Oracle® Database

Client Installation Guide

10*g* Release 2 (10.2.0.4) for Apple Mac OS X on Intel x86

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This guide describes how to install and configure Oracle Database Client 10*g* Release 2 (10.2.0.4) on Apple Mac OS X on Intel x86. It includes information about the following topics:

1 Oracle Client Installation Types

You can choose one of the following installation types when installing Oracle Client:

- **Administrator:** Enables applications to connect to an Oracle Database instance on the local system or on a remote system. Includes Pro*C, full set of archive and shared libraries required by Oracle Call Interface (OCI), Oracle C++ Call Interface (OCCI), Pro*C, or Java database connectivity (JDBC) OCI applications and client side tools.

- **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 than the other Oracle Client installation type.

  > **See Also:** *Oracle Call Interface Programmer's Guide* or *Oracle Database JDBC Developer's Guide and Reference* for more information about Instant Client

  Included in the Instant Client installation is Instant Client Light. The advantage of using Instant Client Light is that it has a smaller footprint than the regular Instant Client. The shared libraries, which an application must load, are only 34 MB as opposed to the 110 MB that regular Instant Client uses. Therefore, the applications use less memory. You may want to use this version of Instant Client if the applications generate error messages in American English only. Instant Client Light is beneficial to applications that use one of the supported character sets and can accept error messages in American English. The following are the supported character sets:

  - US7ASCII

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- WE8DEC

- WE8ISO8859P1

- WE8EBCDIC37C for EBCDIC platform only

- WE8EBCDIC1047 for EBCDIC platform only

- WE8MSWIN1252

- UTF8

- AL32UTF8

- AL16UTF16

2 Hardware Requirements

The system must meet the following minimum hardware requirements:

- 256 MB of physical RAM

- 512 MB of swap space

- Between 75 MB and 500 MB of disk space for the Oracle software

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

1. To determine the physical RAM size, use System Profiler (`/Applications/Utilities/System Profiler`) or enter the following command:

   ```
   # /usr/sbin/system_profiler SPHardwareDataType | grep Memory
   ```

   If the size of the physical RAM 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:

   ```
   # df -h /
   ```

   > **Note:** Mac OS X dynamically creates swap files as required in `/private/var/vm` directory. Ensure that you have at least 512 MB of available disk space on the root (`/`) file system to accommodate newly created swap files.

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

   ```
   # df -h
   ```

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

Installation Type	Requirement for Software Files (MB)
Administrator	500
Instant Client	130

> **Note:** If you want to configure only the Instant Client Light component of Instant Client, you need 34 MB of disk space to store the related files. To configure Instant Client Light, refer to Section 5.2, "Configuring Instant Client Light."

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

```
# uname -p
```

> **Note:** This command displays the processor type. The command output must be i386. If you do not see the expected output, then you cannot install the software on this system.

3 Software Requirements

You must verify that the following software is installed on the system. The procedure following the table describes how to verify these requirements.

Item	Requirement
Operating system	Apple Mac OS X Server 10.5
Tools	■ Xcode 3.0 or later
	■ GNU C compiler (gcc) version 4.0.1 or later
	This version of gcc is included in Xcode 3.0 or later.
Pro*C/C++, Oracle Call Interface, Oracle C++ Call Interface	The version of the GNU C and C++ compiler listed previously is supported for use with these products.
Oracle JDBC/OCI Drivers	You can use the following optional JDK version with the Oracle JDBC/OCI drivers, however it is not required for the installation:
	■ JDK 1.4.2 with the JNDI extension

To determine the operating system version, enter the following command:

```
# sw_vers
```

> **Note:** Only the versions listed in the previous table are supported. Do not install the software on other versions of Apple Mac OS X.

3.1 Instant Client Light Requirements

In addition to the requirements described in the preceding section, if you plan to use Instant Client Light, then your applications must use the following languages and character sets:

■ **Language:** US English

- **Territory:** Any territory that is supported by Oracle
- **Character sets:**
  - Single byte
    * US7ASCII
    * WE8DEC
  - Unicode
    * UTF8
    * AL16UTF16
    * AL32UTF8

The language, territory, and character sets are determined by the `NLS_LANG` environment variable.

