

Case Study: Implementing Oracle E-Business Suite R12 Through 11i to R12 Upgrade Path

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Abstract

Oracle Application E-Business Suite R12 offers the great technology advance and benefit to Oracle Applications customers. To establish the best practice of implementing Oracle E-Business suite R12 on Linux platform and Dell servers, Engineers from Dell Database and Applications lab and Dell IT have completed a POC project of migrating an Oracle E-Business Suite 11i system on single applications node and single database node architecture to R12 with two applications tier nodes and two RAC database nodes. This whitepaper examines this POC as a R12 upgrade case study. The main focus of the whitepaper will be on the technical stack upgrade: upgrade paths, upgrade process, 10g RAC database configuration.

Introduction to Oracle E-Business Suite R12

Oracle E-Business Suite R12 as the latest Oracle Applications suite evolution, brings great value and advantages to customers' business: In today's global economic, companies faces a lot challenges to manage the business in global scope. As a global business release, Oracle E-Business Suite R12 has been designed to support today's global business by bringing the global views in a single system. It can enable customers to

- . Think Globally by offering a global view of the across regions and division to help customer to make global decision.
- . Work Globally by providing a system to operate business globally.
- . Manage globally by allowing customers to implement and manage and scale global Applications.

In additional to these major business benefits, R12 also provides more out-of-box improved features, a vastly enhanced user interface and more scalability, better performance.

As shown in Figure 1, On Technology side, Oracle E-Business R12 incorporated the latest technology on three tiers. On the Client tier, it moved from Jinitiator to Native Sun Java plug-in JESE 1.5 . On Application tier, it adapted Oracle Application Server 10g : replacing 8.0.6 Oracle _Home in iAS 1.0.2.2 with Oracle AS 10g 10.1.2 for forms and Reports; replacing Oracle 8.1.7 Oracle home in iAS 1.0.2.2 with Oracle AS 10g 10.1.3 for Oracle container for Java OC4J; It is certified with Oracle Fusion Middleware; It adapted Oracle JDeveloper 10.1.3 and JDBC 1.2 , JDK 5.0 for Web & concurrent processing , Oracle AS 10.1.3 web service infrastructure. On Database tier, it adapts Oracle 10gR2 for improving Manageability and better performance. Another improvement with EBS R12 is its full certification of 64 bit platforms on both application tier and database tier.

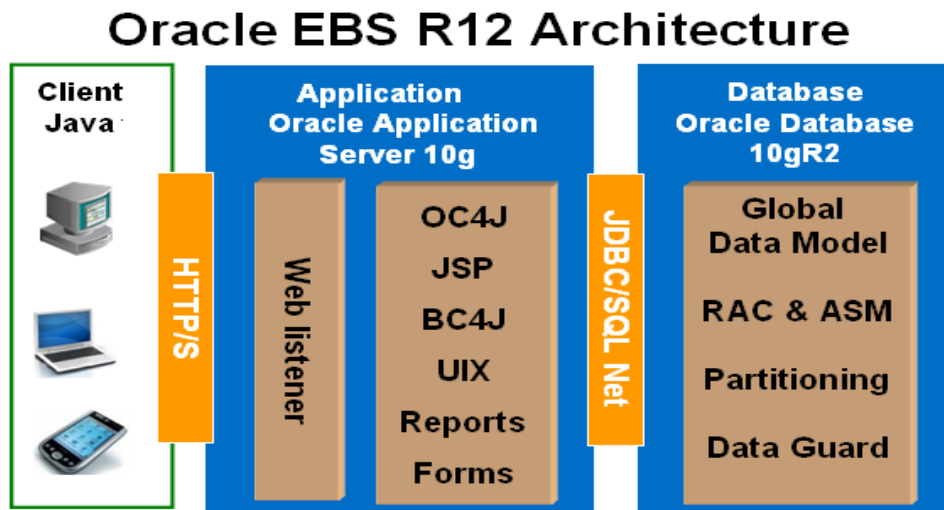


Figure 1 Oracle E-Business Suite Release 12 Architecture

Oracle E-Business Suite (EBS) R12 Migration Case Study

To help customers to adapt the Oracle E-Business suite R12 on Linux and Dell servers, Engineers from Dell Database and Applications Engineering solutions lab and Dell IT have completed two Oracle Applications E-Business Release 12 (R12) Proof-of Concept (POC) projects: 1) Implementation of EBS R12 with Oracle 10g RAC database on Dell x86_64 servers and Linux platform. 2) Migrations from 11i to R12. This whitepaper examines the migration project. In

this migration POC, the migration started with an Oracle EBS 11.5.10 environment running on single application tier node and a single Oracle 10g R2 database node. There are two goals in this migration POC project. The first goal was to upgrade the Oracle E-Business Suite from 11i to R12. The second goal was to migrate the system to a more scalable infrastructure which was composed of two application tier nodes and two Oracle 10R2 RAC database tier nodes running on Dell | EMC Clarrion SAN storage. The Figure 2 shows the migration project architecture.

