

Oracle Maximum
Availability Architecture

Upgrading Enterprise Manager 12c to 13c and Transitioning to DR Readiness

A Step-by-Step Guide

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Introduction

Maximum Availability Architecture (MAA) provides a highly available Enterprise Manager implementation by guarding against failure at each component of Enterprise Manager. The release of Oracle Enterprise Manager Cloud Control (EM) 12.1.0.3 included a significant change to MAA Disaster Recovery (DR) architecture. From this release onwards, the recommended MAA DR architecture now makes use of a single WebLogic domain, replicated storage, and alias hostnames. The previous Standby OMSs using Standby WebLogic Domain DR architecture was deprecated beginning in EM 12.1.0.3 and was desupported in EM 13.1. This whitepaper presents a step by step guide to upgrading and transitioning EM 12.1.0.5 environments from the Standby OMSs using Standby WebLogic Domain DR architecture to EM 13.2 and the Standby OMSs using Storage Replication DR architecture. For further information about the architecture, see [Enterprise Manager Disaster Recovery in the Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).

A best-practice implementation of the Standby OMSs using Storage Replication DR architecture includes the following:

- » OMSs and agents secured using an application virtual hostname
- » Each OMS and central agent configured using alias hostname
- » Each OMS and central agent installed on replicated storage and replicated between sites
- » Each OMS and central agent installations attached to inventory on replicated storage and replicated between sites
- » Software Library and BI Publisher storage shared between OMS servers at each site and replicated between sites
- » Agents installed on each physical host at each site to provide monitoring of the hosts regardless of which site is currently the active site

Environments that have already implemented Standby OMSs using Storage Replication DR architecture configured with best practices can make use of the standard upgrade procedures and do not require the additional steps detailed in this whitepaper. For more information on the architectural transition associated with the Upgrade and Transition to DR Readiness process and when the process is needed, including a step by step overview of the changes associated with each phase of the process, see [Enterprise Manager 13.2: Upgrade and Transition to DR Readiness - Overview](#) and [Enterprise Manager 13.2: Upgrade and Transition to DR Readiness - When is Upgrade and Transition necessary?](#)

In order to assist with the process of transitioning to the new architecture, a new mode of the installer has been created, named Upgrade and Transition to DR Readiness. This new mode is enabled by passing a parameter named UPGRADE_TRANSITION. It is only supported for use on the first OMS, via a standard GUI installation, and requires following a specific flow of preparation and post-upgrade steps. A software only install followed by ConfigureGC.sh does not provide support for this new mode. In addition, upgrading additional OMSs using this new mode is not supported. In a multi-OMS environment, the additional OMSs must first be deinstalled, the first OMS and related post-upgrade processes associated with the transition must be completed, and then additional OMSs are deployed.

In addition to upgrading the primary OMS1 and repository from EM 12.1.0.5.0 to EM 13.2.0.0.0, this new mode of the installer can perform the following additional steps:

- » Install the EM 13c software for the primary OMS1 on replicated storage
- » Configure the upgraded EM 13c primary OMS1 to make use of an alias hostname
- » Attach the upgraded EM 13c installation to a specified inventory on replicated storage

The process depicted in this whitepaper addresses the maximum set of changes required as part of the upgrade and transition as it involves implementation of alias hostnames, relocation of OMS and OMS agent from installations and inventory on local storage to installations and inventory on replicated storage. Variations of this process can be performed to address environments where only a subset of these configuration changes are required.

| Old Install | Upgraded Install | Old Inventory | Upgraded Inventory | Old Hostname | Upgraded Hostname | Supported Upgrade Mode |
|---------------------|------------------|---------------|--------------------|--------------|-------------------|--|
| Local or Replicated | Replicated | Local | Replicated | Physical | Alias | Upgrade and Transition to DR Readiness |
| Local or Replicated | Replicated | Local | Replicated | Alias | Same | Upgrade and Transition to DR Readiness |
| Local or Replicated | Replicated | Replicated | Same | Physical | Alias | Upgrade and Transition to DR Readiness |
| Local or Replicated | Replicated | Replicated | Same | Alias | Same | Upgrade |

Table 1 - Transitions supported by upgrade modes

Table 1 - Transitions supported by upgrade modes provides an overview of which upgrade mode is applicable for which scenario. Both a standard Upgrade and an Upgrade and Transition to DR Readiness involve an out of place software installation for the OMS, so both can ensure that the OMS software is properly located on replicated storage. However, the Upgrade and Transition to DR

Readiness process is required if the OMS and OMS agent are not both configured for alias hostnames, or if the OMS and OMS agent installations are not both associated with Oracle Inventory located on replicated storage. If the OMS and OMS agent are already configured for alias hostnames and associated with Oracle Inventory located on replicated storage, a standard Upgrade can be performed.

The new DR architecture allows choices to be made, including which hostnames to alias, how to implement the alias hostnames, and how to structure connections to the repository database. The following choices were made in the environment used for this upgrade and transition:

- » Uses alias hostnames that are consistent on both sites, providing consistency and better supporting future transitions to different underlying physical hosts on either site.
- » Uses /etc/hosts to implement the alias host names.
- » Uses role-based database services and scan addresses in the database connection string, preventing the need to change connection strings during switchover and failover activities.

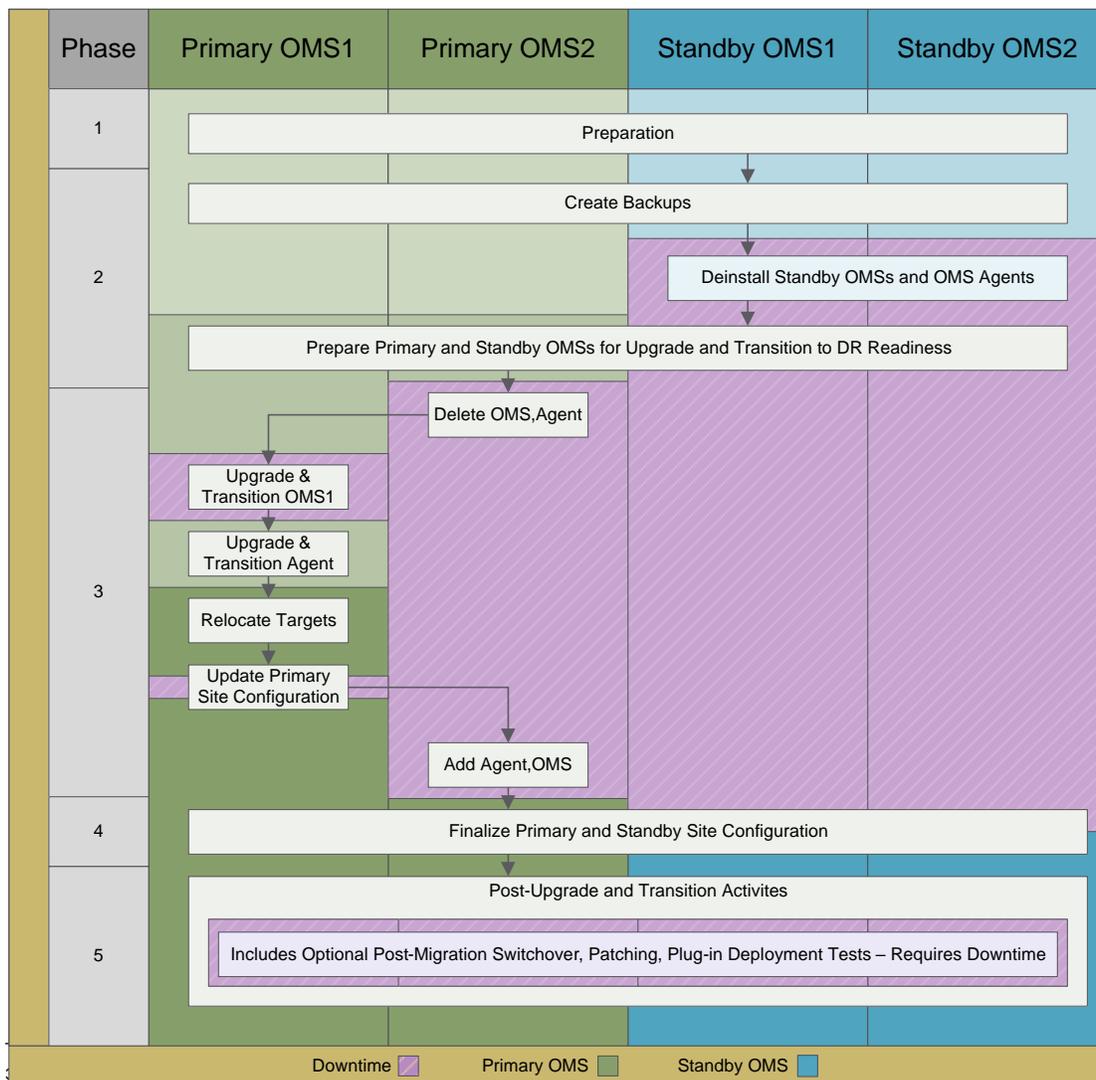


Figure 1 - Upgrade and Transition to DR Readiness Process Overview

Figure 1 - Upgrade and Transition to DR Readiness Process Overview provides a high level graphical overview of the upgrade and transition process. The high level overview does not account for all activities that occur on other OMS servers at a particular step. It is very important to pay close attention to each step in the upgrade and transition process to ensure the step is performed properly and the environment remains as available as possible during the upgrade and transition.

The Upgrade and Transition to DR Readiness process requires significant preparation and additional steps outside the context of the installer itself. It is important to ensure that the process is resourced appropriately, which may involve the use of multiple teams to handoff within or between phases or may involve scheduling the activities by phases depending upon your requirements. Table 2 - Upgrade and transition process phases provides an overview of the phases and steps.

| Phase | Step(s) | Notes |
|-------|--|---|
| 1 | Error! Reference source not found. | Likely spans days to months of preparation. |
| 2 | Create backups Deinstall Standby OMSs and OMS Agents Prepare Primary and Standby OMS Servers | Rolling downtime during backups. DR site unavailable at end of phase. |
| 3 | Delete Primary OMS2 and OMS2 Agent Upgrade and Transition OMS1 and Repository Transition OMS1 Agent to DR Readiness Update Primary Site Configuration Add new Primary OMS2 Alias Hostname Agent and OMS2 | This phase accounts for the bulk of the time in the actual upgrade and transition. Hard downtime during upgrade and when OMS re-secured. Reduced capacity before and after upgrade when OMSs are deleted and before re-added. |
| 4 | Finalize Primary and Standby Site Configuration | Rolling downtime during demo cert regen. DR site available at end of phase. |
| 5 | Post-Upgrade and Transition Activities | Includes environment specific tasks. Optional switchover tests involve downtime. |

Table 2 - Upgrade and transition process phases

The upgrade and transition process starts with preparation activities across the environment to ensure readiness for a successful upgrade and transition. Once the environment is ready, a consistent set of backups are taken of all OMS servers at both sites and of the repository database. Once the backups are complete, the Standby OMSs are deleted, the Standby OMS agents are deinstalled, and the Standby OMS binaries are deinstalled.

Once the Standby site deinstallation is complete, detailed preparation of servers on both sites begins. The OMS Installation Base directory is identified; Primary and Standby OMS Servers are prepared for replicated storage configuration and for alias hostnames; an Oracle Inventory Location pointer file is



created in the Oracle Inventory Directory on replicated storage on Primary OMS1; the EM 13c installation software is staged on Primary OMS1 server; and the local lock file directories are created on all Primary and Standby OMS Servers.

Once the preparation on both sites is complete, additional OMSs and OMS agents at the primary site are deleted and deinstalled, and the upgrade and transition of OMS1 begins. The Primary OMS1 and OMS1 agent are stopped, the installer is launched, and the upgrade and transition of OMS1 and the repository begins. After the upgrade and transition of OMS1 completes, OMS1 is stopped, configured for local lock files, and restarted.

At this point, the upgrade and transition of OMS1 Agent begins. The OMS1 Agent is upgraded to EM 13.2; the Post Agent Upgrade Cleanup is performed for the OMS1 Agent; the OMS1 Agent is relocated from local storage and inventory to replicated storage and inventory; steps are taken to recover the OMS1 Agent to make use of the alias hostname; OMS1 related targets are relocated to the recovered alias hostname agent

Once the Agent and target relocation has completed, OMS1 is resecured to make use of the updated EM 13c SLB configuration and the Deferred Data Migration (DDMP) jobs are submitted. Once the DDMP Jobs complete, the upgrade and transition of OMS1 is complete and additional OMS deployment begins. An alias hostname agent is deployed to OMS2 server on replicated storage with inventory on replicated storage. OMS2 is deployed using the Add Oracle Management Service deployment procedure.

After OMS2 is successfully deployed, WebLogic demonstration certificates are regenerated to reflect alias hostnames on both OMS1 and OMS2; the binaries from the EM 12c OMS on OMS1 are deinstalled; and physical hostname agents are deployed to all Primary and Standby OMS servers.

This completes the upgrade and transition process on both sites. In development and test environments that can accommodate the associated downtime, a switchover can be performed to and back from the new standby OMSs to confirm the successful upgrade and transition, and additional patching and other maintenance tests also can be performed. Once the upgrade and transition is complete and known to be successful, interim upgrade and transition files can be backed up as necessary and deleted.

Note: It is a best practice and is very important to become familiar with this upgrade and transition process in its entirety before beginning the upgrade and transition and to perform one or more upgrade and transitions in a development or test environment that is separate from your production environment, such as a clone or copy of the production environment or a production-representative development or test environment.

Preparing for the Upgrade and Transition to DR Readiness

This section details the preparation steps required to ensure a successful upgrade and transition. As a general approach, consider preparation for this upgrade and transition to be similar to preparation that you would perform for an upgrade or other heavy maintenance activity. As with those maintenance activities, it is important to ensure that the environment is healthy prior to commencing the upgrade and transition activities.

It is important to understand the entire upgrade and transition process as well as the conventions used in this whitepaper. Throughout this whitepaper, notes indicate which user should be used to execute the commands. There are two users referenced in the instructions: root and the Oracle Software Owner User. If you cannot directly log in as root in your environment, you can make use of sudo or other means to execute the commands as root. If this is required in your environment, be sure to make the appropriate changes to the commands to ensure they are run with root privileges and test those commands in your development or test environment to ensure they are structured correctly.

Variables are referenced within commands using angle brackets as in <VARIABLE>. **Appendix B – Variable Values, Definitions, and Examples** contains sample values for each of these variables that you will also see in the examples. Wherever you see a variable presented this way in a command, replace the <VARIABLE> with the appropriate value for your environment. As environments can vary substantially, it is possible that direct variable substitution may not work for your environment. In these cases, you must identify the difference between your environment and the example environment reflected in the examples in this whitepaper, and adapt the variable substitution to reflect the differences in your environment.

Enterprise Manager servers that contain an OMS are referenced within these instructions individually as an OMS server or OMS n (such as OMS1), and collectively as OMSs or OMS servers. Thus, a reference to an OMS server often includes components besides the OMS, such as BI Publisher if BI Publisher is configured. A reference to Start OMS with the command `emctl start oms` will start the full product stack installed and configured on the particular OMS server, including OMS, BIP if configured, WebLogic Node Manager, and WebLogic Administration Server if on OMS1.

Confirm the environment is functioning properly and is ready for the upgrade and transition, including the following checks.

Ensure environment is at 12.1.0.5

The instructions in this whitepaper were tested using Enterprise Manager 12c Release 5 (12.1.0.5). In order to ensure a successful upgrade and transition, ensure that the environment is at 12.1.0.5 before starting the upgrade and transition.

```
<OLD_OMS_HOME>/bin/emctl getversion oms
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emctl getversion oms
```

```
Oracle Enterprise Manager Cloud Control 12c Release 5
```

Copyright (c) 1996, 2015 Oracle Corporation. All rights reserved.

Enterprise Manager 12c OMS Version 12.1.0.5.0

Note: Oracle recommends performing the upgrade and transition using Enterprise Manager 12.1.0.5. The minimum version that can be upgraded and transitioned to Enterprise Manager 13c is Enterprise Manager 12.1.0.4.

Ensure EM is secured against an application virtual hostname

A disaster recovery configuration requires securing the OMS and agents against an application virtual hostname, which can be implemented manually with DNS or in an automated fashion with a global load balancer. Ensure that the OMS and agents have been secured against an application virtual hostname before performing the upgrade and transition. For more information on application virtual hostname, see Application Virtual Host Name Consideration in the [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).

Ensure EM related infrastructure is discovered and visible in EM

It is important to know the state and health of all of the Enterprise Manager related infrastructure before, during, and after this upgrade and transition. This includes all OMSs, OMS hosts, the WebLogic domains, all BI Publisher servers that have been configured, and the EM repository. See Maintaining Enterprise Manager in [Oracle Enterprise Manager Cloud Control Administrator's Guide](#) for details on managing and monitoring the Enterprise Manager environment. See "EM Operational Considerations and Troubleshooting Whitepaper Master Index," Doc ID [1940179.1](#) for more information, including understanding how to configure and monitor for availability.

Check Backlog Graphs in EM Manage the Manager pages

Check for backlogs using the Manage the Manager pages in Enterprise Manager. For example, navigate to Setup -> Manage Cloud Control -> Health Overview and review the graphs. This information and additional details can also be gathered and reviewed using EMDIAG. For more details, see the section (OPTIONAL) Run EMDIAG repvfy commands to perform EM checks.

If there is a backlog that is growing, or if there is a high backlog, fix the backlog before performing this upgrade and transition.

Ensure OMS port configuration is consistent

Review the ports used for console and upload to ensure that the ports are consistent across the OMSs so that there will not be issues with accessing the console or with agent uploads when one OMS is brought down at any given step. The ports can be viewed by running either `emctl status oms -details` or the EMDIAG command `omsvfy show ports` on each OMS server. If an OMS server does not have the correct ports, reference "12c Cloud Control: Steps for Modifying the OMS HTTP and HTTPS Ports for Upload & Console UI URL's After Installation," Doc ID [1381030.1](#).

Ensure BI Publisher is configured consistently, if configured

BI Publisher is automatically installed with Enterprise Manager 12.1.0.4, but is not configured by default. If BI Publisher is configured, it needs to be configured consistently on all Primary site OMSs in order for it to function properly in a multi-OMS environment. The instructions in this whitepaper assume that if BI Publisher is configured, it is configured on all OMSs at the primary site. In order to run on multiple OMSs, the BI Publisher shared storage needs to be mounted with the same path, same mount point options, etc. on each of the primary site OMSs. In addition, the BI Publisher shared storage needs to be replicated to the standby site. See further details in the next section.



Ensure BI Publisher is configured consistently on all primary site OMSs. For more information, see [Running Multiple BI Publisher Servers in Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). For additional general shared storage troubleshooting information applicable to WebLogic and BI Publisher, see [General File Locking Issues in the whitepaper Oracle WebLogic on Shared Storage: Best Practices](#).

Ensure replicated storage is provisioned and active on the primary site

This document makes use of the terms replicated storage and storage replication to describe the storage that is used for the installation, configuration, and execution of the OMS and OMS agent software using the alias hostnames. The storage for a given OMS at the primary site is replicated to the corresponding storage at the standby site. Changes are replicated at a minimum on a defined schedule, and on demand before a switchover occurs, such that the same installed software and configuration can be accessed by whichever site is active. Depending upon the technologies chosen, there may be manual steps required to be taken by storage administrators in order to change the direction of the replication and prepare the other site's storage for access. Each OMS (OMS1, OMS2, etc.) has a server at the primary site and at the standby site, and for each OMS only one server at any given time, the server at the active site, hosts the OMS using the replicated storage.

In addition to the storage replication of OMS and OMS agent software, there are two other sets of storage replication that must be provisioned prior to performing this upgrade and transition process in order to support replication of the Software Library and the BI Publisher shared storage. Storage replication for the Software Library should already be addressed because the Software Library should already be shared between OMSs at a site and replicated between the primary and standby sites as part of the existing two-domain installation. As such, while the Software Library is backed up at the start of this upgrade and transition process, there are no steps incorporated into this upgrade and transition to address preparation of replication of the Software Library. Ensure Software Library replication is configured properly such that the Software Library is currently available on all OMSs at both the primary and standby sites using the same path on all OMSs to support the current two-domain installation, and that it will continue to be available to whichever site is active in the migrated environment.

BI Publisher shared storage needs to be replicated to the standby site such that it can be mounted with the same path, same mount point options, etc. on each of the standby site OMSs at switchover or failover time. The BI Publisher shared storage at the standby site should make use of the same technology (including software version and configuration options) as that used on the primary site. This document does not provide specific instructions to setup or configure storage replication for the BI Publisher shared storage. Before beginning this upgrade and transition process, ensure that each of the OMS servers at the primary and standby sites are configured to be able to mount the replicated BI Publisher shared storage located at the respective site. If BI Publisher is already configured on the primary site, ensure that it is configured to make use of the replicated BI Publisher shared storage as this configuration will be carried forward in the upgrade and transition. If BI Publisher is not yet configured on the primary site, the BI Publisher config and cluster volume directories on the replicated BI Publisher shared storage will need to be specified in the installer. These BI Publisher config volume and cluster volume directories will need to be created on the primary site on the replicated BI Publisher shared storage. Steps in this whitepaper will ensure the replicated BI Publisher shared storage config and cluster volume directories are specified in the appropriate screen in the installer.

For more information regarding storage replication requirements, see [Storage Considerations in Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). For more information on BI Publisher High Availability including the BI Publisher shared storage, see [BI Publisher High Availability in Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).



Ensure that the replicated storage has been provisioned as requested, and that the replication is currently configured such that the primary site is active. This will prevent delays during the maintenance window for the upgrade and transition by ensuring that the storage replication is ready to support the upgrade and transition.

Ensure process for reversing storage replication is understood

In many organizations, the personnel responsible for storage replication are not the personnel responsible for Enterprise Manager administration. It is important to understand the process required to request the appropriate storage replication support in the context of Enterprise Manager switchover and failover operations. This request may involve the creation of a service request, change request, or other ticket with the supporting organization. Try this process out prior to the actual upgrade and transition to ensure that the response time is understood. Ensure that you have an accelerated process available to support production availability requirements. Ensure that sufficient information has been documented regarding the replicated storage, its configuration, and the normal and priority processes to follow to request the replication reversal.

