Upgrading an EBS Database to 12c with a Platform Change

Session ID: 10393

Prepared by:

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Who Am I

- Over 21 years experience with Oracle Database
- Over 18 years experience with E-Business Suite
- Chair, OAUG Database SIG
- Co-Founder AppsPerf
- Oracle ACE
- OAUG Member of the Year 2013
- Applications DBA, BlueStar

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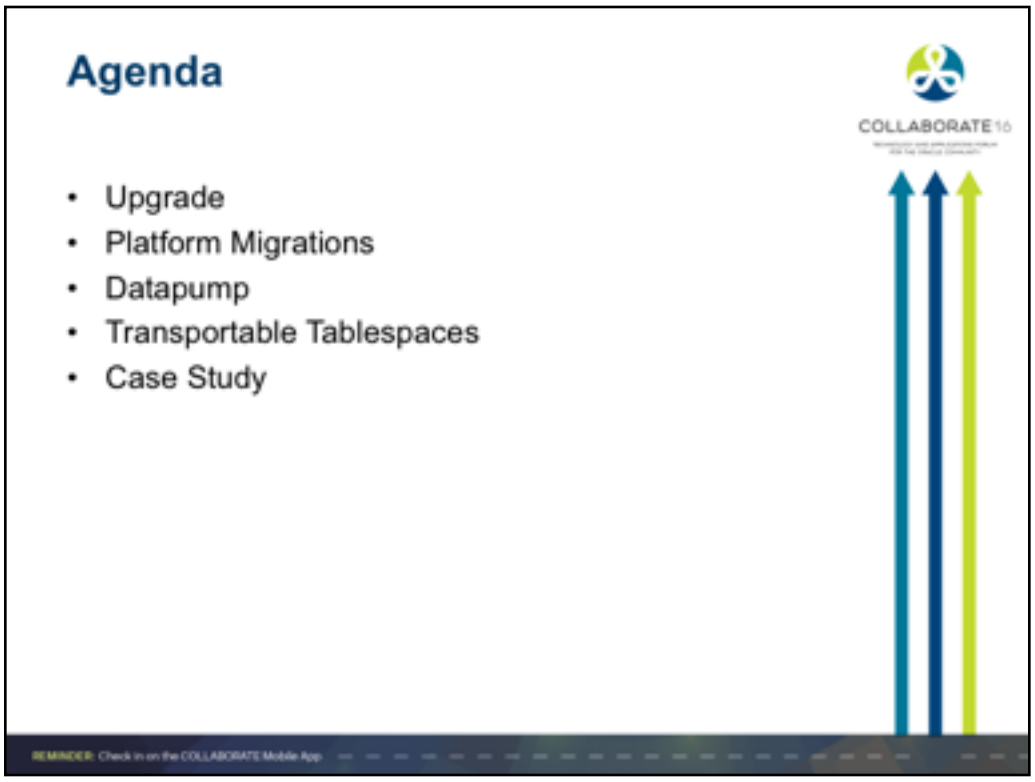
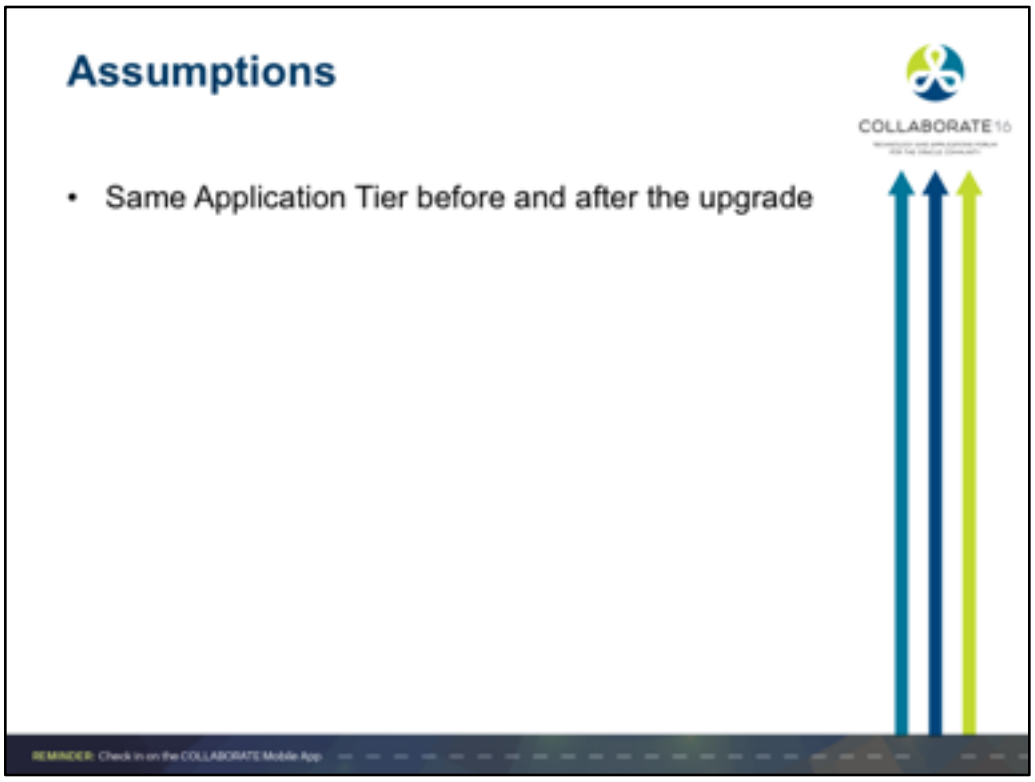
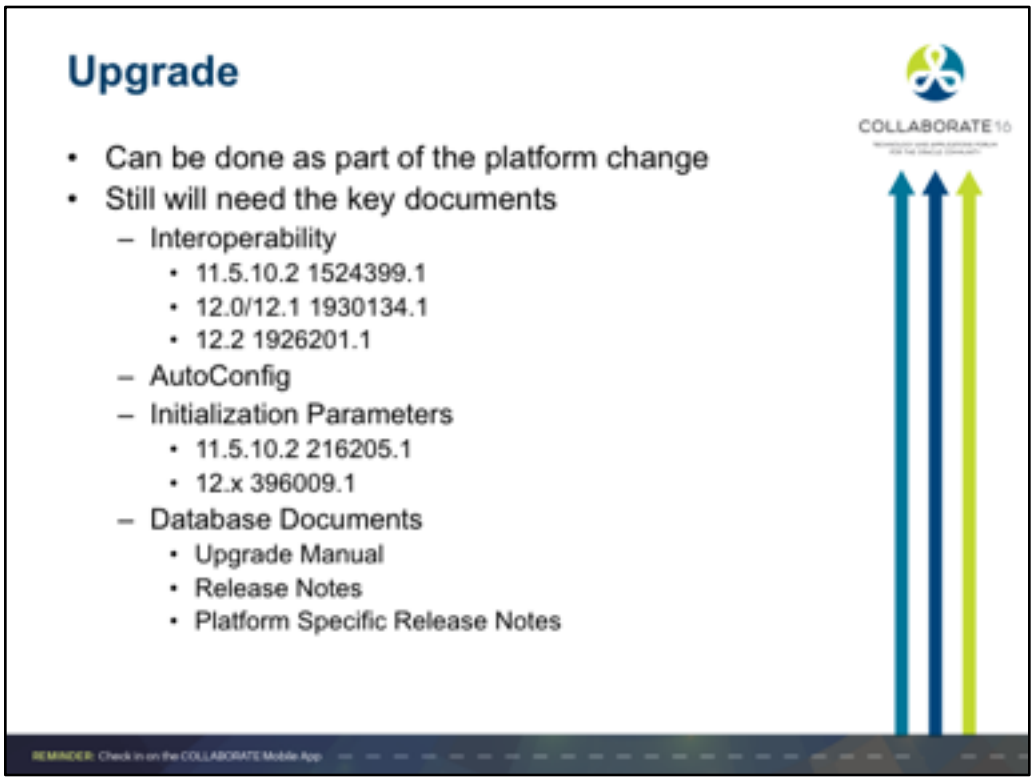