Technology Stack Migration:

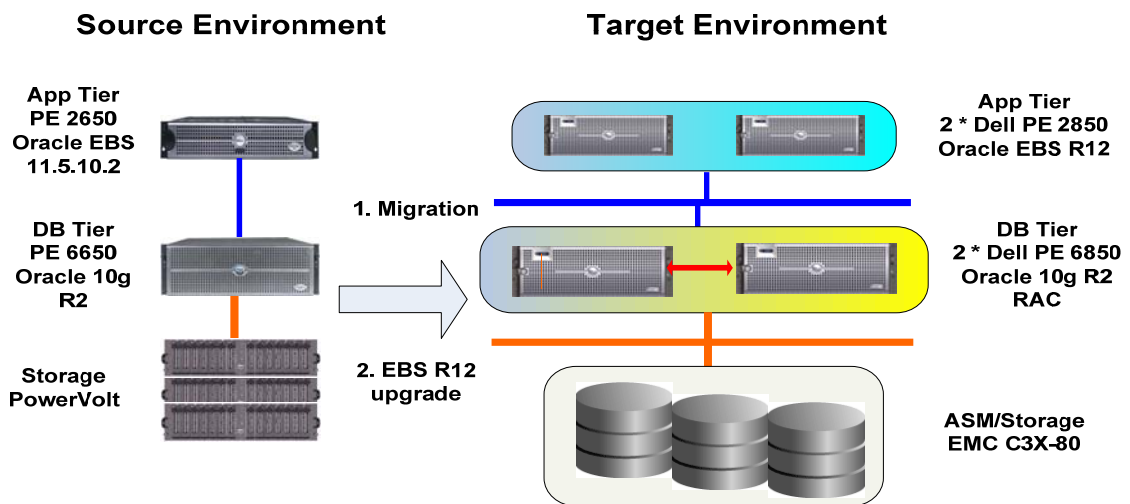
Platforms:

	Source Platform	Target Platform
Applications tier server	One Dell™ PowerEdge™2650	Two Dell™ PowerEdge™ 2850
Database Tier server	One Dell™ PowerEdge™ 6850	Two Dell™ PowerEdge™6850
Database Storage	File System Dell™ PowerValut™	ASM Dell™ EMC™ Clarrion CX3-80
OS	Red Hat Enterprise Linux AS 3	Red Hat Enterprise Linux AS 3

Oracle E-Business Suite Technology Stacks

	Source	Target
EBS Technology Stack	Oracle E-Business Suite 11.5.10.2 CU2	Oracle E-Business Suite R12.01
Database	Oracle 10gR2 CU2 single node	Oracle 10gR2 CU2 two node RAC
Database files	File system	ASM on EMC Clarrion Shared Storage
Oracle_Home for Reports and Forms	Oracle 8.0.6 in iAS 10.2.0.2	Oracle AS 10g 10.1.2
Oracle Home for Java	Oracle 8.1.7 in iAS 10.2.0.2	Oracle AS 10g 10.1.0.3

Oracle EBS R12 Migration Case Study



Migration Goal:

- Migrate to more scalable infrastructure:

- Multiple Applications nodes
- Multiple Database (DB) node: 10g RAC/ASM Solution
- Hardware upgrade; Storage upgrade
- Upgrade from EBS 11i to R12:

Figure 2: Migration Case Study Architecture

Two Phrases of Migration

The migration POC were performed in two phrases: platform migration and EBS technology stack upgrade. The platform migration is to migrate the Oracle E-Business 11i environment from the source platform to the target platform. This involves moving the applications tier to two new nodes and moving the database tier from a single node to a two node 10g R2 RAC servers and moving the database from the file system on old Dell PowerValut storage to EMC CX3-80 shared storage using ASM.

The second phrase is the Oracle E-Business R12 upgrade. In this phrase, Oracle E-Business technology 11i technology stack will be replaced by R12 technology stack on both application tier and database tier. The following sessions of the whiter paper will examine the steps of these two migration phrases.

Platform Migration by Cloning

The platform migration was achieved by cloning the single node apps tier and single stand-alone database tier to the two node apps tier and two node RAC database tier. The database was also migrated from file system storage to the ASM (Automatic Storage Management) and the APPS TOPs are shared on the new two nodes apps servers.

Database Tier Cloning:

The cloning process was performed on the database tier first and then the apps tier. Figure 3 shows the high level steps for the database clone and migration.

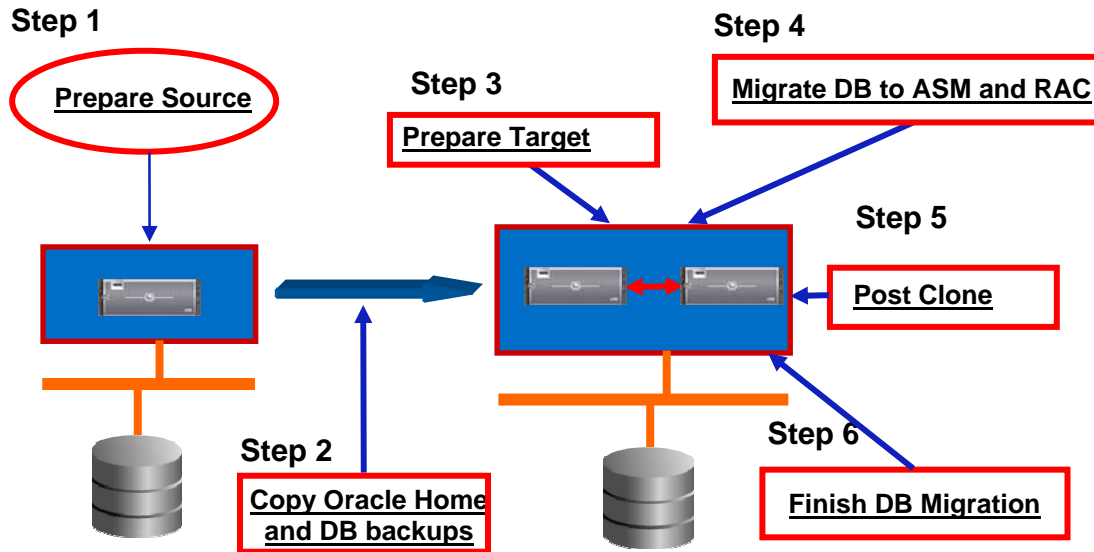


Figure 3: Database migration by clone

The following are the detailed steps:

1. Prepare the source. The cloning process started with the source system preparation to get the backup for Oracle Home binary and database. The script `adpreclone` is required to run with `dbTier` for the Oracle Home backup and clone. Then we backup the Oracle Home using `tar` command and copy the tar file to the target database servers. The database backup is required to use Oracle RMAN in order to migrate the database from file systems to ASM.
2. Prepare the target
 - Hardware : Servers : 2 Dell PowerEdge 6850, Two HBAs, public and private connections, Fibre channel connections from HBAs to FC storage switches
Storage: Local disk : 300GB on DB node1 to hold the database clone file. EMC Clarrion CX3-80 storage, connect to FC storage switches. Storage Lun Zoning: 1 GB lun for OCR and votingdisk and ASM spfile, 2 * 150 GB luns for diskgroups.
 - Install Red Hat 3.0 OS on both database nodes. Configured public and Private network configuration, create oracle user, and establish ssh Between two database servers. Partitioned following devices for
`/dev/emcpowera1` 300 MB for OCR
`/dev/emcpowera2` 300MB for votingdisk
`/dev/emcpowera3`: 300 MB for spfileASM.ora
`/dev/emcpowerb1`: 150GB for diskgroup1
`/dev/emcpowerc1`: 150GB for diskgroup2

After the OS, storage, and network are configured on the database servers, we installed and configured the 10gR2 CRS for the two-node RAC database servers which included the base version 10.2.0.1 CRS install and 10.2.0.2 upgrade. Then we installed the 10gR2

Oracle database home for ASM, created and configured the ASM instances on both nodes. Two diskgroups were created for the database migration to the ASM.

3. Clone the target database system

The next step is to clone the Oracle Home on both nodes of the RAC database servers. After restore the Oracle Home binary on node 1, we ran the script `$ORACLE_HOME/apputil/clone/bin/adcfgclone.pl` with `dbTechStack`. This prompts questions related to the database server and RAC information. Respond “y” for “yes” to the question “Target instance is a Real Application Cluster (RAC) instance (y/n)” and “Current node is the first node in an N Node RAC Cluster (y/n)[n]”. This step will configure the listener and TNS. Listener is started.

With the ASM instance up and running, we can then migrate the database to the ASM using RMAN. The database instance must be instructed to use the ASM disk group for datafiles by specify the parameter `db_create_file_dest = '+DATA_1'` where `DATA_1` is the diskgroup name in ASM to hold all database datafiles. Upon the completion of all datafiles being restored in ASM, the database can be recovered to the completion time of the backupset and database can be opened with `resetlogs`.

Now we can finish up the cloning process by restoring the Oracle Home on node 2, running the `adcfgclone.pl` script with `dbTechStack`, and starting up the instance.

4. Post database clone configuration

After the database being restored and migrated to ASM, we need to update the library by connecting to the database with `sysdba` and Running the database script `$ORACLE_HOME/apputil/install/{CONTEXT_NAME}/adupplib.sql` on node 1 first and then on node 2. Then run the script `$ORACLE_HOME/apputil/clone/bin/adcfgclone.pl` to config the database using the xml file `$ORACLE_HOME/apputil/{CONTEXT_NAME}.xml` on both nodes. Auto config script `$ORACLE_HOME/apputil/scripts/{CONTEXT_NAME}/adautoconfig.sh` is the last step to finish up the cloning process on both nodes.

Upon the completion of the database cloning, we can add the database resources to CRS, including ASM, Database instances, database, listeners, services. All these resources will be managed by CRS process. For example, the ASM and database can be configured to startup after the server reboots.

Apps Tier Cloning:

The following diagram shows the high level steps for Apps tier cloning.

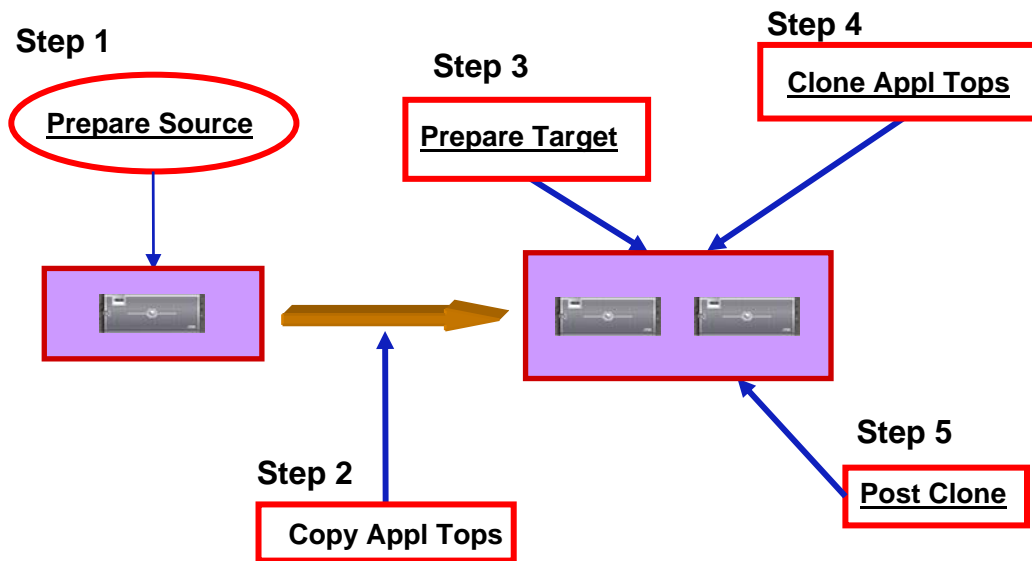


Figure 4: Application Tier Migration by Clone

1. Prepare the source

Like the DB tier, adpreclone is required to be run on the appsTier on the source system to prepare the backup of the APPL TOP for cloning. Then backup all the APPL_TOPs including APPL_TOP, 806 Oracle Home, iAS Oracle Home, COMMON_TOP, CUSTOM_TOP, etc.
2. Prepare the Target

Hardware : Servers : 2 Dell PowerEdge 2850, 200 GB mirrored disks for local file Systems on Application tier node 1 to hold the clone files, and 11i file systems and R12 file systems. File systems for 11i and R12 applications file system are local to Apps tier node 1 and NFS mounted and shared by two applications tier nodes.