4 Installation Tasks

The Oracle Client software is available for download from the Oracle Technology Network Web site. This section includes information about the following topics:

- Section 4.1, "Downloading and Extracting Oracle Software from the OTN Web Site"
- Section 4.2, "Installing the Oracle Client Software"

4.1 Downloading and Extracting Oracle Software from the OTN Web Site

This section describes how to download the installation archive files and extract them on your hard disk. It contains the following topics:

- Section 4.1.1, "Downloading the Installation Archive Files"
- Section 4.1.2, "Extracting the Installation Files"

4.1.1 Downloading the Installation Archive Files

To download the installation archive files from Oracle Technology Network:

1. Use any browser to access the software download page from Oracle Technology Network:

   http://www.oracle.com/technology/software/

2. Navigate to the download page for the product that you want to install.

   - **For Instant Client installation:** Download Oracle Instant Client 10*g* Release 2 (10.2.0.4.0) for MAC OS X on Intel x86
   - **For Administration installation:** Download Oracle Database 10*g* Client Release 2 (10.2.0.4.0) for MAC OS X on Intel x86

3. On the download page, identify the required disk space by adding the file sizes for each required file.

   The file sizes are listed next to the file names.

4. Select a file system with enough free space to store and expand the archive files.

In most cases, the available disk space must be at least twice the size of all of the archive files.

5. On the file system that you selected in step 4, create a parent directory for each product, for example `OraCli10g`, to hold the installation directories.

6. Download all of the installation archive files to the directory that you created in step 5.

7. Verify that the files you downloaded are the same size as the corresponding files on Oracle Technology Network.

4.1.2 Extracting the Installation Files

To extract the installation archive files, perform the following steps:

1. If necessary, change directory to the directory that contains the downloaded installation archive files.

2. To uncompress each file, enter a command similar to the following:

```
unzip filename.zip
```

When you have extracted all of the required installation files, refer to Section 4.2, "Installing the Oracle Client Software."

4.2 Installing the Oracle Client Software

Perform the following steps to install Oracle Client:

1. Download the Oracle Client packages for your operating system.

> **Note:** Basic or Basic Lite package is required for Instant Client installation.

2. Unzip the Oracle Client packages to a single directory. For example, create a directory called `instantclient`, if your installation type is Instant Client.

3. Set the `ORACLE_HOME` environment variable to specify the Oracle home directory where you installed Oracle Client, if your installation type is Administration.

4. Set the library loading path, `DYLD_LIBRARY_PATH`, in your environment to the directory in Step 2 (`instantclient`).

5 Postinstallation Tasks

You must perform the tasks described in the following sections after completing an installation.

- Section 5.1, "Connecting with Instant Client"
- Section 5.2, "Configuring Instant Client Light"
- Section 5.3, "Connecting Instant Client or Instant Client Light to an Oracle Database"
- Section 5.4, "Configuring Oracle Precompilers"
- Section 5.5, "Configuring OCCI"
- Section 5.6, "Setting the NLS_LANG Environment Variable"

5.1 Connecting with Instant Client

If you installed the Instant Client installation type, you can configure users' environments to enable dynamically linked client applications to connect to a database as follows:

1. Set the appropriate shared library path environment variable for your platform to specify the directory that contains the Instant Client libraries. For the Instant Client installation type, this directory is the Oracle home directory that you specified during the installation, for example:

    ```
    /u01/app/oracle/product/10.2.0/client_1
    ```

    The required environment variable is `DYLD_LIBRARY_PATH`.

2. Use one of the following methods to specify database connection information for the client application:

    - Specify a SQL connect URL string using the following format:

        ```
        //host:port/service_name
        ```

    - Set the `TNS_ADMIN` environment variable to specify the location of the `tnsnames.ora` file and specify a service name from that file.

    - Set the `TNS_ADMIN` environment variable and set the `TWO_TASK` environment variable to specify a service name from the `tnsnames.ora` file.

    > **Note:** You do *not* have to specify the `ORACLE_HOME` environment variable.

5.2 Configuring Instant Client Light

When you install Instant Client, the Instant Client libraries are installed under the `ORACLE_HOME` directory and the Instant Client Light specific library is installed under the `ORACLE_HOME/light` directory. To configure Instant Client Light, you must replace the `ORACLE_HOME/libociei.dylib` file with the `ORACLE_HOME/light/libociicus.dylib` file.

After replacing the library file, you must set the `DYLD_LIBRARY_PATH` environment variable to point to the location of the Instant Client shared library files. For example:

```
$ORACLE_HOME
```

5.3 Connecting Instant Client or Instant Client Light to an Oracle Database

Before you can connect Instant Client (including Instant Client Light) to an Oracle database, you must ensure that the `DYLD_LIBRARY_PATH` environment variable specifies the directory that contains the Instant Client libraries. This directory is the `ORACLE_HOME` directory that you specified during installation.

For example, the shared libraries for Instant Client or Instant Client Light (if you have configured Instant Client Light), are in:

```
/u01/app/oracle/product/10.2.0/client_1
```

After you have checked the `DYLD_LIBRARY_PATH` environment variable, you can use any of the following methods to specify Oracle Database connection information for client applications:

- Specifying a Connection by Using the Easy Connect Naming Method
- Specifying a Connection by Configuring a tnsnames.ora File
- Specifying a Connection by Using an Empty Connect String and the TWO_TASK Environment Variable

5.3.1 Specifying a Connection by Using the Easy Connect Naming Method

You can specify a connection address to an Oracle Database directly from a client application, without having to configure a `tnsnames` setting for the Instant Client. This method is convenient in that you do not have to create and manage a `tnsnames.ora` file. However, your application users must specify the host name and port number when they log in to your application.

