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# Managing OpenVMS Oracle Database Migration to 11gR2

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# Managing OpenVMS Oracle Database Migration to 11gR2

- 1 ➤ 11gR2 New Features
- 2 ➤ Obsolete Features
- 3 ➤ Changes to Initialization Parameters
- 4 ➤ Migration – Major Steps

# Managing OpenVMS Oracle Database Migration to 11gR2

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# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Improved Performance and Scalability  
In-Memory Parallel Execution

In-memory parallel execution harnesses the aggregated memory in a system to enhance query performance by minimizing or even completely eliminating the physical I/O needed for a parallel operation.

For more details, see [Oracle Database New Features Guide 11g Release 2 \(E41360-03\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Significant Performance Improvement of On-Commit Fast Refresh
  - Fast refresh of a materialized view is now significantly faster due to reducing the time spent on log handling
  - Provides significantly reduced maintenance time
  - More fast refreshes are possible

For more details, see [Oracle Database New Features Guide 11g Release 2 \(E41360-03\)](#)



# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Automatic Block Repair

Allows corrupt blocks on the primary database or physical standby database to be automatically repaired, as soon as they are detected, by transferring good blocks from the other destination.

For more details, see [Oracle Data Guard Concepts and Administration 11g Release 2 \(E41134-03\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Enhanced Tablespace Point-In-Time Recovery (TSPITR)
  - New ability: recover a dropped tablespace
  - TSPITR can be repeated multiple times for the same tablespace

For more details, see [Oracle Database New Features Guide 11g Release 2 \(E41360-03\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Enhanced CREATE OR REPLACE TYPE to allow FORCE

Allows CREATE OR REPLACE TYPE operations to succeed even when TYPE dependent objects are present. However, if at least one dependent TABLE is present then FORCE does not allow CREATE OR REPLACE TYPE to succeed.

For more details, see [Oracle Database Object-Relational Developer's Guide 11g Release 2 \(E11822-05\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- WITH HOLD clause in DECLARE CURSOR statements in Pro\*C/C++

Any cursor that has been declared with the clause WITH HOLD after the word CURSOR remains open after a COMMIT.

For more details, see [Pro\\*C/C++ Programmer's Guide 11g Release 2 \(E10825-01\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- OCI Support for 8-Byte Integer Bind/Define

For details, see [Oracle Call Interface Programmer's Guide 11g Release 2 \(E10646-14\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- IGNORE\_ROW\_ON\_DUPKEY\_INDEX hint for INSERT statement

With INSERT INTO TARGET ... SELECT ... FROM SOURCE, a unique key for some to-be-inserted rows may collide with existing rows. The IGNORE\_ROW\_ON\_DUPKEY\_INDEX hint allows such collisions to be silently ignored and the non-colliding rows to be inserted.

For more details, see [Oracle Database SQL Language Reference 11g Release 2 \(E41084-02\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Data Pump Legacy Mode

Provides backward compatibility for scripts and parameter files used for original Export and Import scripts. This feature allows users to continue using original Export and Import scripts with Data Pump Export and Import. Development time is reduced as new scripts do not have to be developed.

For more details, see [Oracle Database Utilities 11g Release 2 \(E22490-07\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Diagnosability

Tracing and trace files have undergone some significant changes since 10.2.0.5.

For details, see [Oracle Database Administrator's Guide 11g Release 2 \(E25494-05\)](#)  
– Chapter 9: Managing Diagnostic Data



# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Database Replay – platform native Real Application Testing

Although the “Workload Capture” portion of Database Replay was available with 10.2.0.5, the 11.2.0.4 version also includes Workload Preprocessing, Workload Replay, Analysis and Reporting.

For details, see [Oracle Database Real Application Testing User's Guide 11g Release 2 \(E41481-03\)](#) – Chapter 8: Introduction to Database Replay

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Oracle Data Redaction

This new database security feature prevents data columns (such as credit card numbers, US Social Security numbers and other sensitive or regulated data) from being displayed by applications.

For details, see [Oracle Database Advance Security Administrator's Guide 11g Release 2 \(E40393-07\)](#) – Chapters 3, 4, 5 and 6

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Case Sensitive Passwords

- Database passwords are now CASE-SENSITIVE (since 11gR1)
- Override with SEC\_CASE\_SENSITIVE\_LOGON = FALSE
- Take care with password files

For details, see [Oracle Database Security Guide 11g Release 1 \(B28531-21\)](#) – Chapter 3

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- Numerous RAC and CRS Enhancements

For details, see [Oracle Clusterware Administration and Deployment Guide 11g Release 2 \(E41959-03\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

- ... and many more!