OS : Install Red Hat 3.0 OS on both applications tier nodes. Configured Network configuration, created oracle and applmgr user.

Before we clone the APPL_TOP, the pre-requisite patch for OUI (#5035661) is required to be downloaded from Oracle metalink and applied to all the apps tier servers. Because we are migrating the apps tier from a single server to a shared APPL_TOP two-node apps tier system, the APPL_TOPs file systems are required to be mounted on both nodes.
3. Clone Appl Tops

After the backup files of APPL_TOPs from the source are copied to the target apps servers, all the APPL_TOPs are restored to the same directory structures. Then we run the script \$COMMON_TOP/clone/bin/adcfgclone appsTier to configure the target system apps tier server nodes. It prompts the questions related to the shared APPL_TOP on multiple apps servers and which node is used for system admin, forms server, web server, and concurrent manager. A load balance can be defined among the

apps tier nodes. The following scripts need to be run on the primary node and secondary node to prepare for and enable the shared APPL_TOP:

```
cd $AD_TOP/bin
perl adclonctx.pl sharedappltop contextfile=
$APPL_TOP/11i/admin/<context_name>.xml
```

```
cd $FND_TOP/patch/115/bin
perl -I $AU_TOP/perl txkSOHM.pl
```

4. Post Clone Steps

The following steps should be performed for post clone on the target system:

- a. Run Purge Concurrent Requests/Manager Data program
- b. Check utl_file_dir, APPLPTMP, and APPLTMP configurations are consistent.
- c. Clean out APPLCSF, APPLTMP, and APPLPTMP log and out files
- d. Clean out COMMON_TOP/admin/<SID> log and out files
- e. Clean up FND_NODES
- f. Update Profiles
- g. Check FND_CONCURRENT_REQUESTS
- h. Update Site Name
- i. Clean up scheduled Jobs from Queue.

Oracle E-Business R12 Upgrade

After the platform migration, the EBS 11i system has been moved to a more scalable infrastructure and was ready to be upgraded to R12. Comparing to previous version 11i upgrade, Release 12 (R12) upgrade process has been enhanced and streamlined. The basic approach to upgrade is to install R12 technology stack to replace 11i technology by Rapid Install utility, use AutoPatch utility to upgrade the 11i EBS database to R12 ; finally use Rapid Install utility again to configure servers and start services. In this POC project, we executed this technology stack upgrade in the following steps.

1. Plan for Upgrade: Study the upgrade path and understand the upgrade process.
2. Prepare for Upgrade : prepare the pre-requisites for the upgrade.
3. Rapid installation of R12 : install EBS R12 technology stack.
4. Apply 10g Database Patches: apply the required database patches before the upgrade.
5. Upgrade 11i to R12: upgrade the
6. Configure R12 system
7. Finish Upgrade
8. Post-upgrade.

Plan for Upgrade

Oracle Applications 11i to R12 upgrade guild [1] has given several supported the upgrade paths to bring the various versions of Oracle Applications EBS to R12.

Oracle Applications EBS R12 Upgrade Paths

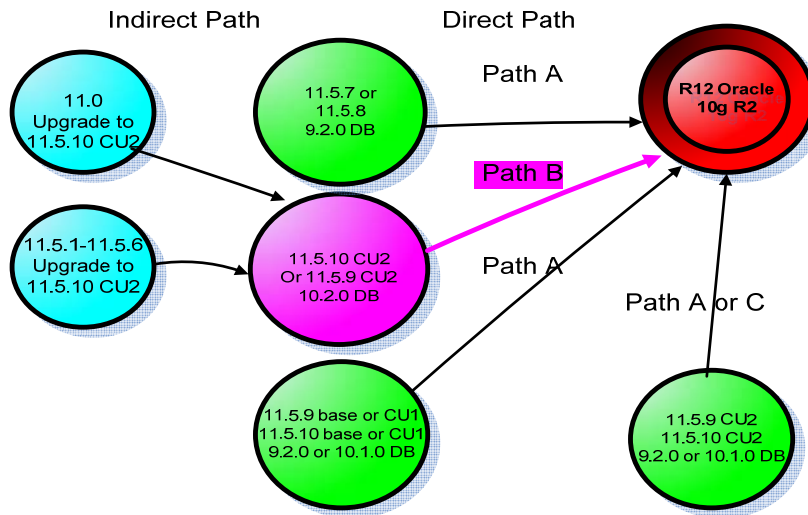


Figure 5: Oracle E-Business suite R12 Upgrade Path

As shown in the figure 5 above, there are direct upgrade paths for Oracle EBS 11.5.7 and later. Systems running 11.0 or 11.5.1-11.5.7 is required to upgrade to 11.5.10 CU2 with 10.2.0.2 database before they can be upgraded to R12 directly.

Depending on the current Oracle EBS version and its underneath database version, there are three different direct upgrade paths to R12.

- Path A: 11.5.7/11.5.8, 11.5.9/11.5.10 (base or CU1) → R12
- Path B: 11.5.9/11.5.10 CU2 + 10.2.0.2 database → R12
- Path C: 11.5.9 CU2/11.5.10.2 + 9iR2/10gR1 → R12

In this case study, since the source environment is EBS 11.5.10 CU2 running on Oracle database 10.2.0.2, we adapted upgrade path B as the R12 upgrade path which this whitepaper will examine in detail. The details of other paths for other upgrade paths can be referred to Metalink note 403339.1 or the R12 upgrade document.

