Instructions for Installation of Oracle9i (Release 1) and Patches

Oracle9i Version 9.0.1.0
Patchset for Upgrade to Version 9.0.1.3.0
Patchset for Upgrade to Version 9.0.1.4.0
Security Patches

Office of Information and Instructional Technology

April 2003

Note: This is a draft version of the installation instructions. If you have comments or problems with the instructions, please contact OIIT Customer Services at helpdesk@usg.edu.

Table of Contents

Introduction 1
- Overview 1
- Rationale 1
- Assumptions 1
- Objective 1
- Target Audience 1
- Document Organization 2

Graphics and Conventions 3
- Graphics 3
- Conventions 4

Support 4
- OIIT Customer Services 4

Verifying Installation Requirements 5
- Section Overview 5
- Time Estimate 5
- Check Hardware Requirements 5
- Operating System Version Requirements 5
- Operating System Patches Required 6

Preparing to Start the Installation Process 7
- Section Overview 7
- Time Estimate 7
- 1. Mount CDs 7
- 2. Create Area for Disk Contents 8
- 3. Copy Disk Contents to Correct Directory 8
- 4. Establish Network Connection 9
- 5. Log On 9
- 6. Verify Environment Variables 9
- 7. Install Java Runtime Environment (JRE) 10

Installing Oracle9i Version 9.0.1.0 11
- Section Overview 11
- Time Estimate 11

Installing the Software with the Oracle Universal Installer 11
- 1. Start Oracle Installer 11
- 2. Respond to Welcome 11
- 3. Establish File Locations 11
- 4. Select Product 11
- 5. Select Installation Type 12
- 6. Install Minimum Components 12
- 7. Select Operating System Groups 12
- 8. Upgrade/Migrate Existing Database 12
- 9. Do Not Create Database 12

10. Review Installation 12
Correcting Disk Error 13
11. Run Root.sh 13
12. Finish Install 13
13. Upgrade Database 13
Upgrading the Banner Database 14
Section Overview 14
Time Estimate 14
Examples 14
Assumptions 14
Setting Up the Database Environment 15
1. Check Starting Point 15
2. Set Environment Variables 15
3. Backup Database 15
4. Turn Archiving Off 15
5. Avoid Running Out of Space 16
6. Compile Invalid Objects 16
7. Stop Listener 17
8. Check Datafile Status 17
9. Default Tablespaces 17
Preparing to Upgrade 17
1. Init<sid>.ora Changes 17
2. Update the oratab File 18
3. Set Environment Variables 18
4. Create Database Links 18
Upgrading the Database 19
1. Change Directory 19
2. Start Up the Database 19
3. Spool Output 19
4. Run Upgrade Script 19
5. Spool Off 19
6. Run utlrp.sql 19
7. Restart Database 19
8. Upgrade NCHAR Datatypes 19
Applying Upgrade Patches 20
Applying Patches to Upgrade Oracle9i to Version 9.0.1.3.0 20
Section Overview 20
Time Estimate 20
1. Verify Environment Variables 20
2. Download the Patch Files 21
3. Unzip the Files 21
4. Shut Down Existing Databases 21
5. Shutdown Listeners 21

6. Start Oracle Installer 21
7. Welcome Screen 21
8. Establish File Locations 21
Completing the Upgrade to 9.0.1.3.0 22
1. Connect as sys 22
2. Start Database 22
3. Run catpatch.sql 22
4. Validate All Invalid Objects 22
5. Restart Database 22
Applying Patch 2517300 to Upgrade Oracle9i to Version 9.0.1.4.0 22
1. Download Patch Files 22
2. Check System Tablespace 23
3. Unzip the Files 23
4. Shutdown Existing Databases 23
5. Shutdown Listeners 23
6. Start Oracle 9.0.1.4.0 Installer 24
7. Respond to Welcome 24
8. Establish File Locations 24
9. Verify Products 24
Completing Patch 2517300 Installation to Upgrade to Oracle9i Version 9.0.1.4.0 25
1. Connect as sys 25
2. Start Database 25
3. Run catpatch.sql 25
4. Update Internal Oracle Table 25
5. Validate All Invalid Objects 25
6. Restart database 25
Installing Security Patches 26
Section Overview 26
Time Estimate 26
Installing Patch 2540219 26
Patch Introduction 26
Patch Contents 26
1. Shut Down Listeners 26
2. Install Patch 26
De-installing if Errors Occur 27
Installing Patch 2620726 27
Patch Introduction 27
Patch Contents 27
1. Shut Down Databases 27
2. Install patch 27
De-installing if Errors Occur 28

Installing Patch 2642117 28
Patch Introduction 28
Patch Contents 28
1. Shut Down Databases 28
2. Install patch 29
De-installing the Patch for Errors 29
Installing Oracle Patch 2642267 29
Patch Introduction 29
Patch Contents 29
1. Shut Down Databases 29
2. Install patch 29
De-installing the Patch for Errors 30
Installing Patch 2642439 30
Patch Introduction 30
Patch Contents 30
1. Shut Down Databases 30
2. Install patch 31
De-installing the Patch for Errors 31
Completing Post-upgrade Procedures 32
Overview 32
Time Estimate 32
1. Modify the Listener 32
2. Modify oratab 32
3. Make Init<sid>.ora Changes 32
4. Turn Archiving On 33
5. Shutdown and Restart Database 33
6. Backup Database 33
7. Restart the Database 33
8. Test Listener 33
9. Compile Demo Programs 34
10. Remove Obsolete Parameters 34
Recompiling Banner 36
Time estimate 36
1. Download .mk Files for Banner 36
2. Recompile Banner Code 36
Regenerating Forms 36
Regenerate .fmbs 36
Completing the Final Step 36
Update COMPATIBLE Parameter 36

Instructions for Installation of Oracle9i (Release 1) and Patches

Introduction

Overview

This document provides instructions for the OIIT Oracle9i upgrade path. More detailed explanations are available in supporting documentation from Oracle. The complete reference guide, *Oracle9i Installation Guide Release (9.0.1.0.0) for Unix Systems*, is located online at http://docs.oracle.com/.

