**Oracle Database upgrade to Oracle 19c from 11g/12c – (Out of Place)**

1. Verify the source database SGA, components, Invalid Objects etc.
2. Verify space, Disk groups on the target server.
3. Backup source Database and create init.ora file.

Create pfile=’<LOCATION>/init$ORACLE\_SID.ora from spfile.

Cat hot\_backup\_RMAG.bash

#!/bin/sh

export ORACLE\_SID=RMAG

export ORACLE\_HOME=/u02/app/oracle/product/12.2/db\_1

export PATH=$ORACLE\_HOME/bin:$PATH

export TNS\_ADMIN=$ORACLE\_HOME/network/admin

export ORACLE\_UNQNAME=RMAG

INST=`hostname`

TODAY=`date +%d%b`

BACKUP\_DIR=/infshare/oracle/exports/RMAG\_HOT

LOG\_DIR=/infshare/oracle/exports/RMAG\_HOT

LOGFILE=$LOG\_DIR/rman\_backup\_${ORACLE\_SID}\_${TODAY}.log

$ORACLE\_HOME/bin/rman <<EOF > ${LOG\_DIR}/rman\_backup\_${ORACLE\_SID}\_${TODAY}.log

connect target /

run {

allocate channel t1 TYPE DISK;

allocate channel t2 TYPE DISK;

allocate channel t3 TYPE DISK;

allocate channel t4 TYPE DISK;

backup as compressed backupset full database format '${BACKUP\_DIR}/$ORACLE\_SID\_%d\_%t\_%p\_%s\_%c\_%u.dbf';

backup current controlfile format '${BACKUP\_DIR}/$ORACLE\_SID\_%d\_%t\_%p\_%s\_%c\_%u.ctl';

sql 'alter system archive log current';

backup as compressed backupset archivelog all format '${BACKUP\_DIR}/$ORACLE\_SID\_%d\_%t\_%p\_%s\_%c\_%u.arc';

release channel t1;

release channel t2;

release channel t3;

release channel t4;

}

EOF

Note1:- To take the COLD backup, put the database in MOUT mode and remove the following two lines from the ablve script.

sql 'alter system archive log current';

backup as compressed backupset archivelog all format '${BACKUP\_DIR}/$ORACLE\_SID\_%d\_%t\_%p\_%s\_%c\_%u.arc';

*Note2:- crontab:- example*

Crontab -e

44 17 \* \* \* /u02/backup/EODUAT/upgrade19c.bash

1. Run Pre-Upgrade tool as shown below ( This your run against the 12C database you're upgrading to 19c)

/u02/app/oracle/product/12.0.2/db\_1/jdk/bin/java -jar /u02/app/oracle/product/19.3.0/db\_1/rdbms/admin/preupgrade.jar TERMINAL TEXT > /u02/app/oracle/scripts/19CUpgrades/${ORACLE\_SID}/preupgrade\_$ORACLE\_SID.log

4a. **Backup WALLET files for the database:-**

Following are some wallet commands, if need to.

select \* from v$encryption\_wallet;

alter system set wallet open identified by "Gr2tp#$r0Ph9sy";

**Auto Login Wallet:-**

**Cd** /u02/app/oracle/WALLETS/EODUAT 🡨 Wallet location

[oracle@hrdmzuatoel01 EODUAT]$

**orapki wallet create -wallet /u02/app/oracle/WALLETS/EODUAT -auto\_login**

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Version 21.0.0.0.0

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Enter wallet password:

Operation is successfully completed.

[oracle@hrdmzuatoel01 EODUAT]$ pwd

/u02/app/oracle/WALLETS/EODUAT

[oracle@hrdmzuatoel01 EODUAT]$

1. Check log file generated in step2 "preupgrade\_$ORACLE\_SID.log"

Look closely for recommendations and execute them on 12C database, if it doesn't require DB to be restarted Don't run preupgrade fix script it generates (Not recommended), Just fix manually

**Restore Database:-**

1. Move the backupsets to target server.
2. Update /etc/oratab with new instance info.
3. Connect using the Oracle 19c binaries.
4. Start new instance in NOMOUNT mode.

*demo init<SID>.ora file shown at the bottom of this document.*

1. DUPLICATE the NEW database with following script. This will restore and recover the database but leave the database in MOUNT mode.

