

Oracle® Database

Installation Guide

10g Release 2 (10.2) for IBM z/OS (OS/390)

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Oracle Database Installation Guide, 10g Release 2 (10.2) for IBM z/OS (OS/390)

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Contents

Preface	v
Audience	v
Documentation Accessibility	v
Related Documents	vi
Conventions	vi
1 Installation Overview	
Overview of Oracle Database Installation	1-1
Oracle Database 10g Products for Installation	1-2
Oracle Database	1-3
Oracle Database Client	1-3
Oracle Database and Subsystem Configuration	1-3
Installation Considerations	1-3
Software Certification	1-3
Multiple Oracle Homes	1-4
Upgrade Issues	1-4
Working in Shell Environments	1-4
2 Preinstallation Tasks	
Checking the Hardware Requirements	2-1
Checking the Software Requirements	2-2
Check for Required APARS	2-3
Review System-Level Configuration Considerations	2-3
Perform Product Security Activities	2-4
Configure BPX Parameters	2-4
Check User Virtual Storage	2-4
Add an APF-Authorized Library	2-5
Ensure Adequate Address Space IDs (ASIDs)	2-6
Add Program Properties	2-6
Create and Activate a Resource Class	2-7
Associate Userids with Services	2-9
Choosing Oracle Software Locations	2-10
Identifying Required Software Directories	2-11
Configuring the User Environments	2-12
Client X Server Environment	2-12

z/OS User Environment	2-12
Accessing the Installation Software	2-15
Copying the Software to the Hard Disk	2-15
Downloading Oracle Database 10g Software from the OTN Web Site	2-15
Extracting the Installation Archive Files	2-16
3 Database Installation Tasks	
Overview	3-1
Installing the Oracle Database Software	3-1
Required Postinstallation Tasks	3-2
Downloading and Installing Patches	3-2
Performing System Administrator Tasks	3-3
Configuring Other Oracle Products	3-3
4 Removing Oracle Software	
Removing an Oracle Database	4-1
Removing Oracle Software	4-1
A Installing and Configuring Oracle Database Using Response Files	
Overview	A-1
Creating the oraInst.loc File	A-1
Preparing Response Files	A-2
Running Oracle Universal Installer Using a Response File	A-3
B Installation Reference	
Choosing Data Set Name Qualifiers	B-1
Oracle Library Data Sets	B-2
C Troubleshooting	
X Windows Display Errors	C-1
Reviewing the Log of an Installation Session	C-1
Silent-Mode Response File Error Handling	C-2
Cleaning Up After a Failed Installation	C-3
Index	

Preface

This guide describes how to install and configure Oracle Database 10g release 2 (10.2) for IBM z/OS (OS/390).

Audience

This guide is intended for anyone responsible for installing, migrating or upgrading to Oracle Database 10g release 2 (10.2) on a single IBM z/OS (OS/390) system.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at

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Related Documents

The platform-specific documentation for Oracle Database 10g products includes the following manuals:

- Oracle Database
 - *Oracle Database Release Notes for IBM z/OS (OS/390)*
 - *Oracle Database Installation Guide for IBM z/OS (OS/390)*
 - *Oracle Database How To Get Started for IBM z/OS (OS/390)*
 - *Oracle Database User's Guide for IBM z/OS (OS/390)*
 - *Oracle Database Messages Guide for IBM z/OS (OS/390)*
 - *Oracle Database System Administration Guide for IBM z/OS (OS/390)*

For information on upgrading from a previous release of Oracle Database, refer to the *Oracle Database Upgrade Guide* and the *Oracle Database System Administration Guide for IBM z/OS (OS/390)*.

- Other Documentation

The IBM Redbook, *Experiences Installing Oracle Database 10g on z/OS* (SG24-7055-00), is available from IBM and may be helpful to anyone installing Oracle Database 10g for z/OS for the first time.

Refer to *Oracle Database Release Notes for IBM z/OS (OS/390)* for important information that was not available when this book was released. The release notes for Oracle Database 10g are updated regularly. You can get the most recent version from Oracle Technology Network at

<http://www.oracle.com/technology/documentation/index.html>

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Installation Overview

This chapter describes the different types of Oracle Database 10g for z/OS installations you can perform, and issues you should consider before installing the software. It includes information on the following topics:

- [Overview of Oracle Database Installation](#)
- [Installation Considerations](#)
- [Upgrade Issues](#)
- [Working in Shell Environments](#)

Overview of Oracle Database Installation

Oracle recommends that you review the installation process carefully before you begin. The new installation features and tasks are summarized in the following list:

- The Oracle software is compressed into installation files that can be loaded from the product DVDs or downloaded from an Oracle Web site, as described in [Chapter 2](#). The installation files are in a PAX format. This is a method of compressing multiple files into a single object using the z/OS UNIX System Services shell command, `pax`.
- You must upload the installation files to z/OS using either File Transfer protocol (FTP) or network file system (NFS), and then extract the compressed files to a temporary location on your z/OS UNIX System Services file system. You must allocate either Hierarchical File System (HFS) or zFS temporary disk space for each task. Instructions on transferring the files to your z/OS system, as well as temporary disk space requirements are listed in [Chapter 2](#).
- You will need to allocate permanent disk space for the installed products. This disk space includes HFS or zFS disk space and data set disk space. [Chapter 2](#) describes the permanent disk space requirements.
- Oracle Universal Installer is a Java application requiring Java to be installed on your system. Software requirements are described in [Chapter 2](#).
- You may need to configure z/OS UNIX System Services parameters and other system parameters depending on whether you are installing the Oracle Database software for the first time or upgrading an existing installation. This is described in [Chapter 2](#).
- With Oracle Universal Installer, you can use either an interactive method or a silent method of installation. The interactive method, described in [Chapter 3](#), uses the X server graphical display routines. When you use this method, you must have the X libraries installed on your z/OS system. In addition, you must be able to

connect to an X server, a PC or UNIX system running the X server software. In this arrangement, the X server is the client and the X client is the z/OS server. Alternatively, you must modify a response file in the silent method of installation, as described in [Appendix A](#).

When you use the interactive method to install Oracle Database, Oracle Universal Installer displays a series of screens that enable you to specify all of the required information to install the Oracle Database software and optionally create a database. Help is available for most of these screens. In a noninteractive installation, you must create a response file and specify this file when you start the Oracle Universal Installer to automate some or all of the Oracle Database installation.

- After installation is complete, temporary files can be removed.
- The installation process creates an Oracle environment on z/OS UNIX System Services that is complete for the maintenance of Oracle products. This environment is similar to that of a UNIX system. On the TSO/Batch side you will have a number of PDS (Partitioned Data Set) and PDSE (Partitioned Data Set - Extended) data sets.

The Oracle Database installation process consists of the following phases:

1. **Read the release notes:** Read the Oracle Database 10g release 2 (10.2) release notes before you begin the installation. The release notes are available with the platform-specific documentation. The latest version of the release notes is available on Oracle Technology Network at <http://www.oracle.com/technology/documentation/index.html>
2. **Planning your installation:** This chapter describes the Oracle Database 10g for z/OS products that you can install, and issues that you must consider before starting the installation.
3. **Completing preinstallation tasks:** [Chapter 2](#) describes preinstallation tasks that you must complete before installing the product.
4. **Installing software:** Use the following section to install Oracle Database:
 - [Chapter 3](#) describes how to use Oracle Universal Installer to install Oracle Database and complete the database installation process.
 - [Chapter 4](#) describes how to remove the Oracle software.
 - [Chapter A](#) provides information on performing noninteractive installations, which you may want to use if you need to perform multiple installations of Oracle Database.
 - [Chapter B](#) describes the Oracle Library data sets, and how to choose data set name qualifiers.
 - [Chapter C](#) provides troubleshooting advice in case you encounter problems with the installation.

Oracle Database 10g Products for Installation

During installation, you must choose to install one of the following products:

- [Oracle Database](#)
- [Oracle Database Client](#)
- [Oracle Database and Subsystem Configuration](#)

Oracle Database

Oracle Database is an object-relational database management system. There are three installation types for this option:

- **Complete:** Installs all components of the Oracle RDBMS bundle, including all sample files.
- **Typical:** Installs all components of the Oracle RDBMS bundle required for most installations. Does not install less commonly used utilities and examples.
- **Custom:** Allows you to select individual components of the installation suite for the Oracle RDBMS bundle.

Oracle Database Client

Oracle Client is software that can be used to run Oracle Database applications. There are three installation types for this option:

- **Complete:** Installs all components of the Oracle RDBMS client bundle, including all samples. Does not include the components required to run an RDBMS server on z/OS.
- **Typical:** Installs all components of the Oracle RDBMS client bundle required for most installations. Does not install less commonly used utilities and examples.
- **Custom:** Enables you to select individual components of the installation suite for the Oracle RDBMS client bundle.