How many are on EBS 12.2, 12.1, 12.0, 11.5.10.2, earlier?

How many are on 12.1 (if any 12.1.0.2), 11.2.0.4, 11.2, 11.1, earlier?



Information on changing the applications tier can be found in MOS Notes **438086.1**



Autoconfig, Initialization note numbers will be found in the interoperability note. Make sure to pay attention to platform specific initialization parameters

Platform Migrations

- Three main types for the database
  - OS upgrade on the same platform
    - Example: Oracle Enterprise Linux 5 to Oracle Enterprise Linux 7
  - Change in platform of the same endian-ness
  - Change in platform of different endian-ness

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Endian

- How is 0xaf178c4b stored in memory (or a binary file)
  - Big Endian
    - Most Significant Bytes first
      - Byte A: AF
      - Byte A+1: 17
      - Byte A+2: 8C
      - Byte A+3: 4B

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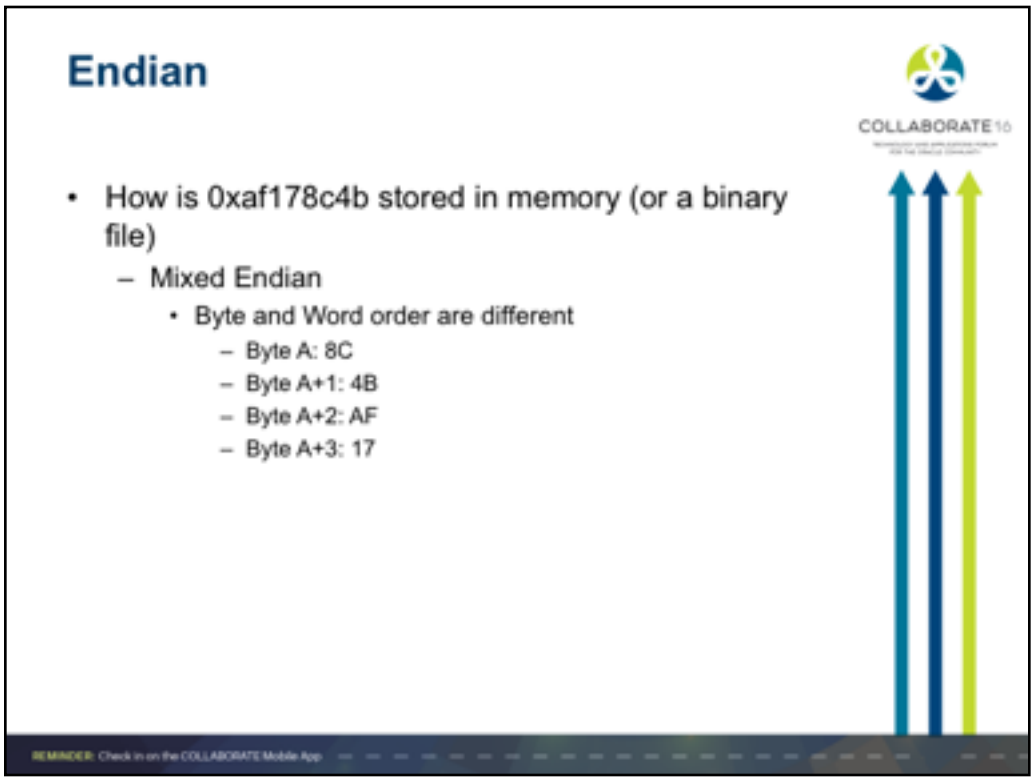

Mentioned for completeness, but rare and I don't believe is used by any certified EBS/DB platforms

Endian

- Big Endian
  - Solaris on SPARC
  - HP-UX on Itanium and PA-RISC
  - AIX on POWER Systems
  - Linux on System z
  - Linux on POWER Systems
- Little Endian
  - Linux x86/x86-64
  - Solaris on x86-64
  - Linux Itanium
  - HP Tru64 and OpenVMS Alpha
  - Windows Server x86/x64/Itanium

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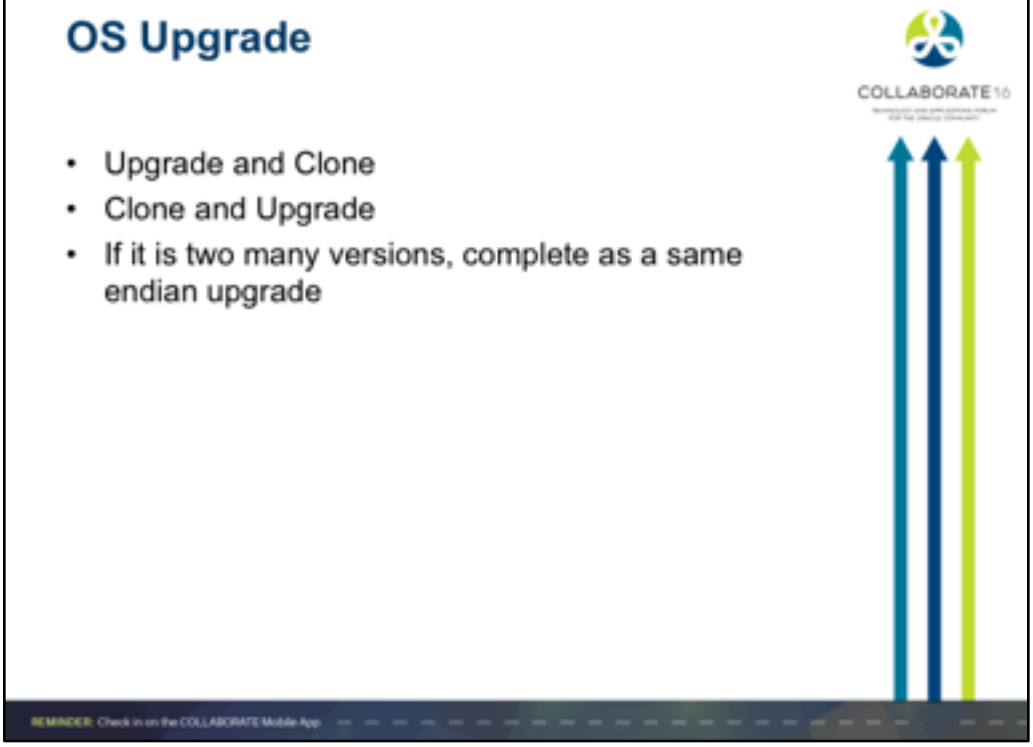
OS Upgrade