Identify alias hostname methodology and maintenance ramifications

The approach documented in this whitepaper implements alias hostnames using `/etc/hosts` files. This option was selected as it would be technically feasible for existing installations and involves no delay in terms of name resolution at switchover or failover time. Other options for an existing implementation include configuring alias name resolution within DNS. While any selected option involves its tradeoffs, it is important to be aware of the maintenance implications of the selected implementation choice. If `/etc/hosts` is used, ensure that the alias hostname information remains configured consistently within the `/etc/hosts` files on all OMS servers at the site, such as in cases where the physical host is rebuilt, upgraded, or replaced, or when an additional OMS is added to a site.

For more information regarding alias host name requirements, see Planning Host Names in [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).

Run the Enterprise Manager Installation Prerequisite Kit

Run the prerequisite kit to identify issues with the Enterprise Manager environment that may need to be resolved prior to embarking upon this upgrade and transition. The best checks to run are the upgrade checks, since those will check the repository settings to help ensure that the configuration is ready to be changed as part of the upgrade and transition. The following is an example command to run the prerequisite kit using the installer:

```
./em13200_linux64.bin EMPREQ_KIT=true
```

(OPTIONAL) Run EMDIAG repvfy commands to perform EM checks

The Master Note for EMDIAG Troubleshooting Kits is Doc ID [421053.1](#). Ensure that repvfy has been installed on the repository server and run the following checks:

1. Check for conditions that can seriously impact an upgrade. This upgrade and transition is somewhat similar in impact to an upgrade due to the recovery of each of the OMSs. Any test that is listed here must be resolved prior to performing the upgrade and transition.

```
repvfy verify upgrade -level 9 -details
```

2. After an OMS outage, the ping heartbeats of the agents will be stale, making the OMS believe there are 'Agent Down' issues. To avoid that work, you can set a grace time (the `PING_START_GRACE_TIME`, specified in seconds) to tell the OMS to wait to perform Agent heartbeat checking until the grace time has been met before declaring agents as potentially 'down.' The amount of seconds needed for the grace period depends upon multiple criteria. Ensure the ping grace period is configured correctly by checking the settings with the following test. If the test recommends a different value, follow the instructions to set the ping grace period to the recommended value.

```
repvfy verify repository -test 6050 -details
```

3. Check for significant errors that are repeating frequently, as these can cause slowdowns and can create performance problems after the OMSs are restarted during the upgrade and transition. Review the output of the following command and pay particular attention to errors that are occurring hundreds of times.

```
repvfy dump errors
```

4. Check for job, loader, or notification backlogs and resolve prior to starting the upgrade and transition process to ensure the EM job and loader sub systems are healthy. Review the output of the following command and if there is a backlog, it needs to be diagnosed.

```
repvfy dump backlog
```

Check the repository database

Perform a general health check on the repository database, including but not limited to checking the alert log and ensuring there are no space issues. For example, insufficient TEMP space could cause the upgrade and transition to fail, requiring manual intervention. If something significant is found, resolve it before performing the upgrade and transition.

Ensure database service is properly configured on both RAC clusters

If you are using a role-based database service for the repository database, the following commands can be used to confirm the database service is configured on both of the RAC clusters. Run the primary database commands on the primary cluster and the standby database commands on the standby cluster:

```
srvctl config service -d <PRIMARY_DATABASE_NAME> -s <ROLE_BASED_DB_SERVICE_NAME>
```

```
srvctl config service -d <STANDBY_DATABASE_NAME> -s <ROLE_BASED_DB_SERVICE_NAME>
```

Example:

```
Service name: emdb.domain.com
Server pool:
Cardinality: 2
Disconnect: false
Service role: PRIMARY
Management policy: AUTOMATIC
DTP transaction: false
AQ HA notifications: false
Global: false
Commit Outcome: false
Failover type:
Failover method:
TAF failover retries:
TAF failover delay:

Connection Load Balancing Goal: LONG
Runtime Load Balancing Goal: NONE
TAF policy specification: NONE
Edition:
Pluggable database name:
Maximum lag time: ANY
SQL Translation Profile:
Retention: 86400 seconds
Replay Initiation Time: 300 seconds
Session State Consistency:
GSM Flags: 0
Service is enabled
```



```
Preferred instances: emdbP1,emdbP2
Available instances:
srvctl config service -d emdbS -s emdb.domain.com
Service name: emdb.domain.com
Server pool:
Cardinality: 2
Disconnect: false
Service role: PRIMARY
Management policy: AUTOMATIC
DTP transaction: false
AQ HA notifications: false
Global: false
Commit Outcome: false
Failover type:
Failover method:
TAF failover retries:
TAF failover delay:
Connection Load Balancing Goal: LONG
Runtime Load Balancing Goal: NONE
TAF policy specification: NONE
Edition:
Pluggable database name:
Maximum lag time: ANY
SQL Translation Profile:
Retention: 86400 seconds
Replay Initiation Time: 300 seconds
Session State Consistency:
GSM Flags: 0
Service is enabled
Preferred instances: emdbS1,emdbS2
Available instances:
```

The following commands can be used to confirm the state of the service on both of the RAC clusters. Run the primary database commands on the primary cluster and the standby database commands on the standby cluster:

```
srvctl status service -d <PRIMARY_DATABASE_NAME> -s <ROLE_BASED_DB_SERVICE_NAME>
srvctl status service -d <STANDBY_DATABASE_NAME> -s <ROLE_BASED_DB_SERVICE_NAME>
```

Example:

```
srvctl status service -d emdbP -s emdb.domain.com
Service emdb.domain.com is running on instance(s) emdbP1,emdbP2
srvctl status service -d emdbS -s emdb.domain.com
Service emdb.domain.com is not running.
```

Confirm Data Guard is configured and functioning properly

Confirm the state of the Data Guard environment using the High Availability Console and the Data Guard Administration pages in Enterprise Manager. Navigate to the primary Cluster Database target for the EM Repository and select these pages from the Availability menu. From the Data Guard Administration page, you can select to perform a Verify Configuration to verify the Data Guard configuration.

The following commands can also be used to confirm the state of the Data Guard environment:

```
dgmgrl
connect sys@<PRIMARY_DATABASE_NAME>
```



```
show configuration
show database "<PRIMARY_DATABASE_NAME>"
show database "<STANDBY_DATABASE_NAME>"
```

Examples:

```
DGMGRL> connect sys@emdbP
Password:
Connected as SYSDBA.
DGMGRL> show configuration
```

Configuration - emdbP.domain.com

```
Protection Mode: MaxAvailability
Members:
emdbP - Primary database
emdbS - Physical standby database
```

Fast-Start Failover: DISABLED

```
Configuration Status:
SUCCESS (status updated 13 seconds ago)
```

```
DGMGRL> show database "emdbP"
```

Database - emdbP

```
Enterprise Manager Name: emdbP.domain.com
Role: PRIMARY
Intended State: TRANSPORT-ON
Instance(s):
emdbP1
emdbP2
```

```
Database Status:
SUCCESS
```

```
DGMGRL> show database "emdbS"
```

Database - emdbS

```
Enterprise Manager Name: emdbS.domain.com
Role: PHYSICAL STANDBY
Intended State: APPLY-ON
Transport Lag: 0 seconds (computed 1 second ago)
Apply Lag: 0 seconds (computed 1 second ago)
Average Apply Rate: 16.00 KByte/s
Real Time Query: OFF
Instance(s):
emdbS1
emdbS2 (apply instance)
```

```
Database Status:
SUCCESS
```

Confirm repository high availability configuration



Ensure the repository database has been configured for high availability. This includes but is not limited to enabling ARCHIVELOG mode, using a Fast Recovery Area, and enabling Flashback Database. See Repository High Availability in [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#) for further details.

Confirm backup configuration

Ensure backups have been scheduled for the repository database. See the [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#) for details on backing up the management repository database.

Identify backup locations

Identify backup location(s) for OMS backups that will be performed through the course of these instructions. Ensure these backup locations have sufficient free disk space to contain the backups that are specified in these instructions.

Identify variable values

Review and update the table in **Appendix B – Variable Values, Definitions, and Examples** with the values appropriate for your environment. Reference the table throughout the steps for the appropriate values.

Ensure upgrade and transition occurs on the primary site

This whitepaper provides instructions that upgrade and transition the primary WebLogic domain to become the new single WebLogic domain that will be used on both sites. Ensure that the upgrade and transition process is started on the primary site. Do not use a standby WebLogic domain as the source domain for the upgrade and transition.

Identify OMS Installation Base Directory

Identify the directory to be used as the OMS Installation Base Directory, which is the parent directory for the Middleware Home, Instance Base, OMS Agent Base, and Oracle Inventory locations on replicated storage. The OMS Installation Base directory can serve as the mount point for the replicated storage. In the example configuration detailed in this whitepaper, the OMS Installation Base Directory is /u01/app/oracle/OMS, referenced as the variable <OMS_MOUNT_POINT>. For further details on the OMS Installation Base Directory, see Oracle Management Service High Availability in the [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).

Identify additional steps required if using custom WLS certificates

As part of the transition to alias hostnames, WebLogic Server certificates need to be updated on each OMS to reflect the alias hostname FQDN instead of the physical hostname. This upgrade and transition process includes the instructions required to perform these updates for the default WebLogic Server demonstration certificates. It does not include the instructions required to update custom WLS certificates. For more details on configuring custom WLS certificates, please see Configuring Custom Certificates for WebLogic Server in the [Oracle Enterprise Manager Cloud Control Security Guide](#). If you have this configuration, ensure that you have obtained the needed certificates and understand the steps required to perform the updates at the appropriate point in this upgrade and transition process before proceeding.

Ensure environment meets Prerequisites for Upgrading to EM 13c Release 2

The prerequisites for performing an Upgrade and Transition to DR Readiness are a superset of the prerequisites for performing a standard upgrade. Review, understand, and ensure the environment meets the prerequisites specified in Prerequisites for Upgrading to Enterprise Manager Cloud Control 13c Release 2 in the [Oracle Enterprise Manager Cloud Control Upgrade Guide](#). Ensure that prerequisites not specifically referenced in this whitepaper are performed at the appropriate time in the upgrade and transition process, no later than before the start of the actual Upgrade

and Transition to DR Readiness using the installer. Instructions in this whitepaper will address when the OMS and OMS agent should be stopped.

Update SLB configuration for the upgraded EM 13c environment

SLB configuration updates are required to support Always-On Monitoring (AOM), BI Publisher, and Java Virtual Machine Diagnostics (JVMD) SLB configuration requirements in EM 13c. Ensure that the SLB configuration on both primary and standby sites is updated with the new configuration required to support AOM, BI Publisher, and JVMD. A future step will resecure the OMS to implement the updated configuration for BI Publisher and JVMD. For more details on SLB configuration for high availability in EM 13c, please see [Configuring a Load Balancer in the Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). For more details on SLB configuration for disaster recovery in EM 13c, please see [Management Service Disaster Recovery in the Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). For an example of detailed step by step instructions for configuring an SLB for a site, please see the white paper [Enterprise Manager 13c Cloud Control Configuring OMS High Availability with F5 BIG-IP Local Traffic Manager](#).

Create backups

Create a set of backups that can be used as a fallback should the entire environment need to be reset.

Overview

This subsection provides an overview of the backups to be made before starting the upgrade and transition. Details are in the following subsections. There are five parts to the backup process: a full backup of each OMSs relevant directories, a backup of the configuration of each OMS, a backup of the Software Library, a backup of BI Publisher storage if BI Publisher is configured and corresponding backups of the repository database(s). The backups of the OMSs relevant directories must include the instance, middleware, agent, and inventory. As they are filesystem backups, they must be performed as root and must be performed while the OMS and the agent are down. These backups can be performed in a staggered manner, for a single OMS at a time, to ensure availability. Each OMS must be backed up. A single corresponding backup of the Software Library is required. If BI Publisher is configured, a single corresponding backup of the BI Publisher config and cluster volumes is also required. Corresponding backups of the database must also be taken or identified.

Backup each OMS

Make a backup of each OMS. This can be performed in a rolling fashion on the primary OMSs and in parallel on the standby OMSs to prevent the need to take a full outage in a production environment, or can be run in parallel across all primary and standby OMSs to minimize the time taken in a test or development environment.

Perform the following steps on each OMS:

The following commands are to be run as the Oracle Software Owner User.

1. Backup OMS configuration
`<OLD_OMS_HOME>/bin/emctl exportconfig oms -dir <BACKUP_DIR>`
2. Shutdown OMS (if not already down)
`<OLD_OMS_HOME>/bin/emctl stop oms -all`
3. Shutdown OMS agent
`<OLD_OMS_AGENT_HOME>/bin/emctl stop agent`

The following commands are to be run as root.

4. As root, backup Middleware Home

```
cd <OLD_ORACLE_BASE>
nohup tar -cvpzf <BACKUP_DIR>/<BACKUP_FILE_NAME> <OLD_MIDDLEWARE_HOME_NAME> >
<BACKUP_DIR>/<BACKUP_LOG_FILE_NAME> 2>&1 &
```

Example:

```
cd /u01/app/oracle
nohup tar -cvpzf
/u01/app/oracle/local/backup/em_host1_MWare_12.5_pre_transition_backup_2016050
20811MT.tgz MWare_12.5 >
/u01/app/oracle/local/backup/nohup_mware_201605020811MT.out 2>&1 &
```

5. As root, backup Instance Base

```
cd <OLD_ORACLE_BASE>
nohup tar -cvpzf <BACKUP_DIR>/<BACKUP_FILE_NAME> <OLD_INSTANCE_BASE_NAME> >
<BACKUP_DIR>/<BACKUP_LOG_FILE_NAME> 2>&1 &
```

Example:

```
cd /u01/app/oracle
nohup tar -cvpzf
/u01/app/oracle/local/backup/em_host1_gc_inst_pre_transition_backup_2016050208
11MT.tgz gc_inst >
/u01/app/oracle/local/backup/nohup_gc_inst_201605020811MT.out 2>&1 &
```

6. As root, backup OMS Agent

```
cd <OLD_ORACLE_BASE>
nohup tar -cvpzf <BACKUP_DIR>/<BACKUP_FILE_NAME> <OLD_OMS_AGENT_BASE_NAME> >
<BACKUP_DIR>/<BACKUP_LOG_FILE_NAME> 2>&1 &
```

Example:

```
cd /u01/app/oracle
nohup tar -cvpzf
/u01/app/oracle/local/backup/em_host1_oms_agent_pre_transition_backup_20160502
0811MT.tgz oms_agent >
/u01/app/oracle/local/backup/nohup_oms_agent_201605020811MT.out 2>&1 &
```

7. As root, backup Oracle Inventory

Ensure the correct Oracle Inventory directory is backed up on each server. In our testing, the local storage inventory directory was different (*oraInventory.new*) on the Standby OMS1 than on the other OMSs (*oraInventory*). If you have questions about which inventory is in use, check the *oraInst.loc* files in the Oracle Homes for the OMS and OMS Agent related homes.

```
cd <OLD_ORACLE_BASE>
nohup tar -cvpzf <BACKUP_DIR>/<BACKUP_FILE_NAME> <OLD_INVENTORY_HOME_NAME> >
<BACKUP_DIR>/<BACKUP_LOG_FILE_NAME> 2>&1 &
```

Example:

```
cd /u01/app/oracle
```

```
nohup tar -cvpzf
/u01/app/oracle/local/backup/em_host1_oraInventory_pre_transition_backup_20160
5020811MT.tgz oraInventory >
/u01/app/oracle/local/backup/nohup_orainventory_201605020811MT.out 2>&1 &
```

8. As root, monitor the backups. Do not proceed until backups have completed.

```
ps -ef | grep tar
```

9. As root, review the nohup*.out files for errors
10. As root, if the backups have been made to a temporary directory, move the files now to a permanent directory.

The following commands are to be run as the Oracle Software Owner User.

11. (On Primary OMS servers only) Start OMS

```
<OLD_OMS_HOME>/bin/emctl start oms
```

12. (On Standby OMS1 server only) Start OMS Administration Server

```
<OLD_OMS_HOME>/bin/emctl start oms -admin_only
```

13. Startup OMS Agent

```
<OLD_OMS_AGENT_HOME>/bin/emctl start agent
```

Make sure that the above commands have been performed on all OMSs before continuing.

Backup the Software Library

The following commands are to be run as root.

Perform the following steps on a single OMS:

1. As root, backup the Software Library. The Software Library can be located by running the command `<OLD_OMS_HOME>/bin/emcli list_swlib_storage_locations` or by navigating to **Setup -> Provisioning and Patching -> Software Library** and viewing the Location within the Upload File Locations.

```
cd <SOFTWARE_LIBRARY_PARENT>
```

```
nohup tar -cvpzf <BACKUP_DIR>/<BACKUP_FILE_NAME> <SOFTWARE_LIBRARY_DIR_NAME> >
<BACKUP_DIR>/<BACKUP_LOG_FILE_NAME> 2>&1 &
```

Example:

```
cd /
```

```
nohup tar -cvpzf
/u01/app/oracle/local/backup/em_host1_SWLIB_pre_transition_backup_201605020811
MT.tgz SWLIB > /u01/app/oracle/local/backup/nohup_SWLIB_201605020811MT.out
2>&1 &
```

2. As root, monitor the backup. Do not proceed until backup has completed.

```
ps -ef | grep tar
```
3. As root, review the nohup*.out files for errors
4. As root, if the backups have been made to a temporary directory, move the files now to a permanent directory.

The following commands are to be run as the Oracle Software Owner User.

Backup the BI Publisher shared storage, if configured

If BI Publisher is configured, take a backup of the BI Publisher shared storage. While the backup needs to be performed from a single OMS, to ensure a consistent backup, BI Publisher must be stopped on all OMSs. Ensuring that BI Publisher is configured properly on all primary site OMS servers and is configured properly to make use of BI Publisher shared storage that is replicated between the primary and standby sites is a pre-requisite for performing the upgrade and transition.

Perform the following steps on Primary OMS1 to confirm the location of the BI Publisher shared storage.

1. Confirm the location of the BI Publisher shared storage config volume

```
<OLD_OMS_HOME>/bin/emctl get property -name  
oracle.sysman.core.eml.ip.bip.SharedStorageConfigVolume
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emctl get property -name  
oracle.sysman.core.eml.ip.bip.SharedStorageConfigVolume  
Oracle Enterprise Manager Cloud Control 12c Release 5  
Copyright (c) 1996, 2015 Oracle Corporation. All rights reserved.  
SYSMAN password:  
Value for property oracle.sysman.core.eml.ip.bip.SharedStorageConfigVolume at  
Global level is /BIP/config
```

2. Confirm the location of the BI Publisher shared storage cluster volume

```
<OLD_OMS_HOME>/bin/emctl get property -name  
oracle.sysman.core.eml.ip.bip.SharedStorageClusterVolume
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emctl get property -name  
oracle.sysman.core.eml.ip.bip.SharedStorageClusterVolume  
Oracle Enterprise Manager Cloud Control 12c Release 5  
Copyright (c) 1996, 2015 Oracle Corporation. All rights reserved.  
SYSMAN password:  
Value for property oracle.sysman.core.eml.ip.bip.SharedStorageClusterVolume at  
Global level is /BIP/cluster
```

3. Review the results above to ensure the following document variables are correct, as they will be used in the following backup and referenced in future steps.

```
<BIP_STORAGE_MOUNT_POINT>  
<BIP_STORAGE_DIR_NAME>  
<BIP_STORAGE_PARENT>  
<BIP_CLUSTER_VOLUME>  
<BIP_CONFIG_VOLUME>
```

Example:

```
/BIP  
BIP  
/  
/BIP/cluster  
/BIP/config
```

Perform the following step on all primary site OMSs to stop BI Publisher before the backup:

1. (On Primary OMS servers only) Stop BI Publisher
`<OLD_OMS_HOME>/bin/emctl stop oms -bip_only`

The following commands are to be run as root.

Perform the following steps on a single OMS:

1. As root, backup the BI Publisher shared storage.
`cd <BIP_STORAGE_PARENT>`
`nohup tar -cvpzf <BACKUP_DIR>/<BACKUP_FILE_NAME> <BIP_STORAGE_DIR_NAME> >`
`<BACKUP_DIR>/<BACKUP_LOG_FILE_NAME> 2>&1 &`
Example:
`cd /`
`nohup tar -cvpzf`
`/u01/app/oracle/local/backup/em_host1_BIP_pre_transition_backup_201605020811MT`
`.tgz BIP > /u01/app/oracle/local/backup/nohup_BIP_201605020811MT.out 2>&1 &`
2. As root, monitor the backup. Do not proceed until backup has completed.
`ps -ef | grep tar`
3. As root, review the nohup*.out files for errors
4. As root, if the backups have been made to a temporary directory, move the files now to a permanent directory.

The following commands are to be run as the Oracle Software Owner User.

Perform the following step on all primary site OMSs to start BI Publisher after the backup:

1. (On Primary OMS servers only) Start BI Publisher
`<OLD_OMS_HOME>/bin/emctl start oms -bip_only`

Backup the Repository Database(s)

Backup the repository database. Identify and preserve repository database backup(s) for the initial startup period. Consider setting a guaranteed restore point before beginning the upgrade and transition process. See [Oracle Database Backup and Recovery User's Guide](#) for more information on Flashback Database and Restore Points.

Note: It is critically important to ensure that the backups completed above for all of the OMSs and the repository database are complete and safeguarded before proceeding with this upgrade and transition process as they will be needed if issues are encountered in the upgrade and transition that require restoring the environment.

Deinstall Standby OMSs and OMS Agents

Remove the standby OMSs starting with standby OMS2, then standby OMS1. For additional details, see [Removing Standby Oracle Management Services in the Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).

Deinstall Standby OMSs

1. On the first Standby OMS, start the admin server if not already started

```
<OLD_OMS_HOME>/bin/emctl start oms -admin_only
```

2. Deconfigure and delete additional standby OMS2 instance by running the following command from the OMS home **on Standby OMS2**. Pay close attention to the name of the standby OMS2,

```
<OLD_STANDBY_OMS2_NAME>, which likely may be EMGC_OMS3:
```

```
<OLD_OMS_HOME>/bin/omsca delete -OMSNAME <OLD_STANDBY_OMS2_NAME> -REP_CONN_STR "<REPOSITORY_CONNECTION_STRING>"
```

When prompted, enter the repository login credentials.

