Migrating/Upgrading to Oracle Version 8.1.5: UNIX (BC-DB-ORA)

Release 4.6C
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Migrating/Upgrading to Oracle Version 8.1.5: UNIX (BC-DB-ORA)

The following document describes database migration and upgrade from Oracle versions 7.3.x, 8.0.4 and 8.0.5 to Oracle version 8.1.5.

Oracle's menu-driven tool, Universal Installer, is used for database migration.

The document consists of the following sections:

Requirements [Page 6]
Preparations [Page 8]
Importing the Software [Page 20]
Migrating the Database [Page 30]
Follow-up Tasks [Page 35]
Installing the SAP Backup Library and/or the Legato Storage Manager [Page 46]
Requirements

Before you begin, make sure your system complies with the requirements specified in this section.

SAP Notes

This document refers to the following SAP Notes:

<table>
<thead>
<tr>
<th>Number</th>
<th>Topic</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>181192</td>
<td>Supplements for migration/upgrade to 8.1.5</td>
<td>This Note is required.</td>
</tr>
<tr>
<td>181195</td>
<td>Current patchset 8.1.5</td>
<td>This Note is required for follow-up activities.</td>
</tr>
<tr>
<td>181201</td>
<td>Problems during migration to 8.1.X</td>
<td>This Note is required if problems arise.</td>
</tr>
<tr>
<td>180430</td>
<td>Client software ORACLI.CAR for Oracle 8.1.5 UNIX</td>
<td>This Note is required for import of client software following migration.</td>
</tr>
<tr>
<td>98228</td>
<td>Transport after database upgrade to Oracle 8.1.X</td>
<td>This Note is required for live operation of R/3 3.0x/3.1x and Oracle 8.1.5.</td>
</tr>
<tr>
<td>142635</td>
<td>Installation of the SAP backup library</td>
<td>This Note is required for installation of the SAP backup library and the Legato Storage Manager.</td>
</tr>
</tbody>
</table>

You can request the required Notes in SAPNet - R/3 Frontend before you start migration and upgrade. If you do not have a connection to SAPNet, you can use the fax request form included in the software package.

Software Requirements

Operating System Version

Make sure your operating system version complies with SAP requirements. SAP has approved specific combinations of operating system version, database version, R/3 Release, and R/3 kernel release. The approved software combinations are described in the following Notes:

Approved operating systems for Oracle

<table>
<thead>
<tr>
<th>R/3 Release</th>
<th>Note Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0x/3.1x</td>
<td>23875</td>
</tr>
<tr>
<td>4.0x/4.5x</td>
<td>85838</td>
</tr>
<tr>
<td>4.6x</td>
<td>156548</td>
</tr>
</tbody>
</table>

Oracle Version

Your database must have software version 7.3.x, 8.0.4 or 8.0.5.

If you are migrating from **32-bit** to **64-bit** Oracle software, you must first perform all the tasks that will enable you to run 64-bit applications on your operating system.

Then, you can migrate your Oracle database to version 8.1.5 (64-bit) as described in this chapter.
The procedure for migration to Oracle 8.1.5 is identical for 32-bit and 64-bit software.
Preparations

The following preparations have to be performed:

- Required Memory Space [Page 9]
- Write Authorization for the Directory /oracle [Page 10]
- Setting umask for ora<sapsid> [Page 11]
- Changing Database Administration Rights [Page 12]
- Operating System Requirements [Page 14]
- Importing Migration Data [Page 15]
- Checking the Requirements Within the Database [Page 16]
- Modifying the Oracle Initialization Parameters [Page 17]
- For R/3 Kernel Release 4.5A, Copy the Oracle Client Library [Page 18]
- Backing Up the Oracle Database [Page 19]
Required Memory Space

Use

The memory space required for the directories /oracle/<SAPSID>, /oracle/stage and /tmp is specified in Note 181192.