This document defines steps required for both HP-UX and Solaris.

You should preview the entire document before beginning the upgrade process.

Rationale

All Banner products, as of Banner 6.x, including Internet Native Banner (INB), require Oracle9i, Release 2.

Oracle9i Release 2 depends upon Oracle9i Release 1 and the patch sets identified in this document being applied before upgrading to Release 2.

Oracle is de-supporting Version 8.1.6.x as of December 2003.

Assumptions

These instructions assume that you are starting from Oracle 8.1.6.3.

Objective

These instructions guide you through the process of installing the following:

- Oracle9i Release 9.0.1.0.0
- Patchset to upgrade to 9.0.1.3.0
- Patchset to upgrade to 9.0.1.4.0
- Required security patches

Target Audience

Database Administrators and System Administrators

Document Organization

This document includes the following sections:

- Introduction
- Graphics and Conventions
- Support
- Verifying Installation Requirements
- Preparing to Start the Installation Process
- Installing Oracle9i Version 9.0.1.0.0
- Upgrading the Banner Database
- Applying Upgrade Patches
- Installing Security Patches
- Completing Post-upgrade Procedures
- Recompiling Banner
- Regenerating Forms
- Completing the Final Step

Graphics and Conventions

Graphics

Graphic cues used in this document assist with labeling of steps and items that are particularly important.

Steps for recovery or support.

For additional information, see references.

Exercise caution.

Warning: an error here is critical.

Steps are different for HP-UX and Solaris.

Notes and tips to make the process easier.

On target: steps completed successfully.

Time estimate.

Conventions

The following conventions are used in this document:

Commands or code that you enter are shown in bold in a different font that looks like the following example:

```
HPUX> /usr/sbin/pfs_mount /dev/cdrom /SD_CDROM
```

Items that you select or "click" are shown in bold small caps like the following example:

Double click **FONTS**, click the **FONT DATABASE** button, and click **ADD**.

Screen names are shown as follows:

Upgrading or Migrating an Existing Database

Support

OIIT Customer Services

Report problems or request support by contacting OIIT Customer Services in one of the following ways:

- Web http://www.usg.edu/customer_services
- Toll-free phone 1-888-875-3697
- E-mail helpdesk@usg.edu

Verifying Installation Requirements

Section Overview

Verify that your system meets the hardware, disk space, and operating system requirements before beginning the installation.

Time Estimate

The estimated time to prepare for the install is 30 minutes.

Check Hardware Requirements

Check that your machine has the following minimum resources:

OS Prerequisites	Version 9.0.1
Memory in MB of Ram	> 512
Disk Space in GB	> 3.5
Swap Space in GB	> 1.0
Temporary Disk Space /tmp in MB	> 500

Operating System Version Requirements

Check that you have the proper operating system version required to install Oracle9i:

Platform	OS Version	Command
HP-UX (64bit)	11.0	$ uname -a
Solaris (32bit)	2.8	$ uname -a
Solaris (64bit)	2.8	$ uname -a

Operating System Patches Required

Verify that the correct Operating System patches have been successfully applied. Check with your system administrator to ensure that the latest patches recommended by OIIT Enterprise Infrastructure Services (EIS) have been applied to the HP-UX Operating System. EIS anticipates a mid-to-late April 2003 patchset release.

Operating System	Patches
HP-UX (64 bit)	The following patches, among others, are all included in the EIS patchset: Sept. 2001 Quality Pack PHCO_23792 PHCO_24148 PHKL_24268 PHKL_24729 PHKL_25475 PHKL_25525 PHNE_24715 PHSS_23670 PHSS_24301 PHSS_24303 PHSS_24627 PHSS_22868
Solaris (32bit)	Not Applicable
Solaris (64bit)	Update 5 (07/01)

On target: system meets the hardware, disk space, and operating system requirements needed for installation.

Preparing to Start the Installation Process

Section Overview

The steps outlined in this section explain how to mount CDs to a stage area before performing the installation.

Time Estimate

The estimated time to mount the CDs is 30 minutes or less.

1. Mount CDs

The software is provided on three CDROMS for HPUX and three for Solaris.

Mount the CDs with the following mount command for your system:

```
HPUX> /usr/sbin/pfs_mount /dev/cdrom /SD_CDROM
Solaris> /mount –r –F hsfs device_name /cdrom
```

HP-UX. In order to use the HP-UX pfs_mount command, the pfs daemon must be running. The Oracle installer for HP-UX requires that both the NFS Server and NFS Client daemons be running in order to access Oracle installer CDs properly. Due to the nature of NFS, System Administrators should always know when NFS services have been enabled on their systems. Therefore, the OIIT-TSS Release of HP-UX 11.0 sets up the NFS Server, but it does not enable this service. The System Administrator needs to enable the NFS Client and NFS Server before accessing the Oracle installer CDs.

Note: /usr/sbin/ch_rc -lv -p NFS_SERVER -p NFS_CLIENT will show you the status of your NFS Client and NFS Server. The following should appear:

```
/etc/rc.config.d/nfsconf: NFS_SERVER=1
/etc/rc.config.d/nfsconf: NFS_CLIENT=1
```

If not, modify the file /etc/rc.config.d/nfsconf so that the parameters NFS_SERVER and NFS_CLIENT both equal one.

Enter the following

```
ps –ef |grep  pfsd
```

If grep returns the process running, continue with next step.

```
Pfsd –v
Pfsd.rpc
```

If not please contact TSS System Support.

The Oracle Product Installation media is in the RockRidge format.