Oracle Database and Subsystem Configuration

The Database and Subsystem Configuration utility is an optional component which creates the necessary files for configuring an Oracle Database on z/OS. You should run this option after installing the Oracle Database 10g for z/OS software.

Installation Considerations

This section contains information that you should consider before deciding how to install Oracle Database 10g software. It contains the following sections:

- [Software Certification](#)
- [Multiple Oracle Homes](#)

Software Certification

The platform-specific software requirements included in this installation guide were current at the time this guide was published. However, because new platforms and operating system software versions might be certified after this guide is published, review the certification matrix on the *OracleMetaLink* Web site for the most up-to-date list of certified operating system versions. The *OracleMetaLink* Web site is available at the following URL:

<https://metalink.oracle.com>

If you do not have a current Oracle Support Services contract, you can access the same information from the following Web site:

<http://otn.oracle.com/support/metalink/content.html>

Multiple Oracle Homes

Oracle Database 10g for z/OS supports multiple Oracle homes. This means that you can install this release or previous releases of Oracle Database 10g for z/OS software more than once on the same system, in different Oracle home directories.

Upgrade Issues

For information about upgrading a previous release of Oracle Database for z/OS to Oracle Database 10g for z/OS, refer to the *Oracle Database Upgrade Guide* and the *Oracle Database System Administration Guide for IBM z/OS (OS/390)*.

Working in Shell Environments

Many installation-related tasks are performed in the z/OS UNIX System Services environment and utilize shell commands. Throughout this document, tasks that involve shell commands are prefixed with a dollar sign (\$) followed by a space, which is the default prompt for the TTY shell provided by IBM. If you use a different shell such as the OMVS shell in TSO, the prompt may be different but the commands are generally the same. However, the OMVS shell requires using an editor other than `vi` in situations where a file must be edited.

Preinstallation Tasks

This chapter describes the tasks that you must complete before you start Oracle Universal Installer. It includes information on the following:

- [Checking the Hardware Requirements](#)
- [Checking the Software Requirements](#)
- [Review System-Level Configuration Considerations](#)
- [Choosing Oracle Software Locations](#)
- [Identifying Required Software Directories](#)
- [Configuring the User Environments](#)
- [Accessing the Installation Software](#)
- [Extracting the Installation Archive Files](#)

Checking the Hardware Requirements

The system must meet the following minimum hardware requirements:

- 100 MB of disk space in the /tmp directory
- 1.4 GB to 2.5 GB of disk space for the Oracle software, depending on the installation type
- 2.6 GB of temporary disk space for a temporary work area, including the disk space required for the PAX files that are copied from the product DVD and their expanded contents. The PAX files and expanded installation files can be located in different file systems.
- 1000 cylinders (860 MB) of PDS disk space, including 350 cylinders (284 MB) for the AUTHLOAD library (only 10 cylinders are needed for client-only installations), 300 cylinders (244 MB) for the CMDLOAD library, and 125 cylinders (102 MB) for the MESSG PDS. The remaining data sets are less than 10 cylinders (10 MB) each.

Your z/OS system may not have the required disk space already available as an HFS or z/FS file system. In this case, you will need to ask your system administrator to allocate the space. Oracle recommends that you install Oracle software in its own separate zFS file system.

You can use the following command in a z/OS UNIX Systems Services shell to list the file systems which have space available:

```
$ df -k
```

The installation itself requires a maximum of 60 MB of temporary disk space for extracting the files. Typically Oracle Universal Installer will use the /tmp directory. If there is not enough space in /tmp then ask your system administrator to increase the size of /tmp or set the TMP and TMPDIR environment variables, as described on page 2-14.

The following table shows the approximate z/OS UNIX System Services disk space requirements for each installation type:

Installation Type	Temporary zFS Space	Permanent zFS Space	Permanent Data Set Space
Oracle Database 10g for z/OS installations	2.4 GB	2.3 GB	700 MB
Oracle Database 10g for z/OS Client installations	2.4 GB	1.4 GB	550 MB

Checking the Software Requirements

Depending on the products that you intend to install, verify that the required software is installed on the system, as listed and described in the following table:

Installation Type or Product	Requirement
Operating System	z/OS V1.4 or z/OSe V1.4 or above Note: Required for all installations.
Java	IBMJava2-141 (java version "1.4.1" Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.1)) Classic VM (build 1.4.1, J2RE 1.4.1 IBM z/OS Persistent Reusable VM build cm141-20030930 (JIT enabled: jitc)) (Up to the latest maintenance levels.) Note: Required for all installations.
IBM REXX	Required for all installations
CICS TS	V1.3 or higher is required for Oracle Access Manager for CICS TS
IMS TM	V7 or higher is required for Oracle Access Manager for IMS TM
z/OS UNIX System Services	X windows libraries Note: Required for all interactive installations.
TCP/IP	Required for all installations.
IBM C/C++	IBM C/C++ V1R2 or higher is required for Pro*C and OCI applications
COBOL compiler	Any currently supported IBM COBOL compiler that uses the LE runtime environment is required for Pro*COBOL applications
PL/I compiler	Any currently supported IBM PL/I compiler that uses the LE runtime environment is required for PRO*PL/I applications

To ensure that the system meets the software requirements, perform the following steps:

1. To determine which version of z/OS is installed, use the following command:

```
$ uname -a
```

The operating system version should appear as follows, where *systemname* is the name of the system and *nnnn* is the hardware model:

```
OS/390 systemname 14.00 03 nnnn
```

2. To determine whether Java 1.4.1 or 1.4.2 is installed in the default PATH, enter the following command:

```
$ java -version
```

The Java version should appear as follows:

```
IBMJava2-141 (java version "1.4.1" Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.1)
Classic VM (build 1.4.1, J2RE 1.4.1 IBM z/OS Persistent Reusable VM build cm141-20030930 (JIT enabled: jitc))
```

If the Java executable is not found, or if the version displayed is less than 1.4.1, download Java 1.4.1 from the IBM Java Web site and install it:

```
http://www-1.ibm.com/servers/eserver/zseries/software/java/
```

Note that you can install IBM Java with or without SMP/E.

3. To determine whether the IBM make program is installed and in the path, enter the following command:

```
$ make -V
```

Usually make is located in the `/bin` directory. You may need to copy the file `/samples/startup.mk` to `/etc/startup.mk` in order for make to function correctly. If make is not installed and in the path, you will get an error message. Oracle recommends that you should not modify this file.

Check for Required APARS

Depending on the products that you intend to install, verify that the fixes for IBM APAR PQ75251 for C++ programs is installed on the system.

Review System-Level Configuration Considerations

This section describes configuration considerations to review for your system.

The following are required for both server and client-only installations:

- [Perform Product Security Activities](#)
- [Configure BPX Parameters](#)
- [Check User Virtual Storage](#)
- [Add an APF-Authorized Library](#)

The following are required for server installations only:

- [Ensure Adequate Address Space IDs \(ASIDs\)](#)
- [Add Program Properties](#)
- [Create and Activate a Resource Class](#)
- [Associate Userids with Services](#)

Perform Product Security Activities

Some activities that are related to installing Oracle Database 10g for z/OS can be performed independently, even before the software arrives. All of these activities are related to product security features, and one activity, which is optional, requires an initial program load (IPL) of your system before it takes effect. Depending on the organization and procedures of your installation, you may need to work with system security personnel or systems programmers to perform these activities.

The following descriptions are provided in RACF (IBM z/OS Security Server) terms with the assumption that RACF is in use. Any product which fully implements z/OS System Authorization Facility (SAF) can be substituted. If your installation uses a product other than RACF, refer to the documentation for that product for information on how to perform the steps that are discussed in this chapter.

Configure BPX Parameters

The following BPX parameter files need to be modified and activated on the system. They are set in `SYS1.PARMLIB(BPXxxx)`. After doing so, you do not need to IPL the system:

- `MAXTHREADTASKS(1000)`
- `MAXTHREADS(1000)`
- `MAXCPU(2147483647)`
- `MAXASSIZE(2147483647)`
- `MAXSHAREPAGES(131072)`
- `SHRLIBMAXPAGES(8192)`

Check User Virtual Storage

Determine the virtual region size for the user performing the installation. If it is less than the required size, you must increase the maximum allowable size of the virtual region to 512 MB. The method you use to determine the virtual region size depends on whether you entered the z/OS UNIX System Services shell environment through Telnet or `rlogin` or through TSO OMVS:

- If you entered the z/OS UNIX System Services shell environment through Telnet or `rlogin`, the virtual storage is the amount set in the `SYS1.PARMLIB(BPXPRMxx)` field `MAXASSIZE`. This amount can be limited in the OMVS segment of your RACF profile.