Procedure

Make sure the required memory space is available. A large portion of file system space can be reserved for administrative information or for the user root!
Write Authorization for the Directory /oracle

The user ora<sapsid> must have a write authorization for the directory /oracle.

To check if this authorization exists, proceed as follows:
1. Log on to your system with the user ora<sapsid>.
2. Enter the following commands:
   - touch /oracle/write_test
   - rm /oracle/write_test

If the user ora<sapsid> does not have a write authorization, log on to your system with the user root and enter the command:
   - chmod 775 /oracle
Setting umask for ora<sapsid>

Enter the following commands with the user ora<sapsid>:

```
umask
```

If umask does not return the value '022', set umask:

```
umask 022
```
Changing Database Administration Rights

You must perform the following step only if you have ORACLE start release 7.x.

To increase the security of your R/3 System, only the database user SYSTEM may be given the role DBA in release 4.x. The user <sapsid>adm must therefore be assigned the authorizations SYSOPER and SYSDBA, and the role SAPDBA.

The SYSDBA authorization allows the user <sapsid>adm to create backups with the Oracle Recovery Manager in the SAP Computing Center Management System (CCMS).

If you want to change the database administration rights, you must perform certain actions in your operating system:

1. Change the UNIX groups and UNIX users
   Instructions on how to create UNIX groups and assign UNIX users can be found in the chapters on operating systems in the section OS Dependencies of the installation documentation. Log on to your system with the user root and proceed as follows:
   i. Create a new UNIX group called oper.
   ii. Assign the users <sapsid>adm and ora<sapsid> to this group.
      Enter the assignments as follows:
      <sapsid>adm: sapsys, oper, dba
      ora<sapsid>: dba, oper

2. Set up the OPS$ connect mechanism
   When you set up the OPS$ connect mechanism, the new database user OPS$<SAPSID>ADM and the table SAPUSER are created. All R/3 programs first log on to the database by means of the OPS$ connect mechanism and obtain the current password from the table SAPUSER. This password is then used to logon with the SAP database user SAPR3.
   The tool chdbpass is used to set up the connect mechanism. This tool writes the log $ORACLE_HOME/sapreorg/chdbpass.log.
   Proceed as follows:
   i. Mount the CD SAP Kernel (current R/3 kernel release).
      Instructions on how to mount the CD can be found in the chapters on operating systems in the section OS Dependencies of the installation documentation.
   ii. Log on at the UNIX level with the user ora<sapsid>.
   iii. Make sure that the database is started and that the R/3 System is shut down.
   iv. Copy the tool chdbpass from the CD to the directory $ORACLE_HOME/dbs by entering:
       cd $ORACLE_HOME/dbs
cp /<CD-Dir>/UNIX/COMMON/INSTALL/CHDBPASS  chdbpass

Replace <CD-Dir> with the name of mount directory on the CD.

v. Start chdbpass by entering:

./chdbpass

This tool checks that the settings of the environment variables ORACLE_HOME and ORACLE_SID are correct.

Confirm the settings.

vi. Enter the current password of the Oracle user SYSTEM.

chdbpass performs all database actions with this user.

vii. From the chdbpass menu, choose the option Initialize OPS-Connect and change password of SAPR3.

You will first be requested to enter the password for the new user OPS$<sapid>adm and then the new password for the user SAPR3. You can also enter the old password for SAPR3.

viii. If you want to, you can change the passwords for the users SYS and SYSTEM.

To do so, choose the options c) and d from the chdbpass menu

Make sure that the users <sapid>adm and ora<sapid> are assigned to the group dba.
Operating System Requirements

ReliantUNIX

Make sure that the language variable is set to `En_US.ASCII`. This is the only permissible value for Oracle migration.

You can be sure that this value is set if the file `/etc/default/language` contains only the one line:

```
LANG=En_US.ASCII
```

Solaris

1. Make sure that the program `ld` is called via the path `/usr/ccs/bin`.

   Check the path using the UNIX command `which ld`.
   The system response must be: `/usr/ccs/bin/ld`

   If the system indicates a different path, for example, `/usr/ucb/bin/ld`, you must change the content of the `PATH` variables to the specified path.

