

Oracle® Forms Server and Reports Server

Installation Guide

Release 6i for IBM AIX

April 2000

Part No. A83557-01

Topics Include:

- Features and Requirements
- Setting Up the Environment
- Installation Tasks
- Completing the Installation
- Administration
- Creating User Exits

ORACLE®

Oracle Forms Server and Reports Server Installation Guide for IBM AIX

Part No. A83557-01

Release 6i

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Oracle Forms Server and Reports Server Installation Guide Release 6i for IBM AIX

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- Did you find any errors?
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Preface

Purpose

This document provides installation and configuration information for Oracle Forms Server and Reports Server Release 6*i*.

This preface describes the following topics:

- Audience
- Typographic Conventions
- Command Syntax
- Related Documentation
- Oracle Services and Support

Audience

This document is for database administrators and others responsible for installing Oracle products on UNIX operating systems. While command examples are provided, this document does not attempt to teach Oracle or UNIX administration.

Typographic Conventions

<code>monospace</code>	Monospace type indicates UNIX commands, directory names, user names, path names, and file names.
brackets []	Words enclosed in brackets indicate key names (for example, Press [Return]). Note that brackets have a different meaning when used in command syntax.
<i>italics</i>	Italic type indicates a variable, including variable portions of filenames. It is also used for emphasis.
UPPERCASE	Uppercase letters indicate Structured Query Language (SQL) reserved words, initialization parameters, and environment variables.

Because UNIX is case-sensitive, conventions in this document may differ from those used in other Oracle product documentation.

Command Syntax

Command syntax appears in `monospace` font. The following conventions apply to command syntax:

backslash \	A backslash indicates a command that is too long to fit on a single line. Enter the line as printed (with a backslash) or enter it as a single line without a backslash: <pre>dd if=/dev/rdskc0t1d0s6 of=/dev/rst0 bs=10b \ count=10000</pre>
braces { }	Braces indicate required items: <code>.DEFINE {macro1}</code>
brackets []	Brackets indicate optional items: <code>cvtcrt termname [outfile]</code> Note that brackets have a different meaning when used in regular text.

ellipses ...	Ellipses indicate an arbitrary number of similar items: <code>CHKVAL fieldname value1 value2 ... valueN</code>
<i>italics</i>	Italic type indicates a variable. Substitute a value for the variable: <code>library_name</code>
vertical line	A vertical line indicates a choice within braces or brackets: <code>SIZE filesize [K M]</code>

Related Documentation

For additional information related to Oracle Forms Server and Reports Server, see *Oracle Forms Developer and Reports Developer: Guidelines for Building Applications*. This document describes Oracle Browser, Oracle Forms, Oracle Graphics, Oracle Procedure Builder, Oracle Project Builder, and Oracle Reports. Use your Web browser to view this document in

`$ORACLE_HOME/doc60/admin/manuals/US/guide60/atgtoc.htm`.

Oracle Services and Support

A wide range of information about Oracle products and global services is available on the Internet, from <http://www.oracle.com>. The sections below provide URLs for selected services.

Oracle Support Services

Global Support Sales offices are listed at <http://www.oracle.com/support>. Templates are provided to help you prepare information before you call. You will also need your CSI number (if applicable) or complete contact details, including any special project information.

Products and Documentation

Oracle Store, for U.S.A. customers, is at <http://oraclestore.oracle.com>. Links to stores in other countries are provided from this site.

Customer Service

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Features and Requirements

Completing a quick, successful installation depends on the local system satisfying the software dependencies and space requirements for Oracle software. This chapter describes the requirements for installing Oracle Forms Server and Reports Server Release 6*i* on AIX. Verify that the system meets these requirements before starting the installation.

This chapter describes the following topics:

- Introduction
- Installation Overview
- Supported User Interfaces
- Online Documentation and Help
- Related Publications
- System Requirements
- Disk Space and Memory Requirements
- Issues and Restrictions

Introduction

Oracle Forms Server and Reports Server is an integrated set of database tools supporting multiple platforms, user interfaces, and data sources. These tools are built on a layer called Oracle Toolkit, which provides a uniform programming interface to the underlying user interface. Oracle Toolkit makes it possible to create applications that run against multiple user interfaces, such as Motif or Windows, while retaining the full native look and feel of the interface.

Installing Oracle Forms Server and Reports Server involves the following steps:

1. *Satisfy Prerequisites:* Make sure that the local system satisfies the hardware, software, memory, and disk space requirements for the products you want to install. These requirements and restrictions are described in this chapter.
2. *Check the UNIX Environment:* Make sure that the UNIX environment is properly set up for the products you want to install. See Chapter 2, "Setting Up the Environment".
3. *Install:* Use the Oracle Installer to install the Oracle software. See Chapter 3, "Installation Tasks".
4. *Post-Installation:* Create database objects, establish the user environment, and configure the installed Oracle products for the local system. See Chapter 4, "Completing the Installation" and Chapter 5, "Administration".
5. *Create User Exits:* This optional step is described in Chapter 6, "Creating User Exits".

With Oracle Forms Server and Reports Server Release 6*i*, you can deploy applications on the World Wide Web.

Oracle Forms Server and Reports Server tools are built using standard application programming interfaces (APIs), allowing organizations to supplement the Oracle Forms Server and Reports Server product set with tools from other vendors.

Table 1–1 describes the Oracle Forms Server and Reports Server products.

Table 1–1 Oracle Forms Server and Reports Server Supported Products

Oracle Forms Release 6 <i>i</i>	Use Oracle Forms to build and deploy interactive applications that access Oracle8 Server data.
Oracle Graphics Release 6 <i>i</i>	Use Oracle Graphics to create multimedia graphical displays dynamically linked to a database.

Table 1–1 Oracle Forms Server and Reports Server Supported Products

Oracle Reports Release 6i	Use Oracle Reports to build and generate reports that access Oracle8 Server data.
---------------------------	---

Installation Overview

This overview describes performing a client-only installation, a client-only configuration, and a server-based installation.

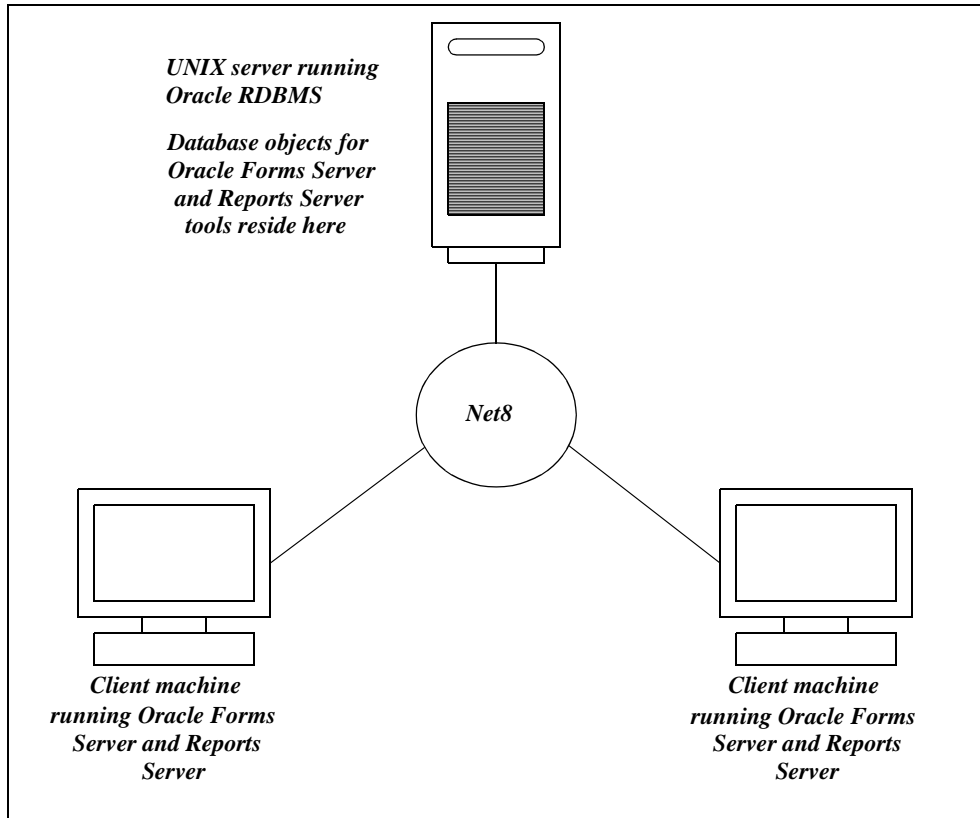
Client-Only Installation

You can install Oracle Forms Server and Reports Server tools in a `ORACLE_HOME` directory separate from the `ORACLE_HOME` directory containing the Oracle Database Server software that the tools access. A client-only installation consists of Oracle Forms Server and Reports Server software, database objects, and Oracle Net8. Although you need to install the database objects only once for each server, Oracle Forms Server and Reports Server tools must be installed on each system used to access the server.

Client-Only Configuration

Figure 1–1 illustrates a configuration in which Oracle Forms Server and Reports Server is installed on client machines connecting to the database server with Oracle Net8.

Figure 1–1 Client-Only Installation



Server-Based Installation

For Oracle Forms Server and Reports Server Release 6i, in a server-based installation, Oracle Forms Server and Reports Server and the Oracle Database Server release 8.0.6 are installed in the same ORACLE_HOME directory and the Oracle Forms Server and Reports Server tools connect to the local database. This option was not available in previous releases.

Attention: Oracle Forms Server and Reports Server only supports server-based installations that use Oracle Database Server release 8.0.6.