- Upgrade and Clone
- Clone and Upgrade
- If it is two many versions, complete as a same endian upgrade

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Same Endian

- Transportable Database
  - Does not support Upgrade
  - Basically a datafile copy and rman convert
- Data Pump

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Different Endian

- Datapump (DP)
  - 11.5.10.2 1585257.1
    - Source must be at least 10.2
  - 12.0/12.1 741818.1
    - Source must be at least 10.2
  - 12.2 1926203.1
    - Source must be at least 11.2

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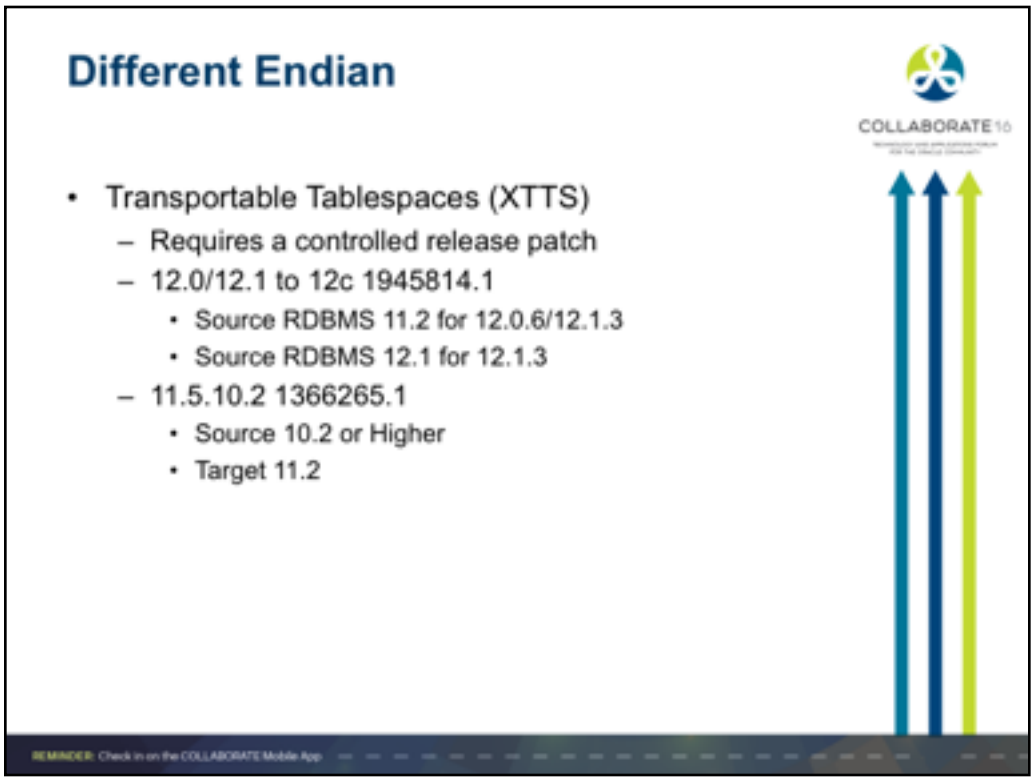

Data pump is safer

11.5.10.2 means multi step process, use data pump

Oracle support strongly encourages data pump, they must be convinced to give the controlled release patch.

Datapump

- Easiest method
- Takes longest
  - Serial, Full export followed by full import
- Safest

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Transportable Tablespaces

- Cannot change Character Set or National Character Set
- Transparent Data Encryption (TDE) is not supported
- Mixing RDBMS and EBS schemas in the same tablespace is not supported
  - For example, CTSYS needs to be separate from EBS schemas

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Transporatable Tablespaces

- Required patch is controlled release
  - This is not a rubber stamp, Oracle will make the decision on whether to give it to you.