For a complete list of New Features in Oracle 11gR2, please refer to:

Oracle New Features Guide 11g Release 2 (E41360-03)

Oracle New Features Guide 11g Release 1 (B28279-06)

# Managing OpenVMS Oracle Database Migration to 11gR2

## 11gR2 New Features

Please pay particular attention to the OpenVMS Install Guide and Release Notes for the final list of features supported on OpenVMS

Some new features of 11.2.0.4 may not be supported on OpenVMS, for example: ASM

# Managing OpenVMS Oracle Database Migration to 11gR2

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# Managing OpenVMS Oracle Database Migration to 11gR2

## Obsolete Features

### ■ Obsolete Oracle XML DB Functions and Packages

- PL/SQL procedure DBMS\_XDB\_ADMIN.createRepositoryXMLIndex
- PL/SQL procedure DBMS\_XDB\_ADMIN.XMLIndexAddPath
- PL/SQL procedure DBMS\_XDB\_ADMIN.XMLIndexRemovePath
- PL/SQL procedure DBMS\_XDB\_ADMIN.dropRepositoryXMLIndex
- XML schema annotation (attribute) csx:encodingType
- XMLIndex index on CLOB portions of hybrid XMLType storage, that is, on CLOB data that is embedded within object relational storage

See:

[Oracle Database New Features Guide 11g Release 2 \(E41360-03\)](#)

[Oracle XML DB Developer's Guide 11g Release 2 \(E23094-04\)](#)



# Managing OpenVMS Oracle Database Migration to 11gR2

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# Managing OpenVMS Oracle Database Migration to 11gR2

## Changes to Initialization Parameters

### ■ Obsolete Parameters

DRS\_START

GC\_FILES\_TO\_LOCKS

MAX\_COMMIT\_PROPAGATION\_DELAY

PLSQL\_NATIVE\_LIBRARY\_DIR

PLSQL\_NATIVE\_LIBRARY\_SUBDIR\_COUNT

SQL\_VERSION

### ■ 11gR2 Equivalents

DG\_BROKER\_START

An attempt to start a database using one or more obsolete initialization parameters will succeed, but a warning is returned and recorded in the alert log.

# Managing OpenVMS Oracle Database Migration to 11gR2

## Changes to Initialization Parameters

### ■ Obsolete Parameters

BACKGROUND\_DUMP\_DEST

USER\_DUMP\_DEST

CURSOR\_SPACE\_FOR\_TIME

INSTANCE\_GROUPS

LOG\_ARCHIVE\_LOCAL\_FIRST

PLSQL\_DEBUG

### ■ 11gR2 Equivalents

DIAGNOSTIC\_DEST

DIAGNOSTIC\_DEST

PLSQL\_OPTIMIZE\_LEVEL

See: [Oracle Database Upgrade Guide 11g Release 2 \(E23633-10\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## Changes to Initialization Parameters

### ■ Obsolete Parameters

COMMIT\_WRITE

PLSQL\_V2\_COMPATIBILITY

STANDBY\_ARCHIVE\_DEST

MAX\_JOB\_SLAVE\_PROCESSES

RESOURCE\_MANAGER\_CPU\_ALLOCATION

### ■ 11gR2 Equivalents

COMMIT\_LOGGING / COMMIT\_WAIT

JOB\_QUEUE\_PROCESSES

See: [Oracle Database Upgrade Guide 11g Release 2 \(E23633-10\)](#)

# Managing OpenVMS Oracle Database Migration to 11gR2

## Changes to Initialization Parameters

- Changes to LOG\_ARCHIVE\_DEST\_n:
  - Number of LOG\_ARCHIVE\_DEST\_n and LOG\_ARCHIVE\_DEST\_STATE\_n parameters have been increased from 10 to 31
  - LOG\_ARCHIVE\_DEST\_11 through 31 do not support the SYNC, ARCH, LOCATION, MANDATORY, ALTERNATE or DEPENDENCY attributes
  - LOG\_ARCHIVE\_DEST\_11 through 31 cannot be specified as the target of the ALTERNATE or DEPENDENCY attributes

# Managing OpenVMS Oracle Database Migration to 11gR2

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# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

1. Prepare to Upgrade
2. Test the Upgrade Process
3. Test the Upgraded Test Database
4. Prepare and Preserve Production Database
5. Upgrade the Production Database
6. Tune and Adjust the new Production Database

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 1. Prepare to Upgrade

- Become familiar with new 11gR2 features
- Determine upgrade path
- Choose upgrade method
- Choose new Oracle Home directory
- Develop a testing plan
- Prepare a backup strategy



# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 1. Prepare to Upgrade

- Existing Installation(s)
  - 10gR2 (10.2.0.5)
  - 10gR1 (10.1.0.5)
  - 9iR2 (9.2.0.8)
  - Earlier releases?

