# Step by step Upgrade 11.2.0.4 RAC to 12.1.0.2 with DBUA

http://ohsdba.cn

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# Upgrade Path

| Source Database | Upgrade Path | Target Database |
|---|---|---|
| 7.3.3 (lower) | 7.3.4 --> 9.2.0.8 --> 10.2.0.5 | 12.1.x |
| 8.0.5 ( or lower ) | 8.0.6 --> 9.2.0.8 --> 10.2.0.5 | 12.1.x |
| 8.1.7 ( or lower ) | 8.1.7.4 --> 10.2.0.5 | 12.1.x |
| 9.0.1.3 ( or lower ) | 9.0.1.4 --> 10.2.0.5 | 12.1.x |
| 9.2.0.7 ( or lower ) | 10.2.0.5 | 12.1.x |
| 10.2.0.4 ( or lower ) | 10.2.0.5 | 12.1.x |
| 11.1.0.6 | 11.1.0.7 | 12.1.x |
| 11.2.0.1 | 11.2.0.2 | 12.1.x |

# Recommendations for Source database

1) Ensure that all database components/objects provided by Oracle are VALID in the source database prior to starting the upgrade.

2) Ensure that you do not have duplicate objects in the SYS and SYSTEM schema. For 1 and 2 refer to:
Note 556610.1 Script to Collect DB Upgrade/Migrate Diagnostic Information (dbupgdiag.sql) dbupgdiag.sql script is a set of sql statements intended to provide a user friendly output to diagnose the status of the database either before (or) after upgrade. The script will create a output file called db_upg_diag_<sid>_<timestamp>.log

3) Disable the custom triggers that would fire before/after DDL and enable them after the upgrade is complete.

4) Either take a Cold or Hot backup of your source database (advisable to have cold backup).

5) Check the database server upgrade/downgrade compatibility matrix before upgrading the database.

6) Set Archive Log ON during upgrade. Oracle recommends that you set Archive Log ON in order for DBUA to create and update the log file for the upgrade process.

7) For Oracle RAC, if you upgrade a cluster database using DBUA, then you must leave the CLUSTER_DATABASE initialization parameter set to TRUE.

8) Ensure to run the pre-upgrade utility prior to upgrading the database . The script is available in the 12c ORACLE_HOME/rdbms/admin named preupgrd.sql. Refer to 12c documentation for complete details.:

Oracle Database Upgrade Guide 12c Release 1 (12.1) E17642-10
2 Preparing to Upgrade Oracle Database
2.5 About the Pre-Upgrade Information Tool for Oracle Database

9) If mitigation patch is applied at source database, it would have disabled Java. Enable it before performing upgrade to avoid java related error
Database Upgrade failed with Errors "ORA-02290: check constraint (SYS.JAVA_DEV_DISABLED) violated" & "ORA-04045: SYS.DBMS_ISCHED" (Doc ID 1985725.1)

10) Materialized views in source database should be stopped before upgrade
How to Handle Materialized Views When You Upgrade or Clone a Database (Doc ID 1406586.1)

11) Disable scheduled custom jobs

12) Before starting the Database Upgrade Assistant it is required change the preference for 'concurrent statistics gathering' on the current release if the current setting is not set to 'FALSE'
First, while still on the 11.2. release, obtain the current setting:
SQL> SELECT dbms_stats.get_prefs('CONCURRENT') from dual;
When 'concurrent statistics gathering' is not not set to 'FALSE', change the value to 'FALSE before the upgrade.

```
BEGIN
DBMS_STATS.SET_GLOBAL_PREFS('CONCURRENT','FALSE');
END;
/
```

13) Run the Pre-Upgrade Information Tool for Collecting Pre-Upgrade Information from 12c ORACLE_HOME

```
$ORACLE_HOME/rdbms/admin/preupgrd.sql
$ sqlplus '/ as sysdba'
SQL> spool upgrade_info.log
SQL> @preupgrd.sql
SQL> spool off
```

14) Check for INVALID database components and objects in the Source database

select substr(comp_name,1,40) comp_name, status, substr(version,1,10) version from dba_registry order by comp_name;

select substr(object_name,1,40) object_name,substr(owner,1,15) owner,object_type from dba_objects where status='INVALID' order by owner,object_type;

select owner,object_type,count(*) from dba_objects where status='INVALID' group by owner,object_type order by owner,object_type ;

15) Disable Oracle Database Vault

You must do this before upgrading the database. Enable Oracle Database Vault again once the upgrade is complete.

Reference:

Note 453903.1 Enabling and Disabling Oracle Database Vault in UNIX

Note 453902.1 How To Enable And/Or Disable Oracle Database Vault

16) Audit records

From 10gr2 DBUA/catupgrd script can spend an infinite time to process the records in FGA_LOG$ and/or AUD$ if there are too many records

See:

Note1062993.1 11.2.0.1 Catupgrd.sql Hangs While Running Procedure POPULATE_DBID_AUDIT

For 10.2 and later source versions there is now a pre-process script available:

Note 1329590.1 How to Pre-Process SYS.AUD$ Records Pre-Upgrade From 10.1 or later to 11gR1 or later.

If do not want to keep the records collected before 12cR1 then you can just do in source environment (READ PREVIOUS NOTES before proceeding):

SQL> truncate table sys.aud$;

SQL> truncate table sys.fga_log$;

17) Enterprise Manager Database Control

sql> connect / as sysdba

sql> spool emremoval.log

sql>@emremove.sql

sql> spool off

18) Oracle Warehouse Builder

OWB is not installed as part of the software for Oracle Database 12c, and OWB components that may exist in earlier releases are not upgraded as part of the Oracle Database upgrade process. However, you can use OWB release 11.2.0.3 with Oracle Database 12c. Note that OWB releases earlier than release 11.2.0.3 do not work with Oracle Database 12c

19) Oracle Label Security

If you are upgrading from a database earlier than Oracle Database release 12.1 that uses Oracle Label Security (OLS) and Database Vault, then you must first run the OLS preprocess script, olspreupgrade.sql, to process the aud$ table contents. The OLS upgrade moves the aud$ table from the SYSTEM schema to the SYS schema. The olspreupgrade.sql script is a preprocessing script required for this move

# *Pre-upgrade check*

## *Run preupgrd.sql*

```
[oracle@ohs3 ~]$ cd /pgold/ordb/oracle/product/121/rdbms/admin
[oracle@ohs3 admin]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.4.0 Production on Tue Dec 6 17:00:35 2016
Copyright (c) 1982, 2013, Oracle.  All rights reserved.
Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options

SQL> spool /tmp/upgrade2_12c.log
SQL> @preupgrd.sql

Loading Pre-Upgrade Package...

**************************************************************************
***
Executing Pre-Upgrade Checks in PROD...
**************************************************************************
***

        ************************************************************

                    =====>> ERRORS FOUND for PROD <<=====

     The following are *** ERROR LEVEL CONDITIONS *** that must be addressed
                        prior to attempting your upgrade.
                    Failure to do so will result in a failed upgrade.

                    You MUST resolve the above errors prior to upgrade
```

```
      ************************************************************

      ************************************************************

            ====>> PRE-UPGRADE RESULTS for PROD <<=====

ACTIONS REQUIRED:

1. Review results of the pre-upgrade checks:
 /pgold/ordb/oracle/product/112/cfgtoollogs/stdby/preupgrade/preupgrade.log

2. Execute in the SOURCE environment BEFORE upgrade:
 /pgold/ordb/oracle/product/112/cfgtoollogs/stdby/preupgrade/preupgrade_fixups.sql

3. Execute in the NEW environment AFTER upgrade:
 /pgold/ordb/oracle/product/112/cfgtoollogs/stdby/preupgrade/postupgrade_fixups.sql

      ************************************************************

************************************************************************
***
Pre-Upgrade Checks in PROD Completed.
************************************************************************
***

************************************************************************
***
************************************************************************
***
SQL>

SQL> spool off
SQL>
```

## *Check invalid objects*

```
SQL> col COMP_NAME for a30
SQL> set pagesize500
SQL> set linesize 100
SQL> select substr(comp_name,1,40) comp_name, status, substr(version,1,10) version
from dba_registry order by comp_name;

COMP_NAME                      STATUS                 VERSION
------------------------------ ---------------------- --------------------
```

JServer JAVA Virtual Machine VALID 11.2.0.4.0
OLAP Analytic Workspace VALID 11.2.0.4.0
OLAP Catalog VALID 11.2.0.4.0
OWB VALID 11.2.0.4.0
Oracle Application Express VALID 3.2.1.00.1
Oracle Database Catalog Views VALID 11.2.0.4.0
Oracle Database Java Packages VALID 11.2.0.4.0
Oracle Database Packages and T VALID 11.2.0.4.0
ypes

Oracle Enterprise Manager VALID 11.2.0.4.0
Oracle Expression Filter VALID 11.2.0.4.0
Oracle Multimedia VALID 11.2.0.4.0
Oracle OLAP API VALID 11.2.0.4.0
Oracle Real Application Cluste VALID 11.2.0.4.0
rs

Oracle Rules Manager VALID 11.2.0.4.0
Oracle Text VALID 11.2.0.4.0
Oracle Workspace Manager VALID 11.2.0.4.0
Oracle XDK VALID 11.2.0.4.0
Oracle XML Database VALID 11.2.0.4.0
Spatial VALID 11.2.0.4.0
SQL>

SQL> select substr(object_name,1,40) object_name,substr(owner,1,15) owner,object_type from dba_objects where status='INVALID' order by owner,object_type;

no rows selected

SQL>

## *Run preupgrade_fixups.sql*

SQL>
@/pgold/ordb/oracle/product/112/cfgtoollogs/stdby/preupgrade/preupgrade_fixups.sql
Pre-Upgrade Fixup Script Generated on 2016-12-06 17:01:25 Version: 12.1.0.2 Build: 006
Beginning Pre-Upgrade Fixups...
Executing in container PROD