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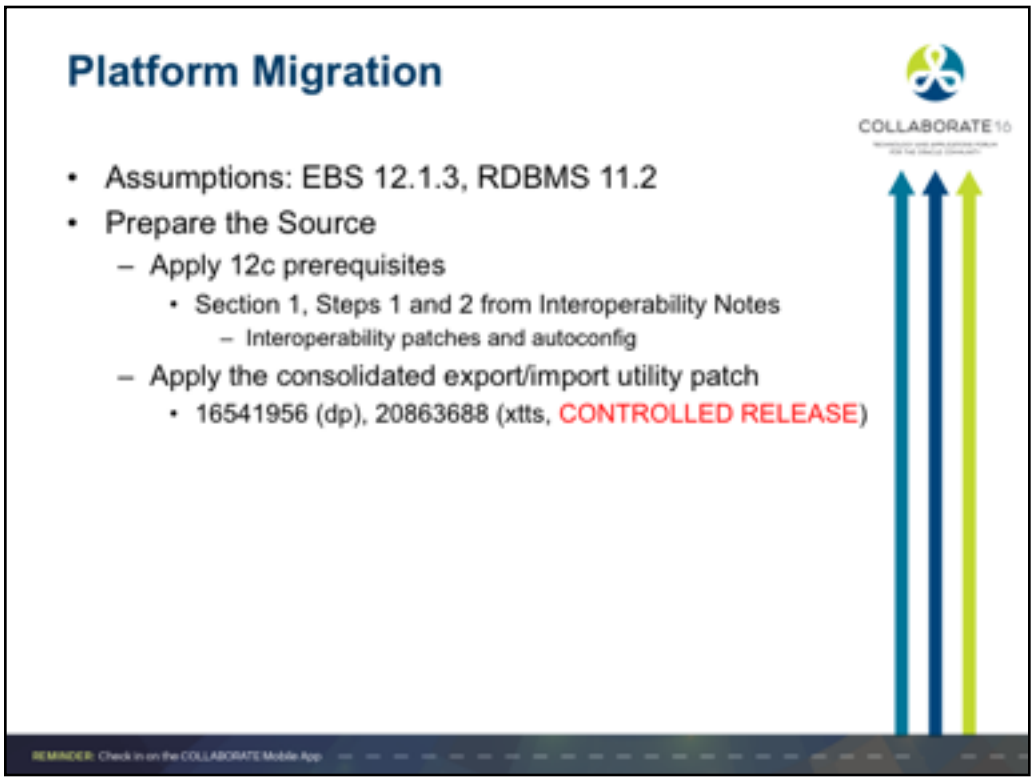

Keep interoperability notes open, I have seen missing steps in both DP and XTTS

Platform Migration

- Create a working directory for datapump
  - Example, /u01/app/oracle/expimp
  - Make sure it is big enough

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Prep the Source - XTTS

- Create transport_set_violations table
  - `dbms_tts.transport_set_check('TABLESPACE');`
- auxttspre.sql from export/import patch
  - Creates all the scripts

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Prep the Source-DP

- Create the database creation script for the target
  - `sqlplus system @$AU_TOP/patch/115/sql/auclondb.sql 11`

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Prep the Source

- As sysdba, run auque1.sql to record the Advanced Queue settings
- Remove rebuild index parameters in spatial indexes
  - Select * from dba_indexes where index_type='DOMAIN' and upper(parameters) like '%REBUILD%';
  - If any, ALTER INDEX *index_name* REBUILD PARAMETERS *parameters without rebuild_index;*

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Prep the Source

- Synchronize Text Indexes
  - Select pnd_index_owner, pnd_index_name, count(*) from ctxsys.ctx_pending group by pnd_index_owner,pnd_index_name;
  - If any
    - Exec ctx_ddl.sync_index('*Index Owner*','*Index Name*')

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Prep the Target

- Perform the steps in the Database Installation section of the Interoperability Notes
  - Install 12.1.0.2 Database software
  - Install 12.1.0.2 Examples
  - Create nls/data/9idata
  - Apply required 12.1.0.2 one off patches

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Prep the Target

- On windows, fix sqlnet.ora
  - SQLNET.AUTHENTICATION_SERVICES=(NTS)
- Create the initialization and CBO parameter files using note 396009.1
  - Do not user PL/SQL native compilation
  - Do not set LOCAL_LISTENER
- Create a working directory for expimp