Example:

```
[oracle@host4 ~]$ /u01/app/oracle/MWare_12.5/oms/bin/omsca delete -OMSNAME EMGC_OMS3 -REP_CONN_STR "(DESCRIPTION_LIST=(LOAD_BALANCE=off) (FAILOVER=on) (DESCRIPTION=(CONNECT_TIMEOUT=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDRESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP) (HOST=pcluster-scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))) (DESCRIPTION=(CONNECT_TIMEOUT=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDRESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP) (HOST=scluster-scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com)))"
```

```
Oracle Enterprise Manager Cloud Control 12c Release 12.1.0.5.0
```

```
Copyright (c) 1996, 2015, Oracle. All rights reserved.
```

```
Enter Administration Server user name:weblogic
```

```
Enter Administration Server user password:
```

```
Enter Repository database user password:
```

```
Do You really want to delete the OMS (Y|N):Y
```

```
OMS Deleted successfully
```

3. In EM, remove targets for WebLogic domain for Standby OMS2, <OLD_STANDBY_OMS2_NAME> and <OLD_STANDBY_OMS2_OHS_NAME>, for example EMGC_OMS3 and ohs3. Ensure that the correct target names are referenced in the commands below.
 - a. Wait for status to change to Down for the <OLD_STANDBY_OMS2_NAME> and <OLD_STANDBY_OMS2_OHS_NAME>, for example EMGC_OMS3 and ohs3
 - b. Remove Standby OMS2 target <OLD_STANDBY_OMS2_NAME>, for example EMGC_OMS3
 - i. Navigate to the home page for target /EMGC_GCDomainStby/GCDomainStby/EMGC_OMS3
 - ii. Select WebLogic Server -> Target Setup -> Remove Target...
 - iii. On the Warning screen, select Yes
 - iv. Confirm that the target has been deleted
 - c. Remove Standby OMS2 ohs target <OLD_STANDBY_OMS2_OHS_NAME>, for example ohs3
 - i. Navigate to the home page for target /EMGC_GCDomainStby/instance3/ohs3

- ii. Select Oracle HTTP Server -> Target Setup -> Remove Target...
 - iii. On the Confirmation dialog, select Yes
 - iv. Confirm that the target has been deleted
4. Deconfigure and delete the first standby OMS instance by running the following command from the OMS home **on Standby OMS1**:

```
<OLD_OMS_HOME>/bin/omsca delete -full -REP_CONN_STR
"<REPOSITORY_CONNECTION_STRING>"
```

Note:

You are prompted to confirm your action, and furnish the AdminServer credentials and the repository database password. Once you provide the required details, the command automatically stops the OMS, Oracle WebLogic Server, and also Oracle WebTier.

Example:

```
[oracle@host3 ~]$ /u01/app/oracle/MWare_12.5/oms/bin/omsca delete -full -
REP_CONN_STR
"(DESCRIPTION_LIST=(LOAD_BALANCE=off) (FAILOVER=on) (DESCRIPTION=(CONNECT_TIMEOU
T=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDRESS_LIST=(LOAD_BALANCE=on
) (ADDRESS=(PROTOCOL=TCP) (HOST=pcluster-
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))) (DE
SCRIPTION=(CONNECT_TIMEOUT=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDR
ESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP) (HOST=scluster-
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))))"
Oracle Enterprise Manager Cloud Control 12c Release 12.1.0.5.0
Copyright (c) 1996, 2015, Oracle. All rights reserved.
```

```
Found only one OMS : EMGC_OMS1
Do You really want to delete the OMS (Y|N):Y
Enter Administration Server user name:weblogic
Enter Administration Server user password:
Enter Repository database user password:
Do You really want to delete the OMS (Y|N):Y
OMS Deleted successfully
```

5. In EM, delete the WebLogic Domain target for the Standby site, /EMGC_GCDomainStby/GCDomainStby
- a. Navigate to the home page for the GCDomainStby WebLogic Domain target.
 - b. From the **WebLogic Domain** menu, select **Target Setup** and then **Remove Target**. Enterprise Manager displays a Warning dialog asking if you wish to continue. Click **Yes**.

Deinstall Standby OMS Agents

Perform the following steps **on both Standby OMS servers** to deinstall the Standby OMS Agents. For further details, see [Deinstalling Oracle Management Agents in the Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#).

1. Shut down the Management Agent **on both Standby OMS servers** by running the following command from its home. If it is already shut down, then skip this step.

```
<OLD_OMS_AGENT_HOME>/bin/emctl stop agent
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/bin/emctl stop agent
```

2. Wait for the Management Agent **on both Standby OMS servers** to go to the *unreachable* state in the Cloud Control console. If it is already in the *unreachable* state, then go to the next step. It is ok to continue if the agent shows Down.
3. **From Primary OMS1**, delete the Management Agent targets and their monitored targets **for both Standby OMS servers**:

```
<OLD_OMS_HOME>/bin/emcli login -username="<EM_USERNAME>"
<OLD_OMS_HOME>/bin/emcli delete_target
-name="<STANDBY_OMS1_PHYSICAL_FQDN>:<OMS_AGENT_PORT>"
-type="oracle_emd"
-delete_monitored_targets
<OLD_OMS_HOME>/bin/emcli delete_target
-name="<STANDBY_OMS2_PHYSICAL_FQDN>:<OMS_AGENT_PORT>"
-type="oracle_emd"
-delete_monitored_targets
```

Note:

For information on EM CLI and instructions to set it up, see [Oracle Enterprise Manager Command Line Interface Guide](#).

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emcli login -username="john.doe@domain.com"
/u01/app/oracle/MWare_12.5/oms/bin/emcli delete_target -
name="host3.domain.com:3872" -type="oracle_emd" -delete_monitored_targets
/u01/app/oracle/MWare_12.5/oms/bin/emcli delete_target -
name="host4.domain.com:3872" -type="oracle_emd" -delete_monitored_targets
```

Example Output:

```
[oracle@host1 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/emcli login -
username="john.doe@domain.com"
Enter password

Login successful
[oracle@host1 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/emcli delete_target
-name="host3.domain.com:3872" -type="oracle_emd" -delete_monitored_targets
Target "host3.domain.com:3872:oracle_emd" deleted successfully
[oracle@host1 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/emcli delete_target
-name="host4.domain.com:3872" -type="oracle_emd" -delete_monitored_targets
Target "host4.domain.com:3872:oracle_emd" deleted successfully
```

Note: It is very important to note that while the emcli command in this step is performed on Primary OMS1, the AgentDeinstall.pl step MUST be performed on the Standby OMS1 and Standby OMS2 servers. Failure to pay very close attention to where this next step is run will cause deinstall of the wrong agent.

4. Invoke the AgentDeinstall.pl script for the OMS agent **on each Standby OMS server**:

```
<OLD_OMS_AGENT_HOME>/perl/bin/perl
<OLD_OMS_AGENT_HOME>/sysman/install/AgentDeinstall.pl -agentHome
<OLD_OMS_AGENT_HOME>
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/perl/bin/perl
/u01/app/oracle/oms_agent/core/12.1.0.5.0/sysman/install/AgentDeinstall.pl -
agentHome /u01/app/oracle/oms_agent/core/12.1.0.5.0/
```

5. Manually delete the agent base directory for the OMS agent **on each Standby OMS Server**.

```
rm -rf <OLD_OMS_AGENT_BASE>
```

Example:

```
[oracle@host3 ~]$ rm -rf /u01/app/oracle/oms_agent
```

```
[oracle@host4 ~]$ rm -rf /u01/app/oracle/oms_agent
```

Deinstall Standby OMS binaries

Perform the following steps **on both Standby OMS servers** to deinstall the Standby OMS binaries.

At this point, the OMS and OMS agent on Standby OMS servers have been stopped, and the Standby OMS agents have been deinstalled. The Standby OMS binaries are still installed. Deinstall the Standby OMS binaries.

1. Deinstall the Enterprise Manager OMS components on both Standby OMSs, following the instructions in Procedure for Deinstalling Enterprise Manager in [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). The following is an example of the command to run. Be sure to replace the variables as appropriate for your environment. See the documentation for further details on the deinstallation command and process:

```
<OLD_OMS_HOME>/oui/bin/runInstaller -deinstall ORACLE_HOME=<OLD_OMS_HOME> -
jreLoc <OLD_MIDDLEWARE_HOME>/jdk16/jdk -removeallfiles -invPtrLoc
<OLD_OMS_INVENTORY_HOME>/oraInst.loc
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/oui/bin/runInstaller -deinstall
ORACLE_HOME=/u01/app/oracle/MWare_12.5/oms -jreLoc
/u01/app/oracle/MWare_12.5/jdk16/jdk -removeallfiles -invPtrLoc
/u01/app/oracle/oraInventory/oraInst.loc
```

Prepare Primary and Standby OMS Servers

This section details the steps required to prepare the Primary and Standby OMSs for an upgrade and transition to DR readiness.

Prepare all OMS Servers for OMS replicated storage

Prepare all OMSs at Primary and Standby sites to be configured to be able to mount OMS replicated storage that will be used to store the Middleware Home, Instance Base, OMS Agent Base, and Oracle Inventory for each OMS.

The following commands are to be run as root.

1. As root, **on all primary and standby OMS servers**, create the OMS Installation Base Directory. This directory will serve as the mount point for replicated storage.

```
mkdir -p <OMS_MOUNT_POINT>
```

Example:

```
mkdir -p /u01/app/oracle/OMS
```

2. As root, **on all primary and standby OMS servers**, make a backup of the /etc/fstab file

```
cp -p /etc/fstab /etc/fstab.before_replicated_storage_YYYYMMDD
```

Example:

```
cp -p /etc/fstab /etc/fstab.before_replicated_storage_20160502
```

3. As root, **on primary OMS1 and standby OMS1 server**, update /etc/fstab with mount point details for replicated storage

The following is an example of storage details for the OMS replicated storage directory. NFS share, storage mount point, and NFS options should be updated as appropriate for your environment.

See [Oracle Enterprise Manager Cloud Control Basic Installation Guide](#) for important details on NFS Mount Point Location Requirements.

Example:

```
nasstorage:/export/host1_1 /u01/app/oracle/OMS nfs  
rw,bg,rsize=32768,wsiz=32768,hard,nointr,tcp,noacl,vers=3,timeo=600 0 0
```

4. As root, **on primary OMS2 and standby OMS2 server**, update /etc/fstab with mount point details for replicated storage

The following is an example of storage details for the OMS replicated storage directory. NFS share, storage mount point, and NFS options should be updated as appropriate for your environment.

See [Oracle Enterprise Manager Cloud Control Basic Installation Guide](#) for important details on NFS Mount Point Location Requirements.

Example:

```
nasstorage:/export/host2_1 /u01/app/oracle/OMS nfs  
rw,bg,rsize=32768,wsiz=32768,hard,nointr,tcp,noacl,vers=3,timeo=600 0 0
```

5. As root, **on all primary OMS servers**, mount the replicated storage

```
mount <OMS_MOUNT_POINT>
```

Example:

```
mount /u01/app/oracle/OMS
```

6. As root, **on all primary OMS servers**, change ownership of the mounted directory to the oracle owner and oracle install group

```
chown <ORACLE_SOFTWARE_OWNER_USER>:<ORACLE_INVENTORY_GROUP> <OMS_MOUNT_POINT>
```

Example:

```
chown oracle:oinstall /u01/app/oracle/OMS
```

7. As root, **on all primary OMS servers**, change permissions of the mounted directory to 755

```
chmod 755 <OMS_MOUNT_POINT>
```

Example:

```
chmod 755 /u01/app/oracle/OMS
```

8. As root, **on all primary OMS servers**, confirm ownership and permissions of the mounted directory

```
ls -alF <OMS_MOUNT_POINT>
```

Example:

```
ls -alF /u01/app/oracle/OMS
```

Prepare all OMS Servers for replicated BI Publisher Shared Storage

Prepare all OMSs at Primary and Standby sites to be able to mount replicated BI Publisher shared storage.

If BI Publisher is already configured in the EM 12c environment, the BI Publisher shared storage used on the primary site should have been configured so that it is replicated between the primary and standby sites as part of preparation for this upgrade and transition process. If this has not yet been completed, correct this now, as the BI Publisher configuration will be used in the upgrade and transition process.

If BI Publisher is not yet configured in the EM 12c environment, prepare the primary and standby OMS servers to be ready to mount the replicated BI Publisher shared storage. Ensure that the replicated BI Publisher shared storage is mounted on both primary OMS servers, the BI Publisher shared storage has appropriate permissions and ownership for the Oracle Software Install User, and the BI Publisher config volume and cluster volume directories are created on the replicated BI Publisher shared storage.

For more information regarding storage replication requirements, see Ensure replicated storage is provisioned and active on the primary site.

Prepare all OMS Servers for Alias Hostnames

Edit the `/etc/hosts` files on primary and standby OMS servers to include alias hostnames. Implementing alias hostnames in `/etc/hosts` requires that the order of name resolution specified in `/etc/nsswitch` be configured such that files are used before performing network lookups via DNS.

The following commands are to be run as root.

1. As root, edit the `/etc/hosts` files **on both OMSs at the primary site** to contain the alias hostnames for both OMSs at the primary site. As depicted in the example below, the physical and alias hostname information for all OMSs at the primary site should be contained in the `/etc/hosts` file on each OMS at the primary site.

- a. As root, make a backup of the `/etc/hosts` file

```
cp -p /etc/hosts /etc/hosts.before_alias_hostname_YYYYMMDD
```

Example:

```
cp -p /etc/hosts /etc/hosts.before_alias_hostname_20160502
```

- b. As root, modify the `/etc/hosts` file to contain the alias hostnames

```
<OMS1_ALIAS_HOSTNAME_FQDN>
```

```
<OMS2_ALIAS_HOSTNAME_FQDN>
```

```
vi /etc/hosts
```

Example:

```
emoms1.domain.com
```

```
emoms2.domain.com
```

The file should contain content similar to the following, with the appropriate values for the environment. The file content should be the same on both Primary OMS servers.

```
[root@host1 oracle]# cat /etc/hosts
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1          localhost.localdomain localhost
192.168.35.181    host1.domain.com host1 emoms1.domain.com
192.168.35.183    host2.domain.com host2 emoms2.domain.com
```

2. As root, edit the /etc/hosts files **on both OMSs at the standby site** to contain the alias hostnames for both OMSs at the standby site. As depicted in the example below, the physical and alias hostname information for all OMSs at the standby site should be contained in the /etc/hosts file on each OMS at the standby site.

- a. As root, make a backup of the /etc/hosts file

```
cp -p /etc/hosts /etc/hosts.before_alias_hostname_YYYYMMDD
```

Example:

```
cp -p /etc/hosts /etc/hosts.before_alias_hostname_20160502
```

- b. As root, modify the /etc/hosts file to contain the alias hostnames for both OMSs at the standby site. As depicted in the example below, the physical and alias hostname information for all OMSs at the standby site should be contained in the /etc/hosts file on each OMS at the standby site.

```
<OMS1_ALIAS_HOSTNAME_FQDN>
```

```
<OMS2_ALIAS_HOSTNAME_FQDN>
```

```
vi /etc/hosts
```

Example:

```
emoms1.domain.com
```

```
emoms2.domain.com
```

The file should contain content similar to the following, with the appropriate values for the environment. The file content should be the same on both Standby OMS servers.

```
[root@host3 oracle]# cat /etc/hosts
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1          localhost.localdomain localhost
192.168.35.186    host3.domain.com host3 emoms1.domain.com
192.168.35.188    host4.domain.com host4 emoms2.domain.com
```

Create Inventory Directory and pointer file on Primary OMS1 Server

As part of the upgrade and transition to replicated storage, the OMS and OMS Agent software must be associated with Oracle Inventory located on replicated storage. This location must be located beneath the OMS Installation Base Directory, identified in this whitepaper by <OMS_MOUNT_POINT>. In this whitepaper, the Oracle Inventory directory on replicated storage is <OMS_MOUNT_POINT>/oraInventory, identified as <NEW_INVENTORY_HOME>. Once the upgrade is complete, it will be important to use this location for all maintenance of the OMS and OMS Agent to ensure that software maintenance can be performed on whichever site is currently serving as the active site.

Create the Oracle Inventory directory located on replicated storage and create the oraInst.loc Inventory Location pointer file in that directory on Primary OMS1. The Inventory Location pointer file will be used when launching the installer to perform the upgrade to ensure that the upgraded software will be associated with inventory on replicated storage. For further details, see [Configure an Oracle Inventory located under OMS installation base directory in the Oracle Enterprise Manager Advanced Installation and Configuration Guide](#).

The following commands are to be run as the Oracle Software Owner User.

1. As software owner user, on Primary OMS1, create the Oracle Inventory directory under the new OMS installation base directory:

```
mkdir -p <NEW_INVENTORY_HOME>
```

Example:

```
mkdir -p /u01/app/oracle/OMS/oraInventory
```

2. As software owner user, on Primary OMS1, create an oraInst.loc file in the directory above with the following content, specifying the path information to the Oracle Inventory directory on replicated storage and specifying the group of the software owner user:

```
vi <NEW_INVENTORY_HOME>/oraInst.loc
```

Example:

```
vi /u01/app/oracle/OMS/oraInventory/oraInst.loc
```

Edit the file to contain the following content, replacing variables with their values:

```
inventory_loc=<NEW_INVENTORY_HOME>
```

```
inst_group=<ORACLE_INVENTORY_GROUP>
```

Example:

```
inventory_loc=/u01/app/oracle/OMS/oraInventory
```

```
inst_group=oinstall
```

3. Confirm the contents of the file:

```
cat <NEW_INVENTORY_HOME>/oraInst.loc
```

Example:

```
cat /u01/app/oracle/OMS/oraInventory/oraInst.loc
```

Example Output:

```
$ cat /u01/app/oracle/OMS/oraInventory/oraInst.loc
```

```
inventory_loc=/u01/app/oracle/OMS/oraInventory
```

```
inst_group=oinstall
```

Stage EM 13c Installation Software on Primary OMS1 Server

Stage the EM 13c installation to the Primary OMS1 server.

1. Create the upgrade staging directory on the Primary OMS1 server

```
mkdir -p <UPGRADE_STAGING_DIR>
```

Example:

```
mkdir -p /u01/app/oracle/OMS/stage
```

2. Download or copy the EM 13.2 installation software to the upgrade staging directory.
3. Confirm the upgrade staging directory contains the installer files. The dates and sizes will likely differ from the example here. The key is to ensure that the download or copy was completed successfully.

```
ls -alF <UPGRADE_STAGING_DIR>
```

Example:

```
ls -alF /u01/app/oracle/OMS/stage
```

Example Output:

```
$ ls -alF /u01/app/oracle/OMS/stage
```

```
total 7733481
```

```
drwxr-xr-x 2 oracle oinstall      8 Mar 21 14:33 ./
```

```
drwxr-xr-x 4 oracle oinstall      6 Mar 21 14:28 ../
```

```
-r--r--r-- 1 oracle oinstall 2118069286 Mar 21 14:31 em13200_linux64-2.zip
```

```
-r--r--r-- 1 oracle oinstall 553563608 Mar 21 14:31 em13200_linux64-3.zip
-r--r--r-- 1 oracle oinstall 2084134870 Mar 21 14:31 em13200_linux64-4.zip
-r--r--r-- 1 oracle oinstall 2128056504 Mar 21 14:31 em13200_linux64-5.zip
-r--r--r-- 1 oracle oinstall 474434243 Mar 21 14:31 em13200_linux64-6.zip
-r-xr-xr-x 1 oracle oinstall 554642127 Mar 21 14:31 em13200_linux64.bin*
```

Prepare Local Lock File Directory on all OMS Servers

Identify a directory on local storage that can be consistently configured on all primary and standby OMS servers.

The following commands are to be run as the Oracle Software Owner User

1. Create the following local lock file directory on local storage **on all OMSs at the primary and standby sites:**

```
mkdir -p <LOCAL_LOCK_FILE_DIR>
```

Example:

```
mkdir -p /u01/app/oracle/local/ohs_locks
```

Prepare OMS Staging Directory on all OMS Servers

Identify and add a directory on local storage with 8GB of free space that that can be consistently configured on all primary and standby OMS servers for use if FTP or HTTP(S) is used to transfer files within the Add Oracle Management Service deployment procedure. Although this whitepaper only includes creation of an additional OMS when the primary site is active, these instructions add the directories to all of the primary and standby site servers to allow for a future addition of an additional OMS regardless of the currently active site.

The following commands are to be run as the Oracle Software Owner User

1. On all Primary and Standby OMS hosts, create a directory on a filesystem with 8GB of free space. The directory name must be the same on all servers. Ensure that the directory is readable and writeable by the Oracle Software Owner User.

For example, if the directory is a local directory, perform the following on both Primary OMS1 and Primary OMS2 hosts:

```
mkdir -p <OMS_STAGING_DIR>
```

```
ls -alF <OMS_STAGING_DIR>
```

```
df -h <OMS_STAGING_DIR>
```

Example:

```
mkdir -p /u01/app/oracle/local/stage
```

```
ls -alF /u01/app/oracle/local/stage
```

```
df -h /u01/app/oracle/local/stage
```

Delete Primary OMS2 and OMS2 Agent

Before beginning the upgrade, delete the additional OMSs and the agents on the additional OMSs. Perform the following sequentially for each additional OMS in the environment. The instructions in this section are a subset of the instructions in Prerequisites for Deinstalling Only the OMS and Retaining the Management Repository in [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#), as only the additional OMSs and OMS agents are being deleted.

Stop and Delete Primary OMS2

Perform the following steps to stop and delete the Primary OMS2.

The following commands are to be run as the Oracle Software Owner User.

1. On Primary OMS2, if BI Publisher is configured, stop the Oracle BI Publisher managed server running on OMS2

```
<OLD_OMS_HOME>/bin/emctl stop oms -bip_only -force
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emctl stop oms -bip_only -force
```

Note: If any Oracle BI Publisher managed server fails to stop, then manually kill it using operating system commands. Ensure to gracefully stop the process. For example, on Linux, use 'kill xxxx' and not 'kill -9 xxxx' where xxxx is the process.

2. On Primary OMS2, if BI Publisher is configured, delete the BI Publisher managed server stopped in the previous step by running the following command

```
<OLD_OMS_HOME>/bin/configureBIP -delete
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/configureBIP -delete
```

Example Output:

```
[oracle@host2 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/configureBIP -delete
Configuring BI Publisher Version "11.1.1.7.0" to work with Enterprise Manager
Logging started at
/u01/app/oracle/MWare_12.5/oms/cfgtoollogs/bip/bipca_20160502135449.log.
```

```
Found one BI Publisher server named :BIP2:.
```

```
Do You really want to delete the BI Publisher server (Y|N):y
```

```
Enter repository user (SYSMAN) user password:
```

```
Enter Administration Server user password:
```

```
Deleting BI Publisher server named :BIP2:.
```

```
The BI Publisher server named :BIP2: has been permanently disabled.
```

```
The BI Publisher server named :BIP2: has been deleted successfully.
```

3. On Primary OMS2, perform an omsca delete to remove the second primary OMS configuration. This cleanly removes the second primary OMS <OLD_PRIMARY_OMS2_NAME>, for example EMGC_OMS2, from the EM repository and from the WebLogic configuration, and updates configuration files appropriately.