**********

Check Tag: EM_PRESENT
Check Summary: Check if Enterprise Manager is present
Fix Summary: Execute emremove.sql prior to upgrade.

```
************************************************************************
Fixup Returned Information:
WARNING: --> Enterprise Manager Database Control repository found in the database

      In Oracle Database 12c, Database Control is removed during
      the upgrade. To save time during the Upgrade, this action
      can be done prior to upgrading using the following steps after
      copying rdbms/admin/emremove.sql from the new Oracle home
   - Stop EM Database Control:
     $> emctl stop dbconsole

   - Connect to the Database using the SYS account AS SYSDBA:

   SET ECHO ON;
   SET SERVEROUTPUT ON;
   @emremove.sql
      Without the set echo and serveroutput commands you will not
      be able to follow the progress of the script.
************************************************************************


************************************************************************
Check Tag:      AMD_EXISTS
Check Summary: Check to see if AMD is present in the database
Fix Summary:    Manually execute ORACLE_HOME/oraolap/admin/catnoamd.sql script to
remove OLAP.
************************************************************************
Fixup Returned Information:
INFORMATION: --> OLAP Catalog(AMD) exists in database

      Starting with Oracle Database 12c, OLAP Catalog component is desupported.
      If you are not using the OLAP Catalog component and want
      to remove it, then execute the
      ORACLE_HOME/olap/admin/catnoamd.sql script before or
      after the upgrade.
************************************************************************


************************************************************************
Check Tag:      APEX_UPGRADE_MSG
Check Summary: Check that APEX will need to be upgraded.
Fix Summary:    Oracle Application Express can be manually upgraded prior to database
upgrade.
************************************************************************
```

```
Fixup Returned Information:
INFORMATION: --> Oracle Application Express (APEX) can be
      manually upgraded prior to database upgrade

      APEX is currently at version 3.2.1.00.12 and will need to be
      upgraded to APEX version 4.2.5 in the new release.
      Note 1: To reduce database upgrade time, APEX can be manually
              upgraded outside of and prior to database upgrade.
      Note 2: See MOS Note 1088970.1 for information on APEX
              installation upgrades.
************************************************************************


************************************************************************
                    [Pre-Upgrade Recommendations]
************************************************************************

                      ****************************************
                      ********* Dictionary Statistics *********
                      ****************************************

Please gather dictionary statistics 24 hours prior to
upgrading the database.
To gather dictionary statistics execute the following command
while connected as SYSDBA:
    EXECUTE dbms_stats.gather_dictionary_stats;

^^^ MANUAL ACTION SUGGESTED ^^^


          ************************************************
              ************* Fixup Summary ************

 3 fixup routines generated INFORMATIONAL messages that should be reviewed.

**************** Pre-Upgrade Fixup Script Complete *********************

PL/SQL procedure successfully completed.

SQL>

SQL> ALTER SYSTEM SET PROCESSES=300 SCOPE=SPFILE;

System altered.
```

## *Gather dictionary stats*

SQL> EXECUTE dbms_stats.gather_dictionary_stats;

PL/SQL procedure successfully completed.

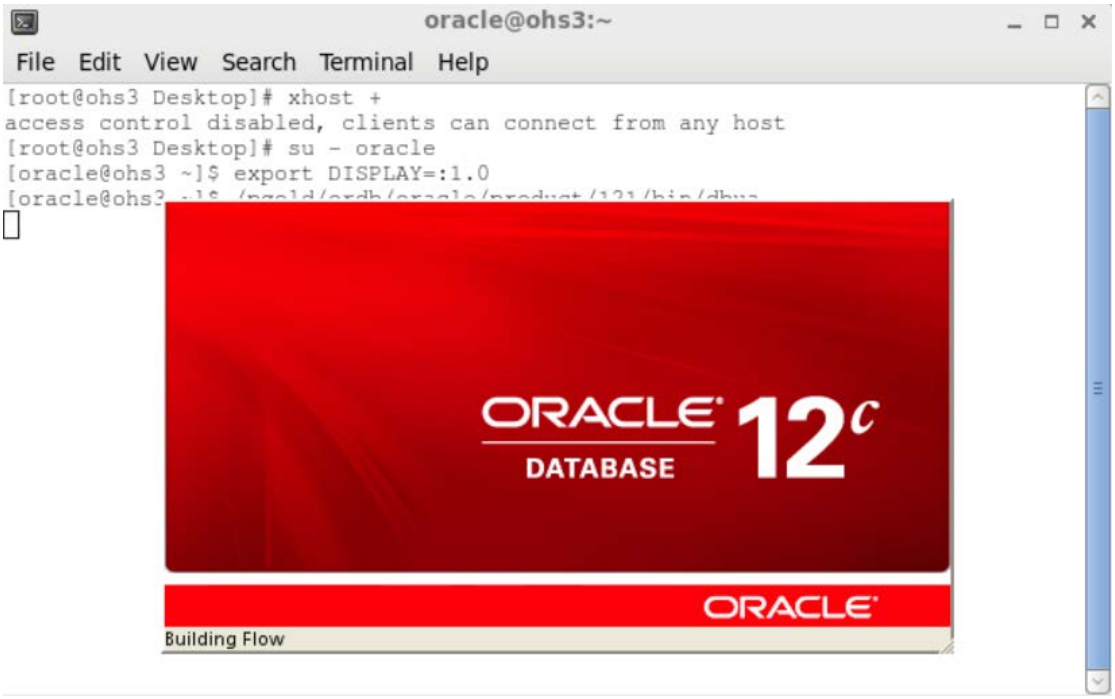
SQL>

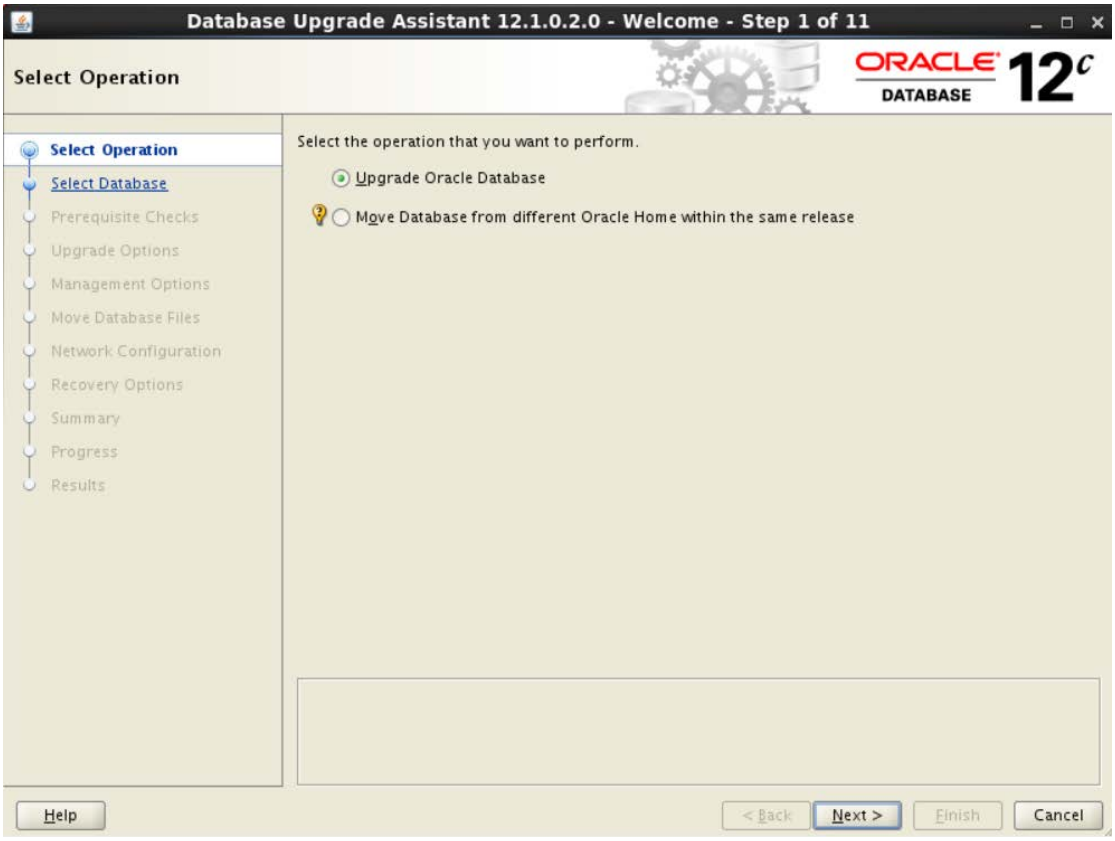
[oracle@ohs3 ~]$ srvctl start database -d stdby
[oracle@ohs3 ~]$