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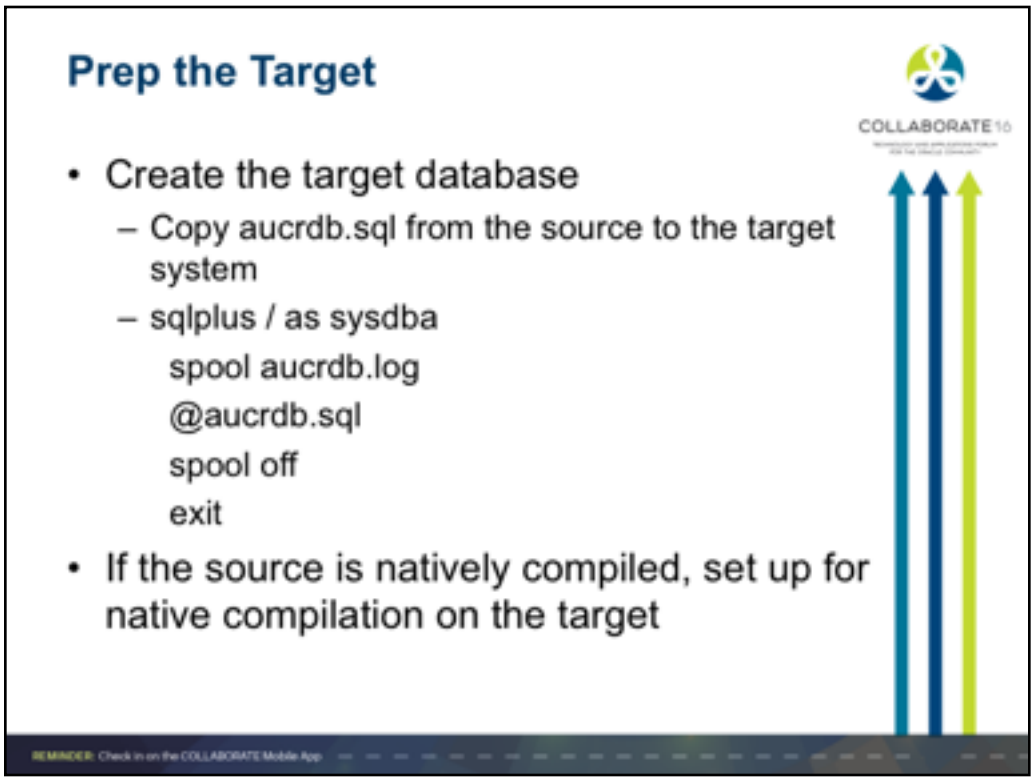
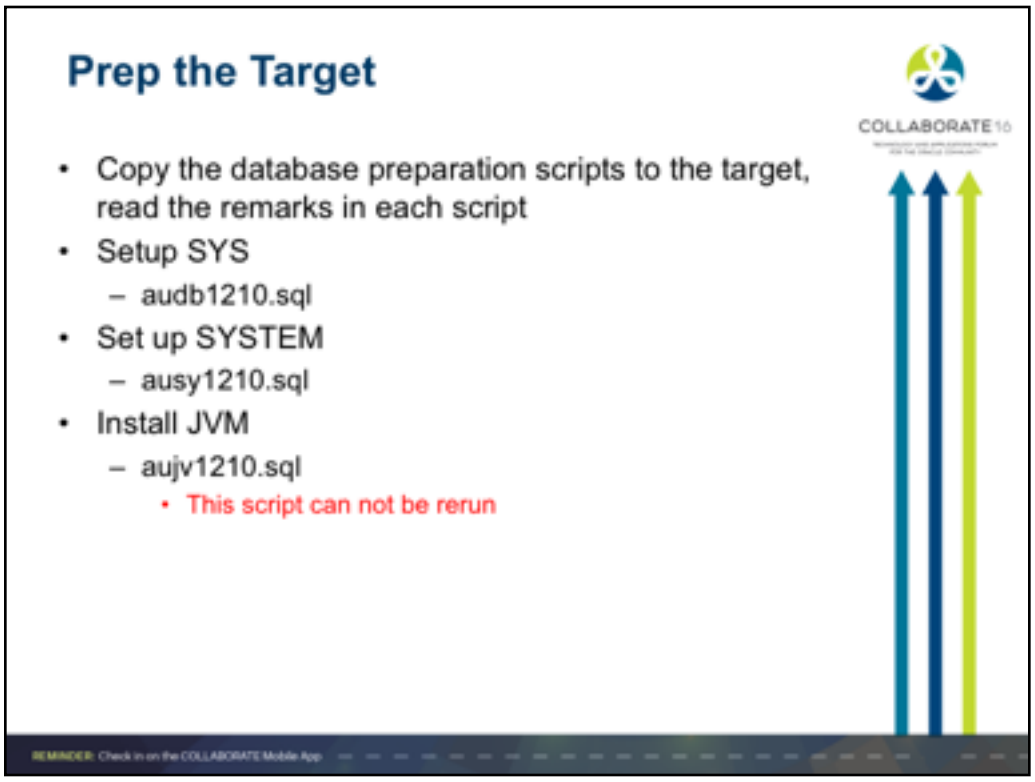


You cannot switch between native and interpreted pl/sql during the migration



Copy them to the working directory

Prep the Target

- Install other required components
  - aumsc1210.sql *SYSAUX TEMP*
- Install custom components
  - Select * from dba_registry
- Run post install steps from the 12.1.0.2 patches

