libs-7.6-45.14.noarch xorg-x11-fonts-7.6-29.45.noarch</p>

6.5 Supported NeoKylin Linux Advanced Server Distributions for x86-64

Use the following information to check supported NeoKylin Linux Advanced Server distributions:

Note: Starting with Oracle Database 12c Release 1 (12.1.0.2), NeoKylin Linux Advanced Server 6 is certified on Linux x86-64 systems.

Table 8 x86-64 Supported NeoKylin Minimum Operating System Requirements

Item	Requirements
SSH Requirement	Ensure that OpenSSH is installed on your servers. OpenSSH is the required SSH software.
NeoKylin Linux Advanced Server	Supported distribution: <ul style="list-style-type: none"> NeoKylin Linux Advanced Server 6: 2.6.32-431.el6.x86_64 or later
NeoKylin 6.0	The following packages (or later versions) must be installed: <pre> binutils-2.20.51.0.2-5.36.el6 (x86_64) compat-libcap1-1.10-1 (x86_64) compat-libstdc++-33-3.2.3-69.el6 (x86_64) compat-libstdc++-33-3.2.3-69.el6 (i686) gcc-4.4.7-4.el6 (x86_64) gcc-c++-4.4.7-4.el6 (x86_64) glibc-2.12-1.132.el6 (i686) glibc-2.12-1.132.el6 (x86_64) glibc-devel-2.12-1.132.el6 (x86_64) glibc-devel-2.12-1.132.el6 (i686) ksh libgcc-4.4.7-4.el6 (i686) libgcc-4.4.7-4.el6 (x86_64) libstdc++-4.4.7-4.el6 (x86_64) libstdc++-4.4.7-4.el6 (i686) libstdc++-devel-4.4.7-4.el6 (x86_64) libstdc++-devel-4.4.7-4.el6 (i686) libaio-0.3.107-10.el6 (x86_64) libaio-0.3.107-10.el6 (i686) libaio-devel-0.3.107-10.el6 (x86_64) libaio-devel-0.3.107-10.el6 (i686) libXext-1.3.1-2.el6 (x86_64) libXext-1.3.1-2.el6 (i686) libXtst-1.2.1-2.el6 (x86_64) libXtst-1.2.1-2.el6 (i686) libX11-1.5.0-4.el6 (x86_64) libX11-1.5.0-4.el6 (i686) libXau-1.0.6-4.el6 (x86_64) libXau-1.0.6-4.el6 (i686) libxcb-1.8.1-1.el6 (x86_64) libxcb-1.8.1-1.el6 (i686) libXi-1.6.1-3.el6 (x86_64) libXi-1.6.1-3.el6 (i686) make-3.81-20.el6 sysstat-9.0.4-22.el6 (x86_64) </pre>

7 Additional Drivers and Software Packages for Linux

You are not required to install additional drivers and packages, but you may choose to install or configure drivers and packages in the following list:

- [Installation Requirements for Open Database Connectivity](#)
- [Installation Requirements for PAM on Linux](#)
- [Installation Requirements for Oracle Messaging Gateway](#)

- [Installation Requirements for Lightweight Directory Access Protocol](#)
- [Installation Requirements for Programming Environments for Linux](#)
- [Installation Requirements for Web Browsers](#)

Note: Oracle Database Smart Flash Cache is an Enterprise Edition only feature.

7.1 Installation Requirements for Open Database Connectivity

Review the following sections if you plan to install Open Database Connectivity (ODBC):

- [About ODBC Drivers and Oracle Database](#)
- [Installing Oracle ODBC Driver on Linux x86-64](#)

7.1.1 About ODBC Drivers and Oracle Database

Open Database Connectivity (ODBC) is a set of database access APIs that connect to the database, prepare, and then run SQL statements on the database. An application that uses an ODBC driver can access non-uniform data sources, such as spreadsheets and comma-delimited files.

7.1.2 Installing Oracle ODBC Driver on Linux x86-64

If you intend to use ODBC, then install the most recent ODBC Driver Manager for Linux. Download and install the ODBC Driver Manager and Linux RPMs from the following website:

<http://www.unixodbc.org>

Review the minimum supported ODBC driver, and install the following ODBC driver, or later releases, for all distributions of Linux:

unixODBC-2.3.1 or later

7.2 Installation Requirements for PAM on Linux

Review the following sections to install PAM:

- [About PAM and Login Authentication](#)
- [Installing PAM Library](#)

7.2.1 About PAM and Login Authentication

Pluggable Authentication Modules (PAM) is a system of libraries that handle user authentication tasks for applications. On Linux, external scheduler jobs require PAM. Oracle strongly recommends that you install the latest Linux-PAM library for your Linux distribution.