For example, suppose you are running SQL*Plus on the client machine and want to connect to the sales_us database, which is located on a server whose host name is shobeen and port number is 1521. If you launch SQL*Plus from the command line, then you can log in as follows:

```
Enter user-name: system@admin@//shobeen:1521/sales_us
```

Similarly, in your application code, you can use Oracle Call Interface net naming methods to create the Instant Client-to-Oracle Database connection. For example, the following formats in the `OCIServerAttach()` call specify the connection information:

- Specify a SQL connect URL string using the following format:

  ```
  //host[:port][/service_name]
  ```

  For example:

  ```
  //shobeen:1521/sales_us
  ```

- Alternatively, you can specify the SQL connect information as an Oracle Net keyword-value pair. For example:

  ```
  "(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp) (HOST=shobeen) (PORT=1521))
  (CONNECT_DATA=(SERVICE_NAME=sales_us)))"
  ```

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

5.3.2 Specifying a Connection by Configuring a tnsnames.ora File

On each client computer, configure either of the following settings:

- Set the `TNS_ADMIN` environment variable to specify the location of the `tnsnames.ora` file and specify a service name from that file.

- Place the `tnsnames.ora` file in the `$ORACLE_HOME`/network/admin directory, and ensure that the `ORACLE_HOME` environment has been set to this Oracle home.

> **See Also:** *Oracle Call Interface Programmer's Guide* for more information on Oracle Call Interface Instant Client connection strings

5.3.3 Specifying a Connection by Using an Empty Connect String and the TWO_TASK Environment Variable

You can set the connect string to an empty connect string (""), and then set the TWO_TASK environment variable to one of the following values:

- A direct address, as described under Section 5.3.1, "Specifying a Connection by Using the Easy Connect Naming Method"

- A tnsnames.ora entry and TNS_ADMIN is set to the location of tnsnames.ora

- A tnsnames.ora entry and the following:

  - tnsnames.ora file located in *$ORACLE_HOME*/network/admin

  - The ORACLE_HOME environment variable set to this Oracle home

This method allows the applications to specify internally a connection string if the application code itself uses an empty connection string. The benefit of an empty connect string is that the application itself does not need to specify the tnsnames.ora entry. Instead, when a user invokes the application, the location of the database is determined by a script or the environment, depending on where you have set the TWO_TASK environment variable. The disadvantage of using empty strings is that you must configure this additional information in order for your application to connect to the database.

5.4 Configuring Oracle Precompilers

This section describes postinstallation tasks for Oracle precompilers.

> **Note:** All precompiler configuration files are located in the $ORACLE_HOME/precomp/admin directory.

5.4.1 Configuring Pro*C/C++

Verify that the PATH environment variable setting includes the directory that contains the C compiler executable.

5.5 Configuring OCCI

The Oracle C++ Call Interface (OCCI) libraries for use with GNU C++ compiler version 4.0.1 are installed with this release. The libraries are installed in the following locations:

```
$ORACLE_HOME/lib/libocci10.a
$ORACLE_HOME/lib/libocci10.dylib.10.1
```

5.6 Setting the NLS_LANG Environment Variable

NLS_LANG is an environment variable that specifies the locale behavior for Oracle software. This variable sets the language and territory used by the client application and the database server. It also sets the character set for the client, which is the character set for data entered or displayed by an Oracle client program, such as SQL*Plus.

5.7 Setting the JAVA_HOME Environment Variable

If you use Oracle Client installation for development, then you must set the JAVA_ HOME environment variable to the the top level directory of the system Java Development Kit (JDK) installation. For example:

```
$ JAVA_HOME=/System/Library/Frameworks/JavaVM.framework/Home
$ export JAVA_HOME
```

5.8 Generating the Client Static Library

The client static library (libclntst10.a) is not generated during installation. If you want to link your applications to the client static library, you must first generate it as follows:

1. Set the ORACLE_HOME environment variable to specify the Oracle home directory used by the Oracle Client installation. For example:

   - Bourne, Bash, or Korn shell:

     ```
     $ ORACLE_HOME=/u01/app/oracle/product/10.2.0/client_1
     $ export ORACLE_HOME
     ```

   - C shell:

     ```
     % setenv ORACLE_HOME /u01/app/oracle/product/10.2.0/client_1
     ```

2. Enter the following command:

   ```
   $ $ORACLE_HOME/bin/genclntst
   ```

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