Use a system editor to add the following line to the /etc/pfs_fstab file
Syntax

```
<device_file<mount_point<filesystem_type<translation_method
```

Example:

```
/dev/dsk/c5t2d0 /SD_CDROM pfs-rrip xlat=unix 0 0
```

Perform the following as root:

```
#nohup /usr/sbin/pfs_mountd &
#nohup /usr/sbin/pfsd &
```

Solaris. On Solaris systems, with automounter running, when the CD is inserted into the drive and the door is closed, the CD mounts automatically.

2. Create Area for Disk Contents

You can choose to install directly from CD-ROM, or copy to disk. For simplicity, we assume that all the disks are copied to a file system that is not in use by other applications. For further instructions on mounting the CD-ROMs, consult the *Oracle9i Installation Release Guide*.

Create a staging area for the contents of each CD. You'll need about 2GB of space for all the CD contents.

Example: `/oracle/stage/`

Create a directory off a mount point named something like 9.0.1

Create directories under that directory named Disk1, Disk2, and Disk3.

3. Copy Disk Contents to Correct Directory

Copy the contents of Disk1 to the …/9.0.1/Disk1 directory.

To copy the contents, use the following cpio command from the CD-ROM drive:

```
% find . -depth -print | cpio -pdmu
/oracle/stage/9.0.1/Disk1
```

Dismount the CD when the copy is complete, using the appropriate command for your operating system. If you need additional assistance, contact OIIT Customer Services.

Repeat the mount step and the copy step for all disks.

4. Establish Network Connection

Some X terminal installations have experienced problems with Reflection and Xwin32. Exceed seems to be the most reliable software.

During testing, Exceed failed to display some of the Oracle installer buttons properly. Eliminate this problem by setting your Exceed software to load fonts from the server:

Start>>Programs>>Hummingbird>>Exceed>>Xconfig

Double click **FONTS**, click the **FONT DATABASE** button, and click **ADD**.

When the "Add Font Directory" window is displayed, ensure that the Load radio button is selected for State, then select the Server radio button.

When the "Add Font Server" window is displayed, enter the fully qualified domain name of the server to which you plan to connect for installation of Oracle products, click OK twice, click Close and then exit the Xconfig program.

5. Log On

Log in as the Oracle user.

Warning: Do not install the Oracle software as the root user.

6. Verify Environment Variables

Verify that the following environment variables are set correctly before attempting to start the Oracle Installer:

HP-UX	Solaris
DISPLAY	DISPLAY
ORACLE_HOME	ORACLE_HOME
ORACLE_SID	ORACLE_SID
ORA_NLS33	ORA_NLS33
ORACLE_BASE	ORACLE_BASE
TMPD **(See note)	TMPD **(See note)
SHLIB_PATH	LD_LIBRARY_PATH
PATH	PATH

**If not enough space (1/2 gig) in /tmp, set the following variables to point to a location that has sufficient space available:

Ex. `TEMP  setenv TEMP /u01/app/oracle/tmp`

Ex. `TMPDIR  setenv TMPDIR /u01/app/oracle/tmp`

Note: See *Oracle9i Installation Guide*, Chapter 2, for more information.

7. Install Java Runtime Environment (JRE)

The Oracle Universal Installer automatically installs the Oracle-supplied version of the Java Runtime Environment (JRE). This version is required to run the installer and several other Oracle assistants.

HP-UX. On HP-UX, the installer prompts for the downloaded version of Java Development Kit (JDK) 1.2.x.

Solaris. On Solaris the installer installs JDK 1.2.x.

On target: preparation steps for installation completed successfully.

Installing Oracle9i Version 9.0.1.0

Section Overview

This section provides the steps to install Oracle9i using the Oracle Universal Installer. The Oracle Universal Installer runs in an X terminal window and performs the installation of Oracle9i.

This section provides the selections you make for each screen after the installer begins.

Time Estimate

Up to 2 hours

Installing the Software with the Oracle Universal Installer

1. Start Oracle Installer

Start the Oracle Installer from the hard drive:

Example:

```
% cd /oracle/product/9.0.1/Disk1
% runInstaller
```

2. Respond to Welcome

Welcome Screen

Choose NEXT.

3. Establish File Locations

File Locations Screen

Source: Accept the current value.

Example:

```
/oracle/stage/9.0.1/Disk1/stage/products.jar
```

Destination: Accept the value if it equals the desired Oracle Home location.

Example:

```
/oracle/product/9.0.1
```

4. Select Product

Available Products

Select a product to install: Oracle9i Database 9.0.1.0.0

Choose **NEXT.**

5. Select Installation Type

Installation Types

What type of installation do you want: **CUSTOM**

Choose **NEXT.**

6. Install Minimum Components

Available Product Components

Note: During this installation, you are installing only the minimum requirements for Banner. You need the following components:

- Oracle9i 9.0.1.0.0
- Oracle Net Services 9.0.1.0.0
- Oracle9i Development Kit

Choose **NEXT.**

7. Select Operating System Groups

Privileged Operating System Groups

Database Administrator (OSDBA) Group: **DBA**

Database Operator (OSOPER) Group: **DBA**

Choose **NEXT**

8. Upgrade/Migrate Existing Database

Upgrading or Migrating an Existing Database

You are not upgrading nor migrating a database from the installer. You will manually upgrade the database after the initial installation is complete.

Choose **NEXT.**

9. Do Not Create Database

Create Database

NO

Choose **NEXT.**

10. Review Installation

Summary

Review the summary of the installation to make sure you have selected the correct requirements.

Choose **INSTALL**.

Correcting Disk Error

If the changing disk dialog appears, then the contents of the CDROM media were not copied correctly.

Try to supply the media location on disk for the next CDROM. Otherwise, restart the install after copying the media exactly as described earlier.