7.2.2 Installing PAM Library

Use a package management system (*yum*, *up2date*, *YaST*) for your distribution to install the latest *pam* library.

7.3 Installation Requirements for Oracle Messaging Gateway

Review the following sections to install Oracle Messaging Gateway:

- [About Oracle Messaging Gateway](#)
- [Installing Oracle Messaging Gateway](#)

7.3.1 About Oracle Messaging Gateway

Oracle Messaging Gateway is a feature of the Oracle database. It enables communication between applications based on non-Oracle messaging systems and Oracle Streams Advanced Queuing.

Oracle Messaging Gateway supports the integration of Oracle Streams Advanced Queuing (AQ) with applications based on WebSphere and TIBCO Rendezvous. For information on supported versions see *Oracle Database Advanced Queuing User's Guide*.

7.3.2 Installing Oracle Messaging Gateway

Oracle Messaging Gateway is installed with Oracle Database.

If you require a CSD for IBM WebSphere MQ, then visit the IBM website for download and installation information:

<http://www.ibm.com>

7.4 Installation Requirements for Lightweight Directory Access Protocol

Review the following sections to install Lightweight Directory Access Protocol:

- [About LDAP and Oracle Plug-ins](#)
- [Installing the LDAP Package](#)

7.4.1 About LDAP and Oracle Plug-ins

Lightweight Directory Access Protocol (LDAP) is an application protocol for accessing and maintaining distributed directory information services over IP networks. You require the LDAP package if you want to use features requiring LDAP, including the Oracle Database scripts `odisrvreg` and `oidca` for Oracle Internet Directory, or `schemasync` for third-party LDAP directories.

7.4.2 Installing the LDAP Package

LDAP is included in a default Linux operating system installation.

If you did not perform a default Linux installation, and you intend to use Oracle scripts requiring LDAP, then use a package management system (`up2date`, `YaST`) for your distribution to install a supported LDAP package for your distribution, and install any other required packages for that LDAP package.

7.5 Installation Requirements for Programming Environments for Linux

Review the following sections to install programming environments:

- [About Programming Environments and Oracle Database](#)
- [Configuring Support for Programming Environments](#)

7.5.1 About Programming Environments and Oracle Database

Oracle Database supports multiple programming languages for application development in different environments. Some languages require that you install additional compiler packages for the operating system.

Programming environments are options. They are not required for Oracle Database Client.

See Also: *Oracle Database Development Guide* for an overview of programming environments

7.5.2 Configuring Support for Programming Environments

Ensure that your system meets the requirements for the programming environment you want to configure:

Table 9 Requirements for Programming Environments for Linux x86-64

Programming Environments	Support Requirements
Java Database Connectivity (JDBC) / Oracle Call Interface (OCI)	JDK 6 (Java SE Development Kit release 1.6.0_37 or later updates to 1.6) with the JNDI extension with Oracle Java Database Connectivity. JDK 1.6 is installed with this release.
Oracle C++ Oracle C++ Call Interface Pro*C/C++ Oracle XML Developer's Kit (XDK)	Intel C/C++ Compiler 12.0.5 or later, and the version of GNU C and C++ compilers listed in the software requirements section in this document for your platform. Oracle C++ Call Interface (OCCI) applications can be built only with Intel C++ Compiler 12.0.5 used with the standard template libraries of the gcc versions listed in the software requirements section in this document for your platform. Oracle XML Developer's Kit is supported with the same compilers as OCCI.
Pro*COBOL	Micro Focus Server Express 5.1

7.6 Installation Requirements for Web Browsers

Web browsers are required only if you intend to use Oracle Enterprise Manager Database Express and Oracle Enterprise Manager Cloud Control. Web browsers must support JavaScript, and the HTML 4.0 and CSS 1.0 standards.

For a list of browsers that meet these requirements see the Enterprise Manager certification matrix on My Oracle Support:

<https://support.oracle.com>

See Also: *Oracle Enterprise Manager Cloud Control Basic Installation Guide* for steps on how to access the Enterprise Manager certification matrix

8 Checking the Software Requirements

To ensure that the system meets these requirements, follow these steps:

1. To determine the distribution and version of Linux installed, enter one of the following commands:

```
# cat /etc/oracle-release  
# cat /etc/redhat-release
```

```
# lsb_release -id
```

Note: Only the distributions and versions listed in [Operating System Requirements for x86-64 Linux Platforms](#) are supported. Do not install the software on other versions of Linux.