[oracle@hrdmzuatoel01 EODUAT]$ cat dup\_eoduat19c.bash

#!/bin/sh

export ORACLE\_SID=EODUAT

export ORACLE\_HOME=/u02/app/oracle/product/19.3.0/db\_1

export PATH=$ORACLE\_HOME/bin:$PATH

export TNS\_ADMIN=$ORACLE\_HOME/network/admin

export ORACLE\_UNQNAME=EODUAT

INST=`hostname`

TODAY=`date +%d%b`

BACKUP\_DIR=/u02/backup/EODUAT

LOG\_DIR=/u02/backup/EODUAT

LOGFILE=$LOG\_DIR/rman\_dup\_${ORACLE\_SID}\_${TODAY}.log

ERRFILE=$LOG\_DIR/rman\_dup\_err\_status.log

$ORACLE\_HOME/bin/rman <<EOF > ${LOGFILE}

connect auxiliary /

run {

allocate auxiliary channel t1 TYPE DISK;

allocate auxiliary channel t2 TYPE DISK;

allocate auxiliary channel t3 TYPE DISK;

allocate auxiliary channel t4 TYPE DISK;

duplicate target database to EODUAT NOOPEN **noredo** NOFILENAMECHECK backup location '/u02/backup/EODUAT';

release channel t1;

release channel t2;

release channel t3;

release channel t4;

}

exit

EOF *Note :- use NOREDO if the backup is COLD backup. Remove it HOT backup;.*

1. Open database in upgrade mode.

alter database open resetlog upgrade;

1. **Upgrade the database using 19c binaries.**

Cat upgrd\_RMAG.bash

#!/bin/sh

export ORACLE\_SID=RMAG

export ORACLE\_HOME=/u02/app/oracle/product/19.3.0/db\_1

export PATH=$ORACLE\_HOME/bin:$PATH

export TNS\_ADMIN=$ORACLE\_HOME/network/admin

$ORACLE\_HOME/perl/bin/perl $ORACLE\_HOME/rdbms/admin/catctl.pl -n 8 -l /u02/software/RMAG\_HOT/logs $ORACLE\_HOME/rdbms/admin/catupgrd.sql

$ORACLE\_HOME/perl/bin/perl $ORACLE\_HOME/rdbms/admin/catctl.pl -n 8 -l /u02/software/RMAG\_HOT/logs $ORACLE\_HOME/rdbms/admin/catuppst.sql

Note:- After the upgrade, the database will be down. Just start it up.

**Post Upgrade steps:-**

**1. Execute utlrp.sql 🡨-** it will down the INVALID objects.

- cat utl.bash

#!/bin/bash

export ORACLE\_SID=$1

export ORACLE\_BASE=/u02/app/oracle

export ORACLE\_HOME=/u02/app/oracle/product/19.3.0/db\_1

export LD\_LIBRARY\_PATH=/u02/app/oracle/product/19.3.0/db\_1/lib

export SPOOL\_LOG=/u02/export/EODCPY/${ORACLE\_SID}\_utl\_${ORACLE\_SID}.log

export PATH=$ORACLE\_HOME/bin:$PATH

$ORACLE\_HOME/bin/sqlplus / as sysdba << EOF

spool ${SPOOL\_LOG}

set timing on

set echo on

select \* from global\_name;

select count(\*) from dba\_invalid\_objects;

select comp\_id,version,status from dba\_registry;

@?/rdbms/admin/utlrp;

select count(\*) from dba\_invalid\_objects;

select comp\_id,version,status from dba\_registry;

SPOOL OFF;

EOF

2. **Make a note of ( select \* from dba\_registry)**

col comp\_id format a10

col comp\_name format a30

col version format a10

col status format a16

select substr(comp\_id,1,15) comp\_id,substr(comp\_name,1,30) comp\_name,substr(version,1,10) version,status from dba\_registry;

1. Execute the **utlrp.sql**, it will down the INVALID objects.

Change Time Zone:-

Change DST Timezone:

Step1 : **shutdown and startup in upgrade mode**

=============================================================================

-- Check current settings.

SELECT \* FROM v$timezone\_file;

SHUTDOWN IMMEDIATE;

STARTUP UPGRADE;

-- Begin upgrade to the latest version.

SET SERVEROUTPUT ON

DECLARE

l\_tz\_version PLS\_INTEGER;

BEGIN

l\_tz\_version := DBMS\_DST.get\_latest\_timezone\_version;

DBMS\_OUTPUT.put\_line('l\_tz\_version=' || l\_tz\_version);

DBMS\_DST.begin\_upgrade(l\_tz\_version);

END;

/

=============================================================================

**Step2**

SHUTDOWN IMMEDIATE;

STARTUP;

-- Do the upgrade.

SET SERVEROUTPUT ON

DECLARE

l\_failures PLS\_INTEGER;

BEGIN

DBMS\_DST.upgrade\_database(l\_failures);

DBMS\_OUTPUT.put\_line('DBMS\_DST.upgrade\_database : l\_failures=' || l\_failures);

DBMS\_DST.end\_upgrade(l\_failures);

DBMS\_OUTPUT.put\_line('DBMS\_DST.end\_upgrade : l\_failures=' || l\_failures);

END;

/

-- Check new settings.