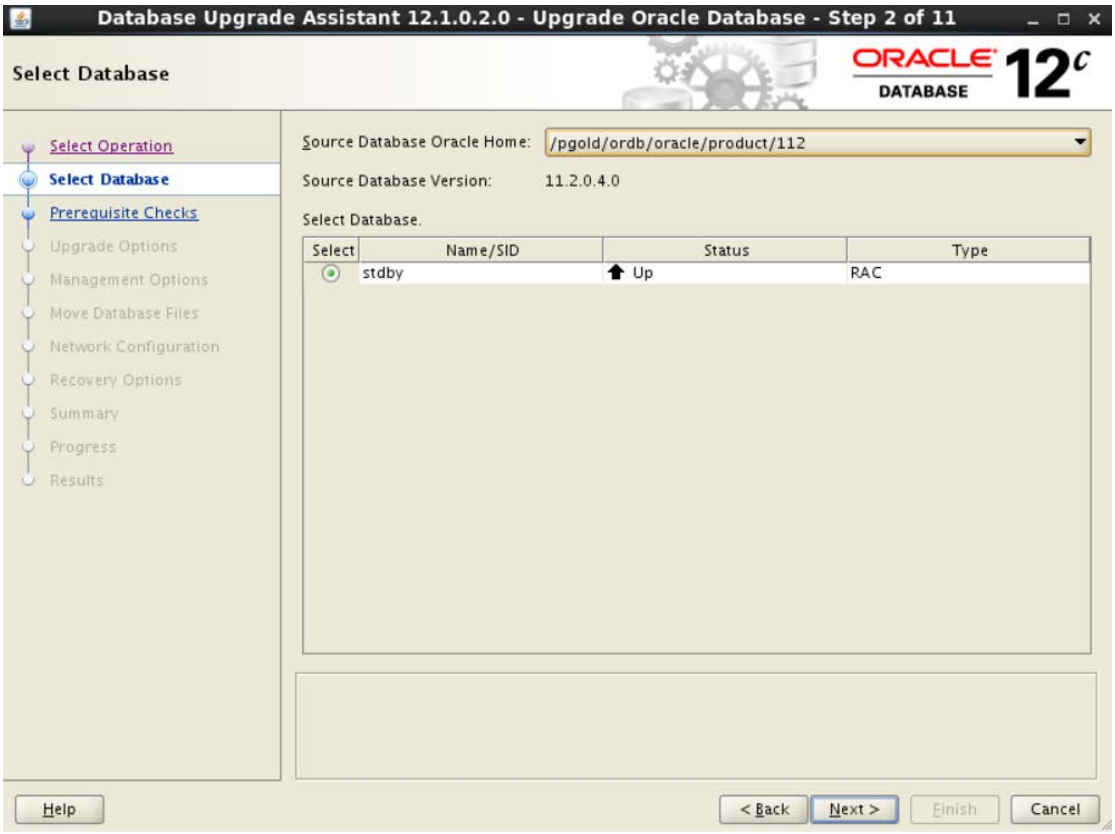
# *Invoke DBUA*

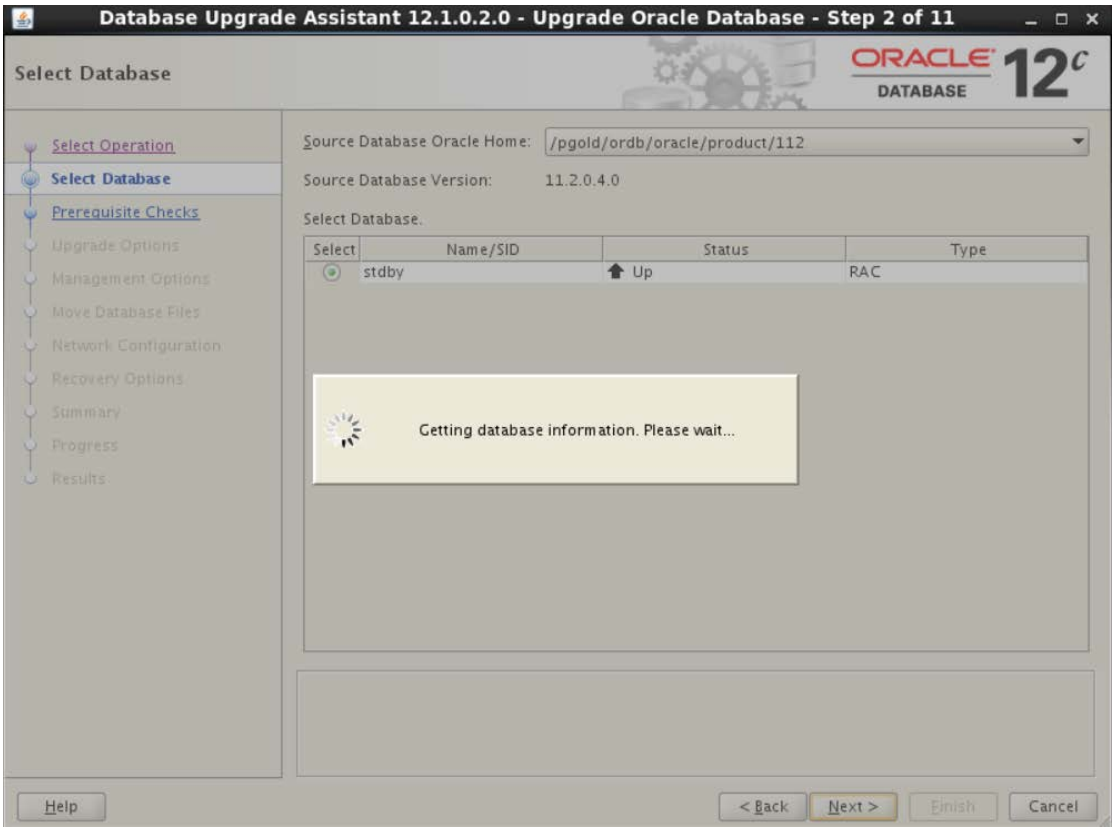
Note: For Oracle RAC, if you upgrade a cluster database using DBUA, then you must set the CLUSTER_DATABASE initialization parameter to TRUE

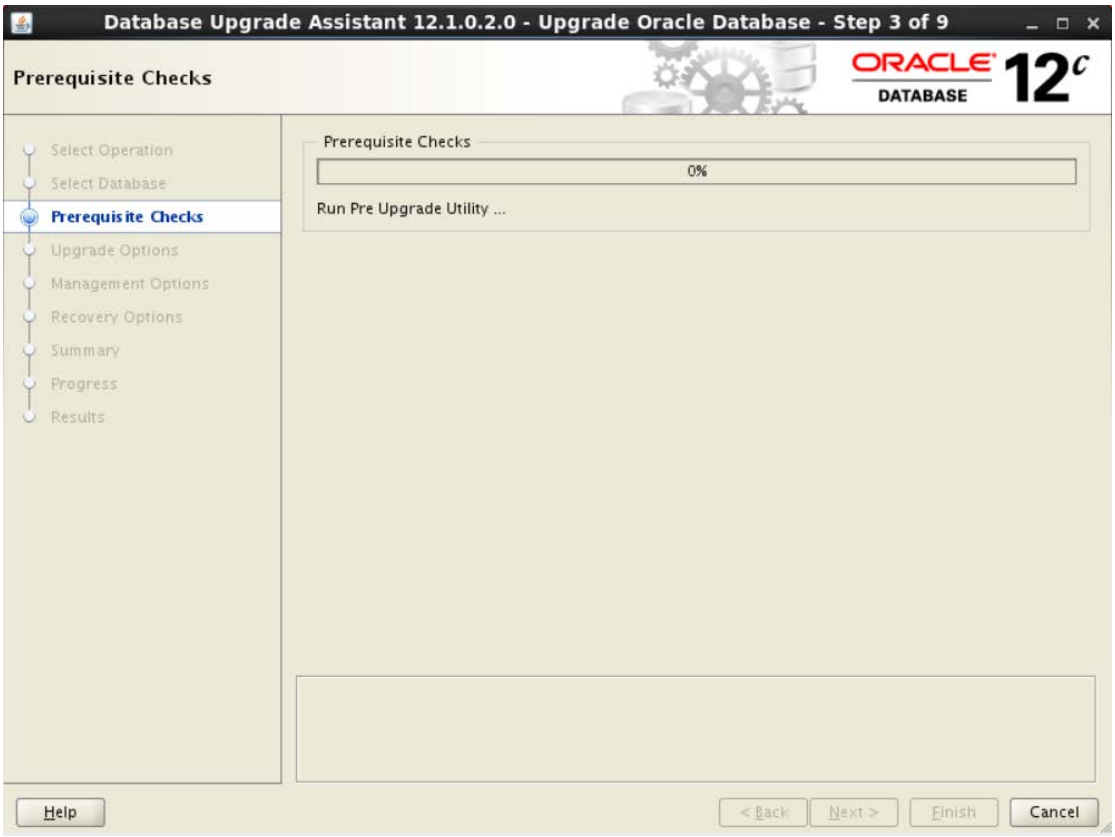
[root@ohs3 Desktop]# xhost +
access control disabled, clients can connect from any host
[root@ohs3 Desktop]# su - oracle
[oracle@ohs3 ~]$ export DISPLAY=:1.0
[oracle@ohs3 ~]$ /pgold/ordb/oracle/product/121/bin/dbua