For example, if you do not define `ASSIZEMAX` in your RACF OMVS segment, and you have `MAXASSIZE` set to 2147483647, all Telnet or `rlogin` sessions will get 2 GB of virtual storage.

- If you entered the z/OS UNIX System Services shell environment through TSO OMVS, then the virtual storage is the region size that you set for the `REGION` field when you logged on to TSO. This value is in KB. This amount can be limited in the TSO segment of your RACF profile.

You will need to ask your system administrator to issue the following command, which shows the maximum allowed value:

```
$ tso listuser username tso
```

For example:

```

tso listuser arogers tso
USER=AROGERS  NAME=ANDREW ROGERS          OWNER=RACF          CREATED=96.106
DEFAULT-GROUP=OEG647  PASSDATE=03.356  PASS-INTERVAL= 92
...
TSO INFORMATION
-----
ACCTNUM= NOACCT
PROC= $AROGERS
SIZE= 02048000
MAXSIZE= 02048000
USERDATA= 0000

```

This shows that you can have up to 2 GB of virtual storage.

You should be aware that the SMF exit IEFUSI can limit virtual storage in either of the previous cases. Therefore, ensure that the SMF exit IEFUSI allows for enough virtual storage to use Oracle products.

Add an APF-Authorized Library

Oracle Database 10g for z/OS requires the database and network region programs to run with APF authorization, which means that the load modules must reside in an APF-authorized library. While it is possible to copy these modules into an existing authorized library, Oracle recommends that you create an authorized library specifically for Oracle Database 10g for z/OS. Because z/OS requires all modules that are loaded by an authorized program to come from authorized libraries, the library will contain a number of modules in addition to the database and network region programs, including the Oracle Database kernel. The authorized library must be a PDSE type rather than a PDS type.

A load library can be authorized in either of two ways: add an entry for the data set to the `PROGxx` member of `SYS1.PARMLIB`, or add an entry for the data set to the `IEAAPFxx` member of `SYS1.PARMLIB`. The first way (using the `PROGxx` member) utilizes a newer mechanism. The second way (using the `IEAAPFxx` member) utilizes an older mechanism. You may need to talk to your systems programmer to determine which method to use and the correct suffix to substitute for `xx`. If you plan to name the authorized library `ORACLE.V10G.AUTHLOAD`, for example, then the following code shows a suitable entry in `PROGxx`:

```
APF ADD DSNAME(ORACLE.V10G.AUTHLOAD) SMS
```

If your installation is using `IEAAPFxx` instead of `PROGxx`, a comparable entry there would be:

```
ORACLE.V10G.AUTHLOAD ,
```

The comma in the above entry is included only if the entry is not the last record in the member. Omit the comma in the new entry if it is last in the member, and ensure that the preceding entry has a comma.

Changes to `PROGxx` or `IEAAPFxx` do not take effect until the next IPL. If your installation has enabled z/OS dynamic APF facilities, then a library can be authorized without an IPL by using a `SETPROG APF,ADD` operator command as shown in the following example:

```
SETPROG APF,ADD,DSN=ORACLE.V10G.AUTHLOAD,SMS
```

The authorization that is conferred by the `SETPROG` command is independent of the `PROGxx` or `IEAAPFxx` members and lasts only until the next IPL. This means that you would use this technique only if you expect to install the software and actually

configure and run a database service or network service before the next IPL of your system.

Regardless of the technique used, a data set does not need to exist to be authorized. Oracle Universal Installer will prompt you for the location of the data set and can optionally allocate it for you. If you can choose the data set name that you will use, then this step can be performed before the data set is created and populated. However, once you create a data set, you will need to authorize it.

Ensure Adequate Address Space IDs (ASIDs)

Oracle Database 10g for z/OS instances can be composed of multiple address spaces and can make extensive use of z/OS Cross Memory Services. When a cross-memory address space is terminated, the address space ID (ASID) that was used for this address space is made unavailable. Eventually, the pool of z/OS ASIDs can become exhausted, which prevents new address spaces from being created. In order to avoid the above condition, the RSVNONR parameter in the IEASYSxx member of SYS1.PARMLIB should be set to a higher value.

See Also: Refer to the *z/OS V1R4.0 MVS Initialization and Tuning Reference (SA22-7592)*, for details on specifying the RSVNONR parameter

Add Program Properties

The database and network service region programs must run nonswappable and noncancelable, and should not be subject to system time limits. In addition, the database service runs in protect key 7. These attributes are indicated by adding entries for these programs to the z/OS Program Properties Table (PPT), through a member of the SYS1.PARMLIB data set named SCHEDxx, where xx is a 2-letter or 2-digit suffix. The entries that you add should be similar to those in the following example. The comments, which are included for clarity, are allowed but are not required.

Note: You may need to work with your systems programmer to determine the correct member name and to add the entries.

```
/* SCHEDxx PPT entry for Oracle database region */
PPT PGMNAME(ORARASC)      /* Program (module) name */
    NOCANCEL              /* Not cancelable */
    KEY(7)                /* Protection key */
    NOSWAP                 /* Not swappable */
    SYST                  /* Not subject to timing */
/* SCHEDxx PPT entry for Oracle network region */
PPT PGMNAME(MINMAIN)     /* Program (module) name */
    NOCANCEL              /* Not cancelable */
    NOSWAP                 /* Not swappable */
    SYST                  /* Not subject to timing */
```

The entries in the SCHEDxx member are usually read at z/OS IPL. You can cause z/OS to re-read the member without an IPL by using the SET SCH operator command. The PPT entries must take effect before Oracle database and network services are started.

See Also: For details on the SCHEDxx member, the PPT, and the SET SCH command, refer to the following IBM documents:

- *z/OS V1R4.0 MVS Initialization and Tuning Reference (SA22-7592-06)*
- *z/OS V1R4.0 MVS System Commands (SA22-7627-07)*

Create and Activate a Resource Class

The authorization-checking mechanism of SAF is based on resource names, which are simply character strings that identify the data, interface, or other entity that is protected. Resource names are organized into classes. A resource class is a name for a group of resources with similar name structure and attributes. RACF has a number of predefined resource classes for items such as data sets, tape volumes, and terminals.

Oracle Database 10g for z/OS has three types of resources that are subject to authorization checking:

1. OSDI commands
2. The client-service bind interface
3. The database server SYSOPER/SYSDBA connection privilege

These resources must have an associated resource class. By default, Oracle Database 10g for z/OS is set up with the assumption that the resources are in the FACILITY class, which is a predefined RACF class. FACILITY is a general-use class whose resource name structure accommodates all three of the resource types of Oracle Database 10g for z/OS. If you use the default FACILITY class, then you may need to activate the class if your installation has not previously defined resources in the class.

See Also: For directions on activating the FACILITY class, refer to the IBM document *z/OS V1R4.0 Security Server RACF Security Administrator's Guide (SA-7683-03)*

This is done with a SETROPTS CLASSACT RACF command and does not require a z/OS IPL.

See Also: For a description of this command, refer to the IBM document *z/OS V1R4.0 Security Server RACF Command Language Reference (SA22-7687-03)*

The security standards or procedures of your installation may make it preferable to create distinct resource classes for Oracle Database 10g for z/OS resources. RACF allows security administration privileges to be granted on a resource class basis. If you create distinct classes for Oracle Database 10g for z/OS, those RACF administration privileges can be granted to users without enabling administrative privileges on other non-Oracle Database resources that may be associated with the FACILITY class.

If you decide to create resource classes for Oracle Database 10g for z/OS, then two classes should be created: one for OSDI commands and one that is shared by both bind and database SYSOPER/SYSDBA connect authorizations.

See Also: For information on adding installation-defined resource classes, refer to the following IBM documents:

- *z/OS V1R4.0 Security Server RACF System Programmer's Guide (SA22-7681-03)*
- *z/OS V1R4.0 Security Server RACF Macros and Interfaces (SA22-7682-03)*

The procedure involves coding Assembler Language macro instructions that are assembled to create non-executable load modules that are the class table and router table, and an IPL of z/OS is required to activate the change.

Note: This is the only preinstallation activity that requires an IPL.

