Oracle Maximum
Availability Architecture

# Oracle Commerce MAA

## Configuration Best Practices

ORACLE WHITE PAPER | JULY 2015

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## Executive Overview

Oracle Maximum Availability Architecture (MAA) is Oracle's best practices blueprint based on proven Oracle high availability technologies and recommendations. The goal of MAA is to achieve the optimal high availability architecture at the lowest cost and complexity. Papers are published on the Oracle Technology Network (OTN) at http://www.oracle.com/goto/maa.

In this paper we describe the architecture along with installation, configuration, and operational best practices for deploying Oracle Commerce with MAA best practices. For the purposes of this paper, Oracle Commerce is comprised of Oracle Commerce Platform, Oracle Commerce Experience Manager, and Oracle Commerce Merchandising.

Oracle Commerce MAA can be implemented in 3 different MAA environmental configurations: fully active/passive, active/active application with active/passive databases (also known as active/active/passive), and fully active/active. This document covers fully active/passive and active/active/passive configurations. With regard to an active/active configuration, there are many business rules required for this type of configuration to be constructed. Therefore, it is not in scope for this document and not formally an MAA endorsed configuration. Clients should verify with Oracle Support whether or not an active/active configuration would be covered within their respective support agreements.

## Introduction

Commerce Platform – formerly known as ATG Web Commerce, Commerce Platform is a framework, which clients can build and develop large-scale B2C or B2B web sites. Commerce Platform offers a complete commerce software platform that enables you to deliver a personalized customer buying experience across all customer touch points, including the web, contact center, mobile devices, social media, physical stores, and more.

Commerce Experience Manager – formerly known as Endeca Commerce, Experience Manager gives clients the flexibility to set up the selling experience as they see fit. The application suite adds search capabilities when used with Oracle Commerce.

Commerce Merchandising – part of the Oracle Commerce Business Control Center, Merchandising allows a client to create and deploy content directly to its commerce web site in a manner that suits its business rules. Merchandising uses Oracle Commerce Content Administration to deploy both data-based content to the commerce database instance(s) and file-based content to the file systems, which the commerce applications are configured.

Commerce Service Center – is the commerce customer service application. This is a fully-integrated system, which allows CSRs to view and edit orders and profile information. Commerce Service Center is not in the scope of this paper, however, its implementation is similar to that of the base commerce web site.

This paper is organized into the following sections:

Primary Site Creation – the steps and configuration used, following MAA best practices, to create the Primary MAA Oracle Commerce web site.

Standby Site Creation – the steps and configuration used, following MAA best practices, to create the Standby MAA Oracle Commerce web site.

Site Test and Site Test to Standby – the steps required to manually switch over from the Primary site to the Standby site and back. This method is for testing only as the standby database and ZFS are opened as read-only. This can also be handled by application packages, such as Oracle's Site Guard.

Site Switchover – the steps required to perform a switchover of roles between the Primary and Standby sites, where the Standby database and applications will become the Primary and vise versa.

Site Failover and Reinstate – the steps required to perform a failover of the Primary site to the Standby site and back again. This assumes that the primary site becomes completely unavailable.

Appendix – covers miscellaneous scripts, configurations, and examples used to create the MAA sample environment sites.

## Primary Site Creation

### Install and Configure Exadata

In addition to the standard Exadata installation, see these papers for best practices:

- "*MAA Best Practices for Oracle Exadata Database Machine (technical white paper)*"
- "*Best Practices for Database Consolidation on Oracle Exadata Database Machine*"

The standard Exadata configuration was deployed on the primary site. You should have the complete database hardware configuration at this stage from whoever ran the Oracle Exadata Deployment Assistant (OEDA) utility.

### Install and Configure Grid Home and Database Home

The Grid Home was installed following the Exadata installation convention by Oracle Exadata Deployment Assistant, formerly known as Java OneCommand (JOC), and is installed on all database nodes in `/u01/app/12.1.0.2/grid`.

The Grid Home is owned by the oracle user and it is in the `oinstall` and `dba` groups.

The Oracle database software for the Commerce database is installed into its own `ORACLE_HOME` location. It is separate from the location where OEDA installed the initial database. There are two ways to install the database software into a separate `ORACLE_HOME`:

1. Download the 12.1.0.2 software and install using Oracle Universal Installer. See "*Exadata Database Machine and Exadata Storage Server Supported Versions*", MOS article 888828.1 for details.
2. Clone an existing `ORACLE_HOME` over to the new `ORACLE_HOME` location for Commerce.

This project uses the second option of cloning from the initial OEDA home because this also gives us a 12.1.0.2 version with the correct patching. The Oracle Database software home for the Commerce database was installed in `/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce`. It is owned by the `oracle_atg` user and it is in the `oinstall` and `dba` groups.

To clone from the OEDA home:

1. As root on each database node, create the software directory tree and make it owned by `oracle_atg:oinstall`:

```
mkdir -p /u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce
chown -R oracle_atg:oinstall /u01/app/oracle_atg
```

2. As root on OEDA compute node, zip up the `dbhome_1 ORACLE_HOME`:

```
cd /u01/app/oracle/product/12.1.0.2
zip -r 12102_dbhome.zip dbhome_1
```

3. As the software owner (`oracle_atg`) on each database node, copy the `12102_dbhome.zip` to the new `ORACLE_HOME` location, unzip it, then move the `dbhome_1` to `dbhome_commerce`:

```
cd /u01/app/oracle_atg/product/12.1.0.2
cp /u01/app/oracle/product/12102_dbhome.zip
unzip – d 12102_dbhome.zip
mv dbhome_1 dbhome_commerce
```

4. Create a small shell script to run the `clone.pl` procedure. The script should look something like the following, but replace the host names and `ORACLE_HOME` path to match the environment it will run on.

```
echo "Clone started at `date`" | tee -a clone.log perl
/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce/clone/bin/clone.pl \
ORACLE_BASE=/u01/app/oracle_atg \
ORACLE_HOME=/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce \
ORACLE_HOME_NAME=Commerce_DBHome '-O"CLUSTER_NODES={scam08db03,scam08db04}"' \
'-O"LOCAL_NODE=scam08db03"' OSDBA_GROUP="dba"
echo "Clone ended at `date`" | tee -a clone.log
```

   Place the above in a script, `clone.sh` for example, add execute privileges, and run it. Do this step on each database node.

5. As the software owner on each node, relink the database software. Make sure that `ORACLE_HOME` is defined. Make sure you include the `ipc_rds` option. (or run the `$ORACLE_HOME/bin/relink` script)

```
export ORACLE_HOME=/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce
cd $ORACLE_HOME/rdbms/lib
make -f ins_rdbms.mk ioracle ipc_rds
```

6. As `root` on each database node, run the `$ORACLE_HOME/root.sh` script.

```
ssh -l root <db-node>
/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce/root.sh
```

7. Set up the environment for each compute node.

```
export ORACLE_BASE=/u01/app/oracle_atg
export ORACLE_HOME=$ORACLE_BASE/product/12.1.0.2/dbhome_commerce
export ORACLE_DB=commaa
#Host names are scam08db03 and scam08db04
case `hostname -s` in
*03 ) ORACLE_SID=${ORACLE_DB}1;;
*04 ) ORACLE_SID=${ORACLE_DB}2 ;;
esac
export ORACLE_SID
export PATH=$PATH:$ORACLE_HOME/bin
```

## Install Exalogic

Review the "*Oracle Fusion Middleware Exalogic Enterprise Deployment Guide*". in particular Chapter 3, *Network, Storage, and Database Preconfiguration*.

## Commerce Database Creation

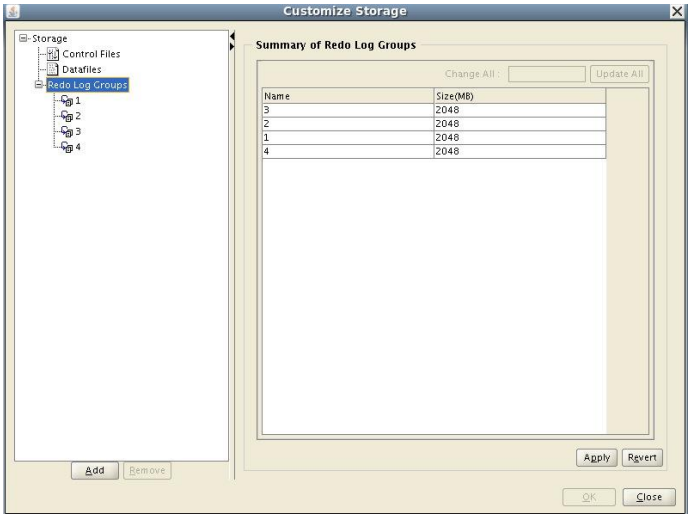
For this case study the environment (Test Environment Details) on our primary site has InfiniBand connectivity between the Exadata system and Exalogic systems. On the standby we had 10 GigE connectivity between the Exadata system and Exalogic systems. Because of this we chose to use 10 GigE on both sides so that we could have the same protocol in the GridLink data source connection and support FAN/FCF automatic failover per section 18 of the MAA white paper "*Client Failover Best Practices for Highly Available Oracle Databases*".

### Use DBCA to Create an Oracle RAC Database

1. In DBCA, choose the General Purpose or Transaction Processing template.

2. Set up the database with the Exadata ASM disk groups.

***NOTE:*** *Do not use Automatic Memory Management. You should use the default, Automatic Shared Memory Management (ASSM), so that Linux HugePages can be used. Increase the redo log size to 2 GB (2097152Kb), as shown below.*




### Create Tablespaces

```
Create bigfile tablespace userdata01 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
create bigfile tablespace userdata02 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
create bigfile tablespace userdata04 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
create bigfile tablespace userdata06 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
Create bigfile tablespace useridx01 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
create bigfile tablespace useridx02 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
create bigfile tablespace useridx04 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
create bigfile tablespace useridx06 datafile '+DATA_SCAM08' size 2g autoextend
on next 2g maxsize 30g NOLOGGING EXTENT MANAGEMENT LOCAL AUTOALLOCATE  SEGMENT
SPACE MANAGEMENT AUTO ;
```

```
select FILE_NAME,TABLESPACE_NAME,bytes/1048576 TBS_SIZE_MB, AUTOEXTENSIBLE,
MAXBYTES/1048576 MAX_MB from dba_data_files where TABLESPACE_NAME like
'USER%0%';

 FILE_NAME                                        TABLESPACE_NA TBS_SIZE_MB AUT
      MAX_MB
--------------------------------------------------------------------------------
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/userdata01.1017.861096469 USERDATA01  2048
YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/userdata02.1018.861096473 USERDATA02  2048
             YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/userdata04.1019.861096475 USERDATA04  2048
             YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/userdata06.1020.861096477 USERDATA06  2048
             YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/useridx01.1021.861096481    USERIDX01 2048
             YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/useridx02.1022.861096483    USERIDX02 2048
             YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/useridx04.1043.861096487    USERIDX04 2048
             YES    30720
+DATA_SCAM08/COMMAA_SCAM08/DATAFILE/useridx06.1038.861096489    USERIDX06 2048
             YES    30720
8 rows selected.
```

#### Create Commerce Database Schemas

```
drop user COM_PRODUCTION_SWITCHB cascade;
drop user COM_PRODUCTION_SWITCHA cascade;
drop user COM_PUBLISHING cascade;
drop user COM_PRODUCTION cascade;

create user COM_PRODUCTION_SWITCHB identified by com123 default tablespace
USERDATA01;
create user COM_PRODUCTION_SWITCHA identified by com123 default tablespace
USERDATA02;
create user COM_PUBLISHING identified by com123 default tablespace USERDATA04;
create user COM_PRODUCTION identified by com123 default tablespace USERDATA06;

grant connect,resource,dba to COM_PRODUCTION_SWITCHB;
grant connect,resource,dba to COM_PRODUCTION_SWITCHA;
grant connect,resource,dba to COM_PUBLISHING;
grant connect,resource,dba to COM_PRODUCTION;
```

#### Create the Role-Based Service

Create and role-based services on both the Primary and Standby to support client failover best practices as documented in "*Client Failover Best Practices for Highly Available Oracle Databases*".

```
srvctl add service -d commaa_scam08 -s comsvc -r commaa1,commaa2 -l PRIMARY -q
FALSE -e NONE -m NONE -w 0 -z 0
srvctl add service -d commaa_scam08 -s comsvc_tst -r commaa1,commaa2 -l
SNAPSHOT_STANDBY -q FALSE -e NONE -m NONE -w 0 -z 0
srvctl add service -d commaa_scam08 -s comsvc_stby -r commaa1,commaa2 -l
PHYSICAL_STANDBY -q FALSE -e NONE -m NONE -w 0 -z 0
```

### Execute the DBMS_SERVICE PL/SQL Package For Each Role-Based Service

Execute the following on the Primary, matching values with the srvctl add service commands from above:

```
EXECUTE DBMS_SERVICE.CREATE_SERVICE('<SERVICE>', '<SERVICE>', NULL, NULL,<-
q>,'NONE', 'NONE', <-w>, <-z>, NULL);
```

Example:

```
EXECUTE DBMS_SERVICE.CREATE_SERVICE('comsvc_tst', 'comsvc_tst', NULL,
NULL,FALSE,'NONE', 'NONE', 0, 0, NULL);
```

### Start Then Stop the Role-Based Services

```
srvctl start service -d commaa_scam08 -s comsvc
srvctl start service -d commaa_scam08 -s comsvc_tst
srvctl start service -d commaa_scam08 -s comsvc_stby

srvctl stop service -d commaa_scam08 -s comsvc_tst
srvctl stop service -d commaa_scam08 -s comsvc_stby
```

### Set Up the Database Best Practices

Ensure that the MAA database best practices are implemented.

## Configure Exalogic Servers

### Set Up a Shared File System on ZFS

The following resources were used to set up the shared file system:

- "*Oracle Fusion Middleware Disaster Recovery Guide"*
- "*Oracle Fusion Middleware Disaster Recovery Solution using Oracle's Sun ZFS Storage Appliance*"
- "*Oracle WebLogic Server Active GridLink for Oracle Real Application Clusters (RAC)*"
- "*Disaster Recovery for Oracle Exalogic Elastic Cloud*"

### Plan the ZFS Project File System Layout and Mount Points

**TABLE 1: PRIMARY SITE PROJECT AND FILE SYSTEM SETUP**

| NAME / TYPE | VALUE | REMARKS |
|---|---|---|
| Quota | 750G | For storing the Oracle FMW binaries, configuration files, logs and so on. |
| Mount point | /export/ATG | |
| Record size | 128K | Default record size |
| Other settings | Default | Set the user and group under "Default Settings" to restrict access. Can also restrict the host access under the Protocols / NFS Exceptions section. |
| File system | WLSData | Data for WLS common for all application hosts |
| File system | WLSbin1 | Binaries for WLS on COMSVR1 |

| | | |
|---|---|---|
| File system | WLSbin2 | Binaries for WLS on COMSVR2 |
| File system | WLSbin3 | Binaries for WLS on COMSVR3 |
| File system | WLSbin4 | Binaries for WLS on COMSVR4 |
| File system | WLSATG1 | ATG Domain on COMSVR1 |
| File system | WLSATG2 | ATG Domain on COMSVR2 |
| File system | WLSATG3 | ATG Domain on COMSVR3 |
| File system | WLSATG4 | ATG Domain on COMSVR4 |
| File system | Endeca1 | Binaries for Endeca on GSSVR1 |
| File system | Endeca2 | Binaries for Endeca on GSSVR2 |

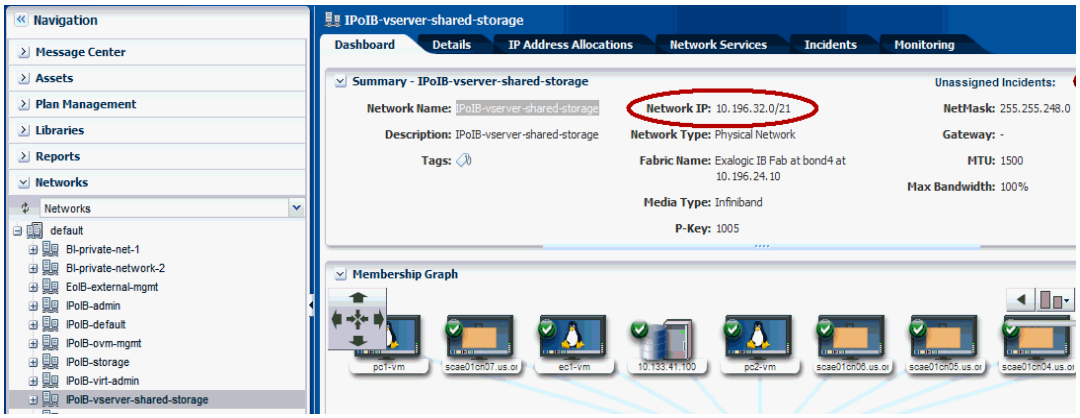
**TABLE 2: MOUNT POINTS**

| HOSTNAME | ZFS MOUNT POINT | HOST MOUNT POINT | REMARKS |
|---|---|---|---|
| COMSVR1 / COMSVR2<br>COMSVR3 / COMSVR4 | WLSData | /u01/app/oracle_atg/data | Data for WLS - common for all application hosts |
| COMSVR1 | WLSbin1 | /u01/app/oracle_atg/product/fmw | Binaries for Fusion Middleware (MW_HOME) |
| COMSVR2 | WLSbin2 | /u01/app/oracle_atg/product/fmw | Binaries for Fusion Middleware (MW_HOME) |
| COMSVR3 | WLSbin3 | /u01/app/oracle_atg/product/fmw | Binaries for Fusion Middleware (MW_HOME) |
| COMSVR4 | WLSbin4 | /u01/app/oracle_atg/product/fmw | Binaries for Fusion Middleware (MW_HOME) |
| COMSVR1 | WLSATG1 | /u01/app/wls/atgDomain/atg | ATG domain on COMSVR1 |
| COMSVR2 | WLSATG2 | /u01/app/wls/atgDomain/atg | ATG domain on COMSVR2 |
| COMSVR3 | WLSATG3 | /u01/app/wls/atgDomain/atg | ATG domain on COMSVR3 |
| COMSVR4 | WLSATG4 | /u01/app/wls/atgDomain/atg | ATG domain on COMSVR4 |
| GSSVR1 | Endeca1 | /u01/app/oracle_atg/product/oracle_gs | GSSVR1 |
| GSSVR2 | Endeca2 | /u01/app/oracle_atg/product/oracle_gs | GSSVR2 |

### Create the ZFS Project

For more information, see "*Setting Up Access to the ZFS Storage Appliance for a vServer*".

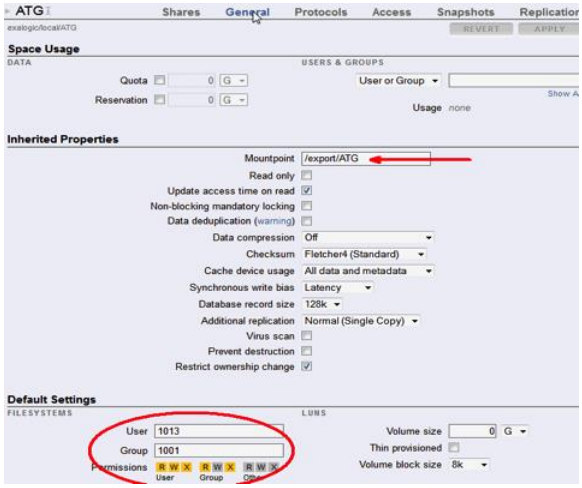
1. Look at the Enterprise Manager Ops Center (EMOC) Networks, specifically at the IPoIB-vserver-shared-storage Network IP 10.196.32.0/21 to get the NFS Exception value for the ZFS project:



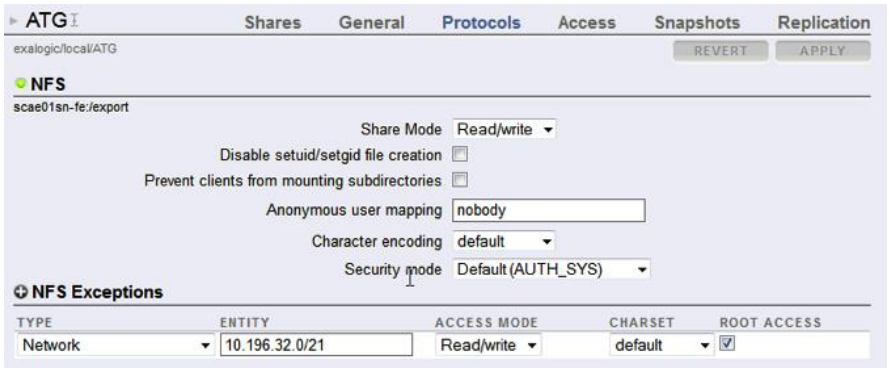

2. Use `/export/ATG` for the mount point in the ZFS General screen.

   Specifying a quota is optional.

