

Migrating/Upgrading to Oracle Version 8.1.7: UNIX



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Icons

Icons







Icon	Meaning
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Migrating/Upgrading to Oracle Version 8.1.7: UNIX

The following document describes database migration and upgrade from Oracle versions 8.0.x and 8.1.x to Oracle version 8.1.7.

Oracle's menu-driven tools, `Universal Installer` and `Database Migration Assistant`, are used for database migration.

The document consists of the following sections:

[Requirements \[Page 1\]](#)

[Preparations \[Page 2\]](#)

[Importing the Software \[Page 7\]](#)

[Migrating the Database \[Page 11\]](#)

[Follow-up Tasks \[Page 13\]](#)

[Installing the SAP Backup Library and/or the Legato Storage Manager \[Page 16\]](#)

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:

Number	Topic	Remarks
362068	Additions migration/upgrade to Oracle 8.1.7: UNIX	This Note is required.
362060	Current patch set for Oracle 8.1.7	This Note is required for follow-up activities.
181201	Problems during migration to 8.1.x	This Note is required if problems arise.
180430	Installation of Oracle client software	This Note is required for import of client software following migration.
98228	Transport after database upgrade to Oracle 8.1.x	This Note is required for live operation of R/3 3.0x/3.1x and Oracle 8.
142635	Installation of the SAP backup library	This Note is required for installation of the SAP backup library and the Legato Storage Manager.

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.

Required Memory Space

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, SAP Release, and SAP kernel release. The approved software combinations are described in the following Notes:

Approved operating systems for Oracle

SAP Release	Note Number
3.0x/3.1x	23875
4.0x/4.5x	85838
4.6x	156548

Oracle Version

Your database must have software version 8.0.x or 8.1.x.

If you are migrating from **32 bit** to **64bit** 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 8.1.7 (64 bit) as described in this chapter.



The procedure for migration to Oracle 8.1.7 is identical for 32 bit and 64 bit software.

Preparations

The following preparations have to be performed:

[Required Memory Space \[Page 2\]](#)

[Write Authorization for the Directory /oracle \[Page 3\]](#)

[Setting umask for ora<sapsid> \[Page 3\]](#)

[Changing Database Administration Rights \[Page 3\]](#)

[Operating System Requirements \[Page 5\]](#)

[Importing Migration Data \[Page 5\]](#)

[Checking the Requirements Within the Database \[Page 6\]](#)

[Modifying the Oracle Initialization Parameters \[Page 7\]](#)

[Backing Up the Oracle Database \[Page 7\]](#)

Required Memory Space

Use

The memory space required for migrating/upgrading to Oracle 8.1.7 is specified in **Note 362068**.

Write Authorization for the Directory /oracle

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 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 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 SAP System, only the database user `SYSTEM` may be given the role `DBA` in release 4.x and higher. 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`.

Changing Database Administration Rights

- 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 SAP 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 SAP 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$<sapsid>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 `<sapsid>adm` and `ora<sapsid>` 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 both CDs *ORACLE RDBMS 8.1.7*.

This is the first time that Oracle software is delivered on two CDs!

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.

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
```

Checking the Requirements Within the Database

```
/oracle/stage/stage_805  
/oracle/stage/815_32(64)  
/oracle/stage/816_32(64)
```

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.

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

Create an empty directory called `/oracle/stage/817_32` for a 32 bit installation or `/oracle/stage/817_64` for a 64 bit installation, respectively.

To create this directory, enter the commands:

```
cd /oracle/stage  
mkdir 817_32 or mkdir 817_64 , respectively.
```

2. Import the data from both ORACLE RDBMS CDs to the staging area by entering the following commands for every CD.

```
cd /<CD-Dir>/UNIX  
./UPGRADE.ORA
```

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

The data is then imported into the directory `/oracle/stage/817_32` or `/oracle/stage/817_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:

```
cd /oracle/stage/817_32/Disk1/SAP or 817_64/Disk1/SAP , respectively  
sqlplus system/<password>  
>@CHECKS.SQL
```

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.

`optimizer_features_enable`

`optimizer_search_limit`

`_lgwr_async_write`

3. Insert the following parameters. If they already exist, modify the values as required:

`log_checkpoint_interval = 300000`

`db_file_multiblock_read_count = 8`

Backing 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 \[Page 8\]](#)

[Calling the Script PREMIG.SQL \[Page 8\]](#)

[Shutting Down the Database \[Page 8\]](#)

[Shutting Down the Listener Process \[Page 8\]](#)

[Checking and Setting the Environment Variables \[Page 9\]](#)

[Starting the ORACLE Universal Installer \[Page 10\]](#)

Shutting Down the SAP System

Shut down the SAP System **with the user** <sapsid>adm.



The SAP 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 SAP System on Windows NT application servers.

Calling the Script PREMIG.SQL

Call the script PREMIG.SQL by entering:

```
cd /oracle/stage/817_32/Disk1/SAP or 817_64/Disk1/SAP , respectively
sqlplus system/<password>
>@PREMIG.SQL
```

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 tnslnr or ps -axu | grep tnslnr
```

To shut down the listener process, enter the command:

```
$_ORACLE_HOME/bin/lsnrctl stop
```

Checking and Setting the Environment Variables

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:

Environment variable	Value
DISPLAY	<hostname>:0
ORACLE_BASE	/oracle
ORACLE_SID	<SAPSID>
ORACLE_HOME	/oracle/<SAPSID>/817_32 or 817_64
NLS_LANG	<refer to the output of script CHECKS.SQL>
ORA_NLS33	\$ORACLE_HOME/ocommon/nls/admin/data
SAPDATA_HOME	/oracle/<SAPSID>

Set the corresponding environment variable regardless of whether you are importing 32 bit or 64 bit Oracle software.