Supported User Interfaces

Table 1–2 lists the Oracle Forms Server and Reports Server Release 6*i* tools and whether they support character mode, Motif, or Web interfaces on AIX:

Table 1–2 Oracle Forms Server and Reports Server Release 6*i* Tools

Oracle Product	Character Mode	Motif (v1.2.3)	Web
Oracle Browser Release 6 <i>i</i>	No	Yes	No
Oracle Forms Release 6 <i>i</i>	Yes	Yes	Yes
Oracle Graphics Release 6 <i>i</i>	No	Yes	Yes
Oracle Reports Release 6 <i>i</i>	Yes	Yes	Yes
Oracle Procedure Builder Release 6 <i>i</i>	No	Yes	No
Oracle Project Builder Release 6 <i>i</i>	No	Yes	No

Note: Oracle Forms Server and Reports Server does not have a character mode designer, and there is no character mode runtime component for Oracle Graphics or Oracle Browser. The designer component of all Oracle Forms Server and Reports Server products, and the runtime component of Oracle Graphics and Oracle Browser, support only the Motif graphical user interface.

Online Documentation and Help

Installation Guide

Oracle Forms Server and Reports Server for IBM AIX documentation is included with this Oracle product distribution. To access the documentation, use your browser to open the `unixdoc/Server/index.htm` file on the CD-ROM. The `index.htm` file contains links to the platform-specific documentation. The browser you use to view Oracle product documentation should support HTML level 3.

If you do not have a browser installed on the system, use an Oracle-supplied browser. Your Oracle distribution includes both character mode and Motif browsers, which you can install or run directly from the CD-ROM. The browsers are in the `oraInst` directory.

To start a browser, enter:

```
$ cd mount_point_directory/orainst
$ ./oraview
```

The `oraview` script invokes the appropriate browser for the system. If you want more information about the `oraview` script, enter:

```
$ ./oraview -h
```

Context-Sensitive Online Help

Oracle Forms Server and Reports Server provides a context-sensitive online help system. Access online help by selecting [Contents] from the [Help] menu. For example, if you are in a Reports property sheet and need information about a current setting, select [Help-Contents]. A window containing one or more pages of information about the setting is displayed. If the page shown extends beyond the window, use [Scroll Down] to display the rest of the page. When you have finished reading help files, select [Quit].

Cue Cards

Cue cards provide step-by-step instructions of common tasks. To access cue cards, select the `Help` pull-down menu, then select `Cue Cards`.

Related Publications

Oracle8 Server for IBM AIX Documentation

The following documents provide additional information and are included on your product CD-ROM in HTML format:

- *Oracle8 Installation Guide for IBM AIX*
- *Oracle8 Administrator's Reference for IBM AIX*

System Requirements

This section describes the system requirements for installing Oracle Forms Server and Reports Server on AIX.

Hardware Requirements

Table 1–3 lists hardware requirements for installing and running Oracle Forms Server and Reports Server on AIX.

Table 1–3 AIX Hardware Requirements

Hardware Item	Requirement
CPU	An AIX-based system
Memory	A minimum of 32 MB internal memory (RAM)
Swap Space	two to four times physical RAM
Media Device	A CD-ROM drive, supported by AIX, that can read ISO 9660 format CD-ROM disks with RockRidge extensions
Display Device for GUI Tools	X11 Server

Operating System Requirements

Table 1–4 lists operating system requirements for installing and running Oracle Forms Server and Reports Server on AIX.

Table 1–4 Operating System Requirements

Software Item	Requirement
Operating System	AIX 4.3.2
	The <code>phthreads</code> library must be installed from your AIX distribution CD-ROM.
AIX 4.3.2	IX71948 (required if running PSSP 2.4) IX79690 (to add <code>fastpath</code> for VSDs to AIX) IX81863 (resolves AIO process hanging in <code>listio</code> and <code>liowait</code>) IX87313 (to allow the 64-bit application buffer to cross a segment boundary) IX87382 (resolves a socket lock problem for AF_UNIX) IX89087 (resolves threads hanging AIO in stress tests) IY02407 (resolves data being copied to wrong segments during AIO) the <code>bos.adt.base</code> file set the <code>bos.adt.libm</code> file set the <code>x11.samples.lib.Core</code> file set

User Interface Requirements

Table 1–5 lists user interface requirements for installing and running Oracle Forms Server and Reports Server products on AIX.

Table 1–5 User Interface Requirements

Software Item	Requirements
Window Manager	Motif Window Manager <code>mwm</code> delivered with AIX 4.3.2
X11 Server	X11R5 and Motif 1.2.3 delivered with AIX 4.3.2

Motif Versions Compatibility

On AIX 4.3, both Motif 2.1 and Motif 1.2 are available. Oracle Forms Server and Reports Server only works with Motif 1.2 and X11R5. At installation time, the default paths of `/usr/lpp/x11/lib/R5` are set to `LIBPATH`.

If your installation does not have Motif and XToolkit installed at these locations, modify the `LIBPATH` settings in the following files:

- `$ORACLE_HOME/forms_server`
- `$ORACLE_HOME/forms60.csh`
- `$ORACLE_HOME/forms60.sh`
- `$ORACLE_HOME/reports_server`
- `$ORACLE_HOME/reports60.csh`
- `$ORACLE_HOME/reports60.sh`

Mandatory Motif Patch

To run Oracle Forms Server and Reports Server Motif Client applications, contact your IBM customer support representative to obtain a patch corresponding to PTF No. U46460 and install the patch on your system.

Server Requirements for Oracle Forms Server and Reports Server

Oracle Forms Server and Reports Server Release 6*i* only supports Oracle8 Server Release 8.0.6.

Table 1–6 lists the Web server requirements when using Oracle Forms Server and Reports Server on AIX:

Table 1–6 Forms Web Server Requirements

Database Item	Requirements
Web server	For non-cartridge implementations: WebDB 2.2, Oracle Application Server 4.0.8.1, or any Web server that supports the transfer of the Java applet. For cartridge implementations: Oracle Application Server 4.0.8.1.

Attention: Do not install Oracle Forms Server and Reports Server and the Oracle Application Server in the same \$ORACLE_HOME.

Relinking Requirements

You can relink the Motif Oracle Forms Server and Reports Server tools using dynamic Motif and X11 libraries.

The Oracle Forms Server and Reports Server distribution provides all necessary components for relinking the character mode Oracle Forms Server and Reports Server tools.

Disk Space and Memory Requirements

Table 1–7 lists disk space, database space, and memory requirements for Oracle Forms Server and Reports Server. These are minimal estimates, not precise calculations.

To calculate the total disk space requirement, decide which products and options are required for your installation. Total the Distribution and DB Space columns (adding only those products and options that are required for you installation). Combine the totals from the two columns to determine the total required disk space for your installation.

Table 1–7 Space Requirements

Products and Options	Distribution (MB)	DB Space (MB)
GUI Common Area	70.3	0.53
Oracle Forms	160.0	0.32

Table 1–7 Space Requirements

Products and Options	Distribution (MB)	DB Space (MB)
Runtime (Char.)	3.6	0.00
Designer (Motif)	3.6	0.00
Runtime (Motif)	3.6	0.00
Generator (Char.)	3.6	0.00
Generator (Motif)	3.6	0.00
Runtime (Web)	3.6	0.00
Oracle Reports	85.0	0.39
Builder	3.8	0.00
Converter	3.8	0.00
Runtime (Char.)	3.8	0.00
Runtime (Motif)	4.0	0.00
CGI Executable	0.3	0.00
Multi-tier server	0.3	0.00
Client (Web)	0.3	0.00
Webcartridge	0.1	0.00
Queue Viewer	0.3	0.00
Oracle Graphics	42.0	0.12
Designer (Motif)	3.8	0.00
Runtime (Motif)	3.8	0.00
Oracle Browser	20.2	0.04
Query Builder	0.3	0.00
Schema Builder	0.3	0.00
Oracle Procedure Builder	22.0	0.00
Procedure Builder (Motif)	3.0	0.00
Oracle Project Builder	8.9	0.00
Project Builder (Motif)	0.6	0.00
Oracle Installer	39.1	0.00

Table 1–7 Space Requirements

Products and Options	Distribution (MB)	DB Space (MB)
Oracle Common	138.0	0.00
Oracle Documentation Library	239.5	0.00
Oracle Developer Features and Benefits Demos	35.8	0.00
Oracle Developer Tuxedo	2.6	0.00
Total Distribution Space / Total Database Space		
Total Required Disk Space = (Distribution Space + Database Space)		

Issues and Restrictions

This section describes a restriction that applies to installing Oracle WebServer and describes the languages available for Oracle Forms Server and Reports Server.

Oracle WebServer Installation

If you are using the Oracle Forms Server and Reports Server options, do not install Oracle Forms Server and Reports Server and the Oracle Application Server 4.0.8.1 in the *same* \$ORACLE_HOME.

National Language Support (NLS)

Message and resource files for Oracle Forms Server and message files for Oracle Reports Server are available for the following languages:

- American English
- Arabic
- Chinese, Simplified (for mainland China)
- Chinese, Traditional (for Taiwan and Hong Kong)
- Croatian
- Czech (for the Czech Republic)
- Danish
- Dutch (for the Netherlands)
- Finnish

- French, Canadian
- French, European
- German
- Greek
- Hebrew
- Hungarian
- Italian
- Japanese
- Korean
- Norwegian
- Polish
- Portuguese, Brazilian
- Portuguese, Iberian
- Romanian
- Russian
- Swedish
- Slovak (for Slovakia)
- Slovenian
- Spanish, Iberian
- Spanish, Latin American
- Thai
- Turkish

Resource files for Oracle Reports Server are available for the following languages:

- American English
- Chinese, Simplified (for mainland China)
- Chinese, Traditional (for Taiwan and Hong Kong)
- Dutch
- French

- German
- Italian
- Japanese
- Korean
- Spanish, Iberian

Setting Up the Environment

Use this chapter to prepare your environment for installing Oracle Forms Server and Reports Server after you have verified that the system meets the requirements described in Chapter 1, "Features and Requirements".

This chapter describes:

- Performing Pre-Installation Tasks
- Setting Up Environment Variables

Performing Pre-Installation Tasks

Perform the following pre-installation tasks:

- Creating a UNIX Account to Own Oracle Software
- Deciding to Install or Upgrade Database Objects
- Setting Up the tnsnames.ora File

Creating a UNIX Account to Own Oracle Software

Note: You must have root access to your system to complete this step.