Prepare for upgrade

To reduce the upgrade downtime, Perform the following pre-requisite tasks prior to the upgrade .

1. Gather schema statistics for CBO using the Gather Statistic concurrent program.
 2. Review Upgrade and Tasks and apply 11i.AD.I minipack
 - a. Apply 11i.AD.I minipack 5120936 to the application tier nodes of 11i
 - b. Use TUMS utility to eliminate the tasks that are not relevant to the system .
 - . Apply the TUMS utility patch 5120936 on the Admin server
 - . Generate and review TUMS report by running sqlplus @adtums.sql
 - . Omit the those tasks that are on TUMS report.
- Figure 4 shows the TUMS report on html format.

TUMS report lists the task that we can omit for your system upgrade. You need to review the TUMS report prior to the upgrade. Figure 4 show the a partial TUMS report.

Oracle Applications R12 Upgrade Report(TUMS) - kyjt

Report generated on 10/18/2007, 01:59 pm

Unnecessary steps

Based on the analysis of your installation, it has been determined that you do not need to perform the following upgrade. You may safely omit carrying out these steps from the Upgrading Oracle Applications Release R12 manual during your upgrade.

Chapter 2: Preparing for the Upgrade

Depot Repair, Step 1 (CSD_DATA_CHECK)
Shipping Execution, Step 1 (WSH_FREIGHT_CODES)
Mobile Field Service, Step 1 (CSM_SYNC_DATA)
Service Contracts, Step 1 (OKS_VALIDATE_GCD)
Process Manufacturing, Step 1 (GMA_PREP_MIGRATE)
Process Manufacturing, Step 2 (GMA_PREP_MIGRATE_FINISH)
Oracle Financials(India), Step 1 (JAI_CHECK_CUST)
General Ledger, Step 1 (GL_MRC_REVIEW_SETUP)
Internet Expense, Step 1 (OIE_IMPORT_INTERCOMPANY_CHECK)

Figure 6: A partial TUMS report

- 3.. Perform database and system Admin Tasks:
 - a. Backup database and application file systems
 - b. Convert to Multiple Organizations architecture
 - c. Review the size of and new tablespaces refer to metalink doc #399362.1
 - d. Convert tablespace to OATM tablespace model:
 - . Apply Patch 5726010
 - . adgncons.sql prepares adcrtp.sql to configure the database to hold new products to be added during the upgrades and switch the your system to use the new tablespace model.
 - . adcrtp.sql creates new tablespaces, allocates unlimited tablespaces to all APPS users, updates fnd_product_install table with correct data and index tablespaces information. Assign default tablespace to all APPS users. And sets the new_ts_mod flage in fnd_product_groups to Y
 - . adgrants.sql grants SYS privileges needed by Applications and creates required views in SYS.
4. Applications Technology Tasks that includes applying 11i.ATG_PF.H Rollup 4 to convert to WF Mailer and some module specific tasks.

Rapid Install R12

Before starting the Rapid install process, R12 software media has to been staged on a file system by running perl adautostage.pl from the mounted DVD directory after the first DVD is mounted.

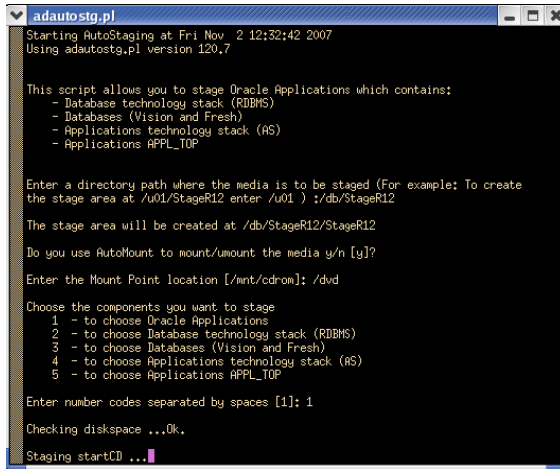


Figure 7: Staging Software

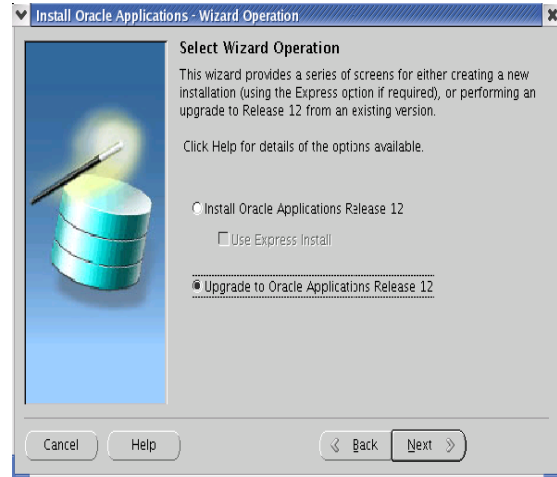


Figure 8: Rapid Install: select upgrade option

This creates the staging directory structure: oraAppDB, oraApps, oraAS, oraDB, startCD directories under the staging root directory.