   To check if this action was successfully performed, enter `which ld` again.

2. Check the environment of the user `ora<sapsid>`:

   The environment variable `OPT` must not be set!

   If it is, you must delete it from the environment before calling the Universal Installer by entering the following command (C shell):

   `unsetenv OPT`
Importing Migration Data

You must import the data from the CD ORACLE RDBMS 8.1.5

To import the data and make the preparations required for execution of the Universal Installer, proceed as follows:

1. Create a staging area.

   If you are updating several Oracle systems, you must create only one staging area.

   Log on to your system with the user ora<sapsid>.

   The directory /oracle/stage may still contain the staging areas of the old Oracle release:
   /oracle/stage/stage_723
   /oracle/stage/stage_733
   /oracle/stage/stage_734
   /oracle/stage/stage_804
   /oracle/stage/stage_805

   These directories can be used to reset the system if an error occurs during migration.

   If your system has sufficient memory space, SAP recommends that you delete the old staging areas only after successful migration or when you no longer need them.

   If your system does not have sufficient memory space, you can now delete the contents of these directories.

2. Create an empty directory called /oracle/stage/815_32: “32” stands for a 32-bit installation. For a 64-bit installation, create an empty directory called /oracle/stage/815_64.

   To create this directory, enter the commands:
   ```
   cd  /oracle/stage
   mkdir 815_32 bzw. mkdir 815_64
   ```

   Import the data from the CD to the staging area.

   Enter the commands:
   ```
   cd/<CD-Dir>/UNIX
   ./UPGRADE.ORA
   ```

   Replace <CD-Dir> with the name of the mount directory on the RDBMS CD, for example, sapcd.

   The data is then imported into the directory /oracle/stage/815_32 or /oracle/stage/815_64.
Checking the Requirements Within the Database

The following script checks the requirements within the ORACLE database. Log on with the user ora<sapsid> and execute the commands:

```bash
cd /oracle/stage/815_32/SAP bzw. 815_64/SAP
sqlplus system/<password>
>@CHECKS.SQL
>exit
```

Carry out all the instructions in this script before you begin migration. The final instruction in the script explains how to set the environment variable NLS_LANG.

Note the value of the environment variable NLS_LANG – you have to set this value later.
Modifying the Oracle Initialization Parameters

Modify the file $ORACLE_HOME/dbs/init<SAPSID>.ora as follows:

1. Replace all question marks with /oracle/<SAPSID>. The following parameters are affected:
   - background_dump_dest
   - user_dump_dest
   - core_dump_dest
   - log_archive_dest

2. If the parameters listed below are available, delete them.
   As parameter names can contain upper-case and lower-case letters, you must first deactivate the case-sensitive search function in the editor.
   - compatible
   - optimizer_features_enable
   - checkpoint_process
   - ccf_io_size
   - _lgwr_async_write
   - async_write
   - use_readv

3. Insert the following parameters. If they already exist, modify the values as required:
   - log_checkpoint_interval = 300000
   - db_file_multiblock_read_count = 8

4. Rename db_writers to dbwr_io_slaves.
   If db_writers is commented out:
   Leave it as such but rename it anyway because the parameter db_writers does not exist in version 8.1.5.
For R/3 Kernel Release 4.5A, Copy the Oracle Client Library

If the database runs on the same computer as an R/3 instance of this database with R/3 kernel release 4.5A, proceed as follows:

1. Log on to the database computer with the user `<sapsid>adm`.
2. Copy the Oracle client library to the R/3 kernel directory by entering:
   
   `cp $ORACLE_HOME/lib/libclntsh.* /usr/sap/<SAPSID>/SYS/exe/run`
Back up the Oracle Database

Before you start the upgrade or migration, create a complete backup of your database.