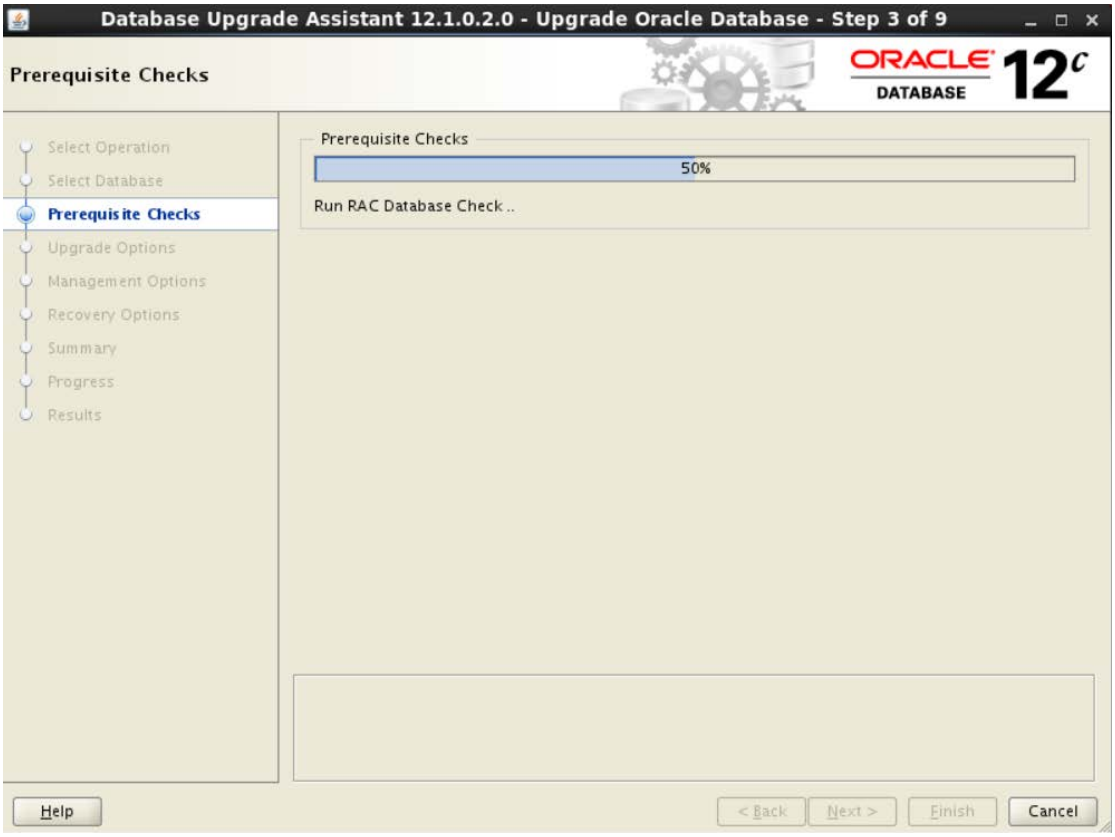


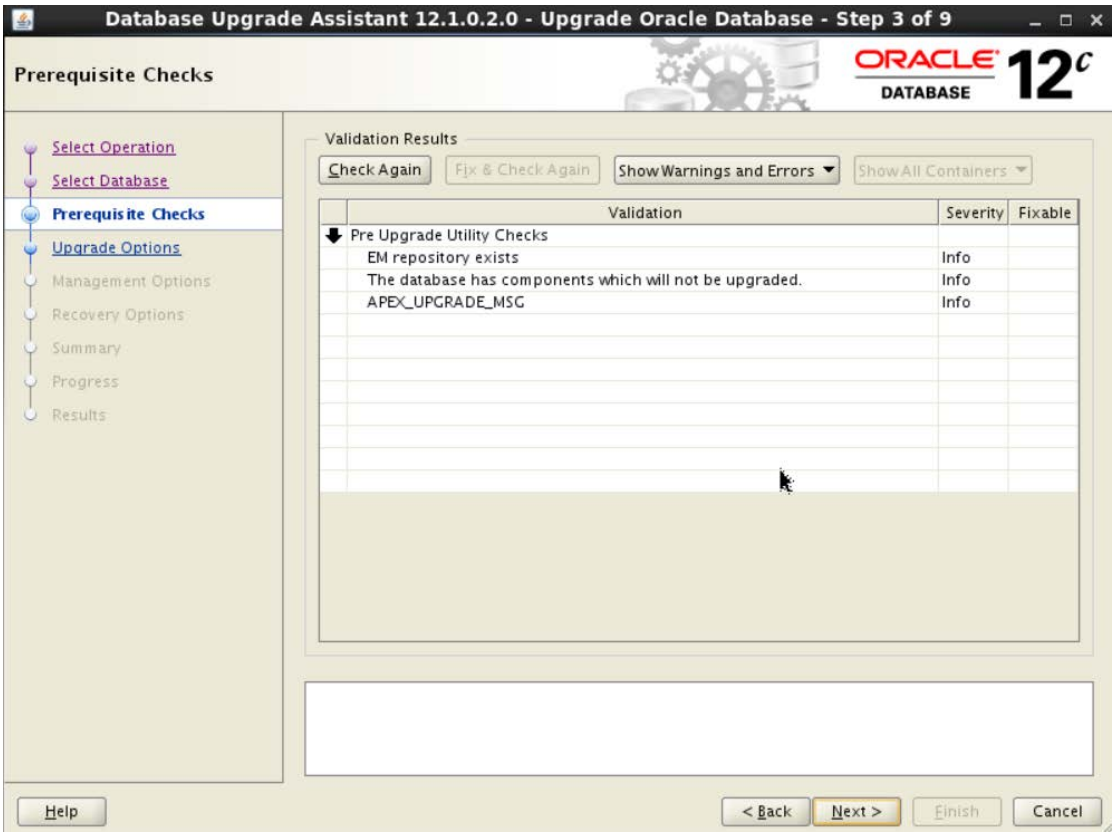

Database Upgrade Assistant 12.1.0.2.0 - Welcome - Step 1 of 11
Select Operation
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Move Database Files
Network Configuration
Recovery Options
Summary
Progress
Results
Select the operation that you want to perform.
Upgrade Oracle Database
Move Database from different Oracle Home within the same release
Help
< Back
Next >
Finish
Cancel

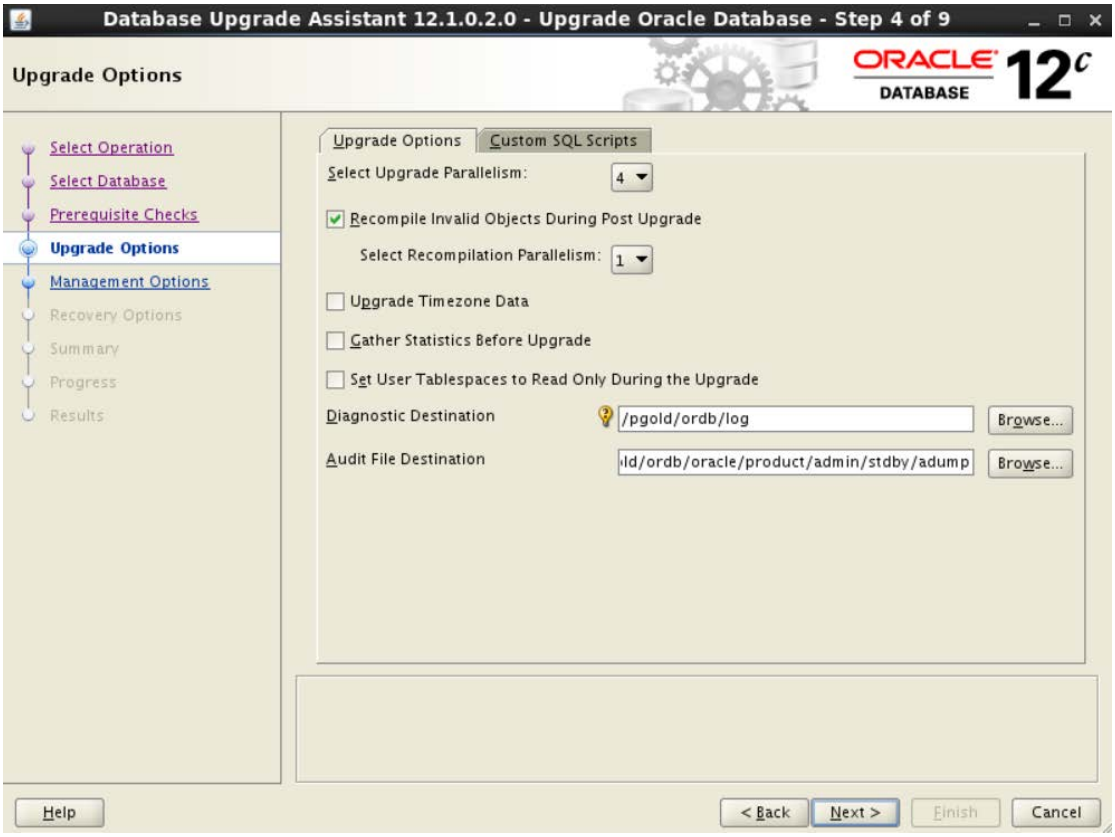

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 2 of 11
Select Database
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Move Database Files
Network Configuration
Recovery Options
Summary
Progress
Results
Source Database Oracle Home:
/pgold/ordb/oracle/product/112
Source Database Version:
11.2.0.4.0
Select Database.
Select
Name/SID
Status
Type
stdby
Up
RAC
Help
< Back
Next >
Finish
Cancel

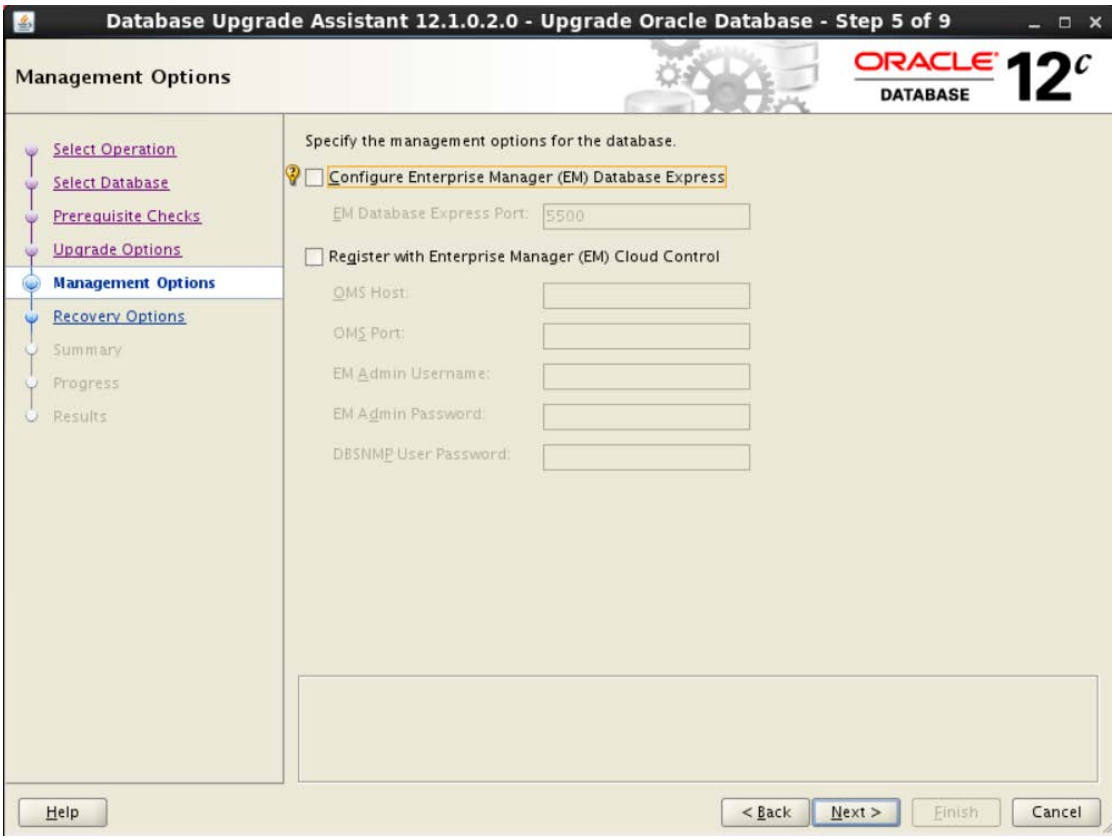

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 2 of 11
Select Database
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Move Database Files
Network Configuration
Recovery Options
Summary
Progress
Results
Source Database Oracle Home:
/pgold/ordb/oracle/product/112
Source Database Version:
11.2.0.4.0
Select Database.
Select
Name/SID
Status
Type
stdby
Up
RAC
Getting database information. Please wait...
Help
< Back
Next >
Finish
Cancel