Rapid install utility lays down the applications file system and technology stack for the new R12 Oracle Applications system, To start the Rapid Install, run the Rapid Install wizard command

1. run `./rapidwiz` on primary Apps node..
2. Select the upgrade action to Oracle Applications Release 12 the Select Wizard Operation Screen as shown in Figure 6.
3. Select Create Upgrade File System action as shown in Figure 9.
4. Enter the parameters prompted that are required to set up the new environment: as host names for app tier nodes and database tier nodes, application system file directory structure, etc. These parameter values are saved a configuration file named as config.txt

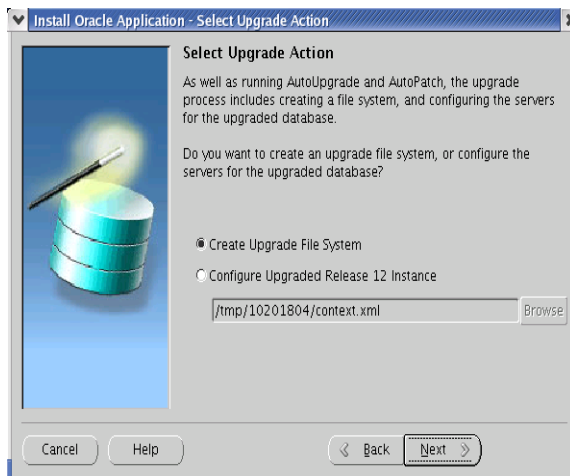


Figure 9 : Select Upgrade Action

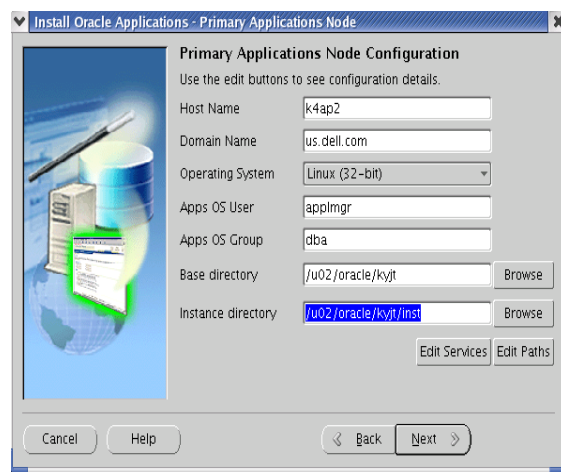


Figure 10 : Primary Application node

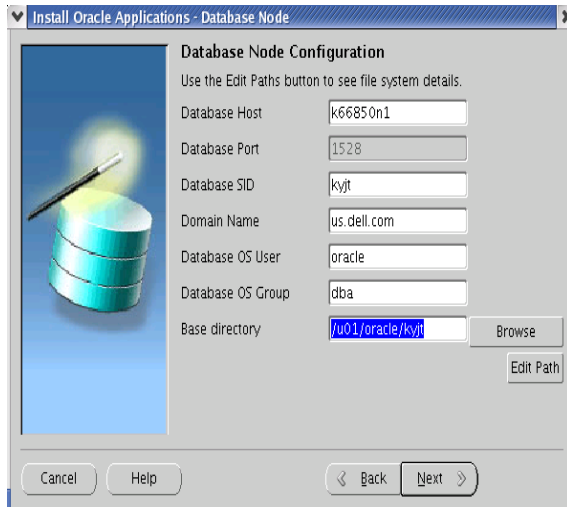


Figure 11: Database Node

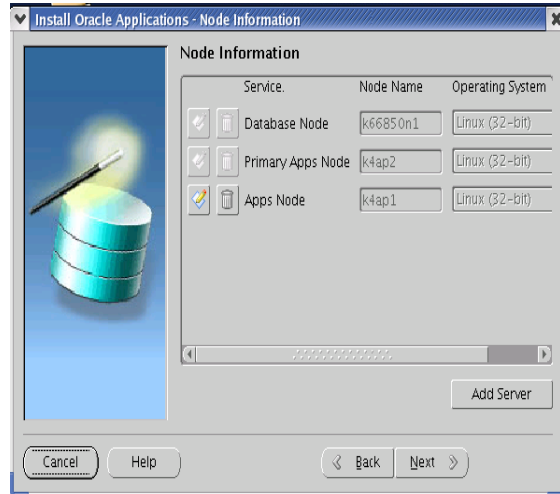


Figure 12: Node Summary

5. Completed the Rapid install on the primary Apps node.
6. NFS mount the staging directory and database node 1 and 2.
7. Run `./rapidwiz` database node 1 and 2 by using `config.txt` to complete Rapid install.

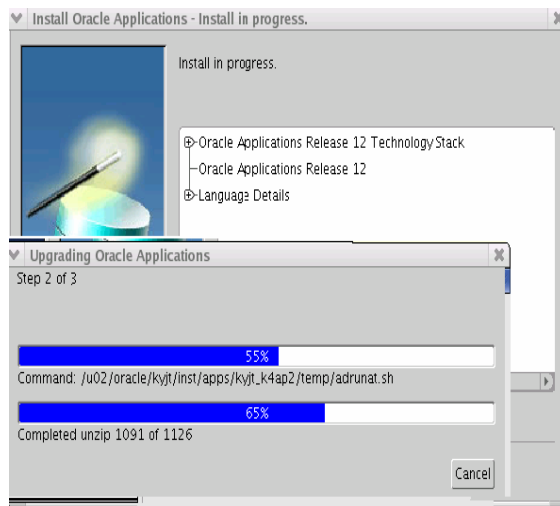


Figure 13: Install progress

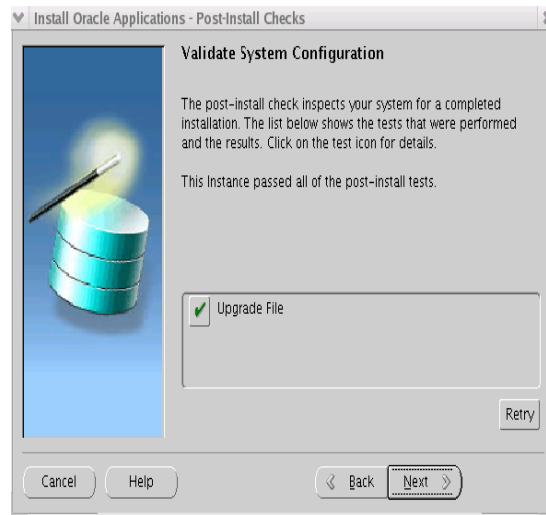


Figure 14: Post-install Validation

After the Rapid install, we have the following file system layout on application tier node and database tier node.

