Oracle® Communications Policy Management Migration Guide





Oracle Communications Policy Management Migration Guide, Release 15.0

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Contents

| Introduction | |
|---|-----|
| Required Cluster Migration Sequence | |
| Migration Preparation | |
| Prerequisites | 3 |
| Planning and Tracking Migration Procedure | 3- |
| Migrating CMP Clusters (12.6.1.x to 15.0) | |
| Checking the current status of 12.6.1.x setup | 4- |
| Verifying Alarm Status | 4- |
| Verifying Traffic Status - KPI Dashboard Report | 4- |
| Capturing MRA Advanced Settings | 4- |
| Capturing MPE Advanced Settings | 4- |
| Identifying and Recording the CMP cluster(s) | 4- |
| Verifying the Status of the CMP Clusters | 4- |
| Migrating Primary Standby CMP (Server-B) | 4- |
| Migrating MRA and MPE Clusters | |
| Performing Health Checks on the MPE/MRA Clusters to be Migrated | 5- |
| Verifying the Status of selected MPE/MRA site/segment | 5- |
| Migrating Standby MRA (Server-B) | 5- |
| Migrating Standby MPE (Server-B) | 5-1 |
| Migrating Spare MRA (Server-C) | 5-2 |
| Migrating Spare MPE (Server-C) | 5-2 |
| Migrating MRA (Server-A) | 5-3 |
| Migrating MPE (Server-A) | 5-3 |



6 Migrating Remaining Secondary CMP Clusters and Primary CMP Cluster

| Verifying the Status of the CMP Cluster | 6-1 |
|---|------|
| Migrating Secondary CMP (Server-B) | 6-1 |
| Migrating Primary CMP (Server-A) | 6-6 |
| Migrating Secondary CMP (Server-A) | 6-11 |
| Exchanging Keys | 6-13 |
| Verifying Migration | 6-14 |

7 Rolling Back of CMP/MRA/MPE

- 8 Post Migration health Check for wireless systems
- 9 Risks Involved while Using Different VLANs and Subnets for 15.0 VMs
- A Appendix



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You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

My Oracle Support is available 24 hours a day, 7 days a week, 365 days a year.



Acronyms and Terminology

| Terminology | Meaning | | |
|-------------|---|--|--|
| AMF | Access and Mobility management Function | | |
| ECGI | E-UTRAN Cell Global Identifier | | |
| MCC | Mobile Country Code | | |
| MNC | Mobile Network Code | | |
| NCGI | Next Generation Cell Global Identifier | | |
| NG-RAN | Next-generation Radio Access Network | | |
| PCF | Policy Control Function | | |
| PLMN | Public Land Mobile Network | | |
| PRA | Presence Reporting Area | | |
| PRA | Presence Report Area | | |
| PRA ID | Presence Report Area Identifier | | |
| TA | Tracking Area | | |
| TAI | Tracking Area Identifier | | |
| UE | User Equipment | | |
| UPSC | UE Policy Section Code | | |
| UPSI | UE Policy Server Identifier | | |
| URSP | UE Route Selection Policy | | |



What's New in This Guide

Release 23.2.0 - F82763-01, June 2023

This is the first issue of this document.



1

Introduction

This document describes the migration of Oracle Communications Policy Management from Release 12.6.1.x to Release 15.0 when georedundancy is enabled.

Note:

- These migration procedures cover the migration for both when 12.6.1.x PCRF (BareMetal/Virtual) and 15.0 PCRF (Virtual) are using the same IPs/SubNets.
- In a cluster with a single node, migration is not supported.
- If the migration path mentioned in the release documents of each supported version is not followed, please contact Oracle Support before migrating to 15.0.

The migration procedure applies to Configuration Management Platform (CMP), Policy Management Policy Front End (also known as the MRA), and Multimedia Policy Engine (MPE) clusters.

- For a CMP cluster, there are only two servers (Active and Standby) in a cluster and the cluster can be either a Primary or Secondary cluster.
- For a non-CMP cluster (MRA/MPE), there can be three servers (Active, Standby, and Spare).

A Policy Management deployment can consist of multiple clusters.

Georedundancy as implemented in the MPE and MRA uses the 2+1 server cluster scheme. The 2 refers to the current Active and Standby servers and the +1 refers to a third Spare server. The Spare server is added to the same cluster so that it can assume the Active role if necessary. If there is a site-wide failure and the servers at the initial site become unavailable, the Spare server, in most cases, is unaffected and continues to provide service as an Active server. Because of this reason, the Spare server is usually located in a separate geographical location.



Required Cluster Migration Sequence

Policy Management migration is performed on a cluster-by-cluster basis at the local and remote sites within the same maintenance window.

The following is the migration sequence:

- Migrate Primary Standby CMP (Server-B) Remove Standby CMP (Server-B) from 12.6.1.x Primary CMP cluster and add freshly installed 15.0 CMP (Virtual) to the cluster. After this, perform the switch over to 15.0 Server-B and verify replication between 12.6.1.x and 15.0 servers.
- 2. Migrate Standby MRA (Server-B) Remove Standby MRA (Server-B) from 12.6.1.x setup and add freshly installed 15.0 MRA (Virtual) to the cluster. After this, perform the switch over to 15.0 Server-B and verify replication between 12.6.1.x and 15.0 servers.
- 3. Migrate Standby MPE (Server-B) Remove Standby MPE (Server-B) from 12.6.1.x setup and add freshly installed 15.0 MPE (Virtual) to the cluster. After this, perform the switch over to 15.0 Server-B and verify replication between 12.6.1.x and 15.0 servers.
- 4. Migrate Spare MRA (Server-C) Remove Spare MRA (Server-C) from 12.6.1.x setup and add freshly installed 15.0 MRA (Virtual) to the cluster and verify replication between 12.6.1.x and 15.0 servers.
- 5. Migrate Spare MPE (Server-C) Remove Spare MPE (Server-C) from 12.6.1.x setup and add freshly installed 15.0 MPE (Virtual) to the cluster and verify replication between 12.6.1.x and 15.0 servers.
- Migrate MRA (Server-A) Remove MRA (Server-A) from 12.6.1.x setup and add freshly installed 15.0 MRA (Virtual) to the cluster and verify replication between 15.0 Active, Standby, and Spare servers.
- Migrate MPE (Server-A) Remove MPE (Server-A) from 12.6.1.x setup and add freshly installed 15.0 MPE (Virtual) to the cluster and verify replication between 15.0 Active, Standby, and Spare servers.
- 8. Migrate Secondary Standby CMP (Server-B) Remove Standby CMP (Server-B) from 12.6.1.x Secondary CMP cluster and add freshly installed 15.0 CMP (Virtual) to the cluster and verify replication between 12.6.1.x and 15.0 servers.
- Migrate Primary CMP (Server-A) Remove CMP (Server-A) from 12.6.1.x Primary CMP cluster and add freshly installed 15.0 CMP (Virtual) node to the cluster and verify replication between 15.0 Active and Standby servers.
- 10. Migrate Secondary CMP (Server-A)- Remove CMP (Server-A) from 12.6.1.x Secondary CMP cluster and add freshly installed 15.0 CMP(Virtual) node to the cluster and verify replication between 15.0 Active and Standby servers.



Migration Preparation

This section provides detailed procedures to prepare a system for migration. All migration procedures should be run during the maintenance window.

Overview of steps:

- Migrate Primary (Site1) CMP
 - a. Migrate Primary Site1 (Standby (Server-B) CMP)
- 2. Segment 1 Site1:
 - a. Migrate 12.6.1.x Standby (Server-B) MRA clusters
 - b. Migrate 12.6.1.x Standby (Server-B) MPE clusters
- 3. Segment 1 Site2:
 - a. Migrate Spare MRA (Server-C) clusters
 - b. Migrate Spare MPE (Server-C)clusters
- 4. Segment 1 Site1:
 - a. Migrate 12.6.1.x Active (Server-A) MRA clusters
 - b. Migrate 12.6.1.x Active (Server-A) MPE clusters
- Migrate Secondary (Site2) CMP
 - a. Migrate Secondary Site2 (Standby CMP)
- 6. Migrate Primary (Site1) Server-A CMP
 - a. Migrate Primary Site1 (Active ((Server-A)) CMP)
- Migrate Secondary(Site2)CMP
 - a. Migrate Secondary Site2 (Active CMP)

Prerequisites

The following prerequisites must be performed before the migration procedure begins.

- Take a backup of the existing 12.6.1.x CMP, MRA, and MPE- You need to take server backup of cmp2, mra1, mra2, mpe1, and mpe2 and system backup of only the CMP Active server.
- Make sure the networks between 12.6.1.x BareMetal (BM)/Virtual (VM) and freshly
 installed 15.0 Virtual (VM) cloud is reachable- This is a basic requirement to start a BMVM or VM-VM migration.
 - a. Make sure VLANS and subnets are the same in both 12.6.1.x (BareMetal or Virtual) and 15.x virtual labs. This is required to ensure that the common VIP listens on both the labs.
 - **b.** Disable upgrade barrier logic on all 12.6.1.x (CMP/MRA/MPE Active Standby) servers. This needs to be performed in each cluster separately.

Upgrade Barrier (UB) logic: Run the following steps to disable the UB logic:

- i. Open Server Console Putty.
- ii. Run: iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier"

FOR CMP Cluster (A: Active, B: Standby)

- i. Disable UB Logic in Standby Server-B. Reboot Server-B.
- ii. Perform failover on Server-A to make Server-B Active.
- iii. Disable UB Logic in new Standby Server-A. Reboot Server-A.
- iv. Perform failover on Server-B to make Server-A Active and Server-B Standby.

Note:

This procedure to be applied on Secondary CMP, followed by Primary CMP Cluster.

For MPE/MRA Cluster (A: Active, B: Standby, C: Spare)

- i. Disable UB Logic in Standby Server-B. Reboot Server-B.
- ii. Perform failover on Server-A to make Server-B Active.
- iii. Disable UB Logic in new Standby Server-A. Reboot Server-A.
- iv. Disable UB Logic to Spare Server-C. Reboot Server-C.
- v. Perform failover on Server-B to make Server-A Active and Server-B Standby. Server-C will remain as Spare.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- i. Open Server Console Putty on the Primary CMP Server-A.
- ii. Run the command, sudo su.
- iii. Run the following command to unzip the MIGRATION_SCRIPTS.zip in the /root path,

unzip MIGRATION_SCRIPTS.zip

.

- iv. Navigate to /root/MAIN/ and run the command, ./main.sh.
- v. Choose Option 1, the Disable Upgrade Barrier submenu is displayed. Choose suboption 1 to enter the hostname of a Standby/Spare server where the Upgrade Barrier (UB) Logic needs to be disabled.
- vi. Run the above step for all the 12.6.1.x servers when they are in Standby or Spare mode. This step will reboot the servers after the UB logic is disabled.
- Install fresh 15.0 nodes in the virtual environment using the HEAT TEMPLATE/KVM.
- d. All migration steps should be performed under Maintenance Window.



Note:

For VM-VM migration, changing the **HW TYPE** option is not required during migration.

- 3. Review Release Notes Review Policy Management 15.0 Release Notes for the following information:
 - a. Individual software components and versions included in target release
 - b. New features included in target release
 - c. Issues (bugs) resolved in target release
 - d. Known issues with target release
 - e. Any further instructions that may be required to complete the migration for the target release. In particular, the supported browsers: In release 15.0, only Mozilla Firefox and Google Chrome are fully supported.

Planning and Tracking Migration Procedure

The migration procedures in this document are mainly divided into two steps:

- Migrate CMP clusters
- Migrate MPE/MRA clusters



You can fill in the required information in the below table before performing the migration, to identify the clusters to be migrated and plan the work. It can also be used to track the completion of the migration. This table acts as a checklist to plan the cluster migration for the entire system.

| Step | Procedure | Result | Time |
|------|---|---------------|------|
| 1. | Migrate Site1 Standby CMP (Server-B) | Site Names | |
| | | and | |
| 2. | MPE/MRA clusters for Segment-1 a. Migrate 12.6.1.x Standby (Server-B) MRA clusters | Site Names | |
| | | Cluster List: | |
| | b. Migrate 12.6.1.x Standby (Server-B) MPE clusters | | |
| 3. | Migrate Site2 MPE/MRA clusters a. Migrate Spare MRA (Server-C) cluster b. Migrate Spare MPE (Server-C) cluster | Site Names | |
| | | Cluster List: | |
| 4. | Migrate remaining MRA/MPE clusters | Site Names | |
| | a. Migrate 12.6.1.x Cluster List: (Server-A) MRA clusters | Cluster List: | |
| | b. Migrate 12.6.1.x (Server-A) MPE clusters | | |
| 5. | Migrate Secondary(Site2)CMP a. Migrate Secondary Site2 (Standby CMP) | Site Names | |
| | | Cluster List: | |
| | b. Migrate Secondary Site2 (Active CMP) | | |
| 6. | Migrate Primary (Site 1) Server-A CMP a. Migrate Primary Site1 (Active (Server-A) CMP) Site Names Cluster List: | Site Names | |
| | | | |



4

Migrating CMP Clusters (12.6.1.x to 15.0)

Perform the following procedure to migrate the Site1 CMP cluster, and if needed, migrate the Site2 CMP cluster in a single maintenance window.