⚠️

If you do not create a database backup before you start the upgrade or migration, you could lose data!
Importing the Software

You have to perform the following steps in order to import the required software.

- Shutting Down the R/3 System [Page 21]
- Extending the Tablespace [Page 22]
- Calling the Script PREMIG.SQL [Page 23]
- Shutting Down the Database [Page 24]
- Shutting Down the Listener Process [Page 25]
- Checking and Setting the Environment Variables [Page 26]
- Starting the ORACLE Universal Installer [Page 28]
Shutting Down the R/3 System

Shut down the R/3 System with the user <sapsid>adm.

⚠️
The R/3 System must be shut down before you begin the import procedure.

Enter the following command using the user <sapsid>adm:

```
stopsap r3
```

If you use a Standalone Database Server, use the Service Manager to shut down the R/3 System on Windows NT application servers.
Extending the Tablespace

Extending the Tablespace

You only have to perform this step if you have Oracle start release 7.x.

Log on to the system again with ora<sapsid>.

Extend the tablespace SYSTEM by 300 MB using the program sapdba.
Calling the Script PREMIG.SQL

Call the script PREMIG.SQL by entering:

cd /oracle/stage/815_32/SAP bzw. 815_64/SAP
sqlplus system/<password>
> @PREMIG.SQL
> exit
Shutting Down the Database

To shut down the database, enter the command:

```
svrmgrl
>connect internal
>shutdown
>exit
```
Shutting Down the Listener Process

The listener process must be shut down by the user that started it. This is usually `ora<sapsid>`. Check this using the command:

```
ps -ef | grep tnslsnr  or  ps -axu | grep tnslsnr
```

To shut down the listener process, enter the command:

```
$ORACLE_HOME/bin/lsnrctl stop
```

Determine whether any Oracle processes are still active for this SAPSID by entering the command:

```
ps -afe | fgrep <SAPSID>
```

Terminate any Oracle processes that may still be active.

Make sure that processes which log on to the database, like CRON jobs, are not active during migration.

Reschedule these processes!
## Checking and Setting the Environment Variables

1. Make sure the following environment variables are **not** set:
   - `TWO_TASK`
   - `ENV`

2. Set the following environment variables:

<table>
<thead>
<tr>
<th>Environment variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td><code>&lt;Computer name&gt;:0</code></td>
</tr>
<tr>
<td>ORACLE_BASE</td>
<td><code>/oracle</code></td>
</tr>
<tr>
<td>ORACLE_SID</td>
<td><code>&lt;SAPSID&gt;</code></td>
</tr>
<tr>
<td>ORACLE_HOME</td>
<td><code>/oracle/&lt;SAPSID&gt;/815_32 or 815_64</code></td>
</tr>
<tr>
<td>NLS_LANG</td>
<td><code>&lt;Use the value in the script CHECKS.SQL&gt;</code></td>
</tr>
<tr>
<td>ORA_NLS33</td>
<td><code>$ORACLE_HOME/ocommon/nls/admin/data</code></td>
</tr>
<tr>
<td>STAGING_AREA</td>
<td><code>/oracle/stage/815_32 bzw. 815_64</code></td>
</tr>
<tr>
<td>LIBRARY_PATH</td>
<td><code>$ORACLE_HOME</code></td>
</tr>
<tr>
<td>SAPDATA_HOME</td>
<td><code>/oracle/&lt;SAPSID&gt;</code></td>
</tr>
</tbody>
</table>

Set the environment variables to `$ORACLE_HOME/lib` or `$ORACLE_HOME/lib64` depending on your operating system. When importing 32-bit Oracle software, set the environment variable to `$ORACLE_HOME/lib`. When importing 64-bit Oracle software, set the environment variable to `$ORACLE_HOME/lib64`. The Digital UNIX operating system is an exception to this rule. For Digital UNIX, always set the environment variable to `$ORACLE_HOME/lib`.