11. Run Root.sh

Setup Privileges Dialog Box

Make sure that you have backup copies of your ORAENV and CORAENV files.

Connect as the root in another terminal session and run the script specified on the screen named root.sh in the Oracle Home location.

Choose **NEXT.**

12. Finish Install

End of Installation Screen

If no errors appear and this screen is presented, you have successfully installed Oracle9i release 9.0.1.0.0.

Choose **EXIT.**

13. Upgrade Database

Warning

After the software installation is complete, you must upgrade the database to Version 9.0.1.0.0 before doing anything else. This is critical to the upgrade process because of possible data dictionary corruption.

On target: software installation completed successfully.

Upgrading the Banner Database

Section Overview

These instructions guide you through upgrading Oracle 8.1.6.3 to 9i on both HP-UX 11 and Solaris 2.8.

Time Estimate

Up to 2 hours

Examples

Example commands and values are given to clarify the instructions. Your install will have different values for some of these variables. During your install, substitute your values for these values as needed.

Variable	Example Value
Unix host name for Oracle install	hostname.usg.edu
ORACLE_HOME for 9i install	/oracle/product/9.0.1
Any password value	password

Assumptions

The media for the release have already been installed.

Example: If upgrading the database to Oracle release 9i, the 9i software must be installed first.

Setting Up the Database Environment

1. Check Starting Point

Verify that your database environment is 8.1.6.3.

2. Set Environment Variables

Ensure that the current Oracle environment variables are set correctly during initial database configuration:

HPUX	Solaris
ORACLE_HOME	ORACLE_HOME
ORACLE_SID	ORACLE_SID
ORA_NLS33	ORA_NLS33
ORACLE_BASE	ORACLE_BASE
TMPD **	TMPD**
SHLIB_PATH	LD_LIBRARY_PATH
PATH	PATH

** If not enough space (1/2 gig) in /tmp, set the following variables to point to a location that has sufficient space available:

```
TEMP    setenv TEMP /u01/app/oracle/tmp
TMPDIR    setenv TMPDIR /u01/app/oracle/tmp
```

Switch back to your 8.1.6.3 environment.

3. Backup Database

Perform a full database backup before performing the upgrade.

4. Turn Archiving Off

If you are not running in archivelog mode, skip this section and go to Step 5.

If you are running in archivelog mode, then execute the following steps:

- Verify archiving is turned on:

```
SQL> archive log list;
```

- Force automatic archive of all full redo logs:

```
SQL> alter system archive log all;
```

- Shut down the database:

```
SQL> shutdown immediate;
```

- Mount the database:

```
SQL> startup mount;
```

- Turn archiving off:

```
SQL> alter database noarchivelog;
```

- Start up the database:

```
SQL> alter database open;
```

5. Avoid Running Out of Space

Warning: If you run out of space, you'll get an error message and have to start the upgrade process over.

Prepare the system rollback segment:

```
SQL> alter rollback segment system storage
(maxextents 121 next 1M);
```

Ensure that there is plenty of space in the SYSTEM tablespace. A minimum of 150 MB is required.

- To query current free space:

```
SQL> select max(bytes) from dba_free_space where
tablespace_name = 'SYSTEM';
```

- To extend datafile as needed:

```
SQL> alter database datafile 'full path and file
name' resize integer [k|m];
```

6. Compile Invalid Objects

Warning: Because the upgrade process will leave objects invalid, compile all invalid objects before performing the upgrade or you will have to start the upgrade process over.

The sql script $ORACLE_HOME/rdbms/admin/utlrp.sql will compile all invalid objects.

```
$ cd $ORACLE_HOME/rdbms/admin
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> @utlrp.sql
```

Spool out all invalid objects after running the compile script.

```
SQL> spool invalid_objects.log
SQL> select * from dba_objects where status =
'INVALID';
SQL> spool off
```

Note: All invalid objects should be resolved before proceeding with the upgrade procedure unless the objects are deliberately set invalid.

7. Stop Listener

Ensure that the listener for the database being upgraded is stopped.

```
$ lsnrctl
LSNRCTL> stop <listener_name>
```

8. Check Datafile Status

Ensure that no datafiles need media recovery or are in backup mode:

```
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> select * from v$recover_file;
SQL> select * from v$backup where status!='NOT
ACTIVE';
```

Resolve all datafile issues before continuing with the upgrade procedure.

9. Default Tablespaces

Ensure that the users sys and system default to the system tablespace:

```
SQL> select username, default_tablespace from
dba_users where username in ('SYS','SYSTEM');
```

To modify users, default tablespace if needed:

```
SQL> alter user <username> default tablespace
system;
```

Make sure database to be upgraded is shutdown.

```
SQL> shutdown immediate;
```

On target: Database environment should be ready for upgrade.

Preparing to Upgrade

1. Init<sid>.ora Changes

Copy the init<sid>.ora file to init<sid>.ora.old

Copy the config<sid>.ora file to config<sid>.ora.old

Change the init<sid>.ora to reflect the following changes:

- Explicitly set **`JOB_QUEUE_PROCESSES = 0`**
- Explicitly set **`AQ_TM_PROCESSES = 0`**
- Set the parameter **`_SYSTEM_TRIG_ENABLED = FALSE`**
- Explicitly set OPTIMIZER_MODE for Oracle 8.1.6 to RULE.

- Leave COMPATIBLE at the current setting. Setting this parameter to 9.x.x results in an error during the upgrade.
- Explicity set REMOTE_LOGIN_PASSWORDFILE = NONE

2. Update the oratab File

Update the file /etc/oratab on HPUX or /var/opt/oracle/oratab on Solaris to represent the new $ORACLE_HOME and disable automatic startup:

```
<SID>:new $ORACLE_HOME:N
```

Example:

```
TEST:/oracle/product/9.0.1:N
```

3. Set Environment Variables

After you modify the /etc/oratab file for HPUX and /var/opt/oracle/oratab for Solaris, exit out of the current session as Oracle and then log back in.