Migration of CMP clusters Overview

- 1. Migrate the Primary CMP cluster (Standby Server-B).
- 2. After migrating Server-B of Primary CMP, perform the failover.
- 3. Log in to the CMP GUI (follow the Migrating MRA and MPE Clusters section to migrate MRA/MPE servers).
- 4. Migrate the Server-A of the Primary CMP cluster.
- 5. Similarly, migrate the Secondary CMP cluster (First start with Standby Server-B).
- **6.** Continue migrating the Server-A of the Secondary CMP cluster.



For checking replication between 12.6.1.x and 15.0, you need to migrate at least one node from each cluster (For example, CMP site1 cluster – Server-B, MRA Cluster --Server-B, MPE Cluster --Server-B). If there are no issues found during migration, then migrate the remaining nodes and clusters. In case of any issues, you can roll back to 12.6.1.x servers.

This procedure should not be service-affecting, but it is recommended to perform this in a maintenance window. It is assumed that the CMPs may be deployed as two georedundant clusters, identified as Site1 and Site2 as displayed on the CMP GUI. When deployed as such, one site is designated as the Primary Site (which is the site that is managing the Policy Management system), and the other is as the Secondary site (this site is ready to become the Primary site if needed). If the System is deployed with only one CMP site, then the migration of the Secondary CMP can be skipped. Identify the CMP sites to be migrated, and verify which site is the Primary site and which site is the Secondary site:

| CMP Sites | Operator Site Name | Topology Site Designation (Site1 or Site2) | CMP Server-A | CMP Server-B |
|----------------|-----------------------|--|------------------------|------------------------|
| Primary Site | | | Server-A Hostname | Server-B Hostname |
| | | | | |
| | | | Server-A IP Address | Server-B IP Address |
| | | | | |
| | | | Server-A HA Status | Server-B HA Status |
| | | | | |
| Secondary Site | | | Server-A Hostname | Server-B Hostname |
| | | | | |
| | | | Server-A IP Address | Server-B IP Address |
| | | | | |
| | | | Server-A HA Status | Server-B HA Status |
| | | | | <u> </u> |

Important:

- Site1 CMP must be migrated to the new release 15.0 before the Site2 CMP.
- The active CMP node must be in 15.0 release before migrating the non-CMP clusters.

Checking the current status of 12.6.1.x setup

In CMP GUI, perform the below procedures to check the current status of 12.6.1.x setup before the migration:

Verifying Alarm Status

To verify alarm status:

- 1. Navigate to System Wide Reports → Alarms → Active Alarms.
- Confirm if any existing alarm on the Active Alarms page impacts the migration procedure.

Before starting any migration activity, ensure that all the active alarms are understood and resolved.

3. Capture the **Active Alarms** screen and save it into a file for reference.

Figure 4-1 Sample Active Alarms screen:

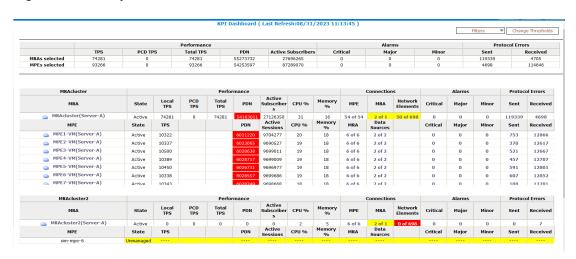


Verifying Traffic Status - KPI Dashboard Report

To verify traffic status:

- 1. Navigate to System Wide Reports → KPI Dashboard.
- Confirm that all Connections and Traffic statuses are as expected. Observe it for a few refresh updates.
- Capture the KPI Dashboard screen and save it into a file for validation after the migration.

Figure 4-2 Sample KPI dashboard screen:



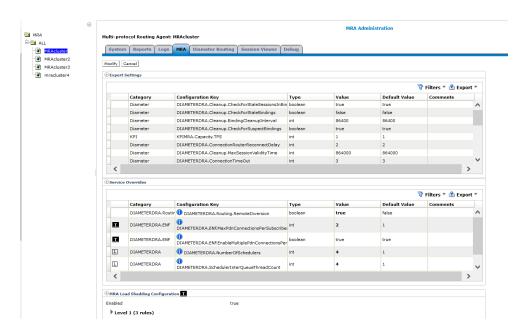
Capturing MRA Advanced Settings

To capture MRA advanced settings:

Navigate to MRA → Configuration → <mra_cluster name> → MRA.



- Click Advanced Settings.
- 3. Capture the **Advanced Settings** screen and save it into a file for reference.



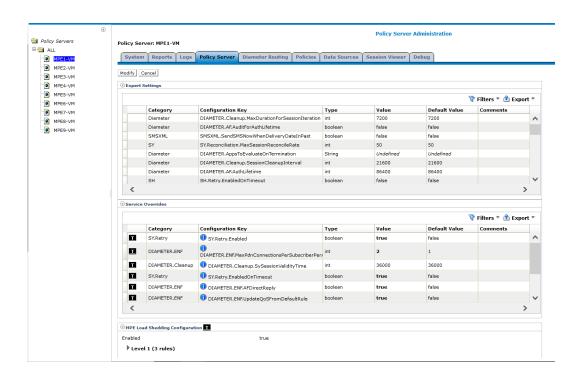
Alternatively, settings can be exported by clicking Export on the right within each setting.

Capturing MPE Advanced Settings

To capture MPE advanced settings:

- Navigate to Policy Server → Configuration → <mpe_cluster name> → Policy Server
- 2. Click Advanced Settings.
- 3. Capture the **Advanced Settings** screen and save it into a file for reference.



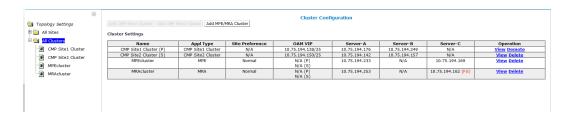


4. Alternatively, settings can be exported by clicking **Export** on the right within each setting.

Identifying and Recording the CMP cluster(s)

To identify and record the CMP cluster(s):

- 1. Navigate to Platform Setting → Topology Settings → All Clusters.
- 2. Note which cluster is the primary and which cluster is the secondary. The Primary CMP is noted with a P in parenthesis and a Secondary CMP is noted with an S in parenthesis.
- 3. Capture the **Cluster Configuration** screen and save it into a file for validation after the migration.

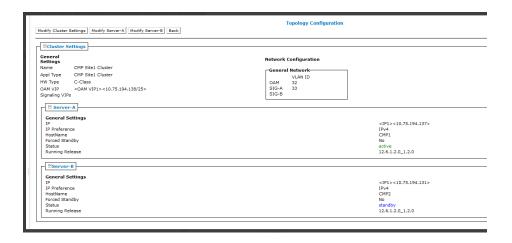


Verifying the Status of the CMP Clusters

To verify the status of the CMP clusters:

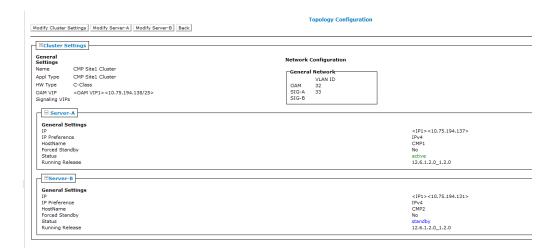
- 1. Navigate to Platform Settings-→ Topology Settings → All clusters.
- 2. Confirm the CMP cluster has the following:
 - Active/Standby status
 - Running release 12.6.1.x



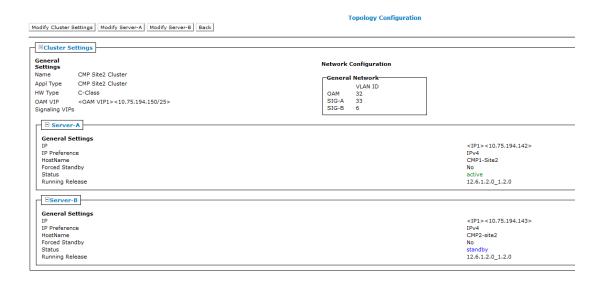


Migrating Primary Standby CMP (Server-B)

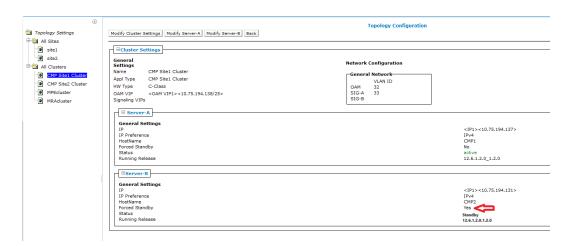
To perform this procedure, Log in to Primary CMP Server- Remove Standby CMP (Server-B) from 12.6.1.x Primary CMP cluster and add freshly installed 15.0 CMP (Virtual) to the cluster. Follow below mentioned steps to perform the switch over to 15.0 Server-B and verify replication between 12.6.1.x and 15.0 servers. Before Migration, all CMPs are in 12.6.1.x.



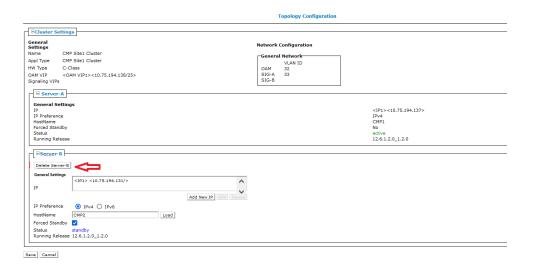




Navigate to Platform Settings --> Topology Settings --> All Clusters --> CMP Site1
 Cluster. Click the Modify Server-B option and enable the Forced Standby flag for the Standby CMP of the Primary CMP cluster.



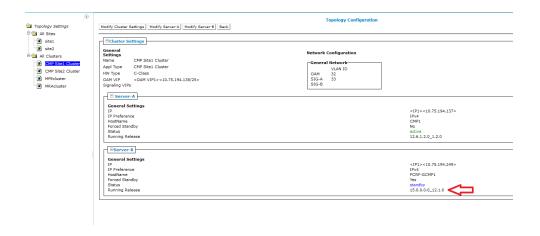
2. Click **Delete Server-B** to remove the 12.6.1.x Standby server from the cluster.



Navigate to Server-B and run the following command for cleanup:
 su - platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup



4. Add the 15.0 CMP (Virtual) node to the CMP cluster and check the replication status between BM/VM Active(12.6.1.x) and VM (15.0) Standby node.





The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication and MySQLReplication in the Primary CMP cluster:

- a. Open Server Console Putty on the Primary CMP Active(12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 1, MySQL Master/Slave status for 1 CMP-cluster, to verify MySQLReplication for Primary CMP cluster.
- f. Choose suboption 3, Irepstat for 1 host, to check irepstat (DBReplication) for both Active/Standby CMPs.
- **5.** Run the following commands on both 12.6.1.x and 15.0 nodes (Active/Standby) for ssh-key exchange:
 - a. On 12.6.1.x node, run ssh-keygen -t rsa.
 - b. On 15.0 node, run ssh-keygen -t dsa.
 - c. On both the 12.6.1.x and 15.0 nodes, run ssh-key exchange using the below command and entering password for admusr /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr.

Here is an output of the command:



```
[root@MPE1 bin]# /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr
The password of admusr in topology:
Connecting to admusr@pcrf-gmpe2 ...
Connecting to admusr@pcrf-grcmp3 ...
Connecting to admusr@mra3-spare ...
Connecting to admusr@pcrf-grcmp4 ...
Connecting to admusr@pcrf-gmra2 ...
Connecting to admusr@mral ...
Connecting to admusr@mpe3bm-spare ...
Connecting to admusr@cmp1 ...
Connecting to admusr@cmp2-site2 ...
Connecting to admusr@mpel ...
[1/10] Provisioning SSH keys on pcrf-gmpe2 ...
[2/10] Provisioning SSH keys on pcrf-grcmp3 ...
[3/10] Provisioning SSH keys on mra3-spare ...
[4/10] Provisioning SSH keys on mra1 ...
[5/10] Provisioning SSH keys on pcrf-gmra2 ...
[6/10] Provisioning SSH keys on pcrf-grcmp4 ...
[7/10] Provisioning SSH keys on mpel ...
[8/10] Provisioning SSH keys on mpe3bm-spare ...
[9/10] Provisioning SSH keys on cmp1 ...
[10/10] Provisioning SSH keys on cmp2-site2 ...
SSH keys are OK.
```



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Active(12.6.1.x) Server-A.
- **b.** Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 2, **check&gen SSH-key for all host(s)**, to check if the required SSH keys (DSA in 15.0 and RSA in 12.6.1.x) are present. If the SSH keys are not found, then generate them.
- f. Choose suboption 4, run Ssh-key exchange on all host(s), to run ssh-key exchange on all the servers (both 12.6.1.x and 15.0 nodes).
- 6. Log in to 12.6.1.x Active server console. Run su- platcfg → Policy Configuration → Cluster File Sync → Cluster Sync Config → Read Destination From Comcol and check for ssh-key exchange status. If the status is OK, then continue. Else, repeat ssh-key exchange for the hosts mentioned under the SSH key not FULLY EXCHANGED status.