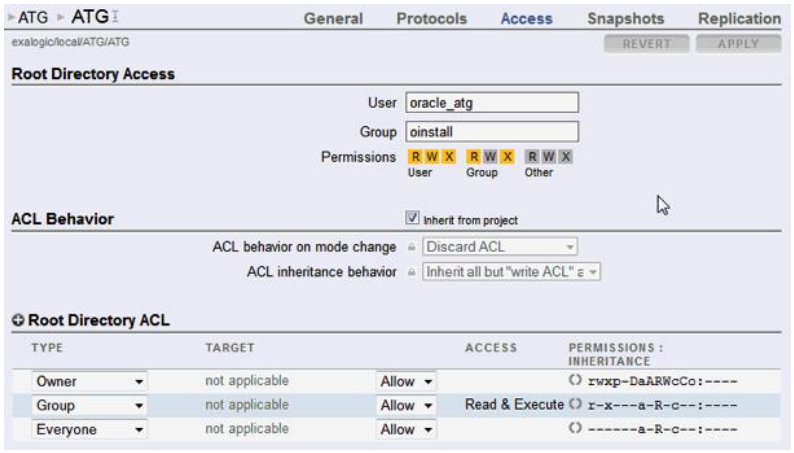
3. Optionally, in the **Default Settings** pane, specify the OS user and group numerical IDs. Because we have NIS set up and are using NFS4 we will use the `oracle_atg` ID (1013) and `oinstall` group (1001) here. If NIS is in use then use the UID and GID from NIS:



4. In the **NFS Exceptions** pane on the **Protocols** tab , add the base host/subnet for the IPoIB-vserver-shared-storage network as identified in the Step 1 above (10.196.32.0/21 in the example).

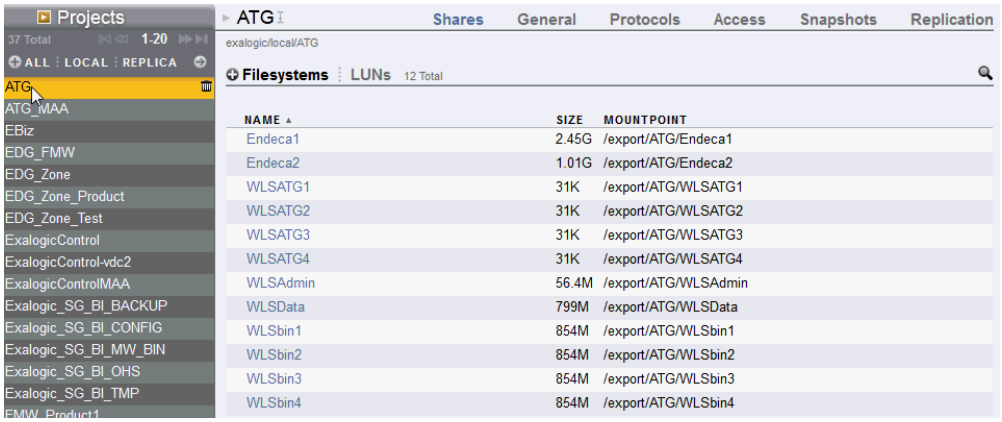



5. Specify the project's **Root Directory Access**.




### Create the ZFS Shares in the Project

Note that each share will inherit the project characteristics.



### Add Mount Points to the Appropriate Hosts

1. We will use NIS and NFS4 for mount points. See "*How To Configure NIS Master, Slave And Client Configuration In Exalogic Virtual Environment*", MOS article 1516025.1 for more information. Also, see the following sections in the "*Oracle Exalogic Elastic Cloud Machine Owner's Guide*":

   Section 9.4, Configuring an Exalogic Linux Compute Node to Use NFSv4

   Section 9.5, Creating NFSv4 Mount Points on Oracle Linux

2. Create the mount point directories:

   **COMSVR1 | COMSVR2 | COMSVR3 | COMSVR4**

   ```
   mkdir -p /u01/app/oracle_atg/product/fmw
   mkdir -p /u01/app/wls/atgDomain/atg
   mkdir -p /u01/app/oracle_atg/data
   ```

   **Endeca1 | Endeca2**

   ```
   mkdir -p /u01/app/oracle_atg/product/oracle_gs
   ```

3. Determine the share IP address, then add the `/etc/fstab` entries.

**COMSVR1**

```
10.196.32.55:/export/ATG/WLSbin1 /u01/app/oracle_atg/product/fmw nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSATG1 /u01/app/wls/atgDomain/atg nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSData /u01/app/oracle_atg/data nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

**COMSVR2**

```
10.196.32.55:/export/ATG/WLSbin2 /u01/app/oracle_atg/product/fmw nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSATG2 /u01/app/wls/atgDomain/atg nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSData /u01/app/oracle_atg/data nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

**COMSVR3**

```
10.196.32.55:/export/ATG/WLSbin3 /u01/app/oracle_atg/product/fmw nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSATG3 /u01/app/wls/atgDomain/atg nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSData /u01/app/oracle_atg/data nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

**COMSVR4**

```
10.196.32.55:/export/ATG/WLSbin4 /u01/app/oracle_atg/product/fmw nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSATG4 /u01/app/wls/atgDomain/atg nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
10.196.32.55:/export/ATG/WLSData /u01/app/oracle_atg/data nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

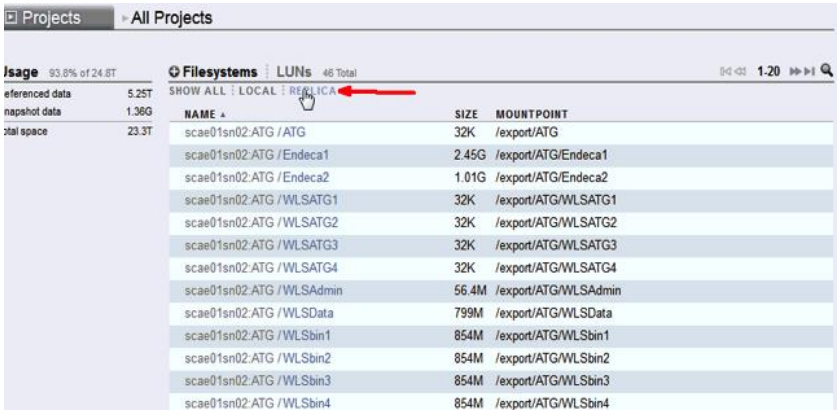
**GSSVR1**

```
10.196.32.55:/export/ATG/Endeca1 /u01/app/oracle_atg/product/oracle_gs nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

**GSSVR2**

```
10.196.32.55:/export/ATG/Endeca2 /u01/app/oracle_atg/product/oracle_gs nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

4. Mount the ZFS shares on each host as `root` using the command `mount -a,` which mounts all of the shares shown below, if they are configured in the `/etc/fstab` file.



## Configure the OS for WebLogic Server

### Enable Large Pages

On all WebLogic Server Platform hosts do the following steps:

(Refer to http://www.oracle.com/technetwork/java/javase/tech/largememory-jsp-137182.html):

1. Mount `/mnt/hugepages` as `root` user (required on Oracle EL5+), and execute the following:

```
mkdir -p /mnt/hugepages
mount -t hugetlbfs nodev /mnt/hugepages
chmod -R 777 /mnt/hugepages
```

2. To make this persist at server reboot edit the `/etc/fstab` file, adding:

```
# Mount /mnt/hugepages for HotSpot Large Page Support
hugetlbfs   /mnt/hugepages   hugetlbfs   auto,user,exec,nodev,rw   0 0
```

3. Edit the `/etc/rc.local` file:

```
chmod -R 777 /mnt/hugepages
```

4. Set large page settings at OS:

```
echo 28991029247 > /proc/sys/kernel/shmmax
echo 13824 > /proc/sys/vm/nr_hugepages
echo 1001 > /proc/sys/vm/hugetlb_shm_group
```

5. Add the following lines to your `/etc/sysctl.conf` file (requires reboot) to ensure that large page settings persist at the system reboots.

```
# Shared memory - max segment size: 27GB (-1 b)
kernel.shmmax = 28991029247 #(comment out the old kernel.shmmax line)
# Enable kernel to reserve 27GB / 2MB large pages
vm.nr_hugepages = 13824
# System group id that can use huge pages (hugepages gid: 1001)
vm.hugetlb_shm_group = 1001
```

### Set System Limits

Set the following in the `/etc/security/limits.conf` file (requires reboot):

```
# Set limit of 24GB total huge pages for oracle_atg user
oracle_atg soft memlock 28311552
oracle_atg hard memlock 28311552
oracle_atg soft nofile 32768
oracle_atg hard nofile 32768
```

## Install WebLogic Server

### Enable the Admin Server HA VIP

See Section 4.3, Enabling VIP1 in SOAHOST1 for more information about this procedure. We will use `10.133.49.181 scae01ec2-vip1.us.oracle.com scae01ec2-vip1` as our virtual IP (VIP):

1. `ifconfig bond0:1 10.133.49.181 netmask 255.255.248.0`
2. `/sbin/arping -q -U -c 3 -I bond0 10.133.49.181`

Ping `10.133.49.181` or `scae01ec2-vip1` from another host to ensure it is active and plumbed on the interface

As `root` do the following to make the VIP persistent across reboots on the primary:

```
vi /etc/sysconfig/network-scripts/ifcfg-bond0:1

MTU=1500
BONDING_OPTS='mode=active-backup use_carrier=1 miimon=250 downdelay=5000
updelay=5000'
NM_CONTROLLED=no
GATEWAY=10.133.48.1
NETMASK=255.255.248.0
IPADDR=10.133.49.181
BOOTPROTO=static
ONBOOT=yes
DEVICE=bond0:1
```

During WebLogic Server install we will use the explicit hostname, `scae01ec2-vip1`, for the listen address.

### Primary Site Application Tier Hosts

See "*Fusion Middleware Disaster Recovery Guide*" for more information.

How you set up the host alias depends on whether your DNS configuration is separate (where the production site and the standby site have their own DNS servers) or you have a single global DNS server.

In this case study a single (global) DNS server is in use, so the disaster recovery site `/etc/hosts` files must be updated with host aliases once the DR vServers get created.

### Install WebLogic Server with the Domain

Oracle Commerce is supported with Oracle WebLogic Server 12.1.2. Check "*Oracle Commerce Supported Environments - Release 11.1.x*", MOS article 1908576.1 for more information.

Use the generic WebLogic Server 12.1.2 installer with Coherence, available at http://www.oracle.com/technetwork/middleware/weblogic/downloads/wls-main-097127.html

1. Verify that Java version 7 has already been installed. See MOS ID 1908576.1 for information on the minimum version required.
2. Copy `the wls121200.jar` to a temporary location and `cd` to that location.
3. Run `java -jar wls121200.jar`.
4. Create new middleware home at `/u01/app/oracle_atg/product/fmw/Midleware` and select **Next**.
5. In the UI, choose **Complete installation**.
6. Ensure that you use the explicit host name for the listen address.
7. Ensure that you use the `scae01ec2-vip1` for the listen address.

### Set the WebLogic Server Environment Variables

1. If it is not created, create the file `wls_env` in the application user's home directory with the following contents:

```
export MW_HOME=/u01/app/oracle_atg/product/fmw/Middleware
export WL_HOME=$MW_HOME/wlserver
export JAVA_HOME=$MW_HOME/../jdk1.7.0_67
export CLASSPATH=$WL_HOME/server/lib/weblogic.jar:$CLASSPATH
export PATH=$JAVA_HOME/bin:$JAVA_HOME/jre/bin:/sbin:$PATH
```

2. Add the following to the application user's `.bash_profile` file to source the `wls_env` file:

```
. ~/wls_env
```

### Enable Exalogic Optimizations

1. Log in to the Oracle WebLogic Server Administration Console.
2. Select **Domain name** in the left navigation pane. The Settings for Domain name screen is displayed.
3. Click the **General** tab.
4. In your domain home page, select **Enable Exalogic Optimizations**, and click **Save**.
5. Activate changes.
6. Stop and start your domain.

### Set Node Manager properties

In `$WL_DOMAIN_HOME /nodemanager/nodemanager.properties`, set the following parameters:

```
SecureListener=false
StartScriptEnabled=true
StopScriptEnabled=true
```

### Setup and Start WLS Domain Admin Server

1. Create service script `/etc/init.d/wls_admin` on both primary and standby environment servers. See Sample Scripts for script contents.

2. Enable the service to run.

```
chmod 755 /etc/init.d/wls_admin
chkconfig --add wls_admin
```

3. Add `sudo` access to `SERVICES` for the `oracle_atg` user on both primary and standby servers.
   a. Run `visudo` as `root` user and edit the `/etc/sudoers` file:
   b. Uncomment the line:

```
Cmnd_Alias SERVICES = /sbin/service, /sbin/chkconfig
```

   c. Add the following lines to the end of the file:

```
# Allows oracle_atg user access to service commands
oracle_atg      ALL=NOPASSWD: SERVICES
```

4. Starting | Stopping | Restarting WebLogic Admin Service:

```
sudo service wls_admin start
sudo service wls_admin stop
sudo service wls_admin restart
```

5. Add aliases to `~/wls_env` file:

```
alias startadmin="sudo service wls_admin start"
alias stopadmin="sudo service wls_admin stop"
alias restartadmin="sudo service wls_admin restart"
# Log Reading
alias lessadmin="less
/u01/app/wls/atgDomain/atg/atg_domain/servers/AdminServer/logs/AdminServer.out
"
```

### Start Node Manager

1. Create service script `/etc/init.d/wls_nodemgr` on both primary and standby environment servers. See Sample Scripts for script contents.

2. Enable the service to run.

```
chmod 755 /etc/init.d/wls_nodemgr
chkconfig --add wls_nodemgr
```

3. Add `sudo` access to `SERVICES` for the `oracle_atg` user on both primary and standby servers.
   a. Run `visudo` as `root` user and edit the `/etc/sudoers` file:
   b. Uncomment the line:

```
Cmnd_Alias SERVICES = /sbin/service, /sbin/chkconfig
```

   c. Add the following lines to the end of the file:

```
# Allows oracle_atg user access to service commands
oracle_atg      ALL=NOPASSWD: SERVICES
```

4. Starting | Stopping | Restarting WebLogic Node Manager Service:

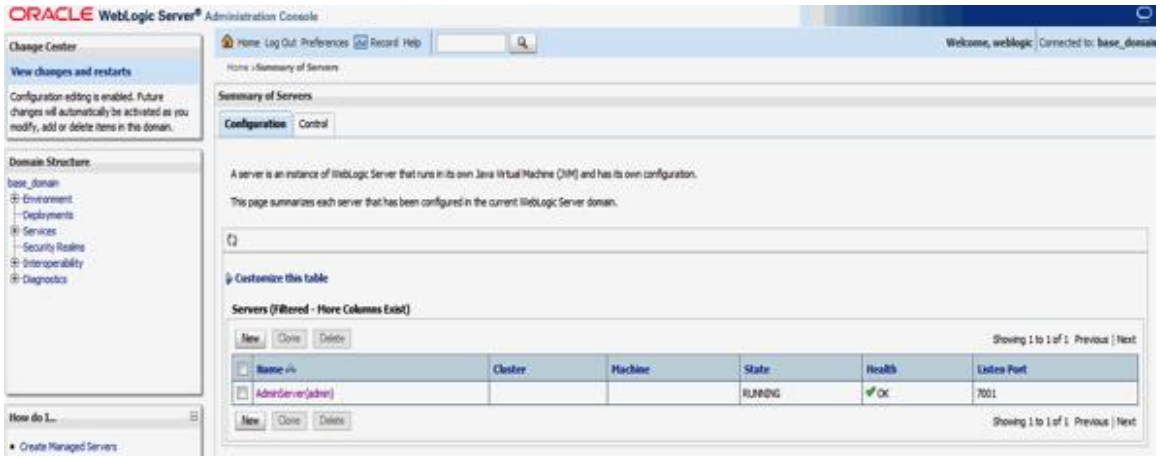
```
sudo service wls_nodemgr start
sudo service wls_nodemgr stop
sudo service wls_ nodemgr restart
```

5. Add aliases to `~/wls_env` file:

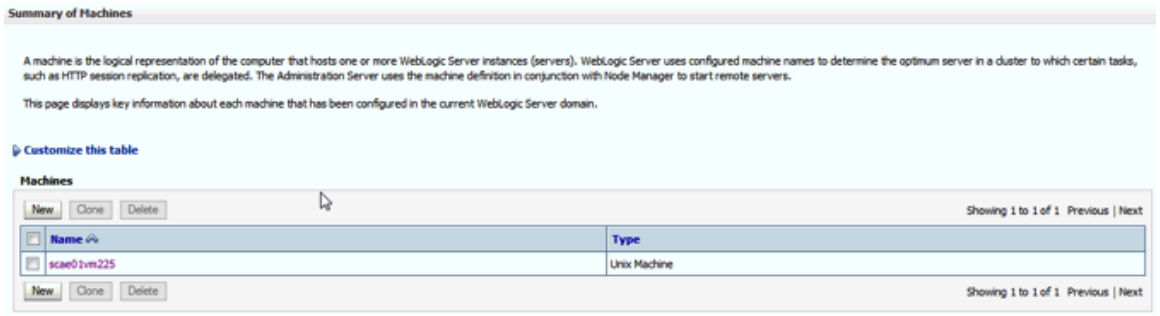
```
alias startadmin=”sudo service wls_nodemgr start”
alias stopadmin=”sudo service wls_nodemgr stop”
alias restartadmin=”sudo service wls_nodemgr restart”
# Log Reading
alias lessndmgr='less
/u01/app/wls/atgDomain/atg/atg_domain/nodemanager/nm.log'
```

### Verify WebLogic Server Administration Console is Working

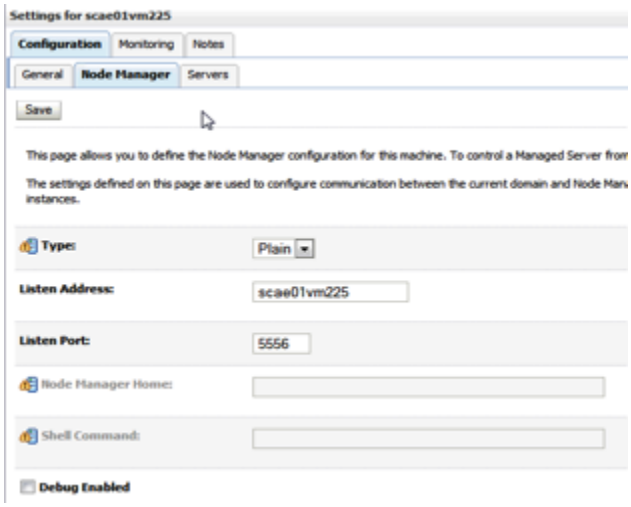
1. Go to http://[WEBLOGIC_ADMIN_VIP]:7001



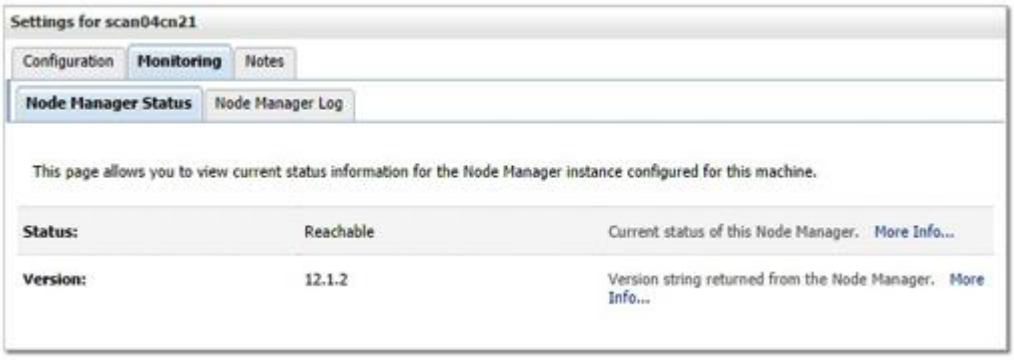

2. Configure the machine (`DOMAIN_NAME/Machines`) and ensure that node managers are reachable.



3. If no machines appear in the **Summary of Machines** page then click **New** to add the machine, using a Plain UNIX machine and the hostname, then check the Node Manager tab.