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

```
# uname -r
```

The following is sample output displayed by running this command on an Oracle Linux 6 system:

```
2.6.39-100.7.1.el6uek.x86_64
```

Review the required errata level for your distribution. If the errata level is previous to the required minimum errata update, then obtain and install the latest kernel update from your Linux distributor.

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

```
# rpm -q package_name
```

Alternatively, if you require specific system architecture information, then enter the following command:

```
# rpm -qa --queryformat "%{NAME}-%{VERSION}-%{RELEASE} (%{ARCH})\n" | grep package_name
```

You can also combine a query for multiple packages, and review the output for the correct versions. For example:

```
# rpm -q binutils compat-libstdc++ gcc glibc libaio libgcc libstdc++ \  
make sysstat unixodbc
```

If a package is not installed, then install it from your Linux distribution media or download the required package version from your Linux distributor's website.

9 Separate 32-Bit Client Software for 64-Bit Platforms

The 64-bit Oracle Database Client software does not contain any 32-bit client binaries. If you require 32-bit client binaries on 64-bit platforms, then install the 32-bit binaries from the respective 32-bit client software into a separate Oracle home.

The 64-bit Oracle Database Client preinstallation requirements apply to 32-bit Oracle Database Client also.

See Also: My Oracle Support note 883702.1 for more information:

<https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=883702.1>

10 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 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 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, `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 a command similar to the following to modify it:

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

Specify the primary group using the `-g` option and any required secondary group using the `-G` option.

Note: Oracle does not support modifying existing Oracle Database server or other Oracle software installation owners. Oracle only supports modifying an Oracle Database Client software owner.

- 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
```

11 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/
```

12 Configuring Oracle Software Owner 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.

Caution: Use shell programs supported by your operating system vendor. If you use a shell program that is not supported by your operating system, then you can encounter errors during installation.

To set the oracle user's environment:

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

```
$ xhost + RemoteHost
```

where *RemoteHost* is the fully qualified remote host name. For example:

```
$ xhost + somehost.example.com
```

3. If you are not 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 system, then enter a command similar to the following to direct X applications to display on the local system:

- Bourne, Bash, or Korn shell:

```
$ 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 system to use to display Oracle Universal Installer (your workstation or PC).

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
```

- 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. If you have had an existing installation on your system, and you are using the same user account to install this installation, then unset the ORACLE_HOME, ORACLE_BASE, ORACLE_SID, TNS_ADMIN environment variables and any other environment variable set for the Oracle installation user that is connected with Oracle software homes.

Enter the following commands to ensure that the ORACLE_HOME, ORACLE_BASE, ORACLE_SID and TNS_ADMIN environment variables are not set:

- Bourne, Bash, or Korn shell:

```
$ unset ORACLE_HOME
$ unset ORACLE_BASE
$ unset ORACLE_SID
$ unset TNS_ADMIN
```

- C shell:

```
% unsetenv ORACLE_HOME
% unsetenv ORACLE_BASE
% unsetenv ORACLE_SID
% unsetenv TNS_ADMIN
```

Use the following command to check the PATH environment variable:

```
$ echo $PATH
```

Ensure that the \$ORACLE_HOME/bin path is removed from your PATH environment variable.

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. 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.

10. To verify that the environment has been set correctly, enter the following commands:

```
$ umask
$ env | more
```

Verify that the `umask` command displays a value of 22, 022, or 0022 and the environment variables that you set in this section have the correct values.

13 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:

- Oracle Linux, and Red Hat Enterprise Linux:

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

- SUSE Linux Enterprise Server:

```
# 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:

- Oracle Linux, and Red Hat Enterprise Linux:

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

- SUSE Linux Enterprise Server:

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

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

- Oracle Linux, and Red Hat Enterprise Linux:

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

- SUSE Linux Enterprise Server:

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

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

14 Installing Oracle Database Client

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

- Log on as the Oracle software owner user (typically, `oracle`) to the computer on which to install Oracle components.
- If you are installing the software from installation media, then mount the disk if it is not mounted.
- To start Oracle Universal Installer, enter the following command:

```
$ /directory_path/runInstaller
```

If the installation files are on the hard disk, change to the `client` directory and enter the following command:

```
$ ./runInstaller
```

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

- The following procedure describes the recommended action for each Oracle Universal Installer screen. Use the following guidelines to complete the installation:
 - If you need more assistance, or to choose an option that is not a default, click **Help** for additional information.
 - If you encounter errors while installing or linking the software, then refer to *Oracle Database Installation Guide* 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. If you have an existing Oracle Database Client 12c Release 1 (12.1.0.1) or later installed on your system, the Select Installation Mode screen is displayed. Select **New Install** to install Oracle Database Client software in a new location, or select **Upgrade** and follow the instructions in the "Performing an In-place Oracle Database Client Upgrade" section in *Oracle Database Client Installation Guide for Linux* to upgrade an earlier release of Oracle Database Client.
2. In the Select Installation Type screen, select the type of installation: Instant Client, Administrator, or Runtime and click **Next**.
3. The Select Product Languages screen enables you to select the language in which you want to run the product.

Select the product language from the Available Languages list, transfer it to the Selected Languages list. Click **Next**.

This screen is not displayed if you select Instant Client as the type of installation in Step 2.

4. In the Specify Installation Location screen, enter the following details:

Oracle Base: This path appears by default. You can change the path based on your requirement. The Oracle Base section is not displayed if you select Instant Client as the type of installation in Step 2.

In the **Software Location** section, accept the default value or enter the Oracle home directory path in which you want to install Oracle components. The directory path should not contain spaces. Click **Next**.

5. In the Create Inventory screen, you are prompted by the installer to specify the directory path for central inventory the first time you install Oracle software on your computer. Select the **oraInventory Group Name of the operating system group that should own the Oracle Inventory directory (the Oracle Inventory group)**, and click **Next**.

Note: By default, the Oracle Inventory directory is not installed under the Oracle Base directory. This is because all Oracle software installations share a common Oracle Inventory, so there is only one Oracle Inventory for all users, whereas there is a separate Oracle Base for each user.

6. The Perform Prerequisite Checks screen verifies if your computer meets the minimum system requirements to install the desired product. Click **Next**.

Note: Oracle recommends that you use caution in checking the Ignore All option. If you check this option, then Oracle Universal Installer may not confirm if your system can install Oracle Database successfully.

7. Review the information displayed in the Summary screen, and click **Finish**.

Note: You can save all the installation steps into a response file by clicking **Save Response File**. Later, this file can be used for a silent installation.

8. The Install Product screen states the progress of a client installation. After Oracle Database Client is installed, execute the `root.sh` script as a `root` user to complete the installation, and click **OK**.

9. In the Finish screen, click **Close** to exit from Oracle Universal Installer.

15 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.

16 Additional Information

This section contains information about the following:

- [Product Licenses](#)
- [Purchasing Licenses and Version Updates](#)

- [Contacting Oracle Support Services](#)
- [Review Oracle Support Certification Matrix](#)
- [Locating Product Documentation](#)

Product Licenses

You are welcome to install and evaluate the products included in this media pack for 30 days under the terms of the Trial License Agreement. However, you must purchase a program license if you want to continue using any product after the 30 day evaluation period. See the following section for information about purchasing program licenses.

Purchasing Licenses and Version Updates

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<https://shop.oracle.com>

Contacting Oracle Support Services

If you have purchased Oracle Product Support, you can call Oracle Support Services for assistance 24 hours a day, seven days a week. For information about purchasing Oracle Product Support or contacting Oracle Support Services, go to the Oracle Support Services website:

<http://www.oracle.com/us/support/index.html>

Review Oracle Support Certification Matrix

New platforms and operating system software versions might be certified after this guide is published, review the certification matrix on the My Oracle Support website for the most up-to-date list of certified hardware platforms and operating system versions:

<https://support.oracle.com/>

You must register online before using My Oracle Support. After logging in, from the menu options, select the **Certifications** tab. On the **Certifications** page, use the **Certification Search** options to search by Product, Release, and Platform. You can also search using the **Certification Quick Link** options such as Product Delivery, and Lifetime Support.

Locating Product Documentation

Product documentation includes information about configuring, using, or administering Oracle products on any platform. The product documentation for Oracle Database products is available in both HTML and PDF formats online:

<http://docs.oracle.com/>

17 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Oracle Database Client Quick Installation Guide, 12c Release 1 (12.1) for Linux x86-64
E55098-08

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