If your .login or .profile file has not been set up to execute the shell script automatically, you should set it to do so now so that the environment gets set up properly for the database to be upgraded.

Please verify that the environment variables are set correctly. Any reference to Oracle directories should reflect the new 9i Oracle Home.

HPUX	Solaris
$ echo $ORACLE_HOME	$ echo $ORACLE_HOME
$ echo $PATH	$ echo $PATH
$ echo $ORA_NLS33	$ echo $ORA_NLS33
$ echo $ORACLE_SID	$ echo $ORACLE_SID
$ echo $ORACLE_BASE	$ echo $ORACLE_BASE
$ echo $TMPD	$ echo $TMPD
$ echo $SHLIB_PATH	$ echo $LD_LIBRARY_PATH

4. Create Database Links

Create a symbolic link to the parameter and config files that is specific to the database being upgraded or created:

```
$ cd $ORACLE_HOME/dbs

$ ln -s
/oracle/admin/<database_name/pfile/init<sid>.ora .

$ ln -s
/oracle/admin/<database_name/pfile/config<sid>.ora .
```

Upgrading the Database

1. Change Directory

cd:$ORACLE_HOME/rdbms/admin/

2. Start Up the Database

Connect as a user with sysdba priveleges:

```
$ sqlplus /nolog
SQL> connect / as sysdba
```

Use the following startup command to upgrade to Oracle 9.0.1.0

```
SQL> startup restrict
```

3. Spool Output

Spool upgrade output to review for possible errors:

```
SQL> spool upgrade_version.log
```

4. Run Upgrade Script

Run the following upgrade script for the new Oracle version installed:

```
SQL>start u0801060.sql
```

5. Spool Off

Spool off to review any possible error messages.

```
SQL> spool off
```

6. Run utlrp.sql

Run $ORACLE_HOME/rdbms/admin/utlrp.sql

```
SQL> start utlrp
```

Execute the following statement:

```
SQL> select * from dba_objects where status =
'INVALID';
```

Compare the current invalid objects with the invalid objects before performing the upgrade.

7. Restart Database

Restarting the database performs database housekeeping tasks:

```
SQL> shutdown immediate
SQL> startup restrict
```

8. Upgrade NCHAR Datatypes

Upgrade NCHAR datatype columns

```
SQL> connect / as sysdba
SQL> $ORACLE_HOME/rdbms/admin/utlnchar.sql
SQL> $ORACLE_HOME/rdbms/admin/n_switch.sql
```

Applying Upgrade Patches

Applying Patches to Upgrade Oracle9i to Version 9.0.1.3.0

Section Overview

A patchset is required to upgrade Oracle9i to Version 9.0.1.3.0.

Time Estimate

4 hours

1. Verify Environment Variables

Verify that the following environment variables are set correctly before attempting to install the patch.

HPUX	Solaris
DISPLAY	DISPLAY
ORACLE_HOME	ORACLE_HOME
ORACLE_SID	ORACLE_SID
ORA_NLS33	ORA_NLS33
ORACLE_BASE	ORACLE_BASE
TMPD **	TMPD **
SHLIB_PATH	LD_LIBRARY_PATH
PATH	PATH

** If not enough space (1/2 gig) in /tmp, set the following variables to point to a location that has sufficient space available:

ex. **`TEMP  setenv TEMP /u01/app/oracle/tmp`**

ex. **`TMPDIR  setenv TMPDIR /u01/app/oracle/tmp`**

2. Download the Patch Files

Start the ftp session from your staging directory.

Connect to ftp.usg.edu using your institution's ID and password.

HP-UX. Navigate to the banner/prod/oracle/hpux11/9idb directory. Download the following zip file: hpux11_64bit_9013patchset.zip.

Solaris. Navigate to the banner/prod/oracle/solaris/9idb directory. Download the following zip file: sol_32bit_9013patchset.zip

At the conclusion of the download, the zip patch files should reside in the staging directory.

3. Unzip the Files

If your machine doesn't have an unzip utility, download it from Oracle via an Oracle Metalink account. Get the file from http://updates.oracle.com/unzips/unzips.html. Use your Metalink account to download the unzip utility.

4. Shut Down Existing Databases

Shut down the existing Oracle Server previously upgraded to release 9.0.1.0.0.

5. Shutdown Listeners

Stop all listeners and other processes running in or against the ORACLE_HOME to be installed into.

6. Start Oracle Installer

Start the Oracle Installer from the hard drive:

Example:

```
% cd $ORACLE_HOME/bin
% runInstaller
```

7. Welcome Screen

Welcome Screen

Choose **NEXT.**

8. Establish File Locations

File Locations Screen

Click the **BROWSE** button for the Source entry field and navigate to the stage directory where you unpacked the Patch.

Select the products.jar file. Click the **NEXT** button

The products file will be read and the installer will load the product definitions. The products to be loaded will be displayed.

Example:

```
/oracle/stage/9.0.1/patches/products.jar
```

Verify the products listed and then click on the **INSTALL** button.

Completing the Upgrade to 9.0.1.3.0

1. Connect as sys

Connect to the database as sysdba.

Example:

```
% sqlplus /nolog
SQLPLUS> connect / as sysdba
```

2. Start Database

After the patch has been installed successfully, you need to startup restrict the database.

Example:

```
SQLPLUS> startup restrict
```

3. Run catpatch.sql

As a user with sysdba privileges, run the following new script that calls the catalog and catalog process scripts to upgrade the data dictionary of the 9i database.

```
$ORACLE_HOME/rdbms/admin/catpatch.sql
```

4. Validate All Invalid Objects

Connected as sysdba, run the following script:

```
SQLPLUS> $ORACLE_HOME/rdbms/admin/utlrp.sql
```

5. Restart Database

Restarting the database performs database housekeeping tasks:

```
SQL> shutdown immediate
SQL> startup
```

On target: upgrade Oracle9i to Version 9.0.1.3.0 completed.