4. Ensure that the machine Node Manager is reachable.. The UI displays whether the Node Manager is reachable, as shown in the screen shot below.



## Install Commerce with the Commerce Reference Store

1. Get software from https://edelivery.oracle.com/ (Select “ATG Commerce” and Linux x86-64).
2. Select “Oracle Commerce (11.1.0), Linux” and download for following:
   a. Oracle Commerce Platform 11.1 for UNIX
   b. Oracle Commerce Reference Store (CRS) 11.1 for UNIX
   c. Oracle Commerce MDEX Engine 6.5.1 for Linux
   d. Oracle Commerce Content Acquisition System (CAS) 11.1 for Linux
   e. Oracle Commerce Experience Manager (EM) Tools and Frameworks 11.1 for Linux
   f. Oracle Commerce Guided Search Platform Services 11.1 for Linux
3. Install Commerce software: ***a & b above***, see installation examples in the Appendix.
4. Install Commerce Reference Store in same directory.
5. Install All Guided Search Software: ***c-f above***, see installation examples in the Appendix.
   a. Follow http://docs.oracle.com/cd/E52191_02/CRS.11-1/ATGCRSInstall/html/s0401appendixacreatingtheeacapplicati01.html to deploy the CRS application into Guided Search to create the search index.
   b. Make sure to run `[CRS_APP_DIR]/control/promote_content.sh`
   c. Make sure to run `[CRS_APP_DIR]/control/runcommand.sh DistributeIndexAndApply`

*Note: Any new index created will need to be replicated to each Commerce WebLogic host. Common replication methods include common NFS shares or `rsync`.*

### Required Commerce Environment Variables

1. Create the file /home/oracle_atg/atg_env with the following content:

```
export DYNAMO_ROOT=/u01/app/oracle_atg/product/ATG/ATG11.1
export DYNAMO_HOME=$DYNAMO_ROOT/home
export PATH=$DYNAMO_HOME/bin:$PATH
```

2. Add the following to the `/home/oracle_atg/.bash_profile` file, at the end of the file:

```
. ~/atg_env
```

### Port Mapping for WebLogic Server | Commerce Applications

Table 3 shows the port mapping for the MAA WebLogic Server and Commerce Platform Applications.

**TABLE 3: COMMERCE PLATFORM PORT MAPPINGS**

| WEBLOGIC SERVER | HTTP PORT | HTTPS PORT | RMI PORT | DRP PORT** | FILE DEPLOY PORT | FILE SYNCH PORT | SLM PORT |
|---|---|---|---|---|---|---|---|
| AdminServer | 7001 | 7002 | | | | | |
| scan04cn21-slm01 | 7003 | 7004 | 7063 | 7053 | | | 9010 |
| scan04cn22-slm01 | 7003 | 7004 | 7063 | 7053 | | | 9010 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| scan04cn22-bcc01*** | 7001 | 7002 | 7061 | 7051 | 7011 | 8811 | 9020 |
| scan04cn21-crs01 | 7005 | 7006 | 7065 | 7055 | | 8815 | |
| scan04cn21-crs02 | 7007 | 7008 | 7067 | 7057 | | 8817 | |
| scan04cn21-crs03 | 7009 | 7010 | 7069 | 7059 | | 8819 | |
| scan04cn21-crs04 | 7101 | 7102 | 7161 | 7151 | | 8821 | |
| scan04cn22-crs01 | 7005 | 7006 | 7065 | 7055 | | 8815 | |
| scan04cn22-crs02 | 7007 | 7008 | 7067 | 7057 | | 8817 | |
| scan04cn22-crs03 | 7009 | 7010 | 7069 | 7059 | | 8819 | |
| scan04cn22-crs04 | 7101 | 7102 | 7161 | 7151 | | 8821 | |
| scan04cn23-crs01 | 7005 | 7006 | 7065 | 7055 | | 8815 | |
| scan04cn23-crs02 | 7007 | 7008 | 7067 | 7057 | | 8817 | |
| scan04cn23-crs03 | 7009 | 7010 | 7069 | 7059 | | 8819 | |
| scan04cn23-crs04 | 7101 | 7102 | 7161 | 7151 | | 8821 | |
| scan04cn23-crs05 | 7103 | 7104 | 7163 | 7153 | | 8823 | |
| scan04cn23-crs06 | 7001 | 7002 | 7061 | 7051 | | 8811 | |
| scan04cn24-crs01 | 7005 | 7006 | 7065 | 7055 | | 8815 | |
| scan04cn24-crs02 | 7007 | 7008 | 7067 | 7057 | | 8817 | |
| scan04cn24-crs03 | 7009 | 7010 | 7069 | 7059 | | 8819 | |
| scan04cn24-crs04 | 7101 | 7102 | 7161 | 7151 | | 8821 | |
| scan04cn24-crs05 | 7103 | 7104 | 7163 | 7153 | | 8823 | |
| scan04cn24-crs06 | 7001 | 7002 | 7061 | 7051 | | 8811 | |

* https ports are configured, but not used.

** DRP = Dynamo Request Protocol. A port mapping used for Commerce Scenario configuration

*** Passive BCC JVM

### Port Mapping for WebLogic Coherence Servers

Table 4 shows the port mapping for the Coherence Cache Servers and the Cluster.

**TABLE 4: WEBLOGIC COHERENCE CACHE SERVER MAPPINGS**

| COHERENCE SERVER | LISTEN PORT | MULTICAST ADDRESS | COHERENCE CLUSTER NAME | MULTICAST PORT | WKA | WKA PORT |
|---|---|---|---|---|---|---|
| scan04cn21-cache01 | 7771 | 231.1.2.3 | CRS_Coh_cluster | 33387 | wka<br>wka2<br>wka3<br>wka4 | 7771<br>7771<br>7771<br>7771 |
| scan04cn22-cache01 | 7771 | 231.1.2.3 | CRS_Coh_cluster | 33387 | wka<br>wka2<br>wka3<br>wka4 | 7771<br>7771<br>7771<br>7771 |
| scan04cn23-cache01 | 7771 | 231.1.2.3 | CRS_Coh_cluster | 33387 | wka<br>wka2<br>wka3<br>wka4 | 7771<br>7771<br>7771<br>7771 |
| scan04cn24-cache01 | 7771 | 231.1.2.3 | CRS_Coh_cluster | 33387 | wka<br>wka2<br>wka3<br>wka4 | 7771<br>7771<br>7771<br>7771 |

### WebLogic Server Resources for Managed Servers

**TABLE 5: COMMERCE PLATFORM DATA SOURCE & APPLICATION EAR MAPPING**

| MANAGED SERVER | MACHINE | CLUSTER | EAR DEPLOYMENT | DATA SOURCES |
|---|---|---|---|---|
| scan04cn21-slm01 | scan04cn21 | | slm.ear | GridLink_ATGProductionDS |
| scan04cn22-slm01 | scan04cn22 | | slm.ear | GridLink_ATGProductionDS |
| scan04cn22-bcc01*** | scan04cn22 | | bcc.ear | GridLink_ATGProductionDS<br>GridLink_ATGSwitchingDS_A<br>GridLink_ATGSwitchingDS_B<br>GridLink_ATGPublishingDS |
| scan04cn21-crs01<br>scan04cn21-crs02<br>scan04cn21-crs03<br>scan04cn21-crs04 | scan04cn21 | CRS_Cluster | crs.ear | GridLink_ATGProductionDS<br>GridLink_ATGSwitchingDS_A<br>GridLink_ATGSwitchingDS_B |
| scan04cn22-crs01<br>scan04cn22-crs02 | scan04cn22 | CRS_Cluster | crs.ear | GridLink_ATGProductionDS<br>GridLink_ATGSwitchingDS_A |

| | | | | |
|---|---|---|---|---|
| scan04cn22-crs03<br>scan04cn22-crs04 | | | | GridLink_ATGSwitchingDS_B |
| scan04cn23-crs01<br>scan04cn23-crs02<br>scan04cn23-crs03<br>scan04cn23-crs04<br>scan04cn23-crs05<br>scan04cn23-crs06 | scan04cn23 | CRS_Cluster | crs.ear | GridLink_ATGProductionDS<br>GridLink_ATGSwitchingDS_A<br>GridLink_ATGSwitchingDS_B |
| scan04cn24-crs01<br>scan04cn24-crs02<br>scan04cn24-crs03<br>scan04cn24-crs04<br>scan04cn24-crs05<br>scan04cn24-crs06 | scan04cn24 | CRS_Cluster | crs.ear | GridLink_ATGProductionDS<br>GridLink_ATGSwitchingDS_A<br>GridLink_ATGSwitchingDS_B |

### Configure Commerce with cim.sh

Install the products, ensure the WebLogic Server and database environments are set, and set up the Commerce applications and instances. After starting `/u01/app/ATG/ATG11.1/home/bin/cim.sh` do the steps in the sections that follow.

#### *Product Selection*

For this test environment, choose the following options from the Commerce Configuration and Installation Manager (CIM):

- Products: `Oracle Commerce Reference Store` (option 9 on the products listing)
- AddOns: `Dedicated Lock Servers for Production only`
- `Switching Datasource`
- `Index By Sku`
- `Storefront Demo with full catalog`

#### *Application Server Selection*

1. Enter Path: `/u01/app/oracle_atg/product/fmw/Middleware/wlserver.`
2. Enter Domain Path: `/u01/app/wls/atgDomain/atg/atg_domain.`
3. Enter URL to admin server: `t3://scae01ec2-vip1:7001.`
4. Enter the WebLogic Admin username and password, and then validate.

### *Database Configuration*

These steps should be repeated for each required data source. Application datasource dependencies are calculated by CIM and displayed on the 'Select a Datasource to Configure' screen.

1. Select Database Type: `Oracle Thin`.
2. Enter User Name: `[PRODUCTION_SCHEMA_NAME]`.
3. Enter Password: `[PRODUCTION_SCHEMA_PASSWORD]`.
4. Enter Database Host Name: `[DB_SCAN_ADDRESS]`.
5. Enter Port Number: `1521` (Note: CIM does not understand the GridLink connection, and will not work. Please provide the corresponding TCP listener port and we will change the WLS datasources later in the process.)
6. Enter Database Name: `[ORACLE_SID]`.
7. Enter Database URL: The URL has been created for you, hit Enter to accept. e.g. `jdbc:oracle:thin:@scam08-scan3:1521:commaa1`.
8. Enter Driver Path: The absolute path to 'ojdbc7.jar' on your local system.
9. Enter JNDI name: Select the default.
10. Test Connection.
11. Create Schema.
12. Import Initial Data.
13. Repeat for other required data sources.

### *Instance Configuration*

Using CIM, configure one or more server instance types, including:

- Production Lock Server (should be more than one, but only two are allowed per Commerce environment)
- Production Server (one with Fulfillment, one with Process Editor Server, more depending on the size of the environment)
- Publishing Server (can be clustered for HA, contains an internal Lock Manager)

### *EAR Creation and Deployment*

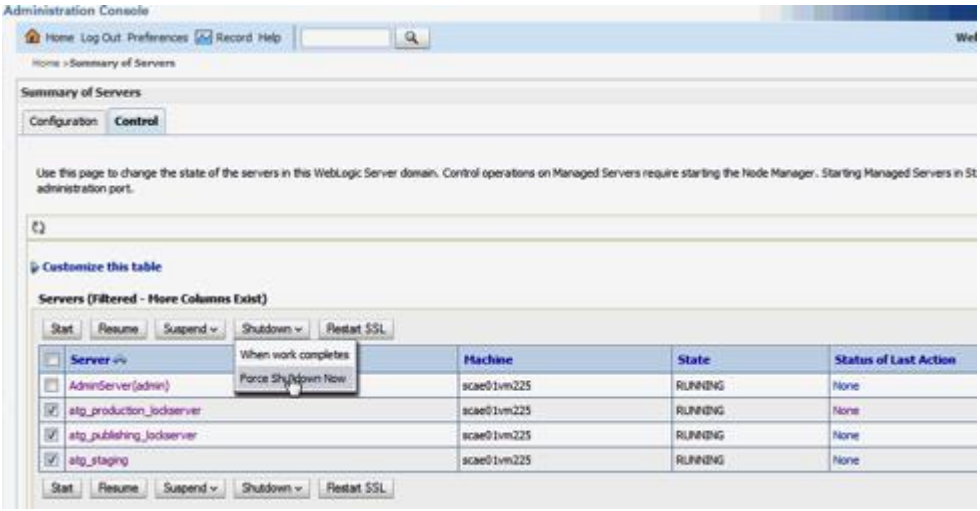
The final phase of CIM is the assembly and deployment of the required EAR application packages. In a production environment, EAR packages should be created as standalone with overwrite on existing packages for future package releases. Following Table 5, create and deploy the 3 required EAR types for the implementation.

## Post-Installation Configuration

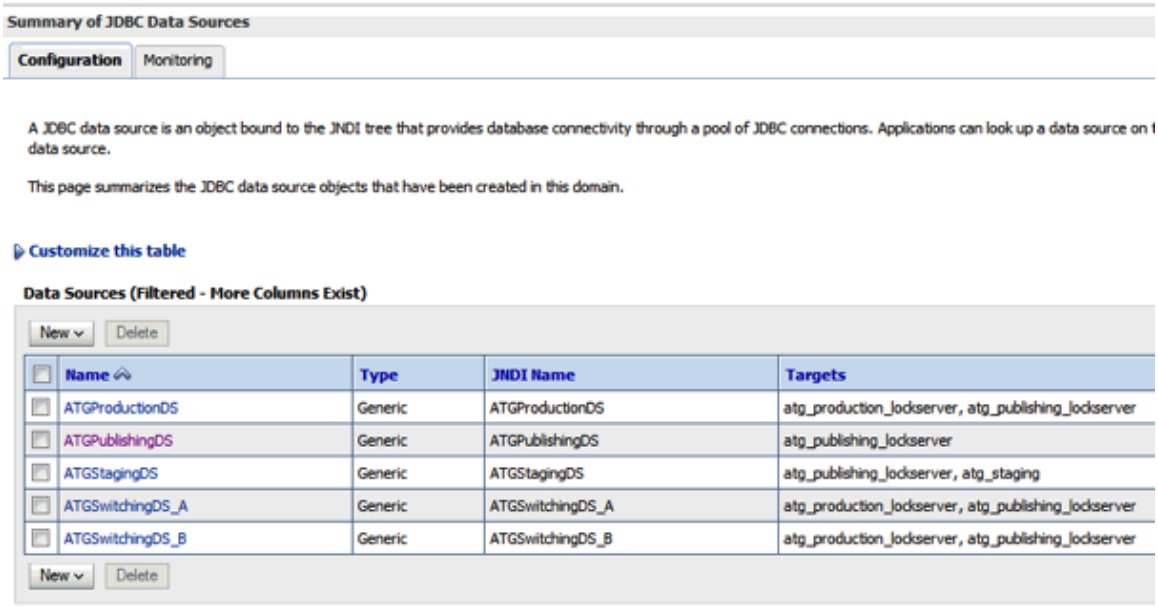
### *Configure GridLink Datasources*

Connect to the WebLogic Server Administration Console to configure the GridLink data sources for each Commerce Platform and Merchandising server, using Table 5 as a guide for the data source mapping.

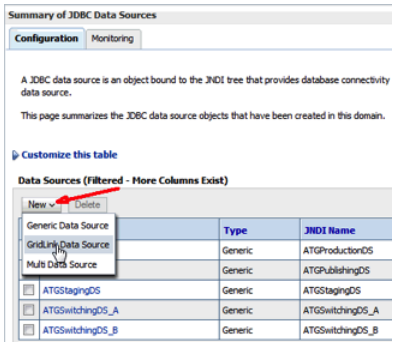
1. Stop the Commerce servers.



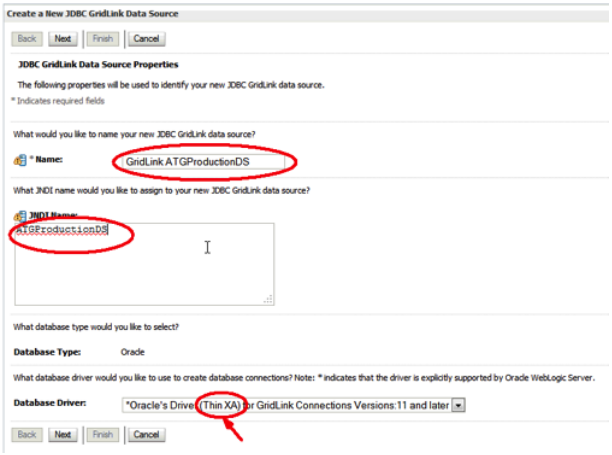

2. Go to Services / Data Sources to observe current data sources and their targets.



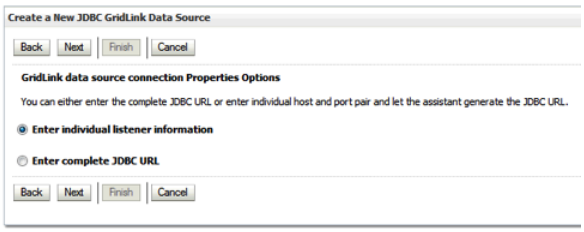
3. Create the new GridLink data sources, maintaining the same target associations.

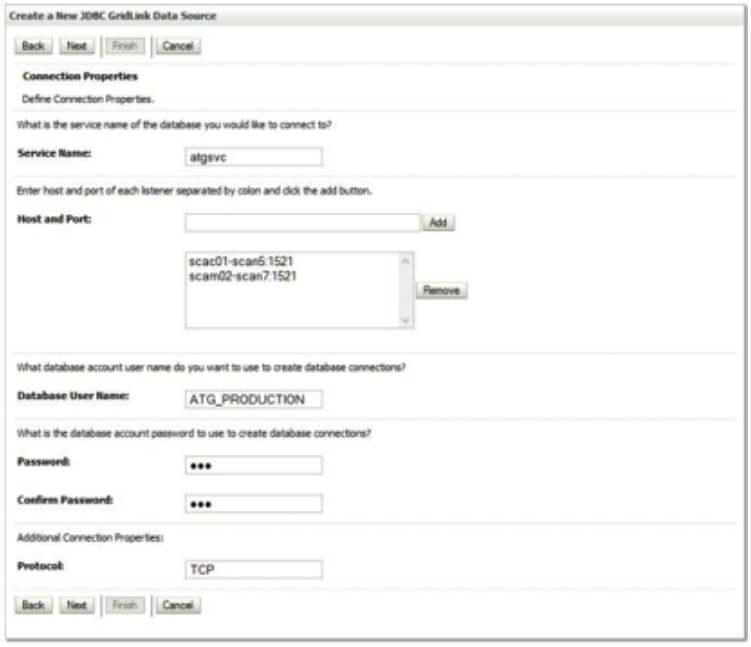



4. Enter a similar name prefixed by GridLink using the same JNDI name and Thin X.




5. For the initial Data Source select the **Enter individual listener** information option.



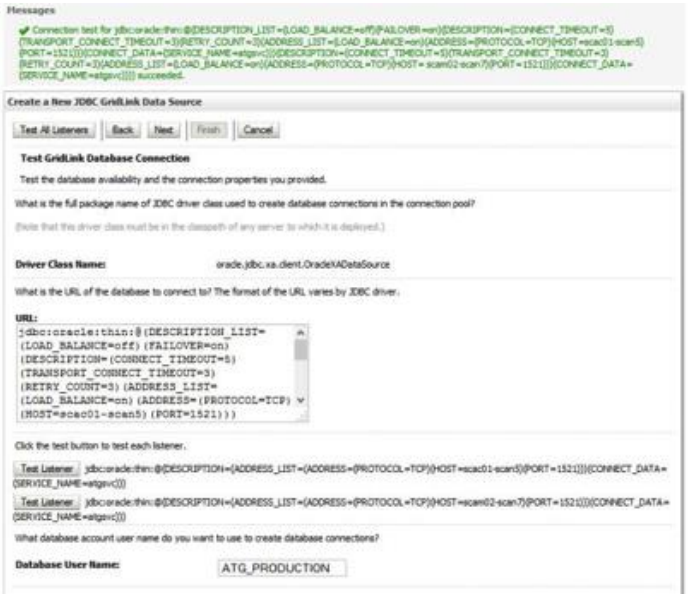



6. Edit the Connection URL as outlined in the "*Client Failover Best Practices for Highly Available Oracle Databases*" white paper.