The *oracle* account is the UNIX account that owns the Oracle Forms Server and Reports Server software after installation. You must run the Installer from this account.

On AIX, log in as *root* and use the *useradd* operating system administration utility to create an *oracle* account with the following properties:

Login Name	Any name. This document refers to it as the <i>oracle</i> account.
Default GID	Corresponds to the OSDBA group.
Home Directory	Choose a home directory consistent with other user home directories. The home directory of the <i>oracle</i> account does not have to be the same as the ORACLE_HOME directory.
Login Shell	The default shell can be <i>/bin/sh</i> , <i>/bin/csh</i> , or <i>/bin/ksh</i> . The examples in this document assume the Bourne shell (<i>/bin/sh</i>).

Note: Use the *oracle* account only for installing and maintaining Oracle software. Never use it for purposes unrelated to Oracle Software. Do not log in to the database when using the *oracle* (UNIX) account. Do not use *root* as the *oracle* account.

Ensure that the *hostname* and *domainname* UNIX commands return valid values (not empty values) on your system.

Deciding to Install or Upgrade Database Objects

Database objects are tables, views, and sequences that Oracle Forms Server and Reports Server uses to store Oracle Forms Server and Reports Server objects, such as Oracle Forms applications, in the database.

Database objects must exist in each database where you are storing Oracle Forms Server and Reports Server objects. If you have already installed the database objects on your database, do not install them again.

If you are upgrading to Oracle Forms Server and Reports Server Release 6*i*, you may need to upgrade the database objects to Release 8.0.6.

Enter the following to determine if the database objects already exist for the products you want to install in the database on the server.

```
$ sqlplus system/manager
SQL> SELECT table_name
2 FROM dba_tables
3 WHERE table_name LIKE 'table_name';
```

If these database tables already exist, you can find them in the SYSTEM account in the database. If these database tables do not exist, then you must create them with the Installer. Table 2-1 lists the tables.

Table 2-1 Database Tables

Product	Table
Oracle Browser	BROWSER%
Oracle Forms	FRM50%
Oracle Graphics	GO%
Oracle Reports	SRW2%

Setting Up the tnsnames.ora File

If you are installing database objects, you must set up the `tnsnames.ora` file before you run the Installer. The `tnsnames.ora` file contains details of the remote databases available to the Oracle Forms Server and Reports Server products installed in a client-only configuration.

A `tnsnames.ora` file consists of the following:

```
alias =
(DESCRIPTION =
  (ADDRESS =
```

```

        (PROTOCOL = tcp)
        (HOST = hostname)
        (PORT = service_number)
    )
    (CONNECT_DATA =
        (SID = ORACLE_SID)
    )
)

```

If you have Oracle Net8 Assistant, you can use it to update the file. Otherwise, you need to use a text editor to update the file with the information shown in Table 2-2.

Table 2-2 *tnsnames.ora* File Values

Variable	Replace with:
<i>alias</i>	The aliased name of the service being described. This is the name you will use to connect to the database.
<i>hostname</i>	The name of the remote host (server) where the database resides.
<i>service_number</i>	The port number on which the Oracle Net8 listener process listens for data packets on the remote host where the database resides. This is typically defined in the <i>/etc/services</i> file.
<i>ORACLE_SID</i>	The value of the system identifier (sid). This is the name of the instance on the host name (defined above) to which you want to connect.

Oracle products will look for the *tnsnames.ora* file in the following order:

1. The *.tnsnames.ora* file in the user's home directory. (Note the dot before the file name.)
2. *\$TNS_ADMIN/tnsnames.ora*
3. */var/opt/oracle/tnsnames.ora* for AIX
4. *\$ORACLE_HOME/network/admin/tnsnames.ora*

Make sure you put the *tnsnames.ora* file in one of these locations; otherwise, you cannot connect to the database through Net8.

To place the *tnsnames.ora* file in a location other than the default locations (*\$ORACLE_HOME/network/admin* or */var/opt/oracle*), set the *TNS_ADMIN* environment variable to the directory where *tnsnames.ora* is located. For example, if *tnsnames.ora* resides in the */tns* directory, set *TNS_ADMIN* to */tns*.

Setting Up Environment Variables

Oracle Corporation recommends that you set up the environment variables in the startup file of the user who will own the Oracle Forms Server and Reports Server installation. Log into the `oracle` account and set up the environment variables according to the instructions in this section. The startup file, normally located in your UNIX login home directory, will vary depending upon the shell used. Typically, `.profile` is used for the Bourne and Korn shells, and `.cshrc` is used for the C shell.

Syntax of Environment Variables

The syntax for setting an environment variable for the Bourne or Korn shell is:

```
$ set variable_name=value; export variable_name
```

The syntax for setting an environment variable for the C shell is:

```
% setenv variable_name value
```

Setting Up the DISPLAY Variable

Set to the machine name or IP address, X server, and screen being used by your workstation to connect to the system where the software will be installed. Do not use the machine name or IP address of the system where the software is being installed. Use the machine name or IP of your own workstation. If you are not sure what the X server and screen should be set to, use 0 (zero) for both. If you get an Xlib error similar to “Failed to connect to server” or “Connection refused by server” when starting the Installer, run one of the following commands:

For the Bourne or Korn shells:

```
$ DISPLAY=machine name:0.0
$ export DISPLAY
$ xhost +
```

For the C shell:

```
% setenv DISPLAY machinename:0.0
% xhost +
```

Note: Oracle does not support PC Xserver emulators. If you are having a problem with an emulator on a PC, try to duplicate the problem on your server's console.

For more information, see "Setting Up the DISPLAY Environment Variable" on page 4-12.

Setting Up the LIBPATH Variable

LIBPATH should be set to include directories where shared libraries are located. This variable should include `$ORACLE_HOME/lib`. See "Setting Up the LIBPATH Variable" on page 4-10.

Setting Up the MALLOCTYPE Variable

Set MALLOCTYPE to 3.1.

Setting Up the ORACLE_AUTOREG Variable

ORACLE_AUTOREG points to the location of your toolkit automation registry file, which is named `autoprefs.oar`.

For the Bourne or Korn shell, enter:

```
$ set ORACLE_AUTOREG=$ORACLE_HOME/guicommon6/tk60/admin; export ORACLE_AUTOREG
```

For the C shell, enter:

```
% setenv ORACLE_AUTOREG $ORACLE_HOME/guicommon6/tk60/admin
```

Setting Up the ORACLE_BASE Variable

ORACLE_BASE is required for OFA-compliant installations. This variable defines the base of the directory structure for your Oracle installation. The *oracle* operating system user must have read, write, and execute privileges on this directory.

If ORACLE_BASE is undefined, the Oracle Installer derives the value of ORACLE_BASE from the mount point you provide: `mount_point/app/oracle`. If you define it before starting the Installer session, the Installer takes the value of ORACLE_BASE from the environment.

Setting Up the ORACLE_HOME Variable

ORACLE_HOME should be set to the directory where the Oracle software will be installed. If performing a client-only installation, this directory should not contain any Oracle Database Server software.

Setting Up the ORACLE_TERM Variable

You can run the Installer in either Motif or character mode. If you want to run the Installer in character mode, set the ORACLE_TERM environment variable to the correct terminal type before installing Oracle Forms Server and Reports Server.

Following are examples of using the Bourne, Korn, and C shells for a vt220 terminal type.

For the Bourne or Korn shell, enter:

```
$ set ORACLE_TERM=vt220; export ORACLE_TERM
```

For the C shell, enter:

```
% setenv ORACLE_TERM vt220
```

If ORACLE_TERM is not set, the Installer uses the value of the TERM environment variable and searches for an equivalent ORACLE_TERM resource file.

Table 2-3 lists common ORACLE_TERM settings:

Table 2-3 Supported Terminals for the Oracle Installer

To Run:	Set ORACLE_TERM to:
ANSI terminal for SCO	ansi
AT386 console	386
AT386 xterm	386x
UnixWare Terminal	386u
Intel xterm	386s
Data General 200	dgd2
Data General 400	dgd4
IBM High Function Terminal and aixterm (monochrome)	hft
IBM High Function Terminal and aixterm (color)	hftc
hpterm terminal emulator and HP 700/9x terminal	hpterm
IBM 3151 terminal	3151 (for IBM)
NCD X Terminal with vt220 style keyboard	ncd220
Sun cmdtool/shelltool using a type 4 keyboard	sun
Sun cmdtool/shelltool using a type 5 keyboard	sun5

Table 2–3 Supported Terminals for the Oracle Installer

To Run:	Set ORACLE_TERM to:
vt100 terminal	vt100
vt220 terminal	vt220
Wyse 50 or 60 terminal	wy50
Wyse 150 terminal	wy150
Sun xterm using a type 4 keyboard	xsun
Sun xterm using a type 5 keyboard	xsun5

Setting Up the TWO_TASK Variable

When installing database objects, set the TWO_TASK environment variable to the correct alias for the database where you want to create the database objects.

Removing the ORA_NLS33 Variable

For the Installer to function properly, the ORA_NLS33 environment variable, used in earlier releases, *cannot* be set. Check to see if the variable is set by entering:

```
$ echo $ORA_NLS33
```

If the variable is set to any value, remove it.

For the Bourne or Korn shell, enter:

```
$ unset ORA_NLS33
```

For the C shell, enter:

```
% unsetenv ORA_NLS33
```

Installation Tasks

This chapter describes the installation of Oracle Forms Server and Reports Server. Before beginning this chapter, complete the tasks described in Chapter 2, "Setting Up the Environment".

This chapter describes the following topics:

- Mounting the Product Installation CD-ROM
- Installing Oracle Forms Server
- Using Oracle Forms Server
- Setting Up Oracle Reports Server
- Using Oracle Reports Server
- Upgrading the Software
- Creating or Upgrading Database Objects

Mounting the Product Installation CD-ROM

To install Oracle Forms Server and Reports Server, use the version of the Installer that is supplied on the Oracle Forms Server and Reports Server CD-ROM.

Note: In the following instructions, the CD-ROM mount point is referred to as `/cdrom`. If your mount point is different, substitute the correct mount point name for all references to `/cdrom`.