If you choose to add new resource classes for Oracle Database 10g for z/OS, then the ICHERCDE macro that you code for the class table entries should specify parameters as in the following example, which defines the classes \$ORACMD and \$ORACONN.

```
$ORACMD ICHERCDE CLASS=$ORACMD,
      GROUP=$ORACONN,
      ID=192,                Some number between 128 & 255
      MAXLNTH=19,
      RACLIST=ALLOWED,
      FIRST=ALPHANUM,
      OTHER=ANY,
      POSIT=42,             Probably unique to this class
      OPER=NO,
      DFTUACC=NONE
$ORACONN ICHERCDE CLASS=$ORACONN,
      MEMBER=$ORACMD,
      ID=191,                Some number between 128 & 255
      MAXLNTH=19,
      FIRST=ALPHANUM,
      OTHER=ANY,
      POSIT=42,             Probably unique to this class
      OPER=NO,
      DFTUACC=NONE
```

Note: In this example, the continuation indicators that are required in position 72 of each continued record are omitted.

You must also add entries to the installation-supplied router table module ICHFR01, as in the following example:

```
ICHRFR01 CLASS=$ORACMD, ACTION=RACF
ICHRFR01 CLASS=$ORACONN, ACTION=RACF
```

After the class table is updated and the system is IPLed, the new classes can be activated with the SETROPTS CLASSACT command.

See Also: For more information, refer to the IBM document *z/OS V1R4.0 Security Server RACF Security Administrator's Guide (SA-7683-03)* and the RACF CLR

You must also provide Oracle Database 10g for z/OS with the class names. This is done in the subsystem parameter file discussed in the *Oracle Database System Administration Guide for IBM z/OS (OS/390)*.

Associate Userids with Services

Oracle Database 10g for z/OS-managed services execute as system address spaces, similar to started tasks or STCs. Some of the z/OS system functions that are invoked by Oracle Database 10g for z/OS services perform authorization checks based on the z/OS userid that is associated with the service address space. Depending on the security configuration and standards of your installation, those system functions may fail if no userid is associated with the address space. You, or security personnel for your installation, may need to take steps to ensure that Oracle Database 10g for z/OS services have an associated userid that can be authorized for system functions that are invoked by the database and network services.

If you are already running the TNS programs of previous releases as started tasks (as opposed to submitting them as batch jobs), then your installation probably already has `STARTED` or `USER` profiles for the associated JCL procedures. You should not rely on those for Oracle Database 10g for z/OS because the Oracle Database 10g for z/OS procedures should have different names. Plan to create at least two new `STARTED` or `USER` profiles, one for the database service and one for the network service. These may be all that you need, because different instances of a type of service can generally share the same JCL procedure. You may want to create additional profiles, though, if you want different instances of a service to run with different userids. This requires using distinct JCL procedures even though the procedures themselves may be otherwise identical. The `RDEFINE` command that is used to add profiles is described in the `RACF CLR`.

See Also: For details on the `STARTED` and `USER` resource classes, refer to the IBM document *RACF Security Administrator's Guide*

With RACF, it is also possible to associate a userid with a started task using a started procedures table that is built with Assembler macros somewhat like the resource class table discussed in the previous section. Activating such changes requires an IPL, however, and is not the preferred method.

See Also: Refer to the IBM document *RACF Security Administrator's Guide* for more information

Certain database features are implemented using z/OS UNIX System Services, formerly called Open Edition. These features include Java, XML, Oracle Text, Spatial Data Option, `UTL_FILE` package, and external LOB(BFILE) support. In order for these features to work, the database service address space must be capable of being "dubbed" as a z/OS UNIX System Services process. This requires that the z/OS userid that is associated with the address space have a default z/OS UNIX System Services segment that is defined to the security subsystem.

See Also: For additional information, refer to the *Oracle Database System Administration Guide for IBM z/OS (OS/390)*

In addition, certain utilities run only in a z/OS UNIX System Services shell environment, such as Oracle Universal Installer, Enterprise Manager, and some client-side Java applications. For users requiring these applications, an OMVS RACF segment must be defined. The OMVS RACF segment can be defined to a group and

then the users who are likely to require these Oracle Java applications can be associated with the group. Such users are typically Oracle DBAs and Oracle operators.

Depending on whether this is the first time Oracle software is being installed on this system and on the products that you are installing, you may need to create several groups and users who will be responsible for the installation, maintenance and operation of the oracle database.

Installation User/Group Considerations

Oracle Universal Installer requires that all users performing Oracle software installation and maintenance belong to the same group. Oracle recommends that you define a user group for all users performing installation and maintenance.

The user who performs the installation becomes the owner of the files created as part of the installation. You may want to define a z/OS user who will be the software owner. Any user performing an Oracle installation must have an OMVS RACF segment defined. This user must be able to create and update the Oracle PDS/PDSE data sets.

For maintenance, only the software owner is granted write access to the archive libraries. You may need to change the permissions for the archive libraries to allow anyone in the group write access after the installation has completed.

Determining Whether the Oracle Inventory Group Exists

When you install Oracle software on the system for the first time, Oracle Universal Installer creates the `oraInst.loc` file. This file is located in the `/var/opt/oracle` directory. Alternatively, this directory can contain a pointer to a different inventory location.

Users who are performing installation and maintenance tasks must have RACF authority to create and update the directory `/var/opt/oracle` and its contents, as well as the Oracle file systems created by the installation and the PDS data sets required for the installation.

This file identifies the name of the Oracle Inventory group. To determine whether the Oracle Inventory group exists, enter the following command:

```
$ more /var/opt/oracle/oraInst.loc
```

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

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

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

Choosing Oracle Software Locations

The Oracle software is installed in different types of file systems on z/OS. These file systems are: z/OS UNIX System Services for the Oracle executable code, samples, and maintenance structure; PDSE data sets for the Oracle executable code required for the Oracle Database server and TSO/batch clients.

Subsequent sections in this chapter describe how to configure the system depending on the location you choose for the software.

Identifying Required Software Directories

You must identify or create three directories for all Oracle installations, as follows:

- [Oracle Base Directory](#)
- [Oracle Inventory Directory](#)
- [Oracle Home Directory](#)
- [Oracle PDS and PDSE Data Sets](#)

The following subsections describe the requirements for these directories.

Oracle Base Directory

The Oracle base directory acts as a top-level directory for Oracle software installations. Generally, you will need to allocate a zFS file system for the Oracle installation files. Oracle recommends that you allocate a high-level directory, for example, `/oracle`, as the root directory for the installation, which can be fairly small. Allocate another file system under this directory for each product being installed, for example, `/oracle/v10.1.0.2`. This corresponds to the Oracle home directory.

Oracle Inventory Directory

The Oracle inventory directory (`oraInventory`) stores an inventory of all software installed on the system. It is required by, and shared by, all Oracle software installations on a single system. The inventory should be placed in a location which is Oracle-version independent, as multiple versions of Oracle Database will use this inventory. The first time you install Oracle software on a system, Oracle Universal Installer prompts you to specify the path to this directory. Oracle recommends that you choose the following path:

```
oracle_base/oraInventory
```

This inventory directory needs to be 20-40 MB, as it holds the installation logs and parameter files. If you do not allocate a separate file system for this directory, then the space used is taken from the `oracle_base` directory.

If this directory does not exist, then Oracle Universal Installer will try to interactively create it at installation time. The `/var/opt/oracle` directory points to this inventory directory.

Oracle Home Directory

The Oracle home directory is the directory where you choose to install the software for a particular Oracle product. You must install different Oracle products, or different releases of the same Oracle product, in separate Oracle home directories. When you run Oracle Universal Installer, it prompts you to specify the path to this directory, as well as a name that identifies it. The directory that you specify must be a subdirectory of the Oracle base directory. Oracle recommends that you define this directory as a separate zFS file system mounted under the `/oracle` directory. In addition, you should specify a path similar to the following for the Oracle home directory:

```
/oracle/v10.1.0.2
```

Each new release of an Oracle product typically requires a separate Oracle home directory. Oracle recommends that you keep your Oracle home to less than 50 characters. This is because the path is placed in the sample JCL and has a line length of 80.

Oracle PDS and PDSE Data Sets

During installation, a number of files are placed into PDS and PDSE data sets. Oracle Universal Installer can create these data sets if the user performing the installation has RACF authority to create them, or it can use preexisting data sets under a high-level qualifier supplied at installation. Oracle Universal Installer requires that all Oracle installation and executable files are kept under one high-level qualifier. The required sizes for these data sets are provided in [Appendix B, "Installation Reference"](#).

You need to determine a naming convention for high-level and second-level data set name qualifiers. For more information, refer to [Appendix B, "Installation Reference"](#). In addition, you need to determine a convention for naming Oracle software data files and database data files. For example, try to use a naming convention for the Oracle executable modules in data sets which includes the version. For example, ORACLE.V10G or ORACLE.V10202.

