Cloning Methods for E-Business

Suite 12.1 and 12.2
Cox Enterprises, Inc.

• Cox Enterprises is a leading communications, media and automotive services company.
• We are a top 10 national player, based on revenues, in every major business category where we compete.
• The company's major subsidiaries are
  – Cox Communications
  – Cox Media Group
  – Cox Automotive Group
• Revenues of nearly $18 billion
• # of Employees, Retirees, and Contractors: ~ 100,000
Agenda

• Why clone?
• Database Cloning
• Application Cloning
• Cloning E-Business Suite 12.1
• Cloning E-Business Suite 12.2
• Advanced Rapid Clone Features
• Autoconfig
• Other Cloning Methods
• Questions
Why clone an EBS Environment
Why Clone?

• Creating a copy of a production system for patch testing

• Creating a staging area to reduce the downtime required for patching

• Refreshing a test system from a production system

• Moving an existing system to a different machine or platform
Cloning Scenarios

- Single node to Single node
- Clone existing Clone
- Multi-node to Multi-node
- Single node to Multi-node
- Multi-node to Single node
Database Cloning with Rapid Clone
Rapid Clone – 11i and 12.1
Cloning E-Business 12.1
Cloning EBS 12.1

Oracle E-Business Suite 12.1 Cloning
Database Tier

1. Prepare Source
   - adpreclone.pl dbTier
     - Create Stage
     - OH/appsutil/clone
     - Obtain DB Information
     - Create DB creation scripts

2. Copy Bits
   - adcfgclone.pl dbTier
     - Create Context File
     - Register/Relink OH
     - Configure OH
     - Re-Create Database
     - Configure Database
     - Start Listener
Cloning EBS 12.1

Oracle E-Business Suite 12.1 Cloning
Applications Tier

1. Prepare Source
   - adpreclone.pl appsTier
     - AS 10.1.3
     - Developer 10.1.2
     - APPL_TOP
     - COMMON_TOP

2. Copy Bits
   - Create Stage
   - COMMON_TOP/clone

3. Configure Target
   - adctfclone.pl appsTier
     - Create Context File
     - Register/Relink OH
     - Configure OH
     - Configure APPL_TOP
     - Create INST_TOP
     - Start Apps Processes
Post Steps

• Update Profile options

• Update Printer settings

• Update Workflow configuration and tables

• Validate environment variables & cookies
Cloning E-Business 12.2
Cloning EBS 12.2

Process of Standard Cloning Tasks in Application Tier

Source System

Application Tier Node

Oracle E-Business Suite
Run Edition File System

Oracle E-Business Suite
Patch Edition File System

Target System

Application Tier Node

Oracle E-Business Suite
Run Edition File System

Oracle E-Business Suite
Patch Edition File System
Cloning EBS 12.2

- Run Pre-Clone on the Source DB Tier
  - perl adpreclone.pl dbtier

- Run Pre-Clone on the Source Apps Tier
  - perl adpreclone.pl appsTier

- Copy Application Tier
  - from Source Run Edition to Target Run Edition
  - <APPL_TOP>, <COMMON_TOP>, 10.1.2 ORACLE_HOME

- Copy RDBMS Oracle Home from the Source To Target
Cloning EBS 12.2

• Copy database .dbf files to Target destination
  – (COLD Backup)

• Run Post Clone in the Target Database Server
  – perl adcfgclone.pl dbTier
Cloning EBS 12.2 - Database

• Copy database .dbf files to Target destination
  – (COLD Backup)

• Run Post Clone in the Target Database Server
  – perl adcfgclone.pl dbTier
Cloning EBS 12.2 - Application

• Run Post Clone in the Target Application Tier
  – In AD-TXK6 or lower:
    • perl adcfgclone.pl appsTier
    • Repeat on Patch file system
  – In AD-TXK7 or higher
    • perl adcfgclone.pl appsTier dualfs

• The “dualfs” option will clone the Run and Patch file systems in a single operation.

• Fix any errors
Cloning EBS 12.2 - Application

• Perform any required post steps

• Start the environment
Common Errors

• Enter value for 1: Enter value for 2: Enter value for 3: ERROR:

\textbf{ORA-12514: TNS:listener does not currently know of service requested in connect descriptor}

-> Make sure the database is listening for the correct Service Name
Common Errors

• Any TNS connect errors in Autoconfig
  – Verify if RAC is set up correctly
  – SCAN listeners are correct
  – VIPs are correctly registered
  – Create ifile if necessary
Advanced Rapid Clone Features
Adding a New Application Tier Node

• Run adpreclone.pl on the Run Edition File Systems

• Copy the Run Edition File System to the Target secondary node.