```
<OLD_OMS_HOME>/bin/omsca delete -OMSNAME <OLD_PRIMARY_OMS2_NAME> -REP_CONN_STR
"<REPOSITORY_CONNECTION_STRING>"
```

Example:

```

/u01/app/oracle/MWare_12.5/oms/bin/omsca delete -OMSNAME EMGC_OMS2 -
REP_CONN_STR
" (DESCRIPTION_LIST=(LOAD_BALANCE=off) (FAILOVER=on) (DESCRIPTION=(CONNECT_TIMEOU
T=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDRESS_LIST=(LOAD_BALANCE=on
) (ADDRESS=(PROTOCOL=TCP) (HOST=pcluster-
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))) (DE
SCRIPTION=(CONNECT_TIMEOUT=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDR
ESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP) (HOST=scluster-
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com)))) "

```

Example Output:

```

[oracle@host2 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/omsca delete -
OMSNAME EMGC_OMS2 -REP_CONN_STR
" (DESCRIPTION_LIST=(LOAD_BALANCE=off) (FAILOVER=on) (DESCRIPTION=(CONNECT_TIMEOU
T=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDRESS_LIST=(LOAD_BALANCE=on
) (ADDRESS=(PROTOCOL=TCP) (HOST=pcluster-
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))) (DE
SCRIPTION=(CONNECT_TIMEOUT=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDR
ESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP) (HOST=scluster-
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com)))) "
Oracle Enterprise Manager Cloud Control 12c Release 12.1.0.5.0
Copyright (c) 1996, 2015, Oracle. All rights reserved.

```

```

Enter Administration Server user name:weblogic
Enter Administration Server user password:
Enter Repository database user password:
Do You really want to delete the OMS (Y|N):Y
OMS Deleted successfully

```

4. In EM, remove targets for WebLogic domain for Primary OMS2, <OLD_PRIMARY_OMS2_NAME>, <OLD_PRIMARY_OMS2_OHS_NAME>, and if BI Publisher is configured on Primary OMS2 <OLD_PRIMARY_OMS2_BIP_NAME>, for example EMGC_OMS2, ohs2, and BIP2.
 - a. Wait for status to change to Down for the <OLD_PRIMARY_OMS2_NAME>, <OLD_PRIMARY_OMS2_OHS_NAME>, and if BI Publisher is configured on Primary OMS2 <OLD_PRIMARY_OMS2_BIP_NAME>, for example EMGC_OMS2, ohs2, and BIP2.

- i. On Primary OMS2, can check the status of agent

```
<OLD_OMS_AGENT_HOME>/bin/emctl status agent
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/bin/emctl status agent
```

If the status shows OMS is unreachable, try an emctl upload agent

Note: This step to upload from the OMS2 agent is added in this order (after OMS2 has been deleted) for customers running in a High Availability configuration to provide administrators with visibility of the latest state of the components in the environment.

Note: You may receive an error attempting the upload that may last for several minutes and then should clear. The error is "EMD upload error:full upload has failed: uploadXMLFiles skipped :: OMS version not checked yet. If this issue persists check trace files for ping to OMS related errors. (OMS_DOWN)"

- b. If BI Publisher is configured on Primary OMS2, remove target <OLD_PRIMARY_OMS2_BIP_NAME>, for example BIP2
 - i. Navigate to the home page for target /EMGC_GCDomain/GCDomain/BIP2
 - ii. Select WebLogic Server -> Target Setup -> Remove Target...
 - iii. On the Warning screen, select Yes
 - iv. Confirm that the target has been deleted
- c. Remove Primary OMS2 target <OLD_PRIMARY_OMS2_NAME>, for example EMGC_OMS2
 - i. Navigate to the home page for target /EMGC_GCDomain/GCDomain/EMGC_OMS2
 - ii. Select WebLogic Server -> Target Setup -> Remove Target...
 - iii. On the Warning screen, select Yes
 - iv. Confirm that the target has been deleted
- d. Remove Primary OMS2 ohs target <OLD_PRIMARY_OMS2_OHS_NAME>, for example ohs2
 - i. Navigate to the home page for target /EMGC_GCDomain/instance2/ohs2
 - ii. Select Oracle HTTP Server -> Target Setup -> Remove Target...
 - iii. On the Confirmation dialog, select Yes
 - iv. Confirm that the target has been deleted

5. Upload from OMS2 agent

```
<OLD_OMS_AGENT_HOME>/bin/emctl upload agent
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/bin/emctl upload agent
```

Note: This step to upload from the OMS2 agent is added in this order (after OMS2 has been deleted) for customers running in a High Availability configuration to provide administrators with visibility of the latest state of the components in the environment. If you are only running with a single OMS or if the OMS Agent is not configured to communicate via the Server Load Balancer, this command will not work and can be skipped.

Note: You may receive an error attempting the upload that may last for several minutes and then should clear. The error is "EMD upload error:full upload has failed: uploadXMLFiles skipped :: OMS version not checked yet. If this issue persists check trace files for ping to OMS related errors. (OMS_DOWN)"

Stop and Deinstall Primary OMS2 Agent

Perform the following steps to deinstall the Primary OMS2 Agent.

1. Stop the OMS2 agent

```
<OLD_OMS_AGENT_HOME>/bin/emctl stop agent
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/bin/emctl stop agent
```

2. Wait for the Management Agent to go to the *unreachable* state in the Cloud Control console. If it is already in the *unreachable* state, then go to the next step. It is ok to continue if the agent shows Down.

3. Delete the Management Agent target and its monitored targets **for Primary OMS2** server. **Run the following emcli commands from Primary OMS1:**

```
<OLD_OMS_HOME>/bin/emcli login -username="<EM_USERNAME>"
```

```
<OLD_OMS_HOME>/bin/emcli delete_target
```

```
-name="<PRIMARY_OMS2_PHYSICAL_FQDN>:<OMS_AGENT_PORT>"
-type="oracle_emd"
-delete_monitored_targets
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emcli login -username="john.doe@domain.com"
/u01/app/oracle/MWare_12.5/oms/bin/emcli delete_target -
name="host2.domain.com:3872" -type="oracle_emd" -delete_monitored_targets
```

Example Output:

```
[oracle@host1 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/emcli login -
username="john.doe@domain.com"
```

Enter password

Login successful

```
[oracle@host1 oracle]$ /u01/app/oracle/MWare_12.5/oms/bin/emcli delete_target
-name="host2.domain.com:3872" -type="oracle_emd" -delete_monitored_targets
Target "host2.domain.com:3872:oracle_emd" deleted successfully
```

Note: It is very important to note that while the emcli command in this step is performed on Primary OMS1, the AgentDeinstall.pl step MUST be performed on the Primary OMS2 server. Failure to pay very close attention to where this next step is run will cause deinstall of the wrong agent.

4. Invoke the AgentDeinstall.pl script for the OMS agent **on Primary OMS2 server:**

```
<OLD_OMS_AGENT_HOME>/perl/bin/perl
<OLD_OMS_AGENT_HOME>/sysman/install/AgentDeinstall.pl -agentHome
<OLD_OMS_AGENT_HOME>
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/perl/bin/perl
/u01/app/oracle/oms_agent/core/12.1.0.5.0/sysman/install/AgentDeinstall.pl -
agentHome /u01/app/oracle/oms_agent/core/12.1.0.5.0
```

Note: After reporting a successful deinstall message, the above command may throw the following error, which is ignorable:

Can't locate Carp.pm in @INC (@INC contains:

5. Manually delete the agent base directory for the OMS agent **on Primary OMS2 Server.**

```
rm -rf <OLD_OMS_AGENT_BASE>
```

Example:

```
[oracle@host2 ~]$ rm -rf /u01/app/oracle/oms_agent
```

Deinstall Primary OMS2 binaries

At this point, the OMS and OMS agent on Primary OMS2 server have been stopped, the OMS has been deleted, and the OMS agent has been deinstalled. The OMS binaries are still installed. Perform the following steps to deinstall the Primary OMS2 binaries.

1. Deinstall the Enterprise Manager OMS components on Primary OMS2, following the instructions in Procedure for Deinstalling Enterprise Manager in [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). The following is an example of the command to run. Be sure to replace the variables as appropriate for your environment. See the documentation for further details on the deinstallation command and process:

```
<OLD_OMS_HOME>/oui/bin/runInstaller -deinstall ORACLE_HOME=<OLD_OMS_HOME> -  
jreLoc <OLD_MIDDLEWARE_HOME>/jdk16/jdk -removeallfiles -invPtrLoc  
<OLD_OMS_INVENTORY_HOME>/oraInst.loc
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/oui/bin/runInstaller -deinstall  
ORACLE_HOME=/u01/app/oracle/MWare_12.5/oms -jreLoc  
/u01/app/oracle/MWare_12.5/jdk16/jdk -removeallfiles -invPtrLoc  
/u01/app/oracle/oraInventory/oraInst.loc
```

Upgrade and Transition OMS1 and Repository

Invoke the installer to perform the upgrade and transition OMS1 to DR readiness. This will upgrade OMS1 and the EM Repository from 12.1 to 13.2, and will change the host name used by the WebLogic Server and EM components on OMS1 from the physical host name to the alias host name.

Perform a final review before the upgrade begins

Ensure that the environment is prepared for the upgrade and transition. Ensure that all preparation steps have been performed. Review Prerequisites for Upgrading to Enterprise Manager Cloud Control 13c Release 2 in the [Oracle Enterprise Manager Cloud Control Upgrade Guide](#). Take any action required to address missed preparation.

Stop Primary OMS1 and OMS1 Agent

1. Stop OMS1

```
<OLD_OMS_HOME>/bin/emctl stop oms -all
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/bin/emctl stop oms -all
```

2. Stop the primary OMS1 agent

```
<OLD_OMS_AGENT_HOME>/bin/emctl stop agent
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/bin/emctl stop agent
```

Perform the upgrade from Primary OMS1

Launch the installer and navigate through the installer screens following the steps below to upgrade and transition the Primary OMS1 and the repository. The steps below highlight important parameters and settings for the upgrade. For further details, see the Oracle Enterprise Manager Cloud Control Upgrade Guide.

1. Open a terminal in a graphical session as the Oracle Software Installation Owner such as via VNC.
2. Change directory to the upgrade staging directory.

```
cd <UPGRADE_STAGING_DIR>
```

Example:

```
cd /u01/app/oracle/OMS/stage
```

3. Understand the parameters required to be passed to enable the Upgrade and Transition to DR Readiness.
 - a. Specifying the following parameter and value ensures that the Enterprise Manager Cloud Control 13c installation will be associated with Oracle Inventory located on replicated storage:

```
-invPtrLoc <NEW_INVENTORY_HOME>
```

- b. Specifying the following parameter and value enables the Upgrade and Transition to DR Readiness mode of the installer:

```
UPGRADE_TRANSITION=true
```

- c. The following parameter and value specifies the alias hostname to use for the upgraded OMS1. Instructions below ensure that the Host Name field on the Installation Details page is reviewed and updated if necessary to match the alias hostname of OMS1:

```
ORACLE_HOSTNAME=<OMS1_ALIAS_HOSTNAME_FQDN>
```

- d. The following parameter and value specifies the directory of the old Oracle Inventory associated with the Enterprise Manager Cloud Control installation that is being upgraded.

```
OLD_INVENTORY_LOCATION=<OLD_INVENTORY_HOME>
```

4. Launch the installer on Primary OMS1 using the staged installation software. Ensure to specify the parameters referenced below:

```
./em13200_linux64.bin -invPtrLoc <NEW_INVENTORY_HOME>/oraInst.loc  
ORACLE_HOSTNAME=<OMS1_ALIAS_HOSTNAME_FQDN> UPGRADE_TRANSITION=true  
OLD_INVENTORY_LOCATION=<OLD_INVENTORY_HOME>
```

Example:

```
./em13200_linux64.bin -invPtrLoc /u01/app/oracle/OMS/oraInventory/oraInst.loc  
ORACLE_HOSTNAME=emoms1.domain.com UPGRADE_TRANSITION=true  
OLD_INVENTORY_LOCATION=/u01/app/oracle/oraInventory
```

5. On the Installation Types screen:
 - a. Select the option **Upgrade and Transition to DR Readiness**
 - b. Confirm that **One-System Upgrade** is selected
 - c. Select the Management Server with the Installed Oracle Home that matches the following directory:

```
<OLD_MIDDLEWARE_HOME>
```

Example:

```
/u01/app/oracle/MWare_12.5
```

6. On the Installation Details screen:
 - a. For Middleware Home Location, specify the full path to the EM 13c Middleware Home location on Replicated Storage

```
<NEW_MIDDLEWARE_HOME>
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2
```

- b. Review the Host Name. Ensure that it is the alias host name for OMS1 that was specified with the ORACLE_HOSTNAME parameter when the installer was launched. If the Host Name does not match the alias host name for OMS1, replace the contents of the field with the alias host name for OMS1.

```
<OMS1_ALIAS_HOSTNAME_FQDN>
```

Example:

```
emoms1.domain.com
```

7. On the Database Connection Details screen, select the **Disable DDMP jobs** option
8. On the Extend WebLogic Server Domain screen:
 - a. Note that the Admin Server Host still lists the physical host name for OMS1. This is ok as this is the current server name. The Admin Server will be updated to use the OMS1 alias host name as part of this mode of the upgrade.
 - b. Ensure the OMS Instance Base location matches the value for `<NEW_INSTANCE_BASE>`. Update if necessary. Based on the configuration used in the whitepaper, no update is necessary, as the field is pre-populated with `/u01/app/oracle/OMS/gc_inst`.
`<NEW_INSTANCE_BASE>`
Example:
`/u01/app/oracle/OMS/gc_inst`
 - c. Note that if the mount point makes use of NFS mounted storage, as it does in the example in this whitepaper, there is a warning about the need to place the lock file directory on local storage. A post-upgrade step after the upgrade completes will place the http lock file in a directory on local storage.
9. On the Enterprise Manager Shared Location Details screen:
 - a. If BI Publisher was configured in the Enterprise Manager 12c installation being upgraded, this screen will be grayed out as the existing storage location details will be carried forward.
 - b. If BI Publisher was not configured in the Enterprise Manager 12c installation being upgraded, ensure the following:
 - i. Ensure the Configure a Shared Location for Oracle BI Publisher checkbox is checked.
 - ii. Specify the replicated BI Publisher shared storage Config Volume directory
`<BIP_CONFIG_VOLUME>`
Example:
`/BIP/config`
 - iii. Specify the replicated BI Publisher shared storage Cluster Volume directory
`<BIP_CLUSTER_VOLUME>`
Example:
`/BIP/cluster`
 - iv. Ensure the Enable Oracle BI Publisher checkbox is checked.
10. On the Port Configuration Details screen:
 - a. Ensure the Ports reflect the configuration that has been prepared for the updates to the SLB configuration, such as for BI Publisher.
11. On the Review screen:
 - a. Ensure the Host Name displayed is the alias host name for OMS1. If it is not, navigate back to the Installation Details screen and ensure the Host Name is properly specified.
`<OMS1_ALIAS_HOSTNAME_FQDN>`
Example:
`emoms1.domain.com`
12. Monitor the installation

The following commands are to be run as root.

13. As root, run `allroot.sh` on Primary OMS1 when directed at the end of the installation
`<NEW_MIDDLEWARE_HOME>/allroot.sh`

Example:

```
/u01/app/oracle/OMS/MWare_13.2/allroot.sh
```

The following commands are to be run as the Oracle Software Owner User.

Specify local file system location for lock files on Primary OMS1

Edit the httpd.conf file to specify a location on local storage for the http lock file. The following instructions are based on the step in Performing Postinstallation Tasks After Installing an Enterprise Manager System in the [Oracle Enterprise Manager Basic Installation Guide](#).

1. Stop OMS1

```
<NEW_MIDDLEWARE_HOME>/bin/emctl stop oms
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl stop oms
```

2. Make a backup of the httpd.conf file

```
cp -p  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/ohs<#>/httpd.conf  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/ohs<#>/httpd.conf.before_local_lock_files_YYYYMMDD
```

Example:

```
cp -p  
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co  
mponents/OHS/ohs1/httpd.conf  
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co  
mponents/OHS/ohs1/httpd.conf.before_local_lock_files_20160502
```

3. Edit the httpd.conf file in the staging directory, replacing values for the uncommented LockFile lines in the IfModule mpm_prefork_module and IfModule mpm_worker_module sections

```
vi  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/ohs<#>/httpd.conf
```

Example:

```
vi  
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co  
mponents/OHS/ohs1/httpd.conf
```

Replace the two occurrences of this line:

```
LockFile "${ORACLE_INSTANCE}/servers/${COMPONENT_NAME}/logs/http_lock"
```

With this line:

```
LockFile "<LOCAL_LOCK_FILE_DIR>/http_lock"
```

Example:

```
LockFile "/u01/app/oracle/local/ohs_locks/http_lock"
```

4. Compare the edited httpd.conf file with the backup made in step 1 above.

```
diff  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/ohs<#>/httpd.conf  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/ohs<#>/httpd.conf.before_local_lock_files_YYYYMMDD
```

Example:

```
diff
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf.before_local_lock_files_20160502
```

Example output:

```
$ diff
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf.before_local_lock_files_20160502
155c155
< LockFile "/u01/app/oracle/local/ohs_locks/http_lock"
---
> LockFile "${ORACLE_INSTANCE}/servers/${COMPONENT_NAME}/logs/http_lock"
175c175
< LockFile "/u01/app/oracle/local/ohs_locks/http_lock"
---
> LockFile "${ORACLE_INSTANCE}/servers/${COMPONENT_NAME}/logs/http_lock"
```

5. Copy the httpd.conf file from the staging directory to the runtime directory

```
cp -p
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/ohs<#>/httpd.conf
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/instances/ohs<#>/httpd.conf
```

Example:

```
cp
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs1/httpd.conf
```

6. Start OMS1

```
<NEW_MIDDLEWARE_HOME>/bin/emctlstart oms
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl start oms
```

Confirm upgrade configured WebLogic and OMS1 for alias hostname

The following steps can confirm that the upgrade and transition has configured the OMS for the alias hostname.

1. On Primary OMS1, confirm the ServerName configured in the httpd.conf file shows the alias hostname for OMS1.

```
grep ^ServerName
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/ohs<#>/httpd.conf
```

Example:

```
grep ^ServerName
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf
```

Example Output:

```
[oracle@host1 ~]$ grep ^ServerName
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/ohs1/httpd.conf
ServerName emoms1.domain.com
```

2. On Primary OMS1, examine the output of `emctl status oms -details`

```
<NEW_MIDDLEWARE_HOME>/bin/emctl status oms -details
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl status oms -details
```

Example Output (highlights):

```
[oracle@host1 ~]$ /u01/app/oracle/OMS/MWare_13.2/bin/emctl status oms -details
Oracle Enterprise Manager Cloud Control 13c Release 2
Copyright (c) 1996, 2016 Oracle Corporation. All rights reserved.
Enter Enterprise Manager Root (SYSMAN) Password :
Console Server Host : emoms1.domain.com
```

...

WLS Domain Information

```
Domain Name : GCDomain
```

```
Admin Server Host : emoms1.domain.com
```

...

Oracle Management Server Information

```
Managed Server Instance Name: EMGC_OMS1
```

```
Oracle Management Server Instance Host: emoms1.domain.com
```

```
WebTier is Up
```

```
Oracle Management Server is Up
```

```
JVMD Engine is Up
```

...

3. Login to the WebLogic Administration Console via a browser using the FQDN of the physical hostname for the Primary OMS1 and review settings to confirm the alias hostname has been configured:

```
https://<PRIMARY_OMS1_PHYSICAL_FQDN>:<ADMIN_SERVER_HTTPS_PORT>/console
```

Example:

```
https://host1.domain.com:7101/console
```

- a. Navigate to GCDomain -> Environment -> Servers and perform the following for each of the Servers in the Servers table

- i. Click on the link for the Server Name
- ii. On the General tab within the Configuration tab, verify that the `<OMS1_ALIAS_HOSTNAME_FQDN>` is displayed in the Listen Address field.
`<OMS1_ALIAS_HOSTNAME_FQDN>`

Example:

```
emoms1.domain.com
```

- b. Navigate to GCDomain -> Environment -> Machines and perform the following

- i. Click on the Machine Name
- ii. On the Node Manager tab within the Configuration tab, verify that the `<OMS1_ALIAS_HOSTNAME_FQDN>` is displayed in the Listen Address field.
`<OMS1_ALIAS_HOSTNAME_FQDN>`

Example:

`emoms1.domain.com`

Transition OMS1 Agent to DR Readiness

This section details the steps required to transition the OMS1 Agent to DR Readiness. The central agent on OMS1 is relocated from its current location on local storage to a location on replicated storage and associated with an Oracle Inventory located on replicated storage. The agent is recovered to make use of the alias host name instead of the physical host name. Targets are relocated to the newly recovered OMS Agent.

Upgrade OMS1 Agent to EM 13.2

Upgrade the OMS1 Agent to EM 13.2 using the Agent Upgrade Console. Follow the instructions in [Upgrading Central Agents or Standalone Management Agents to 13c Release 2 Using the Agent Upgrade Console or EMCLI](#) in the [Oracle Enterprise Manager Cloud Control Upgrade Guide](#). The following is a high level set of steps

1. Start OMS1 Agent

```
<OLD_OMS_AGENT_HOME>/bin/emctl start agent
```

Example:

```
/u01/app/oracle/oms_agent/core/12.1.0.5.0/bin/emctl start agent
```

2. Login to the EM Console and wait until the agent is healthy and all OMS related targets no longer report agent unreachable.

- a. Confirm that the Oracle WebLogic Domain and OMS1 related targets are no longer in agent unreachable
- b. Confirm that the Primary OMS1 physical hostname agent is listed as up

3. Upgrade the OMS1 Agent using the Agent Upgrade Console

- a. Navigate to Setup -> Manage Cloud Control -> Upgrade Agents
- b. Select the old OMS1 Agent

- i. Press Add
- ii. Select the old OMS1 Agent named the following:
`<PRIMARY_OMS1_PHYSICAL_FQDN>:<OMS_AGENT_PORT>`

Example

```
host1.domain.com:3872
```

- iii. Press OK

- c. Press Submit
- d. If a warning is presented regarding preferred privileged credentials for running root.sh, press OK. We will manually run root.sh after the upgrade completes.
- e. Monitor the Agent Upgrade Status
- f. If privileged credentials have not been provided, run root.sh for the upgraded agent

The following commands are to be run as root

- i. As root, run root.sh

```
<INTERIM_OMS_AGENT_HOME>/root.sh
```

Example:

```
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/root.sh
```

Perform Post Agent Upgrade Cleanup for OMS1 Agent

After confirming that the OMS1 Agent was successfully upgraded to EM 13.2, clean up the previous version of the OMS1 agent installation by following the instructions in Performing Postupgrade Cleanup of Old Management Agents Using the Agent Upgrade Console in the [Oracle Enterprise Manager Cloud Control Upgrade Guide](#).

1. Navigate to Setup -> Manage Cloud Control -> Upgrade Agents
2. Click Post Agent Upgrade Tasks
3. Select the old OMS1 Agent

- a. Press Add

- b. Select the old OMS1 Agent named the following:

```
<PRIMARY_OMS1_PHYSICAL_FQDN>:<OMS_AGENT_PORT>
```

Example:

```
host1.domain.com:3872
```

- c. Press OK

4. Press Submit
5. Press OK on the Clean-up Agent Job Submitted dialog
6. Monitor the Clean-up Agent Results

Relocate OMS1 Agent to replicated storage and inventory

Perform the following steps to relocate the OMS1 Agent from its location on local storage registered with the local Oracle Inventory to a location on replicated storage registered with the replicated storage Oracle Inventory. These instructions are based on the instructions in Moving the Central Agent Base Directory Outside Oracle Middleware Home in the [Oracle Enterprise Manager Cloud Control Upgrade Guide](#). However, it is important to note that there is an additional parameter beyond those in the documentation that must be provided to the command in order to make use of a different Oracle Inventory for the new location.

The following commands are to be run as the Oracle Software Owner User.

1. Check to see if there is a plugins.txt file under the agent base directory.