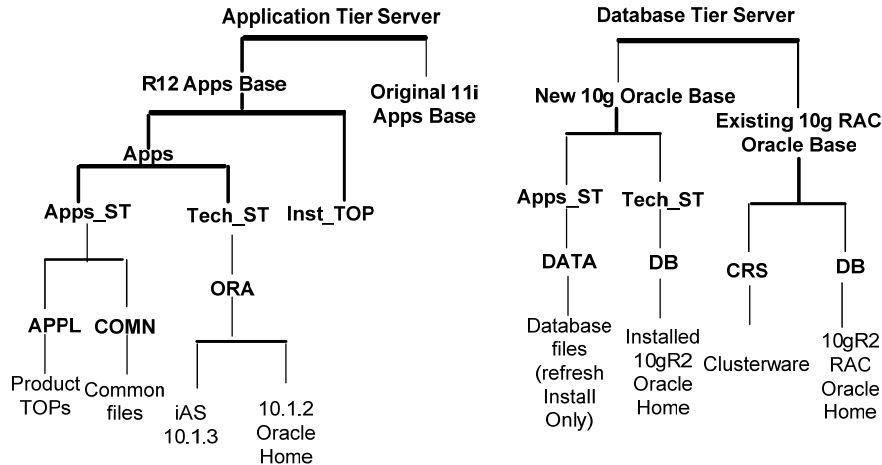


Figure 15: File System Layout

Apply Database Patches

As a result of R12 rapid install, there are two sets of Oracle 10g R2 database home on each database node:

- . Existing 10.2.0.2 RAC ORACLE_HOME from the original 11i environment.
- . ORACLE_HOME from R12 Rapid Install 10.2.0.2

A comparison of these two Oracle Homes is made to select one of them to be R12 Oracle database home:

Oracle Home	Advantage	Disadvantage
Existing 11i Oracle_Home	RAC enabled	Need the R12 database patches
R12 Installed Oracle_Home	RAC conversion is required	R12 Database patches included

Since applying R12 database patches is relatively simpler than RAC conversion, we decided to use existing 11i RAC Oracle_Home and apply the following R12 database patches to this existing RAC Oracle Home.

- For all platforms: 4733582 4906594 5567658 5601428
4247037 4868804 4898580 5005469 5153209 5477912 5865568
- For Linux and Unix only: 4380928 4518443 4592596
4639977 4643322 4686006 4689959 74431 744317 4751145 4932527 4949257
4966417 4967236 5128946 5150177 5206570 5254539 5434572 545562 5460159
5548758 5718367 4450497 5066528 5612127
- Apply Oracle service patch 5880762

Refer to Upgrade Path B for 11.5.10.2 with 10.2.0.2: in Metalink Doc: #403339.1

Upgrade to Release 12

After we completed the upgrade preparation and database patches, the next step is to start the Release 12 upgrade process. This process essentially is to upgrade the existing 11i applications database to Release 12. All the upgrade tasks must be performed during a system down time.

1. Disable AOL Audit trail before upgrade.
2. Shutdown Apps tier listener and Concurrent managers
3. Update init.ora parameters:
 - Remove db_file_multiblock_read_count from init.ora
 - Keep the default value setting 8 for _db_file_optimizer_read_count
 - job_queue_processes = # of CPUs
 - parallel_max_servers = 2 * # of CPUs
 - pga_aggregate_target = 1G
 - recyclebin=off
 - refer to Metalink Doc #3960091
 - create temporary tablespace as a locally managed tablespace (20GB)
4. Disable custom triggers, constraints, indexes
5. Drop no longer needed MRC schema by running adrpmrc.sql
6. Enable Maintenance Mode: adadmin → Change Maintenance mode option → option 1 to enable maintenance mode.
7. Configure Database Connection from R12 Tech Stack:
 - configure TNS entry to point to the RAC database instances.
8. Apply R12 AD Minipack (4502962):
 - Use adpatch to apply patch 4502963 on all the applications tier nodes the R12 environment:
9. Run American English Upgrade patch to R12
 - Cd to R12's \$AU_TOP/patch/115/driver
 - Apply patch: \$ adpatch options=nocopyportion,nogenerateportion
 - More than 90000 jobs, Set Batchsize=10000 Workers=# of CPUs
 - ran more than 20 hours.
10. Apply latest product patches
11. Disable Maintenance Mode
12. Reset init.ora and backup Oracle Applications.

Step 6: Configure R12 System

In order to enable Autoconfig on the applications database tier, the appstutil.zip needs to be generated on apps node, then copied and unzipped to the R12 oracle home on database tier before autoconfigure can be run on the database tier nodes. In Oracle Release 12 upgrade guild, because it assumed that Oracle home on database tier nodes are R12 install Oracle Home, appstutil.zip can be copied directly from apps tier node. However in this case study, it was decided to take advantage the RAC configuration of the previous 11i configuration and adapt the 11i RAC Oracle Home as the R12 database node Oracle 10g home, some utilities used by autoconfig was from this RAC Oracle home was from 11i releases, it failed to work with R12 version of appstutil.zip during the autoconfig process. The solution is to copy the appstutil directory from R12 Rapid install Oracle home to replace the one on RAC Oracle home before R12 appstutil.zip is unzipped on the appstutil directory of the RAC Oracle home. So we modified the autoconfig enabling process as follow:

Step 1: Generate appstutil.zip in Application tier node by running perl admkappstutil.pl

- Step 2: Copy appsutil directory from R12 install Oracle home to RAC Oracle home in Database tier node 1 so that RAC Oracle Home has appsutil directory that compatible with R12's autoconfig.
- Step3: copy and unzip appsutil.zip to RAC Oracle Home's appsutil directory
- Step4 : Create a new contextfile: Run perl adclonctx.pl to recreate kyjt_k66850n1.xml context file for database tier node 1.
- Step 5: run autoconfig on database node 1 using the kyjt_k66850n1.xml context file
- Step 6: Copy appsutil directory from database tier node 1 to database tier node 2
- Step 7: Create a new contextfile: Run perl adclonctx.pl to recreate kyjt_k66850n2.xml context file for database tier node 2.
- Step 8: run autoconfig on database node 2 using the kyjt_k66850n2.xml context file

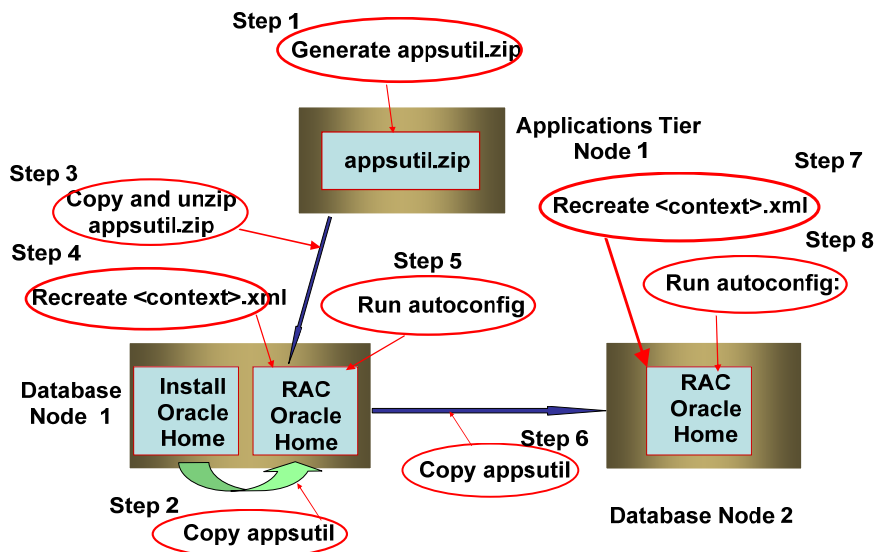


Figure 16: Process to enable autoconfig on database nodes

Rapid Install to updates the system configuration

Start Rapid install on Application Node 1 by running `./rapidwiz`

1. Select the Upgrade to Oracle Applications Release option,
2. On the Select Upgrade Action screen, select the Configure Upgrade Release 12 Instance and point the rapid install to the Applications context file in `<APPL_TOP>/admin/<CONTEXT_NAME>.xml`
3. Add Apps node 2 to the shared Apps tier file system
`perl adpreclone.pl on node1, perl adclonctx.pl add node`

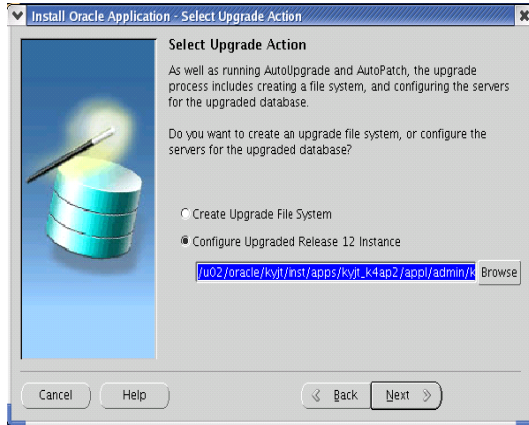


Figure 17: Select Upgrade Action

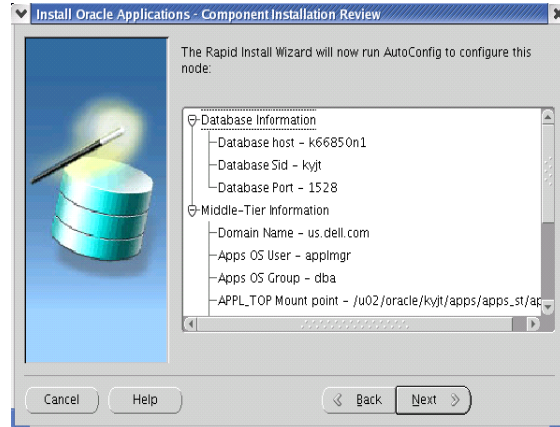


Figure 18: Upgrade Selection Summary

Finish Upgrade

The task includes

1. Configure client software for forms applet. Follow Doc #393931.1 to download SUN JRE naïve plug - in .
2. Reapply customizations : regenerate Applications environment files devenv.env if you customer zed them.
3. Integrate custom objects and schemas.
4. Re-enable custom triggers, constraints and indexes
5. Reset schema password
6. Finish System Administration Tasks.

Refer to chapter 3 of [1] for more details.

Post-upgrade Tasks

The post-upgrade tasks include Applications Technology Post-upgrade Tasks and modules specific post-upgrade tasks and system maintenance tasks. Refer to chapter 4 of [1] for more details.

Summary

This whitepaper examines a case study from a POC project of migrating an Oracle E-Business Suite 11i system on single applications node and single database node architecture to R12 with two applications tier nodes and two RAC database nodes. The migration was performed by two phrases: Platform migration based on cloning method and Oracle E-Business Suite 11i to Release 12 technology stack migration using R12 Rapid install and Autopatch utility.

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