Database files should not include the version number. This is because the database is likely to exist across multiple versions or patch sets of the Oracle software.

Configuring the User Environments

There are two separate environments required for an interactive installation of the Oracle software:

- [Client X Server Environment](#)
- [z/OS User Environment](#)

You must configure both user environments before you begin an installation.

Client X Server Environment

This environment is required for an interactive installation. It is a non-z/OS environment and will typically be a UNIX system running X windows or a PC or other system with X windows software installed.

Note: Unless you intend to complete a silent installation, you must install the software from an X windows workstation, an X terminal, or a PC or other system with X server software installed. For more information on noninteractive and silent installations, see [Appendix A](#).

If you are installing the software from an X windows workstation, X terminal, or PC running an X server application, you need to enable this X server to accept X client (z/OS) applications. To do this, perform the following steps:

1. Start a local terminal session, for example, an X terminal (`xterm`).
2. To enable remote hosts to display X windows applications on the local X server, enter the following command:

```
$ xhost +
```

z/OS User Environment

The z/OS user environment is required for an interactive or noninteractive installation. It is a z/OS UNIX System Services shell environment running under the user who will be performing the installation. You must Telnet to this z/OS UNIX System Services shell environment using a VT terminal, or you can use the command

OMVS from a TSO user who is logged on to the system, as described in the following steps:

1. On the z/OS (X client) system, connect to z/OS UNIX System Services using Telnet. Enter a command similar to the following, using the port number for z/OS UNIX System Services:

```
$ telnet remote_host port
```

If you are using a 3270 terminal emulator, you need to enter the OMVS shell command to access z/OS UNIX System Services.

2. If you are not logged on to the remote system as an authorized user, enter the following commands at the prompts:

```
EZYTE27I logon: username
EZYTE27I logon username Password: password
```

Before you start Oracle Universal Installer, you must configure the environment of the user performing the installation. To configure this environment, you must perform the following tasks:

- Set the default file mode creation mask (umask) to 002 in the shell startup file.
- Set the JAVA_HOME, PATH, LIBPATH, CLASSPATH and DISPLAY environment variables.

To set the user's environment, follow these steps:

1. In any text editor, create an environment file similar to the following, specifying the appropriate values for the environment variables:

```
export JAVA_HOME=/usr/lpp/java/J1.4
export PATH=/bin:/usr/local/bin
export LIBPATH=$JAVA_HOME/bin/classic:$JAVA_HOME/bin:$LIBPATH
export CLASSPATH=$JAVA_HOME/lib/libjtc.so:$CLASSPATH
export DISPLAY=nn.nn.nn:0
```

The PATH environment variable must include Java, make, and ORACLE_HOME/bin. The JAVA_HOME environment variable must point to the Java home directory, and the LIBPATH environment variable must point to the JAVA_HOME/lib directory.

2. If necessary, specify in the environment file the environment variables listed in the following table. If you must specify several values for an environment variable, for example PATH, separate the values with a colon (:).

Environment Variable	Required By	Sample Setting and Description
JAVA_HOME	Oracle Universal Installer must point to the Java installation location (directory or directories containing the Java executables)	/usr/lpp/java/J1.4
PATH	All applications running in the z/OS UNIX System Services shell environment	/bin Note: On most systems, the /usr/local/bin directory is included in the default setting of the PATH environment variable.

Environment Variable	Required By	Sample Setting and Description
LIBPATH	Path for library files	This should concatenate \$ JAVA_HOME/lib: LIBPATH
CLASSPATH	Path for class files	This should concatenate \$ JAVA_HOME/lib/libjtc.so: CLASSPATH
DISPLAY	Interactive installation	This is the TCP/IP address of the X server (the UNIX system or PC) where you want the installation panels to appear. It is in the form of a TCP/IP address followed by <i>:port_number</i> . The TCP/IP address can be a host name if you have DNS service on your z/OS system.

3. Open the user's shell startup file in any text editor:

```
$ vi .profile
```

4. Enter or edit the following line, specifying a value of 022 for the default file creation mask:

```
umask 002
```

5. Save the file and exit from the editor.

6. To run both the shell startup script and the environment script, enter commands similar to the following:

```
$ . ./profile
```

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

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

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

8. For interactive installations, enter a command similar to the following to direct X applications to display on your X server system:

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

In this example, *local_host* is the host name or IP address of the system you want to use to display Oracle Universal Installer (your workstation or PC).

9. If you determined that the `/tmp` directory has less than 100 MB of free disk space, identify or create a file system with at least 100 MB of free space and set the `TMP` and `TMPDIR` environment variables to specify a temporary directory on this file system.

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

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

Accessing the Installation Software

The Oracle Database 10g for z/OS software is available on the Oracle Database 10g for z/OS product DVDs or you can download it from the Oracle Technology Network Web site (OTN). Before you can install the software, you must first transfer the installation archive files to your z/OS system using one of the following two methods:

- [Copying the Software to the Hard Disk](#)
- [Downloading Oracle Database 10g Software from the OTN Web Site](#)

Copying the Software to the Hard Disk

z/OS does not have direct DVD support. Therefore, the software must be copied to a temporary location on the system before you can install it. In order to simplify this process, the installation directories have been compressed using PAX.

Each product DVD contains an installation archive file labeled `Disk1.pax` or `Disk2.pax`. Approximately 900 MB of temporary disk space is required for the contents of the two archive files.

To load the installation archive files from the product DVDs, perform the following steps:

1. Mount the first product DVD on a system that has a DVD drive and has either FTP or NFS access to the z/OS system where you will be installing the software. If you NFS-mount the DVD, then it needs to be mounted in binary mode. Ask your system administrator for the mount instructions specific to your system.
2. FTP the installation archive files in binary mode to a temporary location on the z/OS system. Ask your system administrator for the FTP instructions specific to your system.

Repeat the previous steps for each product DVD. When the installation archive files `Disk1.pax` and `Disk2.pax` are on your z/OS system, you no longer need the DVDs.

The next step is to extract the installation archive files. Refer to the section "[Extracting the Installation Archive Files](#)" on page 2-16.

Downloading Oracle Database 10g Software from the OTN Web Site

This section describes how to download the installation archive files from OTN and extract them on your hard disk.

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

1. Use any browser to access the software download page on OTN at:
`http://otn.oracle.com/software/products/oracle10g/`
2. Choose the link for the software that you want to download.
3. On the Oracle Technology Network Developer License Terms page, answer all questions.
4. 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 filenames.

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

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

6. On the file system that you selected in step 5, create a parent directory, for example `oracle10g`, to hold the installation archive files.
7. Download the installation archive files to the directory that you created in step 6. Verify that the files you downloaded are the same size as the corresponding files on OTN.
8. Unzip the installation archive files using the `unzip` utility, as follows:

Unzip each file on a PC or UNIX system, using a command similar to the following:

```
$ unzip filename.zip
```

The preceding command creates the following files:

```
Disk1.pax
Disk2.pax
doc/
welcome.htm
```

FTP the unzipped files, `Disk1.pax` and `Disk2.pax`, in binary mode to your z/OS system. Ask your system administrator for the FTP instructions specific to your system.

The result should be that there are two files, `Disk1.pax` and `Disk2.pax`, on your z/OS system.

The next step is to extract the installation archive files. Refer to the following section "[Extracting the Installation Archive Files](#)".

Extracting the Installation Archive Files

This section describes how to extract the installation archive files you loaded onto your system from the product DVDs or downloaded from the from the OTN Web site.

The files `Disk1.pax` and `Disk2.pax` now exist in a temporary location on your z/OS system. The files need to be extracted in preparation for installation.

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

1. Change the working directory to the directory where you want the installation files to reside. This can be a temporary space, but it is required until you have finished installing all the Oracle products.
2. Extract the installation files, using commands similar to the following:

```
$ pax -rvf directory_location/Disk1.pax
$ pax -rvf directory_location/Disk2.pax
```

The preceding commands extract the contents of `Disk1.pax` and `Disk2.pax` into the current directory.

3. Check the current directory to make sure the files were extracted properly, using the following command:

```
$ ls -l
```

The directory structure should look similar to the following:

```
drwxr-xr-x  3 AROGERS  OEQA1          288 Mar 10 14:54 Disk1
```

```
drwxr-xr-x  3 AROGERS  OEQA1      288 Mar 16 10:27 Disk2
drwxr-xr-x  3 AROGERS  OEQA1      288 Mar 10 14:54 Translations
drwxr-xr-x  3 AROGERS  OEQA1      864 Mar 30 07:56 install
-rwxr-xr-x  1 AROGERS  OEQA1      772 Mar 15 11:20 runInstaller
```

The extraction should create five directories, /Disk1, /Disk2, /Translations, /install, and /doc, and two files, the runInstaller, and welcome.htm. If the extraction process did not succeed, then the files may be corrupted. Repeat the process of loading or downloading the installation archive files onto your z/OS system, and then unzip and extract the files. If the extraction is still unsuccessful, then contact Oracle Support Services to obtain a new copy of the installation archive files.