Perform the following steps to mount your CD-ROM:

1. Log in as `root` by entering:

```
$ su root
passwd: password
#
```

2. Create the mount point directory for mounting the CD-ROM by entering:

```
# mkdir /cdrom
```

3. Mount the CD-ROM to the mount point by entering:

```
# mount -o -or -v -cdrfs device_name /cdrom
```

Note: You must have `root` privileges to mount or unmount the CD-ROM. Be sure to unmount the CD-ROM before removing the CD-ROM from the drive using the `umount` command.

4. Exit the `root` account by entering:

```
# exit
$
```

Installing Oracle Forms Server

The Oracle Installer installs Oracle executables (programs or software) on the system's hard disk. Certain Oracle products also require database objects which are stored in the database itself. With the RDBMS product, for example, the database objects include those necessary to create a database, such as the system tables and views.

This section describes performing an installation. To upgrade existing software, see "Upgrading the Software" on page 3-19. To create or upgrade database objects, see Creating or Upgrading Database Objects on page 3-20.

Starting the Installer

After you mount the product installation CD-ROM, the `Install Type` dialog box appears.

WARNING: Do not run the Installer as the `root` user.

Perform the following steps to begin the installation:

1. Click `OK`.
The `preamble.txt` dialog box appears.
2. Click `OK`.
The `version 6i` dialog box appears.
3. Click `OK`.
The `Install Type` dialog box appears.
4. Select one of the following:
 - **Default Install**
Select this option if the Installer default values are appropriate for your installation. If, after selecting `Default Install`, you decide the default options are not appropriate for your installation, you can click the `Back` button and return to this dialog box.
If you select this option, click `OK` and go to "Selecting Installation Activities and Options".
 - **Custom Install**
If you select this option, click `OK` and go to "Customizing Your Installation".

Customizing Your Installation

Perform the following steps to customize your installation:

1. Define the installation source.

Specify whether you are installing from a CD-ROM or from a staging area. You can only choose to install from a staging area during a custom installation.

When installing directly from the CD-ROM, you load and install the Oracle distribution in one session. Select this option if you are performing a single installation or if you have insufficient disk space to support a staging area.

If you install from a staging area, you can load and install the distribution in distinct phases. You must choose between temporary and permanent staging areas.

If you choose a temporary staging area, you load the software into a staging area, and the Installer converts the contents into the installed distribution during the Installer session.

A permanent staging area is neither removed nor converted during installation. Therefore, you can use it to perform multiple installations.

Installing from a permanent staging area requires approximately twice the disk space of installing from a temporary staging area or distribution medium. See Chapter 1, "Features and Requirements" for space requirements.

Attention: Do not attempt to add files to an existing staging area. If it is necessary to recreate a staging area, then you must delete all existing files before using the Installer to create the new one. If you install a software patch from a staging area, you must create a staging area for just the patch release.

2. Relink the executables.

Relinking regenerates a program from its component parts. The Installer automatically relinks products that require relinking.

Specify relinking if you:

- install a new Oracle protocol adapter
- link Oracle products together
- install user exits
- install patches or bug fixes

3. Use the root installation script file.

If an earlier `root.sh` file exists, the Installer asks whether to append root-related activities to that file or save the old file as `root.sh0` and overwrite `root.sh`.

Unless you want to run old `root.sh` activities with the present installation, rename the old files rather than appending the new ones.

4. Use National Language Support (NLS).

To use a language other than American English, select either `All Languages` or select a language from the displayed list. (Installer prompts and messages are always displayed in American English.)

5. Click `OK`.

Selecting Installation Activities and Options

After you choose the `Default Install` option, or after you choose the `Custom Install` option and complete the "Customizing Your Installation" section, the Installer displays the `preamble.txt` and `README` files included with this release.

Perform the following steps to select installation activities and options:

1. Read these files for additional product information; then click `OK`.

The `Installation Activity Choice` dialog box appears.

2. Select one of the following:

■ `Install, Upgrade, or De-Install Software`

Select this option to install or upgrade Oracle Forms Server and Reports Server software. When you select this option, you have the choice to create or upgrade database objects during this session.

■ `Create/Upgrade Database Objects`

This option creates database objects in an existing database without installing any new products.

■ `Perform Administrative Tasks`

This option relinks product executables in an existing Oracle Forms Server and Reports Server installation.

3. Click `OK`.

The `Installation Options` dialog box appears.

4. Select one of the following:

- **Install New Product - Create DB Objects**
Select this option for a new installation of a product. This option creates a new \$ORACLE_HOME.
 - **Install New Product - Do Not Create DB Objects**
Select this option if you have an existing Oracle database or plan to create database objects later.
 - **Add/Upgrade Software**
Select this option to install or upgrade software in an existing \$ORACLE_HOME.
 - **Build Oracle8 Staging Area**
Select this option to create a staging area. For example, if you will be performing more than one installation of the product.

A staging area allows you to load your software into a designated directory, independent of the actual installation. You can complete the installation at a later time.
 - **Install Documentation Only**
Select this option to install online documentation. You cannot install software when you select this option.
 - **De-Install Software**
Select this option to de-install old products before upgrading products using the existing \$ORACLE_HOME .
 - **Migrate from ORACLE7 to ORACLE8**
Select this option to migrate from Oracle7 to Oracle8.
5. Click OK.

Confirming Default Settings

After you complete the "Selecting Installation Activities and Options" section, the `Environment Variables` dialog box appears.

You set up the environment variables in Chapter 2, "Setting Up the Environment". Perform the following steps to confirm the values of the environment variables:

1. Confirm the path name for the following environment variables:

- ORACLE_BASE

If the value shown is incorrect, enter the ORACLE_BASE for your Oracle product directory structure. This directory will contain the Oracle Forms Server and Reports Server software and associated administration files. If you set ORACLE_BASE before starting the installer, this field defaults to the value you chose.

- ORACLE_HOME

The Installer prompts you to complete the path name of the ORACLE_HOME directory. If you set ORACLE_HOME before installation, its value is used. Otherwise, the value shown is the OFA-compliant value computed by the Installer. The OFA-compliant path is `$ORACLE_BASE/product/release_number`. Enter the release number of the distribution (for example, 6.0).

- ORACLE_SID

If the value shown is incorrect, enter the value of the server identification.

Note: For a list of environment variables used by the Installer, see "Setting Up Environment Variables" on page 2-5.

6. Click OK.

The Installer writes installation log information to the following content-specific files in the `$ORACLE_HOME/orainst` directory:

- `install.log`
- `sql.log`
- `make.log`
- `os.log`

If log files already exist in the default location, the Installer renames the existing files. Storing log files from multiple installations in the same files hinders any subsequent debugging. You can change the values displayed in the `Defaults` file by clicking the Back button.

Setting Up the Software Asset Manager

After you complete the "Confirming Default Settings" section, the `Software Asset Manager` dialog box appears.

Perform the following steps to set up the Software Asset Manager:

1. For each product you will install:
 - a. Scroll to the product in the `Products available` box.
 - b. Press the space bar to highlight the product.
 - c. Click the `Install` button to move the product to `Products installed` box.

Note: If you chose the `Install Documentation Only` option of the `Installation Options` dialog box, select the products corresponding to the documentation you are installing. Only the documentation is installed; the products themselves *are not* installed.

The Software Asset Manager tracks the size of the distribution you selected and the space available in the destination directory (`ORACLE_HOME`).

2. Click the `Options` button if you want to bring up a dialog window that allows you to choose the dialog windows you will see during installation and whether you want to log the installer's actions.

Note: Because the `Log Installer Action` of the `Options` button generates a lot of data, do not select this option unless you are requested to do so by an Oracle Support Services analyst.

3. Press `[Return]`.

Selecting a Component

After you complete the "Setting Up the Software Asset Manager" section, the `Component Selection` dialog box appears.

From the following list of components, tab to select the first component and use the space bar to deselect the other components:

- Forms Server for Web deployment *or* Reports Multitier Server for Web deployment
Select this option. This option applies to Oracle Forms Server and Reports Server.
- Motif Bitmapped Interface
Deselect this option. This options applies to the Oracle Forms Developer and Reports Developer.
- Designer and Generator Executables *or* Reports Designer and Generator Executables
Deselect this option. This options applies to the Oracle Forms Developer and Reports Developer.
- Character Mode Interface
Deselect this option. This options applies to the Oracle Forms Developer and Reports Developer.

Selecting a Machine Configuration

After you complete the "Selecting a Component" section, the `Forms Server Installation` dialog box appears.

Select one of the following:

- single machine configuration
This option indicates you are installing Oracle Forms Server on only one machine.
If you select this option, click `OK` and go to "Setting Up a Single Machine Configuration".
- part of a multiple machine configuration
This option indicates you are installing Oracle Forms Server on more than one machine. This option provides added scalability.
If you select this option, click `OK` and go to "Setting Up a Multiple Machine Configuration".

Setting Up a Single Machine Configuration

If you selected single machine configuration in the "Selecting a Machine Configuration" section, the Forms Server: Web listener dialog box appears.

Perform the following steps to set up a single machine configuration:

1. Select one of the following:

- use Oracle WebDB listener

Select this option if you want Oracle WebDB listener to be installed and configured for you. Oracle WebDB is a light-weight listener provided with Oracle Forms Server that supports Common Gateway Interface (CGI).

- use another Web listener

Select this option to use another Web listener that supports CGI or if you are using Oracle Application Server. If you choose this option, after the installation is complete instructions will tell you how to configure virtual paths for your listener.

2. Click OK.

The WebDB Listener dialog box appears.

1. Enter the following:

- The host name that will be used by Oracle Forms Server
- The listener port that will be used by Oracle Forms Server

2. Click OK.

The Process Startup dialog box appears.

3. Click one of the following:

- Yes

Clicking Yes will automatically start Oracle Forms Server at the end of the install.

- No

Clicking No will not start Oracle Forms Server at the end of the install.

The Forms Server parameters dialog box appears.