SELECT \* FROM v$timezone\_file;

SQL> SELECT \* FROM v$timezone\_file;

FILENAME VERSION CON\_ID

-------------------- ---------- ----------

timezlrg\_32.dat 32 0

SQL>

COLUMN property\_name FORMAT A30

COLUMN property\_value FORMAT A20

SELECT property\_name, property\_value

FROM database\_properties

WHERE property\_name LIKE 'DST\_%'

ORDER BY property\_name;

PROPERTY\_NAME PROPERTY\_VALUE

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DST\_PRIMARY\_TT\_VERSION 32

DST\_SECONDARY\_TT\_VERSION 0

DST\_UPGRADE\_STATE NONE

SQL>

=========================================================================

**STEP 3: Gather Stats.**

sqlplus / as sysdba <<EOF

EXECUTE DBMS\_STATS.GATHER\_FIXED\_OBJECTS\_STATS;

exit;

EOF

**STEP4 : Execute postupgrade\_fixup.sql**

sqlplus / as sysdba <<EOF

@/u02/app/oracle/cfgtoollogs/${ORACLE\_SID}/preupgrade/postupgrade\_fixups.sql

**Step5:- Check DB links**

set line 200

set pagesize 999

col owner for a18

col DB\_LINK for a45

col USERNAME for a35

col HOST for a35

select \* from dba\_db\_links order by owner,db\_link;

**Step6:- Add database to Oracle Re-start**

srvctl add database -d $ORACLE\_SID -o $ORACLE\_HOME

srvctl start database -d $ORACLE\_SID

**Step6:- Execute/Setup backups**

**Final Step:**

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add upgraded database to the following text file so that backup script pick it up

[oracle@hrvldevdb7601 backups]$ pwd

/u02/app/oracle/scripts/backups

[oracle@hrvldevdb7601 backups]$ cat 19cDBlist.txt

OPSDEV1

OPSDEVS

RMANCATD

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**Example of init<SID>.ora file shown below:-**

[oracle@hrvltstdb7603 EODTST2]$ cat initEODTST2.ora

\*.audit\_file\_dest='/u02/app/oracle/admin/EODTST2/adump'

\*.audit\_sys\_operations=TRUE

\*.audit\_trail='DB'

\*.compatible='19.3.0.0.0'

\*.control\_file\_record\_keep\_time=60

\*.control\_files='+DATA','+FRA'

\*.cursor\_sharing='EXACT'

\*.db\_block\_size=8192

\*.db\_create\_online\_log\_dest\_1='+DATA'

\*.db\_create\_online\_log\_dest\_2='+FRA'

\*.db\_domain='HR.STATE.SBU'

\*.db\_file\_name\_convert='+OPS\_DATA','+DATA','+OPS\_FRA','+FRA','+OPS\_DATA/eodtst2','+DATA/eodtst2','+OPS\_FRA/eodtst2','+FRA/eodtst2'

\*.log\_file\_name\_convert='+OPS\_DATA','+DATA','+OPS\_FRA','+FRA','+OPS\_DATA/eodtst2','+DATA/eodtst2','+OPS\_FRA/eodtst2','+FRA/eodtst2'

\*.db\_files=1000

\*.db\_name='EODTST2'

\*.db\_recovery\_file\_dest\_size=120245094400

\*.db\_recovery\_file\_dest='+FRA'

\*.deferred\_segment\_creation=FALSE

\*.diagnostic\_dest='/u02/app/oracle'

\*.dml\_locks=6500

\*.global\_names=FALSE

\*.java\_pool\_size=0

\*.job\_queue\_processes=10

\*.log\_archive\_format='EODTST2\_%t\_%s\_%r.arc'

\*.nls\_length\_semantics='CHAR'

\*.open\_cursors=1000

\*.open\_links=200

\*.open\_links\_per\_instance=200

\*.optimizer\_dynamic\_sampling=2

\*.optimizer\_mode='ALL\_ROWS'

\*.parallel\_max\_servers=128

\*.parallel\_min\_servers=0

\*.parallel\_servers\_target=64

\*.plsql\_warnings='DISABLE:ALL'# PL/SQL warnings at init.ora

\*.processes=1000

\*.query\_rewrite\_enabled='TRUE'

\*.remote\_login\_passwordfile='EXCLUSIVE'

\*.result\_cache\_max\_size=0

\*.service\_names='EODTST2.HR.STATE.SBU'

\*.sessions=2000

\*.sga\_max\_size=6G

\*.sga\_target=6G

\*.shared\_servers=0

\*.skip\_unusable\_indexes=TRUE

\*.streams\_pool\_size=0

\*.transactions=1000

\*.undo\_tablespace='UNDOTBS1'