```
ls -alF <OLD_OMS_AGENT_BASE>
```

Example:

```
ls -alF /u01/app/oracle/oms_agent
```

2. If there is a plugins.txt file under the agent base directory, make a backup copy.

```
cp -p <OLD_OMS_AGENT_BASE>/plugins.txt
<OLD_OMS_AGENT_BASE>/plugins.txt.before_agent_migrate_regen_YYYYMMDD
```

Example:

```
cp -p /u01/app/oracle/oms_agent/plugins.txt
/u01/app/oracle/oms_agent/plugins.txt.before_agent_migrate_regen_20160502
```

3. Ensure that the agent is up and running. Start the agent if it is not running and confirm the agent is running before continuing.

```
<INTERIM_OMS_AGENT_HOME>/bin/emctl status agent
```

Example:

```
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/bin/emctl status agent
```

4. Regenerate the plugins.txt file.

```
<INTERIM_OMS_AGENT_HOME>/perl/bin/perl
<INTERIM_OMS_AGENT_HOME>/sysman/install/create_plugin_list.pl -instancehome
<INTERIM_OMS_AGENT_INSTANCE_HOME>
```

Example:

```
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/perl/bin/perl
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/sysman/install/create_plugin_list.p
l -instancehome /u01/app/oracle/oms_agent/agent_inst
```

5. Run the AgentMigrate.pl script to relocate the agent to the replicated storage and Oracle Inventory on replicated storage

```
<INTERIM_OMS_AGENT_HOME>/perl/bin/perl
<INTERIM_OMS_AGENT_HOME>/sysman/install/AgentMigrate.pl -instanceHome
<INTERIM_OMS_AGENT_INSTANCE_HOME> -newAgentBaseDir <NEW_OMS_AGENT_BASE> -
invPtrLoc <NEW_INVENTORY_HOME>/oraInst.loc
```

Example:

```
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/perl/bin/perl
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/sysman/install/AgentMigrate.pl -
instanceHome /u01/app/oracle/oms_agent/agent_inst -newAgentBaseDir
/u01/app/oracle/OMS/oms_agent -invPtrLoc
/u01/app/oracle/OMS/oraInventory/oraInst.loc
```

The following commands are to be run as root.

6. As root, run the root.sh script when instructed

```
<NEW_OMS_AGENT_HOME>/root.sh
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/root.sh
```

The following commands are to be run as the Oracle Software Owner User.

7. Get status of the agent

```
<NEW_OMS_AGENT_HOME>/bin/emctl status agent
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/bin/emctl status agent
```

8. In EM Console, wait for status of EM related targets to no longer show Diagnose for Status Pending [(Post Blackout)] and for Agent and Host targets to no longer show Agent Unreachable.

9. Invoke the AgentDeinstall.pl script to deinstall the interim agent on local storage.

```
<INTERIM_OMS_AGENT_HOME>/perl/bin/perl  
<INTERIM_OMS_AGENT_HOME>/sysman/install/AgentDeinstall.pl -agentHome  
<INTERIM_OMS_AGENT_HOME>
```

Example:

```
/u01/app/oracle/oms_agent/agent_13.2.0.0.0/perl/bin/perl  
<INTERIM_OMS_AGENT_HOME>/sysman/install/AgentDeinstall.pl -  
agentHome /u01/app/oracle/oms_agent/agent_13.2.0.0.0
```

*Note: Only the installation of the interim agent located on local storage under <INTERIM_OMS_AGENT_HOME> is to be deinstalled. Do NOT delete the targets from cloud control as those targets are now being managed by the agent that has been relocated to replicated storage under <NEW_OMS_AGENT_HOME>. For this reason, **disregard the following message at the bottom of the output of the AgentDeinstall.pl command:** "Make sure to delete the targets manually from the Cloud Control Console for a successful deinstallation."*

Prepare to Redeploy OMS1 Agent using alias hostname

Perform the following steps to prepare to redeploy the OMS1 Agent using the existing installation on replicated storage in order to configure the OMS1 Agent with the alias hostname.

The following commands are to be run as the Oracle Software Owner User.

1. Update the plugins.txt file located under <NEW_OMS_AGENT_BASE> to contain current information.

- a. Identify the current plugins.txt related files

```
ls -ltr <NEW_OMS_AGENT_BASE>/plugins*
```

Example:

```
ls -ltr /u01/app/oracle/OMS/oms_agent/plugins*
```

- b. Backup the existing plugins.txt file if the file exists

```
cp -p <NEW_OMS_AGENT_BASE>/plugins.txt  
<NEW_OMS_AGENT_BASE>/plugins.txt.before_update_YYYYMMDD
```

Example:

```
cp -p /u01/app/oracle/OMS/oms_agent/plugins.txt  
/u01/app/oracle/OMS/oms_agent/plugins.txt.before_update_20160502
```

- c. Ensure that the agent is up and running. Start the agent if it is not running and confirm the agent is running before continuing.

```
<NEW_OMS_AGENT_HOME>/bin/emctl status agent
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/bin/emctl status agent
```

- d. Run the following script to generate the plugins.txt file

```
<NEW_OMS_AGENT_HOME>/perl/bin/perl  
<NEW_OMS_AGENT_HOME>/sysman/install/create_plugin_list.pl -instancehome  
<NEW_OMS_AGENT_INSTANCE_HOME>
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/perl/bin/perl
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/sysman/install/create_pl
ugin_list.pl -instancehome /u01/app/oracle/OMS/oms_agent/agent_inst
```

e. Confirm the plugins.txt related files

```
ls -ltr <NEW_OMS_AGENT_BASE>/plugins*
```

Example:

```
ls -ltr /u01/app/oracle/OMS/oms_agent/plugins*
```

2. Upload from OMS1 agent

```
<NEW_OMS_AGENT_HOME>/bin/emctl upload agent
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/bin/emctl upload agent
```

3. Stop the primary OMS1 agent

```
<NEW_OMS_AGENT_HOME>/bin/emctl stop agent
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/bin/emctl stop agent
```

4. Move the OMS1 agent instance directory

```
mv <NEW_OMS_AGENT_INSTANCE_HOME> <NEW_OMS_AGENT_INSTANCE_HOME>.<YYYYMMDD>
```

Example:

```
mv /u01/app/oracle/OMS/oms_agent/agent_inst
/u01/app/oracle/OMS/oms_agent/agent_inst.20160502
```

Redeploy OMS1 Agent using alias hostname

1. Wait for the OMS1 agent and all of its monitored targets to go to the *unreachable* state in the Cloud Control console.
2. Remove Oracle Home targets for the old physical hostname based agent to prevent shared agent issues due to redeployment of agent using alias hostname. The same steps are performed twice, once for the upgraded interim EM 13c physical hostname agent located on local storage, and once for the EM 13c physical hostname agent located on replicated storage.
 - a. Perform the following steps for the Oracle Home of the upgraded interim EM 13c physical hostname agent located on local storage (<INTERIM_OMS_AGENT_HOME>, for example, /u01/app/oracle/oms_agent/agent_13.2.0.0.0):
 - i. In EM, navigate to the Oracle Home for the upgraded interim EM 13c physical hostname agent located on local storage
 - ii. Select Oracle Home -> Target Setup -> Remove Target...
 - iii. Select Yes on the Confirmation dialog
 - iv. Confirm that Oracle Home has been deleted
 - b. Perform the following steps for the Oracle Home of the EM 13c physical hostname agent located on replicated storage (<NEW_OMS_AGENT_HOME>, for example, /u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0):
 - i. In EM, navigate to the Oracle Home for the EM 13c physical hostname agent located on replicated storage
 - ii. Select Oracle Home -> Target Setup -> Remove Target...
 - iii. Select Yes on the Confirmation dialog
 - iv. Confirm that Oracle Home has been deleted

Note: It is critically important to ensure the above steps have been completed successfully prior to performing the agentDeploy.sh in the next step.

3. Create agent_inst

```
<NEW_OMS_AGENT_HOME>/sysman/install/agentDeploy.sh
AGENT_BASE_DIR=<NEW_OMS_AGENT_BASE>
AGENT_INSTANCE_HOME=<NEW_OMS_AGENT_INSTANCE_HOME>
ORACLE_HOSTNAME=<OMS1_ALIAS_HOSTNAME_FQDN> AGENT_PORT=<OMS_AGENT_PORT> -
configOnly OMS_HOST=<OMS_HOST> EM_UPLOAD_PORT=<OMS_UPLOAD_PORT>
AGENT_REGISTRATION_PASSWORD=<AGENT_REG_PASSWORD>
PLUGIN_RSPFILE=<NEW_OMS_AGENT_BASE>/plugins.txt
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/sysman/install/agentDeploy.sh
AGENT_BASE_DIR=/u01/app/oracle/OMS/oms_agent
AGENT_INSTANCE_HOME=/u01/app/oracle/OMS/oms_agent/agent_inst
ORACLE_HOSTNAME=emoms1.domain.com AGENT_PORT=3872 -configOnly
OMS_HOST=em.domain.com EM_UPLOAD_PORT=4900
AGENT_REGISTRATION_PASSWORD=changeme
PLUGIN_RSPFILE=/u01/app/oracle/OMS/oms_agent/plugins.txt
```

The following commands are to be run as root.

4. As root, run the root.sh script when instructed in the output of the above command.

```
<NEW_OMS_AGENT_HOME>/root.sh
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/root.sh
```

The following commands are to be run as the Oracle Software Owner User.

5. Check status of agent. Repeat as necessary until all uploads are complete.

```
<NEW_OMS_AGENT_HOME>/bin/emctl status agent
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/bin/emctl status agent
```

6. Check EM to confirm that OMS1 alias hostname agent and host are listed as targets in EM with status Up.

Relocate OMS1 targets to alias hostname OMS1 Agent

Relocate the oracle_emrep target

1. Relocate the oracle_emrep target to the Management Agent of the new OMS host using the following commands:

```
<NEW_MIDDLEWARE_HOME>/bin/emcli login -username="<EM_USERNAME>"
<NEW_MIDDLEWARE_HOME>/bin/emcli sync
<NEW_MIDDLEWARE_HOME>/bin/emctl config emrep -agent
<OMS1_ALIAS_HOSTNAME_FQDN>:<OMS_AGENT_PORT>
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli login -username="john.doe@domain.com"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli sync
/u01/app/oracle/OMS/MWare_13.2/bin/emctl config emrep -agent
emoms1.domain.com:3872
```

Example Output:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli login -username="john.doe@domain.com"
Enter password
```

```
Login successful
/u01/app/oracle/OMS/MWare_13.2/bin/emcli sync
Synchronized successfully
/u01/app/oracle/OMS/MWare_13.2/bin/emctl config emrep -agent
emoms1.domain.com:3872
Oracle Enterprise Manager Cloud Control 13c Release 2
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Please enter repository password:
Enter password :                               Login
successful
Moved all targets from host1.domain.com:3872 to emoms1.domain.com:3872
Command completed successfully!
Enter password :                               Login
successful
Moved all targets from host1.domain.com:3872 to emoms1.domain.com:3872
Command completed successfully!
```

Note: If you encounter errors due to time zone disparities between the agents, ensure the time zones of the agents are consistent. If you run emctl config emrep -agent and set the flag -ignore_timeskew, there may a loss of monitoring data as the availability of monitored targets may be affected when the Management Services and Repository target is moved to the new Agent. For ways to compare and correct the time zone configuration of agents see the step [Ensure agents on all nodes have the correct time zone configuration](#). Once any issues have been corrected, reattempt the target relocation.

Relocate WebLogic Server related targets

1. Create a mapping file under the home directory for the Oracle Software Owner User that will be used to map the physical hostname of OMS1 to the alias hostname of OMS1

```
vi
<ORACLE_SOFTWARE_OWNER_USER_HOME>/<PRIMARY_OMS1_PHYSICAL_HOSTNAME>_to_<OMS1_ALIAS_HOSTNAME>_host_mapping.txt
```

Example:

```
vi /home/oracle/host1_to_emoms1_host_mapping.txt
```

2. The file should contain a comma separated list of the FQDNs of the physical and alias hostnames. The first entry is the hostname that will be replaced, in this case the physical hostname of OMS1, and the second entry is the new hostname, in this case the alias hostname of OMS1.

```
<PRIMARY_OMS1_PHYSICAL_FQDN>,<OMS1_ALIAS_HOSTNAME_FQDN>
```

Example:

host1.domain.com, emoms1.domain.com

3. Run the `relocate_wls` verb via `emcli` the first time to relocate the targets:

```
<NEW_MIDDLEWARE_HOME>/bin/emcli relocate_wls -  
target_name=/EMGC_GCDomain/GCDomain -host=<OMS1_ALIAS_HOSTNAME_FQDN> -  
port=<ADMIN_SERVER_HTTPS_PORT> -  
dest_agent=<OMS1_ALIAS_HOSTNAME_FQDN>:<OMS_AGENT_PORT> -  
src_agent=<PRIMARY_OMS1_PHYSICAL_FQDN>:<OMS_AGENT_PORT> -debug
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli relocate_wls -  
target_name=/EMGC_GCDomain/GCDomain -host=emoms1.domain.com -port=7101 -  
dest_agent=emoms1.domain.com:3872 -src_agent=host1.domain.com:3872 -debug
```

Example Output:

```
$ /u01/app/oracle/OMS/MWare_13.1/bin/emcli relocate_wls -  
target_name=/EMGC_GCDomain/GCDomain -host=emoms1.domain.com -port=7101 -  
dest_agent=emoms1.domain.com:3872 -src_agent=host1.domain.com:3872 -debug
```

Updating Service URL...

```
service:jmx:t3s://emoms1.domain.com:7101/jndi/weblogic.management.mbeanservers  
.domainruntime
```

emoms1.domain.com

7101

Relocating targets...

Source Agent Provided. Targets on Agent host1.domain.com:3872 will be relocated...

Changes to the Monitoring Agent for 22 targets have been initiated successfully.

Target Name(Target Type),Old Agent,New Agent,Status

```
/EMGC_GCDomain/GCDomain/EMGC_ADMINSERVER/mds-  
owsm(metadata_repository),https://host1.domain.com:3872/emd/main/,https://emom  
s1.domain.com:3872/emd/main/,Change agent successfully initiated.
```

```
/EMGC_GCDomain/GCDomain/BIP(weblogic_j2eeserver),https://host1.domain.com:3872  
/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully  
initiated.
```

```
/EMGC_GCDomain/GCDomain/jvmdengine#13.2.1.0.0(j2ee_application_domain),https://  
/host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Chan  
ge agent successfully initiated.
```

```
/EMGC_GCDomain/GCDomain/EMGC_OMS1(weblogic_j2eeserver),https://host1.domain.co  
m:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent  
successfully initiated.
```

```
/EMGC_GCDomain/GCDomain/EMGC_ADMINSERVER(weblogic_j2eeserver),https://host1.do  
main.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent  
successfully initiated.
```

```
/EMGC_GCDomain/GCDomain(weblogic_domain),https://host1.domain.com:3872/emd/mai  
n/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully  
initiated.
```

```
/EMGC_GCDomain/GCDomain/BIP/bipublisher(11.1.1)(j2ee_application),https://host  
1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
```

```

/EMGC_GCDomain/GCDomain/OCMRepeater(j2ee_application_domain),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/ohs1(oracle_apache),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/ESSAPP(j2ee_application_domain),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/EMGC_OMS1/jvmdengine(13.2.1.0.0)(j2ee_application),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/EMGC_OMS1/emgc(j2ee_application),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/BIP_cluster/bipublisher(11.1.1)(j2ee_application_cluster),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/BIP_cluster/ESSAPP(j2ee_application_cluster),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/EMGC_ADMINSERVER/mds-sysman_mds(metadata_repository),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/bipublisher#11.1.1(j2ee_application_domain),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/BIP_cluster(weblogic_cluster),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/EMGC_OMS1/empbs(j2ee_application),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/emgc(j2ee_application_domain),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/EMGC_OMS1/OCMRepeater(j2ee_application),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/BIP/ESSAPP(j2ee_application),https://host1.domain.com:3872/emd/main/,null,Change agent successfully initiated.
/EMGC_GCDomain/GCDomain/empbs(j2ee_application_domain),https://host1.domain.com:3872/emd/main/,https://emoms1.domain.com:3872/emd/main/,Change agent successfully initiated.
Refreshing WebLogic Domain...
WebLogic Domain refreshed successfully.

```

4. Run the `relocate_wls` verb via `emcli` a second time, with an additional parameter, to update the host name for targets as necessary:

```

<NEW_MIDDLEWARE_HOME>/bin/emcli relocate_wls -
target_name=/EMGC_GCDomain/GCDomain -host=<OMS1_ALIAS_HOSTNAME_FQDN> -
port=<ADMIN_SERVER_HTTPS_PORT> -
dest_agent=<OMS1_ALIAS_HOSTNAME_FQDN>:<OMS_AGENT_PORT> -
src_agent=<PRIMARY_OMS1_PHYSICAL_FQDN>:<OMS_AGENT_PORT> -

```

```
input_file=old_to_new_host_mapping_file:<ORACLE_SOFTWARE_OWNER_USER_HOME>/<PRIMARY_OMS1_PHYSICAL_HOSTNAME>_to_<OMS1_ALIAS_HOSTNAME>_host_mapping.txt -debug
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli relocate_wls -  
target_name=/EMGC_GCDomain/GCDomain -host=emoms1.domain.com -port=7101 -  
dest_agent=emoms1.domain.com:3872 -src_agent=host1.domain.com:3872 -  
input_file=old_to_new_host_mapping_file:/home/oracle/host1_to_emoms1_host_mapping.txt -debug
```

Example Output:

```
$ /u01/app/oracle/OMS/MWare_13.1/bin/emcli relocate_wls -  
target_name=/EMGC_GCDomain/GCDomain -host=emoms1.domain.com -port=7101 -  
dest_agent=emoms1.domain.com:3872 -src_agent=host1.domain.com:3872 -  
input_file=old_to_new_host_mapping_file:/home/oracle/host1_to_emoms1_host_mapping.txt -debug
```

Valid Host Mapping File is provided

host1.domain.com-----emoms1.domain.com

Updating Service URL...

service:jmx:t3s://emoms1.domain.com:7101/jndi/weblogic.management.mbeanservers.domainruntime

emoms1.domain.com

7101

Relocating targets...

Source Agent Provided. Targets on Agent host1.domain.com:3872 will be relocated...

Agents are already assigned. No changes to Monitoring Agent are required.

Refreshing WebLogic Domain...

WebLogic Domain refreshed successfully.

Updating Host for all Targets...

Successfully updated host for all Targets.

Finding Node Manager targets on old host...

No Node Manager targets are found on old host.

5. Perform the following steps to remove the Oracle Home of the upgraded middleware home on replicated storage that is associated with the alias hostname on Primary OMS1. This Oracle Home will be rediscovered in the next step. This is being done to ensure that the associations are made properly to the correct Oracle Home.

- a. In EM, navigate to the Oracle Home for the upgraded middleware home on replicated storage that is associated with the alias hostname on Primary OMS1.

Host <OMS1_ALIAS_HOSTNAME_FQDN>

Home Location <NEW_MIDDLEWARE_HOME>

Example:

Host emoms1.domain.com

Home Location /u01/app/oracle/OMS/MWare_13.2

Example Oracle Home target name:

oms13c1_1_emoms1.domain.com_9136

- b. Select Oracle Home -> Target Setup -> Remove Target...