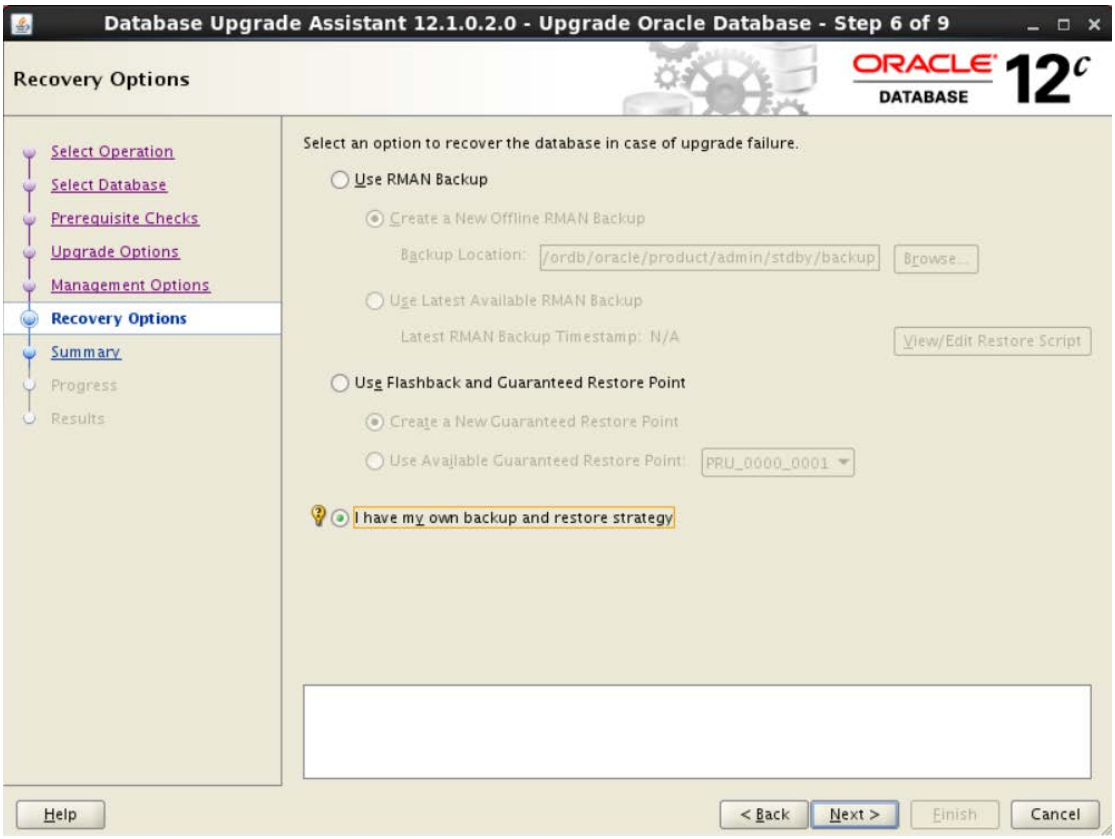

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 3 of 9
Prerequisite Checks
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Prerequisite Checks
0%
Run Pre Upgrade Utility ...
Help
< Back
Next >
Finish
Cancel

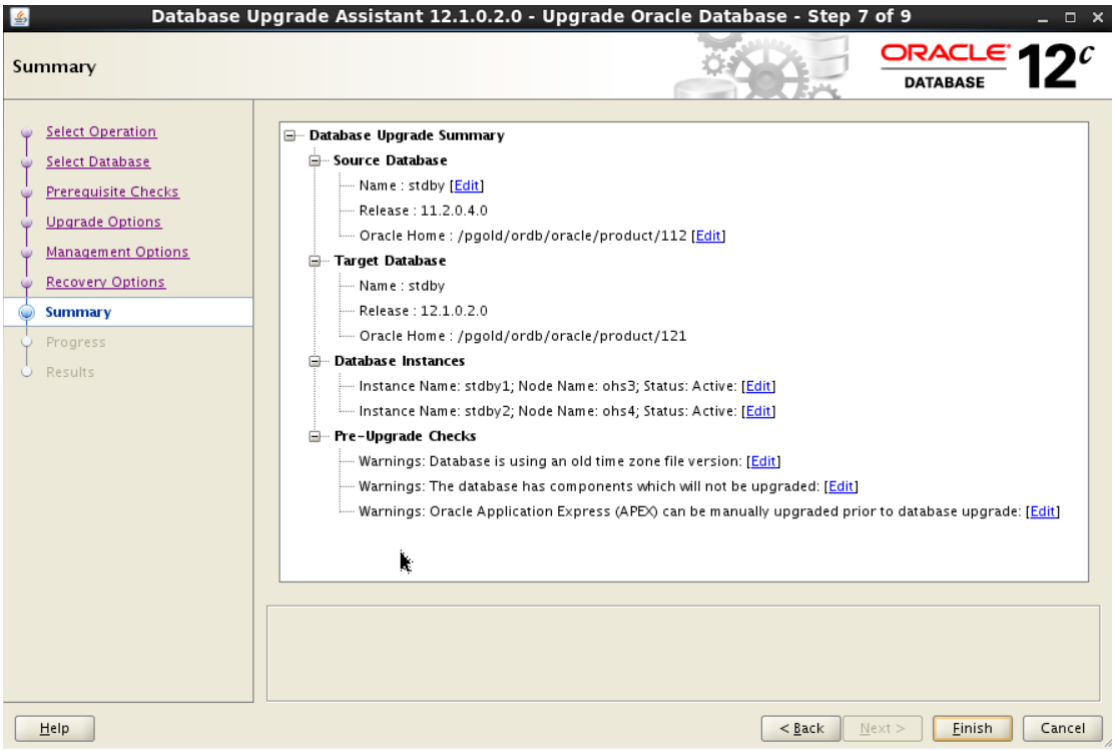

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 3 of 9
Prerequisite Checks
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Prerequisite Checks
50%
Run RAC Database Check ..
Help
< Back
Next >
Finish
Cancel

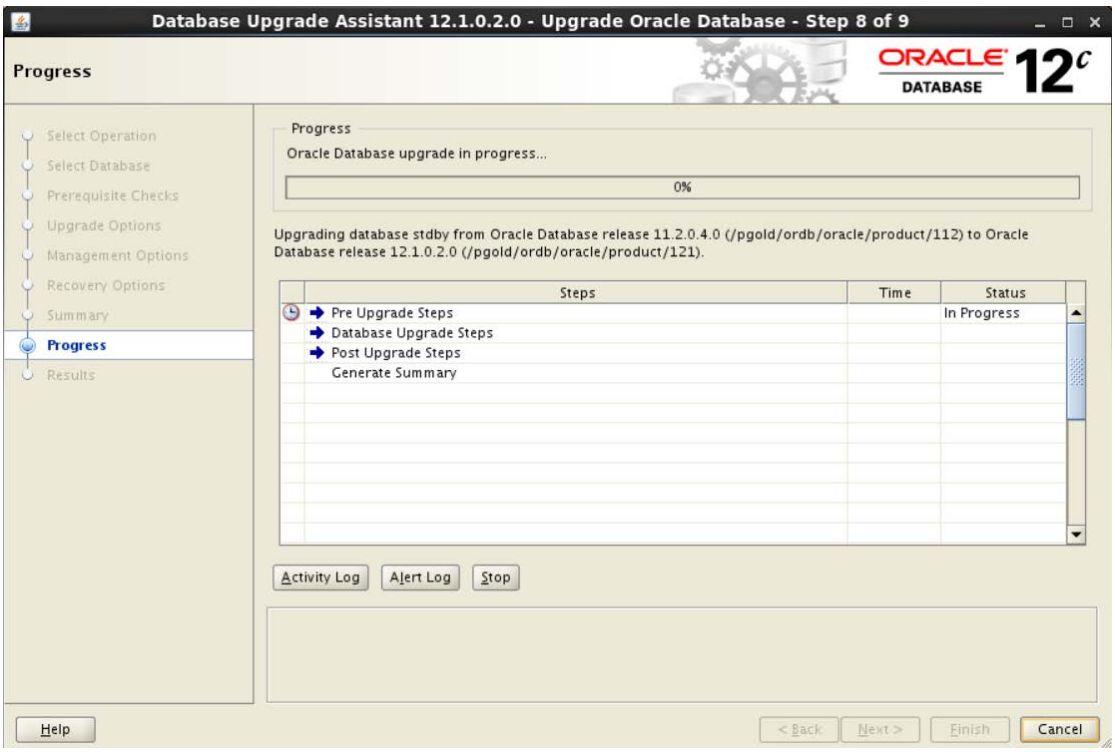

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 3 of 9
Prerequisite Checks
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Validation Results
Check Again
Fix & Check Again
Show Warnings and Errors
Show All Containers
Validation
Severity
Fixable
Pre Upgrade Utility Checks
EM repository exists
Info
The database has components which will not be upgraded.
Info
APEX_UPGRADE_MSG
Info
Help
< Back
Next >
Finish
Cancel


Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 4 of 9
Upgrade Options
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Upgrade Options
Custom SQL Scripts
Select Upgrade Parallelism:
4
Recompile Invalid Objects During Post Upgrade
Select Recompilation Parallelism:
1
Upgrade Timezone Data
Gather Statistics Before Upgrade
Set User Tablespaces to Read Only During the Upgrade
Diagnostic Destination
/pgold/ordb/log
Browse...
Audit File Destination
ıld/ordb/oracle/product/admin/stdby/adump
Browse...
Help
< Back
Next >
Finish
Cancel


Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 5 of 9
Management Options
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Specify the management options for the database.
Configure Enterprise Manager (EM) Database Express
EM Database Express Port:
5500
Register with Enterprise Manager (EM) Cloud Control
OMS Host:
OMS Port:
EM Admin Username:
EM Admin Password:
DBSNMP User Password:
Help
< Back
Next >
Finish
Cancel


Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 6 of 9
Recovery Options
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Select an option to recover the database in case of upgrade failure.
Use RMAN Backup
Create a New Offline RMAN Backup
Backup Location: /ordb/oracle/product/admin/stdby/backup
Browse...
Use Latest Available RMAN Backup
Latest RMAN Backup Timestamp: N/A
View/Edit Restore Script
Use Flashback and Guaranteed Restore Point
Create a New Guaranteed Restore Point
Use Available Guaranteed Restore Point: PRU_0000_0001
I have my own backup and restore strategy
Help
< Back
Next >
Finish
Cancel


Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 7 of 9
Summary
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Database Upgrade Summary
Source Database
Name : stdby [Edit]
Release : 11.2.0.4.0
Oracle Home : /pgold/ordb/oracle/product/112 [Edit]
Target Database
Name : stdby
Release : 12.1.0.2.0
Oracle Home : /pgold/ordb/oracle/product/121
Database Instances
Instance Name: stdby1; Node Name: ohs3; Status: Active: [Edit]
Instance Name: stdby2; Node Name: ohs4; Status: Active: [Edit]
Pre-Upgrade Checks
Warnings: Database is using an old time zone file version: [Edit]
Warnings: The database has components which will not be upgraded: [Edit]
Warnings: Oracle Application Express (APEX) can be manually upgraded prior to database upgrade: [Edit]
Help
< Back
Next >
Finish
Cancel