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Prep the Target

- CTXSYS
  - ctxsys.ctx_adm_set_parameter('file_access_role', 'public')
- Disable automatic statistics gathering
  - Copy $APPL_TOP/admin/adstats.sql to the target database server
  - In a restricted session, run adstats.sql
- Take a backup

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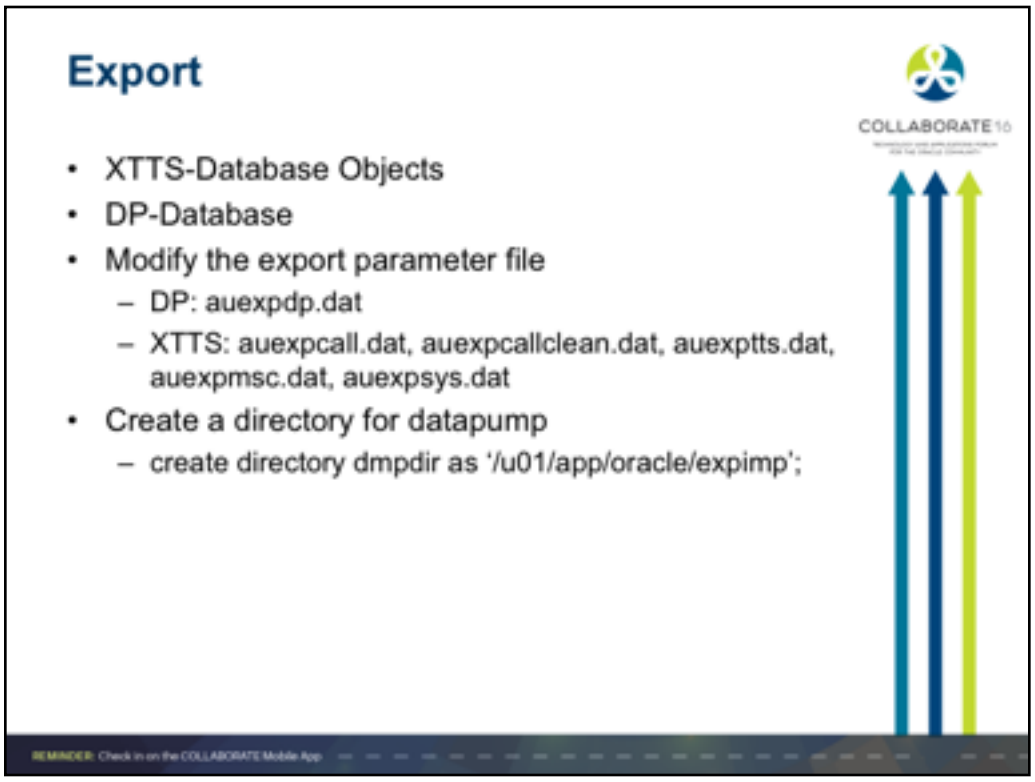
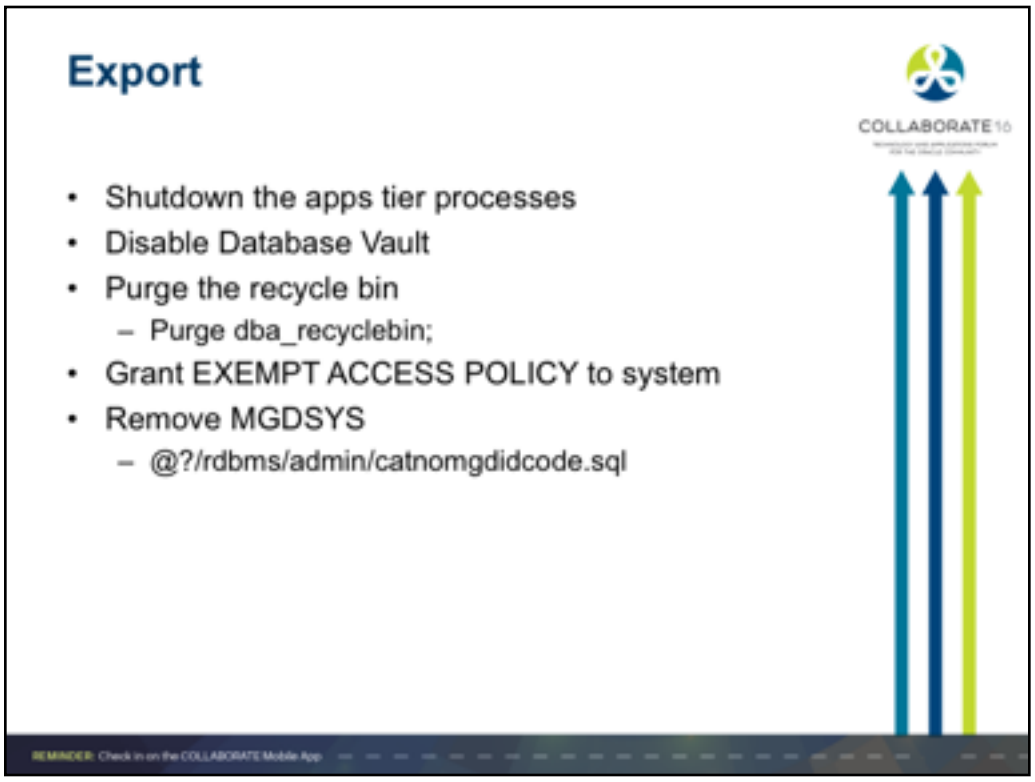
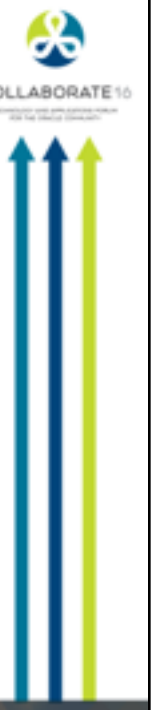