4. You can now delete the Disk1.pax and Disk2.pax files.

When you have finished extracting the files, you are ready to install the software. To install the Oracle Database or Oracle Client, refer to the instructions in [Chapter 3, "Database Installation Tasks"](#).

Database Installation Tasks

This chapter describes how to start Oracle Universal Installer and install Oracle Database 10g for z/OS products on your system. Review the information in [Chapter 1, "Installation Overview"](#) and complete the tasks listed in [Chapter 2, "Preinstallation Tasks"](#) before beginning the installation.

This chapter includes information on the following topics:

- [Overview](#)
- [Installing the Oracle Database Software](#)
- [Required Postinstallation Tasks](#)

Overview

This chapter describes how to install the Oracle Database software. These installation instructions apply to the Oracle Database products.

Before you install the software, you must perform the necessary preinstallation tasks, including transferring the software to your z/OS system and extracting the files. For more information, refer to [Chapter 2, "Preinstallation Tasks"](#).

In most cases, you use the graphical user interface (GUI) provided by Oracle Universal Installer to install the software. However, you can also use Oracle Universal Installer to complete noninteractive installations, without using the GUI. See [Appendix A](#) for information on noninteractive installations.

Installing the Oracle Database Software

To start Oracle Universal Installer and install the software, perform the following tasks:

Note: Do not use Oracle Universal Installer from an earlier Oracle Database release to install components from this release.

1. If necessary, log in as the user who will install the Oracle software, set the DISPLAY environment variable, and run the environment shell script or the environment variables created earlier.
2. To start Oracle Universal Installer, enter the following commands where `directory_path` is the path of the Disk1 directory on the hard disk:

```
$ /directory_path/runInstaller
```

If Oracle Universal Installer does not appear, then refer to the ["X Windows Display Errors"](#) section on page C-1 for information troubleshooting.

3. Use the following guidelines to complete the installation:
 - Follow the instructions displayed in Oracle Universal Installer windows. If you need additional information, then click **Help**.
 - During installation, blank lines will be written to the Telnet session display. This is normal.
 - When Oracle Universal Installer prompts you to run a script with administrator privileges, which permits you to update the `/usr/local/bin` directory and set the `extattr` for the Enterprise Manager management agent `nmo` executable, the administrator must run the `root.sh` shell script which is located in the `ORACLE_HOME` directory. This script is not required unless you want to use the Enterprise Manager management agent.

Enter a command similar to the following in a terminal where you are logged in as a system administrator user, then click **Continue** or **OK**:


```
$ /oracle/v10g/root.sh
```
 - If you encounter errors while installing or linking the software, then refer to [Appendix C](#) for information on troubleshooting.
4. When the installation is complete, click **Exit**, then click **Yes** to exit from Oracle Universal Installer.

At this stage, the following will have been created:

- A `z/OS` UNIX System Services file system populated with client executables and the necessary files to maintain them
- PDS and PDSE files which contain the executable files
- An `ENV` file in the Oracle home directory which can be used to configure the default environment settings

Required Postinstallation Tasks

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

- [Downloading and Installing Patches](#)
- [Performing System Administrator Tasks](#)
- [Configuring Other Oracle Products](#)

Downloading and Installing Patches

Check the [OracleMetalink](#) Web site for required patches for your installation. To download required patches:

1. Use a Web browser to view the [OracleMetalink](#) Web site:


```
https://metalink.oracle.com
```
2. Log in to [OracleMetalink](#).

Note: If you are not an Oracle*Metalink* registered user, then click **Register for MetaLink!** and follow the registration instructions.

3. On the main Oracle*Metalink* page, click **Patches**.
4. Use the Simple Search feature to search by Product or Family.
5. Specify the following information, then click **Go**:
 - In the Product or Family field, specify RDBMS Server
 - In the Release field, specify the current release number
 - In the Patch Type field, specify Patchset/Minipack

Performing System Administrator Tasks

Before you use the Oracle Database, you must perform various configuration tasks. Perform the following before using your Oracle Database for the first time:

- APF-authorize the AUTHLOAD library.
- Move load modules from the AUTHLOAD library to a system linklist PDSE and activate them. This can be done by configuring and running the batch job COPYPROC which has been provided as a sample in the INSTLIB PDS.

After running COPYPROC, you need to refresh the linklist library, by issuing the following command to a z/OS console:

```
F LLA REFRESH
```

See Also: For detailed information on configuring your database, refer to the *Oracle Database System Administration Guide for z/OS*

Configuring Other Oracle Products

Many other Oracle products and options must be configured before you use them for the first time. Before using other Oracle Database 10g for z/OS products or options, refer to product-specific administration and tuning guides for detailed configuration and tuning information. For more information, refer to the "[Related Documents](#)" section in the [Preface](#).

Removing Oracle Software

This chapter describes how to completely remove an Oracle database and the Oracle software. It includes information on the following topics:

- [Removing an Oracle Database](#) on page 4-1
- [Removing Oracle Software](#) on page 4-1

Note: If you want to remove an individual product, check the product-specific documentation for requirements and restrictions.

Removing an Oracle Database

To completely remove Oracle Database 10g for z/OS software, you must remove any installed databases. To remove an Oracle Database, do the following:

Caution: Removing an Oracle Database deletes all the data in the database.

- Delete the VSAM data sets under the high-level qualifier for the database
- Delete the Oracle executable PDSE files that were created during the installation, for example, AUTHLOAD and CMDLOAD files
- Delete the subsystem modules that were placed into any linklist libraries.
- Remove any JCL procedures that were created for the Oracle services and placed in your PROCLIB library.

Removing Oracle Software

The following steps describe how to use Oracle Universal Installer to remove Oracle software:

Note: Always use Oracle Universal Installer to remove Oracle software. Do not delete any Oracle home directories without first using Oracle Universal Installer to remove the software.

1. Start Oracle Universal Installer as follows:

```
$ $ORACLE_HOME/oui/bin/runInstaller
```

2. In the Welcome window, click **Deinstall Products**.

The Inventory window appears, listing all of the Oracle homes on the system and the products installed in each Oracle home.

3. In the Inventory window, select the Oracle home and the products that you want to remove.

Note: If you choose to remove Oracle JVM, Oracle Universal Installer removes all installed products that depend on Oracle JVM, including Oracle Database 10g.

4. Click Remove.

Oracle Universal Installer displays a confirmation window asking you to confirm that you want to deinstall the products and their dependant components.

5. Click Yes.

Oracle Universal Installer displays a progress indicator as it removes the software.

6. Exit Oracle Universal Installer.

7. After using Oracle Universal Installer to remove Oracle software, you must remove the PDSE files that were created during the installation process. This must be done manually.

Installing and Configuring Oracle Database Using Response Files

This chapter describes how to install and configure Oracle Database 10g for z/OS noninteractively using response files. It includes information on the following topics:

- [Overview](#) on page A-1
- [Creating the oraInst.loc File](#) on page A-1
- [Preparing Response Files](#) on page A-2
- [Running Oracle Universal Installer Using a Response File](#) on page A-3

Overview

You can install Oracle Database 10g noninteractively by specifying a response file when you start Oracle Universal Installer. Oracle Universal Installer uses the values contained in the response file to provide answers to some or all of the Oracle Universal Installer prompts. If you include responses for all of the Oracle Universal Installer prompts in the response file, then you can run a completely noninteractive installation without seeing the Oracle Universal Installer windows.

To install and configure Oracle products noninteractively, complete the following steps:

1. Create the `oraInst.loc` file.
2. Prepare response files.
3. Run Oracle Universal Installer noninteractively.
4. Run configuration assistants noninteractively.

These steps are described in the following sections.

Creating the oraInst.loc File

If you plan to install Oracle products noninteractively, you must manually create the `oraInst.loc` file if it does not already exist. This file specifies the location of the `oraInventory` directory where Oracle Universal Installer creates the inventory of Oracle products installed on the system.

Note: If Oracle software has been installed previously on the system, then the `oraInst.loc` file might already exist. If the file does exist, then you do not need to create a new file.

