Oracle9*i*

Quick Installation Procedure

Release 1 (9.0.1) for Linux Intel

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Part No. A90352-01

Purpose of this Procedure

The following procedure describes basic requirements your system needs to meet, and the minimum tasks you need to perform to install an Oracle9*i* Database. It is not intended to replace *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*. If you are an experienced DBA, use this procedure as a guide to complete a quick installation of an Oracle9*i* Database.

If you want to install Oracle9*i* Management and Integration or Oracle9*i* Client, or if you need to complete complex installation configurations, including those with Legato Storage Manager and Oracle Real Application Clusters, then you must follow the complete installation procedure described in the *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*.

If you have not installed Oracle products before, use this document to become familiar with the installation procedure.

Requirements

The requirements in this procedure are current as of the release date for Oracle9*i*. For the most current information, refer to the release notes for your platform, which are located at the following site:

`http://docs.oracle.com`

If you need assistance with navigating the Oracle Documentation site, refer to the following site:

`http://docs.oracle.com/instructions.html`

The following requirements must be met in order to perform a typical Oracle9*i* software installation and to create a simple prototype database.

- Memory: A minimum of 512 MB of RAM is required to install Oracle9*i* Server. Use the following command to verify the amount of memory installed on your system:

  ```
  $ grep MemTotal /proc/meminfo
  ```

- Swap Space: An amount of disk space equal to twice the amount of RAM or at least 400 MB, whichever is greater. Use the following command to determine the amount of swap space installed on your system:

  ```
  $ /sbin/swapon -s
  ```

- CD-ROM: A CD-ROM drive capable of reading CD-ROM disks in the ISO 9660 format with RockRidge extensions.
- Disk Space: 2.5 GB for database software, and an additional 1 GB for a seed database.
- Temporary Disk Space: The Oracle Universal Installer requires up to 400 MB of free space in the `/tmp` directory. If 400 MB or more is not available in the `/tmp` directory, you can create a `/tmp` directory in another file system, then set the environment variables TEMP (used by Oracle) and TMPDIR (used by operating system programs like the linker "`ld`" and library archiver "`ar`") to point to this location.

  For example:

  For the Bourne or Korn shells:

  ```
  $ mkdir /u03/tmp
  $ TEMP=/u03/tmp ; export TEMP
  $ TMPDIR=/u03/tmp ; export TMPDIR
  ```

  For the C shell:

  ```
  % mkdir /u03/tmp
  % setenv TEMP /u03/tmp
  % setenv TMPDIR /u03/tmp
  ```

- Operating System: Oracle9*i* is certified on SuSe 7.1, Kernel 2.4.4 and the operating system library GNU Lib C 2.2.
- Operating System Patches: Check with your Linux distribution for the latest kernel and library updates.
- JRE: Oracle applications use Sun JRE 1.3.1.
- JDK: Oracle HTTP Server Powered by Apache uses Sun JDK 1.3.1 and Blackdown 1.1.8_v3.

- Operating System Software Requirements: The following table lists the operating system software requirements:

OS Software	Requirements
Operating System Packages	SuSe 7.1.
X Server and Window Manager	Use any X server supported by your UNIX operating system vendor. For Hummingbird eXceed, use native window manager. To determine if your X windows system is working properly on your local system, enter the following command: `$ xclock`
Required Executables	The following executables must be present in the `/usr/bin` directory: `make`, `ar`, `ld`, `nm`.

Note: Non-interactive installation can be done using a response file. Response file templates are located on the Oracle9*i* CD-ROM Disk 1 in the `response` directory. It is not possible to install Oracle9*i* non-interactively without X Window System or an X Window emulator.

See Also: For more information on non-interactive installation, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Non-Interactive Installation and Configuration" in Chapter 3.

If you are an Oracle Support customer, register for Metalink to obtain examples. Metalink is at the following site:

`http://metalink.oracle.com`

Pre-Installation Tasks

Complete the following pre-installation tasks in order to ensure that Oracle is properly installed and that you can use the database after installation.

Determine Shell File Size Limit

Oracle9*i* includes native support for files greater than 2 GB. However, your operating system shell may impose file size limit.

To determine if your shell will impose a file size limit, use the following command:

- For the Bourne or Korn shells:

  ```
  $ ulimit -f
  ```

  Multiply the `file (blocks)` value by 512 to obtain the maximum file size in bytes imposed by the shell. For example, if `file (blocks)` is set to 2097148, the maximum size of the file that you can fully access will be 1 GB.