# *Checking during upgrade process*

**The DBUA will do follow steps**

- Create a new pfile in 12c ORACLE_HOME
- Create new password file
- Set cluster_database= false
- Start instance on node1 and run upgrade processes
- Remove database from 11g ORACLE_HOME
- Add database and register instance with 12c ORACLE_HOME
- Create tnsnames.ora in 12c ORACLE_HOME

```
[oracle@ohs3 admin]$ ps -ef|grep pmon
oracle     4633      1   0 17:19 ?        00:00:00 ora_pmon_stdby1
orgrid     4915      1   0 16:16 ?        00:00:00 asm_pmon_+ASM1
orgrid     6053      1   0 16:17 ?        00:00:00 mdb_pmon_-MGMTDB
oracle    15991 19414   0 17:46 pts/0    00:00:00 grep pmon
[oracle@ohs3 admin]$ ssh ohs4 ps -ef|grep pmon
orgrid     4977      1   0 16:16 ?        00:00:00 asm_pmon_+ASM2
[oracle@ohs3 admin]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.4.0 Production on Tue Dec 6 17:46:17 2016

Copyright (c) 1982, 2013, Oracle.  All rights reserved.
```

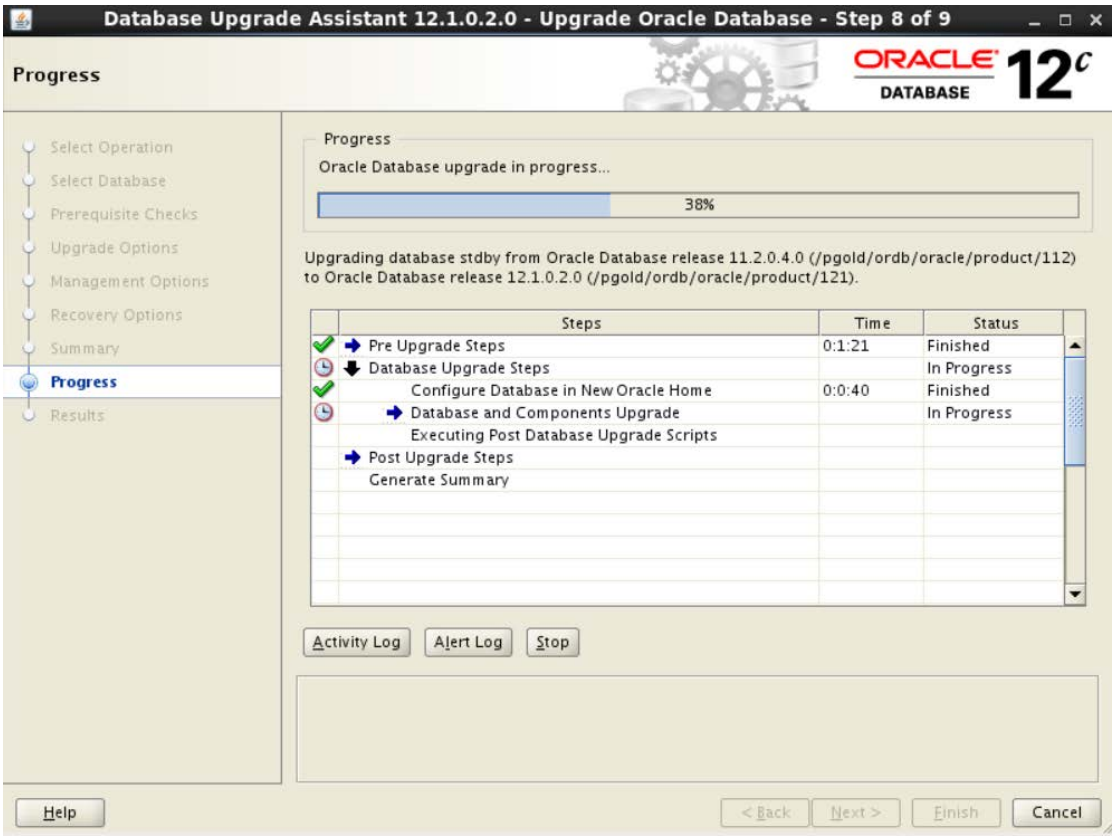
```
Connected to an idle instance.

SQL> exit
Disconnected
[oracle@ohs3 admin]$ echo $ORACLE_HOME
/pgold/ordb/oracle/product/112
[oracle@ohs3 admin]$ export ORACLE_HOME=/pgold/ordb/oracle/product/121
[oracle@ohs3 admin]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.4.0 Production on Tue Dec 6 17:46:36 2016

Copyright (c) 1982, 2013, Oracle.  All rights reserved.


Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Advanced Analytics and Real Application Testing options

SQL> show parameter cluster

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
cluster_database                     boolean     FALSE
cluster_database_instances           integer     1
cluster_interconnects                string
SQL>
SQL> show parameter spf

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
spfile                               string
SQL>

[oracle@ohs3 admin]$ cd $ORACLE_HOME
[oracle@ohs3 121]$ cd dbs/
[oracle@ohs3 dbs]$ ls -ltr
total 28
-rw-r--r--. 1 oracle oinstall 2992 Feb  3  2012 init.ora
-rw-r-----. 1 oracle oinstall 1842 Dec  6 17:19 initstdby.ora
-rw-r-----. 1 oracle oinstall 8192 Dec  6 17:19 orapwstdby1
-rw-r-----. 1 oracle oinstall 8192 Dec  6 17:19 orapwstdby2
-rw-rw----. 1 oracle asmadmin 1544 Dec  6 17:19 hc_stdby1.dat
```

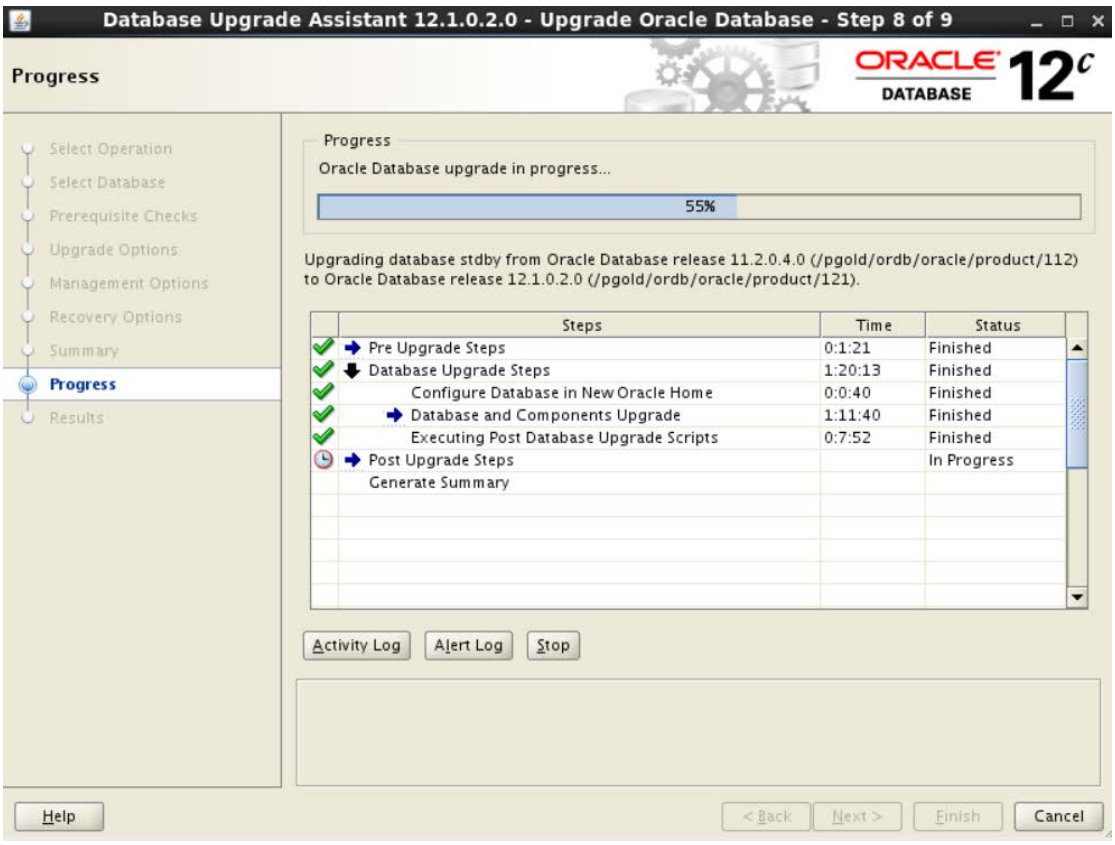
```
[oracle@ohs3 dbs]$ cd ../network/admin/
[oracle@ohs3 admin]$ ls -ltr
total 8
-rw-r--r--. 1 oracle oinstall  373 Oct 31  2013 shrept.lst
drwxr-xr-x. 2 oracle oinstall 4096 Dec  3 06:24 samples
[oracle@ohs3 admin]$

NOTE: remote asm mode is local (mode 0x1; from cluster type)
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, Real Application Clusters, OLAP, Advanced Analytics
and Real Application Testing options.
ORACLE_HOME = /pgold/ordb/oracle/product/121
System name:    Linux
Node name:      ohs3.ohsdba.cn
Release:        4.1.12-37.4.1.el6uek.x86_64
Version:        #2 SMP Tue May 17 07:23:38 PDT 2016
Machine:        x86_64
Using parameter settings in client-side pfile
/pgold/ordb/oracle/product/121/dbs/initstdby.ora on machine ohs3.ohsdba.cn
System parameters with non-default values:
  processes                = 300
  event                    = ""
  sga_max_size              = 2G
  sga_target               = 2G
  control_files            = "+DATA_STDBY/stdby/control01.ctl"
  control_files            = "+DATA_STDBY/stdby/control02.ctl"
  db_file_name_convert      = "+DATA_PROD/prod"
  db_file_name_convert      = "+DATA_STDBY/stdby"
  log_file_name_convert     = "+DATA_PROD/prod"
  log_file_name_convert     = "+DATA_STDBY/stdby"
  db_block_size             = 8192
  compatible               = "11.2.0.4.0"
  log_archive_dest_1        = "LOCATION=USE_DB_RECOVERY_FILE_DEST"
  log_archive_dest_2        = "service="prod""
  log_archive_dest_2              = "LGWR ASYNC NOAFFIRM delay=0 optional
compression=disable max_failure=0 max_connections=1 reopen=300
db_unique_name="prod" net_timeout=30"
  log_archive_dest_2        = "valid_for=(all_logfiles,primary_role)"
  log_archive_dest_state_1 = "ENABLE"
  log_archive_dest_state_2 = "ENABLE"
  log_archive_min_succeed_dest= 1
  fal_server               = "prod"
  log_archive_trace         = 0
  log_archive_config        = "dg_config=(PROD,STDBY)"
```