Operating system	Environment variable	Value
AIX	LIBPATH	\$ORACLE_HOME/lib
Reliant UNIX, Solaris, Digital UNIX	LD_LIBRARY_PATH	\$ORACLE_HOME/lib
HP-UX	SHLIB_PATH	\$ORACLE_HOME/lib

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>.

Starting the ORACLE Universal Installer

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/817_32/Disk1` or `/oracle/stage/817_64/Disk1` using the command:
`cd /oracle/stage/817_32/Disk1` or
`cd /oracle/stage/817_64/Disk1` .
3. Enter the following `su` command to ensure that the user `root` is assigned the environment of `ora<sapsid>`:
`su root`
4. Call the script `rootpre.sh` by entering:
`./rootpre.sh`
5. Log off with the user `root` by entering:
`exit`

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>`:

```
cd /oracle/stage/817_32/Disk1/SAP
or /oracle/stage/817_64/Disk1/SAP
./RUNINSTALLER
```

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

1. *"File Locations Destination..."*
Check that the variable `$ORACLE_HOME` is correctly set. The relevant directory must be empty! Continue by choosing *Next*.
2. When you run the Universal Installer for the first time, a dialog box appears.
Execute the file `/tmp/OraInstall/orainstRoot.sh` as user `root`, and confirm the dialog box by choosing *Retry*.
3. *"Available Product Components"*
Confirm the default selections by choosing *Next*.
4. When the Install step has been completed, a dialog box appears.

Checking the oratab Entry

Execute the file `$ORACLE_HOME/root.sh` with the user `root`, and confirm the dialog box by choosing *Ok*. Then continue by choosing *Next*.

5. Exit the ORACLE Universal Installer by choosing *Exit* and then *Yes*.

Migrating the Database



The steps in this chapter must be performed in any case!!

The Oracle start release is of no consideration!

Please perform the following steps to migrate the database.

[Checking the oratab Entry \[Page 11\]](#)

[Calling the Oracle Data Migration Assistant \[Page 11\]](#)

[Calling the script POSTMIG.SQL \[Page 13\]](#)

Checking the oratab Entry

The file `oratab` (located in the directory `/var/opt/oracle` under Solaris and Reliant UNIX or in `/etc` under AIX, Digital UNIX and HP-UX, respectively) 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



If you are migrating from 8.1.7, 32 bit to 8.1.7, 64 bit, you **must not call the Oracle Data Migration Assistant `odma`**. Continue with the next section [Calling the post migration scripts \[Page 13\]](#).

Call the Oracle Data Migration Assistant with the user `ora<sapsid>`:

```
$ORACLE_HOME/bin/odma
```

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

1. "Welcome"

Calling the Oracle Data Migration Assistant

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* and confirm the following dialog box by choosing *Yes*.

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

Exception: If the dialog box "listener migration" appears, you must choose *No*.

9. “*Finish*”

You may encounter the following error message:

An error occurred while upgrading your Oracle database. Check the log files to determine if the upgrade was successful.

If you encounter this message, then click the *OK*-Button and click *View Summary* in the subsequent box. If the errors are similar to the following, you can ignore the messages:

```
ORA-00604: error occurred at recursive SQL level 1
```

```
ORA-00001: unique constraint (SYSTEM.AQ$_QUEUES_CHECK) violated
```

```
ORA-06512: at "SYS.DBMS_AQADM", line 2023
```

```
ORA-06512: at line 2
```

When you have checked the log files, confirm the “*Finish*” window by choosing *Finish*.

Calling the post migration scripts



If you are migrating from 8.1.7, 32 bit to 8.1.7, 64 bit, call the script MIG3264.SQL instead of POSTMIG.SQL.

Call the script POSTMIG.SQL by entering:

```
cd /oracle/stage/817_32/Disk1/SAP or 817_64/Disk1/SAP
sqlplus internal
>@POSTMIG.SQL
```

Follow-up Tasks

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

[Copying the File init<SAPSID>.sap \[Page 13\]](#)

[Modifying the Oracle Initialization Parameters \[Page 13\]](#)

[Copying *.ora Files \[Page 14\]](#)

[Modifying the File listener.ora \[Page 14\]](#)

[Checking the Read Authorization of the User <sapsid>adm \[Page 14\]](#)

[Importing the Current Patchset \[Page 14\]](#)

[Starting the Listener Process \[Page 15\]](#)

[Importing Oracle Client Software \[Page 15\]](#)

[Importing the Current SAP Tools \[Page 15\]](#)

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:

```
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 changing the parameter:

```
compatible = 8.1.0
```

If this parameter doesn't exist yet, insert it 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 <old 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>/817_32 or 817_64. To make this change, enter:

```
cd $ORACLE_HOME/network/admin
```

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 362060** 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/817_32/PATCH or /817_64/PATCH. If it does not, copy it from sapserv(x) as described in **Note 362060**.

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**.

Importing the Current SAP Tools

Procedure

You will find the current SAP database administration tools on one of the two *ORACLE RDBMS 8.1.7* CDs.

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:

```
/<CD-Dir>/UNIX/<OS>/SAPCAR -xvf /<CD-Dir>/UNIX/<OS>/DBATOOLS.SAR
```

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 8.1.7 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.