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 1. Prepare to Upgrade

- 11gR2 (11.2.0.4) must be installed into a new / fresh Oracle Home
- Where are your database files?
- Under the original Oracle Home?

```
SELECT NAME FROM V$DATAFILE      UNION
SELECT NAME FROM V$TEMPFILE      UNION
SELECT NAME FROM V$CONTROLFILE  UNION
SELECT MEMBER FROM V$LOGFILE;
```

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 1. Prepare to Upgrade

- During your final SQL\*Plus session as DBA, create a PFILE from your SPFILE

```
CREATE PFILE='full_pfile_name' FROM SPFILE;
```

- This will ease your upgrade to 11.2.0.4
- PFILE can be manually edited

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 1. Prepare to Upgrade

- Shut down database (normal)
- Shut down listeners etc
- Take a full cold backup

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 1. Prepare to Upgrade

- Copy miscellaneous files to the new Oracle Home:

`orapw'sid' .`  
`tnsnames.ora`

`sid_'sid' .properties`  
`listener.ora`

`init'sid' .ora`  
`sqlnet.ora`

- These will probably need to be edited

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 2. Test the Upgrade Process

- Upgrade a Test Database
- Upgrade in an Isolated Test Environment
- Should not interfere with production database

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 2. Test the Upgrade Process

- Use the Pre-Upgrade Informational Tool

```
SQL> SPOOL UPGRADE_INFO.LOG  
SQL> @ORA_ROOT:[RDBMS.ADMIN]utlu112i.sql  
SQL> SPOOL OFF
```

- Review output and correct as appropriate
- Repeat until no further adjustments required
- See **Oracle® Database Upgrade Guide 11g Release 2 [E23633-11]**  
– chapter 3

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 2. Test the Upgrade Process

- When satisfied with upgradability:
  - Shut down
  - Take a full cold backup
  - Start a new VMS session
  - Run ORAUSER.COM under 11gR2
  - Start the database in UPGRADE mode

```
SQL> STARTUP UPGRADE
```



# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 2. Test the Upgrade Process

- Run the CATUPGRD.SQL script

```
SQL> SPOOL upgrade.log
```

```
SQL> @ORA_ROOT:[RDBMS.ADMIN]CATUPGRD.SQL
```

```
SQL> SPOOL OFF
```

- Examine the log file for errors
- Correct errors if possible
- Otherwise restore backup and start over
- Shut down and restart the database

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 2. Test the Upgrade Process

- Run the Post-Upgrade Status Tool

```
SQL> @ORA_ROOT:[RDBMS.ADMIN]UTLU112S.SQL
```

- Check that the tool displays no errors

- Run the Post-Upgrade Actions Script

```
SQL> @ORA_ROOT:[RDBMS.ADMIN]CATUPPST.SQL
```

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 2. Test the Upgrade Process

- Run `UTLRP.SQL` to recompile stored PL/SQL etc.

```
SQL> @ORA_ROOT:[RDBMS.ADMIN]UTLRP.SQL
```

- Verify that all packages etc. are valid

```
SQL> SELECT COUNT(*) FROM DBA_INVALID_OBJECTS;
```

```
SQL> SELECT DISTINCT OBJECT_NAME FROM DBA_INVALID_OBJECTS;
```

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 3. Test the Upgraded Test Database

- Perform tests planned in step #1
- Compare results between pre- and post-upgrade
- Investigate ways to correct any anomalies
- Implement corrections
- Repeat until completely successful

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 4. Prepare and Preserve Production Database

- Prepare current production database to ensure successful upgrade
- Schedule downtime required for backup and upgrade
- Backup current production database (full or incremental) to protect against data loss

# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 5. Upgrade the Production Database

- Upgrade current production database to 11gR2
- Perform a full backup of upgraded production database
- Perform other post-upgrade tasks