   For example, to include the failover parameters and then Test All Listeners:

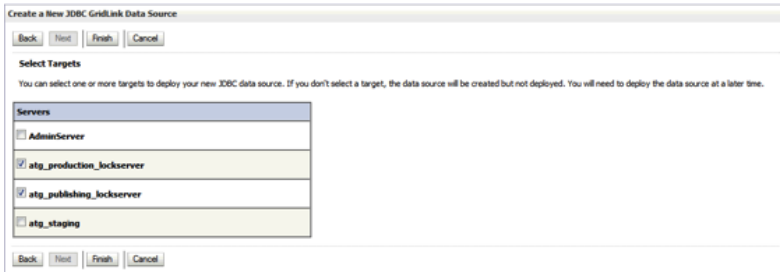
   ```
   jdbc:oracle:thin:@(DESCRIPTION=(FAILOVER=on)(CONNECT_TIMEOUT=1)(TRANSPORT_
   CONNECT_TIMEOUT=1)(RETRY_COUNT=3)(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(
   PROTOCOL=TCP)(HOST=scam08-
   scan3)(PORT=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=scao01-
   scan1)(PORT=1521)))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=comsvc)))
   ]
   ```

   The primary service at `scam08-scan3:1521` should test successfully.



7. ONS configuration does not need to be configured with XA GridLink datasources. It is handles automatically in 12*c*.

8. Select the associated target servers as identified in current data sources and their targets above.




9. Repeat the previous steps for each Data Source with the option to use the **Enter the complete JDBC URL** instead of the **Enter individual listener information** option. ONS information is the same for all of them.

10. Remove the old data sources, and review the remaining listing.

| Name | Type | JNDI Name |
|---|---|---|
| GridLink_ATGProductionDS | GridLink | ATGProductionDS |
| GridLink_ATGPublishingDS | GridLink | ATGPublishingDS |
| GridLink_ATGSwitchingDS_A | GridLink | ATGSwitchingDS_A |
| GridLink_ATGSwitchingDS_B | GridLink | ATGSwitchingDS_B |

11. Add the following to each Data Source's Connection Pool > Properties field:
`oracle.net.ns.SQLnetDef.TCP_CONNTIMEOUT_STR=3000`

### *Create the WebLogic Cluster*

See "*Understanding Cluster Configuration*" 12*c* (12.1.2) on how to configure a cluster. Clusters for Commerce should use multicast addressing as the method of communication between cluster members. The only Commerce server types to be clustered are Production servers. Server Lock Manager and Publishing server types are not clustered in WebLogic.

Once the cluster has been created, configuration of EAR deployments, data sources, and other WebLogic elements becomes easy, as you deploy to the cluster as a whole, instead of individual servers.

### *Set up Coherence Cluster*

Oracle Coherence is a mechanism by which repositories and web session state can be cached. This document will describe the configuration of HTTP session replication caching. See http://docs.oracle.com/cd/E52191_02/Platform.11-1/ATGInstallGuide/html/s1601appendixeusingoraclecoherenceweb01.html for information about the complete configuration of Commerce and Coherence. Additional configuration notes are as follows:

- As with WebLogic clustering, Coherence clustering should use multicast addressing as the method of communication between Coherence cluster members. The use of well-known addresses is also advised. See http://docs.oracle.com/middleware/1212/coherence/COHDG/cluster_setup.htm for more information about setting up a Coherence cluster.
- Java Arguments should include `-Dtangosol.coherence.distributed.localstorage=false` for all Commerce Production servers and `-Dtangosol.coherence.distributed.localstorage=true` for all Coherence cache servers. These arguments force the caching to be sent to the cache servers.
- Tune the Coherence cache server heap during performance testing. Commerce tends to push session data into the eden space and therefore, a large portion of the heap should be configured as eden space.

### *Set the Coherence Java Arguments*

Use the following Java arguments for each Coherence Cache Server / Client. Set them in the WebLogic Server Administration Console in each servers' `Configuration > Server Start` tab.

» Coherence Cache Server arguments:

```
-Dtangosol.coherence.role=CoherenceServer
-Dtangosol.coherence.cacheconfig=<PATH_TO_CACHE_CONFIG_FILE>
-Dcoherence-cache-delegator-
class=com.tangosol.coherence.servlet.LocalSessionCacheDelegator
-Dcoherence-preserve-attributes=true
-Dtangosol.coherence.session.localstorage=true
-Dtangosol.coherence.management.extendedmbeanname=true
-Dtangosol.coherence.management.remote=true
-Dtangosol.coherence.management.report.autostart=false
-Dtangosol.coherence.management.report.distributed=true
-Dtangosol.coherence.management=all
-Dtangosol.coherence.member=<WEBLOGIC_SERVER_NAME>
-Doracle.coherence.home=<PATH_TO_COHERENCE_HOME>
-Doracle.coherence.machine=<WEBLOGIC_MACHINE_NAME>
-Dcom.sun.management.jmxremote=true
-Dcom.sun.management.jmxremote.port=<JMX_PORT>
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
```

» Coherence Cache Client arguments:

```
-Dtangosol.coherence.role=<WEBLOGIC_SERVER_NAME>
-Dtangosol.coherence.localport.adjust=true
-Dtangosol.coherence.distributed.localstorage=false
-Dtangosol.coherence.management=local-only
-Dtangosol.coherence.management.extendedmbeanname=true
-Dtangosol.coherence.management.remote=true
-Dtangosol.coherence.member=<WEBLOGIC_SERVER_NAME>
-Doracle.coherence.home=<PATH_TO_COHERENCE_HOME>
-Doracle.coherence.machine=<WEBLOGIC_MACHINE_NAME>
-Dcom.sun.management.jmxremote=true
-Dcom.sun.management.jmxremote.port=<JMX_PORT>
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
```

### *Install WebLogic Software on All Other Host Machines*

If the installation is a Clone, then the WebLogic Binary home can be kept because it contains no machine specific references. Otherwise, software should be reinstalled.

### *Extend the WebLogic Domain*

Extend the WebLogic Server domain to the other hosts in the WebLogic configuration. See: "*Updating WebLogic Domains*" for doing this with the GUI.

1. On Machine 1, pack up the domain using the pack script in `$WL_HOME/common/bin/` *(example creates the template file on a common share).*

```
[oracle_atg@scan04cn21 atg]$ $WL_HOME/common/bin/pack.sh -
domain=/u01/app/wls/atgDomain/atg/atg_domain -
template=/u01/app/oracle_atg/data/installers/WLS_atg_domain.jar -
template_name=mytemplate -managed=true
<< read domain from "/u01/app/wls/atgDomain/atg/atg_domain"
>>  succeed: read domain from "/u01/app/wls/atgDomain/atg/atg_domain"
<< set config option Managed to "true"
>>  succeed: set config option Managed to "true"
<< write template to "/u01/app/oracle_atg/data/installers/WLS_atg_domain.jar"
>>  succeed: write template to
"/u01/app/oracle_atg/data/installers/WLS_atg_domain.jar"
<< close template
>>  succeed: close template
```

2. On Machine 2, unpack the domain using the `unpack.sh` script.

```
[oracle_atg@scan04cn22 atg]$ $WL_HOME/common/bin/unpack.sh -
template=/u01/app/oracle_atg/data/installers/WLS_atg_domain.jar -
domain=/u01/app/wls/atgDomain/atg/atg_domain
<< read template from "/u01/app/oracle_atg/data/installers/WLS_atg_domain.jar"
>>  succeed: read template from
"/u01/app/oracle_atg/data/installers/WLS_atg_domain.jar"
<< set config option DomainName to "atg_domain"
>>  succeed: set config option DomainName to "atg_domain"
<< write Domain to "/u01/app/wls/atgDomain/atg/atg_domain"
>>  succeed: write Domain to "/u01/app/wls/atgDomain/atg/atg_domain"
<< close template
>>  succeed: close template
```

3. Add all hosts which were extended as new Machines in the WebLogic domain.

### *Clone WebLogic Servers*

Once all Node Managers, Machines, Clusters, and Coherence clusters have been created, each of the managed server types (Commerce Production servers, Commerce Publishing servers, and Commerce Lock Manager servers) can be cloned in the WebLogic Server Administration Console. When a clone is performed, the newly created server clone takes on the configurations of the server which it was cloned from. See Table 3, Table 4, and Table 5 for all WebLogic domain configuration examples. Make sure to validate the following for each newly cloned managed server:

- Machine associated with managed server
- WebLogic cluster membership (if applicable)
- Coherence cluster membership (if applicable)
- EAR package deployment
- Datasource configuration

***Miscellaneous WebLogic Configurations***

» Create the file `META-INF/weblogic-application.xml` with the following contents, and add it to the crs.ear to change the session timeout to be 15 minutes.

```
<?xml version="1.0" encoding="UTF-8"?>
<weblogic-application xmlns="http://xmlns.oracle.com/weblogic/weblogic-
application"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://xmlns.oracle.com/weblogic/weblogic-application
http://xmlns.oracle.com/weblogic/weblogic-application/1.5/weblogic-
application.xsd">
   <session-descriptor>
      <timeout-secs>900</timeout-secs>
   </session-descriptor>
</weblogic-application>
```

» Add the location of the Commerce protocol.jar and JDBC driver ojdbc.jar to the `$DOMAIN_HOME/bin/setDomainEnv.sh` file as follows:

```
CLASSPATH="/u01/app/oracle_atg/data/lib/protocol.jar:${CLASSPATH}"; export
CLASSPATH
CLASSPATH="${CLASSPATH}:/u01/app/oracle_atg/data/lib/ojdbc7.jar"; export
CLASSPATH
```

» The following arguments/parameters/? are recommended arguments for the WebLogic managed servers. These would be configured in the Server Start tab.

```
-Xms6g
-Xmx6g
-XX:NewSize=3g
-XX:MaxNewSize=3g
-XX:PermSize=384m
-XX:MaxPermSize=384m
-XX:+UseLargePages
-XX:+DisableExplicitGC
-XX:+UseG1GC
-XX:ThreadStackSize=256
-Doracle.ons.maxconnections=4
-Dweblogic.resourcepool.max_test_wait_secs=30
```

» The following items are required configurations for Commerce Platform on WebLogic Server (for details see http://docs.oracle.com/cd/E52191_02/Platform.11-1/ATGInstallGuide/html/s0303oracleweblogic01.html ):

  » Add `<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>` to WebLogic Server domain config.xml as instructed.

  » Create `/u01/app/wls/atgDomain/atg/atg_domain/ATG-Data/localconfig/GLOBAL.properties` as instructed.

  » Configuration to remove redundant Commerce logging, as all logging is also output to the WebLogic Server `stdout log`:

    » Create `/u01/app/wls/atgDomain/atg/atg_domain/ATG-Data/localconfig/atg/dynamo/service/logging/logQueue.properties` with the following content:

```
logListeners^=Constants.null
```

- Miscellaneous WebLogic Server settings:
  - Follow https://www.sparkred.com/confluence/display/ALC/Application+Server to configure optimized settings for Data sources:
    - Increase the JTA Timeout value to `14400` sec
    - Check the Set XA Transaction Timeout for each of created DataSources for all but the GridLink-ATGPublishingDS DataSource
    - Set the XA Transaction Timeout value for each of created DataSources to `600` sec for all but the GridLink-ATGPublishingDS DataSource
  - Follow https://www.sparkred.com/confluence/display/ALC/Application+Server to configure optimized settings for CRS and BCC managed servers
    - Increase the Accept Backlog setting by 25% in the Configuration > Tuning tab until the CONNECTION_REFUSED errors disappear or are significantly reduced in the WebLogic plug-in logging on the Apache servers.
    - Increase the Login Timeout on Configuration > Tuning tab for each of created Servers from `5000` to `10000`
    - Increase the Complete Message Timeout on Protocols > General tab for each of created Servers to `300`
    - Increase the Duration on Protocols > HTTP tab for each of created Servers to `200`
    - Uncheck the `Enable Keepalives` option on Protocols > HTTP tab for each of created Servers
    - If using the WebLogic HTTP Plug-in, make sure that the "`WebLogic Plug-In Enabled`" setting is checked in the advanced section of the Configuration > General section of the WebLogic cluster or in each singleton WebLogic server (or in the main cluster for clustered managed servers)
  - Set Data source connection pools as follows:
    - Inital Capacity: `10` (for all)
    - Maximum Capacity: `50` (GridLinkATGProductionDS and GridLinkATGPublishingDS data sources)
    - Maximum Capacity: `40` (GridLinkATGSwitchingDS_A and GridLinkATGSwitchingDS_B data sources)
    - Minimum Capacity: `10` (for all)

***Configure Load Balancing***

In order to balance HTTP traffic to the WebLogic servers and to the Commerce Guided Search dgraph engines (MDEX), a load balancer must be put in place. As there are several different load balancer hardware and software products, this document does not cover any one way to configure load balancing requirements. A typical configuration will load balance:

- Web servers (if applicable)
- WebLogic Commerce Production servers
- Commerce Guided Search dgraph engines (MDEX)

***Precompiling the WebLogic Application EAR Packages***

With WebLogic Application Server, each server restart required the compiling of any Java applications embedded in a Commerce page at first access of the page. The way to avoid this compiling is to precompile the entire EAR package. This method can only be performed on an unpacked EAR package.

1. Add the weblogic.jar file to the CLASSPATH, either in an environment file or at the command line.
   ```
   export CLASSPATH=$CLASSPATH:$WL_HOME/server/lib/weblogic.jar
   ```
2. Run the following to precompile the EAR package:
   ```
   java weblogic.appc -verbose <EAR_PACKAGE_LOCATION>
   ```

### *Non-Standalone BCC Configuration*

When the BCC WebLogic server is moved to a remote host, the `Publishing` directory, which was created when running the file imports via CIM, needs to be copied or shared to the `atg.dynamo.data-dir` location of the BCC server. If the `Publishing` directory is not moved, any deployment which attempts to deploy file assets stored in the `Publishing` directory will fail.

### *Add IPv4 Preference*

Prepend the Java arguments to prefer IPv4 by editing the $WL_DOMAIN_HOME/bin/startWeblogic.sh script, adding the following into 3 lines within this script:

```
-Djava.net.preferIPv4Stack=true before -Dweblogic.Name
```

# Create the Standby Site

## Install and Configure Oracle Exadata Database Machine

In addition to the standard Oracle Exadata Database Machine installation guide/documentation/?, see these papers for best practices:

- "*MAA Best Practices for Oracle Exadata Database Machine (technical white paper)*"
- "*Best Practices for Database Consolidation on Oracle Exadata Database Machine*"

The standard Exadata configuration was deployed on the primary site. The Exadata Database Machine at the standby site is an X4-2 quarter rack with high performance disks.

You should have the complete database hardware configuration at this stage from whoever ran the OEDA utility.

The OS user, `oracle_atg`, and the Oracle software are installed per the environment detail described in Test Environment Details.

Just as was done on the primary, the Commerce database is installed into its own `ORACLE_HOME` location, separate from where the OEDA installed the initial database. Then perform the same software cloning procedure as in the Oracle GI installation.

*Note: Do not create a database on the standby server. Running the RMAN duplicate will create the entire database.*

## Create the Physical Standby Database

See the *Data Guard Concepts and Administration Guide* for complete details. Also see "*Creating a Standby using RMAN Duplicate (RAC or Non-RAC)",* MOS article 1617946.1 for a detailed description of how to create the standby database using RMAN duplicate.

### Prepare the Primary Database for Standby Creation

1. Enable forced logging.

```
SQL>  ALTER DATABASE FORCE LOGGING;
Database altered.
```

2. Add standby redo logs.

```
ALTER DATABASE ADD STANDBY LOGFILE THREAD 1 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 1 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 1 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 1 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 2 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 2 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 2 ('+RECO_SCAM08') size 2g;
ALTER DATABASE ADD STANDBY LOGFILE THREAD 2 ('+RECO_SCAM08') size 2g;
```

```
SQL>  SELECT GROUP#, BYTES FROM V$LOG;
GROUP#      BYTES
------------------------------
1    2147483648
2    2147483648
3    2147483648
4    2147483648

SQL>  SELECT GROUP#, BYTES FROM V$STANDBY_LOG;

GROUP#      BYTES
------------------------------
5    2147483648
6    2147483648
7    2147483648
8    2147483648
9    2147483648
10   2147483648
11   2147483648
12   2147483648
8 rows selected.
```

3. Add static SID entry to `listener.ora` on primary and standby in CRS.

```
(SID_DESC =
    (GLOBAL_DBNAME = commaa_dgmgrl)
    (ORACLE_HOME = /u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce)
    (SID_NAME = commaa1)

(ENVS="TNS_ADMIN=/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce/network/
admin")
 )
```

4. Restart the listener on the primary and the standby as the grid owner.

```
srvctl stop listener
srvctl start listener
```

5. Add static SID entry to `listener.ora` on standby in `ORACLE_HOME`.

```
LISTENER_duplicate =
 (DESCRIPTION_LIST =
  (DESCRIPTION =
   (ADDRESS = (PROTOCOL = TCP)
   (HOST = scao01adm01)
   (PORT = 1522)(IP = 10.128.17.45))))

SID_LIST_LISTENER_duplicate =
 (SID_LIST =
  (SID_DESC =
   (SID_NAME = commerce1)
   (ORACLE_HOME = /u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce)))
```

6. Start the static listener on the standby as the database owner.

```
lsnrctl start listener_duplicate
```

7. Add connect descriptors to `tnsnames.ora` on primary and standby for all databases.

```
COMMAA_scam08 =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = scam08-scan3)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = comsvc)
    )
  )

commaa_scam08_static =
  (DESCRIPTION =
    (ADDRESS =
      (PROTOCOL = TCP)
      (HOST =scam08db03)
      (PORT = 1521))
        (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SID = commaa1)
    )
  )
```

8. Check and set Data Guard related parameter by running a SQL script similar to the following example to see the current settings.

```
cat listDG.sql
set linesize 220
select name||'='||value
from v$parameter
where name in ('db_name',
'db_unique_name',
'log_archive_config',
'log_archive_dest_1',
'log_archive_dest_state_1',
'log_archive_dest_2',
'log_archive_dest_state_2',
'fal_server',
'fal_client',
'dg_broker_config_file1',
'dg_broker_config_file2',
'dg_broker_start',
'REMOTE_LOGIN_PASSWORDFILE',
'LOG_ARCHIVE_FORMAT',
'LOG_ARCHIVE_MAX_PROCESSES')
order by 1;
```

```
SQL> @listDG
NAME||'='||VALUE
--------------------------------------------------------------------------------
--
db_name=commaa
db_unique_name=commaa_scam08
dg_broker_config_file1=+DATA_SCAM08/COMMAA_SCAM08/dr1.dat
dg_broker_config_file2=+DATA_SCAM08/COMMAA_SCAM08/dr2.dat
dg_broker_start=FALSE
fal_client=commaa_scao01
fal_server=commaa_scam08
log_archive_config=dg_config=(commaa_scao01,commaa_scam08)
log_archive_dest_1=location=USE_DB_RECOVERY_FILE_DEST
log_archive_dest_2=
log_archive_dest_state_1=enable
log_archive_dest_state_2=ENABLE

12 rows selected.
```