- For the C shell:

  ```
  % limit filesize
  ```

  This returns the file size limit in kilobytes.

  If you need assistance changing the value for the shell file size limit, contact your operating system vendor or your system administrator.

Review Kernel Parameters

Oracle9*i* uses UNIX resources such as shared memory, swap memory and semaphores extensively for interprocess communication. If your kernel parameter settings are insufficient for Oracle9*i*, you will experience problems during installation and instance startup. The greater the amount of data you can store in memory, the faster your database will operate. In addition, by maintaining data in memory, the UNIX kernel reduces disk I/O activity.

Use the `ipcs` command to obtain a list of the system's current shared memory and semaphore segments, and their identification number and owner.

You can modify the kernel parameters by using the `/proc` file system.

To modify kernel parameters using the /proc file system:

1. Log in as `root` user.
2. Change to the `/proc/sys/kernel` directory.
3. Review the current semaphore parameter values in the `sem` file using the `cat` or `more` utility. For example,

   ```
   # cat sem
   ```

   The output will list, in order, the values for the SEMMSL, SEMMNS, SEMOPM and SEMMNI parameters. The following example shows how the output will appear.

   ```
   250 32000 32 128
   ```

In the preceding example, 250 is the value of the SEMMSL parameter, 32000 is the value of the SEMMNS parameter, 32 is the value of the SEMOPM parameter and 128 is the value of the SEMMNI parameter.

4. Modify the parameter values using the following command:

```
# echo SEMMSL_value SEMMNS_value SEMOPM_value SEMMNI_value > sem
```

In the preceding command, all parameters must be entered in order.

5. Review the current shared memory parameters using the `cat` or `more` utility. For example,

```
# cat shared_memory_parameter
```

In the preceding example, the *shared_memory_parameter* is either the SHMMAX or SHMMNI parameter. The parameter name must be entered in lowercase letters.

6. Modify the shared memory parameter using the `echo` utility. For example, to modify the SHMMAX parameter, enter the following:

```
# echo 4294967295 > shmmax
```

7. Write a script to initialize these values during system startup and include the script in your system `init` files.

> **See Also:** For more information on script files and `init` files, refer to your system vendor's documentation.

Refer to the following table to determine if your system shared memory and semaphore kernel parameters are set high enough for Oracle9*i*. The parameters in the following table are the minimum values required to run Oracle9*i* with a single database instance.

Kernel Parameter	Setting	Purpose
SEMMNI	100	Defines the maximum number of semaphore sets in the entire system.
SEMMNS	256	Defines the maximum number of semaphores on the system. This setting is a minimum recommended value, for initial installation only. The SEMMNS parameter should be set to the sum of the PROCESSES parameter for each Oracle database, adding the largest one twice, and then adding an additional 10 for each database.

Kernel Parameter	Setting	Purpose
SEMMSL	100	Defines the maximum number of semaphores per user id. The SEMMSL setting should be 10 plus the largest PROCESSES parameter of any Oracle database on the system.
SEMOPM	100	Defines the maximum number of operations per `semop` call.
SEMVMX	32767	Defines the maximum value of a semaphore.
SHMMAX	2147483648	Defines the maximum allowable size of the shared memory. The SHMMAX parameter does not affect how much shared memory is used or needed by Oracle9*i*, the operating system, or the operating system kernel. One-half the size of your system's physical memory. Check your system for additional restrictions.
SHMMIN	1	Defines the minimum allowable size of a single shared memory segment.
SHMMNI	100	Defines the maximum number of shared memory segments in the entire system.
SHMSEG	4096	Defines the maximum number of shared memory segments one process can attach.

Note: These are minimum kernel requirements for Oracle9*i*. If you have previously tuned your kernel parameters to levels equal to or higher than these values, continue to use the higher values. A system restart is necessary for kernel changes to take effect.

Complete root user set-up tasks:

1. Log in as the `root` user.
2. Review the `/etc/group` file to verify current groups.
   a. Create database administrator groups, if necessary, by using the `groupadd` utility.
      * The OSDBA group, typically `dba`
      * The OSOPER group, typically `oper`
      * The ORAINVENTORY group, typically `oinstall`

See Also: For more information about system privileges, the OSDBA and OSOPER privileges, and how they may be used for Oracle9*i* administration, refer to *Oracle9i Administrator's Guide.*

For more information about system privileges and roles, refer to the `GRANT` command in the *Oracle9i SQL Reference Manual.*

For more information about the ORAINVENTORY group, the `oraInventory` directory, and sharing Oracle repository information while preserving separate DBA access to databases, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems,* "Create UNIX Groups for Database Administrators" in Chapter 2.