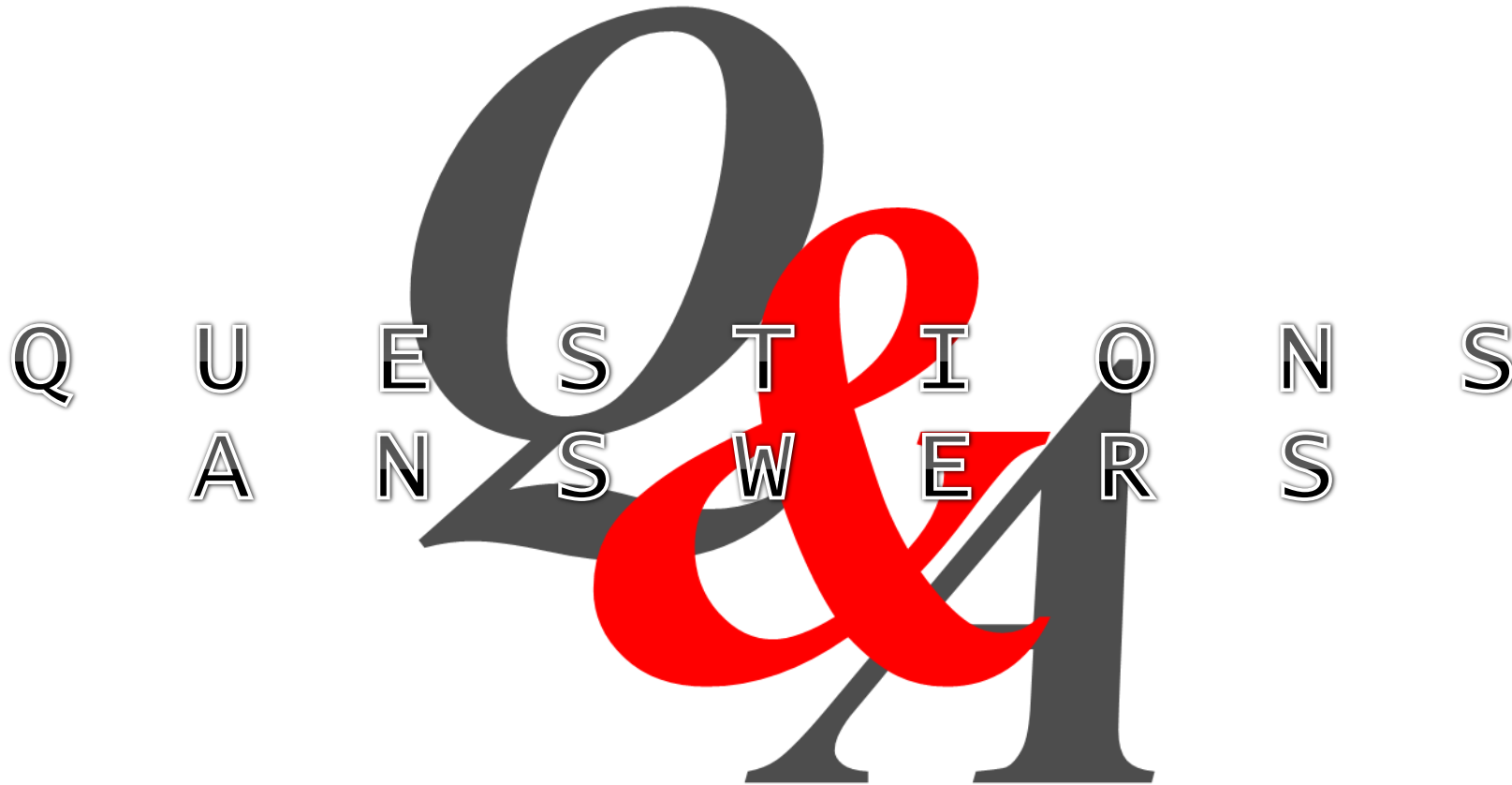
# Managing OpenVMS Oracle Database Migration to 11gR2

## Major Steps

### 6. Tune and Adjust the new Production Database

- Tune the 11gR2 Production Database
- Should perform to same or better standard
- Determine which new 11g features are to be used
- Develop any new DBA procedures as required
- Don't upgrade production users until all applications have been tested

# Managing OpenVMS Oracle Database Migration to 11gR2





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