9. Use the "`alter system set <parameter_name>=<parameter_value>`" command to set the parameters.

   E.g. `alter system set log_archive_dest_1='location=USE_DB_RECOVERY_FILE_DEST'`

10. Enable archive logging, flashback database and force logging.

```
srvctl stop database -d commaa_scam08
sqlplus / as sysdba
startup mount
alter database archivelog;
alter database flashback on;
alter database open;
alter database force logging;
srvctl start database -d commaa_scam08
```

**Prepare the Standby**

1. Create the standby password file to match that of the password used by the primary.

```
orapwd file=$ORACLE_HOME/dbs/orapwcommaa1 password=<password>
```

2. Set up the `init.ora` file and environment.

```
cat initTMP.ora
db_name=commaa
db_unique_name=commaa_scao01
sga_target=6G

[oracle_atg@scao01adm01 dbs]$ eora
ORACLE_DB=commaa_scao01
ORACLE_SID=commaa1
ORACLE_BASE=/u01/app/oracle_atg
ORACLE_HOME=/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce
```

3. Run startup nomount on the standby.

```
[oracle_atg@scao01adm01 dbs]$ sq
SQL*Plus: Release 12.1.0.2.0 Production on Thu May 23 17:19:43 2013
Copyright (c) 1982, 2011, Oracle.  All rights reserved.
Connected to an idle instance.

SQL> startup nomount pfile='?/dbs/initTMP.ora'
```

4. Check the current primary settings and reset if needed.

```
select name,value from v$parameter where name like '%convert%';

NAME                      VALUE
------------------------------------------------------------------------------
db_file_name_convert      +DATAC1, +DATA_SCAM08, +RECOC1, +RECO_SCAM08
log_file_name_convert     +DATAC1, +DATA_SCAM08, +RECOC1, +RECO_SCAM08
```

5. File conversion should be set as follows on the primary:

```
alter system set db_file_name_convert='<primary data disk group>', '<standby
data disk group>', '<primary reco disk group>', '<standby reco disk group>'
scope=spfile;
alter system set log_file_name_convert='<primary data disk group>', '<standby
data disk group>', '<primary reco disk group>', '<standby reco disk group>'
scope=spfile;
```

e.g.

```
alter system set
db_file_name_convert='+DATA_SCAM08/COMMAA_SCAM08','+DATAC1/COMMAA_SCAO01','+RE
CO_SCAM08/COMMAA_SCAM08','+RECOC1/COMMAA_SCAO01' scope=spfile;
alter system set
log_file_name_convert='+DATA_SCAM08/COMMAA_SCAM08','+DATAC1'/COMMAA_SCAO01,'+R
ECO_SCAM08/COMMAA_SCAM08','+RECOC1/COMMAA_SCAO01' scope=spfile;
```

6. Unset the cluster_interconnects on the primary, if they are set, and restart the database.

```
alter system reset cluster_interconnects scope=spfile sid='commaa1';
alter system reset cluster_interconnects scope=spfile sid='commaa2';
```

### Create the Standby Using RMAN Duplicate

7. Run `chkconfig database -d [STBY_DB_NAME]` to make sure the standby? has not registered with CRS. If it has registered, remove it with `srvctl remove database -d [STBY_DB_NAME].`

8. Run "RMAN Duplicate" on the primary to create the remote standby database.

```
export NLS_LANG=American_America.UTF8
export NLS_DATE_FORMAT="MM/DD/YYYY HH24:MI:SS"

rman target sys/welcome1@commaa_scam08_STATIC auxiliary
sys/welcome1@COMMAA_SCAO01_STATIC | tee -a rmanDupStbyLog_`date
+%Y%m%d_%H%M%S`.log

Recovery Manager: Release 12.1.0.2.0 - Production on Tue Jan 15 14:51:26 2013

connected to target database: COMMAA (DBID=1051405088)
connected to auxiliary database: COMMAA (not mounted)

RMAN>
run {
  allocate channel prmy1 type disk;
  allocate channel prmy2 type disk;
  allocate channel prmy3 type disk;
  allocate channel prmy4 type disk;
  allocate auxiliary channel stby type disk;
  duplicate target database for standby from active database
  spfile
parameter_value_convert='+DATA_SCAM08/COMMAA_SCAM08','+DATAC1/COMMAA_SCAO01','+RECO_SCAM08/COMM
AA_SCAM08','+RECOC1/COMMAA_SCAO01'
    set cluster_database='false'
    set
db_file_name_convert='+DATA_SCAM08/COMMAA_SCAM08','+DATAC1/COMMAA_SCAO01','+RECO_SCAM08/COMMAA_
SCAM08','+RECOC1/COMMAA_SCAO01'
    set db_unique_name='COMMAA_SCAO01'
    set db_create_online_log_dest_1='+DATAC1'
    set db_create_file_dest='+DATAC1'
    set db_recovery_file_dest='+RECOC1'
    set
log_file_name_convert='+DATA_SCAM08/COMMAA_SCAM08','+DATAC1/COMMAA_SCAO01','+RECO_SCAM08/COMMAA
_SCAM08','+RECOC1/COMMAA_SCAO01'
    set control_files='+DATAC1'
    set local_listener='scam08-scan3:1521'
    set remote_listener='scao01adm01:1522';
}
```

9. Once the duplicate completes, set the cluster_interconnects on the primary and restart the database.

```
alter system set cluster_interconnects='192.168.218.130' scope=spfile
sid='commaa1';
alter system set cluster_interconnects='192.168.218.131' scope=spfile
sid='commaa2';
```

10. Stop the static listener on the standby and rename the `listener.ora` file.

```
lsnrctl stop listener_duplicate
mv $ORACLE_HOME/network/admin/listener.ora
$ORACLE_HOME/network/admin/listener.ora.duplicate
```

### Complete Standby Post "RMAN Duplicate" Steps

At this stage the new standby database is mounted.

1. Create the database spfile in ASM.

   Note that the second location in the ASM directory specification is the same as the standby database DB_UNIQUE_NAME parameter setting, COMMAA_SCAO01.

```
SQL> create pfile='/tmp/pfile' from spfile;
File created.
SQL> create spfile='+DATAC1/COMMAA_SCAO01/parameterfile/spfilecommaa1.ora'
from  pfile='/tmp/pfile';
File created.
```

2. Create the database startup file.

```
cat $ORACLE_HOME/dbs/initcommaa1.ora
SPFILE='+DATAC1/commaa_scao01/parameterfile/spfilecommaa.ora'
```

3. Add the database to the RAC Cluster Registry (OCR).

```
srvctl add database -d commaa_scao01 -o
/u01/app/oracle_atg/product/12.1.0.2/dbhome_commerce -a "DATAC1,RECOC1"
srvctl add instance -d commaa_scao01 -i commaa1 -n scao01adm01
srvctl add instance -d commaa_scao01 -i commaa2 -n scao01adm02
```

4. Convert the new standby database to a physical_standby.

```
srvctl modify database –d commaa_scao01 –r physical_standby
```

5. Setup instance 2 and the other RAC node.

```
[oracle_atg@scao01adm02 dbs]$ scp scao01adm01:`pwd`/initcommaa1.ora
initcommaa2.ora
[oracle_atg@scao01adm02 dbs]$ scp scao01adm01:`pwd`/orapwcommaa1 orapwcommaa2
```

6. Remove the RMAN generated spfile on the standby.

```
[oracle_atg@scao01adm01 dbs]$ rm $ORACLE_HOME/dbs/spfilecommaa1.ora
```

7. Mount the standby.

   This will pick up the new spfile from ASM now.

```
SQL> shutdown abort
srvctl start database -d commaa_scao01 -o mount
srvctl status database -d commaa_scao01

Instance commaa1 is running on node scao01adm01
Instance commaa2 is running on node scao01adm02
```

8. Enable Oracle RAC for the next startup.

```
SQL> alter system set cluster_database=true scope=spfile;
```

9. Drop extra multiplexed SRLs from +DATA* that are created.

```
set pages 0 head off feedback off lines 150 echo off termout off verify off
select 'alter database drop standby logfile member ' || chr(39) || member ||
chr(39) || ';'
from v$logfile
where type='STANDBY'
and member like '+DATA%'
spool dropSRL.sql
/
spool off

# cat dropSRL.sql
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_5.1148.804854425';
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_6.1149.804854427';
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_7.1150.804854431';
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_8.1151.804854435';
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_9.1152.804854439';
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_10.1153.804854443';
alter database drop standby logfile member
'+DATAC1/commaa_scao01/onlinelog/group_11.1141.804854445';

@dropSRL
```

10. Run the following statements if an SRL is active.

```
SQL> alter system set standby_file_management='MANUAL' ;
System altered.

alter database clear logfile group n;
```

11. Re-execute the "alter database drop standby logfile member ..." command(s) that failed.

```
SQL>alter system set standby_file_management='AUTO' ;
System altered.
```

12. If the “alter database drop standby logfile member” commands still fail then defer redo transport on the primary.

```
alter system set log_Archive_Dest_state_2=defer
```

Re-execute the "alter database drop standby logfile member ..." command(s) that failed. If the extra SRLs in the DATA diskgroup do not get dropped it’s not critical and you can proceed.

13. Re-enable redo transport from the primary.

```
alter system set log_Archive_Dest_state_2=enable
```

## Create the Role-Based Services

1. As user `oracle_atg` on scao01adm01 (the standby) Make sure the DBMS_SERVICE.CREATE_SERVICE was run on the Primary for each role-based service (See "*DBMS_SERVICE.CREATE_SERVICE*").

```
srvctl add service -d commaa_scam08 -s comsvc -r commaa1,commaa2 -l PRIMARY -q
FALSE -e NONE -m NONE -w 0 -z 0
srvctl add service -d commaa_scam08 -s comsvc_tst -r commaa1,commaa2 -l
SNAPSHOT_STANDBY -q FALSE
-e NONE -m NONE -w 0 -z 0
srvctl add service -d commaa_scao01 -s comsvc_stby -r commaa1,commaa2 -l
PHYSICAL_STANDBY -q FALSE -e NONE -m NONE -w 0 -z 0
```

2. The standby services were started and stopped on the standby so that the service definitions are created in the database and then synchronized to the standby. As user `oracle_atg` on scam08db03:

```
srvctl start service -d commaa -s comsvc
srvctl stop service -d commaa -s comsvc
srvctl start service -d commaa -s comsvc_tst
srvctl stop service -d commaa -s comsvc_tst
srvctl start service -d commaa -s comsvc_stby
srvctl stop service -d commaa -s comsvc_stby
```

## Test Redo Log Transport

1. Verify the primary and standby database Data Guard related parameter settings.

   Use a script similar to the one used earlier (see listDG).

```
SQL> @listDG
NAME||'='||VALUE
--------------------------------------------------------------------------------
db_name=commaa
db_unique_name=commaa_scao01
dg_broker_config_file1=+DATA_SCAM08/COMMAA_SCAM08/dr1.dat
dg_broker_config_file2=+DATA_SCAM08/COMMAA_SCAM08/dr2.dat
dg_broker_start=FALSE
fal_client=COMMAA_scam08
fal_server=COMMAA_scao01
log_archive_config=dg_config=(commaa_scam08,commaa_scao01)
log_archive_dest_1=location=USE_DB_RECOVERY_FILE_DEST
log_archive_dest_2=service="commerce_scao01", ASYNC NOAFFIRM
valid_for=(online_logfile,all_roles) db_unique_name="commerce_scao01" #Primary
log_archive_dest_2=service="commaa_scam08", ASYNC NOAFFIRM
valid_for=(online_logfile,all_roles) db_unique_name="commaa_scam08" #Standby
log_archive_dest_state_1=enable
log_archive_dest_state_2=ENABLE

12 rows selected.
```

2. Start managed recovery on the standby database.

   a. Ensure the standby is mounted.

```
SQL> shutdown abort

srvctl start database -d commaa_scao01 -o mount
srvctl status database -d commaa_scao01

Instance commaa1 is running on node scao01adm01
Instance commaa2 is running on node scao01adm02
```

   b. Start managed recovery on the standby.

   While monitoring the primary and standby database alert logs start managed recovery with the command:

```
recover managed standby database through all switchover using current logfile
disconnect
```

3. While continuing to monitor the database alert logs on the primary and the standby switch redo logs on the primary.

```
alter system archive log current;
```

   You should see messages on the primary similar to this:

```
Mon Sep 23 12:11:20 2013
ALTER SYSTEM ARCHIVE LOG
Mon Sep 23 12:11:21 2013
Thread 1 advanced to log sequence 11 (LGWR switch)
  Current log# 1 seq# 11 mem# 0:
+DATA_SCAM08/commaa_scam08/onlinelog/group_1.283.800092133
  Current log# 1 seq# 11 mem# 1:
+RECO_SCAM08/commaa_scam08/onlinelog/group_1.260.800092135
Mon Sep 23 12:11:22 2013
LNS: Standby redo logfile selected for thread 1 sequence 11 for destination
LOG_ARCHIVE_DEST_2
```

   And on the stanby alert log something like this.

```
Mon Sep 23 12:11:22 2013
Media Recovery Log
+RECOC1/commaa_scao01/archivelog/2013_09_23/thread_1_seq_10.1084.826891883
Media Recovery Waiting for thread 1 sequence 11 (in transit)
Recovery of Online Redo Log: Thread 1 Group 5 Seq 11 Reading mem 0
  Mem# 0: +DATAC1/commaa_scao01/onlinelog/group_5.1036.826884085
  Mem# 1: +RECOC1/commaa_scao01/onlinelog/group_5.2181.82688408
```

### Set Up the Database Best Practices

Ensure that the MAA database best practices are implemented.

### Enable Flashback Database on Standby

As user `oracle_atg` on scam08db03:

```
sqlplus / as sysdba <<EOF
recover managed standby database cancel
alter database flashback on;
EOF
```

### Configure and Start Data Guard Broker

1. On Primary and Standby as user `oracle_atg`:

   a. Primary:

   ```
   alter system set dg_broker_config_file1='+DATA_SCAM08/commaa_scam08/dr1.dat'
   scope=both;
   alter system set dg_broker_config_file2='+DATA_SCAM08/commaa_scam08/dr2.dat'
   scope=both;
   alter system set dg_broker_start=true scope=both;
   ```

   b. Standby:

   ```
   alter system set dg_broker_config_file1='+DATAC1/commaa_scao01/dr1.dat'
   scope=both;
   alter system set dg_broker_config_file2='+DATAC1/commaa_scao01/dr2.dat'
   scope=both;
   alter system set dg_broker_start=true scope=both;
   ```

2. On Primary as user `oracle_atg`:

```
dgmgrl sys/WELCOME1
create configuration 'com_dg' as
primary database is 'commaa_scam08'
connect identifier is COMMAA_scam08;
add database 'commaa_scao01' as
connect identifier is COMMAA_scao01
maintained as physical;
enable configuration;
```

### Validate Standby Operation

```
dgmgrl -silent << EOF
show configuration verbose;
show database commaa_scam08
show database commaa_scao01

EOF
  Properties:
    FastStartFailoverThreshold      = '30'
    OperationTimeout                = '30'
    FastStartFailoverLagLimit       = '30'
    CommunicationTimeout            = '180'
```

```
    FastStartFailoverAutoReinstate  = 'TRUE'
    FastStartFailoverPmyShutdown    = 'TRUE'
    BystandersFollowRoleChange      = 'ALL'
Fast-Start Failover: DISABLED

Configuration Status: SUCCESS

[oracle_atg@scam08db03 ~]$ dgmgrl -silent / <<EOF
> show configuration verbose;
> show database commaa_scam08
> show database commaa_scao01
> EOF

Configuration - com_dg

  Protection Mode: MaxPerformance
  Databases:
    commaa_scam08      - Primary database
    commaa_scao01 - Physical standby database

  Protection Mode: MaxPerformance
  Databases:
    commaa_scam08      - Primary database
    commaa_scao01 - Physical standby database

  Properties:
    FastStartFailoverThreshold      = '30'
    OperationTimeout                = '30'
    FastStartFailoverLagLimit       = '30'
    CommunicationTimeout            = '180'
    FastStartFailoverAutoReinstate  = 'TRUE'
    FastStartFailoverPmyShutdown    = 'TRUE'
    BystandersFollowRoleChange      = 'ALL'
Fast-Start Failover: DISABLED

Configuration Status: SUCCESS

Database - commaa_scam08

  Role:            PRIMARY
  Intended State:  TRANSPORT-ON
  Instance(s):
    commaa1
    commaa2

Database Status: SUCCESS

Database - commaa_scao01

  Role:            PHYSICAL STANDBY
  Intended State:  APPLY-ON
  Transport Lag:   0 seconds
  Apply Lag:       0 seconds
  Real Time Query: OFF
  Instance(s):
    commaa1 (apply instance)
    commaa2

Database Status: SUCCESS
```

## Install Exalogic

» Review the "*Oracle Fusion Middleware Exalogic Enterprise Deployment Guide*"

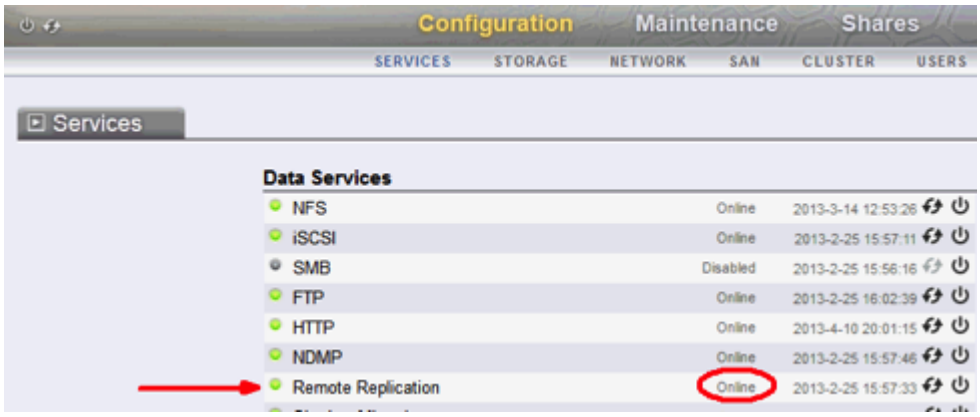
» See mainly chapter 3: Network, Storage, and Database Preconfiguration

## Set Up ZFS Replication for Applications Tier DR

### Configure Replication for the Project

1. Ensure the replication service is set up.

2. Go to Configuration > Services and verify that the Replication service is online.

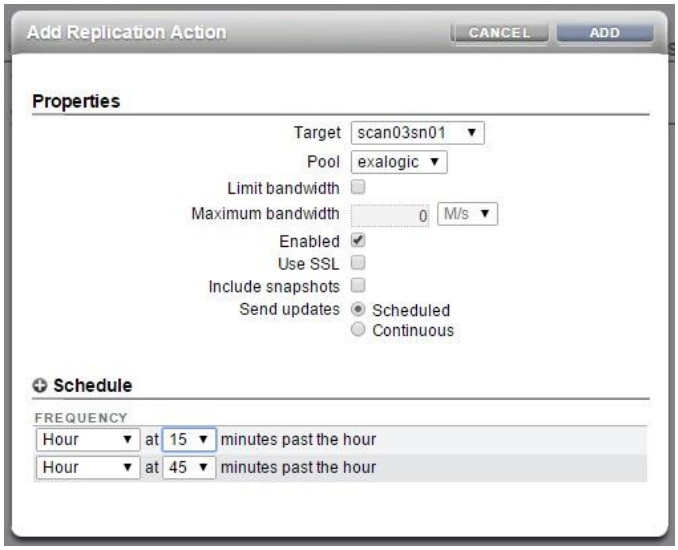


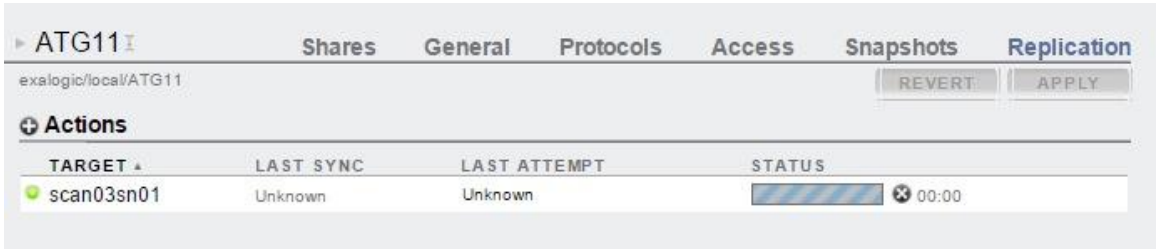

3. Add the replication target if necessary.

4. Click on the replication service shown in the above graphic.

5. Ensure you choose the virtual host that floats to the active ZFS clustered head.

6. Turn on replication for the Project.




### Verify That the Shares Are Being Replicated

Log on to the target ZFS and look at replicas.