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Environment variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>LIBPATH</td>
<td><code>$ORACLE_HOME/lib</code> or <code>lib64</code></td>
</tr>
<tr>
<td>Reliant UNIX, Solaris</td>
<td>LD_LIBRARY_PATH</td>
<td><code>$ORACLE_HOME/lib</code> or <code>lib64</code></td>
</tr>
<tr>
<td>Digital UNIX</td>
<td>LD_LIBRARY_PATH</td>
<td><code>$ORACLE_HOME/lib</code></td>
</tr>
<tr>
<td>HP-UX</td>
<td>SHLIB_PATH</td>
<td><code>$ORACLE_HOME/lib</code> or <code>lib64</code></td>
</tr>
</tbody>
</table>

Enter the command:

```
set path = ($ORACLE_HOME/bin $path)
```

Make sure that the new variables are permanently set in the profiles of the users `<sapsid>adm` and `ora<sapsid>`.
You can set these variables by editing the files .dbenv_<host>.sh and .dbenv_<host>.csh in the home directories of <sapsid>adm and ora<sapsid> using any editor.

⚠️ Only for AIX: Adapting the AIX kernel

If several Oracle instances run on one computer, you must shut these down before adapting the kernel!

To adapt the kernel, proceed as follows:

1. Log on to the system with user ora<sapsid> if you are not already logged on.
2. Change to the directory /oracle/stage/815_32 or /oracle/stage/815_64/pre-install using the command:
   ```bash
cd /oracle/stage/815_32
```
3. Enter the following su command to ensure that the user root is assigned the environment of ora<sapsid>:
   ```bash
   su root
   ``
4. Call the script rootpre.sh by entering:
   ```bash
   ./rootpre.sh
   ``
5. Log off with the user root by entering:
   ```bash
   exit
   ```
Starting the ORACLE Universal Installer

---

**Starting the ORACLE Universal Installer**

Before you continue with the migration/upgrade procedure, make sure that you have completed all of the above steps correctly!

Start the ORACLE Universal Installer with the user ora<sapsid>:

```bash
cd /oracle/stage/815_32 bzw. 815_64
./runInstaller
```

When you start the Universal Installer, a series of windows appears:

1. **“Welcome”**
   - Continue by choosing Next.

2. **“File Locations Destination...”**
   - Check that the variable $ORACLE_HOME is correctly set. The relevant directory must be empty! Continue by choosing Next.

3. When you run the Universal Installer for the first time, the following menu appears:
   - **“UNIX Group Name”**
     - Enter dba as the group name and confirm your entry by choosing Next.
     - A dialog box appears.
     - Execute the file /tmp/OraInstall/orainstRoot.sh with the user root, and confirm the dialog box by choosing Retry.

4. **“Available Products”**
   - Select Oracle 8i Enterprise Edition 8.1.5.0.0 and confirm your selection choosing Next.

5. **“Installation Types”**
   - Select Custom as the installation type and continue by choosing Next.

6. **“Available Product Components”**
   - Select the products as follows: Deactivate Oracle Product Options and activate all options in all other categories. Confirm your selections by choosing Next.

7. **“Component Locations”**
   - Confirm this window by choosing Next.

8. **“Upgrading or Migrating an Existing Database”**
   - If this step does not appear, continue with the next step.
   - Upgrading or Migrating an Existing Database Database must not be activated.
Continue by choosing Next.

9. “Create Database”
   Select No and continue by choosing Next.

10. “Installing Legato Storage Manager”
    
    If this step does not appear, continue with the next step.
    Select No and confirm your selection by choosing Next.

    Select TCP/IP and continue by choosing Next.

12. “Summary”
    Check the entries under Summary. If all entries are correct, choose Install.

13. When the Install step has been completed, a dialog box appears.
    Execute the file $ORACLE_HOME/root.sh with the user root, and confirm the dialog box by choosing Ok. Then continue by choosing Next.