Note:

If the ssh-key exchange status is not OK, you can use the MIGRATION_SCRIPTS.zip (available along with the release documents) to perform the required ssh-key exchange. The steps are as follows:

- a. Open Server Console Putty on the Primary CMP Active (12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the **SSH-Key Exchange** submenu is displayed.
- e. Choose suboption 3, run Ssh-key exchange on one host, to exchange SSH keys for the hosts mentioned under the SSH key not FULLY EXCHANGED status.
- 7. Log in to the 12.6.1.x Active server and perform the Cluster File Sync procedure to sync firewalls and routes between Active and Standby nodes.
- 8. Enabling sync with 12.6.1.x and sync the log level between Active and Standby
 - a. In the Active server, Log in to console and,
 - Run sudo cp /usr/TKLC/camiant/bin/rsyncUtil.pl /usr/TKLC/camiant/bin/ rsyncUtil bckup.pl
 - ii. Run sudo sed -i '592s/./# &/; 593i\ return 1;' /usr/TKLC/camiant/bin/rsyncUtil.pl to enable rsync in mixed mode.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- Open Server Console Putty on the Primary CMP Active(12.6.1.x) Server-A.
- ii. Run the command, sudo su.
- iii. Navigate to /root/MAIN/ and run the command, ./main.sh.
- iv. Choose Option 3, the Enable Rsync Commands submenu is displayed.
- v. Enter hostname of the **Active (12.6.1.x) CMP Server-A** to run the above steps.
- b. To sync debug and trace log settings of CMP, do the following:

Note:

This step needs to be performed to sync the trace and debug log levels of CMP from 12.6.1.x to 15.0.

- i. Log in to CMP GUI.
- ii. Navigate to Manager Log under System Administration.

Note:

Note: If you don't see the **Manager Log** under **System Administration**, follow the steps below:

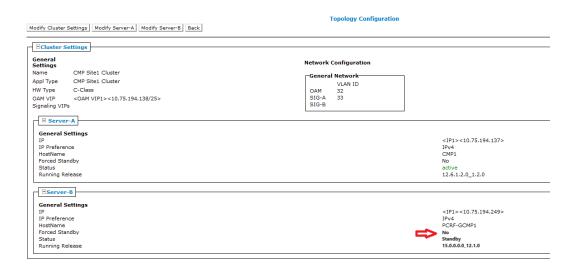
- Open CMP GUI.
- Under the Help tab, navigate to the About option.
- Click the hidden button on top-left of the screen to see the debug settings.
- Click the Modify button and set the Debug Mode (under Server Settings) to True.
- iii. Click the Modify button.
- iv. Save without making any changes to trigger sync.
- v. Navigate to **Trace Log** under **System Administration**.
- vi. Click the Modify button.
- vii. Save without making any changes to trigger sync.
- Disable the Forced Standby flag for the 15.0 Virtual CMP node and ensure the HW TYPE is VM.
 - a. Navigate to **Topology Settings** under the **Platform Settings**.



- **b.** Select the CMP Primary Cluster.
- c. (Only for BM-VM migration) Click Modify Cluster Settings. Change HW TYPE to VM and Click Save.
- d. Click Modify Server-B and disable Forced Standby Flag for 15.0 CMP Node.
- e. Click Save.

Wait till all major alarms get cleared before moving to the next step.

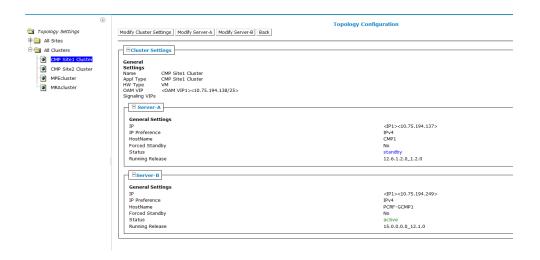
For BM-VM migration, once **HW TYPE** is changed to **VM**, CMP GUI is not accessible through common VIP because the Active server is still in BareMetal.





 Log in to CMP GUI using 12.6.1.x Active server IP and restart this 12.6.1.x Active Server from the **Reports** tab to make new Virtual 15.0 CMP Active. Verify data sync between 12.6.1.x and 15.0 CMPs.





Once 15.0 Virtual CMP becomes Active, run the following commands and verify all the outputs are displayed as expected.

irepstat

Here is an output of the irepstat command on CMP servers:



```
-- Policy 0 ActStb [DbReplication] ------AA From CMP1 Active 0 0.25 ^0.04%cpu 48B/s
irepstat ( 3 lines) (h)elp
```



service qp_procmgr status

Here is an output of the service qp procmgr status command:

```
Redirecting to Ministry and the prompt setup Redirecting to Ministry and Prompt service

* up prompt service > 5757; GP Prompt
Loaded: loaded (/det/or.d/mitl.d/gp prompt semiled; vendor preset: disabled)
Active: active (unning) since Med 2023-09-13 06:10:03 EUT; 1 day 19h ago
Active: active (unning) since Med 2023-09-13 06:10:03 EUT; 1 day 19h ago
Promest: 433 Excentiarty-test/or.d/mitl.d/gp prompt; start (code-exited, status=0/SUGCESS)
Nain PID: 4641 (run gp prompt; 1 day 19h ago
Promest: 433 Excentiarty-test/or.d/mitl.d/gp prompt; start (code-exited, status=0/SUGCESS)
Nain PID: 4641 (run gp prompt; service
CSTOUR): 1/2/12 (limit: 52427)
Memory: 13/2/12 (limit: 52427)
Memory: 13/2/12 (limit: 52447)
Memo
```

· ha.mystate

Here is an output of the ha.mystate commnd:

top.myrole ~ for cmp only

Here is an output of the top.myrole ~ command:

```
[root@PCRF-GRCMP3 admusr]# top.myrole
myNodeId=A1805.223
myMasterCapable=true
myMateNodeId=A1805.013
myParentCluster=00000
myClusterRole=Primary
myClusterTimestamp=09/13/23 07:14:04.839
[root@PCRF-GRCMP3 admusr]#
```

```
[root@PCRF-GRCMP4 admusr]# top.myrole
myNodeId=A2627.055
myMasterCapable=true
myMateNodeId=A2627.067
myParentCluster=00000
myClusterRole=Secondary
myClusterTimestamp=09/13/23 07:12:47.239
[root@PCRF-GRCMP4 admusr]#
```

All the above commands can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Active(12.6.1.x) Server-A.
- **b.** Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 1, MySQL Master/Slave status for 1 CMP-cluster, to verify MySQLReplication for Primary CMP cluster.
- f. Choose suboption 3-12, the output of the above commands is displayed in any server (both 12.6.1.x and 15.0 nodes).

Expected alarms:

70022-The MySQL slave failed to synchronize with the master

31105-The database merge process (inetmerge) is impaired by a s/w fault

31106-Database merging to the parent Merge Node has failed.

31107-Database merging from a child Source Node has failed.

70501 - Cluster Mixed Version

70503 - Server Forced Standby

Note:

- In case of any issues, you need to change the HW Type back to "RMS/c-class/"
 (respective BM hardware type) in Cluster Settings before rolling back to 12.6.1.x.
 After the rollback, perform the failover to the BareMetal server. Steps to failover to
 BareMetal server:
 - 1. Click Modify Cluster Settings.
 - 2. Set **HW TYPE** to respective HW Type for BareMetal (RMS/C-Class).
 - 3. Click Save.
 - 4. Switchover CMP to make BareMetal server Active.



This bullet point is applicable only for BM-VM migration. For VM-VM migration, only switchover is needed to make the 12.6.1.x server Active.

If Customer faces any unexpected alarm, please contact Oracle Support.



5

Migrating MRA and MPE Clusters

Use this procedure to migrate one or more MRA/MPE clusters. This procedure is applicable for 12.6.1.x to 15.0 migration. This section can be replicated for each site/segment to be migrated, allowing you to add cluster and site-specific information.

The migration procedure is essentially the same for an MRA cluster and an MPE cluster.

- 1. Select and start migration on the Standby server.
- 2. Perform failover.
- **3.** Reapply configuration.
- 4. Continue to migrate the Spare server (Server-C).
- 5. Continue migrating the remaining Server-A.
- 6. (MPE only) Reapply configuration one MPE cluster at a time.

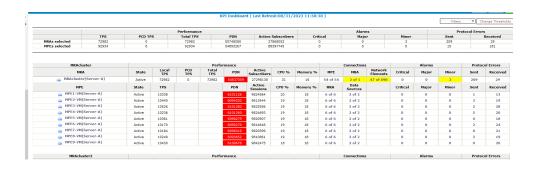


At least one Primary CMP cluster must be migrated to Policy Management release 15.0 prior to performing the following procedures.

Performing Health Checks on the MPE/MRA Clusters to be Migrated

To perform health checks on the MPE/MRA servers to be migrated:

- 1. Check current active alarms.
- 2. Reset MPE/MRA counters to make a baseline
 - For MPE: Policy Server → Configuration → <server_name> → Reports → Reset Counters
 - For MRA: MRA → Configuration → <server_name> → Reports → Reset Counters
- 3. Navigate to the KPI Dashboard and capture a screenshot.

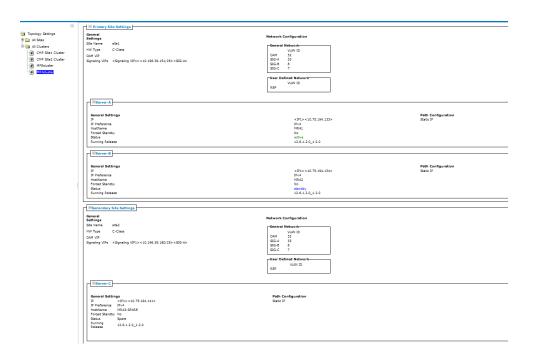


Verifying the Status of selected MPE/MRA site/segment

To verify the status of the selected MPE/MRA site/segment:

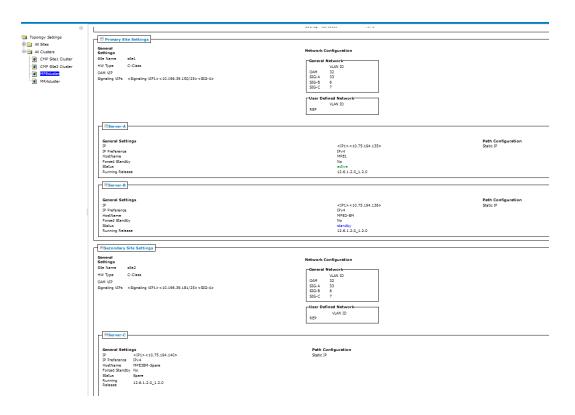
- 1. Navigate to Platform Settings- → Topology Settings- → All clusters →
- 2. Verify information for the MRA/MPE servers:
 - Current release 12.6.1.x
 - Active/Standby/Spare status

MRA Cluster Details:



MPE Cluster Details

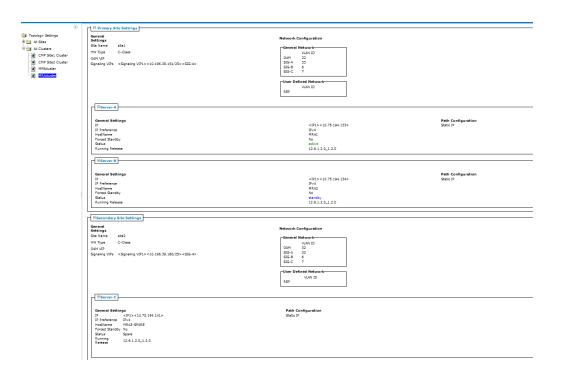




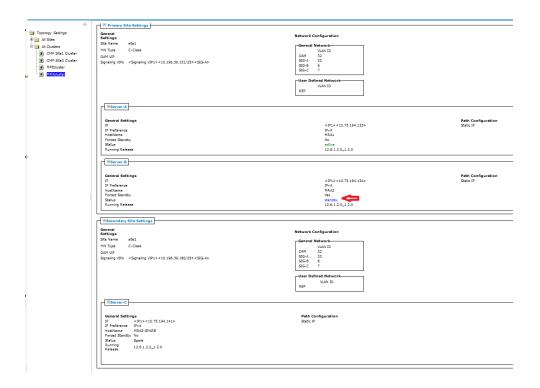
Migrating Standby MRA (Server-B)

To perform this procedure, Log in to CMP GUI- Remove Standby MRA (Server-B) from 12.6.1.x setup and add freshly installed 15.0 MRA (Virtual) to the cluster. After this, perform the switch over to 15.0 Server-B and verify replication between 12.6.1.x and 15.0 servers.

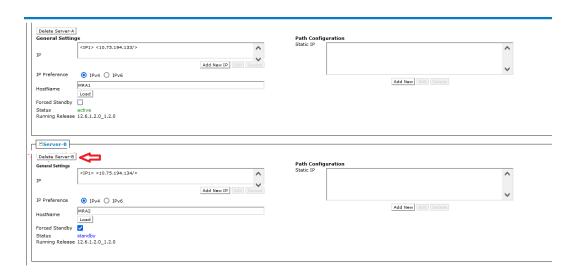
MRA Cluster Details:



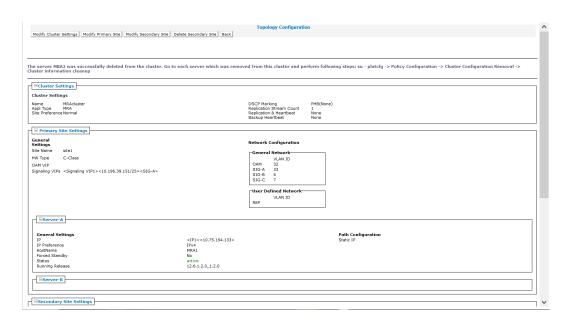
Navigate to Platform Settings --> Topology Settings --> All Clusters --> MRA
 Cluster--> Primary Site settings. Click the Modify Primary Site option and enable
 the Forced Standby flag for the 12.6.1.x Standby MRA.