## Create Exalogic Servers

Just as in "*Configure Exalogic Servers*", the following procedure creates disaster recovery servers or vServers for the primary Servers.

See the "*Oracle Exalogic Elastic Cloud Administrator's Guide*" for complete details. At this stage any necessary users and roles are created.

For vServers, log in to the Enterprise Manager Ops Center (EMOC) as the vDC owner and follow these steps:

1. Create Exalogic vServer types.
2. Create Exalogic distribution groups.
3. Create the vServers specifing the correct vServer type and distribution group. Also, choose the correct networks so that each vServer has ZFS access.
4. Create the `oracle_atg` OS user.
5. Configure the vServer OS settings per the steps at Configure OS for WebLogic/Commerce.
6. Set the WebLogic Environment Variables.

## Disaster Recovery Host Aliasing

In a Disaster Recovery topology, the production site host names must be resolvable to the IP addresses of the corresponding peer systems at the standby site. Therefore, it is important to plan the host names for the production site and standby site. After a role transition (failover or switchover) from a primary site to a standby site, the alias host names for the application tier hosts on the standby site become active. You do not need to reconfigure hostnames for the hosts on the standby site because you setup aliases on the standby site.

Also see *Network Considerations* and *Planning Host Names* in the "*Oracle® Fusion Middleware Disaster Recovery Guide*"**.**

How the host alias is set up depends on whether your DNS configuration is separate (where the production site and the standby site have their own DNS servers) or you have a single global DNS server. For examples of each see Section 3.1.1.1.3, *Resolving Host Names Using Separate DNS Servers* and Section 3.1.1.1.4, *Resolving Host Names Using a Global DNS Serve*" in the "*Oracle® Fusion Middleware Disaster Recovery Guide*"**.**

In this case study a single(global) DNS server is in use so the disaster recovery site `/etc/hosts` files had to be updated with host aliases as detailed in**Error! Reference source not found.**. **Note that for Commerce Platform, he ordering of the host name in the /etc/hosts file is important and the primary fully qualified hostname must be first.** This ordering is a requirement of the Commerce Platform Scenario Manager, Internal Scenario Manager and Workflow Process Manager.

**Sample DR /etc/hosts**

```
#Host Listing for Oracle Commerce Failover
10.133.219.197 scan03vm0059-eoib1.us.oracle.com scan03vm0063-
eoib1.us.oracle.com scan04cn21.us.oracle.com scan04cn21 scan03vm0059-eoib1
scan03vm0063-eoib1 scan03vm0063-eoib1.us.oracle.com scan03vm0063-eoib1
10.133.219.198 scan03vm0060-eoib1.us.oracle.com scan03vm0064-
eoib1.us.oracle.com scan04cn22.us.oracle.com scan04cn22 scan03vm0060-eoib1
scan03vm0064-eoib1 scan03vm0064-eoib1.us.oracle.com scan03vm0064-eoib1
10.133.219.199 scan03vm0061-eoib1.us.oracle.com scan04cn23.us.oracle.com
scan04cn23 scan03vm0061-eoib1
10.133.219.200 scan03vm0062-eoib1.us.oracle.com scan04cn24.us.oracle.com
scan04cn24 scan03vm0062-eoib1
10.133.219.197 scae01ec2-vip1.us.oracle.com scae01ec2-vip1
```

### Update DR Hosts With ZFS Replica Mount Points

On the application tier need to ensure that the primary replicated file systems are used on the corresponding nodes in preparation for role transitions. Update the `/etc/fstab` to match the primary settings.

### Set the DR WebLogic Environment Variables

See Set the WebLogic Environment Variables.

### Set Up the Standby Load Balancer

See "Configure Load Balancing".

## Site Test

The key elements for the Sit test are:

- The load balancer on site 2 was configured in the same way as site 1
- The standby site has host aliases
- The GridLink data sources point to the new snapshot standby database service

### Create an Alternate Set of WebLogic Server JDBC Files

In preparation for the Site Test, create a set of JDBC files that use the snapshot standby database service, **comsvc_tst**. These will be used via the ZFS replication and the Site Test ZFS clone.

1. On the primary WLS Admin server, navigate to `$WL_DOMAIN_HOME (/u01/app/wls/atgDomain/atg/atg_domain)` on the WLS Admin server and copy all files in the jdbc directory, as new IDs (repeat with each of the 4 JDBC files):

```
cp GridLink_ATGProductionDS-0829-jdbc.xml GridLink_ATGProductionDS-0904-
jdbc.xml
```

2. Edit the newly created files, replacing the service_name in the <url> tag of comsvc, with the snapshot standby service_name, comsvc_tst:

```
<url>jdbc:oracle:thin:@(DESCRIPTION=(FAILOVER=on)(CONNECT_TIMEOUT=1)(TRANSPORT
_CONNECT_TIMEOUT=1)(RETRY_COUNT=3)(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(PRO
TOCOL=TCP)(HOST=scam02-scan7)(PORT=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=scam08-
scan3)(PORT=1521)))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=comsvc_tst)))
</url>
```

3. Copy the Admin `$WL_DOMAIN_HOME/config/config.xml` as `$WL_DOMAIN_HOME/config/config.xml/stby`:

```
cp /u01/app/wls/atgDomain/atg/atg_domain/config/config.xml
/u01/app/wls/atgDomain/atg/atg_domain/config/config.xml.stby
```

4. Edit `the /u01/app/wls/atgDomain/atg/atg_domain/config/config.xml.stby`, replacing the Production JDBC config files with the standby config files:

```
<jdbc-system-resource>
  <name>GridLink_ATGProductionDS</name>
  <target>CRS-Cluster,scan03vm0059-eoib1-slm01,scan03vm0060-eoib1-
slm01,scan03vm0059-eoib1-bcc01,scan03vm0060-eoib1-bcc01</target>
  <descriptor-file-name>jdbc/GridLink_ATGProductionDS-0904-
jdbc.xml</descriptor-file-name>
</jdbc-system-resource>
<jdbc-system-resource>
  <name>GridLink_ATGPublishingDS</name>
  <target>scan03vm0059-eoib1-bcc01,scan03vm0060-eoib1-bcc01</target>
  <descriptor-file-name>jdbc/GridLink_ATGPublishingDS-0904-
jdbc.xml</descriptor-file-name>
</jdbc-system-resource>
<jdbc-system-resource>
  <name>GridLink_ATGSwitchingDS_A</name>
  <target>CRS-Cluster,scan03vm0059-eoib1-bcc01,scan03vm0060-eoib1-
bcc01</target>
  <descriptor-file-name>jdbc/GridLink_ATGSwitchingDS_A-0904-
jdbc.xml</descriptor-file-name>
```

```
</jdbc-system-resource>
<jdbc-system-resource>
  <name>GridLink_ATGSwitchingDS_B</name>
  <target>CRS-Cluster,scan03vm0059-eoib1-bcc01,scan03vm0060-eoib1-
bcc01</target>
  <descriptor-file-name>jdbc/GridLink_ATGSwitchingDS_B-0904-
jdbc.xml</descriptor-file-name>
</jdbc-system-resource>
```

### Convert the Standby Database to a Snapshot Standby

Use Data Guard Broker to convert the standby database to a snapshot standby, for example:

```
dgmgrl sys/welcome1 <<EOF
convert database commaa_scao01 to snapshot standby
EOF
```

The database service that was configured for snapshot standby mode (comsvc_tst) under "Create the role-based services" will be started automatically.

### Create a File System Clone

1. Log into ZFS BUI on standby.
2. Select the REPLICA project, for example "`scan04sn01: ATG11`".
3. Select the "Replication" tab.
4. Hit the "Clone most recently received project snapshot" icon (labeled with the + sign).
5. Enter the new project name, for example "`ATG_tst`".
6. Enter an override mount point "`/export/ATG_tst`".
7. Hit CONTINUE.
8. Select the new LOCAL project - ATG_tst.

### Mount the WebLogic Server and Commerce File System Clone

1. On each Commerce server, edit the `/etc/fstab` file to point to the cloned file system and mount on the appropriate mount point, replacing `/export/ATG` with `/export/ATG_tst`, for example:

```
172.17.0.9:/export/ATG_tst /u01/app/oracle_atg/product/fmw nfs4
rw,bg,hard,nointr,rsize=131072,wsize=131072
```

We have accomplished this, by creating an alternate `/etc/fstab` file, which contains the cloned share mount points, and swapping it when required.

```
mv /etc/fstab /etc/fstab.orig
mv /etc/fstab.stby /etc/fstab
```

2. As `root`, umount the file old systems and mount the new file systems:

```
umount /u01/app/wls/atgDomain/admin
umount /u01/app/oracle_atg/product/fmw
umount /u01/app/wls/atgDomain/atg
umount /u01/app/oracle_atg/data
mount /u01/app/wls/atgDomain/admin
mount /u01/app/oracle_atg/product/fmw
mount /u01/app/wls/atgDomain/atg
mount /u01/app/oracle_atg/data
```

**Note, the same mount points are used for primary operation so the Commerce configuration does not need to be changed.*

### Change the WebLogic Server config.xml File

Change the WLS `config.xml` to the Alternate Standby Version that was previously created in Create an alternate set of WLS JDBC files.

```
cp /u01/app/wls/atgDomain/admin/atg_domain/config/config.xml
/u01/app/wls/atgDomain/admin/atg_domain/config/config.xml.orig
cp /u01/app/wls/atgDomain/admin/atg_domain/config/config.xml.stby
/u01/app/wls/atgDomain/admin/atg_domain/config/config.xml
```

### Failover and Start the WebLogic Server Admin listen address

1. Create a host alias and add the following line to `/etc/hosts` on the standby WebLogic Server Administration node:

```
10.133.219.197 scae01ec2-vip1.us.oracle.com scae01ec2-vip1
```

### Commerce Platform Startup and Test

Start up the Commerce Platform applications using the regular process and begin Commerce application testing.

## Site Test to Standby

### Shut Down Commerce Applications

» Shut down Commerce applications on the standby site using the regular process.

### Convert the Standby to a Physical Standby

» Use the Data Guard Broker to convert the snapshot standby database to a physical standby, for example:

```
dgmgrl sys/welcome1 <<EOF
convert database commaa_scao01 to physical standby
EOF
```

### Unmount the File Systems

1. As `root`, unmount the cloned Commerce File System used for testing on each server, for example:

   ```
   umount /u01/app/oracle_atg/product/fmw
   ```

2. Restore the original `/etc/fstab` file on each server so that you are ready for primary operation when necessary,

   ```
   mv /etc/fstab.orig /etc/fstab
   ```

**Note: There is no need to attempt to mount the file system at this time.*

### Remove the Clone of the Commerce File System Replica

1. Log into ZFS BUI on the standby site.
2. Select the LOCAL project, for example "`ATG_tst`".
3. Confirm that you have the correct project.
4. Select the "Remove of Destroy Entry" trash can icon.
5. Hit OK to confirm.

## Site Switchover

### Shut Down Commerce Applications on Primary Site

» Shutdown all Commerce applications using the standard procedure and unmount all ZFS file systems, for example:

```
umount /u01/app/oracle_atg/product/fmw
```

### Perform Database Switchover

» Use Data Guard Broker to perform the database switchover, for example:

```
dgmgrl sys/welcome1 <<EOF
switchover to commaa_scao01
EOF
```

### Stop Commerce File System Replication at Source

1. Log in to the ZFSSA BUI on the old primary (source) site.
2. Locate the Commerce File System project, for example `ATG`
3. Navigate to the **Replication** tab and confirm that replication is up-to-date – the Last Sync time should be later than when the Commerce File System was dismounted.
4. Click the **Enable/disable action** button to disable replication, and wait for the **STATUS** column to indicate a status of disabled.

### Perform Commerce File System Role Reversal at Target

1. Log in to the ZFSSA BUI on the new primary site.
2. Locate the replica project on the standby (target) site, for example `scan03sn01:ATG`.
3. Navigate to the Replication tab and confirm that replication is up-to-date – the Last Sync time should be later than when the Commerce File System was dismounted on the old primary site.
4. Click the **Reverse Direction of Replication** button.
5. Enter the new project name "`ATG`".
6. Configure the project so the Commerce Servers have access.

### Mount the Commerce File System

This procedure should be performed on each Commerce Server.

1. As `root`, verify that the current Commerce File System is not mounted, for example:
   ```
   umount /u01/app/oracle_atg/product/fmw
   ```

2. Check the `/etc/fstab` file to confirm that the server mounts the Commerce File System from the primary export (`/export/ATG`), for example:
   ```
   172.17.0.9:/export/ATG/WLSbin1 /u01/app/oracle_atg/product/fmw nfs4
   rw,rsize=131072,wsize=131072,bg,hard,timeo=600
   ```

3. As `root`, mount the Commerce file System. Note, the mount points, e.g. `/u01/app/oracle_atg/product/fmw,` do not change and so the Commerce configuration does not need to be changed.

### Start Up Commerce Applications As Prod on the New Primary Site

Use the standard procedure to start all Commerce applications.

### Start File System Replication to New Standby Site

1. Log in to the ZFSSA BUI on the new primary site.
2. Locate the Commerce File System project, for example `ATG`.
3. Navigate to the **Replication** tab and click **Edit Entry**.
4. Enable the **Send Updates: Continuous** radio button and click **Apply**.
5. Wait until the sync completes and the Last Sync time is updated.

### Delete Old Commerce File System Project

It is important to delete the old Commerce File System project after the switchover so that a subsequent switchover or failover will not be slowed down by this work. To clean up:

1. Log in to the ZFSSA BUI on the old primary (new standby) site.
2. Locate the Commerce File System project, for example `ATG`.
3. Confirm that there are no shares in this project.
4. Delete the project.

## Site Failover

### Perform Database Failover

This procedure can be performed in parallel with the Commerce File System Role Reversal. Using Data Guard Broker from the standby, perform the database failover, for example:

```
dgmgrl sys/welcome1 <<EOF
failover to commaa_scao01
EOF
```

### Perform Commerce File System Role Reversal

This procedure can be performed in parallel with the database failover.

1. Log in to the ZFSSA BUI on the new primary site.
2. Locate the replica project on the standby (target) site, for example `scan03sn01:ATG`.
3. Navigate to the **Replication** tab and make a note of the Last Sync time.
4. Click the **Reverse Direction of Replication** button.
5. Enter the new project name "`ATG`".
6. Configure the project so the Commerce Servers have access.

### Mount the Commerce File System

Perform this procedure on all of the Commerce application servers.

1. As `root`, verify that the current Commerce File System is not mounted.
2. Check the `/etc/fstab` file to confirm that the server is mounting the File System from the primary export (`/export/ATG`), for example:

```
172.17.0.9:/export/ATG/WLSData /u01/app/oracle_atg/data nfs4
rw,rsize=131072,wsize=131072,bg,hard,timeo=600
```

3. As `root`, mount the Commerce File System.

**Note: The mount point does not change and so the Commerce configuration does not need to be changed.*

### Start Up the Commerce Applications As Prod on the New Primary Site

Use the standard procedure to start all Commerce applications.

## Reinstate

### Perform Database Reinstate

1. Start up one database instance on the new standby (old primary) site:

```
srvctl start instance -d commaa_scam08 -i commaa1
```

2. Use Data Guard Broker to reinstate the old primary as a physical standby database, from the standby database:

```
dgmgrl sys/welcome1 <<EOF
reinstate database commaa_scam08
EOF
```

3. If flashback database is not on then enable it. See Enabling Flashback."

### Start Commerce File System Replication to Standby Site

1. Log in to the ZFSSA BUI on the new primary site.
2. Locate the Commerce File System project, for example `ATG`.
3. Navigate to the **Replication** tab and click the **Edit Entry** button.
4. Enable the **Send Updates: Continuous** radio button and click **Apply**.
5. Wait until the sync completes and the Last Sync time is updated.

### Delete Old Commerce File System Project

It is important to delete the old Commerce File System project after the switchover so that a subsequent switchover or failover will not be slowed down by the unnecessary files. To clean up:

1. Log in to the ZFSSA BUI on the new standby site.
2. Locate the Commerce File System project, for example `ATG`.
3. Confirm that there are no shares in this project.
4. Delete the project.