14. Cancel all other tools that the system automatically calls by choosing Cancel and then Ok.

15. Exit the ORACLE Universal Installer by choosing Exit and then Yes.
Migrating the Database

⚠️

The steps in this chapter must be performed before any type of release upgrade. They also apply to upgrades from 8.0.x to 8.1.x.

Please perform the following steps to migrate the database.

- Checking the oratab Entry [Page 31]
- Calling the Oracle Data Migration Assistant [Page 32]
- Calling the script POSTMIG.SQL [Page 34]
Checking the oratab Entry

The file /var/opt/oracle/oratab must contain the following entry:

<SAPSID>:<ORACLE_HOME>:N

If this entry does not exist, insert it using a text editor.

⚠️

<ORACLE_HOME> must refer to the old ORACLE_HOME directory and not to the new one!
Calling the Oracle Data Migration Assistant

Call the Oracle Data Migration Assistant with the user ora<sapid>: odma

When you start the Oracle Data Migration Assistant, a series of windows appears:

1. "Welcome"
   Continue by choosing Next.

2. "Before You Migrate or Upgrade"
   Check the requirements and continue by choosing Next.

3. "Select a Database Instance"
   Select an instance and continue by choosing Next.

4. "Database Password and INIT.ORA File"
   Check the entries and continue by choosing Next.

5. "Choose Migration Type"
   
   If this step does not appear, continue with the next step.
   Select Default and confirm your selection by choosing Next.

6. "Back Up Your Database"
   Confirm this window by choosing Next.

7. "Start the Migration or Upgrade"
   Continue by choosing Next.

8. Confirm all the status dialog boxes that appear by choosing Ok or Next.

9. "Finish"
   Check the file <SAPSID>SUMMARY.log by choosing Results Summary.
   
   Start release 7.3.x must contain four "No Errors" entries; start release 8.0.x must contain one "No Errors" entry.
   
   You can display the following files by choosing View Log File:
   - For start release 7.3.x:
     <SAPSID>altdbs.log
     <SAPSID>cat.log
     <SAPSID>checkspc.log
     <SAPSID>mig.log
   - For start release 8.0.x:
     <SAPSID>update8unix.log
The log files are stored in the directory `$ORACLE_HOME/assistants/dbma`.

When you have checked the log files, confirm the “Finish” window by choosing Finish.
Calling the script POSTMIG.SQL

You can call the script POSTMIG.SQL by entering:

cd /oracle/stage/815_32/SAP bzw. 815_64/SAP

sqlplus internal

>@POSTMIG.SQL

>exit
Follow-up Tasks

This section describes what you have to do after having migrated the database:

- Copying the File `init<SAPSID>.sap` [Page 36]
- Modifying the Oracle Initialization Parameters [Page 37]
- Copying *.ora Files [Page 38]
- Modifying the File `listener.ora` [Page 39]
- Checking the Read Authorization of the User `<sapid>adm` [Page 40]
- Importing the Current Patchset [Page 41]
- Starting the Listener Process [Page 42]
- Importing Oracle Client Software [Page 43]
- Creating the SAPDBA Role [Page 44]
- Importing the Current SAP Tools [Page 45]
Copying the File `init<\SAPSID>.sap`

Copy the files `init<\SAPSID>.sap` and `init<\SAPSID>.dba` from the old `$ORACLE_HOME/dbs` directory into the new one by entering:

```bash
cd /<old ORACLE_HOME>/dbs
cp init<\SAPSID>.sap $ORACLE_HOME/dbs
cp init<\SAPSID>.dba $ORACLE_HOME/dbs
```
Modifying the Oracle Initialization Parameters

Modify the file $ORACLE_HOME/dbs/init<SAPSID>.ora by inserting the parameter:

```
optimizer_index_cost_adj = 10
```

If this parameter already exists, modify the value accordingly
Copying *.ora Files