4. Enter the number of the TCP/IP port on which Oracle Forms Server will listen for Form execution requests. Change the displayed port number if it is already being used by another program.
5. Click **OK**.

The `Forms Server parameters` dialog box appears. (This dialog box has the same name as the previous dialog box.)
6. Select one of the following:
 - **Sockets**

Select this option to use socket protocols for communication between the Oracle Forms Server runtime engine and the Oracle Forms Server Java applet (which runs in your Web browser).
 - **HTTP**

Select this option if communication needs to pass through a firewall. For example, if your machine is inside a firewall, but your Oracle Forms Server applications need to be available to users outside the firewall.
 - **HTTPS**

Select this option if communication needs to pass through a firewall and use a Secure Sockets Layer encryption.
7. Click **OK**.
8. Go to the "Using Oracle Forms Server" section.

Setting Up a Multiple Machine Configuration

If you selected part of a multiple machine configuration in the "Selecting a Machine Configuration" section, the `Forms Server: Multiple Machine Confirmation` dialog box appears.

Select one of the following to set up a multiple machine configuration:

- **Primary node**

If you select this option, click **OK** and go to "Setting Up for a Primary Node".
- **Secondary node**

If you select this option, click **OK** and go to "Setting Up for a Secondary Node".

Setting Up for a Primary Node

If you selected `Primary` node in the "Setting Up a Multiple Machine Configuration" section, the `Forms Server: Primary Node` dialog box appears.

Perform the following steps to set up a primary node:

1. Select one of the following:
 - On the secondary node and this primary node
 - Only on the secondary nodes

2. Click `OK`.

The `Forms Server: Web listener` dialog box appears.

3. Select one of the following:

- use Oracle WebDB listener

Select this option if you want Oracle WebDB listener to be installed and configured for you. Oracle WebDB is a light-weight listener provided with Oracle Forms Server that supports Common Gateway Interface (CGI).

- use another Web listener

Select this option to use another Web listener that supports CGI or if you are using Oracle Application Server. If you choose this option, after the installation is complete instructions will tell you how to configure virtual paths for your listener.

4. Click `OK`.

The `WebDB Listener` dialog box appears.

5. Enter the following:

- The host name that will be used by Oracle Forms Server
- The listener port that will be used by Oracle Forms Server

6. Click `OK`.

The `Process Startup` dialog box appears.

7. Click one of the following:

- Yes

Clicking **Yes** will automatically start Oracle Forms Server at the end of the install.

- **No**

Clicking **No** will not start Oracle Forms Server at the end of the install.

The **Load Balancer Server parameters** dialog box appears.

8. Enter the following:

- **Data Port**

This value is the TCP/IP port where the load balancing clients will send load data.

- **Request Port**

This value is the TCP/IP port where Oracle Forms Server CGI and Oracle Forms Server Cartridge will request load data.

9. Click **OK**.

The **Forms Server parameters: Secondary nodes** dialog box appears.

10. Enter the number of the TCP/IP port on which Oracle Forms Server will listen for Form execution requests. Change the displayed port number if it is already being used by another program.

11. Click **OK**.

12. Go to the "Using Oracle Forms Server" section.

Setting Up for a Secondary Node

If you selected **Secondary node** in the "Setting Up a Multiple Machine Configuration" section, the **Forms Server parameters: Secondary nodes** dialog box appears.

Perform the following steps to set up a secondary node:

1. Select one of the following:

- **Sockets**

Select this option to use socket protocols for communication between the Oracle Forms Server runtime engine and the Oracle Forms Server Java applet (which runs in your Web browser).

- HTTP
Select this option if communication needs to pass through a firewall. For example, if your machine is inside a firewall, but your Oracle Forms Server applications need to be available to users outside the firewall.
 - HTTPS
Select this option if communication needs to pass through a firewall and use a Secure Sockets Layer encryption.
2. Click **OK**.
The `Process Startup` dialog box appears.
 3. Click one of the following:
 - **Yes**
Clicking `Yes` will automatically start Oracle Forms Server at the end of the install.
 - **No**
Clicking `No` will not start Oracle Forms Server at the end of the install.The `Load Balancer Client parameters` dialog box appears.
 4. Enter the following:
 - **Data host**
This value is the name of the host where the load balancing server will run.
 - **Data Port**
This value is the TCP/IP port on the data host where the load balancing server will receive load data for the load balancing clients.
 5. Click **OK**.
The `Forms Server parameters` dialog box appears.
 6. Enter the number of the TCP/IP port on which Oracle Forms Server will listen for Form execution requests. Change the displayed port number if it is already being used by another program.
 7. Click **OK**.
The `Forms Server parameters` dialog box appears. (This dialog box has the same dialog box name as the previous dialog box.)

8. Select one of the following:
 - Sockets
Select this option to use socket protocols for communication between the Oracle Forms Server runtime engine and the Oracle Forms Server Java applet (which runs in your Web browser).
 - HTTP
Select this option if communication needs to pass through a firewall. For example, if your machine is inside a firewall, but your Oracle Forms Server applications need to be available to users outside the firewall.
 - HTTPS
Select this option if communication needs to pass through a firewall and use a Secure Sockets Layer encryption.
9. Click OK.
10. Go to the "Using Oracle Forms Server" section.

Using Oracle Forms Server

You can use scripts to start up and shut down Oracle Forms Server and to test Oracle Forms Server from the Web.

Starting Up and Shutting Down Oracle Forms Server

Oracle Forms Server creates a shell script in the `$ORACLE_HOME/forms60_server` file that you can use to start up and shut down the server.

To start up the server, enter:

```
forms60_server start parameters
```

where:

parameters passes Oracle Forms Server parameters to files

For example, the following script would log all Oracle Forms Server actions in the `server.log` file:

```
forms60_server start log=server.log
```

To shut down the server, enter

```
forms60_server stop
```

Testing Oracle Forms Server from the Web

To test Oracle Forms Server, go to the following URL:

```
http://host_name:port/dev60html/runform.htm
```

where:

host_name is your system host name

port is the port number running your HTTP listener

Setting Up Oracle Reports Server

After you complete the "Selecting a Component" section, the Default display for Reports Server dialog box appears.

Perform the following steps to set up Oracle Reports Server:

1. Enter the name of your XWindow display value as follows:

```
machine_name:server_number:screen_number
```

where

machine_name is the host name of the server

server_number is the number of the X11 server you are using; typically it has a value of zero

screen_number is the number of the X11 screen number you are using; typically it has a value of zero

Oracle Reports Server uses the XWindow display value of the X11 windowing system to set the DISPLAY environment variable. For more information see the product documentation and your operating system documentation.

2. Click OK.

The Reports Server parameters dialog box appears.

3. Enter the following:

- the TNS name used by Oracle Reports Server on the machine on which you are running

This TNS name must be defined as an Oracle Net8 TNS name. The installation process defines this name for you in the Net8 `tnsnames.ora` file.

- the TCP/IP port number used by Oracle Reports Server

Change the displayed port number if it is already being used by another program.

4. Click **OK**.

The `Reports Server: Web listener` dialog box appears.

5. Select one of the following:

- use Oracle WebDB listener

Select this option if you want Oracle WebDB listener to be installed and configured for you. Oracle WebDB is a light-weight listener provided with Oracle Reports Server that supports Common Gateway Interface (CGI).

- use another Web listener

Select this option to use another Web listener that supports CGI or if you are using Oracle Application Server. If you choose this option, after the installation is complete instructions will tell you how to configure virtual paths for your listener.

6. Click **OK**.

The `Process Startup` dialog box appears.

7. Click one of the following:

- **Yes**

Clicking `Yes` will automatically start Oracle Reports Server at the end of the install.

- **No**

Clicking `No` will not start Oracle Reports Server at the end of the install.

The `Oracle` dialog box appears. (Typically, processing takes at least 20 minutes.) Then, the `Reports Security` dialog box appears.

8. Click one of the following:

- Yes
Clicking `Yes` will install the Reports Security feature for WebDB.

- No
Clicking `No` will not install the Reports Security feature for WebDB.

The Configuration instructions for Developer Server dialog box appears.

9. Click `Yes`.

A dialog box appears. The heading of the dialog box indicates where the server was installed.

Using Oracle Reports Server

You can use scripts to start up and shut down Oracle Reports Server and to test Oracle Reports Server from the Web.

Starting Up and Shutting Down Oracle Reports Server

Oracle Reports Server creates a shell script in the `$ORACLE_HOME/reports60_server` file that you can use to start up and shut down the server.

To start up the server, enter:

```
reports60_server start
```

To shut down the server, enter:

```
reports60_server stop
```

Testing Oracle Reports Server from the Web

To test Oracle Reports Server, go to the following URL:

```
http://host_name:port/dev60html/runrep.htm
```

where:

`host_name` is your system host name

`port` is the port number running your HTTP listener

Upgrading the Software

This section describes upgrading from Developer/2000 Release 2.1 to Oracle Forms Server and Reports Server Release 6i. It is assumed that Developer/2000 Release 2.1 is installed in your ORACLE_HOME before you begin upgrading to Oracle Forms Server and Reports Server Release 6i. You must de-install old versions of Developer/2000 Release 2.1 products.

Note: Upgrading Developer/2000 to Oracle Forms Server and Reports Server Release 6i does not require a Database Object upgrade.

Perform the following steps to upgrade the software:

1. Start the Release 2.1 Installer as described in "Starting the Installer" on page 3-3.

Use the Installer provided with Developer/2000 Release 2.1 to de-install the old version of Developer/2000. Use the new Installer to install the new version only.

2. At the Installation Activity Choice dialog box, select the `Install`, `Upgrade`, or `De-Install Software` option.

Select one of the following:

- Select `Default Install` for the default options.

If, after selecting `Default Install`, you decide the default options are not adequate for your installation, select the `Back` button and select `Custom Install`.

- Select `Custom Install` if you do not want to use the default options.

The National Language Support (NLS) dialog box appears when you select `Custom Install`. To use a language other than American English, select either `All Languages` or select a language from the displayed list. (Installer prompts and messages are always displayed in American English.)