## WebLogic Server Administration Server Failover

This step assumes that the WebLogic Server Adminitration server is down, including the VIP. Do the folloing steps on the new WebLogic Server Administration Sever:

1. Verify that the VIP is down.

```
ping scae01ec2-vip1
```

2. Mount the shared file system necessary to start the WebLogic Server Adminitration server. The required file systems are:

```
/u01/app/wls/atgDomain/admin
/u01/app/oracle_atg/product/fmw
```

3. Start the VIP.

```
ifconfig bond0:1 10.133.49.181 netmask 255.255.248.0
/sbin/arping -q -U -c 3 -I bond0 10.133.49.181
```

4. Ping `10.133.49.181` or `scae01ec2-vip1` from another host to ensure it is active and plumbed on the interface.

5. Start the WebLogic Server Administration server using your start script.

```
sudo service wls_admin start
```

## Enable Active Data Guard for Read-Only Reporting

1. Verify/Check whether the standby database is mounted:

   a. As user `oracle_atg`, execute `sqlplus / as sysdba.`

   b. Check to make sure the database isn't mounted.

```
sql>select db_unique_name,open_mode from v$database;
DB_UNIQUE_NAME      OPEN_MODE
--------------- ----------------
commaa_scao01       MOUNTED
```

2. If the database is mounted, you need to stop `mrp` and then open in read-only mode.

```
SQL> alter database recover managed standby database cancel;
Database altered.
SQL> !ps -ef|grep mrp
1013 98993  98912  0      13:12  pts/3  00:00:00 /bin/bash -c ps -ef|grep mrp
1013 98995  98993  0      13:12  pts/3  00:00:00 grep mrp
```

3. Open database in read-only mode.

```
SQL> alter database open ;
Database altered.
SQL> select db_unique_name,open_mode from v$database;
DB_UNIQUE_NAME      OPEN_MODE
---------------------------------
commaa_scao01       READ ONLY
```

4. Restart Redo Apply.

```
SQL> alter database recover managed standby database using current logfile
disconnect from session;
Database altered.
```

5. Verify that redo-apply is enabled using the following query:

```
SQL> select process,status,sequence# from v$managed_standby where process like
'%MRP%';
PROCESS       STATUS        SEQUENCE#
------------------------------------
MRP0          APPLYING_LOG  133
```

6. Monitor Active Data Guard:

a. From the Primary:

```
SQL> select dest_name,status,database_mode,recovery_mode from
v$archive_dest_status where dest_id=2;
DEST_NAME        STATUS DATABASE_MODE     RECOVERY_MODE
-------------------------------------------------------------
LOG_ARCHIVE_DEST_2      VALID  OPEN_READ-ONLY   MANAGED REAL TIME APPLY
```

b. From the standby:

```
sql>select db_unique_name,open_mode from v$database;
DB_UNIQUE_NAME   OPEN_MODE
--------------------------------------
commaa_scao01    READ ONLY WITH APPLY

SQL> select 'YES' Active_DataGuard from v$managed_standby ms,v$database db
where ms.process like '%MRP%' and db.open_mode like '%READ ONLY%';
ACT
-------
YES

SQL> SELECT * FROM V$STANDBY_EVENT_HISTOGRAM WHERE NAME = 'apply lag' AND
COUNT > 0;
NAME      TIME   UNIT          COUNT  LAST_TIME_UPDATED
-------------------------------------------------------------
apply lag 0      seconds       165860 10/25/2013 13:54:05
apply lag 1      seconds       722    10/25/2013 13:51:33
apply lag 2      seconds       190    10/25/2013 13:24:12
apply lag 3      seconds       49     10/25/2013 13:19:13
apply lag 4      seconds       12     10/25/2013 13:22:00
apply lag 5      seconds       7      10/25/2013 13:22:01
apply lag 6      seconds       5      10/25/2013 13:22:02
apply lag 7      seconds       3      10/25/2013 13:22:03
apply lag 8      seconds       4      10/25/2013 13:22:04
apply lag 9      seconds       3      10/25/2013 13:22:05
apply lag 10     seconds       3      10/25/2013 13:22:06
```

# Appendix

## Oracle Commerce Installation Examples

### Commerce Platform Installation Example

```
Preparing to install...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...
===============================================================================
Choose Locale...
----------------
    1- Dansk
    2- Deutsch
  ->3- English
    4- Español
    5- Français
    6- Italiano
    7- Nederlands
    8- Português
    9- Português  (Brasil)
   10- Suomi
   11- Svenska

CHOOSE LOCALE BY NUMBER: 3
===============================================================================
Oracle Commerce Platform                          (created with InstallAnywhere)
-------------------------------------------------------------------------------
Preparing CONSOLE Mode Installation...
===============================================================================
Introduction
------------
InstallAnywhere will guide you through the installation of Oracle Commerce
Platform 11.1.
It is strongly recommended that you quit all programs before continuing with
this installation.
Respond to each prompt to proceed to the next step in the installation.  If you
want to change something on a previous step, type 'back'.
You may cancel this installation at any time by typing 'quit'.
PRESS <ENTER> TO CONTINUE: ENTER
===============================================================================
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===============================================================================
Choose Install Folder
---------------------
Where would you like to install?

  Default Install Folder: /home/oracle_atg/ATG/ATG11.1

ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:
/u01/app/oracle_atg/product/fmw/ATG/ATG11.1

INSTALL FOLDER IS: /u01/app/oracle_atg/product/fmw/ATG/ATG11.1
   IS THIS CORRECT? (Y/N): y
===============================================================================
Select Products to Install
--------------------------
  ->1- Core Platform (DAS/DAF/DPS/DSS/ContentMgmt)
  ->2- Core Commerce and Merchandising
```

```
  ->3- ATG Portal
  ->4- Content Administration
  ->5- Motorprise
  ->6- Quincy Funds

Please choose products from the list by typing their number, separating them
with commas, or press <enter> to install all products (default): 1,2,3,4
================================================================================
Select Application Server
-------------------------
Select the application server.
    1- JBoss
    2- IBM WebSphere
    3- IBM WebSphere - cluster
    4- Oracle WebLogic
    5- Skip server selection

ENTER THE NUMBER OF THE DESIRED CHOICE: 4
================================================================================
WebLogic configuration
----------------------
Please enter the full path to your Oracle_Home Directory:
/u01/app/oracle_atg/product/fmw/Middleware
Please enter the full path to your WebLogic home directory (DEFAULT:
/u01/app/oracle_atg/product/fmw/Middleware/wlserver): ENTER
Please enter the full path to your WebLogic domain directory (DEFAULT:
/u01/app/oracle_atg/product/fmw/Middleware/user_projects/domains/base_domain):
/u01/app/wls/atgDomain/atg/atg_domain
Please enter the full path to a valid JDK Home directory (DEFAULT:
/u01/app/oracle_atg/product/fmw/Middleware/../jdk1.7.0_67):
/u01/app/oracle_atg/product/fmw/jdk1.7.0_67
Please enter the WebLogic listen port (DEFAULT: 7001): ENTER
Please enter ATG RMI port (DEFAULT: 8860): ENTER
================================================================================
Pre-Installation Summary
------------------------
Please Review the Following Before Continuing:
Product Name: Oracle Commerce Platform 11.1
Install Folder: /u01/app/oracle_atg/product/fmw/ATG/ATG11.1
Product Features:
    Core Platform (DAS/DAF/DPS/DSS/ContentMgmt),
    Core Commerce and Merchandising,
    ATG Portal,
    Content Administration
Application server: Oracle WebLogic
JDK path: /u01/app/oracle_atg/product/fmw/jdk1.7.0_67
Disk Space Information (for Installation Target):
    Required:  682,000,106 Bytes
    Available: 5,138,118,606,848 Bytes

PRESS <ENTER> TO CONTINUE: ENTER
================================================================================
Installing...
-------------
 [==================|==================|==================|==================]
Installation Complete
---------------------
Congratulations. Oracle Commerce Platform 11.1 has been successfully installed
to:
```

```
   /u01/app/oracle_atg/product/fmw/ATG/ATG11.1

PRESS <ENTER> TO EXIT THE INSTALLER: ENTER
```

#### Commerce Reference Store Installation Example

```
Preparing to install...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...
===============================================================================
Choose Locale...
----------------
    1- Deutsch
  ->2- English
    3- Español

CHOOSE LOCALE BY NUMBER: 2
===============================================================================
Oracle Commerce Reference Store                  (created with InstallAnywhere)
-------------------------------------------------------------------------------
Preparing CONSOLE Mode Installation...
===============================================================================
Introduction
------------
InstallAnywhere will guide you through the installation of Oracle Commerce
Reference Store 11.1
It is strongly recommended that you quit all programs before continuing with
this installation.
Respond to each prompt to proceed to the next step in the installation.  If you
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===============================================================================
Choose Install Folder
---------------------
Where would you like to install?
  Default Install Folder: /home/oracle_atg/ATG/ATG11.1

ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
      : /u01/app/oracle_atg/product/fmw/ATG/ATG11.1

INSTALL FOLDER IS: /u01/app/oracle_atg/product/fmw/ATG/ATG11.1
   IS THIS CORRECT? (Y/N): y
===============================================================================
Pre-Installation Summary
------------------------
Please Review the Following Before Continuing:
Product Name: Oracle Commerce Reference Store 11.1
Install Folder: /u01/app/oracle_atg/product/fmw/ATG/ATG11.1
Link Folder: /home/oracle_atg
Disk Space Information (for Installation Target):
    Required:  156,990,779 Bytes
    Available: 5,138,632,933,376 Bytes

PRESS <ENTER> TO CONTINUE: ENTER
===============================================================================
Installing...
-------------
```

```
[==================|==================|==================|==================]
Installation Complete
---------------------
Congratulations! Oracle Commerce Reference Store 11.1 has been successfully
installed to:
   /u01/app/oracle_atg/product/fmw/ATG/ATG11.1

PRESS <ENTER> TO EXIT THE INSTALLER: ENTER
```

### Commerce Guided Search MDEX Installation Example

```
[oracle_atg@scan04cn21 installers]$ ./OCmdex6.5.1-Linux64_829811.sh --target
/u01/app/oracle_atg/product/oracle_gs

MDEX 6.5.1 install for x86_64pc-linux
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```

```
About to extract 527728 KB in /u01/app/oracle_atg/product/oracle_gs.
Available disk space in /u01/app/oracle_atg/product/oracle_gs: 5018907904 KB.
Uncompressing MDEX 6.5.1 for x86_64pc-
linux.....................................................................
.....................................................
Configuring Endeca MDEX 6.5.1 for x86_64pc-linux .....
Configuration of Endeca MDEX 6.5.1 for x86_64pc-linux done
Please run the following command to set your environment variables:
Bourne, Bash or Korn:
        source
/u01/app/oracle_atg/product/oracle_gs/endeca/MDEX/6.5.1/mdex_setup_sh.ini
csh or tcsh:
        source
/u01/app/oracle_atg/product/oracle_gs/endeca/MDEX/6.5.1/mdex_setup_csh.ini
```

#### Commerce Guided Search Platform Services Installation Example

```
[oracle_atg@scan04cn21 installers]$ ./OCplatformservices11.1.0-Linux64.bin --
target /u01/app/oracle_atg/product/oracle_gs

Oracle Commerce Guided Search Platform Services 11.1.0 install for x86_64pc-
linux
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Verifying archive integrity...

All good.

Uncompressing Oracle Commerce Guided Search Platform Services 11.1.0 for
x86_64pc-
linux.....................................................................
.............................................................

Configuring Oracle Commerce Guided Search Platform Services 11.1.0 for
x86_64pc-linux ....

Configuring the Oracle Commerce Guided Search installed Perl 5.8.3 on your
environment.

Configure the ports your Oracle Commerce Guided Search Instance will utilize.

Please enter the port number of the Oracle Commerce Guided Search HTTP Service.
The typical default is 8888.
       : 8888
Please enter the shutdown port number of the Oracle Commerce Guided Search HTTP
Service. The typical default is 8090.
       : 8090
Would you like this installation configured to run the Oracle Commerce
Application Controller (EAC)? (Y/N)?
(Please note: this will also install the EAC Agent)
       : y

Please enter the root of your Oracle Commerce MDEX Engine installation. The
root directory path typically includes the version number. Leave blank if there
is no Oracle Commerce MDEX Engine installed.
       : /u01/app/oracle_atg/product/oracle_gs/endeca/MDEX/6.5.1
Would you like to install the reference implementations? (Y/N)?
       : y
Please run the following command to set your environment variables:
Bourne, Bash or Korn:
        source
/u01/app/oracle_atg/product/oracle_gs/endeca/PlatformServices/workspace/setup/i
nstaller_sh.ini

csh or tcsh:
        source
/u01/app/oracle_atg/product/oracle_gs/endeca/PlatformServices/workspace/setup/i
nstaller_csh.ini
```
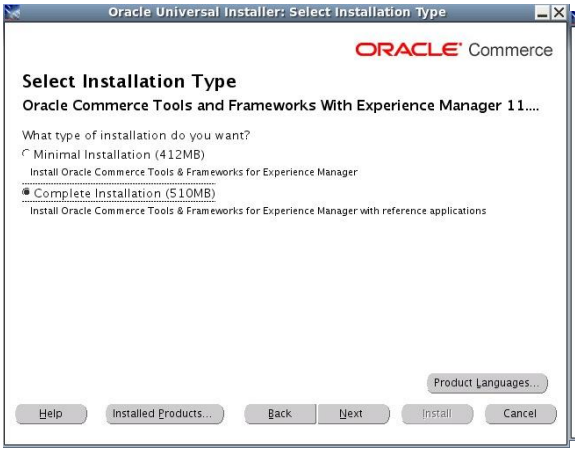
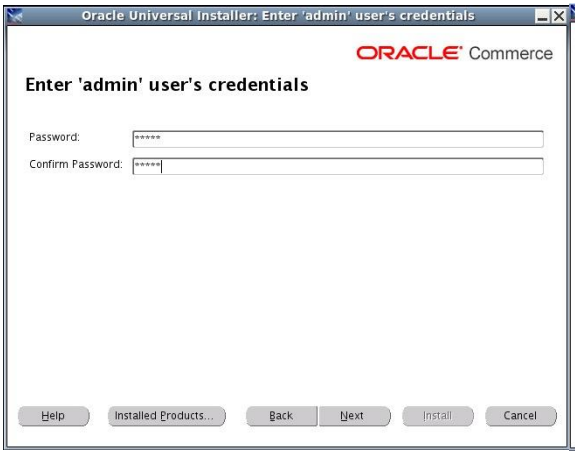
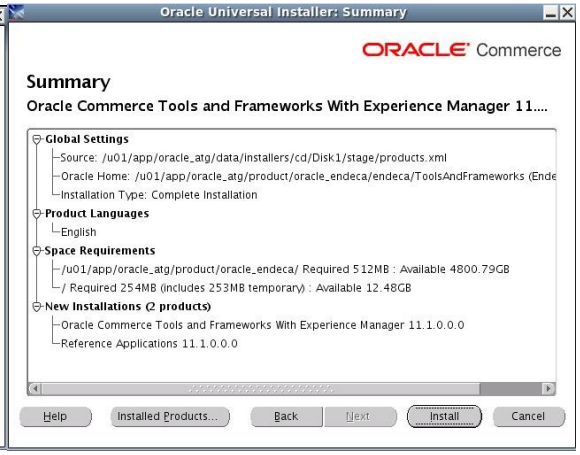

## Commerce Guided Search Tools & Frameworks with Experience Manager Installation Example










### Commerce Guided Search CAS Installation Example

```
[oracle_atg@scan04cn21 installers]$ ./OCcas11.1.0-Linux64.sh --target
/u01/app/oracle_atg/product/oracle_gs
Content Acquisition System 11.1.0 install for x86_64pc-linux
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Verifying archive integrity...All good.
Uncompressing Content Acquisition System 11.1.0 for x86_64pc-
linux.....................................................................
.....................................................................

Please enter the port for the CAS service. The typical default is 8500.
       :8500
Please enter the shutdown port for the CAS service. The typical default is
8506.
       :8506

Creating the CAS service workspace.
Configuring the CAS host and port in the workspace located at
/u01/app/oracle_atg/product/oracle_gs/endeca/CAS/11.1.0/bin/../../workspace

ENDECA_TOOLS_ROOT is set to:
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0.
ENDECA_TOOLS_CONF is set to:
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace.

Please enter the fully qualified name, including domain information, of the CAS
server.
       :scan04cn21.us.oracle.com

Installing casconsole.xml into
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/Standalone/localhost.

Installing casconsole-infocenter.xml into
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/Standalone/localhost.
Installing war files into
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
ebapps.
Installing casconsole.properties into
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf.
Installing CAS console into
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/ws-extensions.xml
Backing up file
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/ws-extensions.xml to
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/ws-extensions.xml.10-07-2014-12-00
```

```
Installing CAS console into
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/ws-mainMenu.xml
Backing up file
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/ws-mainMenu.xml to
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/server/w
orkspace/conf/ws-mainMenu.xml.10-07-2014-12-00
Installing casStubs.jar to
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/referenc
e/discover-data-cas/lib/casStubs.jar
Installing casStubs.jar to
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/deployme
nt_template/app-templates/common/config/lib/java/casStubs.jar
Installing casStubs.jar to
/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.1.0/referenc
e/media-mdex-cas/lib/casStubs.jar
CAS installation is complete.
```

## Sample Scripts

```
==============================
/etc/init.d/endeca_platform
==============================

#!/bin/sh
# style chkconfig
###
# chkconfig: 2345 95 85
# description: Script to start and stop Endeca Platform Services
###

SCRIPT_USER=oracle_atg
SERVICE_NAME=endeca_platform
SCRIPT_PATH=/u01/app/oracle_atg/product/oracle_gs/endeca/PlatformServices/11.1.
0/tools/server/bin
START_SCRIPT_NAME=startup.sh
STOP_SCRIPT_NAME=shutdown.sh

case "$1" in
  start)
    if [ `ps -ef | grep "java" | grep "PlatformServices" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "Starting Endeca Platform Services"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME"
    else
      echo "ENDECA PLATFORM SERVICES IS ALREADY RUNNING"
    fi
   ;;

  stop)
    if [ `ps -ef | grep "java" | grep "PlatformServices" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "ENDECA PLATFORM SERVICES IS NOT RUNNING"
    else
      echo "Stopping Endeca Platform Services"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME"
    fi
    ;;

  restart)
    if [ `ps -ef | grep "java" | grep "PlatformServices" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo  "ENDECA PLATFORM SERVICES IS NOT RUNNING"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME"
    else
      echo "Restarting Endeca Platform Services"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME"
      /bin/sleep 10
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME"
    fi
    ;;

  *)
    echo "Usage: /sbin/service $SERVICE_NAME {start|stop|restart}"
    exit 1
    ;;

esac

exit 0
```

```
==============================
/etc/init.d/endeca_tools
==============================

#!/bin/sh
# style chkconfig
###
# chkconfig: 2345 95 85
# description: Script to start and stop Endeca Workbench
###

SCRIPT_USER=oracle_atg
SERVICE_NAME=endeca_tools
SCRIPT_PATH=/u01/app/oracle_atg/product/oracle_gs/endeca/ToolsAndFrameworks/11.
1.0/server/bin
START_SCRIPT_NAME=startup.sh
STOP_SCRIPT_NAME=shutdown.sh

case "$1" in
  start)
    if [ `ps -ef | grep "java" | grep "ToolsAndFrameworks" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "Starting Endeca Workbench"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME"
    else
      echo "ENDECA WORKBENCH IS ALREADY RUNNING"
    fi
   ;;

  stop)
    if [ `ps -ef | grep "java" | grep "ToolsAndFrameworks" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "ENDECA WORKBENCH IS NOT RUNNING"
    else
      echo "Stopping Endeca Workbench"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME"
    fi
    ;;

  restart)
    if [ `ps -ef | grep "java" | grep "ToolsAndFrameworks" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo  "ENDECA WORKBENCH IS NOT RUNNING"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME"
    else
      echo "Restarting Endeca Workbench"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME"
      /bin/sleep 10
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME"
    fi
    ;;

  *)
    echo "Usage: /sbin/service $SERVICE_NAME {start|stop|restart}"
    exit 1
    ;;

esac

exit 0
```

```
==============================
/etc/init.d/endeca_cas
==============================

#!/bin/sh
# style chkconfig
###
# chkconfig: 2345 95 85
# description: Script to start and stop Endeca Content Acquisition System
###

SCRIPT_USER=oracle_atg
SERVICE_NAME=endeca_cas
SCRIPT_PATH=/u01/app/oracle_atg/product/oracle_gs/endeca/CAS/11.1.0/bin
START_SCRIPT_NAME=cas-service.sh
STOP_SCRIPT_NAME=cas-service-shutdown.sh

case "$1" in
  start)
    if [ `ps -ef | grep "java" | grep "endeca.cas.root" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "Starting Endeca CAS"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME &"
    else
      echo "ENDECA CAS IS ALREADY RUNNING"
    fi
   ;;

  stop)
    if [ `ps -ef | grep "java" | grep "endeca.cas.root" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "ENDECA CAS IS NOT RUNNING"
    else
      echo "Stopping Endeca CAS"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME &"
    fi
    ;;
  restart)
    if [ `ps -ef | grep "java" | grep "endeca.cas.root" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo  "ENDECA CAS IS NOT RUNNING"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME &"
    else
      echo "Restarting Endeca CAS"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME &"
      /bin/sleep 10
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$START_SCRIPT_NAME &"
    fi
    ;;

  *)
    echo "Usage: /sbin/service $SERVICE_NAME {start|stop|restart}"
    exit 1
    ;;

esac

exit 0
```

```
==============================
/etc/init.d/wls_nodemgr
==============================

#!/bin/sh
# style chkconfig
###
# chkconfig: 2345 95 85
# description: Script to start and stop WebLogic Node Manager
###