Copy files with the extension *.ora from the old/$ORACLE_HOME/network/admin directory into the new one by entering:

```
cd /<altes ORACLE_HOME>/network/admin

cp *.ora $ORACLE_HOME/network/admin
```
Modifying the File listener.ora

In the file listener.ora, change the line ORACLE_HOME = /oracle/<SAPSID> to ORACLE_HOME = /oracle/<SAPSID>/815_32 or 815_64. To make this change, enter:

```
cd $ORACLE_HOME/network/admin
vi listener.ora
```

Then call the text editor by entering

```
vi listener.ora
```

and change the specified line accordingly.
Checking the Read Authorization of the User <sapsid>adm

Make sure that the user <sapsid>adm has a read authorization for the files in the directory $ORACLE_HOME/ocommon/nls/admin/data/* and for the directory $ORACLE_HOME.

If this is not the case, enter the following commands with the user ora<sapsid>:

    chmod 755 $ORACLE_HOME/ocommon/nls/admin/data/*
    chmod 755 $ORACLE_HOME
Importing the Current Patchset

Log on at the operating system level with the user ora<sapsid>. Refer to Note 181195 for the number of the current patchset and the import instructions.

If the Oracle RDBMS CD already contains the patchset, it can be found under /oracle/stage/815_32/PATCH or /815_64/PATCH. If it does not, copy it from sapserv(x) as described in Note 181195.
Starting the Listener Process

Log on with the user ora<sapsid> and enter the command:

$ORACLE_HOME/bin/lsnrctl start
Importing Oracle Client Software

Import the Oracle client software as described in Note 180430.
Creating the SAPDBA Role

You need the SQL script `DBA_ROLE.SQL` on the ORACLE RDBMS 8.1.5 CD to create the SAPDBA role.

1. Make sure this CD is mounted.
2. Copy the SQL script `DBA_ROLE.SQL` from the CD to the directory 
   `$ORACLE_HOME/dbs` by entering:
   ```
cd $ORACLE_HOME/dbs
cp /<CD-Dir>/UNIX/COMMON/DBA_ROLE.SQL sapdba_role.sql
   ```
3. Start the script with the user `ora<sapsid>` by entering:
   ```
cd $ORACLE_HOME/dbs
sqlplus internal @sapdba_role <SAPSID> UNIX
   ```

If the following error message appears, ignore it:

```
Error accessing PRODUCT_USER_PROFILE
Warning: Product user profile information not loaded!
You may need to run PUBLD.SQL as SYSTEM.
```
Importing the Current SAP Tools

Procedure

Import the current SAP database administration tools from the ORACLE RDBMS 8.1.5 CD.

1. Make sure this CD is mounted.
2. Log on with the user <sapsid>adm.
3. Change to the R/3 executable directory by entering:
   ```
   cd /usr/sap/<SAPSID>/SYS/exe/run
   ```
   Delete the following old programs:
   - sapdba
   - brarchive
   - brbackup
   - brconnect
   - brrestore
   - brtools
   Unpack the current programs using the call:
   ```
   CAR -xvf <CD-Mount>/UNIX/<OS>/DBATOOLS.CAR .
   ```
4. Change the authorization for all programs except brrestore by entering:
   ```
   su root
   chown ora<sapsid> sapdba brarchive brbackup
   chown ora<sapsid> brconnect brtools
   chmod 775 sapdba brarchive brbackup brconnect brtools
   exit
   ```

Result

Oracle version 8.1.5 is now installed on your database.
Installing the SAP Backup Library and/or the Legato Storage Manager

If you want to extend the backup functionality, like incremental backup, of your system, you must use one of the following backup libraries:

- SAP backup library
- Legato Storage Manager
- Backup tool of a third-party vendor that implements the backup interface of the Oracle Recovery Manager

The use of a backup library is optional. You can install a backup library any time after Oracle migration or upgrade.

For more information on how to install and use the SAP backup library and the Legato Storage Manager, see Note 142635.

When installing third-party backup software, follow the vendor’s instructions.