3. At the Installation Options dialog box, select the `De-Install Software` option. See Step 4 of "Starting the Installer" on page 3-5.

4. Continue answering the Installer prompts.

5. At the Software Asset Manager dialog box, select the products you want to upgrade, and confirm that you want to delete the old products.

6. After the Developer/2000 Release 2.1 products are deleted, start the new installer and install the Oracle Forms Server and Reports Server Release 6i products as described in the previous sections.

Creating or Upgrading Database Objects

To create or upgrade database objects, perform the following steps:

1. Make sure your environment is correctly set. See Chapter 2, "Setting Up the Environment".
2. Restart the Installer. From the Installation Activity Choice dialog box, choose the Create/Upgrade Database Objects option to create new database objects for Oracle Forms Server and Reports Server or to upgrade database objects from a previous release to release 8i.

Completing the Installation

This chapter describes post-installation and configuration tasks you perform to complete the installation.

The chapter describes the following:

- Verifying Your Installation
- Setting Printer Configuration Files
- Setting Up the Environment
- Setting Up the GUI
- Setting Up Windows Clients
- Enabling Use of Other Languages
- Setting Up the Post-Install Environment

Verifying Your Installation

If you have startup problems, use `DEBUG_SLFIND` to direct error messages to a file you choose. To do this, set `DEBUG_SLFIND` to `stdout`, `stderr`, or another file name.

Rerun the tool. Check for error messages in the file that indicate if a resource file is missing.

Ensure that the permissions for `/dev/audio` and `/dev/audioctl` are set to allow read-write access. To check permissions, enter:

```
$ ls -l /dev/audio*
```

Setting Printer Configuration Files

After running the Oracle Installer, set your printer configuration files to prepare your system for printing by performing the following tasks:

- Locating and Installing PPD and AFM Files for Your Printers
- Setting Up the Default Printers
- Updating the Toolkit Font Mapping File
- Setting Printer Commands (Optional)
- Specifying a Default Printer
- Printing to HP PCL Printers
- Testing Printing Capabilities and Fixing Errors

Locating and Installing PPD and AFM Files for Your Printers

This task provides instructions for choosing an appropriate PostScript Printer Definition (PPD) file for your printer. Oracle Toolkit uses the PPD files to determine which fonts are available on a PostScript printer, since AIX does not allow the Toolkit to obtain this information from the printer directly.

Each PPD file provides paper sizes, available fonts, and default resolution for a printer. If this file lists a PostScript font, a corresponding Adobe Font Metrics (AFM) file must exist in the

`$ORACLE_HOME/guicommon6/tk60/admin/AFM` directory since the file is used by the Toolkit to calculate font metrics.

An AFM file specifies font metric information for Type 1 font programs. Each AFM file lists the following information about one font: font attributes such as style, weight, width, and character set; whether the font is fixed pitch or proportional; and the size of each character.

Oracle provides PPD and AFM files for some common printers and fonts. If you cannot find the appropriate file for your printer, you can obtain PPD and AFM files from your printer vendor or from Adobe Systems. You can also use the `default.ppd` default printer definition file.

1. To find the PPD file for your printer, enter:

```
$ cd $ORACLE_HOME/guicommon6/tk60/admin/PPD
$ ls *.ppd | more
```

This lists all the PPD files that are included with the Oracle distribution.

2. To determine the fonts listed in the PPD file, enter:

```
$ grep Font PPD_filename | more
```

3. To check whether all the necessary fonts are in the

`$ORACLE_HOME/guicommon6/tk60/admin/AFM` directory, enter:

```
$ cd $ORACLE_HOME/guicommon6/tk60/admin/AFM
$ ls | more
```

See your printer documentation to determine the fonts you need for your printer

Changing the Default PPD File

You can also specify a PPD file by creating a `default.ppd` that is a copy of another PPD file to better describe the local default printer.

For example, enter:

```
$ mv default.ppd default.ppd.old
$ cp another_PPD_file default.ppd
```

When an invalid PPD file is specified for the current printer, for example when an incorrect file is specified or no file is specified, the Oracle Toolkit uses `default.ppd`.

Modifying the PPD Files

Do not modify the PPD files unless you want to add fonts to the printer and you want these changes reflected in Oracle applications. If you add fonts to your printer, also add entries for these fonts to the printer's PPD file.

The format for a font entry is:

```
*Font font_name: encoding "version" charset
```

where:

<i>font_name</i>	specifies the Adobe font name as specified in PostScript
<i>encoding</i>	specifies the PostScript encoding name
<i>version</i>	specifies the font's version number
<i>charset</i>	specifies the Adobe character set name

Setting Up the Default Printers

To set up default printers for Oracle Forms Server and Reports Server products, update the `$ORACLE_HOME/guicommon6/tk60/admin/uiprint.txt` file with entries for each of your printers. Using this file enables you to obtain correct paper sizes and correct printer resolution and enables Toolkit application users to set print jobs to use various paper sizes available on the selected printer.

Oracle Toolkit uses the `uiprint.txt` file, located in the `$ORACLE_HOME/guicommon6/tk60/admin` directory, to display the list of printers available on your system. Each printer is defined by a line in the `uiprint.txt` file containing five fields separated by colons.

For each of your printers, enter the following line into the `uiprint.txt` file:

```
printer:printer_driver:Toolkit_driver:printer_descr:printer_descr_file:
```

where:

<i>printer</i>	contains the name of the printer, as used with <code>lpr</code> or <code>lp</code> commands. This parameter also specifies the default printer if both the <code>ORACLE_PRINTER</code> and <code>PRINTER</code> environment variables are not set on your system.
<i>printer_driver</i>	specifies the type of print driver used for the printer. The Toolkit supports the PostScript, ASCII, and PCL selections for the printer driver.

<i>Toolkit_driver</i>	specifies the version of the printer driver that should be used by the Toolkit. The Toolkit supports 1 for ASCII or Level 1 PostScript, 2 for Level 2 PostScript printers, and 5 for HP PCL printers.
<i>printer_descr</i>	contains a free-format description of the printer. It can show, for example, the location and speed of the printer.
<i>printer_descr_file</i>	specifies the printer definition file to be used with the printer. The format of this file is dependent on the driver specified for the printer. The Toolkit supports the Adobe PPD and the HP HPD file formats. See "Locating and Installing PPD and AFM Files for Your Printers" on page 4-2 for complete instructions.

Attention: The first non-commented line (line without a number in column one) must define a valid printer. The `Printing` services and `Saving output to file` options may not work properly unless the `uiprint.txt` file is configured properly.

Updating the Toolkit Font Mapping File

The `uifont.ali` file contains alias mappings from one Toolkit font to another, and is used to map unavailable fonts to substitutes. For example, the Arial font is found only on Microsoft Windows and is mapped to Helvetica on AIX.

The `uifont.ali` file resides in the `$ORACLE_HOME/guicommon6/tk60/admin` directory. If you want to use another directory, see the following section.

See Also: Comments in the `uifont.ali` file. This file is updated for each new release.

Setting TK60_FONTALIAS

Oracle Toolkit first looks for `uifont.ali` in the location specified by `TK60_FONTALIAS`. If `TK60_FONTALIAS` is not set, or if `uifont.ali` is not in the specified location, the Toolkit looks for `uifont.ali` in the `$ORACLE_HOME/guicommon6/tk60/admin` directory.

Modifying the uifont.ali File

If you want to modify the `uifont.ali` file, make sure the general structure of each line is as follows:

new font=existing font

where:

new_font is a font you want to add
existing_font is a font that already exists on your printer

The format of each line in `uifont.ali` is as follows:

```
face.size.style.weight.width.charset = face.size.style.weight.width.charset
```

where the values are separated by periods (.) and:

<i>face</i>	specifies the name of the font the Toolkit uses for printing. Common fonts include Palatino, Helvetica, Courier, and Times.
<i>size</i>	specifies the size of the font in points.
<i>style</i>	specifies the style option: plain, italic, oblique, underline, outline, shadow, inverted, or overstrike. If there is more than one style, the list must be enclosed in parentheses, for example, (plain italic).
<i>weight</i>	specifies the weight options: ultralight, extralight, light, demilight, medium, demibold, bold, extrabold, or ultrabold.
<i>width</i>	specifies the width option: ultradense, extradense, dense, semidense, normal, semiexpand, expand, extraexpand, or ultraexpand.
<i>charset</i>	specifies the name of a character set. This option is not supported in the current release.

The following rules apply:

- Any Arial that has both italic and overstrike styles maps to a 12-point font. Each font line may be continued to the next line by using the backslash (\).
- Separate each element from the next by a period (.).
- Combine styles using the plus sign (+) to delimit parts of a style. For example:

```
Helvetica.12.Italic+Overstrike = Helvetica.12.Italic.Bold
```

maps any Helvetica 12-point font that has both italic and overstrike styles to a 12-point, bold, italic Helvetica font.

- Use quotes to enclose element names that contain a space. For example:

```
"Avant Garde".12.Italic+Overstrike = Helvetica.12.Italic.Bold
```

maps any Avant Garde font that has both italic and overstrike styles to a 12-point, bold, italic Helvetica font.

- Use a period as a place holder if you choose not to define an element. Trailing periods may be truncated. For example, in the following statement the two sides are equivalent even though the size is not specified on the left side:

```
Arial..Italic+Overstrike = Helvetica.12.Italic.Bold
```

Setting Printer Commands (Optional)

You can set `TK6_PRINT` to store the print command and `TK6_PRINT_STATUS` to store the printer status command. You must supply a *print_string*, like:

```
lp -s -d'%n' -n%c
lpstat -p '%n'
```

which allows you to embed the following strings:

`%n` is the name of the printer
`%c` is the number of copies (printed as a decimal number)

If you do not set `TK6_PRINT`, the value defaults to:

```
lp -s -d'%n' -n%c
```

If you do not set `TK6_PRINT_STATUS`, the value defaults to:

```
/usr/bin/lpstat -p '%n'
```

To set `TK6_PRINT` and `TK6_PRINT_STATUS` for the Bourne shell, enter:

```
$ set TK6_PRINT="print_string"; export TK6_PRINT
$ set TK6_PRINT_STATUS="print_string"; export TK6_PRINT_STATUS
```

To set `TK6_PRINT` and `TK6_PRINT_STATUS` for the C shell, enter:

```
% setenv TK6_PRINT "print_string"
% setenv TK6_PRINT_STATUS "print_string"
```

Specifying a Default Printer

Oracle Forms Server and Reports Server determines your default printer by searching for values of the following variables in the following order:

1. `TK6_PRINTER`
2. `ORACLE_PRINTER`
3. `PRINTER`

4. the first entry in your `uiprint.txt` file

To specify a default printer, set `TK6_PRINTER` to the applicable printer.

