EXAM OBJECTIVE: UNDERSTAND THE SUPPORTED UPGRADE PATHS TO ORACLE DATABASE 10g

The Oracle Database 10g upgrade is automated and simplified. The Oracle Database 10g upgrade supports a direct path upgrade from Oracle 9iR2(9.2), Oracle 9i (9.0.1), Oracle 8i (8.1.7), and Oracle 8 (8.0.6). If you are not at one of these versions you can still upgrade to Oracle Database 10g but it will be necessary to perform the upgrade in more than one step. For example, if your version is 7.3.4 you could perform the upgrade to 9.0.1 or 9.2 and then perform another upgrade from 9.2 to Oracle Database 10g. Likewise, if you are at 8.1.5 you will need to first upgrade to 8.1.7 and then upgrade from 8.1.7 to Oracle Database 10g.

DATABASE UPGRADE ASSISTANT (DBUA).

The DBUA can be launched by the Oracle Universal Installer, depending upon the type of installation that you select and provides a GUI that guides you through the upgrade process. You can also launch DBUA as a standalone tool at any time.

This is the preferred and recommended methods to upgrade to a new Oracle Database 10g release.

The DBUA will automatically perform all the necessary steps for the upgrade (including the pre upgrade checks). The DBUA also interacts with the Database Administrator (DBA) if decisions need to be made. Additionally, the DBUA performs necessary tasks such as the alteration or creation of required tablespaces.

PERFORM A MANUAL UPGRADE:

This is a command-line upgrade of the database. It can be performed using scripts and utilities. Internally the DBUA runs these scripts. The manual upgrade can be achieved with the help of the Upgrade guide.

This may be suitable for the highly experienced DBA as it involves more work and is potentially more error prone.

EXAM OBJECTIVE: USE NEW UTILITY TO PERFORM PRE-UPGRADE VALIDATION CHECKS

In Oracle Database 10g a Pre Upgrade Information Tool (**utlu101i.sql**) has been added. This tool analyzes the original database, prior to the upgrade, to determine changes to system resources and initialization parameters that are necessary to accommodate the new release. The original database can be any version supported for upgrade (8.0.6, 8.1.7, 9.0.1, or 9.2.0).

The tool makes various calculations for suggested values of parameters and settings. The Pre Upgrade Information tool works dynamically to recommend the proper settings for your database, taking into account the currently running system and the needs of the new Oracle Database 10g release.

The Oracle Database 10g Pre Upgrade Information Utility checks the old database for the following items and will issue warnings, accordingly:

- Database version and Compatibility (compatible parameter must be 9.2.0 or greater)
- Redo logs < 4MB
- Updated initialization parameters
- Deprecated initialization parameters
- Obsolete initialization parameters
- Cluster
- Account check ("DIP", "OUTLN")
- Names of database components
- Tablespaces (size adjustment recommendation)
- New SYSAUX tablespace
- Character set anomalies
- Installed options
- Upgrade time estimate

The following example (taken from the Oracle Documentation® UpgradeGuide) displays the output of the Upgrade Information Tool for a release 9.0.1.0.0 database named TEST.

```
Oracle Database 10.1 Upgrade Information Tool    MM-DD-YYYY HH:MM:SS
.
***********************************************************************
**
Database:
---------
--> name: TEST
--> version: 9.0.1.0.0
--> compatibility: 9.0.0
WARNING: Database compatibility must be set to 9.2.0 prior to upgrade.
.
***********************************************************************
**
Logfiles: [make adjustments in the current environment]
--------------------------------------------------
-- The existing log files are adequate. No changes are required.
.
***********************************************************************
**
```

```
Tablespaces: [make adjustments in the current environment]
----------------------------------------------------------
--> SYSTEM tablespace is adequate for the upgrade.
.... owner: SYS
.... minimum required size: 466 MB
--> CWMLITE tablespace is adequate for the upgrade.
.... owner: OLAPSYS
.... minimum required size: 13 MB
--> DRSYS tablespace is adequate for the upgrade.
.... owner: CTXSYS
.... minimum required size: 8 MB
.
************************************************************************
**
Options: [present in existing database]
---------------------------------------
--> Partitioning
--> Spatial
WARNING: Listed option(s) must be installed with Oracle Database 10.1
.
************************************************************************
**
Update Parameters: [Update Oracle Database 10.1 init.ora or spfile]
-------------------------------------------------------------------
WARNING: --> "shared_pool_size" needs to be increased to at least
"100663296"
WARNING: --> "pga_aggregate_target" needs to be increased to at least
"25165824"
WARNING: --> "large_pool_size" needs to be increased to at least
"8388608"
--> "java_pool_size" is already at "67108864" calculated new value is
"67108864"
.
************************************************************************
**
Deprecated Parameters: [Update Oracle Database 10.1 init.ora or spfile]
----------------------------------------------------------------------
-- No deprecated parameters found. No changes are required.
.
************************************************************************
**
Obsolete Parameters: [Update Oracle Database 10.1 init.ora or spfile]
---------------------------------------------------------------------
--> "undo_suppress_errors"
.
************************************************************************
**
Components: [The following database components will be upgraded or
installed]
----------------------------------------------------------------------
------
--> Oracle Catalog Views        [upgrade]
--> Oracle Packages and Types    [upgrade]
--> JServer JAVA Virtual Machine [upgrade]
--> Oracle XDK for Java          [upgrade]
--> Oracle Java Packages         [install]
--> Oracle Workspace Manager     [upgrade]
```

```
--> OLAP Catalog                   [upgrade]
--> Oracle interMedia              [upgrade]
--> Spatial                        [upgrade]
--> Oracle Text                    [upgrade]
--> Oracle Ultra Search            [upgrade]
.
************************************************************************
**
.
************************************************************************
**
SYSAUX Tablespace: [Create tablespace in Oracle Database 10.1
environment]
-----------------------------------------------------------------------
---
--> New "SYSAUX" tablespace
.... minimum required size for database upgrade: 500 MB
Please create the new SYSAUX Tablespace AFTER the Oracle Database
10.1 server is started and BEFORE you invoke the upgrade script.
.
************************************************************************
**
```

EXAM OBJECTIVE: USE SIMPLIFIED UPGRADE PROCESS THAT AUTOMATICALLY DETERMINES COMPONENTS TO BE UPGRADED

The Database Upgrade Assistant is a graphical user interface (GUI) tool that interactively steps the user through the upgrade process and configures the database to run with the new Oracle Database 10g release.

The DBUA invokes the Pre Upgrade Information Utility and automatically makes appropriate recommendations for configuration options such as tablespaces, redo logs, and so on.

For example, the DBUA recommends sizing information for the SYSAUX tablespace, based on the information from the Pre Upgrade Information Utility. If the user does not alter these settings, the DBUA creates the SYSAUX tablespace using the information from the Pre Upgrade Information Utility.

Before upgrading the database, the DBUA checks for adequate resources, including rollback segments and free disk space and optionally backs up all necessary files.

The DBUA then proceeds to create new configuration files (init.ora, spfile, listener files) in the new Oracle home. The values for the parameters are based on calculations made by the Pre Upgrade Information Utility. Once the DBUA completes all initialization steps, the upgrade process then begins.

EXAM OBJECTIVE: Start up the database using a new mode when upgrading

When performing the upgrade using a manual procedure, there is a new mode in which you are required to startup the database. It is: **STARTUP UPGRADE.**