3. Review the `/etc/passwd` file for current account names.

   a. Create the `oracle` and APACHE accounts, if necessary, using the `useradd` utility.

      * The `oracle` account should have the following characteristics:

        The primary group is the ORAINVENTORY group.

        The secondary group is the OSDBA group.

        The account is only used to install and update Oracle software.

      * The APACHE account should have the following characteristics:

        The primary group is the ORAINVENTORY group.

        The secondary group is a group in which only APACHE is a member.

        The account has minimum privileges.

      See Also: For more information on security and ownership of Apache processes, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Create a UNIX Account to Own the Apache Server" in Chapter 2.

      Oracle Corporation has updates on maintaining security with Oracle products and Apache at the following site:

      `http://www.oracle.com/support`

      For more information on Apache configuration and examples, refer to *Apache version 1.3 User's Guide*.

4. Create mount points for the Oracle software and database.

   - Basic installation requires at least two mount points: one for the software and at least one for the database files. At a minimum,

allow 850 MB for the software mount point and 450 MB for the database mount point.

- Optimal Flexible Architecture (OFA)-Compliant installation requires at least four mount points: one for the software and at least three for database files.

  See Also: For more information on issues to consider in creating mount points, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Create Mount Points" in Chapter 2.

5. Set system environment variables.

   - If it does not already exist, create a local `bin` directory, such as `/usr/local/bin` or `/opt/bin`. Set and verify that this directory is included in each user's PATH statement, and that users have execute permissions on the directory.
   - Determine if your X Window system is working properly on your local system. On the system where you will run the Oracle Universal Installer, set DISPLAY to that system's name, or the IP address, X server, and screen.

     Use the database server's name, or the IP address, X server, and screen only if you are performing the installation from your database server's X Window console. If you are not sure what the X server and screen should be set to, use 0 (zero) for both.

     Note: If you receive an error similar to "Failed to connect to server," "Connection refused by server," or "Can't open display" when starting the installer, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*.

   - Set a temporary directory path for the TMPDIR variable with at least 20 MB of free space where the installer has write permission. Example: `/var/tmp`

     See Also: For more information about required and optional environmental variables, PATH settings and OFA settings, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Set Environment Variables" in Chapter 2.

     Additional pre-installation tasks must be completed for Oracle tools, precompilers, networking and other products. For information about required setup tasks for additional Oracle components, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Precompilers and Tools" in Chapter 2.

6. Set Oracle environment variables by adding an entry similar to the following example to each user startup `.profile` file for the Bourne or Korn shells, or `.login` file for the C shell.

> **Note:** If you have existing Oracle home directories in your directory path, Oracle Corporation recommends that you set up a new one for Oracle9*i*.
>
> For the NLS_LANG variable, enter the language environment you prefer to use. The following example assumes American English.

```
# Oracle Environment

ORACLE_HOME=/opt/oracle/product/9.0.1; export ORACLE_HOME
ORACLE_SID=dia2; export ORACLE_SID
ORACLE_TERM=xterm; export ORACLE_TERM
TNS_ADMIN=/export/home/oracle/config/9.0.1; export TNS_ADMIN
NLS_LANG=AMERICAN-AMERICA.UTF8; export NLS_LANG
ORA_NLS33;$oracle_home/ocommon/nls/admin/data; export ORA_NLS33
LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib:/usr/openwin/lib
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/td/lib:/usr/ucblib: \
/usr/local/lib
export LD_LIBRARY_PATH

# Set shell search paths:

PATH=/bin:/usr/bin:/usr/sbin:/etc:/opt/bin:/usr/ccs/bin:/usr/openwin
/bin:/opt/local/GNU/bin
PATH=$PATH:/opt/local/bin:/opt/NSCPnav/bin:$ORACLE_HOME/bin
PATH=$PATH:/usr/local/samba/bin:/usr/ucb:
export PATH

#CLASSPATH must include the following JRE locations:

CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib
CLASSPATH=$CLASSPATH:$ORACLE_HOME/network/jlib
```

Note: DO NOT MODIFY THE JRE SYMBOLIC LINK AFTER ORACLE9*i* IS INSTALLED. The JRE shipped with Oracle9*i* is required by Oracle software. Do not modify this JRE unless it is done through a patch provided by Oracle Support. The inventory can contain multiple versions of the JRE, each of which can be used by one or more products or releases. The `oraInventory` file keeps an inventory of installed products and other installation information. Products in an Oracle home directory access required JREs through a symbolic link in `$ORACLE_HOME/JRE` directory to the actual location of a JRE within the inventory.