2. Click **Delete Server-B** to remove the 12.6.1.x Standby server from the cluster.

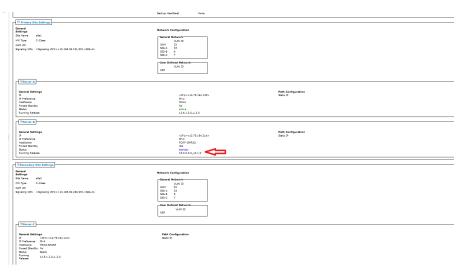


Navigate to Server-B and run the following command for cleanup:
 su - platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup



4. Add the 15.0 MRA (Virtual) node to the MRA cluster and check the replication status between the BM/VM Active (12.6.1.x) and VM (15.0) Standby node.





The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in the MRA cluster:

- **a.** Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on both Active/Standby MRAs.
- 5. Run the following commands on both 12.6.1.x and 15.0 nodes (Active/Standby) for ssh-key exchange:
 - a. On 12.6.1.x node, run ssh-keygen -t rsa.
 - b. On 15.0 node, run ssh-keygen -t dsa.
 - c. On both the 12.6.1.x and 15.0 nodes, run ssh-key exchange using the below command and entering password for admusr: /opt/camiant/bin/ qpSSHKeyProv.pl --prov --user=admusr.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in Standby(15.0) MRA Server-B. If not found, then generate them.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run ssh-key exchange on all the MRA servers (both 12.6.1.x and 15.0 nodes).
- 6. Log in to the 12.6.1.x Active server console. Run su- platcfg → Policy Configuration → Cluster File Sync → Cluster Sync Config → Read Destination From Comcol and check for ssh -key exchange status. If the status is OK, then continue. Else, repeat ssh-key exchange for the hosts mentioned under the SSH key not FULLY EXCHANGED status.

Note:

If the ssh-key exchange status is not OK, you can use the MIGRATION_SCRIPTS.zip (available along with the release documents) to perform the required ssh-key exchange. The steps are as follows:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 3, run Ssh-key exchange on one host, to exchange SSH keys for the hosts mentioned under the SSH key not FULLY EXCHANGED status.
- 7. Log in to the 12.6.1.x Active server and perform the Cluster File Sync procedure to sync firewalls and routes between Active and Standby nodes.
- 8. Enabling sync with 12.6.1.x and sync the log level between Active and Standby
 - a. In the Active server, Log in to console and,
 - Run sudo cp /usr/TKLC/camiant/bin/rsyncUtil.pl /usr/TKLC/camiant/bin/rsyncUtil_bckup.pl
 - ii. Run sudo sed -i '592s/./# &/; 593i\ return 1;' /usr/TKLC/camiant/bin/rsyncUtil.pl to enable rsync in mixed mode.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- i. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- ii. Run the command, sudo su.
- iii. Navigate to /root/MAIN/ and run the command, ./main.sh.
- iv. Choose Option 3, the Enable Rsync Commands submenu is displayed.
- v. Enter hostname of the **Active (12.6.1.x) MRA Server-A** to run the above steps.
- b. To reapply configuration:
 - i. Log in to CMP GUI.
 - ii. Navigate to MRA → Configuration → [Select MRA cluster] → System.
 - iii. Click the Reapply Configuration button.
- c. To sync debug and trace log settings of MRA, do the following:

Note:

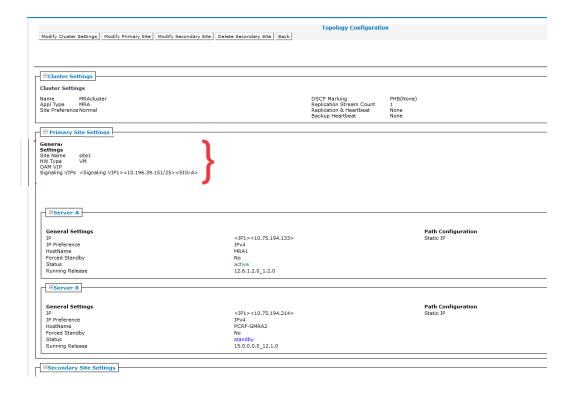
This step needs to be performed to sync the trace and debug log levels of MRA from 12.6.1.x to 15.0.

- i. Log in to CMP GUI.
- ii. Navigate to MRA → Configuration → [Select MRA cluster] → Logs.
- iii. Click the Modify button.
- iv. Save without making any changes to trigger sync.
- v. Navigate to MRA → Configuration → [Select MRA cluster] → Debug.
- vi. Click the Modify button.
- vii. Save without making any changes to trigger sync.
- Perform a switchover to Virtual Standby MRA (to make Virtual MRA Active) using following steps:
 - a. Click the Modify Primary Site button for the cluster.
 - **b.** For BM-VM migration, set **HW TYPE** to **VM**.
 - Enable the Forced Standby flag for Server-A (Active MRA).
 - d. Disable the Forced Standby flag for Server-B (Standby MRA).
 - e. Click Save.



During switchover ongoing connections will be disconnected and a call drop will be observed for a few seconds (approx 15 to 20 seconds). Once Virtual MRA Server-B is Active, all the traffic will be processed by Virtual MRA.



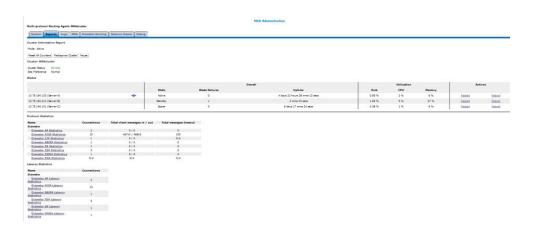




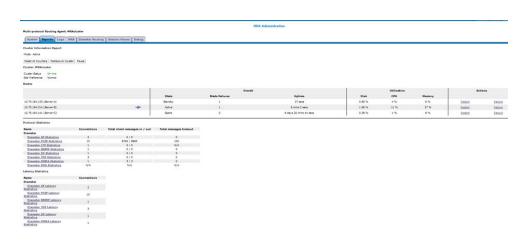


10. Verify connections in MRA **Report** tab should be the same before and after switch over to 15.0.

Here is a screenshot before SWO:



Here is a screenshot after SWO to 15.0:





- 11. Reapply Configuration on 15.0 Virtual MRA.
- 12. Once 15.0 Virtual MRA becomes active, Run the following commands and verify all outputs are displayed as expected:
 - irepstat
 - service qp_procmgr status
 - ha.mystate

All the above commands can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3-12, the output of the above commands is displayed in any server (both 12.6.1.x and 15.0 nodes).
- 13. Verify DRA bindings in all the Active, Standby, and Spare MRAs.

Note:

DRA binding counts in both MRAs can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 5, the **Check dra bindings and diam sess counts** submenu is displayed.
- e. Choose suboption 3, check draBinding Count on a MRA, to verify DRA binding counts in Active, Standby, and Spare MRAs.

Expected alarms

- 31101-Database replication to a slave database has failed.
- 31102-Database replication from a master database has failed.
- 31104-Database replication latency has exceeded thresholds.
- 31105-The database merge process (inetmerge) is impaired by a software fault.



31224-High availability configuration error

Note:

During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Rollback:

In case of any issues, you need to ensure the **HW Type** in the **Cluster Settings** is set to "RMS/c-class/" (respective BM hardware type in case of BM-VM migration) or "VM" (in case of VM-VM migration) before rolling back to 12.6.1.x. After the rollback, perform the failover to the 12.6.1.x BM/VM server. Steps to rollback are as follows:

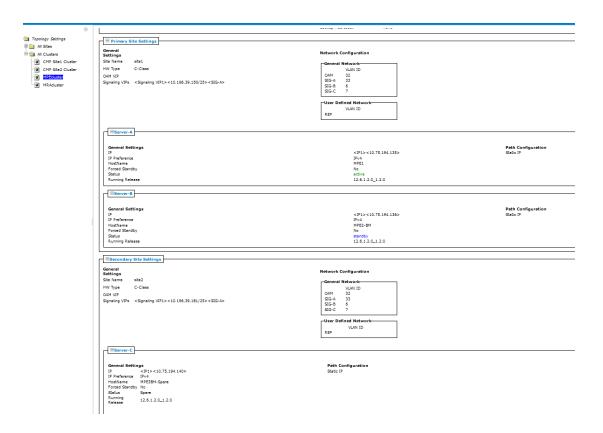
- Click Modify Primary Site for cluster.
- 2. For BM-VM migration, set **HW TYPE** to respective HW Type for BareMetal (RMS/C-Class).
- 3. Enable the Forced Standby flag for the 15.0 VM server.
- 4. Disable the **Forced Standby** flag for the 12.6.1.x BM/VM server.
- 5. Click Save.

Migrating Standby MPE (Server-B)

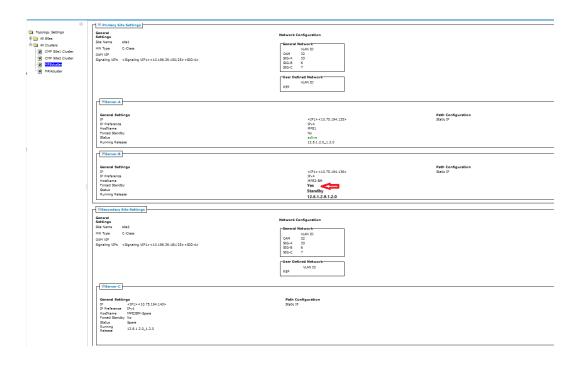
To perform this procedure, Log in to CMP GUI- Remove Standby MPE (Server-B) from 12.6.1.x setup and add freshly installed 15.0 MPE(Virtual) to the cluster. After this, perform the switch over to 15.0 Server-B and verify replication between 12.6.1.x and 15.0 servers.

MPE Cluster Details:

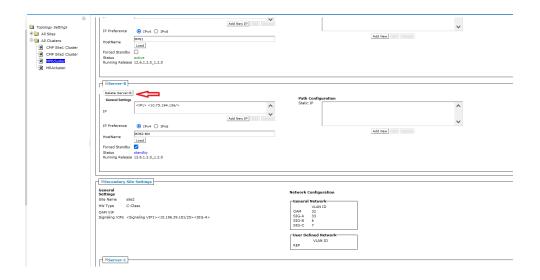




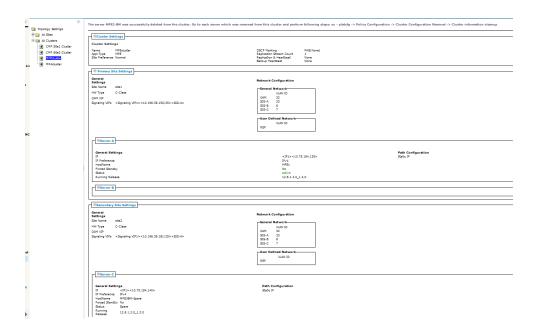
Navigate to Platform Settings --> Topology Settings --> All Clusters --> MRA Cluster--> Primary Site settings. Click the Modify Primary Site option and enable the Forced Standby flag for 12.6.1.x Standby MPE.



2. Click **Delete Server-B** to remove the 12.6.1.x Standby server from the cluster.



Navigate to Server-B and run the following command for cleanup:
 su - platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup



4. Add the 15.0 MPE (Virtual) node to the MPE cluster and check the replication status between the BM/VM Active (12.6.1.x) and VM (15.0) Standby node.



The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in the MPE cluster:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on both Active/Standby MPEs.
- 5. Run the following commands on both 12.6.1.x and 15.0 nodes (Active/Standby) for ssh-key exchange:
 - a. On 12.6.1.x node, run ssh-keygen -t rsa.
 - b. On 15.0 node, run ssh-keygen -t dsa.
 - c. On both the 12.6.1.x and 15.0 nodes, run ssh-key exchange using the below command and entering password for admusr /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- **a.** Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in Standby(15.0) MPE Server-B. If not found, then generate them.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run ssh-key exchange on all the MPE servers (both 12.6.1.x and 15.0 nodes).
- 6. Log in to the 12.6.1.x Active server console. Run su- platcfg → Policy Configuration → Cluster File Sync → Cluster Sync Config → Read Destination From Comcol and check for ssh-key exchange status. If the status is OK, then continue. Else, repeat ssh-key exchange for the hosts mentioned under the SSH key not FULLY EXCHANGED status.