Applying Patch 2517300 to Upgrade Oracle9i to Version 9.0.1.4.0

1. Download Patch Files

Start the ftp session from your staging directory.

Connect to ftp.usg.edu using your institution's ID and password.

HP-UX. Navigate to the banner/prod/oracle/hpux11/9idb directory. Download the following file:

- p2517300_9014_H64.zip for the upgrade to 9.0.1.4.0

You can also download these additional security patches at this time, although you should not apply these patches until you complete the upgrade.

- p2540219_9014_H64.zip
- p2620726_9014_HP64.zip
- p2642117_9014_HP64.zip
- p2642267_9014_HP64.zip
- p2642439_9014_HP64.zip

Solaris. Navigate to the banner/prod/oracle/solaris/9idb directory. Download the following file:

- p2517300_9014_SOLARIS.zip

You can also download these additional security patches at this time, although you should not apply these patches until you complete the upgrade.

- p2620726_9014_SOLARIS.zip
- p2642117_9014_SOLARIS.zip
- p2642267_9014_SOLARIS.zip
- p2642439_9014_SOLARIS.zip

At the conclusion of the download, the zip patch files should reside in the staging directory.

2. Check System Tablespace

Make sure that you have 100M of free system tablespace.

Verify that system tablespace is the default tablespace for sys and system.

3. Unzip the Files

Unzip the files. If your machine doesn't have an unzip utility, download it from Oracle via an Oracle Metalink account. Get the file from http://updates.oracle.com/unzips/unzips.html. Use your Metalink account to download the unzip utility.

4. Shutdown Existing Databases

Shut down the existing Oracle Server previously upgraded to release 9.0.1.3.0.

5. Shutdown Listeners

Stop all listeners and other processes running in or against the ORACLE_HOME to be used for the install.

6. Start Oracle 9.0.1.4.0 Installer

In your patches directory under $ORACLE_HOME, uncompress the patch zip file using the unzip command.

Make a p257300 directory under $ORACLE_HOME/patches.

HPUX. Untar hpux64_9014_patchset.tar in directory p2517300.

Solaris: Untar 9014_solaris32_release.tar in directory p2517300.

Start your xterm emulator and type **xterm** at the prompt.

In the xterm window, switch to patches directory p2517300/Disk1

Start the Oracle Installer from unix prompt:

Example:

```
% cd $ORACLE_HOME/patches/p2517300/Disk1
% runInstaller
```

7. Respond to Welcome

Welcome Screen

Choose NEXT.

8. Establish File Locations

File Locations Screen

Click the BROWSE button for the Source entry field and navigate to the stage directory where you unpacked the patch.

Select the products.jar file. Choose NEXT .

The products file will be read and the installer will load the product definitions. The products to be loaded will be displayed.

Example:

```
/oracle/stage/9.0.1/patches/p2517300/Disk1/stage/
products.jar
```

9. Verify Products

Verify that the products listed are correct and then click INSTALL.

Completing Patch 2517300 Installation to Upgrade to Oracle9i Version 9.0.1.4.0

1. Connect as sys

Connect to the database as sysdba.

Example:

```
% sqlplus /nolog
SQL> connect / as sysdba
```

2. Start Database

To complete the install of this patch set, you need start up each database associated to the upgraded $ORACLE_HOME.

```
SQL> startup restrict
SQL> ALTER SYSTEM ENABLE RESTRICTED SESSION;
```

3. Run catpatch.sql

Run the following new script that calls the catalog and catalog process to update the data dictionary of the 9idatabase.

```
SQL>spool catpatch
SQL> start $ORACLE_HOME/rdbms/admin/catpatch.sql
```

4. Update Internal Oracle Table

Run the following scripts to update the internal Oracle table.

```
SQL>ALTER SYSTEM DISABLE RESTRICTED SESSION;
SQL>CONNECT / AS SYSDBA
SQL>update obj$ set status=5 where type#=29 and
owner#!=0;
SQL> commit;
SQL>shutdown immediate
SQL>startup
```

Note: Result may be that no rows were updated.

5. Validate All Invalid Objects

Run the following scripts to validate invalid objects:

```
SQL> spool utlrp
SQL> start $ORACLE_HOME/rdbms/admin/utlrp.sql
```

Execute the following statement to review list for errors:

```
SQL> SELECT * FROM DBA_OBJECTS WHERE STATUS = 'INVALID';
```

6. Restart database

Restarting the database performs database housekeeping tasks:

```
SQL> shutdown immediate
SQL> startup
SQL>exit
```

On target: Patch 2517300 installed to upgrade to Oracle9i Version 9.0.1.4.0.

Installing Security Patches

Section Overview

After you install the software and the patchsets to upgrade the databases, you have several security patches that you must apply.

Time Estimate

Up to 1 hour

Installing Patch 2540219

Patch Introduction

Patch Number	2540219
Platform	HP-UX 11.0 64 bit Solaris 32 bit
Product Version	9.0.1.4
Problem fixed	Listener fails to process special commands.

Patch Contents

Patch includes the following:

- README.txt
- patch.sh
- nsgcmd.o
- nsgcs.o
- nsglsn.o
- 32#nsgcmd.o
- 32#nsgcs.o
- 32#nsglsn.o

1. Shut Down Listeners

Before applying this patch, verify that the listeners to which this patch will be applied are shut down properly.

2. Install Patch

Make a patch stage directory and unzip the zip file for patch 2540219.