Note: The default printer must be specified in one of the ways listed above; otherwise, the Printing services and Saving output to file options may be disabled.

Printing to HP PCL Printers

With Oracle Forms Server and Reports Server, printing to PostScript, ASCII, and HP PCL printers is fully supported. Similar to PPD files for PostScript printers, HPD or HP glue files provide information on what fonts are available for an HP PCL printer. Many HP glue files are provided in `$ORACLE_HOME/guicommon6/tk60/admin/HPD`. The HP AutoFont Support Installer (available on PCs) generates these files automatically. Documentation for their file format is available in the *HP PCL5 Developer's Guide*.

As with PostScript's AFM files, every HP font must have an associated TFM file; TFM files should be provided by the font vendor, and new fonts should be added to the glue file for your printer when installed. The TFM files are located in `$ORACLE_HOME/guicommon6/tk60/admin/TFM`.

For a new font, specify these fields in the glue file:

```
FONT={fontname}  
/tfm={tfm-filename}
```

where

<i>fontname</i>	is a descriptive name for the font
<i>tfm-filename</i>	is the base file name for the TFM file

You can also specify these fields in the glue file, after the `FONT=` field, if the TFM file isn't specific enough, by entering:

```
/ptsize={size {size ...}}
```

If the font is a bitmapped font, but is listed in the TFM file as a scalable font, you can limit the point sizes used by listing all acceptable size by entering:

```
/symset={symset {symset ...}}
```

This field limits the supported symbol sets to those listed on the field. See the HP PCL documentation for a list of recognized symbol sets.

Oracle Forms Server and Reports Server also supports the `defaultpaper` field for printing to PCL format. This field can be used to set the `defaultpaper` to be used by the Toolkit. The format of this field is:

```
<defaultpaper={papername}
```

For example, `<defaultpaper=A4` will set the default paper to A4.

The *papername* is case insensitive. If the user specifies this field in more than one place, then the final `defaultpaper` field's *papername* will be used as the `defaultpaper`. If the user has specified a `defaultpaper` and the *papername* is not supported by the printer, the `defaultpaper` setting will be ignored and the `defaultpaper` will be set to LETTER. If the *papername* specified in this field is incorrect, then the `defaultpaper` will be set to LETTER.

Testing Printing Capabilities and Fixing Errors

To select a printer and test it, perform the following tasks:

1. Test the printing capability.

Start up any Oracle Forms Server and Reports Server tool and print to the default printer.

2. Select a printer from the Choose Printer dialog.

The Choose Printer dialog lists printers available on your system, giving the type and a full description of each. Oracle Toolkit obtains this list from the `$ORACLE_HOME/guicommon6/tk60/admin/uiprint.txt` file. You can choose a printer from the list of available printers.

You can also specify a new printer and its type. To choose a new printer, enter its name, or choose a corresponding type from the Choose Printer dialog containing the drivers supported by Oracle Toolkit. The Toolkit checks to see if the name corresponds to a valid printer. If the printer is valid, Oracle Toolkit allows you to associate a PPD file with the printer through a file dialog. If you do not want to associate a PPD file, the Toolkit uses `default.ppd`.

Setting Up the Environment

This section describes how to set up the generic user environment for Oracle Forms Server and Reports Server. The environment variable below is required to run

Oracle Forms Server and Reports Server, regardless of the chosen user interface (character mode, Motif, or Web).

Setting up the Oracle Forms Server and Reports Server Environment requires the following task:

Setting Up the LIBPATH Variable

To run the Oracle Forms Server and Reports Server products, you must set up the LIBPATH environment variable. Oracle Forms Server and Reports Server products use dynamic, or shared, libraries. Therefore, you must set up LIBPATH so that the dynamic linker can find the libraries. To determine if your LIBPATH is set, enter:

```
% echo $LIBPATH
```

Set the LIBPATH environment variable for the first time to:

```
/usr/lpp/X11/lib/R5 :$ORACLE_HOME/lib
```

You can reset the LIBPATH.

To reset it for the Bourne shell, enter:

```
$ set LIBPATH=/usr/lpp/X11/lib/R5 :$ORACLE_HOME/lib:${LIBPATH}
$ export LIBPATH
```

To reset it for the C shell, enter:

```
% setenv LIBPATH \
/usr/lpp/X11/lib/R5 :$ORACLE_HOME/lib:${LIBPATH}
```

Note: If you set LIBPATH in a previous Developer/2000 installation, and you are now setting it for the current installation, be sure to remove the old \$ORACLE_HOME/lib entry from the path.

Setting Up the GUI

This section explains how to prepare the GUI environment for Oracle Forms Server and Reports Server. This section describes:

- Getting Help with X and OSF/Motif
- Relocating the Key Definition File
- Setting Up the X Window System and Motif Environments

In this section, it is assumed you have a working knowledge of X Window and OSF/Motif setup and administration, including an understanding of the client/server architecture of the X Window System and Motif.

Getting Help with X and OSF/Motif

Oracle customers can contact Oracle Support Services regarding any problems with Oracle products. However, Oracle Corporation does not offer technical support for the X Window System or Motif provided by your operating system vendor. Refer your questions about the X Window System or Motif to your on-site expert, or to your operating system vendor or Motif vendor.

Note: Oracle does not support PC Xserver emulators. If you are having a problem with an emulator on a PC, try to duplicate the problem on your server's console.

Relocating the Key Definition File

When installation is complete, the `XKeysymDB X11` key symbol file is in the `$ORACLE_HOME/guicommon6/tk60/admin` directory. You must move the `XKeysymDB` file to the `/usr/lib/X11` directory on every machine on which Oracle Forms Server and Reports Server is running. To move the file, perform the following steps:

1. As the `root` user, change to the `$ORACLE_HOME/guicommon6/tk60/admin` directory by entering:

```
# cd $ORACLE_HOME/guicommon6/tk60/admin
```

If the directory `/usr/lib/X11` does not exist, create it by entering:

```
# mkdir /usr/lib/X11
```

2. Set up the `XKeysymDB` file.

If you have a version of `XKeysymDB` in `/usr/lib/X11`, decide whether to use the new file as is or merge it with the old file. If you decide to use the new file, you may want to rename the old file to preserve it.

- To preserve the original file, enter:

```
# cd /usr/lib/X11
# mv XKeysymDB XKeysymDB.OLD
# cd $ORACLE_HOME/guicommon6/tk60/admin
```

- To merge the new file with the existing file, add the old material you want to keep into the new file using your system editor.
- To install the new file, enter:

```
# cp XKeysymDB /usr/lib/X11
```

Note: The application code reads the `XKeysymDB` file at startup time. If the application code cannot find the file, or if it does not contain all of the relevant OSF `keysym` values, some function keys may not function properly. In this case you may receive warning messages similar to the following:

```
Warning: translation table syntax error: Unknown
keysym
name: osfUp
Warning: ...found while parsing ` <Key>osfUp:
ManagerGadgetTraverseUp ()'
```

3. Exit the root user account.

Oracle Motif applications running in an X11R4 environment do not have the capability of locating National Language Support (NLS) data files. Except for this limitation, Oracle Motif applications running in an X11R4 environment have the same capability as applications running in an X11R5 environment.

Setting Up the X Window System and Motif Environments

This section describes the following topics:

- Setting Up the DISPLAY Environment Variable
- Controlling Display Access with the xhost Utility

Setting Up the DISPLAY Environment Variable

If you run Oracle Forms Server and Reports Server on a machine that is not your local workstation, set the DISPLAY environment variable on the remote machine to the name of your X Windows screen. This tells the application which machine, server, and screen to display its windows.

The format for the name of the X Windows screen is:

```
machine_name : server.screen
```

where:

<i>machine_name</i>	specifies the name of the machine you will be using
<i>server</i>	specifies the sequential code number for the server
<i>screen</i>	specifies the sequential code number for the screen (optional)

For example, assume your workstation is named `bambi`, and you want to run Motif Forms from a larger machine named `godzilla`.

For the Bourne and Korn shell, enter the following from `godzilla`:

```
$ set DISPLAY=bambi:0.0; export DISPLAY
```

For the C shell, enter the following from `godzilla`:

```
% setenv DISPLAY bambi:0.0
```

The first zero in this example refers to the first server running on `bambi`. The second zero refers to the first screen managed by that server. Typically, there is just one server and one screen per workstation or X terminal. In such cases you can omit the screen specification.

Controlling Display Access with the `xhost` Utility

Most X servers prevent users on other machines from displaying windows on your screen, unless you explicitly give them permission. This is done by an access file `/etc/Xn.hosts`, where `n` is the number of the display. The `xhost` utility allows you to interactively grant or deny systems access to the server.

To grant access to a remote system, run `xhost` and specify the name with an optional leading plus sign (+). To deny access, use a leading minus sign (-). A plus sign without a host name gives access to all available systems, even if they are not listed in `/etc/Xn.hosts`. A minus sign without a host name restricts access to systems listed in the `/etc/Xn.hosts` file.

Running `xhost` without arguments prints the list of hosts in the `/etc/Xn.hosts` file, and tells you whether they have current access to your display.

For example, assume your workstation is named `bambi` and you want to grant access to `godzilla`, a remote machine. Enter the following on `bambi`:

```
$ xhost +godzilla
```

To allow unlimited, unspecified access, enter:

```
$ xhost +
```

Attention: When you grant another machine access, all users of that machine have access to your machine's X server. For example, if you grant machine `godzilla` access to `bambi`, all users of `godzilla` have access to the `bambi` X server.