Note:

If the ssh-key exchange status is not OK, you can use the MIGRATION_SCRIPTS.zip (available along with the release documents) to perform the required ssh-key exchange. The steps are as follows:

- **a.** Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the **SSH-Key Exchange** submenu is displayed.
- e. Choose suboption 3, run Ssh-key exchange on one host, to exchange SSH keys for the hosts mentioned under the SSH key not FULLY EXCHANGED status.
- 7. Log in to the 12.6.1.x Active server and perform the Cluster File Sync procedure to sync firewalls and routes between Active and Standby nodes.
- 8. Enabling sync with 12.6.1.x and sync the log level between Active and Standby
 - a. In the Active server, Log in to console and,
 - Run sudo cp /usr/TKLC/camiant/bin/rsyncUtil.pl /usr/TKLC/camiant/bin/rsyncUtil_bckup.pl
 - ii. Run sudo sed -i '592s/./# &/; 593i\ return 1;' /usr/TKLC/camiant/bin/ rsyncUtil.pl to enable rsync in mixed mode.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- i. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- ii. Run the command, sudo su.
- iii. Navigate to /root/MAIN/ and run the command, ./main.sh.
- iv. Choose Option 3, the Enable Rsync Commands submenu is displayed.
- v. Enter hostname of the **Active (12.6.1.x) MPE Server-A** to run the above steps.
- b. To reapply configuration:
 - i. Log in to CMP GUI.
 - ii. Navigate to Policy Server → Configuration--> [Select MPE cluster] → System.
 - iii. Click the Reapply Configuration button.
- c. To sync debug and trace log settings of MPE, do the following:

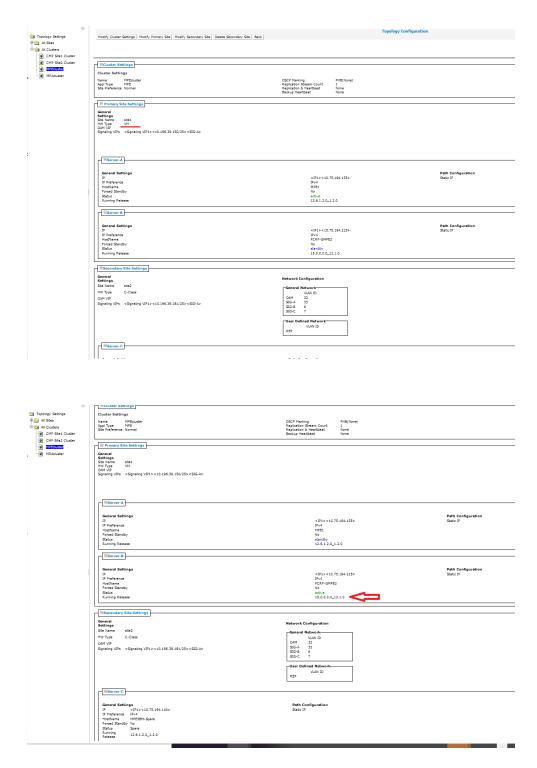
Note:

This step needs to be performed to sync the trace and debug log levels of MPE from 12.6.1.x to 15.0.

- i. Log in to CMP GUI.
- ii. Navigate to Policy Server → Configuration → [Select MPE cluster] → Logs.
- iii. Click the Modify button.
- iv. Save without making any changes to trigger sync.
- Navigate to Policy Server → Configuration → [Select MPE cluster] → Debug.
- vi. Click the Modify button.
- vii. Save without making any changes to trigger sync.
- Perform a switchover to Virtual Standby MPE (to make Virtual MPE Active) using following steps:
 - a. Click the Modify Primary Site button for the cluster.
 - **b.** For BM-VM migration, set **HW TYPE** to **VM**.
 - Enable the Forced Standby flag for Server-A.
 - d. Disable the Forced Standby flag for Server-B.
 - e. Click Save.



During switchover ongoing connections will be disconnected and a call drop will be observed for a few seconds (approx 15 to 20 seconds). Once Virtual MPE Server-B is Active, all the traffic will be processed by Virtual MPE.



10. Verify connections in MPE **Report** tab should be same before and after switchover to 15.0.

Here is a screenshot before SWO:



Here is a screenshot after SWO to 15.0:



- 11. Reapply Configuration on 15.0 Virtual MPE.
- **12.** Once 15.0 Virtual MPE becomes active, Run the following commands and verify all outputs are displayed as expected:
 - irepstat
 - service qp_procmgr status
 - ha.mystate



All the above commands can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3-12, the output of the above commands is displayed in any server (both 12.6.1.x and 15.0 nodes).
- 13. Verify Diameter Sessions in Active, Standby, and Spare MPEs.

Note:

Diameter Session counts in both MPEs can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 5, the **Check dra bindings and diam sess counts** submenu is displayed.
- Choose suboption 3, check diamSessions Count on a MPE, to verify diameter sessions count on Active, Standby, and Spare MPEs.

Expected alarm

- 31101-Database replication to a slave database has failed
- 31102-Database replication from a master database has failed.
- 31104-Database replication latency has exceeded thresholds
- 31105-The database merge process (inetmerge) is impaired by a s/w fault
- 31224-High availability configuration error



During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Rollback:

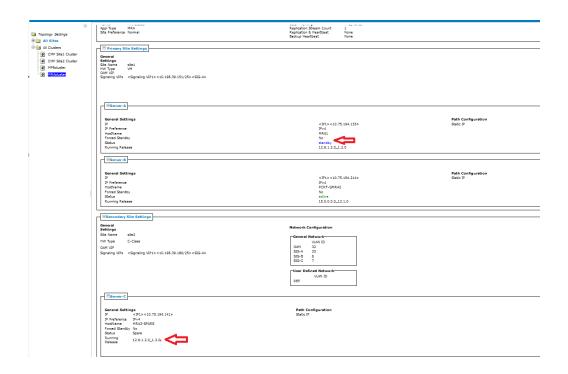
In case of any issues, you need to ensure the **HW Type** in the **Cluster Settings** is set to "RMS/c-class/" (respective BM hardware type in case of BM-VM migration) or "VM" (in case of VM-VM migration) before rolling back to 12.6.1.x. After the rollback, perform the failover to the 12.6.1.x BM/VM server. Steps to rollback are as follows:

- 1. Click Modify Primary Site for cluster.
- 2. For BM-VM migration, set **HW TYPE** to respective HW Type for BareMetal (RMS/C-Class).
- 3. Enable the **Forced Standby** flag for the 15.0 VM server.
- 4. Disable the **Forced Standby** flag for the 12.6.1.x BM/VM server.
- 5. Click Save.

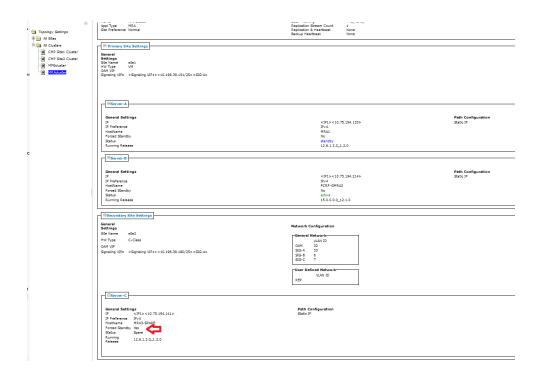
Migrating Spare MRA (Server-C)

To perform this procedure, Log in to CMP GUI- Remove Spare MRA (Server-C) from 12.6.1.x setup and add freshly installed 15.0 MRA (Virtual) to the cluster and verify replication between 12.6.1.x and 15.0 servers.

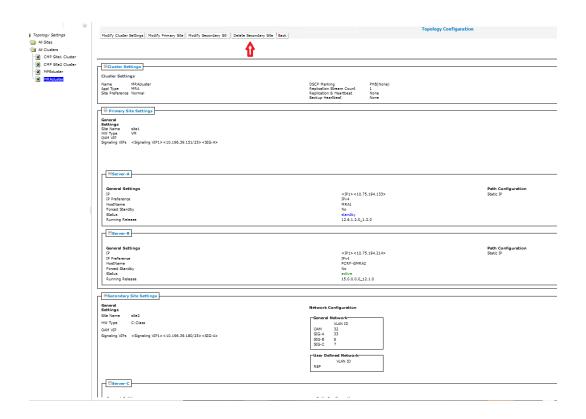




Navigate to Platform Settings --> Topology Settings --> All Clusters --> MRA
 Cluster--> Delete Secondary Site. Click the Delete Secondary Site option and
 enable the Forced Standby flag to Yes for 12.6.1.x Spare MRA.

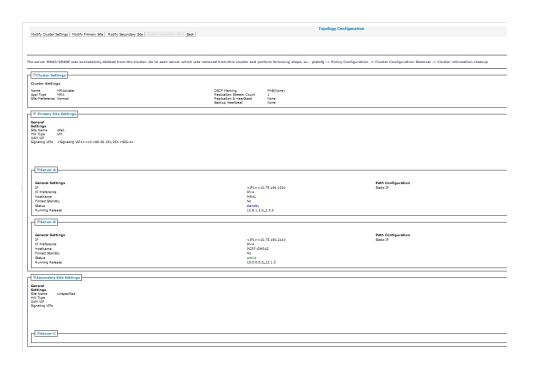


2. Click the **Delete Secondary Site** option to remove 12.6.1.x Spare MRA server from the cluster.



- Navigate to Server-C and run the following command for cleanup:
 su platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup
- 4. Click the Modify Secondary Site option. Under Secondary Site Settings, add the 15.0 MRA (Virtual) node to the MRA cluster and configure the Site Name, HW type (as VM) and Signaling VIPs. Click Save and check the replication status (using irepstat command) between 12.6.1.x (BM/VM) and 15.0 (VM) nodes.





The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in the MRA cluster:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on Spare MRA Server-C (15.0).
- 5. Run the following commands on both the 12.6.1.x and 15.0 nodes (Active/Standby) for SSH key exchange:
 - a. On 12.6.1.x node, run ssh-keygen -t rsa.
 - b. On 15.0 node, run ssh-keygen -t dsa.
 - c. On both the 12.6.1.x and 15.0 nodes, run SSH key exchange using the below command and entering password for admusr /opt/camiant/bin/ qpSSHKeyProv.pl --prov --user=admusr.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in Standby(15.0) MRA Server-C. If not found, then generate them.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run SSH key exchange on all the MRA servers (both 12.6.1.x and 15.0 nodes).
- 6. Verify DRA bindings in Active, Standby, and Spare servers.

Note:

DRA binding counts in both MRAs can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 5, the Check dra bindings and diam sess counts submenu is displayed.
- e. Choose suboption 1, check draBinding Count on a MRA, to verify DRA binding counts in Active, Standby, and Spare MRAs.

Expected alarm

- 31101-Database replication to a slave database has failed.
- 31102-Database replication from a master database has failed.
- 31104-Database replication latency has exceeded thresholds.
- 31105-The database merge process (inetmerge) is impaired by a s/w fault.
- 31224-High availability configuration error



During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Rollback:

In case of any issues, you need to change the **HW Type** back to "RMS/c-class/" (respective BM hardware type) in **Cluster Settings** before rolling back to 12.6.1.x. After the rollback, perform the failover to the BareMetal server.

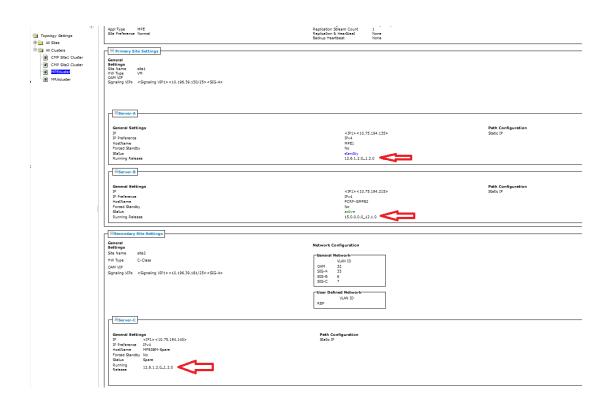


This is applicable only for BM-VM migration. For VM-VM migration, only switchover is needed to make the 12.6.1.x server Active.

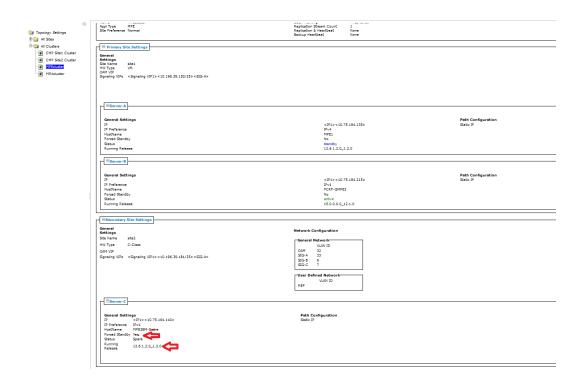
Migrating Spare MPE (Server-C)

To perform this procedure, Log in to CMP GUI- Remove Spare MPE (Server-C) from 12.6.1.x setup, attach freshly installed 15.0 MPE (Virtual) to the cluster and verify replication between 12.6.1.x and 15.0 servers.

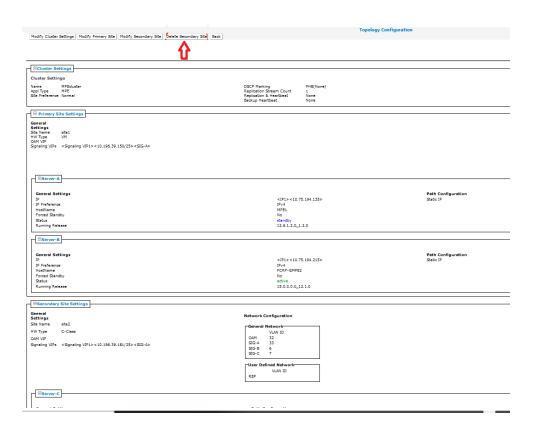




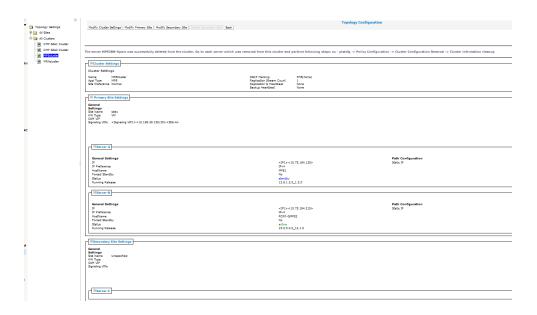
Navigate to Platform Settings --> Topology Settings --> All Clusters --> MPE Cluster-->
 Delete Secondary Site. click the **Delete Secondary Site** option and enable the **Forced Standby** flag to **Yes** for 12.6.1.x Spare MPE.