- c. Select Yes on the Confirmation dialog
 - d. Confirm that Oracle Home has been deleted
6. Run a “Discover Promote Oracle Home Target” job on Primary OMS1 to discover the Oracle Home of the upgraded Middleware Home on replicated storage that is associated with the alias hostname.
- a. Navigate to Enterprise -> Job -> Activity
 - b. Press Create Job
 - c. Select “Discover Promote Oracle Home Target” on the Select Job Type - Oracle Enterprise Manager dialog
 - d. Press Select
 - e. Enter a Name for the job, such as “Promote OMS1 Oracle Home”
 - f. In the Target section, press Add
 - g. In the Search and Select: Targets dialog, select the OMS1 alias hostname
<OMS1_ALIAS_HOSTNAME_FQDN>
Example:
emoms1.domain.com
 - h. Press Select
 - i. Press the Parameters tab
 - j. In the Path, enter the path to the upgraded Middleware Home for Primary OMS1 on replicated storage
<NEW_MIDDLEWARE_HOME>
Example:
/u01/app/oracle/OMS/MWare_13.2
 - k. Ensure Manage Entity is set to Oracle Home and Action is set to Discover And Manage.
 - l. Press Submit
 - m. When the job has 'succeeded,' check the job output to ensure the Oracle Home was properly discovered.
7. Navigate to the home page for the Oracle Home for the upgraded middleware home on replicated storage that is associated with the alias hostname on Primary OMS1
- a. Review the Associated Instance Targets list
 - b. If there are no targets listed, wait a few minutes, refresh, and repeat until this list is populated
 - c. Move forward once the list is populated

Review and update target and configuration information in EM

In EM, confirm WebLogic Domain target configuration

1. Navigate to the WebLogic Domain target (/EMGC_GCDomain/GCDomain)
2. Select WebLogic Domain -> Target Setup -> Monitoring Configuration
3. Review the Host name
 - a. Ensure it contains the FQDN of the alias hostname for the OMS
4. Review the URI for the WebLogic Admin Console
 - a. Update the URL for the WebLogic Admin console to contain the FQDN of the physical hostname for Primary OMS1.
https://<PRIMARY_OMS1_PHYSICAL_FQDN>:<ADMIN_SERVER_HTTPS_PORT>/console
Example:

`https://host1.domain.com:7101/console`

5. If you made changes above, Press Ok. Else, Press Cancel.

Note: The new alias host and alias hostname based agent targets will get the metrics that are assigned from the default template. Confirm that the proper monitoring template and metrics have been applied to the new alias host and alias hostname based agent targets. If you have made changes to metric collection settings associated with the Oracle Homes on the old physical hostname based agent, you will need to make those changes to the new Oracle Homes on the new alias hostname based agent.

In EM, decommission physical hostname OMS1 agent

1. Navigate to the home page for the old physical hostname based OMS1 agent that no longer actually exists.

`<PRIMARY_OMS1_PHYSICAL_FQDN>:<OMS_AGENT_PORT>`

Example:

`host1.domain.com:3872`

2. Select Agent -> Target Setup -> Agent Decommission...
3. Select Continue on the Confirmation dialog
4. Review the targets monitored by the agent and ensure they only contain the old Oracle Homes associated with the old physical hostname, the agent, and the physical hostname host of the OMS server. It is ok if the /EMGC_GCDomain/GCDomain Oracle WebLogic Domain target is listed under both the old physical hostname agent and the new alias hostname agent, as long as all other WebLogic Domain related targets are only associated with the new alias hostname agent.

If there are additional targets here related to the current version of the OMS components and agent that have been upgraded and transitioned to replicated storage and alias hostname, cancel, relocate those targets to the new agent using the `emcli relocate_targets` command, and restart the Agent Decommission steps above before continuing.

Note: At this point, after completing the sub steps above, if there are additional targets that are unrelated to the current version of the OMS components and agent that have been upgraded and transitioned to replicated storage and alias hostname, but which still need to be managed by an agent (such as other software installed locally on the OMS server or other targets that need to be monitored from this physical host), then there are two options. Either relocate those targets to the new agent using `emcli relocate_targets` commands now and later relocate them again from the new replicated storage agent to the new physical hostname agent after it is created in the future step "Deploy Host-based Agents to Primary and Standby OMSs," or allow the targets to be removed now with the decommission of the agent and rediscover the targets after the new physical hostname agent is created in the future step "Deploy Host-based Agents to Primary and Standby OMSs."

5. Select Continue
6. If presented with an Agent Decommission Confirmation dialog, select OK

In EM, check availability of targets relocated to alias hostname OMS1 agent

1. Navigate to the home page for the new alias hostname based agent on Primary OMS1

2. Under the Monitoring section at the top right, expand Details
3. Review the availability of the targets listed under Monitored Targets
4. If there are any targets that have been relocated that are not showing with a Status of Up or N/A, correct the availability issues before continuing.

The following are steps that can be taken to attempt to resolve any availability issues.

- a. Stop the oms agent
`<NEW_OMS_AGENT_HOME>/bin/emctl stop agent`
- b. Start the oms agent
`<NEW_OMS_AGENT_HOME>/bin/emctl start agent`

Review the availability and see if it resolves.

If it does not resolve, the following are additional options to try:

- c. Create a short blackout for the target
 - i. Navigate to the home page of the target
 - ii. Select Control -> Create Blackout...
 - iii. Follow the wizard, adjusting the duration length to be a few minutes, and submit the blackout
 - iv. Wait a few minutes after the blackout has ended and check the availability of the target
 - d. Save the Monitoring Configuration again for the target
 - i. Navigate to the home page of the target
 - ii. Select Target Setup -> Monitoring Configuration and press OK
 - iii. Wait a few minutes and check the availability of the target
 - e. If these steps do not resolve the availability issues, please reference [How to run the "Targets Status Diagnostics Report" to Troubleshoot Target Status Availability Issues \(Doc ID 1546575.1\)](#).
5. Verify that the site is fully operational.

Update Primary Site Configuration

Resecure OMS1 to reflect updated EM 13c SLB configuration

The SLB should have been updated to include required EM 13c configuration as part of the preparation for this upgrade and transition process. This step will resecure the configuration of OMS1 to make use of the updated configuration in the SLB for EM 13c for BI Publisher and JVMD. For more details on SLB configuration for high availability in EM 13c, please see Configuring a Load Balancer in the [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). For more details on SLB configuration for disaster recovery in EM 13c, please see Management Service Disaster Recovery in the [Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). For an example of detailed step by step instructions for configuring an SLB for a site, please see the white paper [Enterprise Manager 13c Cloud Control Configuring OMS High Availability with F5 BIG-IP Local Traffic Manager](#).

Note: It is important to ensure that the `emctl secure oms` command be run with the same `-host`, `-slb_port`, and `-slb_console_port` used when the OMS was originally secured for the SLB configuration so that agents do not need to be resecured. If the SLB configuration needs to be changed more substantially, ensure that agents are resecured appropriately.

1. Secure OMS to reflect updated SLB configuration

```
<NEW_MIDDLEWARE_HOME>/bin/emctl secure oms -host <OMS_HOST> -slb_port  
<SLB_VS_SECURE_UPLOAD_PORT> -slb_console_port <SLB_VS_SECURE_CONSOLE_PORT> -  
slb_bip_http_port <SLB_VS_UNSECURE_BIP_CONSOLE_PORT> -slb_bip_https_port  
<SLB_VS_SECURE_BIP_CONSOLE_PORT> -slb_jvmd_https_port  
<SLB_VS_SECURE_JVMD_PORT> -lock_console -lock_upload
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl secure oms -host em.domain.com -  
slb_port 4900 -slb_console_port 443 -slb_bip_http_port 8080 -  
slb_bip_https_port 5443 -slb_jvmd_https_port 7301 -lock_console -lock_upload
```

2. Stop OMS1

```
<NEW_MIDDLEWARE_HOME>/bin/emctl stop oms -all
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl stop oms -all
```

3. Start OMS1

```
<NEW_MIDDLEWARE_HOME>/bin/emctl start oms
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl start oms
```

Configure Internal Channel between OMS and BI Publisher

Beginning with Enterprise Manager 13.1, communication from the Oracle Management Service to BI Publisher can be configured to go through the SLB, ensuring that all operations that require this communication will also be routed through the SLB. For more information on the internal channel, see [Paths to Access BI Publisher in the Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide](#). Perform the following steps to configure the internal channel for BI Publisher:

1. On Primary OMS1, run the following command to confirm the current setting for the internal channel.

```
<NEW_MIDDLEWARE_HOME>/bin/emcli login -username="<EM_USERNAME>"  
<NEW_MIDDLEWARE_HOME>/bin/emcli sync  
<NEW_MIDDLEWARE_HOME>/bin/emcli unregister_bipublisher
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli login -username="john.doe@domain.com"  
<NEW_MIDDLEWARE_HOME>/bin/emcli sync  
<NEW_MIDDLEWARE_HOME>/bin/emcli unregister_bipublisher
```

Example Output:

```
$ /u01/app/oracle/OMS/MWare_13.2/bin/emcli login -  
username="john.doe@domain.com"  
Enter password :
```

```
Login successful
```

```
$ /u01/app/oracle/OMS/MWare_13.2/bin/emcli sync
```

```
Synchronized successfully
```

```
$ /u01/app/oracle/OMS/MWare_13.2/bin/emcli unregister_bipublisher
```

Error: The BI Publisher managed server named "https://emoms1.domain.com:9803/xmlpserver" is registered. Use -force option to overwrite this.

Note: This command is called `unregister_bipublisher`, but will not actually unregister anything as long as the `-force` parameter is not passed. The output of this command displays the current setting for the internal channel.

DO NOT pass -force.

2. On Primary OMS1, run the following command to change the internal channel to make use of the SLB configuration.

```
<NEW_MIDDLEWARE_HOME>/bin/emcli setup_bipublisher -force -nodeploy -  
proto=https -host=<OMS_HOST> -port=<SLB_VS_SECURE_BIP_CONSOLE_PORT> -  
uri=xmlpserver
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli setup_bipublisher -force -nodeploy -  
proto=https -host=em.domain.com -port=5443 -uri=xmlpserver
```

Example Output:

```
$ /u01/app/oracle/OMS/MWare_13.2/bin/emcli setup_bipublisher -force -nodeploy  
-proto=https -host=em.domain.com -port=5443 -uri=xmlpserver
```

```
BI Publisher "https://em.domain.com:5443/xmlpserver" has been registered for  
use with Enterprise Manager.
```

3. On Primary OMS1, run the following command to confirm the setting for the internal channel has been updated. The output should now show the `<OMS_HOST>` rather than the alias hostname of OMS1.

```
<NEW_MIDDLEWARE_HOME>/bin/emcli unregister_bipublisher
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli unregister_bipublisher
```

Example Output:

```
$ /u01/app/oracle/OMS/MWare_13.2/bin/emcli unregister_bipublisher
```

```
Error: The BI Publisher managed server named  
"https://em.domain.com:5443/xmlpserver" is registered. Use -force option to  
overwrite this.
```

Note: This command is called `unregister_bipublisher`, but will not actually unregister anything as long as the `-force` parameter is not passed. The output of this command displays the current setting for the internal channel.

DO NOT pass -force.

Submit DDMP Jobs previously disabled during upgrade

The DDMP jobs were disabled earlier during the upgrade when the Disable DDMP Jobs option was selected in the installer on the Database Connection Details screen. Follow the steps below to submit the DDMP jobs. For more details on the DDMP jobs, see [Tracking the Status of Deferred Data Migration Jobs in the Oracle Enterprise Manager Cloud Control Upgrade Guide](#).

1. Navigate to Setup -> Manage Cloud Control -> Post Upgrade Tasks

2. Review the status of the jobs listed in the table on the Deferred Data Migration tab. All of the tabs should show a status of Not Started
3. Select all of the rows in the table and press the Start button
4. Monitor the jobs to ensure they complete successfully
 - a. Reload the current page using the browser's reload button
 - b. Press the refresh icon that appears at the upper right of the page

Add new Primary OMS2 Alias Hostname Agent and OMS2

In EM, deploy Alias Hostname Agent to Primary OMS2

1. Considerations
 - a. Port number (use the same port that was previously used for the agent on OMS2)
 - b. Use replicated storage for agent directory
 - c. Specify replicated storage inventory location
2. Deploy via EM.
 - a. Select Setup -> Add Target -> Add Targets Manually
 - b. On the Add Targets Manually page, select Install Agent on Host
 - c. On the Add Host Targets: Host and Platform page,
 - i. Press Add once
 - ii. Enter the alias FQDN for the primary OMS2 in the first row's Host field
`<OMS2_ALIAS_HOSTNAME_FQDN>`
Example:
`emoms2.domain.com`
 - iii. Select Platform (in our case Linux x86-64) from the first row's drop-down list
 - iv. Press Next
 - d. On the Add Host Targets: Installation Details page,
 - i. Enter the Installation Base Directory
`<NEW_OMS_AGENT_BASE>`
Example:
`/u01/app/oracle/OMS/oms_agent`
 - ii. Review the automatically populated Instance Directory
`<NEW_OMS_AGENT_INSTANCE_HOME>`
Example:
`/u01/app/oracle/OMS/oms_agent/agent_inst`
 - iii. Select or add a Named Credential for the Oracle Software Owner for the OMS2 host
 - iv. Optionally select or add a Root Credential for the root user for the OMS2 host
 - v. Review Privileged Delegation Setting
In our case, cleared this field as do not have delegation configured and have specified a Root Credential
 - vi. Enter port for the alias hostname agent
`<OMS_AGENT_PORT>`
Example:

3872

vii. Expand Optional Details

In Additional Parameters, add the following to specify use of the replicated storage Oracle Inventory

```
INVENTORY_LOCATION=<NEW_INVENTORY_HOME>
```

Example:

```
INVENTORY_LOCATION=/u01/app/oracle/OMS/oraInventory
```

viii. Press Next

- e. On the Add Host Targets: Review page,
 - i. Review the information
 - ii. If correct, press Deploy Agent.
- f. On the Agent Deployment Summary page,
 - i. Review the results as they refresh
 - ii. Take actions as indicated.

The following commands are to be run as root.

For example, if indicated, need to manually run root.sh as indicated when the deployments are complete.

```
<NEW_OMS_AGENT_HOME>/root.sh
```

Example:

```
/u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0/root.sh
```

iii. Press Done

Note: The new alias host and alias hostname based agent targets will get the metrics that are assigned from the default template. Confirm that the proper monitoring template and metrics have been applied to the new alias host and alias hostname based agent targets. If you have made changes to metric collection settings associated with the Oracle Homes on the old physical hostname based agent before it was removed when beginning the upgrade and transition, you will need to make those changes to the new Oracle Homes on the new alias hostname based agent.

In EM, add new Primary OMS2

1. Select Enterprise -> Provisioning and Patching -> Procedure Library
2. On the Deployment Procedure Manager page, in the Procedure Library tab, from the table, select Add Oracle Management Service, and then, click Launch.
3. On the Add Oracle Management Service: Getting Started page, the preinstallation tasks should all have been completed earlier in this process and because we are installing OMS2 on a system that previously had a running OMS2. Select each of the tasks that are completed, and then, click Next.
4. On the Add Oracle Management Service: Select Destination page, do the following:

- a. Select or enter the OMS2 Alias Hostname FQDN

```
<OMS2_ALIAS_HOSTNAME_FQDN>
```

Example:

```
emoms2.domain.com
```

- b. Review the Destination Instance Base Location. This should match the value on OMS1, should be located on replicated storage, and should be the following:
`<NEW_INSTANCE_BASE>`
Example:
`/u01/app/oracle/OMS/gc_inst`
 - c. Select or add Source Credentials and Destination Credentials. These should be the following:
`<ORACLE_SOFTWARE_OWNER_USER>`
Example:
`oracle`
 - d. Click Next
5. On the Options page, do the following:
- a. In the File Transfer Option section, select a suitable protocol to transfer the cloned ZIP files to a staging location. FTP is the default transfer mode. Options include FTP, HTTP(S), and a Shared Directory. If FTP or HTTP(S) are used, directories must be specified on each server and must have 8 GB of free space. If a Shared Directory Path is used, the path must be the same on both servers, and the directory must contain at least 4GB of free space.
 - i. Ensure that the staging directory exists on both Primary OMS1 and Primary OMS2 hosts, or if it is a Shared Directory, that it is accessible from both Primary OMS1 and Primary OMS2 hosts. Ensure that the directory is readable and writeable by the Oracle Software Owner User.

The following commands are to be run as the Oracle Software Owner User

- b. In the Staging Locations section, do the following:
 - i. For Source Staging, enter a location on OMS1 where the cloned ZIP files can be created and placed temporarily
`<OMS_STAGING_DIR>`
Example:
`/u01/app/oracle/local/stage`
 - ii. For Destination Staging, enter a location on OMS2 where the cloned ZIP files can be copied to temporarily
`<OMS_STAGING_DIR>`
Example:
`/u01/app/oracle/local/stage`
 - c. In the Destination Ports section, validate the ports displayed by default. These default ports are based on the ports already assigned and used by OMS1. It is a best practice to keep these ports on OMS2 the same as those on OMS1.
 - d. Click Next
6. On the Post Creation Steps page, do the following:
- a. If the mail server has not been configured in EM, acknowledge the Warning dialog that indicates that Enterprise Manager is not configured with an outgoing mail (SMTP) server for sending email notifications by pressing OK.
 - b. If the mail server has already been configured in EM, enter one or more e-mail IDs (separate by a comma) where the details of the postinstallation tasks to be performed can be sent. Otherwise, leave the field blank, and then, click Next.
7. On the Review page, review the details and click Finish

8. Monitor the deployment procedure.

The following commands are to be run as root.

9. As root, once the deployment procedure has completed successfully, run the root.sh script:

```
<NEW_MIDDLEWARE_HOME>/root.sh
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/root.sh
```

Specify local file system location for lock files on Primary OMS2

Edit the httpd.conf.emctl_secure file and copy it to the httpd.conf file to specify a location on local storage for the http lock file. The following instructions are based on the step in Performing Postinstallation Tasks After Adding an Additional Oracle Management Service in the [Oracle Enterprise Manager Basic Installation Guide](#).

The following commands are to be run as the Oracle Software Owner User

1. Stop OMS2

```
<NEW_MIDDLEWARE_HOME>/bin/emctl stop oms
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl stop oms
```

2. Make a backup of the httpd.conf.emctl_secure file

```
cp -p  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/instances/ohs<#>/httpd.conf.emctl_secure  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/instances/ohs<#>/httpd.conf.emctl_secure.before_local_lock_files_YYYYMMDD
```

Example:

```
cp -p  
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co  
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure  
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co  
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure.before_local_lock_files_20  
160502
```

3. Edit the httpd.conf.secure file in the runtime directory, replacing values for the uncommented LockFile lines in the IfModule mpm_prefork_module and IfModule mpm_worker_module sections

```
vi  
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components  
/OHS/instances/ohs<#>/httpd.conf.emctl_secure
```

Example:

```
vi  
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co  
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure
```

Replace the two uncommented occurrences of this line:

```
LockFile "${ORACLE_INSTANCE}/servers/${COMPONENT_NAME}/logs/http_lock"
```

With this line:

```
LockFile "<LOCAL_LOCK_FILE_DIR>/http_lock"
```

Example:

```
LockFile "/u01/app/oracle/local/ohs_locks/http_lock"
```

4. Compare the edited `httpd.conf.secure` file with the backup made in step 1 above.

```
diff
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/instances/ohs<#>/httpd.conf.emctl_secure
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/instances/ohs<#>/httpd.conf.emctl_secure.before_local_lock_files_YYYYMMDD
```

Example:

```
diff
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure.before_local_lock_files_20
160502
```

Example output:

```
$ diff
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure.before_local_lock_files_20
160316
155c155
< LockFile "/u01/app/oracle/local/ohs_locks/http_lock"
---
> LockFile "${ORACLE_INSTANCE}/servers/${COMPONENT_NAME}/logs/http_lock"
175c175
< LockFile "/u01/app/oracle/local/ohs_locks/http_lock"
---
> LockFile "${ORACLE_INSTANCE}/servers/${COMPONENT_NAME}/logs/http_lock"
```

5. In the runtime directory, copy the `httpd.conf.emctl_secure` file to the `httpd.conf` file

```
cp -p
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/instances/ohs<#>/httpd.conf.emctl_secure
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/config/fmwconfig/components
/OHS/instances/ohs<#>/httpd.conf
```

Example:

```
cp
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs2/httpd.conf.emctl_secure
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/config/fmwconfig/co
mponents/OHS/instances/ohs2/httpd.conf
```

6. Start OMS2

```
<NEW_MIDDLEWARE_HOME>/bin/emctl start oms
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl start oms
```

7. Check status of OMS2

```
<NEW_MIDDLEWARE_HOME>/bin/emctl status oms -details
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl status oms -details
```

8. Wait for OMS2 to stabilize. Check EM.

In EM, check the availability of the targets that are associated with the alias hostname agent on Primary OMS2

1. Navigate to the home page for the alias hostname agent on Primary OMS2
2. Under the Monitoring section at the top right, expand Details
3. Review the availability of the targets listed under Monitored Targets
4. If there are any targets that are not showing with a Status of Up or N/A, correct the availability issues before continuing.

The following are steps that can be taken to attempt to resolve any availability issues.

a. Stop the oms agent

```
<NEW_OMS_AGENT_HOME>/bin/emctl stop agent
```

b. Start the oms agent

```
<NEW_OMS_AGENT_HOME>/bin/emctl start agent
```

Review the availability and see if it resolves.

If it does not resolve, the following are additional options to try:

- c. Create a short blackout for the target
 - i. Navigate to the home page of the target
 - ii. Select Control -> Create Blackout...
 - iii. Follow the wizard, adjusting the duration length to be a few minutes, and submit the blackout
 - iv. Wait a few minutes after the blackout has ended and check the availability of the target
 - d. Save the Monitoring Configuration again for the target
 - i. Navigate to the home page of the target
 - ii. Select Target Setup -> Monitoring Configuration and press OK
 - iii. Wait a few minutes and check the availability of the target
 - e. If these steps do not resolve the availability issues, please reference [How to run the "Targets Status Diagnostics Report" to Troubleshoot Target Status Availability Issues \(Doc ID 1546575.1\)](#).
5. Verify that the site is fully operational.

Finalize Primary and Standby Site Configuration

Perform the following steps to complete the configuration of the primary and standby sites.

Update Demonstration Keystores to Reflect Alias Hostnames

If you are using demonstration keystores, the demonstration identity certificates configured for WebLogic Server need to be recreated on each OMS to have the alias hostname for the OMS instead of the physical hostname of the server so that wlst can be used for future operations after this upgrade and transition process has completed.

These steps involve downtime as the OMS must be restarted. To maintain availability, these steps should be performed serially, first on OMS1 and then on OMS2 so that one OMS remains available while the other is being updated.

Perform the following steps first on OMS1 and then on OMS2.

Regenerate Demoidentity.jks to make use of the alias hostname, to enable future use of wlst

1. Backup existing Demoidentity.jks file

```
cp -p <NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/security/DemoIdentity.jks <NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/security/DemoIdentity.jks.before_regen_YYYYMMDD
```

Example:

```
cp -p /u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/security/DemoIdentity.jks /u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/security/DemoIdentity.jks.before_regen_20160502
```

2. Backup existing DemoTrust.jks file

```
cp -p <NEW_MIDDLEWARE_HOME>/wlserver/server/lib/DemoTrust.jks <NEW_MIDDLEWARE_HOME>/wlserver/server/lib/DemoTrust.jks.before_regen_YYYYMMDD
```

Example:

```
cp -p /u01/app/oracle/OMS/MWare_13.2/wlserver/server/lib/DemoTrust.jks /u01/app/oracle/OMS/MWare_13.2/wlserver/server/lib/DemoTrust.jks.before_regen_20160502
```

3. Perform the following commands in a separate session to prevent the environment variable settings required to perform these steps from affecting other commands. These environment variable settings can cause issues with standard OMS operations and the other instructions in this upgrade and transition process.