Change directory to the patch stage directory and locate patch.sh.

```
% cd <patch stage directory>
% sh patch.sh
```

De-installing if Errors Occur

If there are errors or other problems with this patch and you need to de-install it, you should run the **undo_pre<bug number>.sh** shell script that was generated automatically when **patch.sh** was run.

Use the following syntax if you need to run the de-install script:

```
% sh undo_pre2559169_9.0.1.4.0.sh
```

Installing Patch 2620726

Patch Introduction

Patch Number	2620726
Platforms	HP-UX 11.0 64 bit Solaris 32 bit
Product Version	9.0.1.4
Problem fixed	Buffer overflow in Oracle.exe

Patch Contents

Patch includes the following:

- README.txt
- patch.sh
- kpolon.o

1. Shut Down Databases

Before applying this patch, verify that all databases running under the ORACLE_HOME being patched are cleanly shut down.

2. Install patch

Make a patch stage directory and unzip zip file for patch 2620726.

HPUX. When the patch is unzipped, a directory 2715585 is created.

Solaris. When the patch is unzipped, a directory 2715587 is created.

Change directory to the patch stage directory and locate patch.sh.

```
% cd <patch stage directory>
% sh patch.sh
```

De-installing if Errors Occur

If there are errors or other problem with this patch and you need to de-install it, you should run the **`undo_pre<bug number>.sh`** shell script that was generated automatically when **`patch.sh`** was run.

Use the following syntax if you need to run the de-install script:

```
% sh undo_pre2715585_9.0.1.4.0.sh
```

Installing Patch 2642117

Patch Introduction

Patch Number	2642117
Platforms	HP-UX 11.0 64 bit Solaris 32 bit
Product Version	9.0.1.4
Problem fixed	Buffer overflow vulnerability in directory parameter of the Bfilename

Patch Contents

Patch for HP-UX and Solaris includes the following:

- README.txt
- patch.sh
- pesblt.o
- kol.o
- kolf.o
- kokl.o

Solaris patch also includes the following:

- 32#kol.o
- 32#kolf.o
- 32#pesblt.o

1. Shut Down Databases

Before applying this patch, verify that all databases that you have upgraded to 9.0.1.4.0 to which patch will be applied are shut down properly.

2. Install patch

Make a patch stage directory and unzip the zip file for patch 2642117.

Change directory to the patch stage directory and locate patch.sh.

```
% cd <patch stage directory>
% sh patch.sh
```

De-installing the Patch for Errors

If there are errors or other problems with this patch and you need to de-install it, you should run the **undo_pre<bug number>.sh** shell script that was generated automatically when **patch.sh** was run.

Use the following syntax if you need to run the de-install script:

```
% sh undo_pre2713614_9.0.1.4.0.sh
```

Installing Oracle Patch 2642267

Patch Introduction

Patch Number	2642267
Platforms	HP-UX 11.0 64 bit Solaris 32 bit
Product Version	9.0.1.4
Problem fixed	TZ_OFFSET buffer overflow

Patch Contents

Patch includes the following:

- README.txt
- patch.sh
- ldiiftz.o

1. Shut Down Databases

Before applying this patch, verify that all databases that you have upgraded to 9.0.1.4.0 to which patch will be applied are shut down properly.

2. Install patch

Make a patch stage directory and unzip zip file for patch 2642267.

Change directory to the patch stage directory and locate patch.sh.

```
% cd <patch stage directory>
% sh patch.sh
```

De-installing the Patch for Errors

If there are errors or other problems with this patch and you need to de-install it, you should run the **undo_pre<bug number>.sh** shell script that was generated automatically when **patch.sh** was run.

Use the following syntax if you need to run the de-install script:

```
% sh undo_pre2713797_9.0.1.4.0.sh
```

On target: security patches applied successfully.

Installing Patch 2642439

Patch Introduction

Patch Number	2642439
Platforms	HP-UX 11.0 64 bit Solaris 32 bit
Product Version	9.0.1.4
Problem fixed	TO_TIMESTAMP_TZ doesn't handle long input

Patch Contents

Patch for HP-UX and Solaris includes the following:

- README.txt
- Patch_server.sh
- Patch_client.sh
- ldiinp.o

HP-UX patch also includes the following:

- 32#ldiinp.o

1. Shut Down Databases

Before applying this patch, verify that all databases that you have upgraded to 9.0.1.4.0 to which patch will be applied are shut down properly.

2. Install patch

Make a patch stage directory and unzip the zip file for patch 2642439.

Change directory to the patch stage directory and locate patch_server.sh.

```
% cd <patch stage directory>
% sh patch_server.sh
```

De-installing the Patch for Errors

If there are errors or other problems with this patch and you need to de-install it, you should run the **undo_pre<bug number>.sh** shell script that was generated automatically when **patch_server.sh** was run.

Use the following syntax if you need to run the de-install script:

```
% sh undo_pre2742762_9.0.1.4.0.sh
```

Completing Post-upgrade Procedures

Overview

Post-upgrade procedures are needed to complete the installation.

Time Estimate

1 hour

1. Modify the Listener

Copy the listener.ora file from the previous home to the new $ORACLE_HOME/network/admin/ directory.

Modify the ORACLE_HOME parameter with in the listener.ora to point to the new destination.

```
Example: SID_LIST_LISTENER =
           (SID_LIST =
             (SID_DESC =
               (GLOBAL_DBNAME = TEST.us.oracle.com)
               (ORACLE_HOME = /oracle/product/9.0.1)
               (SID_NAME = TEST)
             )
```

Start the listener

```
$ lsnrctl
LSNRCTL> start listener_name
```

2. Modify oratab

Update the oratab file to represent the new $ORACLE_HOME and enable automatic startup:

```
<SID>:new $ORACLE_HOME:Y
```

Example: **`TEST:/oracle/product/9.0.1:Y`**

3. Make Init<sid>.ora Changes

Change the init<sid>.ora to reflect the following changes:

- Remove _SYSTEM_TRIG_ENABLED = FALSE from the init<sid>.ora.
- Modify LOG_ARCHIVE_DEST to specify only the path and make sure to end the path with '/'. To verify archiving is turned on issue:

```
SQL> archive log list;
```

Note: Verify that all parameters referencing archiving are set correctly before proceeding.