Click the Delete Secondary Site option to remove the 12.6.1.x Spare MPE server from the cluster.



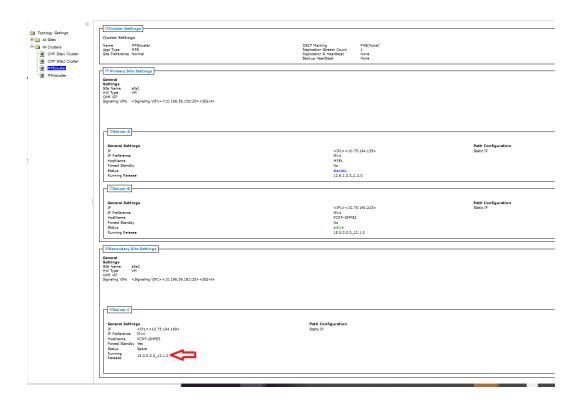
Navigate to Server-C and run the following command for cleanup:
 su - platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup

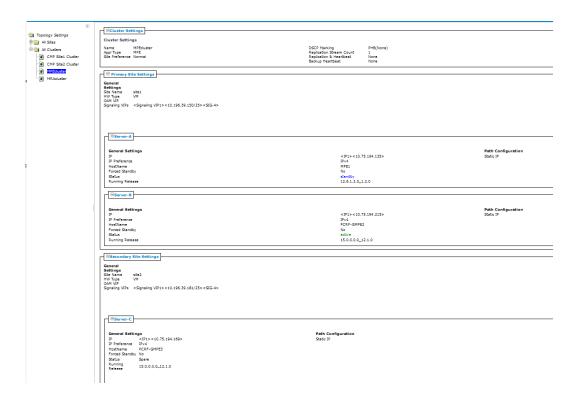


4. Click Modify Secondary Site. Add the 15.0 MPE (Virtual) node to the MPE cluster and configure the Site Name, HW type (as VM) and Signaling VIPs in Secondary



Site Settings. Click **Save** and check the replication status (using irepstat command) between 12.6.1.x (BM/VM) and 15.0 (VM) nodes.





The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in the MPE cluster:

- **a.** Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on Spare MPE 15.0 Server-C.
- 5. Run the following commands on both the 12.6.1.x and 15.0 nodes (Active/ Standby) for SSH key exchange:
 - a. On 12.6.1.x node, run ssh-keygen -t rsa.
 - b. On 15.0 node, run ssh-keygen -t dsa.
 - c. On both the 12.6.1.x and 15.0 nodes, run SSH key exchange using the below command and entering password for admusr /opt/camiant/bin/ qpSSHKeyProv.pl --prov --user=admusr.

Note:

This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- i. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- ii. Run the command, sudo su.
- iii. Navigate to /root/MAIN/ and run the command, ./main.sh.
- iv. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- v. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in Spare(15.0) MPE Server-C. If not found, then generate them.
- vi. Choose suboption 3, run Ssh-key exchange on one host, to run SSH key exchange on all the MPE servers (both 12.6.1.x and 15.0 nodes).
- 6. Verify Diameter Sessions in Active, Standby, and Spare MPE servers.



Diameter Sessions count in both MPEs can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 5, the Check dra bindings and diam sess counts submenu is displayed.
- e. Choose suboption 1, **check diamSessions Count on a MPE**, to verify diameter sessions count in Active, Standby, and Spare MPEs.

Expected alarm

- 31101-Database replication to a slave database has failed.
- 31102-Database replication from a master database has failed.
- 31104-Database replication latency has exceeded thresholds.
- 31105-The database merge process (inetmerge) is impaired by a software fault.
- 31224-High availability configuration error
- 78001-Transfer of Policy jar files failed

Note:

During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Rollback:

In case of any issues, you need to change the **HW Type** back to "RMS/c-class/" (respective BM hardware type) in Cluster Settings before rolling back to 12.6.1.x. After the rollback, perform the failover to the BareMetal server.



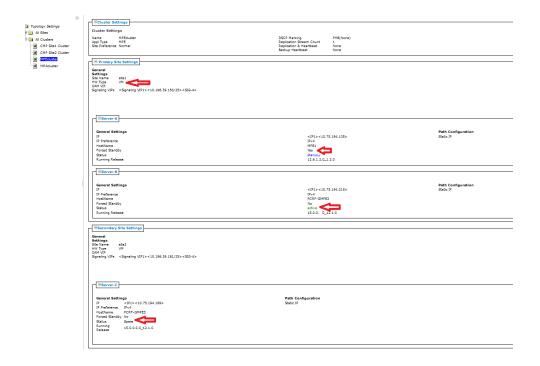


This is applicable only for BM-VM migration. For VM-VM migration, only switchover is needed to make the 12.6.1.x server Active.

Migrating MRA (Server-A)

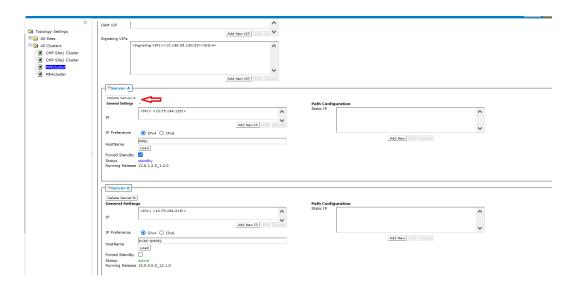
To perform this procedure, Log in to CMP GUI- Remove MRA (Server-A) from 12.6.1.x setup and add freshly installed 15.0 MRA (Virtual) to the cluster. After this, perform a switch over to 15.0 Server-A and verify replication between 12.6.x and 15.0 servers.

Navigate to Platform Settings --> Topology Settings --> All Clusters --> MRA
 Cluster--> Modify Primary Site Settings. Click the Modify Primary Site option and
 enable the Forced Standby flag to Yes for 12.6.1.x MRA (Server-A) of the MRA
 cluster.

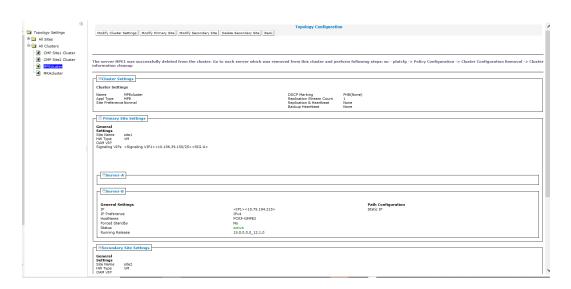


Click Delete Server-A to remove the 12.6.1.x Server-A server from the cluster.

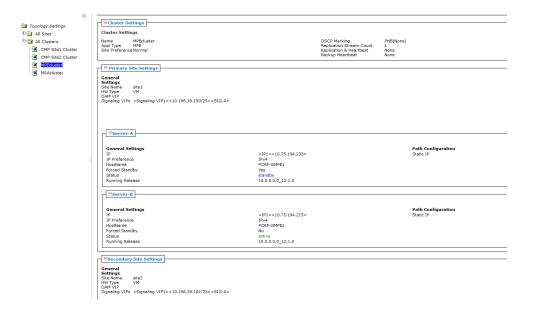




Navigate to Server-A and run the following command for cleanup:
 su - platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup



 Add 15.0 MRA (Virtual) node to the MRA cluster and check the replication status (using irepstat command) between 15.0 Active and Standby nodes.



The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in the MRA cluster:

- **1.** Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- 2. Run the command, sudo su.
- 3. Navigate to /root/MAIN/ and run the command, ./main.sh.
- Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- 5. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on Standby(15.0) MRA Server-A.
- Run the following commands on all 15.0 nodes (Active/Standby/Spare) for SSH key exchange:
 - 1. On 15.0 node, run ssh-keygen -t dsa.
 - On each 15.0 node, run SSH key exchange using the below command and entering password for admusr /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- 2. Run the command, sudo su.
- 3. Navigate to /root/MAIN/ and run the command, ./main.sh.
- 4. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in Standby(15.0) MRA Server-A. If not found, then generate them.
- **6.** Choose suboption 3, **run Ssh-key exchange on one host**, to run SSH key exchange on all the MRA servers (all 15.0 nodes).
- · Verify data replication between Active, Standby, and Spare MRA servers.

Note:

DRA binding counts on all MRAs can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- 2. Run the command, sudo su.
- 3. Navigate to /root/MAIN/ and run the command, ./main.sh.
- Choose Option 5, the Check dra bindings and diam sess counts submenu is displayed.
- Choose suboption 3, check draBinding Count on a MRA, to verify DRA binding counts in Active, Standby, and Spare MRAs.

Expected alarm

- 31101-Database replication to a slave database has failed
- 31102-Database replication from a master database has failed.
- 31104-Database replication latency has exceeded thresholds
- 31105-The database merge process (inetmerge) is impaired by a s/w fault



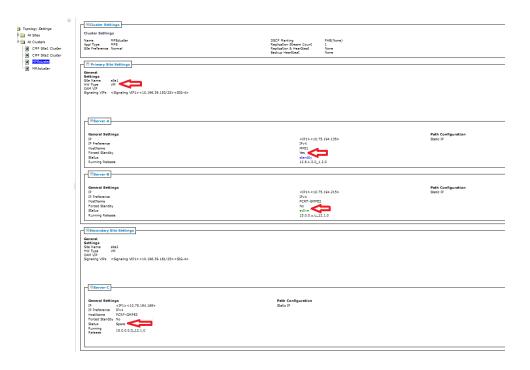
During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Migrating MPE (Server-A)

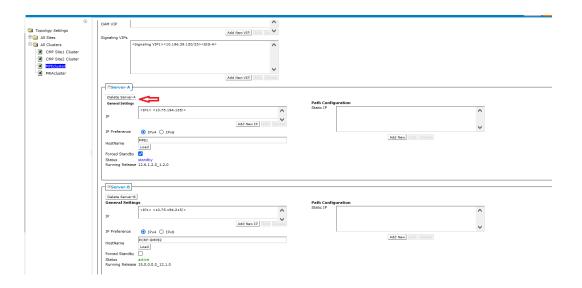
To perform this procedure, Log in to CMP GUI- Remove MPE (Server-A) from 12.6.1.x setup, attach freshly installed 15.0 MPE(Virtual) to the cluster, and verify replication between 15.0 Active, Standby, and Spare servers.

Navigate to Platform Settings --> Topology Settings --> All Clusters --> MPE
 Cluster--> Modify Primary Site Settings. Click the Modify Primary Site option and
 enable the Forced Standby flag to Yes for 12.6.1.x MPE (Server-A) of the MPE
 cluster.

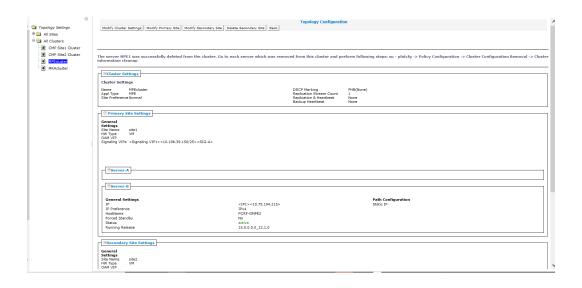


2. Click **Delete Server-A** and remove 12.6.1.x Server-A server from the cluster.

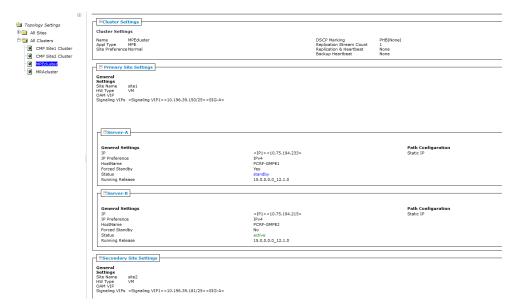




3. Navigate to Server-A and run the following command for cleanup:
 su - platcfg-->Policy Configuration → Cluster Configuration Removal → Cluster Information cleanup



4. Add 15.0 MPE (Virtual) node to the MPE cluster and check the replication status (using irepstat command) between 15.0 Active and Standby nodes.



The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in the MPE cluster:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on both Active/Standby MPEs.
- 5. Run the following commands on all 15.0 nodes (Active/Standby/Spare) for SSH key exchange:
 - a. On 15.0 node, run ssh-keygen -t dsa.
 - b. On each 15.0 node, run SSH key exchange using the below command and entering password for admusr /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in Standby(15.0) MPE Server-A. If not found, then generate them.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run SSH key exchange on all the MPE servers (all 15.0 nodes).
- 6. Verify data replication between Active, Standby, and Spare MPE servers.