XTTS v DP is metadata v data unless your metadata is significantly larger, use DP



If the source DB is being kept as a backup or will still be used for other reasons, after exporting run catmgdidcode.sql

Export



- Follow steps 1-3 in note 352306.1 to export the OLAP analytical workspaces
- For performance reasons, you may drop the XLA packages and re-create after import

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Export DP

- expdp system parfile=*export parameter file*
- Copy the dump files to the target system
- revoke EXEMPT ACCESS POLICY from system
- Re-create XLA packages
- Enable Database Vault
- Shutdown

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Export-XTTS

- expdp system parfile=auexpcall.dat
  - Ignore ORA-39168 errors
- Mark the tablespaces read only
  - auxttsread.sql
- The following can be run in parallel
  - expdp system parfile=auexptts.dat
  - expdp system parfile=auexpsys.dat
  - expdp system parfile=auexpglb.dat
  - expdp system parfile=auexpmsc.dat

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Export-XTTS

- Copy the export dump files and data files to the target system
- Revoke EXEMPT ACCESS POLICY from system
- Convert back to read write
  - auxttswrite.sql
- Convert callout data back to metadata
  - expdp system parfile=auexpcallclean.dat

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Export XTTS

- Recreate XLA packages
- Enable Database Vault
- Shutdown the database

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Import-DP

- Copy auimpdp.dat and aufullimp.dat from $AU_TOP/patch/115/import to the target system
- On the target system
  - Create directory dmpdir as '/u01/app/oracle/expimp';
- impdp system parfile=auimpdp.dat
- Follow step 7 from note 352306.1 to import the OLAP analytical workspaces
- Revoke EXEMPT ACCESS POLICY from system

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Import-XTTS

- Copy the import files from the source
  - auimpxtts.dat, auimpmsc1.dat, auimpmsc2.dat, auimpsys.dat
- Create directory dmpdir as '/u01/app/oracle/expimp';
- rman target / @aurman.dat
  - Converts endian
- Impdp system parfile=auimpmsc1.sql
  - Ignore ORA-39168

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Import-XTTS

- Impdp system parfile=auimpxtts.dat
- Modify tablespaces to read write
  - @auxttswrite.sql
- Impdp system parfile=auimpglb.dat
- Impdp system parfile=auimpmsc2.dat
- Impdp system parfile=auimpsys.dat

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Import-XTTS

- Follow step 7 from note 352306.1 to import the OLAP analytical workspaces
- Revoke EXEMPT ACCESS POLICY from system
- Expdp system parfile=auexpcallclean.dat

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Update the Target

- Reset Advanced Queues
  - @auque2.sql
- Start the new listener
- Adgrants.sql
- Adctxprv.sql *system_password* CTXSYS
- If target is windows and source was not, apply 6494466
- In restricted session, adstats.sql

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Update the target

- Fnd_conc_clone.setup_clean
- Implement Autoconfig
- Apply WMS patches
  - 8796558, 18039691
- Recreate database links
- Create ConText and AZ objects
- $AU_TOP/patch/115/bin/dpost_imp.pl *driver* 11
  - Apply the generated file with adpatch

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Update the Target

- lcx_cat_sqe_pvt.sysnc_sqes_for_all_zones
- Use utlrp.sql to compile all invalid objects
- Re-create XLA packages if they were dropped
  - @xla6128278.sql
- Run Autoconfig on the apps admin node

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Update the Target

- Adadmin
  - Compile flexfields
  - Recreate grants and synonyms
- Start the apps tier
- Create DQM indexes

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Questions

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- BlueStar
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