- a. Open a new shell session as the Oracle Software Owner User
- b. Set necessary environment variables

i. Change directory to the bin directory for the domain

```
cd <NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/bin
```

Example:

```
cd /u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/bin
```

ii. Source script to set environment variables. Make sure you source the contents of the script using the exact syntax below including the leading dot and space.

```
./setDomainEnv.sh
```

c. Create a new keystores directory to use while generating these files

```
mkdir -p <NEW_MIDDLEWARE_HOME>/keystores
```

Example:

```
mkdir -p /u01/app/oracle/OMS/MWare_13.2/keystores
```

d. Change directory to the new keystores directory

```
cd <NEW_MIDDLEWARE_HOME>/keystores
```

Example:

```
cd /u01/app/oracle/OMS/MWare_13.2/keystores
```

- e. Generate the new certificate with the alias hostname for the OMS server. In the following command, replace <OMS_ALIAS_HOSTNAME_FQDN> with the value for <OMS1_ALIAS_HOSTNAME_FQDN> when running these commands on OMS1 and with the value for <OMS2_ALIAS_HOSTNAME_FQDN> when running these commands on OMS2.

```
java utils.CertGen -cn <OMS_ALIAS_HOSTNAME_FQDN> -keyfilepass
DemoIdentityPassPhrase -certfile democert -keyfile demokey
```

Example:

```
java utils.CertGen -cn emomsl.domain.com -keyfilepass
DemoIdentityPassPhrase -certfile democert -keyfile demokey
```

- f. Import the new certificate into a new Demoidentity.jks file

```
java utils.ImportPrivateKey -keystore DemoIdentity.jks -storepass
DemoIdentityKeyStorePassPhrase -keyfilepass DemoIdentityPassPhrase -
certfile democert.pem -keyfile demokey.pem -alias demoidentity
```

- g. Confirm that the newly generated certificate in the keystore references the alias hostname FQDN of the OMS. When prompted for a password, hit enter as a password is not required to view contents of the keystore. Examine the value after 'CN=' on the line that starts 'Owner:'

```
keytool -list -v -keystore DemoIdentity.jks
```

Example Output:

```
$ keytool -list -v -keystore DemoIdentity.jks
Enter keystore password:
```

```
***** WARNING WARNING WARNING *****
* The integrity of the information stored in your keystore *
* has NOT been verified! In order to verify its integrity, *
* you must provide your keystore password. *
***** WARNING WARNING WARNING *****
```

```
Keystore type: JKS
Keystore provider: SUN
```

Your keystore contains 1 entry

```
Alias name: demoidentity
Creation date: Apr 2, 2016
Entry type: PrivateKeyEntry
Certificate chain length: 1
Certificate[1]:
Owner: CN=emomsl.domain.com, OU=FOR TESTING ONLY, O=MyOrganization,
L=MyTown, ST=MyState, C=US
Issuer: CN=CertGenCA, OU=FOR TESTING ONLY, O=MyOrganization, L=MyTown,
ST=MyState, C=US
Serial number: -3a2e2b32e410b3a8234c334b51c8fe64
Valid from: Fri Apr 01 13:26:44 EDT 2016 until: Wed Apr 02 13:26:44 EDT
2031
Certificate fingerprints:
    MD5: 7F:A5:B0:84:E6:91:21:41:16:D4:23:F0:F1:3F:89:EA
    SHA1:
02:FB:FB:B9:4C:7E:77:3C:00:F4:AA:31:5A:66:1B:87:CA:AB:8C:C3
    SHA256:
5D:78:43:7B:FB:50:4C:9D:74:E9:5E:9D:B9:02:06:6A:61:7E:43:45:66:6F:71:DC
:3B:B3:F6:DE:FC:47:FF:73
    Signature algorithm name: SHA256withRSA
```

Version: 3

Extensions:

```
#1: ObjectId: 2.5.29.35 Criticality=false
AuthorityKeyIdentifier [
  KeyIdentifier [
    0000: 34 38 FD 45 D8 80 CF C7    D2 E8 DF 1D F8 A1 39 B0
    48.E.....9.
    0010: 11 88 00 6A                ...j
  ]
]

#2: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
  KeyIdentifier [
    0000: 83 DB B2 30 86 55 C1 48    43 EE 02 65 5C DF B0 5B
    ...0.U.HC..e\..[
    0010: CE 7E 8E D3                ....
  ]
]
```

```
*****
*****
```

- h. Delete the four interim files that are no longer needed, leaving just the new Demoidentity.jks file in the current directory:

```
rm democert.*
rm demokey.*
```

- i. Exit the separate shell session that was started to execute these commands.

4. Stop the OMS

```
<NEW_MIDDLEWARE_HOME>/bin/emctl stop oms -all
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl stop oms -all
```

5. Change directory to the new keystores directory

```
cd <NEW_MIDDLEWARE_HOME>/keystores
```

Example:

```
cd /u01/app/oracle/OMS/MWare_13.2/keystores
```

6. Replace the old Demoidentity.jks file with the newly generated file. Note that we are explicitly NOT passing the -p parameter to cp here so that the target file retains its original permissions. Specifying -p here will cause the wrong permissions to be set on the target file.

```
cp DemoIdentity.jks
<NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/security/
```

Example:

```
cp DemoIdentity.jks
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/security/
```

7. Confirm that the Demoidentity.jks file has been copied successfully.

```
ls -alF <NEW_INSTANCE_BASE>/user_projects/domains/GCDomain/security/Demo*
```

Example:

```
ls -alF
/u01/app/oracle/OMS/gc_inst/user_projects/domains/GCDomain/security/Demo*
```

8. Start the OMS

```
<NEW_MIDDLEWARE_HOME>/bin/emctl start oms
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emctl start oms
```

9. Perform the following commands in a separate session to prevent the environment variable settings required to perform these steps from affecting other commands. These environment variable settings can cause issues with standard OMS operations and the other instructions in this upgrade and transition process.

a. Open a new shell session as the Oracle Software Owner User

b. Set necessary environment variables

i. Change directory to the bin directory for WebLogic Home

```
cd <NEW_MIDDLEWARE_HOME>/wlserver/server/bin
```

Example:

```
cd /u01/app/oracle/OMS/MWare_13.2/wlserver/server/bin
```

ii. Source script to set the environment needed to run wlst. Make sure you source the contents of the script using the exact syntax below including the leading dot and space.

```
. ./setWLSEnv.sh
```

c. Change directory to prepare to run wlst

```
cd <NEW_MIDDLEWARE_HOME>/oracle_common/common/bin
```

Example:

```
cd /u01/app/oracle/OMS/MWare_13.2/oracle_common/common/bin
```

d. Launch wlst

```
java -Dweblogic.security.TrustKeyStore=DemoTrust -
Dweblogic.security.SSL.minimumProtocolVersion=TLSv1 weblogic.WLST
```

e. At this point you should be able to successfully connect to this OMS server via wlst specifying the alias hostname for this OMS server, and if you have already completed these steps on the other OMS server you should also be able to connect to the other OMS server

f. Attempt to connect to the Admin server:

```
connect('<ADMIN_SERVER_USER>', '<ADMIN_SERVER_PASSWORD>', 't3s://<OMS1_ALIAS_HOSTNAME_FQDN>:<ADMIN_SERVER_HTTPS_PORT>')
```

Example:

```
connect('weblogic', 'changeme', 't3s://emoms1.domain.com:7101')
```

g. Attempt to connect to the OMS1 Managed Server

```
connect('<ADMIN_SERVER_USER>', '<ADMIN_SERVER_PASSWORD>', 't3s://<OMS1_ALIAS_HOSTNAME_FQDN>:<OMS_SERVER_HTTPS_PORT>')
```

Example:

```
connect('weblogic', 'changeme', 't3s://emoms1.domain.com:7301')
```

h. Attempt to connect to the OMS2 Managed Server (will fail until these steps are completed on OMS2)

```
connect('<ADMIN_SERVER_USER>', '<ADMIN_SERVER_PASSWORD>', 't3s://<OMS2_ALIAS_HOSTNAME_FQDN>:<OMS_SERVER_HTTPS_PORT>')
```

Example:

```
connect('weblogic','changeme','t3s://emoms2.domain.com:7301')
```

- i. If BI Publisher is configured, attempt to connect to the BIP (primary) Managed Server

```
connect('<ADMIN_SERVER_USER>','<ADMIN_SERVER_PASSWORD>','t3s://<OMS1_ALIAS_HOSTNAME_FQDN>:<BIP_SERVER_HTTPS_PORT>')
```

Example:

```
connect('weblogic','changeme','t3s://emoms1.domain.com:9803')
```

- j. If BI Publisher is configured, attempt to connect to the BIP2 Managed Server

```
connect('<ADMIN_SERVER_USER>','<ADMIN_SERVER_PASSWORD>','t3s://<OMS2_ALIAS_HOSTNAME_FQDN>:<BIP_SERVER_HTTPS_PORT>')
```

Example:

```
connect('weblogic','changeme','t3s://emoms2.domain.com:9803')
```

- k. Exit wlst

```
exit()
```

- l. Exit the separate shell session that was started to execute these commands.

Note: Before continuing, ensure the above steps were performed on both OMS servers.

Deinstall EM 12c OMS binaries on Primary OMS1

Deinstall the old EM 12c OMS home on Primary OMS1. For more information, see [Deleting the Old OMS Home When the Central Agent Is Migrated to a Location Outside the Old Middleware Home in the Oracle Enterprise Manager Cloud Control Upgrade Guide](#).

1. Ensure that the old EM 12c OMS home on Primary OMS1 is detached from the inventory.

```
<OLD_OMS_HOME>/oui/bin/runInstaller -detachHome -force -allDepHomes -silent  
ORACLE_HOME=<OLD_OMS_HOME> -waitForCompletion -invPtrLoc  
<OLD_OMS_HOME>/oraInst.loc
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/oui/bin/runInstaller -detachHome -force -  
allDepHomes -silent ORACLE_HOME=/u01/app/oracle/MWare_12.5/oms -  
waitForCompletion -invPtrLoc /u01/app/oracle/MWare_12.5/oms/oraInst.loc
```

Note: This may have already been accomplished by the installer. Therefore, it is ok to continue if the command completes with the following message:

The Oracle home '/u01/app/oracle/MWare_12.5/oms' could not be updated as it does not exist.

2. Ensure that the old EM 12c Oracle common directory on Primary OMS1 is detached from the inventory

```
<OLD_OMS_HOME>/oui/bin/runInstaller -detachHome -force -allDepHomes -silent  
ORACLE_HOME=<OLD_MIDDLEWARE_HOME>/oracle_common -waitForCompletion -invPtrLoc  
<OLD_MIDDLEWARE_HOME>/oracle_common/oraInst.loc
```

Example:

```
/u01/app/oracle/MWare_12.5/oms/oui/bin/runInstaller -detachHome -force -  
allDepHomes -silent ORACLE_HOME=/u01/app/oracle/MWare_12.5/oracle_common -  
waitForCompletion -invPtrLoc  
<OLD_MIDDLEWARE_HOME>/oracle_common/oraInst.loc
```

Note: This may have already been accomplished by the installer. Therefore, it is ok to continue if the command completes with the following message:

The Oracle home '/u01/app/oracle/MWare_12.5/oracle_common' could not be updated as it does not exist.

3. Confirm that no processes are running from the old middleware home. There should be no processes running because we've upgraded the OMS.

```
ps -ef | grep <OLD_MIDDLEWARE_HOME>
```

Example:

```
ps -ef | grep /u01/app/oracle/MWare_12.5
```

Note: Even if Oracle Configuration Manager (OCM) is not configured against the old EM 12c installation, there may be OCM related processes running from under the old middleware home. These processes can be attempted to be stopped using the command <OLD_OMS_HOME>/ccr/bin/emCCR stop. If the stop fails, for example because OCM is not configured, these processes may need to be killed in order to remove the directory in the next step.

4. Once no processes are running from the old Middleware Home, delete the old Middleware Home.

```
rm -rf <OLD_MIDDLEWARE_HOME>
```

Example:

```
rm -rf /u01/app/oracle/MWare_12.5
```

Deploy Host-based Agents to Primary and Standby OMSs

1. Considerations
 - a. Port number (must be different than the replicated storage agent)
 - b. Use local storage for agent directory
 - c. Specify local storage inventory location
2. Select Setup -> Add Target -> Add Targets Manually
3. On the Add Targets Manually page, under Add Host Targets, select Install Agent on Host
4. On the Add Host Targets: Host and Platform page,
 - a. Select Same for All Hosts from the Platform drop-down list
 - b. Press Add four times
 - c. Select Platform (in our case Linux x86-64) from the first row's drop-down list
 - d. Enter the physical FQDN for the primary OMS1 in the first row's Host field
<PRIMARY_OMS1_PHYSICAL_FQDN>
Example:
host1.domain.com
 - e. Enter the physical FQDN for the primary OMS2 in the second row's Host field
<PRIMARY_OMS2_PHYSICAL_FQDN>
Example:
host2.domain.com
 - f. Enter the physical FQDN for the standby OMS1 in the third row's Host field
<STANDBY_OMS1_PHYSICAL_FQDN>

Example:

```
host3.domain.com
```

- g. Enter the physical FQDN for the standby OMS2 in the fourth row's Host field
<STANDBY_OMS2_PHYSICAL_FQDN>

Example:

```
host4.domain.com
```

- h. Press Next

5. On the Add Host Targets: Installation Details page,

- a. Enter the Installation Base Directory

```
<LOCAL_AGENT_BASE>
```

Example:

```
/u01/app/oracle/local/agent
```

- b. Review the automatically populated Instance Directory

```
<LOCAL_AGENT_INSTANCE_HOME>
```

Example:

```
/u01/app/oracle/local/agent/agent_inst
```

- c. Select or add a Named Credential for the OMS host
- d. Optionally select or add a Root Credential for the root user OMS2 host
- e. Review Privileged Delegation Setting

In our case, cleared this field as do not have delegation configured and have specified a Root Credential

- f. Enter port for the local agents

```
<LOCAL_AGENT_PORT>
```

Example:

```
1830
```

- g. Expand Optional Details. In Additional Parameters, add the following to specify use of the local storage Oracle Inventory

```
INVENTORY_LOCATION=<LOCAL_INVENTORY_HOME>
```

Example:

```
INVENTORY_LOCATION=/u01/app/oracle/oraInventory
```

- h. Press Next

6. On the Add Host Targets: Review page,

- a. Review the information
- b. If correct, press Deploy Agent.

7. On the Agent Deployment Summary page,

- a. Review the results as they refresh
- b. Take actions as indicated.

For example, if indicated, need to manually run root.sh as indicated when the deployments are complete.

```
<LOCAL_AGENT_HOME>/root.sh
```

Example:

```
/u01/app/oracle/local/agent/agent_13.2.0.0.0/root.sh
```

- c. Press Done

8. Ensure agents on all nodes have the correct time zone configuration.

- a. Check configuration of all OMS agents (the four physical hostname local storage agents and the two alias hostname replicated storage agents) using emcli from primary OMS1

```
<NEW_MIDDLEWARE_HOME>/bin/emcli login -username="<EM_USERNAME>"
<NEW_MIDDLEWARE_HOME>/bin/emcli get_agent_properties -
agent_name="<PRIMARY_OMS1_PHYSICAL_FQDN>:<LOCAL_AGENT_PORT>"
<NEW_MIDDLEWARE_HOME>/bin/emcli get_agent_properties -
agent_name="<PRIMARY_OMS2_PHYSICAL_FQDN>:<LOCAL_AGENT_PORT>"
<NEW_MIDDLEWARE_HOME>/bin/emcli get_agent_properties -
agent_name="<STANDBY_OMS1_PHYSICAL_FQDN>:<LOCAL_AGENT_PORT>"
<NEW_MIDDLEWARE_HOME>/bin/emcli get_agent_properties -
agent_name="<STANDBY_OMS2_PHYSICAL_FQDN>:<LOCAL_AGENT_PORT>"
<NEW_MIDDLEWARE_HOME>/bin/emcli get_agent_properties -
agent_name="<OMS1_ALIAS_HOSTNAME_FQDN>:<OMS_AGENT_PORT>"
<NEW_MIDDLEWARE_HOME>/bin/emcli get_agent_properties -
agent_name="<OMS2_ALIAS_HOSTNAME_FQDN>:<OMS_AGENT_PORT>"
```

Example:

```
/u01/app/oracle/OMS/MWare_13.2/bin/emcli login -
username="john.doe@domain.com"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli get_agent_properties -
agent_name="host1.domain.com:1830"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli get_agent_properties -
agent_name="host2.domain.com:1830"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli get_agent_properties -
agent_name="host3.domain.com:1830"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli get_agent_properties -
agent_name="host4.domain.com:1830"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli get_agent_properties -
agent_name="emoms1.domain.com:3872"
/u01/app/oracle/OMS/MWare_13.2/bin/emcli get_agent_properties -
agent_name="emoms2.domain.com:3872"
```

- b. Review the results of the command. If the local agents differ in time zone configuration from the replicated storage agents, reset the time zone for the local agents.
- c. Reset the time zone for any agents as required to ensure that the OMS related agents are in a consistent time zone. This is important in the event that targets need to be moved between agents.

For each agent that needs the time zone to be reset, perform the following from the agent home:

```
echo $TZ
<AGENT_HOME>/bin/emctl config agent getTZ
<AGENT_HOME>/bin/emctl stop agent
<AGENT_HOME>/bin/emctl resetTZ agent
```

Login to the repository via sqlplus and run the commands provided in the output of the emctl resetTZ agent command

```
<AGENT_HOME>/bin/emctl start agent
```

- d. Repeat step a, and review the results, confirming that the time zones are now consistent.

- e. For more information, please reference [Enterprise Manager Cloud Control 12c Agent: Troubleshooting Timezone \(TZ\) issues \(Doc ID 1550956.1\)](#).

Post-Upgrade and Transition Activities

Review and complete remaining post-upgrade activities

At this point, the upgrade and transition specific steps are complete. However, there may still be additional steps required to complete the upgrade, such as implementing WebLogic custom configuration not carried forward in the upgrade, and additional steps required in the Enterprise Manager environment, such as upgrading management agents. Review the Oracle Enterprise Manager Cloud Control Upgrade Guide to identify any remaining steps required in your environment.

(OPTIONAL) Perform Post-Upgrade and Transition Tests

Optionally perform switchover, patching, and plug-in deployment tests. This step is intended to build confidence in the upgraded and transitioned environment in a test or development environment. These steps involve downtime and require planning to identify specific patches and plug-ins to deploy.

Oracle recommends that switchover testing be scheduled at the first reasonable opportunity following the completion of the upgrade and transition such that any issues are identified and resolved to ensure the successful availability of the standby to protect against unplanned and planned outages, and to provide operations personnel familiarity with the new standby configuration and switchover processes. In addition, patching and plug-in deployment can be performed to further confirm the readiness of the environment for maintenance operations and to provide operations personnel familiarity with patching processes.

Patching Considerations

When using OMS Patcher to perform patching, set the following property to disable the host verification check due to the alias hostnames configuration:

```
OMSPatcher.OMS_DISABLE_HOST_CHECK=true
```

Oracle Inventory Considerations

Now that the upgrade and transition is complete, there are two sets of Oracle Inventory locations that need to be considered when performing any maintenance in the EM environment: local storage Oracle Inventory and replicated storage Oracle Inventory. This upgrade and transition process did not make any changes to the central Oracle Inventory pointer located in `/etc/orainst.loc`. It is possible that this pointer may reference the replicated storage Oracle Inventory, the local storage Oracle Inventory, or perhaps even a different Oracle Inventory. The key is to ensure that when you are performing maintenance operations that you are aware of the Oracle Inventory that should be used for the particular installed software. Operations against the locally installed software such as the local agents should be performed against the local storage Oracle Inventory. Operations against the software installed on replicated storage such as the OMS and OMS agent should be performed against the replicated storage Oracle Inventory so that the software installed on replicated storage can be maintained regardless of which physical host is currently hosting the software.

Cleanup

When you are certain of upgrade and transition success and that you will no longer need to fall back from the upgrade and transition, and once any logs, configuration, or other long-term reference information has been copied or backed up via other means as necessary, you can remove temporary directories, backups, directories related to



old installations, etc. that were made on local and replicated storage as part of the upgrade and transition process. The following are a list of the areas to review:

1. Review the following directories on Primary OMS1:
 - a. Renamed agent base directory prior to running agentDeploy.sh
`<NEW_OMS_AGENT_BASE>/agent_inst.YYYYMMDD`
Example:
`/u01/app/oracle/OMS/oms_agent/agent_inst.20160502`
 - b. Staging directory used for the EM 13.2 installer
`<UPGRADE_STAGING_DIR>`
Example:
`/u01/app/oracle/OMS/stage`
2. Review the following on all Primary and Standby OMS servers:
 - a. Instance Base directories from the EM 12c installations which have been deinstalled
`<OLD_INSTANCE_BASE>`
Example:
`/u01/app/oracle/gc_inst`
 - b. Backups taken before or during this upgrade and transition process
`<BACKUP_DIR>`
Example:
`/u01/app/oracle/local/backup`
 - c. Scheduled jobs, such as via cron, that reference the EM 12c software and/or environment
Example:
`crontab -l`

Conclusion

Staying current with Enterprise Manager Cloud Control releases and improvements, including architectural changes when they occur, is important to ensure the Enterprise Manager environment meets your organization's enterprise monitoring and management needs with the availability required to meet service level agreements. The release of Oracle Enterprise Manager Cloud Control 12.1.0.3 included a significant change to MAA Disaster Recovery (DR) architecture. From this release onwards, the recommended MAA DR architecture now makes use of a single WebLogic domain, replicated storage, and alias hostnames. Preparing for and following an upgrade and transition process that leverages the new Upgrade and Transition to DR Readiness functionality in EM 13c reduces the effort required to transition to the new architecture and combines the upgrade and transition to reduce associated impact to production operations.

Appendix A - Switchover Procedure

This section describes the steps to switchover to the standby site. The same procedure is applied to switchover in either direction. Pay particular attention to the notes related to the steps.

The following commands are to be run as the Oracle Software Owner User.