SCRIPT_USER=oracle_atg
SERVICE_NAME=wls_nodemgr
#SCRIPT_PATH=/u01/app/oracle_atg/product/fmw/wlserver_10.3/server/bin
SCRIPT_PATH=/u01/app/wls/atgDomain/atg/atg_domain/bin
START_SCRIPT_NAME=startNodeManager.sh

case "$1" in
  start)
    if [ `ps -ef | grep "java" | grep "weblogic.NodeManager" | grep -v grep |
awk '{print $2}' | wc -l` = 0 ]; then
      echo "Starting WebLogic Node Manager"
      /bin/su - $SCRIPT_USER -c "/usr/bin/nohup $SCRIPT_PATH/$START_SCRIPT_NAME
> $SCRIPT_PATH/../nodemanager/nm.log 2>&1 &"
    else
      echo "WEBLOGIC NODE MANAGER IS ALREADY RUNNING"
    fi
  ;;

  stop)
    if [ `ps -ef | grep "java" | grep "weblogic.NodeManager" | grep -v grep |
awk '{print $2}' | wc -l` = 0 ]; then
      echo  "WEBLOGIC NODE MANAGER IS NOT RUNNING"
    else
      echo "Stopping WebLogic Node Manager"
      /bin/su - $SCRIPT_USER -c "/bin/ps ux | awk '/weblogic.NodeManager/ &&
!/awk/ {print $2}' > /tmp/nm.pid"
      /bin/su - $SCRIPT_USER -c "/bin/kill `/bin/cat /tmp/nm.pid`"
      /bin/su - $SCRIPT_USER -c "/bin/rm /tmp/nm.pid"
    fi
  ;;

  restart)
    if [ `ps -ef | grep "java" | grep "weblogic.NodeManager" | grep -v grep |
awk '{print $2}' | wc -l` = 0 ]; then
      echo  "WEBLOGIC NODE MANAGER IS NOT RUNNING"
      /bin/su - $SCRIPT_USER -c "/usr/bin/nohup $SCRIPT_PATH/$START_SCRIPT_NAME
> $SCRIPT_PATH/../nodemanager/nm.log 2>&1 &"
    else
      echo "Restarting WebLogic Node Manager"
      /bin/su - $SCRIPT_USER -c "/bin/ps ux | awk '/weblogic.NodeManager/ &&
!/awk/ {print $2}' > /tmp/nm.pid"
      /bin/su - $SCRIPT_USER -c "/bin/kill `/bin/cat /tmp/nm.pid`"
      /bin/su - $SCRIPT_USER -c "/bin/rm /tmp/nm.pid"
      /bin/sleep 10
      /bin/su - $SCRIPT_USER -c "/usr/bin/nohup $SCRIPT_PATH/$START_SCRIPT_NAME
> $SCRIPT_PATH/../nodemanager/nm.log 2>&1 &"
    fi
  ;;

  *)
    echo "Usage: /sbin/service $SERVICE_NAME {start|stop|restart}"
    exit 1
  ;;

esac

exit 0
```

```
==============================
/etc/init.d/wls_admin
==============================

#!/bin/sh
# style chkconfig
###
# chkconfig: 2345 95 85
# description: Script to start and stop WebLogic Admin Console JVM
###

SCRIPT_USER=oracle_atg
SERVICE_NAME=wls_admin
SCRIPT_PATH=/u01/app/wls/atgDomain/atg/atg_domain/bin
START_SCRIPT_NAME=startWebLogic.sh
STOP_SCRIPT_NAME=stopWebLogic.sh

case "$1" in
  start)
    if [ `ps -ef | grep "java" | grep "AdminServer" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "Starting WebLogic Admin Console JVM"
      /bin/su - $SCRIPT_USER -c "nohup $SCRIPT_PATH/$START_SCRIPT_NAME -
Dweblogic.security.SSL.ignoreHostnameVerification=true >
$SCRIPT_PATH/../servers/AdminServer/logs/AdminServer.out 2>&1 &"
    else
      echo "WEBLOGIC ADMIN CONSOLE JVM IS ALREADY RUNNING"
    fi
  ;;

  stop)
    if [ `ps -ef | grep "java" | grep "AdminServer" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo "WEBLOGIC ADMIN CONSOLE JVM IS NOT RUNNING"
    else
      echo "Stopping WebLogic Admin Console JVM"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME"
    fi
  ;;

  restart)
    if [ `ps -ef | grep "java" | grep "AdminServer" | grep -v grep | awk
'{print $2}' | wc -l` = 0 ]; then
      echo  "WEBLOGIC ADMIN CONSOLE JVM IS NOT RUNNING"
      /bin/su - $SCRIPT_USER -c "nohup $SCRIPT_PATH/$START_SCRIPT_NAME -
Dweblogic.security.SSL.ignoreHostnameVerification=true >
$SCRIPT_PATH/../servers/AdminServer/logs/AdminServer.out 2>&1 &"
    else
      echo "Restarting WebLogic Admin Console JVM"
      /bin/su - $SCRIPT_USER -c "$SCRIPT_PATH/$STOP_SCRIPT_NAME"
      /bin/sleep 10
      /bin/su - $SCRIPT_USER -c "nohup $SCRIPT_PATH/$START_SCRIPT_NAME -
Dweblogic.security.SSL.ignoreHostnameVerification=true >
$SCRIPT_PATH/../servers/AdminServer/logs/AdminServer.out 2>&1 &"
    fi
  ;;

  *)
    echo "Usage: /sbin/service $SERVICE_NAME {start|stop|restart}"
    exit 1
  ;;

esac

exit 0
```

## Monitoring and Troubleshooting

### Exadata

See the MAA Enterprise Manager page at Enterprise Manager for best practice papers, especially these Exadata related papers:

- Support Note 1110675.1 - Monitoring Exadata Database Machine using Enterprise Manager - contains updated monitoring suggestions for each component.
- "*Exadata Health and Resource Usage Monitoring*"
- "*Oracle Exadata Discovery Cookbook*"

### Exalogic

- See *Monitoring the Topology Using Oracle Enterprise Manager Grid Control* in the *Oracle Fusion Middleware Exalogic Enterprise Deployment Guide*

### View WebLogic Server Startup Logs

- `cd $WL_DOMAIN_HOME/servers/<server-name>/logs`
- Once there look at the following files:

```
<server-name>.out
<server-name>.log
```

### Java Mission Control

The Java Mission Control tool suite includes tools to monitor, manage, profile, and eliminate memory leaks in your Java application without introducing the performance overhead normally associated with tools of this type.

## SDP Listener Setup Example

The basis for this procedure is the steps in 7.8.1 Enabling SDP on Database Nodes to configure the system. **Note that no reboot is necessary after configuring SDP.**

The high level steps are:

1. Enable SDP on the database nodes.
2. Create an SDP Listener on the InfiniBand network.
3. Configure the database to use the SDP listener.
4. Add compute node InfiniBand hostnames to /etc/hosts.
5. Enable SDP on the database nodes.

This needs to be done on each DB node.

1. Open the `/etc/ofed/openib.conf` file in a text editor, and add the following:

```
set: SDP_LOAD=yes

$ cat /etc/ofed/openib.conf
# Load IPoIB
IPOIB_LOAD=yes
# Set connected mode for IPoIB
SET_IPOIB_CM=yes
# Load RDS
RDS_LOAD=yes
# Load SDP module
SDP_LOAD=yes
# Load SRP module
SRP_LOAD=no
# Load iSER module
ISER_LOAD=no
# Should we modify the system mtrr registers?  We may need to do this if you
# get messages from the ib_ipath driver saying that it couldn't enable
# write combining for the PIO buffs on the card.
FIXUP_MTRR_REGS=no
```

2. Open the `/etc/ofed/libsdp.conf` file in a text editor, and edit the file as follows:

3. To use both SDP and TCP, add the `use both` rule as follows:

```
use both server * *:*
use both client * *:*
```

4. `Open /etc/modprobe.conf` file in a text editor, and add the following setting:

```
options ib_sdp sdp_zcopy_thresh=0 recv_poll=0
```

5. Reload on all database nodes for the changes to take effect.

```
/sbin/modprobe ib_sdp
```

» Create an SDP Listener on the InfiniBand network.

1. Add unused InfiniBand hosts to each nodes `/etc/hosts` file for the IP's to be used for the InfiniBand network.

```
#!/bin/sh
#
export TIME_STAMP=`date +%Y%m%d_%H%M%S`
cp /etc/hosts /etc/hosts.$TIME_STAMP
echo "## Entries for Infiniband Listener" >> /etc/hosts
echo "192.168.218.141 scam08db03-ibvip.us.oracle.com scam08db03-ibvip" >>
/etc/hosts
echo "192.168.218.142 scam08db04-ibvip.us.oracle.com scam08db04-ibvip" >>
/etc/hosts
```

2. Identify the InfiniBand network to use, and as the Grid Infrastructure software owner execute the following:

```
[oracle@scam08db03 ~]$ oifcfg iflist -p -n
eth0  10.133.218.0  PRIVATE  255.255.254.0
eth4  10.133.240.0  PRIVATE  255.255.254.0
bondib0  169.254.0.0  UNKNOWN  255.255.0.0
bondib0  192.168.218.0  PRIVATE  255.255.254.0
```

3. To use the `bondib0 private network;` on one of the database nodes, as the `root` user, create a network resource for the InfiniBand network:

```
[root@scam08db03]# /u01/app/12.1.0.2/grid/bin/srvctl add network -k 2 -S
192.168.218.0/255.255.254.0/bondib0 -v
Successfully added Network.
```

4. Verify that the network is online.

```
[root@scam08db03]# /u01/app/12.1.0.2/grid/bin/crs_stat -u | grep -A3 network
NAME=ora.net1.network
TYPE=application
TARGET=ONLINE
STATE=ONLINE on scam08db03

NAME=ora.net2.network
TYPE=application
TARGET=ONLINE
STATE=ONLINE on scam08db03

[root@scam08db03]# /u01/app/12.1.0.2/grid/bin/srvctl config network -k 2
Network exists: 2/192.168.218.0/255.255.254.0/bondib0, type static
```

5. Add and start the VIPs for each node.

```
[root@scam0bdb03]# /u01/app/12.1.0.2/grid/bin/srvctl add vip -n scam08db03 -A
scam08db03-ibvip/255.255.254.0/bondib0 -k 2
[root@scam08db03]# /u01/app/12.1.0.2/grid/bin/srvctl add vip -n scam08db04 -A
scam08db04-ibvip/255.255.254.0/bondib0 -k 2
```

6. Start as the `Grid` owner:

```
[grid@scam08db03 ~]$ srvctl status vip -n scam08db03
VIP scam08db03-ibvip is enabled
VIP scam08db03-ibvip is running on node: scam08db03
VIP scam0803-vip is enabled
VIP scam0803-vip is running on node: scam08db03

[grid@scam08db03 ~]$ srvctl status vip -n scam08db04
VIP scam08db04-ibvip is enabled
VIP scam08db04-ibvip is running on node: scam08db04
VIP scam0804-vip is enabled
VIP scam0804-vip is running on node: scam08db04
```

7. Add the SDP listener as `Grid` owner and start it.

```
[grid@scam08db03]$ srvctl add listener -l LISTENER_IB -k 2 -p
TCP:1522,/SDP:1522
[grid@scam08db03]$ srvctl start listener -l LISTENER_IB
[grid@scam08db03]$ srvctl status listener -l LISTENER_IB
Listener LISTENER_IB is enabled
Listener LISTENER_IB is running on node(s): scam08db03,scam08db04
```

» Configure the database to use the SDP listener.

1. Add appropriate `tnsnames.ora` entries (`$ORACLE_HOME/network/admin/tnsnames.ora`).

```
COMMAA_SCAM08 =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = scam08-scan3-scan7)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = comsvc)
    )
  )

COMMERCE_IB =
  (DESCRIPTION =
    (LOAD_BALANCE=on)
    (ADDRESS = (PROTOCOL = TCP)(HOST = scam08db03-ibvip)(PORT = 1522))
    (ADDRESS = (PROTOCOL = TCP)(HOST = scam08db04-ibvip)(PORT = 1522))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = comsvc)
    )
  )

LISTENER_IBREMOTE=
       (DESCRIPTION=
        (ADDRESS=(PROTOCOL=tcp)(HOST=scam08db04-
ibvip.us.oracle.com)(PORT=1522))
       )

LISTENER_IBLOCAL=
       (DESCRIPTION=
         (ADDRESS = (PROTOCOL = TCP)(HOST = scam08db03-ibvip)(PORT = 1522))
         (ADDRESS = (PROTOCOL = SDP)(HOST = scam08db04-ibvip)(PORT = 1522))
       ))

LISTENER_IPLOCAL=
       (DESCRIPTION=
```

```
          (ADDRESS = (PROTOCOL = TCP)(HOST = scam0083-vip)(PORT = 1521))
        ))

LISTENER_IPREMOTE=
        (DESCRIPTION=
          (ADDRESS = (PROTOCOL = TCP)(HOST = scam08-scan3)(PORT = 1521))
        ))

[root@scam08db03 scripts]# /u01/app/12.1.0.2/grid/bin/srvctl start listener -l
LISTENER_IB

[root@scam08db03 scripts]# /u01/app/12.1.0.2/grid/bin/srvctl status listener -
l LISTENER_IB
Listener LISTENER_IB is enabled
Listener LISTENER_IB is running on node(s): scam08db04,scam08db03

SQL> alter system set listener_networks='((NAME=network2)
(LOCAL_LISTENER=LISTENER_IBLOCAL)(REMOTE_LISTENER=LISTENER_IBREMOTE))',
'((NAME=network1)(LOCAL_LISTENER=LISTENER_IPLOCAL)(REMOTE_LISTENER=LISTENER_IP
REMOTE))' scope=both;

SQL> show parameter net
NAME                 TYPE   VALUE
-------------------------------- ----------- ------------------------------
-
fileio_network_adapters  string
listener_networks                    string    ((NAME=network2)
(LOCAL_LISTENER=LISTENER_IBLOCAL)(REMOTE_LI

STENER=LISTENER_IBREMOTE)), ((NAME=network1)(LOCAL_LISTENER=

     LISTENER_IPLOCAL)(REMOTE_LISTENER=LISTENER_IPREMOTE))


[grid@scam08db03 admin]$ lsnrctl status listener_sdp

LSNRCTL for Linux: Version 12.1.0.2.0 - Production on 24-NOV-2012 04:43:46

Copyright (c) 1991, 2011, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=LISTENER_SDP)))
STATUS of the LISTENER
------------------------------------------------------------------------------
------------------------
Alias                     LISTENER_SDP
Version                   TNSLSNR for Linux: Version 12.1.0.2.0 - Production
Start Date                23-NOV-2012 19:37:20
Uptime                     0 days 9 hr. 6 min. 26 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /u01/app/12.1.0.2/grid/network/admin/listener.ora
Listener Log File
     /u01/app/12.1.0.2/grid/log/diag/tnslsnr/scam02db07/listener_sdp/alert/log
.xml
Listening Endpoints Summary...
    (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=LISTENER_SDP)))
    (DESCRIPTION=(ADDRESS=(PROTOCOL=sdp)(HOST=192.168.41.253)(PORT=1529)))
    (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=192.168.41.254)(PORT=1529)))
```

```
Services Summary...
Service "comsvc" has 2 instance(s).
    Instance "commaa1", status READY, has 1 handler(s) for this service...
    Instance "commaa2", status READY, has 2 handler(s) for this service...
The command completed successfully
```

» Add compute node InfiniBand hostnames to `/etc/hosts`.

1. On each VM server that connects to the database you must add the InfiniBand hostnames to the `/etc/hosts` file so that the connections to the SDP listener on the database nodes will work.

```
export TIME_STAMP=`date +%Y%m%d_%H%M%S`
cp /etc/hosts /etc/hosts.$TIME_STAMP
echo "## Entries for Infiniband Listener" >> /etc/hosts
echo "192.168.218.141 scam08db03-ibvip.us.oracle.com scam08db03-ibvip" >>
/etc/hosts
echo "192.168.218.142 scam08db04-ibvip.us.oracle.com scam08db04-ibvip" >>
/etc/hosts
```

## Terminology

| Term | Description |
|---|---|
| Session Backup | The Commerce platform implements a session backup facility that allows you to specify a set of session-scoped Nucleus components and properties that should be backed up after every request. This session backup mechanism saves these session-scoped components and properties, and restores them when the application server migrates a session to another server. |
| Virtualized Data Center (vDC) | A collection of physical compute nodes and storage that sit on the Exalogic fabric. These physical resources are organized into a pool that can then be accessed by self-service users. It offers an access point through which to allocate and control the resources inside. |
| Virtual Server (vServer) | An entity that provides the outward interface of a stand-alone operating system. This entity is a virtual machine with guest operating system, which consumes CPU and memory resources. A vServer can be a member of one or more vNets. |

## Test Environment Details

The hardware and software details for the test environment are as follows:

### Primary Site

#### *Database*

- Oracle Exadata Database Machine X3-2 quarter rack (see X3-2 Data Sheet for complete system details)
- 2 Compute Nodes

```
Names: scam08DB03, scam08DB04
```

IP Addresses (two high-order octets, xx.xxx, are used to protect IP addresses)

```
scam08db03          xxx.xxx.240.44
scam0803-vip        xxx.xxx.218.130
scam08db04          xxx.xxx.240.45
scam0804-vip        xxx.xxx.218.131
```

- SCAN details (see *SINGLE CLIENT ACCESS NAME (SCAN)* paper)
- $ srvctl config scan

```
Subnet IPv4: xx.xxx.240.0/255.255.254.0/eth4, static
Subnet IPv6:
SCAN 0 IPv4 VIP: xx.xxx.240.53
SCAN 1 IPv4 VIP: xx.xxx.240.54
SCAN 2 IPv4 VIP: xx.xxx.240.55
```

- $ host scam08-scan3

```
scam08-scan3.us.oracle.com has address 10.133.240.55
scam08-scan3.us.oracle.com has address 10.133.240.53
scam08-scan3.us.oracle.com has address 10.133.240.54
```

- Exadata software version 12.1.1.1.1
- Oracle Linux 2.6.39-400.128.17.el5uek x86_64
- Oracle Grid Infrastructure 12*c* Release 1 (12.1.0.2.0)
- Grid ORACLE_HOME 12.1.0.2.0 - /u01/app/12.1.0.2/grid
- ASM ORACLE_SID=+ASM1 and +ASM2 respectively
- Oracle Database 12*c* Release 1 (12.1.0.2.0)
- Storage: 3 Exadata Storage Servers (scam08cel05-07) with high capacity drives

#### *Application Tier*

- Exalogic X3-2 bare metal rack (see Oracle Exalogic Elastic Cloud X3-2 Data Sheet for complete details)
- Exalogic Version 2.0.4.0.0
- Virtualized Data Center (vDC) deployment
- 384 GB memory
- InfiniBand connectivity to the Exadata system

### Standby Site

***Database***

» Oracle Exadata Database Machine X4-2 quarter rack (see X4-2 Data Sheet for complete system details)

» 2 Compute Nodes

```
Names: scao01adm01, scao01adm02
```

- IP Addresses (two high-order octets, xx.xxx, are used to protect IP addresses)

```
scao01adm01        xx.xxx.17.45
scao0101-vip       xx.xxx.17.48
scao01adm02        xx.xxx.17.46
scao0102-vip       xx.xxx.17.48
```

» SCAN details (see *SINGLE CLIENT ACCESS NAME (SCAN)* paper)

» $ srvctl config scan

```
SCAN name: scao01-scan1, Network: 1/xx.xxx.0.0/255.255.240.0/bondeth0
SCAN VIP name: scan1, IP: /scao01-scan1/xx.xxx.2.229
SCAN VIP name: scan2, IP: /scao01-scan1/xx.xxx.2.231
SCAN VIP name: scan3, IP: /scao01-scan1/xx.xxx.2.230
```

» Exadata software version 12.1.1.1

» Oracle Linux 2.6.39-400.128.17.el5uek x86_64

» Oracle Grid Infrastructure 12*c* Release 1 (12.1.0.2.0)

» Grid ORACLE_HOME 12.1.0.2.0 - /u01/app/12.1.0.2/grid

» ASM ORACLE_SID=+ASM1 and +ASM2 respectively

» Oracle Database 12*c* Release 1 (12.1.0.2.0)

» Storage: 3 Exadata Storage Servers (scao01cel01-03), with high performance drives

## Application Tier

» Exalogic X3-2 quarter rack (see Oracle Exalogic Elastic Cloud X2-2 Data Sheet for details)

» Exalogic Version 2.0.4.0.0

» Virtualized Data Center (vDC) deployment

» 1048 GB memory

» 10 GigE connectivity to the Exadata system

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Integrated Cloud Applications & Platform Services



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