• Configure Run and patch systems on Target
  $ cd <COMMON_TOP>/clone/bin
  $ perl adcfgclone.pl appsTier dualfs

• Autoconfig on Application and DB
Cloning EBS 12.2

Process of Cloning a Multi-Node System in Application Tier

Source System

Primary Application Tier Node

- ORACLE E-BUSINESS SUITE
- Run Edition File System
- ORACLE E-BUSINESS SUITE
- Patch Edition File System

Target System

Primary Application Tier Node

- ORACLE E-BUSINESS SUITE
- Run Edition File System
- ORACLE E-BUSINESS SUITE
- Patch Edition File System

Secondary Application Tier Node

- ORACLE E-BUSINESS SUITE
- Run Edition File System
- ORACLE E-BUSINESS SUITE
- Patch Edition File System
Advanced Rapid Clone Features

Cloning a RAC-enabled Instance to RAC or non-RAC
Cloning RAC Instances

- Copy and uncompress the Oracle Home in the Target primary node
- Create new “pairsfile.txt” file
- Create new contextfile

```bash
$ perl adclonectx.pl \contextfile=[Full PATH to OLD Source RAC]/<contextfile>.xml \template=[NEW ORACLE_HOME]/appsutil/template/adxdbctx.tmp \pairsfile=[NEW ORACLE_HOME]/appsutil/clone/pairsfile.txt initialnode

*The target database should have a different DB_NAME*
Cloning RAC Instances

- Run adclone.pl to Restore and Rename Database on New Target System

- $ perl adclone.pl
  java=[JDK Location]
  component=dbTier
  mode=apply
  stage=[ORACLE_HOME]/appsutil/clone
  method=RMAN
  dbctxtg=[Full Path to the Target Context File]/<contextfile>.xml
  rmanstage=[Location of the Source RMAN dump files... i.e. RMAN_STAGE/data/stage]
  rmantgtloc=[Shared storage location for data files...ASM diskgroup / NetApps NFS mount / OCFS mount point]
  srcdbname=[Source RAC system GLOBAL name]
  showProgress
Cloning RAC Instances

- Run Autoconfig on Primary Node
- Update sqlnet.ora, listener.ora, and pairsfile.txt
- Create new context file for 2\textsuperscript{nd} node

\begin{verbatim}
$ perl adclonectx.pl \n  contextfile=[Full Path to Existing Context File on First Node]/<contextfile>.xml \n  template=[NEW ORACLE_HOME]/appsutil/template/adxdbctx.tmp \n  pairsfile=[NEW ORACLE_HOME]/appsutil/clone/pairsfile.txt addnode
\end{verbatim}

- perl adcfgclone.pl dbTechStack
- Autoconfig
# Cloning RAC Instances

<table>
<thead>
<tr>
<th>Service Group</th>
<th>Service(s)</th>
<th>Service Control Script</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root Service</td>
<td>Node Manager</td>
<td>adnodemgrctl.sh</td>
</tr>
<tr>
<td>Web Administration</td>
<td>WebLogic Admin Server</td>
<td>adadminsrvctl.sh</td>
</tr>
<tr>
<td>Web Entry Point</td>
<td>Oracle HTTP Server</td>
<td>adapcctl.sh</td>
</tr>
<tr>
<td>Services</td>
<td>Oracle Process Manager</td>
<td>adopmnctl.sh</td>
</tr>
<tr>
<td>Web Application</td>
<td>oacore</td>
<td>admanagersrvctl.sh</td>
</tr>
<tr>
<td>Services</td>
<td>oafm</td>
<td>admanagersrvctl.sh</td>
</tr>
<tr>
<td></td>
<td>forms</td>
<td>admanagersrvctl.sh</td>
</tr>
<tr>
<td></td>
<td>forms-c4ws</td>
<td>admanagersrvctl.sh</td>
</tr>
<tr>
<td>Batch Processing</td>
<td>Oracle TNS Listener</td>
<td>adalnctl.sh</td>
</tr>
<tr>
<td>Services</td>
<td>Concurrent Manager</td>
<td>adcmctl.sh</td>
</tr>
<tr>
<td></td>
<td>Fulfillment Server</td>
<td>jtffmctl.sh</td>
</tr>
<tr>
<td></td>
<td>Oracle ICSM</td>
<td>ieoicsm.sh</td>
</tr>
<tr>
<td>Other Services</td>
<td>Forms Server</td>
<td>adformsrvctl.sh</td>
</tr>
<tr>
<td></td>
<td>Oracle MWA Service</td>
<td>mwactlwrpr.sh</td>
</tr>
</tbody>
</table>
Autoconfig

• Preview Effects of Running AutoConfig

• Execute the applicable command to run the Check Config utility:

  • Database Tier
    – sh appsutil/bin/adchkcfg.sh \ contextfile=<CONTEXT_FILE>

  • Application Tier
    – $ sh <AD_TOP>/bin/adchkcfg.sh \ contextfile=<CONTEXT_FILE>
Autoconfig

- mod_wl_oohs.conf and apps.conf