Setting Up Windows Clients

You can set up the Oracle Forms, Oracle Reports, and Oracle Graphics servers to deploy to either Oracle Jinitiator or an Applet Viewer. This section describes both of these options.

Setting Up Oracle Jinitiator

You can use the Oracle Jinitiator plugin with either the Netscape Navigator or Microsoft Internet Explorer browser. If you are running one of these browsers and use Oracle Forms CGI to execute an Oracle Form, the Oracle Forms Server automatically downloads and installs the Jinitiator plugin in your browser.

Setting Up an Applet Viewer

Included with Oracle Forms Server and Reports Server Release 6i is an applet viewer for Windows. This applet viewer for Windows can be installed on a Windows platform and used as a client to the Oracle Forms Server and Reports Server.

See Also: The Release Notes have instructions on installing and running the applet viewer on Windows. Release Notes are located in `ORACLE_HOME/guicommon6/doc`.

See *Oracle Forms Developer and Reports Developer: Guidelines for Building Applications* for information about configuring Oracle Forms, Oracle Reports, and Oracle Graphics for the Web. This documentation is in the `$ORACLE_HOME/doc60/admin/manuals/US/guide60/atgtoc.htm` directory.

Enabling Use of Other Languages

This section explains how to set up your environment so that you can run the tools using various languages.

Perform the following tasks to enable Oracle Forms Server and Reports Server to run in languages other than the default language (English):

- Setting Up the NLS_LANG Variable
- Setting Tk2Motif*fontMapCs

Note: Oracle Forms and Oracle Graphics Runtime files may need to be regenerated if they were previously generated with a different NLS_LANG setting.

Setting Up the NLS_LANG Variable

Oracle Forms Server and Reports Server products use the NLS_LANG environment variable to determine which language territory and terminal character set to use. To set NLS_LANG, use the following procedure.

For the Bourne and Korn shell, enter:

```
$ NLS_LANG=language_territory.character_set
$ set export NLS_LANG
```

For the C shell, enter:

```
% setenv NLS_LANG language_territory.character_set
```

where:

language is a supported language

territory is a supported territory

character_set is a character set supported by the user's terminal

Note: If NLS_LANG is not set, the default setting is `us7ascii`.

Table 4–1 lists the values supported by Oracle Forms Server and Reports Server products for NLS_LANG.

Table 4–1 Settings for NLS_LANG

Language Name	language Value	territory Value	character_set Value
American	american	america	us7ascii
Dutch	dutch	“the netherlands”	we8dec
Finnish	finnish	finland	we8dec
French	french	france	we8dec
German	german	germany	we8dec
Italian	italian	italy	we8dec
Japanese	japanese	japan	ja16euc
Korean	korean	korea	ko16ksc5601
Spanish	spanish	spain	we8dec
Simplified Chinese	“simplified chinese”	taiwan	zhs32eus
Traditional Chinese	“traditional chinese”	zhp	zht32euc

Setting Tk2Motif*fontMapCs

This section explains how to add an entry to the `Tk2Motif` file so that the Toolkit can match Oracle character sets with X character sets. The setting is called `Tk2Motif*fontMapCs`. Add the following line to the file to set `Tk2Motif*fontMapCs`:

```
Tk2Motif*fontMapCs: xset=character_set
```

where:

`xset` is the name of an X character set
`character_set` is the name of an Oracle character set

To list all the character sets available on your X Server, enter:

```
$ xlsfonts | awk -F- '{print $14 "-" $15}' | sort -u
```

Setting Up the Post-Install Environment

To define the environment variables for Oracle Forms Server and Reports Server, use the script files that the installer creates. For Oracle Forms, use either the `forms60.csh` or the `forms60.sh` script file. For Oracle Reports, use the `reports60.csh` or the `reports60.sh` script file. You can add lines at the end of the script files to customize them.

Administration

This chapter provides information specific to administering Oracle Forms Server and Reports Server products.

This chapter describes the following topics:

- Administering Oracle Forms
- Administering Oracle Reports
- Administering Oracle Graphics

Administering Oracle Forms

Oracle Forms Executables

Table 5-1 lists the Oracle Forms executable names. The executables are in the `$ORACLE_HOME/bin` directory.

Table 5-1 Oracle Reports Executables

Component	Web Executable Name
Oracle Forms CGI	f60cgi
Oracle Forms Listener	f60webm
Oracle Forms Server	f60srvm
Oracle Forms Web Cartridge	f60webc.so

Deploying Oracle Forms on the Web

See *Oracle Forms Developer and Reports Developer: Guidelines for Building Applications* in `$ORACLE_HOME/doc60/admin/manuals/US/guide60/atgtoc.htm` for information about deploying Oracle Forms on the Web.

Relinking Oracle Forms

To relink Oracle Forms with Oracle Forms Server and Reports Server, enter:

```
$ cd $ORACLE_HOME/forms60/lib
$ make -f ins_forms60w.mk install
```

Documentation for relinking Oracle Forms is included in the `ins_forms60w.mk` file.

Administering Oracle Reports

Oracle Reports Executables

Table 5–2 lists the Oracle Reports executables. The executables are in the `$ORACLE_HOME/bin` subdirectory.

Table 5–2 Oracle Reports Executables

Component	Executable Name
Reports CGI Executable	<code>rwcgi60</code>
Multi-Tier Server	<code>rwmts60</code>
Queue Viewer	<code>rwrqv60</code>
Reports Client	<code>rwcli60</code>
Reports WebCartridge	<code>rwows60.so</code>

Deploying Oracle Reports on the Web

See *Oracle Forms Developer and Reports Developer: Guidelines for Building Applications* in

`$ORACLE_HOME/doc60/admin/manuals/US/guide60/atgtoc.htm` for information about deploying Oracle Reports on the Web.

Relinking Oracle Reports

In Oracle Forms Server and Reports Server Release 6i, Graphics is linked into the Oracle Reports executables automatically. You cannot relink Oracle Reports without Oracle Graphics.

To relink Oracle Reports for the Oracle Forms Server and Reports Server, enter:

```
$ cd $ORACLE_HOME/reports60/lib
$ make -f ins_reports60w.mk install
```

Administering Oracle Graphics

Oracle Graphics Executables

Table 5-3 lists the Oracle Graphics executable. The executable is in the `$ORACLE_HOME/bin` subdirectory.

Table 5-3 Oracle Graphics Executable

Component	Executable Name
Graphics Web Cartridge	<code>g60webc.so</code>
Graphics Web Cartridge Loader	<code>g60ldr.so</code>

Deploying Oracle Graphics on the Web

See *Oracle Forms Developer and Reports Developer: Guidelines for Building Applications* in `$ORACLE_HOME/doc60/admin/manuals/US/guide60/atgtoc.htm` for information about deploying Oracle Graphics on the Web.

Relinking Oracle Graphics

To relink Oracle Graphics for the Oracle Forms Server and Reports Server, enter:

```
$ cd $ORACLE_HOME/graphics60/lib
$ make -f ins_graphics60w.mk install
```

Creating User Exits

User exits are subroutines that contain embedded SQL commands. You can create user exits by modifying the sample source file.

This chapter describes:

- Creating User Exits
- Linking to Your User Exits

Creating User Exits

The `iapxtb.c` and `ue_xtb.c` sample files each declare an `iapxtb[]` user exit array. Following are the files that describe which file is used to define exit tables:

- Oracle Forms uses `$ORACLE_HOME/forms60/lib/ue_xtb.c`.
- Oracle Reports uses `$ORACLE_HOME/reports60/lib/*.c`
- Oracle Graphics uses `$ORACLE_HOME/graphics60/lib/iapxtb.c`.

To create user exits:

1. Add entries to the sample source file for each user exit. Here is a sample source file:

```
/* Define the user exit table */
extern exitr iapxtb[] = { /* Holds exit routine pointers */
"UE_OK",          ue_ok, XITCC,
"UE_ERR",         ue_err, XITCC,
"UE_MB",          ue_mb, XITCC,
"UE_EMP_PLAN",   ue_emp_plan, XITCC,
(char *) 0, 0, 0 /* zero entry marks the end */};
/* end iapxtb */
```

The first item in the entry is the name (inside double quotes) used by the tool to reference the user exit. The second item is the actual name of the user exit routine. Names of user exits cannot be more than 30 alphanumeric characters in length, and must begin with a letter. The last item (XITCC) indicates that the user exit is called using C calling conventions. For other languages, you would use one of the following:

- XITCOB /* COBOL */
 - XITFOR /* FORTRAN */
 - XITPLI /* PL/I */
 - XITPAS /* Pascal */
 - XITAda /* Ada */
2. After modifying the source file, compile it along with your user exit program. Next, link the resulting IAPXTB object file with the product executables.

Linking to Your User Exits

To link to your user exits, override the EXITS make file macro on the command line with the user exit table file and user exits you created. The following sections describe linking to Oracle Forms, Oracle Reports, and Oracle Graphics.

Linking to Oracle Forms

To link your user exits to Oracle Web Forms, enter:

```
$ cd $ORACLE_HOME/forms60/lib
$ make -f ins_forms60w.mk EXITS="my_iapxtb.o \userexit1.0 userexit2.0
..." f60webmx
```

Replace the default Web Forms f60webm engine with your newly relinked copy by entering:

```
$ mv f60webmx $ORACLE_HOME/bin/f60webm
```

Linking to Oracle Reports

To link your user exits to the Oracle Reports Web engine, enter the following.

```
$ cd $ORACLE_HOME/reports60/lib
$ make -f ins_reports60w.mk \
EXITS="my_iapxtb.o userexit1.0 userexit2.0 ..." rwr60x
```

Replace the default Reports Web f60webm engine with your newly relinked executable by entering:

```
$ mv rwr60x $ORACLE_HOME/bin/rwr60
```

Linking to Oracle Graphics

Linking user exits to the Oracle Graphics Web cartridge is not currently supported.

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