Note:

Diameter Session counts in both MPEs can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 5, the **Check dra bindings and diam sess counts** submenu is displayed.
- **e.** Choose suboption 3, **check diamSessions Count on a MPE**, to verify diameter sessions count on Active, Standby, and Spare MPEs.

Expected alarm

- 31101-Database replication to a slave database has failed
- 31102-Database replication from a master database has failed.
- 31104-Database replication latency has exceeded thresholds
- 31105-The database merge process (inetmerge) is impaired by a s/w fault



During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.



6

Migrating Remaining Secondary CMP Clusters and Primary CMP Cluster

Verifying the Status of the CMP Cluster

To verify the status of the CMP cluster:

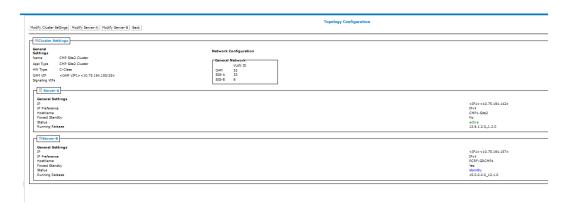
Navigate to Platform settings- \rightarrow Topology Settings \rightarrow All Clusters \rightarrow CMP Site1 Cluster and CMP Site2 Clusters

- Primary CMP cluster is partially migrated to 15.0.
- Secondary CMP cluster is on 12.6.1.x.

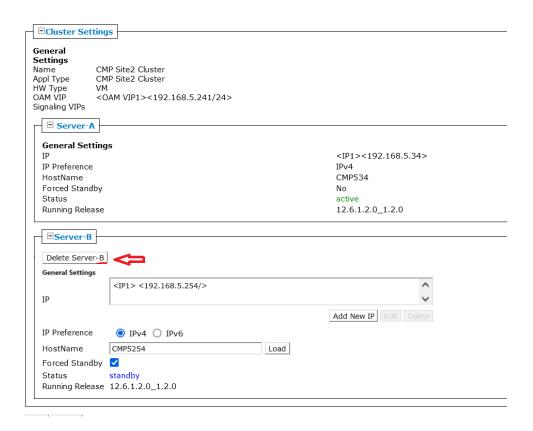
Migrating Secondary CMP (Server-B)

To perform this procedure, Log in to the Secondary CMP Server- Remove Standby CMP (Server-B) from 12.6.1.x setup and add freshly installed 15.0 CMP (Virtual) to the cluster and verify replication between 12.6.1.x and 15.0 servers.

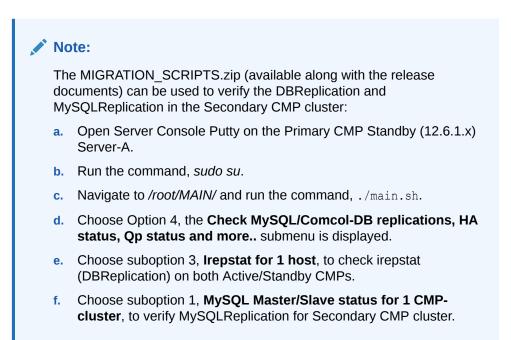
Navigate to Platform Settings --> Topology Settings --> All Clusters --> CMP Site2
 Cluster--> Modify SERVER B . Click the Modify Server-B option and enable the Forced Standby flag to Yes for Standby CMP of the Primary CMP cluster.



Click Delete Server-B to remove the 12.6.1.x Standby server from the cluster. Run cluster config removal for cleanup.



3. Add the 15.0 CMP (Virtual) node to the CMP cluster and check the replication status between the 15.0 Active and Standby nodes.



- 4. Run the following commands on all the 15.0 nodes (Active/Standby) for ssh-key exchange:
 - a. On 15.0 node, run ssh-keygen -t dsa.

b. On each 15.0 node, run SSH key exchange using the below command and entering password for admusr /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr.

Note:

This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- i. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- ii. Run the command, sudo su.
- iii. Navigate to /root/MAIN/ and run the command, ./main.sh.
- iv. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- v. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if DSA is present in Secondary Standby(15.0) CMP Server-B. If not found, generate it.
- vi. Choose suboption 3, **run Ssh-key exchange on one host**, to run ssh-key exchange on all servers (both 15.0 nodes).
- 5. Log in to the 12.6.1.x Active server console. Run su- platcfg → Policy Configuration → Cluster File Sync → Cluster Sync Config → Read Destination From Comcol and check for ssh -key exchange status. If the status is OK, then continue. Else, repeat ssh-key exchange for the hosts mentioned under the SSH key not FULLY EXCHANGED status.

Note:

If the ssh-key exchange status is not OK, you can use the MIGRATION_SCRIPTS.zip (available along with the release documents) to perform the required ssh-key exchange. The steps are as follows:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the **SSH-Key Exchange** submenu is displayed.
- e. Choose suboption 3, run Ssh-key exchange on one host, to exchange SSH keys for the hosts mentioned under the SSH key not FULLY EXCHANGED status.
- 6. Log in to 12.6.1.x Active server console. Run su platcfg → Policy Configuration → Run Cluster File Sync to sync firewalls and routes between Active and Standby nodes.
- 7. Enabling sync with 12.6.1.x and sync the log level between Active and Standby
 - a. In the Active server, Log in to console and,
 - Run sudo cp /usr/TKLC/camiant/bin/rsyncUtil.pl /usr/TKLC/camiant/bin/rsyncUtil_bckup.pl



ii. Run sudo sed -i '592s/./# &/; 593i\ return 1;' /usr/TKLC/camiant/bin/ rsyncUtil.pl to enable rsync in mixed mode.

Note:

This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- i. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- ii. Run the command, sudo su.
- iii. Navigate to /root/MAIN/ and run the command, ./main.sh.
- iv. Choose Option 3, the **Enable Rsync Commands** submenu is displayed.
- v. In suboption 1, enter hostname of the Secondary Active (12.6.1.x) CMP Server-A to run the above steps.
- **b.** To sync debug and trace log settings of CMP, do the following:

Note:

This step needs to be performed to sync the trace and debug log levels of CMP from 12.6.1.x to 15.0.

- i. Log in to CMP GUI.
- ii. Navigate to Manager Log under System Administration.

Note:

Note: If you don't see the **Manager Log** under **System Administration**, follow the steps below:

- Open CMP GUI.
- Under the Help tab, navigate to the About option.
- Click the hidden button on top-left of the screen to see the debug settings.
- Click the Modify button and set the Debug Mode (under Server Settings) to True.
- iii. Click the Modify button.
- iv. Save without making any changes to trigger sync.
- v. Navigate to **Trace Log** under **System Administration**.
- vi. Click the Modify button.
- vii. Save without making any changes to trigger sync.



- Disable the Forced Standby flag for the 15.0 Virtual CMP node and ensure the HW TYPE is 'VM'.
 - a. Navigate to **Topology Settings** under the **Platform Settings**.
 - b. Select the CMP Secondary Cluster.
 - c. For BM-VM migration, click Modify Cluster Settings and change HW TYPE to VM and Click Save.
 - d. Click Modify Server-B and disable Forced Standby flag for 15.0 CMP Node.
 - e. Click Save.

Wait till all major alarms get cleared before moving to the next step. For BM-VM migration, once HW TYPE is changed to VM, CMP GUI is not accessible through common VIP because the Active server is still in BareMetal.

- 9. Log in to CMP GUI using Primary Active (12.6.1.x) Server IP and restart the Secondary Active (12.6.1.x) Server from the **Reports** tab to make the new 15.0 CMP in the secondary cluster Active. Verify data sync between the 12.6.1.x and 15.0 CMPs.
- **10.** Once 15.0 Virtual CMP becomes active, Run the following commands and verify all outputs are displayed as expected.
 - irepstat
 - service qp_procmgr status
 - ha.mystate
 - top.myrole ~ for cmp only

Note:

All the above commands can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Active(12.6.1.x) Server-A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Op status and more.. submenu is displayed.
- e. Choose suboption 1, MySQL Master/Slave status for 1 CMP-cluster, to verify MySQLReplication for Secondary CMP cluster.
- f. Choose suboption 3-12, the output of the above commands is displayed in any server (both 12.6.1.x and 15.0 nodes).

Expected alarm

70022-The MySQL slave failed to synchronize with the master

31105-The database merge process (inetmerge) is impaired by a s/w fault

31106-Database merging to the parent Merge Node has failed.

31107-Database merging from a child Source Node has failed.

70501 - Cluster Mixed Version



70503 – Server Forced Standby



During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Rollback:

In case of any issues, you need to change the **HW Type** back to "RMS/c-class/" (respective BM hardware type) in Cluster Settings before rolling back to 12.6.1.x. After the rollback, perform the failover to the BareMetal server.

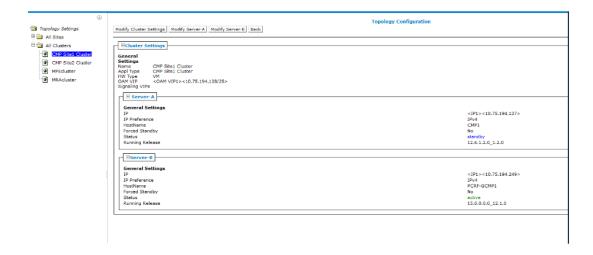


This is applicable only for BM-VM migration. For VM-VM migration, only switchover is needed to make the 12.6.1.x server Active.

Migrating Primary CMP (Server-A)

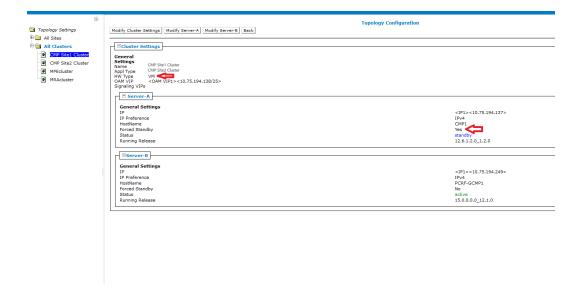
To perform this procedure, Log in to the Primary CMP Server- Remove server A from 12.6.1.x Primary CMP cluster, attach freshly installed 15.0 CMP (Virtual) to the cluster and verify replication between 15.0 Active and Standby servers.





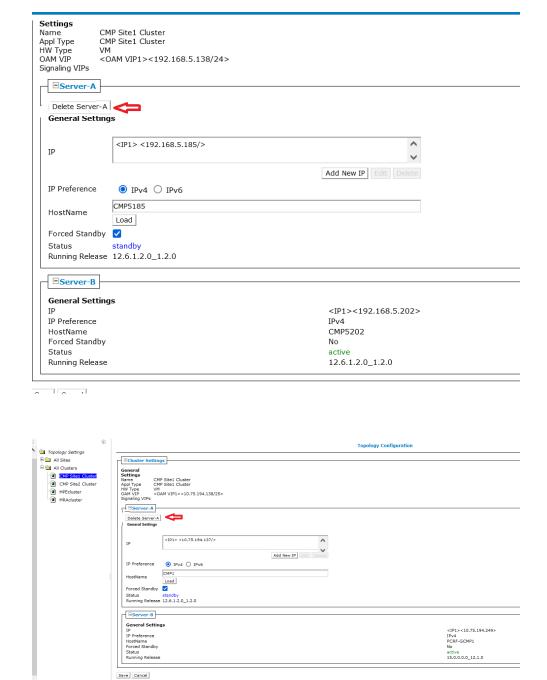
If you are using Migration_Scripts, run the following commands to create a backup for 'migration.log' in the Primary CMP Standby Server-A in the Primary Active CMP Server-B.

- Open Server Console Putty on the Primary CMP Standby(12.6) Server-A.
- Run the command, sudo su.
- Go to /root/MAIN/ and run the following command to take a backup:
 - ./bckup migrationLogs.sh <hostname of Active CMP Server-B>
- Navigate to Platform Settings --> Topology Settings --> All Clusters --> CMP Site1
 Cluster--> Modify SERVER A. Set the Forced Standby flag to Yes for Standby CMP of
 the Primary CMP cluster and click the Modify Server-A option.





2. Click **Delete Server-A** to remove the 12.6.1.x Standby server from the cluster. Run cluster config removal for cleanup.



3. Add the 15.0 CMP (Virtual) node to the CMP Site1 cluster and check the replication status between 15.0 Active and standby node.



The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication and MySQLReplication in Primary CMP cluster:

- a. Open Server Console Putty on the Primary CMP Active (15.0) Server-B.
- b. Run the command, sudo su.
- c. Unzip the MIGRATION_SCRIPTS.zip in the /root path.
- d. Navigate to /root/MAIN/ and run the command, ./main.sh.
- e. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- f. Choose suboption 3, Irepstat for 1 host, to check irepstat (DBReplication) for both 15.0 Active/Standby CMPs.
- g. Choose suboption 1, MySQL Master/Slave status for 1 CMP-cluster, to verify MySQLReplication for Primary CMP cluster.
- **4.** Run the following Ssh Key exchange command on both the 15.0 nodes (Active/Standby): /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Active (15.0) Server-B.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in the Primary Standby(15.0) CMP Server-A. If not found, then generate them.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run SSH key exchange on both 15.0 nodes.
- 5. Verify data replication between Active and Standby 15.0 CMP servers.