- Create the `/var/opt/oracle` directory and make it owned by the `oracle` user. After installation, this directory will contain a few small text files that briefly describe the Oracle software installations and databases on the server. These commands will create the directory and give it appropriate permissions:

```
mkdir /var/opt/oracle
chown oracle:dba /var/opt/oracle
chmod 755 /var/opt/oracle
```

CAUTION: Additional pre-installation tasks must be completed for Oracle tools, precompilers, networking and other products.

Installation Tasks

Complete these tasks to perform a standard Oracle9*i* Database installation on your server and create a seed database. Oracle Corporation strongly recommends that you install a seed database to use as a prototype for configuring databases that conform to your needs.

1. Mount the Oracle9*i* CD-ROM.

   There are multiple CD-ROMs included with Oracle9*i*. Mount Disk 1 to begin installation. Mount subsequent disks when prompted to do so. Place the Oracle9*i* CD-ROM Disk 1 in the CD-ROM drive. You must have `root` privileges to mount or unmount the CD-ROM manually. Be sure to unmount the CD-ROM before removing it from the drive by using the `umount` command.

   If volume management is available the CD-ROM will mount automatically to the `/cdrom/` directory when you insert it into the CD-ROM drive. To check if volume management is available use the following command:

```
% ps -e | grep vold
```

This should return a line similar to:

```
404 ?       16:03 vold
```

If no lines are returned, then volume management is not running and CD-ROM will need to be mounted manually.

Follow these steps to mount the Oracle9i CD-ROM manually:

a. Place the Oracle9*i* CD-ROM in the CD-ROM drive.

b. Log in as the `root` user and create a CD-ROM mount point if one does not already exist:

```
% su root
# mkdir cdrom_mount_point_directory
```

c. Mount the CD-ROM drive on the mount point directory, then exit the `root` account by using the following commands.

```
# mount options device_name cdrom_mount_point_directory
# exit
```

If you are unsure of the correct *device_name*, consult with your system administrator.

Note: If you run the installer while the current working directory is in the CD-ROM, follow these steps to mount the next CD-ROM:

a. Change directory to the root directory of your system and log in as the `root` user by using the following commands:

```
$ cd /
$ su root
```

b. Unmount and remove the CD-ROM from the CD-ROM drive using the following command:

```
# umount cdrom_mount_point_directory
```

c. Insert and mount the next CD-ROM into the CD-ROM drive by using the following command:

```
# mount options device_name cdrom_mount_point_
directory
```

d. Enter the correct mount point in the *Installation* dialog box.

e. Click OK to continue.

2. Run the Oracle Universal Installer.

a. Log in as the `oracle` account.

b. Start the installer by typing in the path where the installer executable is located. Do not try to run the installer executable from within the `oracle9i` directory. If you do, installation will fail. The following is an example of the correct command syntax:

```
/cdrom/oracle9i/runInstaller
```

In order to ensure that you do not have problems with your installation, Oracle Corporation strongly recommends that you review *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Installation" in Chapter 1.

c. The *Welcome* window appears. Click Next.

d. If this is the first installation of any Oracle9*i* products on the database server, the *Inventory Location* window appears. Specify a base directory where you want to install the files, and click OK.

e. The *UNIX Group Name* window appears. Specify the group that will have permission to update Oracle software on the system. Enter the ORAINVENTORY group, or the OSDBA group if you chose not to create ORAINVENTORY. Click Next.

f. If pre-installation tasks were not completed, a window opens prompting you to run the `orainstRoot.sh` script. Oracle Corporation does not recommend this procedure, but running this script will allow you to complete the installation.

g. The *File Locations* window appears. Do not change text in the Source field. The Destination field will have the Oracle home directory path setting you defined during pre-installation.