To create the `oraInst.loc` file, perform the following steps:

1. Create the `/var/opt/oracle` directory if it does not exist
2. Change directory as follows, depending on your operating system:
3. Use a text editor to create the `oraInst.loc` file, containing the following lines:

```
$ mkdir /var/opt/oracle
```

```
$ cd /var/opt/oracle
```

```
inventory_loc=ORACLE_BASE/oraInventory
inst_group=
```

In the preceding example, `ORACLE_BASE` is the path specified in the `ORACLE_BASE` environment variable.

4. Enter the following command to set the appropriate owner, group, and permissions on the `oraInst.loc` file:

```
$ chmod 664 oraInst.loc
```

Preparing Response Files

Oracle Database provides response file templates for each installation category and type, and for each configuration tool. These files are located in the `/directory_location/Disk1/stage/Response` directory, where `directory_location` is the location to which you extracted the installation files.

The following table lists and describes the response files included in the `/directory_location/Disk1/stage/Response` directory.

Response File Name	Description
<code>oracle.mvsosdi.server.Complete.rsp</code>	Oracle z/OS Database 10g - Complete Install
<code>oracle.mvsosdi.server.Custom.rsp</code>	Oracle z/OS Database 10g - Custom Install
<code>oracle.mvsosdi.server.Typical.rsp</code>	Oracle z/OS Database 10g - Typical Install
<code>oracle.mvsosdi.client.Complete.rsp</code>	Oracle z/OS Client 10g - Complete Install
<code>oracle.mvsosdi.client.Custom.rsp</code>	Oracle z/OS Client 10g - Custom Install
<code>oracle.mvsosdi.client.Typical.rsp</code>	Oracle z/OS Client 10g - Typical Install
<code>oracle.mvsosdi.config.Typical.rsp</code>	Oracle z/OS Database and Subsystem Configuration Utility

To prepare a response file, perform the following steps:

1. Change directory to the response file directory, using the following command:

```
$ cd directory_location/Disk1/stage/Response
```

2. Copy the response file from the response file directory to a directory on your system, using the following command:

```
$ cp oracle.mvsosdi.server.Typical.rsp local_directory
```

3. Open the response file in a text editor, using the following command:

```
$ vi oracle.mvsosdi.server.Typical.rsp
```

Note: Some installation response files allow you to run configuration assistants automatically in silent mode. If you choose to do this, then ensure that you configure the appropriate response files for the configuration assistants before using the installation response file.

4. Edit the file, following the instructions in the file.

Note: Oracle Universal Installer or configuration assistant fails if you do not correctly configure the response file. See "[Silent-Mode Response File Error Handling](#)" on page C-2 for more information on troubleshooting a failed noninteractive installation.

Running Oracle Universal Installer Using a Response File

To run Oracle Universal Installer noninteractively, enter a command similar to the following:

Note: Do not use a relative path to the response file. If you use a relative path, then Oracle Universal Installer fails.

```
$ /directory_location/runInstaller -silent -responseFile filename
```

Variables for the previous example are defined as follows:

- *directory_location* is the path of the Disk1 directory on the hard drive.
- The `-silent` parameter specifies a completely noninteractive installation.
- *filename* is the full path and filename of the installation response file that you configured.

Installation Reference

This appendix documents additional installation information that is referenced in the installation sections. It includes information on the following topics:

- [Choosing Data Set Name Qualifiers](#) on page B-1
- [Oracle Library Data Sets](#) on page B-2

Choosing Data Set Name Qualifiers

The Oracle Database for z/OS installation setup and initialization process creates the first of several z/OS data sets. Later in the installation, you can specify the high-level and second-level data set name qualifiers that are used for subsequently created data sets.

Oracle recommends that you use the same qualifiers for all of the installation-related data sets. At this time, you need to choose and use the qualifiers that were selected during the installation process.

While choosing qualifiers, remember the following requirements:

- You must choose unique qualifiers.

Using different qualifiers ensures that the products in the product set are maintained in separate libraries as required.

Caution: Do not use the same qualifiers that you have used for any other Oracle Database for z/OS product set that you have previously installed. If you do, then the installation procedures will delete and reallocate your current Oracle libraries. In addition, do not concatenate these libraries with any existing libraries that you are running for previously installed product sets.

- In most z/OS systems, some preparation is required before creating data sets with a new high-level data set name qualifier.

If you intend to use a new high-level qualifier for your Oracle data sets, then you must define an ALIAS before running the job that loads the installation JCL. If in doubt, ask your z/OS systems programmer for assistance.

Oracle Library Data Sets

This section describes the Oracle library data sets that were created during the installation process. You might not have all of these data sets on your system, depending on which products you selected to install.

Oracle Library Data Sets and their sizes are described in the following table:

Name	CYLS	Dsorg	Recfm	Lrecl	Blksz
AUTHLOAD	350	PDSE	U	0	27998
CMDLOAD	250	PDSE	U	0	27998
H	5	PDS	FB	80	8880
INSTLIB	2	PDSE	FB	80	27920
MACLIB	2	PDS	FB	80	27920
MESG	110	PDS	U	0	27998
OBJLIB	2	PDS	FB	80	27920
SQL	6	PDSE	VB	2048	27998
SQLLIB	2	PDSE	U	0	27798
SRCLIB	2	PDSE	FB	80	27920

The following Oracle libraries can be created on your system depending on which products you select during the installation process.

- `oracle_hlq.AUTHLOAD`
 This data set contains programs that must have APF authorization (normally you identify this as an authorized library. For more information, refer to the "[Add an APF-Authorized Library](#)" section on page 2-5).
- `oracle_hlq.CMDLOAD`
 This data set contains all other executable Oracle utilities, tools, and supporting modules, including Oracle Net and Oracle Access Manager for CICS and IMS TM.
- `oracle_hlq.H`
 This data set contains the header files and includes files that are used by the precompilers.
- `oracle_hlq.MACLIB`
 This data set contains the CICS and IMS TM macros.
- `oracle_hlq.MESG`
 This data set contains the NLS data objects and message files.
- `oracle_hlq.OBJLIB`
 This data set contains the object files necessary for linking Oracle Call Interface or Oracle Precompiler programs.
- `oracle_hlq.PARMLIB`
 This data set contains sample initialization and parameter files.
- `oracle_hlq.SQL`

This data set contains SQL scripts that create and initialize database tables and PL/SQL sample scripts. The PL/SQL sample script names are documented in the *Oracle Database PL/SQL User's Guide and Reference*.

- oracle_hlq.SQLLIB

This data set contains the program objects necessary for linking Oracle Call Interface or Oracle Precompiler programs.

- oracle_hlq.SRCLIB

This data set contains files to run the demo scripts for Oracle tools and Programmatic Interfaces. It also contains SMF examples, PL/SQL samples, OCI samples, Oracle Precompiler samples, and sample JCL and source code for Oracle Access Manager for CICS and IMS TM.

The PL/SQL sample source names are the same as those that are documented in the *Oracle Database PL/SQL User's Guide and Reference*.

Troubleshooting

This appendix contains information on troubleshooting. It includes information on the following topics:

- [X Windows Display Errors](#)
- [Reviewing the Log of an Installation Session](#)
- [Silent-Mode Response File Error Handling](#)
- [Cleaning Up After a Failed Installation](#)

X Windows Display Errors

When you run Oracle Universal Installer, you might see error messages similar to the following:

```
"Failed to connect to server"  
"Connection refused by server"  
"Can't open display"
```

If you see one of these error messages, perform the following tasks:

1. In the session on your workstation, enter the following command:

```
$ xhost +
```

2. From the workstation where you will run Oracle Universal Installer, log in to the server where you intend to install Oracle Database 10g.

3. Enter the following commands, where *workstation_name* is the name of your workstation:

```
$ DISPLAY=workstation_name:0.0  
$ export DISPLAY
```

4. To determine whether your X Window system is working properly on your local system, enter the following command:

```
$ xclock
```

The X clock should appear on your monitor.

Reviewing the Log of an Installation Session

During an installation, Oracle Universal Installer records all of the actions that it performs in a log file. If you encounter problems during the installation, review the log file for information about possible causes of the problem.

To view the log file, follow these steps:

1. If necessary, enter the following command to determine the location of the `oraInventory` directory:

```
$ more /var/opt/oraInst.loc
```

The `inventory_loc` parameter in this file specifies the location of the `oraInventory` directory.

2. Enter the following command to change directory to the Oracle Universal Installer log file directory, where `orainventory_location` is the location of the `oraInventory` directory:

```
$ cd /orainventory_location/logs
```

3. Enter the following command to determine the file name of the log file:

```
$ ls -ltr
```

This command lists the files in the order of creation, with the most recent file shown last. Oracle Universal Installer log files have names similar to the following, where `date_time` indicates the date and time that the installation started:

```
installActionsdate_time.log
```

4. To view the most recent entries in the log file, where information about a problem is most likely to appear, enter a command similar to the following:

```
$ tail -50 installActionsdate_time.log | more
```

This command displays the last 50 lines in the log file.