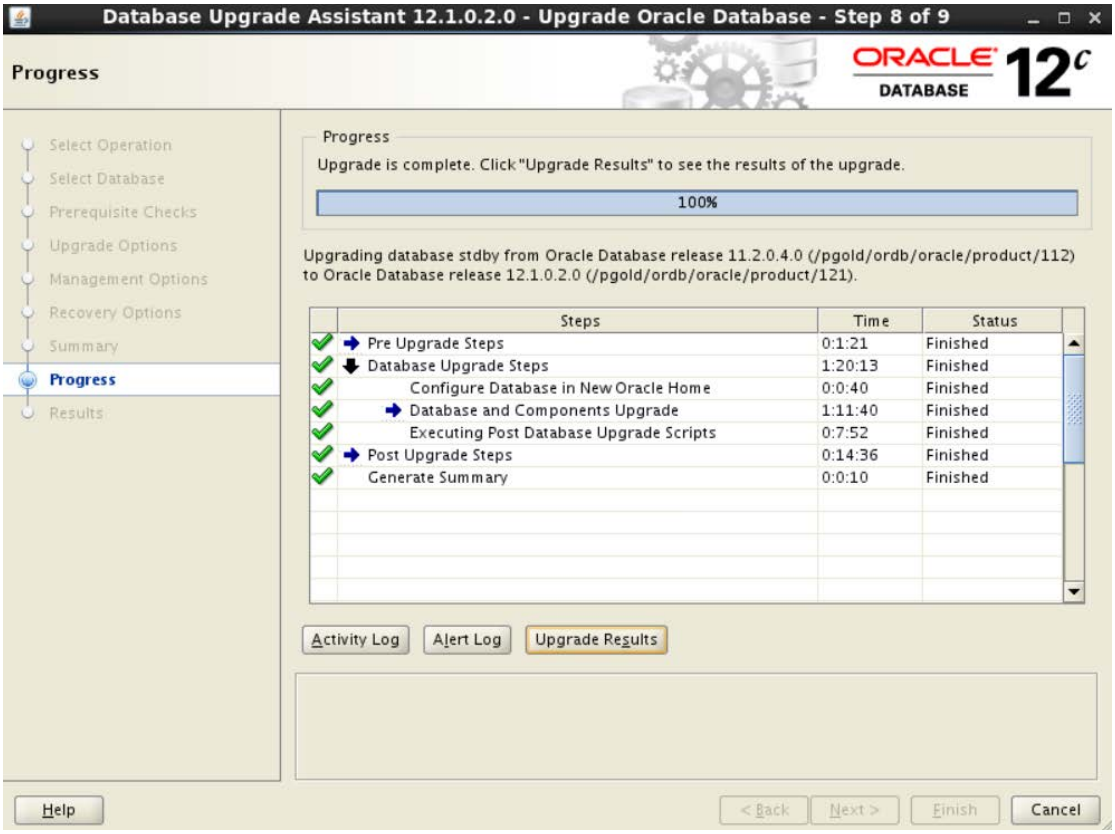
```
  log_archive_format        = "stdby1_%t_%s_%r.arc"
  log_archive_max_processes= 4
  archive_lag_target        = 0
  cluster_database          = FALSE
  db_create_file_dest       = "+DATA_STDBY"
  db_create_online_log_dest_1= "+DATA_STDBY"
  db_recovery_file_dest     = "+FRA_STDBY"
  db_recovery_file_dest_size= 18000M
  standby_file_management   = "AUTO"
  thread                    = 1
  undo_tablespace           = "UNDOTBS1"
  instance_number           = 1
  remote_login_passwordfile= "EXCLUSIVE"
  db_domain                 = ""
  dispatchers               = "(PROTOCOL=TCP) (SERVICE=stdbyXDB)"
  audit_file_dest           = "/pgold/ordb/oracle/product/admin/stdby/adump"
  audit_trail               = "DB"
  db_name                   = "prod"
  db_unique_name            = "stdby"
  open_cursors              = 300
  pga_aggregate_target      = 250M
  dg_broker_start           = FALSE
  dg_broker_config_file1    = "+DATA_STDBY/stdby/dr1stdby.dat"
  dg_broker_config_file2    = "+DATA_STDBY/stdby/dr2stdby.dat"
  diagnostic_dest           = "/pgold/ordb/log"
NOTE: remote asm mode is local (mode 0x1; from cluster type)
Tue Dec 06 17:19:30 2016
Cluster communication is configured to use the following interface(s) for this instance
  169.254.213.141
cluster interconnect IPC version: Oracle UDP/IP (generic)
IPC Vendor 1 proto 2
Oracle instance running with ODM: Oracle Direct NFS ODM Library Version 3.0
Starting background process PMON
Starting background process PSP0
Tue Dec 06 17:19:30 2016
PMON started with pid=2, OS id=4633
Starting background process VKTM
Tue Dec 06 17:19:30 2016
PSP0 started with pid=3, OS id=4635
Tue Dec 06 17:19:31 2016
VKTM started with pid=4, OS id=4637 at elevated (RT) priority
Tue Dec 06 17:19:31 2016
VKTM running at (1)millisec precision with DBRM quantum (100)ms
Starting background process GEN0
```

Starting background process MMAN
Tue Dec 06 17:19:31 2016
GEN0 started with pid=5, OS id=4641
Tue Dec 06 17:19:31 2016
MMAN started with pid=6, OS id=4643
Starting background process DIAG
Starting background process DBRM
Tue Dec 06 17:19:31 2016
DIAG started with pid=8, OS id=4656
Starting background process VKRM
Tue Dec 06 17:19:31 2016
DBRM started with pid=9, OS id=4659
Starting background process PING
Tue Dec 06 17:19:31 2016
VKRM started with pid=10, OS id=4661
Starting background process ACMS
Tue Dec 06 17:19:31 2016
PING started with pid=11, OS id=4664
Starting background process DIA0
Tue Dec 06 17:19:31 2016
ACMS started with pid=12, OS id=4668
Starting background process LMON
Tue Dec 06 17:19:31 2016
DIA0 started with pid=13, OS id=4670
Starting background process LMD0
Tue Dec 06 17:19:31 2016
LMON started with pid=14, OS id=4672
Starting background process RMS0
Tue Dec 06 17:19:31 2016
LMD0 started with pid=15, OS id=4674
Tue Dec 06 17:19:31 2016
* Load Monitor used for high load check
* New Low - High Load Threshold Range = [960 - 1280]
Starting background process LMHB
Tue Dec 06 17:19:31 2016
RMS0 started with pid=16, OS id=4678
Starting background process DBW0
Tue Dec 06 17:19:31 2016
LMHB started with pid=17, OS id=4683
Starting background process LGWR
Tue Dec 06 17:19:31 2016
DBW0 started with pid=18, OS id=4687
Starting background process CKPT
Tue Dec 06 17:19:31 2016

LGWR started with pid=19, OS id=4689
Starting background process SMON
Tue Dec 06 17:19:31 2016
CKPT started with pid=20, OS id=4691
Starting background process RECO
Tue Dec 06 17:19:31 2016
SMON started with pid=21, OS id=4693
Starting background process LREG
Tue Dec 06 17:19:31 2016
RECO started with pid=22, OS id=4695
Starting background process PXMN
Tue Dec 06 17:19:31 2016
LREG started with pid=23, OS id=4697
Starting background process RBAL
Tue Dec 06 17:19:32 2016
PXMN started with pid=24, OS id=4699
Starting background process ASMB
Tue Dec 06 17:19:32 2016
RBAL started with pid=25, OS id=4701



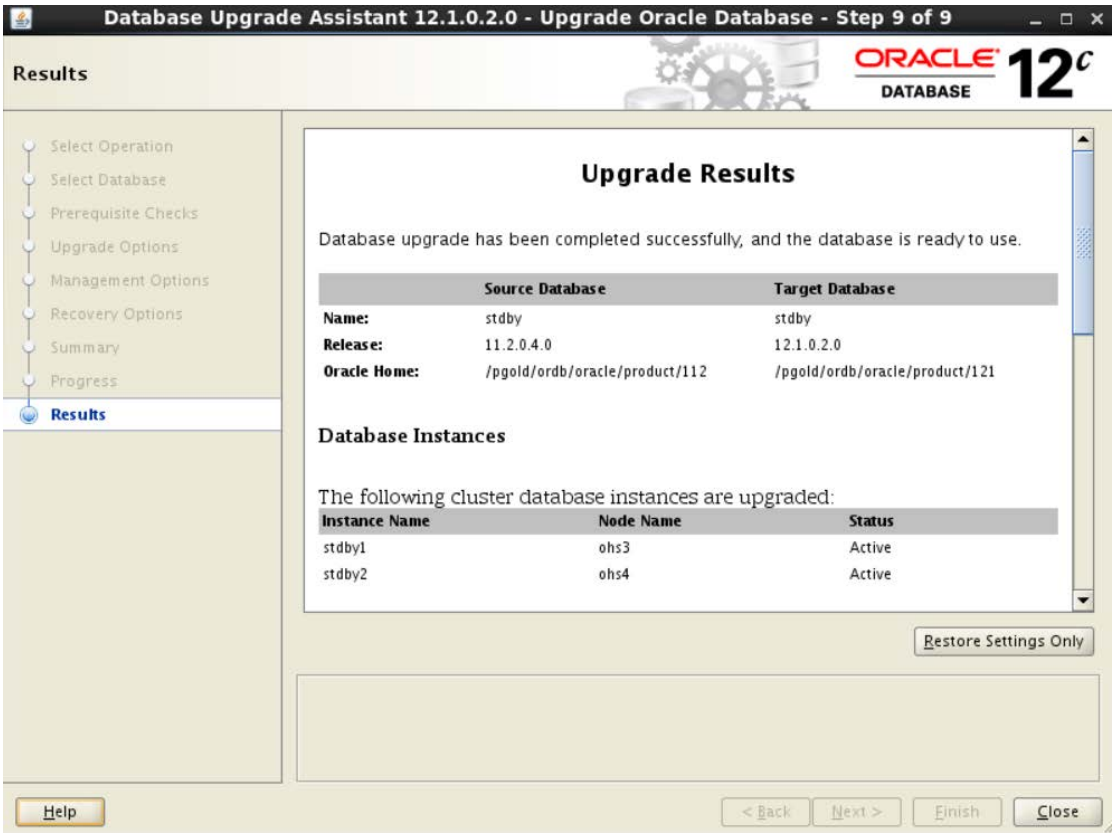

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 8 of 9
Progress
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Progress
Oracle Database upgrade in progress...
55%
Upgrading database stdby from Oracle Database release 11.2.0.4.0 (/pgold/ordb/oracle/product/112) to Oracle Database release 12.1.0.2.0 (/pgold/ordb/oracle/product/121).
Steps
Time
Status
Pre Upgrade Steps 0:1:21 Finished
Database Upgrade Steps 1:20:13 Finished
Configure Database in New Oracle Home 0:0:40 Finished
Database and Components Upgrade 1:11:40 Finished
Executing Post Database Upgrade Scripts 0:7:52 Finished
Post Upgrade Steps In Progress
Generate Summary
Activity Log
Alert Log
Stop
Help
< Back
Next >
Finish
Cancel