Specify the group that has permission to update Oracle software on your system, which should be ORAINVENTORY. If you have previously installed Oracle9*i* products on your system, the installer obtains the UNIX group name information from its records, which are stored in the `/var/opt/oracle/oraInst.loc` file.

h. Click Next. The *Available Products* window appears.

Select Oracle9*i* Database and click Next.

i. The *Installation Types* window appears. Select Oracle9*i* Enterprise Edition or Standard Edition Installation. For information about installation types, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Oracle9*i* Installation Planning" in Chapter 1.

j. The *Component Locations* window appears. Click Next.

k. If you assigned the OSDBA group to a group with a different name than `dba`, then you are prompted to confirm the OSDBA group name. Confirm that the name is correct, and click Next.

l. The *Database Configuration* window appears. Select General Purpose and click Next.

m. If you have existing Oracle databases on your server prior to Oracle9*i*, then the installer prompts you to indicate if you want to run the Oracle Data Migration Assistant immediately after installation is complete. Make your selection, and click Next.

n. The *Database Identification* window appears.

Enter the Global Database Name and SID (system identifier) name in the provided fields for the seed database that will be created. Give your database a global name that is the same as the SID, with your domain name appended.

For example, if your domain is `acme.com`, and your database is to be used for sales, a suitable Global Database Name is `sales.acme.com`, with the SID name `sales`.

Note: As the SID is incorporated into many file names, Oracle Corporation recommends restricting it to no more than four characters to avoid file name problems on different operating systems.

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o. Click Next. The *Database File Location* window appears.

Enter the name of one of the mount points you chose for holding a database. The seed database will be installed in one directory under this mount point. Use the Browse... button to navigate to the mount point if necessary.

p. Click Next. The *Database Character Set* window appears. Choose the database character set to be used. Click Next.

q. The *Summary* window appears. Review your selections to confirm they are correct.

r. Click Install. The *Install* window appears. Wait for the products you have selected to be installed.

You will be prompted to insert the subsequent CD-ROMs.

s. The *Setup Privileges* window appears, and prompts you to run the `root.sh` script.

The installer creates the `root.sh` script during installation in the `$ORACLE_HOME` directory, and prompts you to run the script after products are installed in order to set necessary file permissions for Oracle products, and to perform other `root`-related configuration activities. At this point, if you choose, you may review the script before running it.

Open another window, log in to the database server as `root` user, and enter the following commands:

```
# cd $ORACLE_HOME
# ./root.sh
```

When prompted, specify the local `bin` directory. This is the directory you created in pre-installation step 5. If you neglected to do this step, the `root.sh` script creates one for you.

t. The *Configuration Tools*, *Apache Web Server Configuration Assistant*, and *Oracle Net Configuration Assistant* windows open after you run the `root.sh` script. These configuration assistants help to create

and configure your database and network environments. The *Configuration Tools* window displays the results of running these assistants. No information needs to be provided for these installation steps.

u. The *Database Configuration Assistant* window opens. A *Progress* window opens and indicates actions the installer performs as it creates the seed database.

See Also: For more information on database environment types, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems,* "Oracle9*i* Database Configurations" in Chapter 1.

v. Upon completing seed database configuration, the Database Configuration Assistant opens an alert window and shows the initial passwords for the SYS and SYSTEM database roles. Make a note of these passwords. Click the Password Management button to change the passwords for increased security. Click OK.

w. The *End of Installation* window appears. Click Exit to exit the installer. Click Exit to exit the installer, or click Next Install to install additional products.

Post-Installation Tasks

Post-installation tasks vary according to product installation types and according to individual preferences for database configuration.

See Also: For more information about post-installation tasks, commands to unlock system administration roles, and additional product installation or configuration tasks, refer to *Oracle9i Installation Guide Release 1 (9.0.1) for UNIX Systems*, "Post-Installation" in Chapter 4.

Using the Seed Database to Learn About Oracle9*i*

The Oracle9i seed database is running after installation is complete. If you have not used Oracle products before, use the seed database to familiarize yourself with the products. Oracle Corporation recommends that you begin by looking at the following guides:

- *Oracle9i Database Concepts Guide*
- *Oracle9i Database Administrator's Guide*
- *SQL*Plus User's Guide and Reference*

These books outline the fundamentals of database use and administration. The documentation can be found online at the following site:

http://docs.oracle.com

Shutting Down the Seed Database

To shut down the database enter the following commands:

```
$ sqlplus "/ as sysdba"
SQL> shutdown immediate
SQL> exit
```