```xml
<Location /OA_HTML>
SetHandler weblogic-handler
WebLogicCluster internal.domain.com:7201,external.domain.com:7201
WLTempDir ${ORACLE_INSTANCE}/tmp
</Location>

<Location /forms>
SetHandler weblogic-handler
WLCookieName JsessionIDForms
WebLogicCluster internal.domain.com:7401,external.domain.com:7401
WLTempDir ${ORACLE_INSTANCE}/tmp
</Location>
```
Autoconfig

- Tnsnames.ora files

```
FNDFS_APPLTOP_host1=
 (DESCRIPTION=
   (ADDRESS_LIST=
     (ADDRESS=(PROTOCOL=tcp)(HOST=host.com)(PORT=1626))
     (ADDRESS=(PROTOCOL=tcp)(HOST=host.com)(PORT=1626))
     (ADDRESS=(PROTOCOL=tcp)(HOST=host.com)(PORT=1626))
   )
   (CONNECT_DATA=
     (SID=FNDFS)
   )
)
```
Other cloning methods
Cloning using EM Application Management Pack (AMP)

- Command Line Process
- Requires User Interaction
- Note 406982.1 (Standard Clone)
- Note 559518.1 (RAC)

- Automated Process
- Provides Data Scrambling
- Allows Image Creation
- Leveraging EM Grid Control
Cloning using EM Application Management Pack (AMP)
AMP Hot Cloning
AMP Scrambling

Source System → Scramble Data → Repackage Database → Target System

AMP
Other methods

- Dataguard redo log apply
- Automated RMAN Duplicate
- Application file system copy
  - Rsync, scp over ssh
- Post Clone and Autoconfig

# run Autoconfig on DB tier
echo "running Autoconfig on DB tier"
${ORACLE_HOME}/perl/bin/perl
${ORACLE_HOME}/appsutil/bin/adconfig.pl
contextfile=${ORACLE_HOME}/appsutil/${db_context}.xml
appspass=$appspwd

# run Autoconfig on Apps tier
echo "running Autoconfig on App tier"
ssh $owner@$node.coxenterprises.com
$APP_SCRIPTS/adautocfg.sh
-appspass=$appspwd
wait 300
Delphix
Netapp
EMC

Production Database

EMC Filer

Database
Luns.

SRDF or Recover Point

Non-Prod Filer

Snapshot day 1
Snapshot day 1
Snapshot day 2
Snapshot day 2

Target A

Clone 1

Target B

Clone 2

Target C

Clone 3
Clone 4
Cloning with SSO Enabled
Cloning EBS 12.1 with Oracle Access Manager

- Deregister cloned database from OID
  - $FND_TOP/bin/txkrun.pl -script=SetSSOReg -removerefrences=yes

- Re-register EBS with OID
  - txkrun.pl -script=SetSSOReg -registerinstance=yes

- Register EBS with OID
  - $FND_TOP/bin/txkrun.pl -script=SetSSOReg -registeroid=yes

- Recreate dbc file

- Reset ASADMIN password
Cloning EBS 12.2 with Oracle Access Manager

• Deregister cloned EBS Instance from OAM
• Remove Access Gate application
  – From both Run and patch file systems

• Remove OID link from FND_USER
  – $FND_TOP/patch/115/sql/fndssouu.sql

• Re-register EBS with OID

• Re-register Oracle Access Manager with EBS 12.2