Note:

The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in Primary CMP cluster:

- Open Server Console Putty on the Primary CMP Active (15.0) Server-B.
- **b.** Run the command, *sudo su*.
- c. Unzip the MIGRATION_SCRIPTS.zip in the /root path.
- d. Navigate to /root/MAIN/ and run the command, ./main.sh.
- e. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- f. Choose suboption 3, Irepstat for 1 host, to check irepstat (DBReplication) for both 15.0 Active/Standby CMPs.

Expected alarm

- 70022 The MySQL slave failed to synchronize with the master.
- 31105 The database merge process (inetmerge) is impaired by a software fault.
- 31106 Database merging to the parent Merge Node has failed.
- 31107 Database merging from a child Source Node has failed.
- 70501 Cluster Mixed Version
- 70503 Server Forced Standby



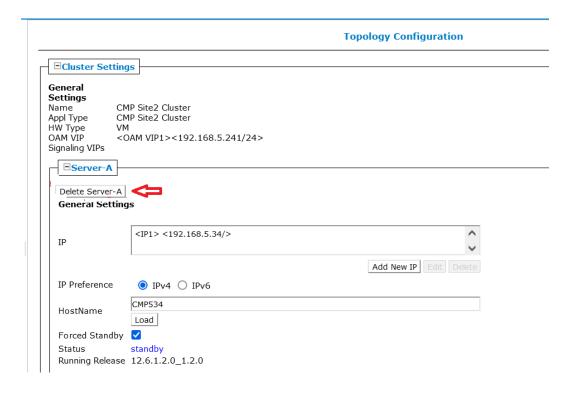
During Migration:

- The approach is that the virtual environment reuses the same Signaling VIP to avoid change in the routing once the Secondary or virtual environment becomes active.
- If the customer decides to use other subnets for OAM and signaling, the customer should
 - Notify to Oracle delivery team to build the Secondary site with the new subnets.
 - Notify the PGW, UDR, OCS, TDF, etc. about this change for the corresponding changes.
- If customer faces any unexpected alarm, please contact Oracle Support.

Migrating Secondary CMP (Server-A)

To perform this procedure, Log in to the Secondary CMP Server- Remove Server-A from 12.6.1.x Secondary CMP cluster, attach freshly installed 15.0 CMP(Virtual) to the cluster and verify replication between 15.0 Active and Standby servers.

- Navigate to Platform Settings --> Topology Settings --> All Clusters --> CMP Site1
 Cluster--> Modify SERVER A . Set the Forced Standby flag to Yes for Standby CMP of
 the Primary CMP cluster and click the Modify Server-A option.
- Click Delete Server-A to remove the 12.6.1.x Standby server from the cluster. Run cluster config removal for cleanup.





3. Add the 15.0 CMP (Virtual) node to the CMP cluster and check the replication status between 15.0 Active and standby node.

Note:

The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication and MySQLReplication in Secondary CMP cluster:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- e. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) on both Active/Standby CMPs.
- f. Choose suboption 1, MySQL Master/Slave status for 1 CMPcluster, to verify MySQLReplication for Secondary CMP cluster.
- **4.** Run the following commands on both the 15.0 nodes (Active/Standby) for SSH key exchange:
 - a. On 15.0 node, run ssh-keygen -t dsa.
 - b. On all the 15.0 nodes, run SSH key exchange using the below command and entering password for admusr /opt/camiant/bin/qpSSHKeyProv.pl --prov --user=admusr.

Note:

This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the **SSH-Key Exchange** submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required DSA is present in the Secondary Standby(15.0) CMP Server-A. If not found, then generate them.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run SSH key exchange on all servers (both 12.6.1.x and 15.0 nodes).
- **5.** Verify data replication between Active and Stand by 15.0 CMP servers.



The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the DBReplication in Secondary CMP cluster:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server A.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- Choose suboption 3, Irepstat for 1 host, to check irepstat (DBReplication) on both Active/Standby CMPs.

Expected alarm

70022-The MySQL slave failed to synchronize with the master.

31105-The database merge process (inetmerge) is impaired by a s/w fault.

31106-Database merging to the parent Merge Node has failed.

31107-Database merging from a child Source Node has failed.

70501 - Cluster Mixed Version

70503 - Server Forced Standby



If customer faces any unexpected alarm, please contact Oracle Support.

Exchanging Keys

Once the whole setup is migrated to 15.0, run SSH CLI Primary Active CMP. To exchange keys to all servers from the Site1 (Primary) Active CMP:

- Login as admusr and run the following command: \$sudo qpSSHKeyProv.pl --prov
- **2.** Enter the password for admusr.
- 3. Ensure that the keys are exchanged successfully with all the server clusters.



This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- **a.** Open Server Console Putty on the Primary CMP Active (15.0) server.
- **b.** Run the command, *sudo su*.
- **c.** Unzip the **MIGRATION_SCRIPTS.zip** in /root path.
- d. Navigate to /root/MAIN/ and run the command, ./main.sh.
- e. Choose Option 2, the SSH-Key Exchange submenu is displayed.
- f. Choose suboption 3, run Ssh-key exchange on one host, to run SSH key exchange from site1 Primary Active CMP to all 15.0 servers in the setup.

Verifying Migration

Please check the following items to verify if the migration is completed successfully:

- All CMP clusters migration is complete and the running release is 15.0.
- All MRA and MPE clusters running release is 15.0.



7

Rolling Back of CMP/MRA/MPE

To roll back to 12.6.1.x server if the target rollback server is in the 15.0 version:

- Enable the Force Standby flag for target 15.0 server (CMP/MRA/MPE).
 If the target rollback server is CMP, follow the below steps to remove the 15.0 CMP server:
 - a. Navigate to Platform Settings --> Topology Settings --> All Clusters --> CMP Site1
 Cluster--> Modify SERVER B/Modify SERVER A → Click on Delete Server B/Delete
 Server A
 - Run Cluster Config Removal in su platcfg-->Policy Configuration
 If target rollback server is MRA/MPE,
 - i. Navigate to Platform Settings --> Topology Settings --> All Clusters --> MRA
 Cluster/MPE Cluster--> Modify Primary Site settings → Click Delete Server-B/
 Delete Server-A.
 - ii. Run Cluster Config Removal in su platcfg-->Policy Configuration

Note:

The server node which is removed from the cluster should be available till the completion of the migration process. In case of any issues encountered during migration process, the same server can be attached for backout.

2. Add 12.6.1.x CMP/MRA/MPE node to the cluster and check replication status between 15.0 and 12.6.1.x nodes.

Note:

Before adding a 12.6.1.x node, make sure to disable the upgrade barrier (UB) logic and reboot the server. Refer the Prerequisites section to disable UB logic.

The MIGRATION_SCRIPTS.zip (available along with the release documents) can be used to verify the MySQLReplication and DBReplication in a CMP/MPE/MRA cluster:

- a. Open Server Console Putty on the Primary CMP Active (15.0) server.
- **b.** Run the command, sudo su.
- c. Unzip the MIGRATION_SCRIPTS.zip in /root path
- d. Navigate to /root/MAIN/ and run the command, ./main.sh.
- e. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- f. Choose suboption 3, **Irepstat for 1 host**, to check irepstat (DBReplication) between 12.6.1.x and 15.0 nodes.
- g. Choose suboption 1, MySQL Master/Slave status for 1 CMPcluster to verify MySQLReplication for CMP clusters with both 12.6.1.x and 15.0 nodes.
- 3. Run Ssh Key exchange command /opt/camiant/bin/qpSSHKeyProv.pl --prov -- user=admusr on both 12.6.1.x and 15.0 node(Active/Standby).

Note:

This step can be run using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Active (15.0) server.
- b. Run the command, sudo su.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the **SSH-Key Exchange** submenu is displayed.
- e. Choose suboption 1, check&gen SSH-key on one host [newly added server], to check if the required RSA-keys are present in all newly added 12.6.1.x nodes. If not found, then generate them.
- f. Choose suboption 4, run Ssh-key exchange on all host(s), to run SSH key exchange on all servers (both 12.6.1.x and 15.0 nodes).
- **4.** Log in to Virtual Active server console su platcfg → Policy Configuration → Run Cluster File Sync to sync firewalls and routes between Active and Standby nodes.
- 5. Disable the Force Standby flag for 12.6.1.x CMP/MRA/MPE node and ensure the HW TYPE is reset to "RMS/c-class/" (respective BM hardware type in case the 12.6.1.x server is BareMetal). Perform the switch over to 12.6.1.x (BM/VM) server and wait till all major alarms get cleared.

Once 12.6.1.x CMP/MRA/MPE becomes Active, run the following commands and verify all outputs are displayed as expected:



- irepstat
- service qp_procmgr status
- ha.mystate
- top.myrole ~ for cmp only

All the above commands can be verified using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- 1. Open Server Console Putty on the Primary CMP Active 15.0 server.
- 2. Run the command, sudo su.
- 3. Navigate to /root/MAIN/ and run the command, ./main.sh.
- 4. Choose Option 4, the Check MySQL/Comcol-DB replications, HA status, Qp status and more.. submenu is displayed.
- Choose suboption 1, MySQL Master/Slave status for 1 CMP-cluster, to verify MySQLReplication for any CMP cluster.
- 6. Choose suboption 3-12, the output of the above commands is displayed in any server (both 12.6.1.x and 15.0 nodes).



8

Post Migration health Check for wireless systems

Note:

This section is used when the entire topology running release is 15.0.

- 1. Verify the migration is successful on all CMP/MRA/MPE clusters.
 - a. Navigate to Platform Settings → **Topology Settings** → **All clusters**
 - **b.** View individual clusters and verify version should be 15.0 and the server should be up and running.
- 2. View current alarms.
 - a. Navigate to System Wide Reports → Alarms → Active Alarms
 - **b.** Verify that all alarms due to the migration have been cleared.
- 3. View current KPIs.
 - a. Navigate to System Wide Reports → KPI Dashboard.
 - b. Make sure everything looks normal.
- 4. Check Replication status.
 - Navigate to System Wide Reports → Others → MPE/MRA Rep Stats (for a wireless system).
 - b. Make sure the replication status shows OK.



9

Risks Involved while Using Different VLANs and Subnets for 15.0 VMs

This document is only applicable when VLANs and Subnets are same in 12.6.1.x and 15.0 planned servers. If it is not possible to have same VLANs and Subnets, customer should:

- Proceed with fresh deployment of the 15.0 setup on VM using *Oracle Communications Policy Management Cloud Installation Guide*.
- Copy all configurations from 12.6.1.x to the new 15.0 freshly installed server.
- Progressively divert traffic from PGW from old 12.6.1.x setup to new setup.
- In case of issue during the traffic diversion, redirect traffic back to 12.6.1.x servers.

Risks Involved while Using Different VLANs and Subnets for 15.0 VMs

Following are the risks Involved while Using Different VLANs and Subnets for 15.0 VMs:

- 1. Update OAM VIP of 15.0 CMP VM and SIGA VIP of MRA and MPE VMs manually before switching over to 15.0 in Topology settings.
- 2. Once Virtual MRA/MPE servers are Migrated to 15.0, make sure to update SIGA VIP in all respective network elements like PGW, AF, and also in MRA settings → MPE pool.
- 3. If MRA VM is migrated to 15.0 and MPE (12.6.1.x) due to different SIGA VIP, a connection between MRA and MPE can't be established as a result, there is a chance of loss of traffic during this time.
- 4. If the subnets between BM and VM are different, then the connections towards PGW, AF, DSR, OCS, TDF, and UDR will be lost. Hence, service continuity degradation and PCRF isolation occur.
- **5.** There may be a chance of latency of replication and synchronization.
- To resolve a common VIP issue, a lab approach has been followed of using the same VLAN and subnets for BareMetal and virtual servers.



A

Appendix

To synchronize the cluster files: (This procedure is common for CMP/MRA/MPE.)

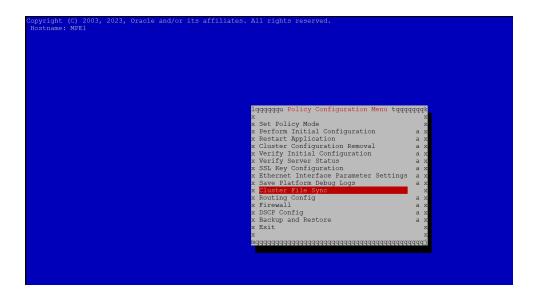
- **1.** Log in to CMP/MRA/MPE 12.6.1.x Active server through the console.
- 2. Run the command: Su platcfg → Policy Configuration
- 3. Log in to server console. Run su- platcfg → Policy Configuration → Cluster File Sync → Cluster Sync Config → Read Destination From Comcol and check for ssh-key exchange status. If the status is OK, then continue. Else, perform ssh-key exchange again.

Note:

ssh-key exchange can be performed using the MIGRATION_SCRIPTS.zip (available along with the release documents) in the following way:

- a. Open Server Console Putty on the Primary CMP Standby (12.6.1.x) Server-A.
- **b.** Run the command, *sudo su*.
- c. Navigate to /root/MAIN/ and run the command, ./main.sh.
- d. Choose Option 2, the **SSH-Key Exchange** submenu is displayed.
- e. Choose suboption 3, run Ssh-key exchange on one host, to exchange SSH-keys for the hosts mentioned under the SSH key not FULLY EXCHANGED status.
- 4. Select the Cluster File Sync option.





5. Select the **Start Synchronizing** option.

6. Click Yes.

Once Cluster file sync is done, verify the status. The status should be OK as displayed in the below screenshot.