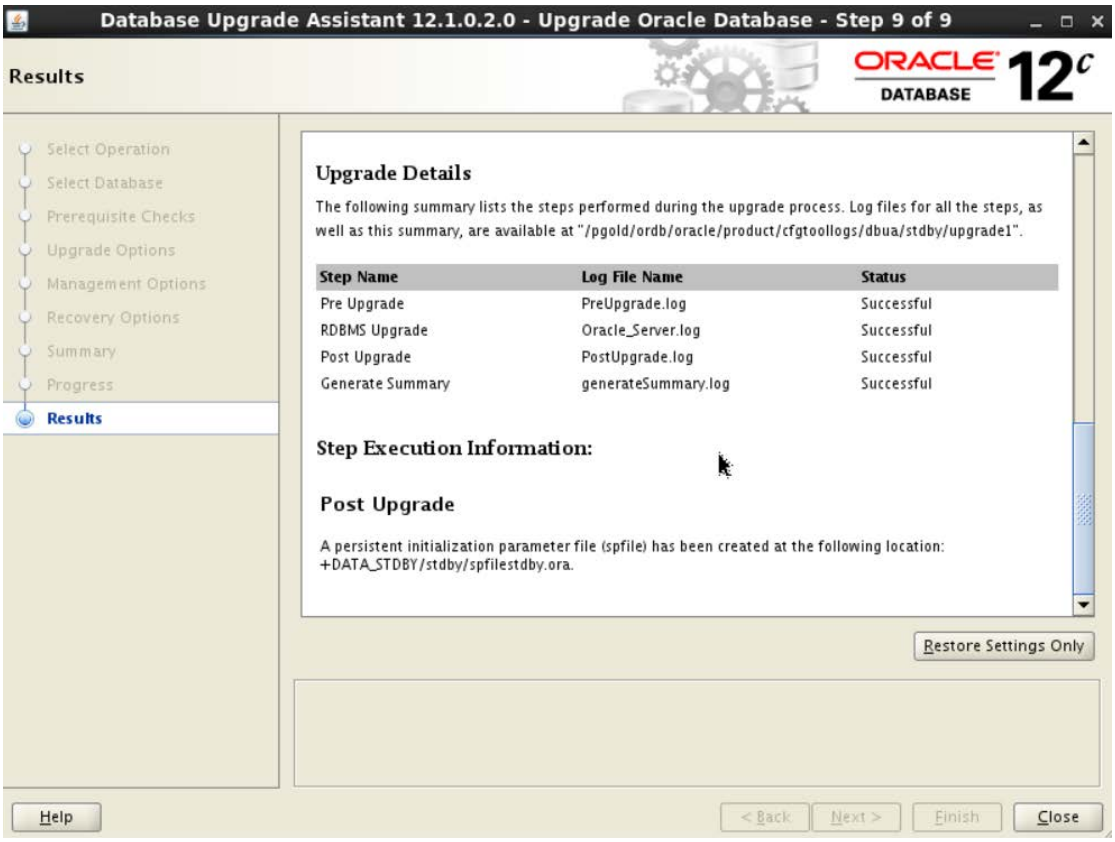

Database Upgrade Assistant 12.1.0.2.0 - Upgrade Oracle Database - Step 8 of 9
Progress
ORACLE DATABASE 12c
Select Operation
Select Database
Prerequisite Checks
Upgrade Options
Management Options
Recovery Options
Summary
Progress
Results
Progress
Upgrade is complete. Click "Upgrade Results" to see the results of the upgrade.
100%
Upgrading database stdby from Oracle Database release 11.2.0.4.0 (/pgold/ordb/oracle/product/112) to Oracle Database release 12.1.0.2.0 (/pgold/ordb/oracle/product/121).
Steps
Time
Status
Pre Upgrade Steps 0:1:21 Finished
Database Upgrade Steps 1:20:13 Finished
Configure Database in New Oracle Home 0:0:40 Finished
Database and Components Upgrade 1:11:40 Finished
Executing Post Database Upgrade Scripts 0:7:52 Finished
Post Upgrade Steps 0:14:36 Finished
Generate Summary 0:0:10 Finished
Activity Log
Alert Log
Upgrade Results
Help
< Back
Next >
Finish
Cancel

# *Upgrade Results*

[oracle@ohs3 ~]$ /pgold/ordb/oracle/product/121/bin/dbua

Database upgrade has been completed successfully, and the database is ready to use.






# *Post upgrade steps*

## *Modify .bash_profile*

```
export ORACLE_SID=stdby1
export ORACLE_HOME=/pgold/ordb/oracle/product/121

[oracle@ohs3 ~]$ echo $ORACLE_HOME
/pgold/ordb/oracle/product/121
[oracle@ohs3 ~]$ cd $ORACLE_HOME/network/admin
[oracle@ohs3 admin]$ ls -l tnsnames.ora
-rw-r-----. 1 oracle oinstall 333 Dec  6 18:17 tnsnames.ora
[oracle@ohs3 admin]$ cat tnsnames.ora
# tnsnames.ora Network Configuration File:
/pgold/ordb/oracle/product/121/network/admin/tnsnames.ora
# Generated by Oracle configuration tools.

STDBY =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = stdby-scan.ohsdba.cn)(PORT = 10015))
```

```
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = stdby)
    )
  )
```

## *Copy tnsnames.ora from 11g to 12c*

```
[oracle@ohs3 admin]$ cp /pgold/ordb/oracle/product/112/network/admin/tnsnames.ora .
[oracle@ohs3 admin]$ cat tnsnames.ora
# tnsnames.ora Network Configuration File: /pgold/ordb/oracle/product/112/network/admin/tnsnames.ora
# Generated by Oracle configuration tools.

PROD =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = prod-scan.ohsdba.cn)(PORT = 10010))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = prod)
    )
  )

STDBY =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = stdby-scan.ohsdba.cn)(PORT = 10015))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = stdby)
    )
  )


[oracle@ohs3 admin]$ srvctl config database -d stdby
Database unique name: stdby
Database name: prod
Oracle home: /pgold/ordb/oracle/product/121
Oracle user: oracle
Spfile: +DATA_STDBY/stdby/spfilestdby.ora
Password file:
Domain:
Start options: open
Stop options: immediate
```

```
Database role: PHYSICAL_STANDBY
Management policy: AUTOMATIC
Server pools:
Disk Groups: DATA_STDBY
Mount point paths:
Services:
Type: RAC
Start concurrency:
Stop concurrency:
OSDBA group: dba
OSOPER group: oper
Database instances: stdby1,stdby2
Configured nodes: ohs3,ohs4
Database is administrator managed
[oracle@ohs3 admin]$ ps -ef|grep pmon
orgrid     4915      1   0 Dec06 ?        00:00:01 asm_pmon_+ASM1
orgrid     6053      1   0 Dec06 ?        00:00:01 mdb_pmon_-MGMTDB
oracle    28058 24635   0 00:01 pts/2     00:00:00 grep pmon
oracle    28674      1   0 Dec06 ?        00:00:01 ora_pmon_stdby1
[oracle@ohs3 admin]$
```

## *Modify listener.ora from GI_HOME if necessary*

```
[orgrid@ohs3 admin]$ pwd
/pgold/orgrid/oracle/product/121/network/admin
[orgrid@ohs3 admin]$ cat listener.ora
MGMTLSNR=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC)(KEY=MGMTL
SNR))))              # line added by Agent
LISTENER=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC)(KEY=LISTENE
R))))              # line added by Agent
LISTENER_SCAN3=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC)(KEY=
LISTENER_SCAN3))))                  # line added by Agent
LISTENER_SCAN2=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC)(KEY=
LISTENER_SCAN2))))                  # line added by Agent
LISTENER_SCAN1=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC)(KEY=
LISTENER_SCAN1))))                  # line added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER_SCAN1=ON                    # line
added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER_SCAN2=ON                    # line
added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER_SCAN3=ON                    # line
added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER=ON              # line added by Agent
```

```
VALID_NODE_CHECKING_REGISTRATION_LISTENER=SUBNET                # line added
by Agent
VALID_NODE_CHECKING_REGISTRATION_LISTENER_SCAN1=OFF             # line
added by Agent
VALID_NODE_CHECKING_REGISTRATION_LISTENER_SCAN3=OFF             # line
added by Agent
VALID_NODE_CHECKING_REGISTRATION_LISTENER_SCAN2=OFF             # line
added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_MGMTLSNR=ON                  # line added by
Agent
VALID_NODE_CHECKING_REGISTRATION_MGMTLSNR=SUBNET                # line
added by Agent

SID_LIST_LISTENER =
(SID_LIST =
 (SID_DESC =
  (SID_NAME = stdby1)
  (ORACLE_HOME = /pgold/ordb/oracle/product/121)
 )
)
[orgrid@ohs3 admin]$
```

## *remove password file of 12c and copy password from 11g*

```
[oracle@ohs3 dbs]$ mv orapwstdby1 orapwstdby1_12c
[oracle@ohs3 dbs]$ mv orapwstdby2 orapwstdby2_12c
[oracle@ohs3 dbs]$ cp /pgold/ordb/oracle/product/112/dbs/orapwstdby1 .
[oracle@ohs3 dbs]$
```

## *Compile invalid objects*

```
sql> connect / as sysdba
sql> @?/rdbms/admin/utlrp.sql
```