5. If the error displayed by Oracle Universal Installer or listed in the log file indicates a relinking problem, see the following file for more information:

```
$ORACLE_HOME/install/make.log
```

Silent-Mode Response File Error Handling

To determine whether a noninteractive installation succeeds or fails, see the following log file:

```
/oraInventory_location/logs/silentInstalldate_time.log
```

If necessary, see the previous section for information on determining the location of the `oraInventory` directory.

A noninteractive installation fails if:

- You do not specify a response file
- You specify an incorrect or incomplete response file
- Oracle Universal Installer encounters an error, such as insufficient disk space

Oracle Universal Installer or configuration assistant validates the response file at runtime. If the validation fails, then the noninteractive installation or configuration process ends. Oracle Universal Installer treats values for parameters that are of the wrong context, format, or type as if no value was specified in the file. Variables that are outside any section are ignored.

Cleaning Up After a Failed Installation

If an installation fails, you must remove files that Oracle Universal Installer created during the attempted installation and remove the Oracle home directory. Perform the following steps to remove the files:

1. Start Oracle Universal Installer as described in the "[Installing the Oracle Database Software](#)" section on page 3-1.
2. Click **Deinstall Products** on the Welcome window or **Installed Products** available on any Oracle Universal Installer window. The Inventory window appears, listing installed products.
3. Select any products that you want to remove, then click Remove.

Note: If you have more than one installation on the system, then products installed in other Oracle homes appear in the Inventory window. If you select products from other Oracle homes, then they are deinstalled.

4. Manually remove the Oracle home directory used by the failed installation.

Index

Symbols

\$ prompt in shell environments, 1-4

A

APARS, required, 2-3
APF-authorized library, adding, 2-5
ASIDs (address space IDs), ensuring adequate, 2-6
associating userids with services, 2-9
AUTHLOAD library, B-2
authorized library list, B-2

B

BPX parameters, configuring, 2-4

C

CICS TS requirements for installation, 2-2
CLASSPATH environment variable, 2-14
client X server environment, 2-12
CMDLOAD library, B-2
COBOL compiler requirements for installation, 2-2
configuration considerations, system level, 2-3

D

data set name qualifiers, choosing, B-1
data sets
 created during installation, 2-12
 PDS and PDSE, 2-12
database
 see Oracle Database for z/OS
Database and Subsystem Configuration utility, 1-3
directories
 for installation, 2-11
 Oracle base, 2-11
 Oracle home, 2-11
 Oracle inventory, 2-11
directory structure for Oracle software, 2-16
disk space requirements, installation, 2-2
DISPLAY environment variable, 2-14
downloading Oracle software from OTN, 2-15
DVDs, loading Oracle software from, 2-15

E

environment variables
 CLASSPATH, 2-14
 DISPLAY, 2-14
 JAVA_HOME, 2-13
 LIBPATH, 2-14
 PATH, 2-13
 z/OS user environment, 2-13
extracting Oracle software from PAX files, 2-16

F

failed installation, removing files after, C-3

H

H library, B-2
hardware requirements, 2-1
high-level data set name qualifiers, B-1

I

IBM C/C++ requirements for installation, 2-2
IBM REXX requirements for installation, 2-2
IMS TM requirements for installation, 2-2
initialization program, parameter file, B-2
installation
 choosing location of software, 2-10
 configuring user environments, 2-12
 considerations, 1-3
 data sets created, 2-12
 directories, 2-11
 directory structure for, 2-16
 disk space requirements, 2-2
 from OTN Web site, 2-15
 from product DVDs, 2-15
 interactive method, 3-1
 introduction, 3-1
 loading Oracle software, 2-15
 noninteractive (silent) method, A-1
 operating system requirements, 2-2
 overview, 1-1
 postinstallation tasks, 3-2
 products, 1-2
 removing files after failed, C-3
 removing Oracle databases, 4-1

- removing Oracle software, 4-1
- reviewing log file, C-1
- system administrator tasks, 3-3
- troubleshooting, C-1

Installer

- see* Oracle Universal Installer

interactive installation method, 3-1

J

Java requirements for installation, 2-2

JAVA_HOME environment variable, 2-13

JCL

- define ALIAS, B-1
- sample JCL for Oracle Access Managers, B-3

L

LIBPATH environment variable, 2-14

libraries

- APF-authorized, 2-5
- see* Oracle libraries

loading Oracle software from DVDs, 2-15

log file for installation, C-1

M

MACLIB library, B-2

MESG library, B-2

migrating existing Oracle Databases, 1-3

multiple Oracle homes support, 1-4

N

noninteractive (silent) installation method, A-1

O

OBJLIB library, B-2

operating system requirements, installation, 2-2

Oracle base directory, 2-11

Oracle Client for z/OS

- installation types, 1-3

Oracle Database for z/OS

- disk space requirements, 2-2
- hardware requirements, 2-1
- installation considerations, 1-3
- installation overview, 1-1
- installation types, 1-3
- installing, 3-1
- products for installation, 1-2
- removing, 4-1
- required APARS, 2-3
- software certification, 1-3
- support for multiple Oracle homes, 1-4
- system-level configuration considerations, 2-3
- upgrading, 1-4

Oracle home directory, 2-11

Oracle homes, support for multiple, 1-4

Oracle inventory directory, 2-11

Oracle libraries

AUTHLOAD, B-2

CMDLOAD, B-2

H, B-2

MACLIB, B-2

MESG, B-2

OBJLIB, B-2

PARMLIB, B-2

SQL, B-3

SQLLIB, B-3

SRCLIB, B-3

Oracle library data sets, B-2

Oracle Universal Installer

- command for running noninteractively, A-3
- description, 1-1
- interactive installation method, 3-1
- log file, C-1
- migrating data, 1-3
- noninteractive installation method, A-1
- starting, 3-1
- upgrading software, 1-3

Oracle z/OS Database and Subsystem Configuration utility, 1-3

oracle.mvsosdi.client.Complete.rsp file, A-2

oracle.mvsosdi.client.Custom.rsp file, A-2

oracle.mvsosdi.client.Typical.rsp file, A-2

oracle.mvsosdi.config.Typical.rsp file, A-2

oracle.mvsosdi.server.Complete.rsp file, A-2

oracle.mvsosdi.server.Custom.rsp response file, A-2

oracle.mvsosdi.server.Typical.rsp file, A-2

oraInst.loc file, for noninteractive installation, A-1

OTN Web site, downloading Oracle software from, 2-15

P

PARMLIB library, B-2

patches, installing Oracle software, 3-2

PATH environment variable, 2-13

PAX files

- description, 1-1
- extracting Oracle software from, 2-16

PL/I requirements for installation, 2-2

preinstallation tasks, 2-1

product security activities, 2-4

products, Oracle Database for z/OS, 1-2

program properties, adding, 2-6

R

removing Oracle databases, 4-1

removing Oracle software, 4-1

resource class, creating and activating, 2-7

response files

- error handling, C-2
- oracle.mvsosdi.client.Complete.rsp, A-2
- oracle.mvsosdi.client.Custom.rsp, A-2
- oracle.mvsosdi.client.Typical.rsp, A-2
- oracle.mvsosdi.config.Typical.rsp, A-2
- oracle.mvsosdi.server.Complete.rsp, A-2
- oracle.mvsosdi.server.Custom.rsp, A-2

oracle.mvsosdi.server.Typical.rsp, A-2
response files, for noninteractive installation, A-2

S

second-level data set name qualifiers, B-1
services, associating with userids, 2-9
shell environments
 \$ prompt in, 1-4
 working in, 1-4
silent (noninteractive) installation method, A-1
software certification, 1-3
SQL library, B-3
SQLLIB library, B-3
SRCLIB library, B-3
storage, checking user virtual, 2-4
system administrator tasks, performing, 3-3

T

TCP/IP requirements for installation, 2-2
troubleshooting the installation, C-1

U

UNIX System Services
 see z/OS UNIX System Services
upgrading existing Oracle Databases, 1-3
upgrading Oracle Database for z/OS, 1-4
user environments
 client X server, 2-12
 configuring, 2-12
 z/OS user, 2-13
user virtual storage, checking, 2-4
userids, associating with services, 2-9

X

X windows
 display errors, C-1
 libraries required for installation, 2-2
 requirement for interactive installation
 method, 2-12

Z

z/OS UNIX System Services
 \$ prompt in, 1-4
 disk space requirements, 2-2
 requirements for installation, 2-2
 working in, 1-4
z/OS user environment, 2-13