- Modify the init<sid>.ora to reflect the following changes:
  - Replace JOB_QUEUE_PROCESSES with old value
  - Replace AQ_TM_PROCESSES with old value
- Alter OPTIMIZER_MODE to the correct setting required by the application. Banner requires RULE.

4. Turn Archiving On

If you are not running in archivelog mode, skip this section and go to the next step.

If you are running in archivelog mode, then execute the following steps:

- Connect as a user with sysdba privileges

```
$sqlplus / nolog
SQL> connect / as sysdba
```

- Mount the database:

```
SQL> startup mount;
```

- Turn archiving on:

```
SQL> alter database archivelog;
```

- Startup the database:

```
SQL> alter database open;
```

5. Shutdown and Restart Database

Warning: Shutting down and restarting the database performs necessary housekeeping tasks.

```
SQL> shutdown immediate
SQL> startup restrict
SQL> shutdown immediate
```

6. Backup Database

Perform a full cold database backup.

7. Restart the Database

Restart the database

```
%sqlplus/nolog
SQL> CONNECT / AS SYSDBA
STARTUP EXIT
```

8. Test Listener

To test listener, at UNIX prompt,

```
%SQLPLUS USERNAME/PASSWORD@CONNECTSTRING
```

9. Compile Demo Programs

Verify the successful installation of Pro*C, Pro*Cobol, and Micro Focus Cobol Demo programs.

- Pro*C

  Login as the banner software owner.

  ```
  % cp $ORACLE_HOME/precomp/demo/proc/sample1.pc
  % cp $ORACLE_HOME/precomp/demo/proc/demo_proc.mk
  % make -f demo_proc.mk sample1
  ```

- Pro*Cobol

  Login as the banner software owner.

  ```
  % cp $ORACLE_HOME/precomp/demo/procob/sample1.pco
  % cp
  $ORACLE_HOME/precomp/demo/procob/demo_procob18.mk
  % make -f demo_procob18.mk sample1
  ```

  Sample1 can be executed by:

  ```
  % sample1
  ```

- MicroFocus Cobol

  Before verifying installation of Procobol application, set the following environment variables:

  ```
  SHLIB_PATH = $ORACLE_HOME/lib32:
               $ORACLE_HOME/network/lib32
  COBMODE = 32
  Login as the banner software owner.
  % cd $COBDIR/demo/tictac.cb1
  % cob -xv tictac.cb1
  ```

  Tictac program can be executed by:

  ```
  % tictac
  ```

10. Remove Obsolete Parameters

Check that there are no obsolete parameters from the following list in init.ora.

If you do find obsolete parameters, remove them or comment out.

On target: Database upgrade is complete.

Oracle9.i Obsolete Parameters

_average_dirties_half_life
_lm_statistics
allow_partial_sn_results
always_anti_join
always_semi_join
arch_io_slaves
b_tree_bitmap_plans
backup_disk_io_slaves
cache_size_threshold
cleanup_rollback_entries
close_cached_open_cursors
compatible_no_recovery
complex_view_merging
cpu_count
db_block_checkpoint_batch
db_block_lru_extended_statisti
db_block_lru_latches
db_block_lru_statistics
db_block_max_dirty_target
db_file_simultaneous_writes
delayed_logging_block_cleanout
discrete_transactions_enabled
distributed_lock_timeout
distributed_recovery_connectio
fast_full_scan_enabled
freeze_DB_for_fast_instance_re
gc_defer_time
gc_latches
gc_lck_procs
gc_releasable_locks
gc_rollback_locks
hash_multiblock_io_count
instance_nodeset
job_queue_interval
job_queue_keep_connections
large_pool_min_alloc
lgwr_io_slaves
lm_locks
lm_procs
lm_procs
lm_ress
lock_sga_areas
log_block_checksum
log_files
log_simultaneous_copies
log_small_entry_max_size
ogms_home
ops_admin_group
ops_interconnects
optimizer_percent_parallel
optimizer_search_limit
parallel_default_max_instances
parallel_min_message_pool
parallel_server_idle_time
parallel_transaction_resource_
push_join_predicate
row_cache_cursors
sequence_cache_entries
sequence_cache_hash_buckets
shared_pool_reserved_min_alloc
snapshot_refresh_interval
snapshot_refresh_keep_connecti
snapshot_refresh_processes
sort_direct_writes
sort_multiblock_read_count
sort_read_fac
sort_spacemap_size
sort_write_buffer_size
sort_write_buffers
spin_count
temporary_table_locks
text_enable
use_ism

Recompiling Banner

Time estimate

5 hours

1. Download .mk Files for Banner

Download the following new sctproc.mk and sctprocb.mk files from the ftp.usg.edu.

HP-UX: `banner/prod/phux11/9idb`

`sctproc901.mk`

`sctprocb901.mk`

Solaris: `banner/prod/solaris/91db`

`sctproc901.mk`

`sctprocb901.mk`

2. Recompile Banner Code

Following installation of the patches, recompile all C and COBOL for Banner.

On target: Banner code recompiled successfully.

Regenerating Forms

Regenerate .fmbs

You must regenerate all .fmbs under 9i environment.

Note: The GUI installer is not available for 9i.

Completing the Final Step

Update COMPATIBLE Parameter

After the database is well tested, update the COMPATIBLE variable in init<sid>.ora to 9.0.1.

On target: Oracle9i 9.0.1.4.0 install and upgrade of the Banner database should be complete.