1. Shut down all OMS components at the primary site.
`<NEW_MIDDLEWARE_HOME>/bin/emctl stop oms -all`
2. Shut down all alias Management Agents at the primary site.
`<NEW_OMS_AGENT_HOME>/bin/emctl stop agent`

The following commands are to be run as root.

3. As root on all primary site OMS servers, unmount the OMS filesystem and the software library filesystems from OMS hosts at the primary site. If BI Publisher has been configured, unmount the BI Publisher shared storage filesystem from OMS hosts at the primary site. As root on all primary site OMS servers:
`umount <SOFTWARE_LIBRARY_MOUNT_POINT>`
`umount <OMS_MOUNT_POINT>`
`umount <BIP_STORAGE_MOUNT_POINT>`
Example:
`umount /SWLIB`
`umount /u01/app/oracle/OMS`
`umount /BIP`

The following commands are to be run as the appropriate user for the command in your environment.

4. Perform on-demand replication of OMS and software library filesystems. If BI Publisher has been configured, also perform an on-demand replication of the BI Publisher shared storage filesystem.
Note: Refer to your storage documentation for steps required to perform an on-demand replication.
5. Update DNS entry for the application alias hostname.
Note: May not be applicable if configured with a global load balancer

The following commands are to be run as a dba user on the appropriate database server host.

6. Switchover Oracle Database using Data Guard switchover.
 - a. The steps below provide sample instructions for performing a switchover using DGMGRL as performed in analysis and testing for this whitepaper. For additional information regarding performing switchover operations using dgmgrl, please reference [12c Dataguard Switchover Best Practices using DGMGRL\(Dataguard Broker Command Prompt\) \(Doc ID 1582837.1\)](#).
 - b. Use DGMGRL to perform a switchover to the standby database. The command can be run on the primary site or the standby site. The switchover command verifies the states of the primary database and the standby database, affects switchover of roles, restarts the old primary database, and sets it up as the new standby database.

- i. Ensure environment is properly set to run dgmgrl
 - . oraenv (specify the instance of the standby repository database on the host)

- ii. Start dgmgrl

```
dgmgrl
```

- iii. Connect to the current standby database as sys

```
connect sys@<STANDBY_DATABASE_NAME>
```

Example:

```
connect sys@emdbS
```

- iv. Display the current configuration and the details for each database:

```
show configuration
```

```
show database <PRIMARY_DATABASE_NAME>
```

```
show database <STANDBY_DATABASE_NAME>
```

Example:

```
show configuration
```

```
show database "emdbP"
```

```
show database "emdbS"
```

- v. Examine the output of the above commands, and when ready, perform the following to switchover to the standby:

```
switchover to <STANDBY_DATABASE_NAME>
```

Example:

```
switchover to "emdbS"
```

- vi. Display the current configuration and the details for each database:

```
show configuration
```

```
show database <PRIMARY_DATABASE_NAME>
```

```
show database <STANDBY_DATABASE_NAME>
```

Example:

```
show configuration
```

```
show database "emdbP"
```

```
show database "emdbS"
```

- c. Example Output:

```
dgmgrl
DGMGRL for Linux: Version 11.2.0.3.0 - 64bit Production
```

```
Copyright (c) 2000, 2009, Oracle. All rights reserved.
```

```
Welcome to DGMGRL, type "help" for information.
```

```
DGMGRL> connect sys@emdbP
```

```
Password:
```

```
Connected.
```

```
DGMGRL> show configuration
```

```
Configuration - emdbP.domain.com
```

```
Protection Mode: MaxAvailability
```

```
Databases:
```

```
emdbP - Primary database
```



emdbS - Physical standby database

Fast-Start Failover: DISABLED

Configuration Status:
SUCCESS

DGMGRL> show database "emdbP"

Database - emdbP

Enterprise Manager Name: emdbP.domain.com_dbcluster
Role: PRIMARY
Intended State: TRANSPORT-ON
Instance(s):
 emdbP1
 emdbP2

Database Status:
SUCCESS

DGMGRL> show database "emdbS"

Database - emdbS

Enterprise Manager Name: emdbS.domain.com
Role: PHYSICAL STANDBY
Intended State: APPLY-ON
Transport Lag: 0 seconds
Apply Lag: 0 seconds
Real Time Query: ON
Instance(s):
 emdbS1 (apply instance)
 emdbS2

Database Status:
SUCCESS

DGMGRL> switchover to "emdbS"
Performing switchover NOW, please wait...
New primary database "emdbS" is opening...
Operation requires shutdown of instance "emdbP2" on database "emdbP"
Shutting down instance "emdbP2"...
ORACLE instance shut down.
Operation requires startup of instance "emdbP2" on database "emdbP"
Starting instance "emdbP2"...
ORACLE instance started.
Database mounted.
Database opened.
Switchover succeeded, new primary is "emdbS"
DGMGRL> show configuration

Configuration - emdbP.domain.com

```

Protection Mode: MaxAvailability
Databases:
  emdbS - Primary database
  emdbP - Physical standby database

Fast-Start Failover: DISABLED

Configuration Status:
SUCCESS

DGMGRL> show database "emdbP"

Database - emdbP

Enterprise Manager Name: emdbP.domain.com_dbcluster
Role:                    PHYSICAL STANDBY
Intended State:          APPLY-ON
Transport Lag:           0 seconds
Apply Lag:               0 seconds
Real Time Query:         ON
Instance(s):
  emdbP1
  emdbP2 (apply instance)

Database Status:
SUCCESS

DGMGRL> show database "emdbS"

Database - emdbS

Enterprise Manager Name: emdbS.domain.com
Role:                    PRIMARY
Intended State:          TRANSPORT-ON
Instance(s):
  emdbS1
  emdbS2

Database Status:
SUCCESS

DGMGRL> exit

Exit dgmgrl

```

- d. Verify the post switchover states. To monitor a standby database completely, the user monitoring the database must have SYSDBA privileges. This privilege is required because the standby database is in a mounted-only state. A best practice is to ensure that the users monitoring the primary and standby databases have SYSDBA privileges for both databases.
7. Confirm role based database service is no longer running on the former primary (new standby) database cluster, and that the service is now running on the new primary database cluster. Edit the following example commands and run each database's command on a host of that database's cluster:

```

srvctl status service -d <PRIMARY_DATABASE_NAME> -s
<ROLE_BASED_DB_SERVICE_NAME>

```

```
srvctl status service -d <STANDBY_DATABASE_NAME> -s
<ROLE_BASED_DB_SERVICE_NAME>
```

Example:

```
srvctl status service -d emdbP -s emdb.domain.com
Service emdb.domain.com is running on instance(s) emdbP1,emdbP2
srvctl status service -d emdbS -s emdb.domain.com
Service emdb.domain.com is not running.
```

The following commands are to be run as the appropriate user for the command in your environment.

8. Perform role reversal of the Software Library and OMS storage (refer to your storage documentation for instructions). If BI Publisher has been configured, also perform a role reversal of the BI Publisher shared storage.
Note: This step is not required until both primary and standby OMS use replicated storage.
9. Re-enable replication schedules for SWLIB and OMS storage. If BI Publisher has been configured, also re-enable replication schedules for the BI Publisher shared storage.
Note: This step is not required until both primary and standby OMS use replicated storage.

The following commands are to be run as root.

10. As root on all standby site OMS servers, mount OMS and Software Library filesystems. If BI Publisher has been configured, also mount the BI Publisher shared storage filesystem:

```
mount <SOFTWARE_LIBRARY_MOUNT_POINT>
mount <OMS_MOUNT_POINT>
mount <BIP_STORAGE_MOUNT_POINT>
```

Example:

```
mount /SWLIB
mount /u01/app/oracle/OMS
mount /BIP
```

The following commands are to be run as the Oracle Software Owner User.

11. Start the first OMS Admin Server at the standby site
Note: This step is not applicable if using a connection string that works from both sites such as by making use of SCAN addresses and a role-based database service, as is the case in our environment.
12. Point OMS to new Primary Repository Database using the following command:
Note: This step is not applicable if using a connection string that works from both sites such as by making use of SCAN addresses and a role-based database service, as is the case in our environment.

```
<NEW_MIDDLEWARE_HOME>/bin/emctl config oms -store_repos_details -
repos_conndesc <connect_descriptor> -repos_user <REPOSITORY_USER>
```

Example:

```
emctl config oms -store repos_details -repos_conndesc
'"(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=newscan.domain)(PORT
=1521))) (CONNECT_DATA=(SERVICE_NAME=emreps.domain))"' -repos_user SYSMAN
```

13. Start the OMSs at the standby site.

<NEW_MIDDLEWARE_HOME>/bin/emctl start oms

14. Start the Management Agents at the standby site using the following command:

```
<NEW_OMS_AGENT_HOME>/bin/emctl start agent
```

15. Relocate Management Services and Repository target using the following command. The Management Services and Management Repository target is monitored by a Management Agent on one of the Management Services on the primary site. To ensure that the target is monitored after switchover/failover, relocate the target to a Management Agent on the standby site by running the following command on one of the Management Service standby sites.

Note: This step is not applicable once the primary and standby OMSs use replicated storage if using a connection string that works from both sites such as by making use of SCAN addresses and a role-based database service, as is the case in our environment. This is because once the replicated storage upgrade and transition is complete, the Management Services and Management Repository target is monitored by an agent configured with the alias hostname and installed on replicated storage.

```
<NEW_MIDDLEWARE_HOME>/bin/emctl config emrep -agent <agent name> -conn_desc  
<repository connection>
```

Example:

```
./emctl config emrep -agent emoms1.domain.com:3872 -conn_desc  
" (DESCRIPTION_LIST=(LOAD_BALANCE=off) (FAILOVER=on) (DESCRIPTION=(CONNECT_TIMEOU  
T=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDRESS_LIST=(LOAD_BALANCE=on  
) (ADDRESS=(PROTOCOL=TCP) (HOST=pcluster-  
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))) (DE  
SCRIPTION=(CONNECT_TIMEOUT=5) (TRANSPORT_CONNECT_TIMEOUT=3) (RETRY_COUNT=3) (ADDR  
ESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP) (HOST=scluster-  
scan.domain.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=emdb.domain.com))) "
```

16. Update the WebLogic Admin Server URL. This is done by navigating to the target homepage for GC Domain and selecting **WebLogic Domain-->Target Setup--> Monitoring Configuration from within Cloud Control**.

Update the URI for the WebLogic Admin Console to be:

```
https://<STANDBY_OMS1_PHYSICAL_FQDN>:<ADMIN_SERVER_HTTPS_PORT>/console
```

Example:

```
https://host3.domain.com:7101/console
```

Appendix B – Variable Values, Definitions, and Examples

Identify the following information and use it throughout the set of instructions in the whitepaper:

VARIABLE VALUES, DEFINITIONS, AND EXAMPLES

| Variable | Definition | Example (Add yours below each) |
|----------------------------|--|--------------------------------|
| <OLD_ORACLE_BASE> | Base directory on local storage under which Oracle software is installed. This directory is located on local storage. This is the parent directory of the <OLD_MIDDLEWARE_HOME>, <OLD_INSTANCE_BASE>, <OLD_OMS_AGENT_HOME>, and <OLD_INVENTORY_HOME> | /u01/app/oracle |
| <BACKUP_DIR> | Directory where backups will be created in commands. | /u01/app/oracle/local/backup |
| <BACKUP_FILE_NAME> | Name of the backup file, which will vary and will need to be set as appropriate for each backup. | |
| <BACKUP_LOG_FILE_NAME> | Name of the log file for the backup, will vary and will need to be set as appropriate for each backup. | |
| <OLD_MIDDLEWARE_HOME> | Full path including directory name for the Middleware Home. | /u01/app/oracle/MWare_12.5 |
| <OLD_MIDDLEWARE_HOME_NAME> | Directory name without path for the Middleware Home. | MWare_12.5 |
| <OLD_INSTANCE_BASE> | Full path including directory name for the Instance Base. | /u01/app/oracle/gc_inst |
| <OLD_INSTANCE_BASE_NAME> | Directory name without path for the Instance Base. | gc_inst |
| <OLD_INVENTORY_HOME> | Full path including directory name for the Oracle Inventory. | /u01/app/oracle/oralInventory |
| <OLD_INVENTORY_HOME_NAME> | Directory name without path for the Oracle Inventory | oralInventory |
| <OLD_OMS_AGENT_BASE> | Full path including directory name for the OMS Agent Base. | /u01/app/oracle/oms_agent |
| <OLD_OMS_AGENT_BASE_NAME> | Directory name without path for the OMS Agent Base. | oms_agent |
| <AGENT_HOME> | Full path including directory name for the Agent Home. This variable is used when the command could be issued on either an OMS Agent or a Local Agent. Use the appropriate home for the appropriate agent. | |

| | | |
|-----------------------------------|--|--|
| <OLD_OMS_AGENT_HOME> | Full path including directory name for the OMS Agent Home | /u01/app/oracle/oms_agent/core/12.1.0.5.0 |
| <OMS_AGENT_PORT> | Port number used by the OMS Agent. | 3872 |
| <OLD_OMS_HOME> | Full path including directory name for the OMS. | /u01/app/oracle/MWare_12.5/oms |
| <NEW_MIDDLEWARE_HOME> | Full path including directory name for the Middleware Home. | /u01/app/oracle/OMS/MWare_13.2 |
| <NEW_INSTANCE_BASE> | Full path including directory name for the Instance Base. | /u01/app/oracle/OMS/gc_inst |
| <NEW_INVENTORY_HOME> | Full path including directory name for the Oracle Inventory. | /u01/app/oracle/OMS/oraInventory |
| <NEW_OMS_AGENT_BASE> | Full path including directory name for the OMS Agent Base. | /u01/app/oracle/OMS/oms_agent |
| <NEW_OMS_AGENT_INSTANCE_HOME> | Full path including directory name for the Agent Instance. | /u01/app/oracle/OMS/oms_agent/agent_inst |
| <NEW_OMS_AGENT_HOME> | Full path including directory name for the OMS Agent Home | /u01/app/oracle/OMS/oms_agent/agent_13.2.0.0.0 |
| <INTERIM_OMS_AGENT_INSTANCE_HOME> | Full path including directory name for the Interim OMS Agent Instance. | /u01/app/oracle/oms_agent/agent_inst |
| <INTERIM_OMS_AGENT_HOME> | Full path including directory name for the Interim OMS Agent Home | /u01/app/oracle/oms_agent/agent_13.2.0.0.0 |
| <LOCAL_AGENT_BASE> | Full path including directory name for the local Agent Base. | /u01/app/oracle/local/agent |
| <LOCAL_AGENT_INSTANCE_HOME> | Full path including directory name for the Agent Instance. | /u01/app/oracle/local/agent_inst |
| <LOCAL_AGENT_PORT> | Port number used by the OMS Agent. | 1830 |
| <LOCAL_INVENTORY_HOME> | Full path including directory name for the local storage Oracle Inventory. | /u01/app/oraInventory |
| <OLD_OMS_INVENTORY_HOME> | Full path including directory name for the local storage Oracle Inventory for the OMS. | /u01/app/oracle/oraInventory |
| <LOCAL_LOCK_FILE_DIR> | Full path including directory name for the local storage location for OHS lock files. | /u01/app/oracle/local/ohs_locks |
| <OMS1_ALIAS_HOSTNAME_FQDN> | Alias hostname for OMS1, fully qualified domain name. | emoms1.domain.com |
| <OMS1_ALIAS_HOSTNAME> | Alias hostname for OMS1. | emoms1 |
| <OMS2_ALIAS_HOSTNAME_FQDN> | Alias hostname for OMS2, fully qualified domain name. | emoms2.domain.com |
| <OMS_ALIAS_HOSTNAME_FQDN> | Variable used in commands that must be run for multiple OMS servers, to be replaced with the | |

| | | |
|----------------------------------|---|---------------------|
| | alias hostname for OMS1 or OMS2 as appropriate for the command. | |
| <PRIMARY_OMS1_PHYSICAL_FQDN> | Physical hostname for Primary OMS1, fully qualified domain name. | host1.domain.com |
| <PRIMARY_OMS1_PHYSICAL_HOSTNAME> | Physical hostname for Primary OMS1. | host1 |
| <PRIMARY_OMS2_PHYSICAL_FQDN> | Physical hostname for Primary OMS2, fully qualified domain name. | host2.domain.com |
| <STANDBY_OMS1_PHYSICAL_FQDN> | Physical hostname for Standby OMS1, fully qualified domain name. | host3.domain.com |
| <STANDBY_OMS2_PHYSICAL_FQDN> | Physical hostname for Standby OMS2, fully qualified domain name. | host4.domain.com |
| <OMS_HOST> | Hostname through which the Cloud Control clients (agents and users) access Cloud Control. This is the application virtual host name configured with a global load balancer or in DNS. | em.domain.com |
| <OMS_UPLOAD_PORT> | Port configured with a SLB to be used by all the agents to upload to the OMS. | 4900 |
| <AGENT_REG_PASSWORD> | Agent registration password. | changeme |
| <SOFTWARE_LIBRARY_MOUNT_POINT> | Full path including directory name for the Software Library. | /SWLIB |
| <SOFTWARE_LIBRARY_DIR_NAME> | Directory name without path for the Software Library. | SWLIB |
| <SOFTWARE_LIBRARY_PARENT> | Parent directory of the Software Library directory. | / |
| <BIP_STORAGE_MOUNT_POINT> | Full path including directory name for the BI Publisher shared storage. | /BIP |
| <BIP_STORAGE_DIR_NAME> | Directory name without path for the BI Publisher shared storage. | BIP |
| <BIP_STORAGE_PARENT> | Parent directory of the BI Publisher shared storage directory. | / |
| <BIP_CLUSTER_VOLUME> | Full path including directory name for the BI Publisher Cluster Volume. | /BIP/cluster |
| <BIP_CONFIG_VOLUME> | Full path including directory name for the BI Publisher Cluster Volume. | /BIP/config |
| <OMS_MOUNT_POINT> | Full path including directory name for the mount point of the replicated storage for the OMS. | /u01/app/oracle/OMS |

| | | |
|-----------------------------------|--|--|
| | This should be the same as the Oracle OMS Installation Base directory path. | |
| <ORACLE_SOFTWARE_OWNER_USER> | User used to install the Oracle software on the OMS. | oracle |
| <ORACLE_SOFTWARE_OWNER_USER_HOME> | Home directory of the user used to install the Oracle software on the OMS. | /home/oracle |
| <ORACLE_INVENTORY_GROUP> | Group used to install the Oracle software on the OMS. | oinstall |
| <REPOSITORY_USER> | The EM repository owner database user. | sysman |
| <REPOSITORY_CONNECTION_STRING> | The connection string used by the OMS to connect to the EM repository. | (DESCRIPTION_LIST=(LOAD_BALANCE=off)(FAILOVER=on)(DESCRIPTION=(CONNECT_TIMEOUT=5)(TRANSPORT_CONNECT_TIMEOUT=3)(RETRY_COUNT=3)(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(PROTOCOL=TCP)(HOST=pcluster-scan.domain.com)(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=emdb.domain.com)))(DESCRIPTION=(CONNECT_TIMEOUT=5)(TRANSPORT_CONNECT_TIMEOUT=3)(RETRY_COUNT=3)(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(PROTOCOL=TCP)(HOST=scluster-scan.domain.com)(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=emdb.domain.com)))) |
| <EM_USERNAME> | EM username used in emcli commands. Can be either the repository database user (i.e. SYSMAN) or a super administrator. | john.doe@domain.com |
| <OMS_STAGING_DIR> | Directory used by the Add Oracle Management Service deployment procedure for temporary storage of files on the primary OMS and primary additional OMS. | /u01/app/oracle/local/stage |
| <UPGRADE_STAGING_DIR> | Directory where the installation files are staged on Primary OMS1 to perform the upgrade of the Primary OMS1. | /u01/app/oracle/OMS/stage |
| <OMS_SERVER_HTTPS_PORT> | WebLogic OMS managed server https port | 7301 |
| <BIP_SERVER_HTTPS_PORT> | WebLogic BI Publisher managed server https port | 9803 |
| <ADMIN_SERVER_USER> | WebLogic admin server user name | weblogic |
| <ADMIN_SERVER_PASSWORD> | WebLogic admin server password | changeme |

| | | |
|------------------------------------|---|-----------------|
| <ADMIN_SERVER_HTTPS_PORT> | WebLogic admin server https port | 7101 |
| <OLD_STANDBY_OMS2_NAME> | Name of the old Standby OMS2 | EMGC_OMS3 |
| <OLD_STANDBY_OMS2_OHS_NAME> | Name of the ohs on the old Standby OMS2 | ohs3 |
| <OLD_PRIMARY_OMS2_NAME> | Name of the Primary OMS2 before the recovery that is part of the upgrade and transition | EMGC_OMS2 |
| <OLD_PRIMARY_OMS2_OHS_NAME> | Name of the ohs on the old Primary OMS2 | ohs2 |
| <OLD_PRIMARY_OMS2_BIP_NAME> | Name of the BI Publisher server on the old Primary OMS2 | BIP2 |
| <ROLE_BASED_DB_SERVICE_NAME> | The name of the role-based database service that has been configured on both the primary and standby RAC clusters | emdb.domain.com |
| <PRIMARY_DATABASE_NAME> | The name of the primary database | emrepP |
| <STANDBY_DATABASE_NAME> | The name of the standby database | emrepS |
| <SLB_VS_SECURE_CONSOLE_PORT> | The virtual server port configured on the SLB for the Secure Console. | 443 |
| <SLB_VS_SECURE_BIP_CONSOLE_PORT> | The virtual server port configured on the SLB for the Secure BI Publisher console. | 5443 |
| <SLB_VS_UNSECURE_BIP_CONSOLE_PORT> | The virtual server port configured on the SLB for the Unsecure BI Publisher console. | 8080 |
| <SLB_VS_SECURE_UPLOAD_PORT> | The virtual server port configured on the SLB for the Secure Upload. | 4900 |
| <SLB_VS_SECURE_JVMD_PORT> | The virtual server port configured on the SLB for the Secure JVMD | 7301 |



Oracle Corporation, World Headquarters

500 Oracle Parkway
Redwood Shores, CA 94065, USA

Worldwide Inquiries

Phone: +1.650.506.7000
Fax: +1.650.506.7200

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Upgrading Enterprise Manager 12c to 13c and Transitioning to DR Readiness
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Author: Curtis Dinkel
Contributing Authors: Werner De Gruyter, Angeline Dhanarani, Bethany Lapaglia, James Viscusi