

Oracle® Communications

Software Installation

Policy Management 15.0 to 15.0.x Upgrade Procedure

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CAUTION: Use only the upgrade procedure included in the Upgrade Kit.

Before upgrading any system, access the Oracle Customer Support site and review any Technical Service Bulletins (TSBs) that relate to this upgrade.

Refer to Appendix C for instructions on accessing this site.

Contact the Oracle Customer Care Center (mailto:support@oracle.com) and inform them of your upgrade plans prior to beginning this or any upgrade procedure.

Oracle Communications Policy Management 15.0 to 15.0.x Upgrade Procedure

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1 GEOREDUNDANCY ENABLED

1.1 Introduction

1.1.1 Purpose and Scope

This document describes methods utilized and procedures run to perform a software upgrade of Oracle Communications Policy Management Release 15.0 to Release 15.0.x when georedundancy is enabled.

Georedundancy as implemented in the MPE and the 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 into the same cluster so that any server can assume the Active role if necessary. The Spare server is usually located in a separate geographical location in case the servers at the initial site become unavailable due to a site-wide failure. The Spare server, in most cases, would be unaffected by the same circumstances and would be able to continue to provide service as an Active server.

1.1.2 Acronyms

Acronym	Definition
CMP	Configuration Management Platform
DR-CMP	Configuration Management Platform for Disaster Recovery
Dit Civii	NOTE: It refers to the CMP on the secondary site
DSR	Diameter Signaling Router
GUI	Graphical User Interface
IPM	Initial Product Manufacture
LVM	Logical Volume Manager
MPE	Multimedia Policy Engine
MPE-LI	MPE for Lawful Intercept - a type of Multimedia Policy Engine
MRA	Multiprotocol Routing Agent (also known as the Policy Front End or PFE)
OCS	Online Charging System
OOS	Out of Service
PCEF	Policy Control Enforcement Function
PCRF	Policy and Charging Rules Function—Oracle MPE
TPD	Tekelec Platform Distribution

1.1.3 Terminology

Term	Description			
Primary Site (Site1)	Site where the MPE/MRA Server-A and Server-B are deployed.			
Secondary Site (Site2)	Site where the MPE/MRA Server-C is deployed.			
Spare Server or Server-C	Server that is ready to take over from the Active server if both the Active and Standby servers fail. It is generally in a different location than the Active and Standby servers.			

1.1.4 Software Release Numbering

COMCOL: 6.6TPD: 8.x

• Policy Management release 15.0

1.2 Upgrade Overview

This section lists the required materials and information needed to run Policy Management release 15.0.x software upgrades.

1.2.1 Upgrade Status Values

Status	Condition
OK	All servers are up-to-date and no alarms are present.
Info	No alarms are present, but a condition (such as out-of-date) is present that the operator should be made aware of.
Minor	At least one minor alarm is present.
Major	At least one major alarm is present.
Offline	The server cannot be reached.
Degraded	At least one server in the cluster cannot be reached.
Critical	At least one critical alarm is present.
Active	The server is active.
Standby	The server is in standby mode as part of normal operations.
Forced Standby	The server is in standby mode because it has been placed into that state via direct operator intervention or as part of the upgrade.
Offline	The server cannot be reached.
Zombie	The server is in a state where it cannot recover automatically and requires direct operator intervention.

1.2.2 Upgrade Paths

This upgrade document supports the following upgrade path:

• Policy Management 15.0 (fresh install) to 15.0.x (full DIU ISO) (Major Path)

NOTE:

- If the official upgrade paths mentioned in the release documents of each supported version are not followed, please contact Oracle Support before upgrading to 15.0.x. (Refer to individual patch release document to see the supported upgrade paths.)
- 15.0 to 15.0.x upgrade is only applicable for VM based environments.

1.2.3 Upgrade Information

This procedure applies to Active, Standby, and Spare servers. A group of servers is referred to as a cluster. The cluster types are CMP, MRA, and MPE.

- For a CMP cluster, there are only 2 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 3 servers (Active, Standby, and Spare).

A Policy Management deployment can consist of multiple clusters.

NOTE: In a cluster with single node, upgrade is not supported.

1.2.3.1 Required Cluster Upgrade Sequence

Policy Management Server software upgrades are performed on a cluster-by-cluster basis at the local and remote sites within the same maintenance window.

The following is the upgrade sequence, specific process is documented by an Oracle provided Maintenance Operation Procedure (MOP).

- 1. Upgrade Primary CMP
- **2.** Upgrade Secondary CMP (if applicable)
- 3. Site 1 Segment 1—Upgrade non-CMP clusters (see note below)
- **4.** Site 2 Segment 1—Upgrade non-CMP clusters (see note below)
- 5. Site 1 Segment 2—Upgrade non-CMP clusters (see note below)
- **6.** Site 2 Segment 2—Upgrade non-CMP clusters (see note below)

NOTE: Up to 16 non-CMP clusters can be upgraded in parallel.

1.2.3.2 Policy Management Release Mixed-Version Operation and Limitation

The general expectation is that a system that is running in a mixed version configuration should support features, and perform at a level of the previous version. Thus, the system that is running pre-15.0.x release and release 15.0.x mixed configuration would support the performance and capacity of pre-15.0.x release. The mixed version Policy Management configuration would support pre-15.0.x release features.

Since the CMP is the first Policy Management system component that is upgraded to the new version, the release 15.0.x CMP is managing servers in both the previous release and release 15.0.x. In this mixed version configuration, release 15.0.x CMP does not prevent an operator from configuring anything that you could configure in a previous release and all configuration items from the previous release are still available. However, the configuration changes during the upgrade of Policy Management system are discouraged and have limited support.

In the mixed version Policy Management configuration release 15.0.x CMP has the following limitations while running in a mixed version environment:

- New features must not be enabled until the upgrades of all servers managed by that CMP are completed. This also applies to using policy rules that include new conditions and actions introduced in the release.
- As a general guideline, policy rules should not be changed while running in a mixed version
 environment. If it is necessary to make changes to the policy rules while running in a mixed
 version environment changes that do not utilize new conditions and actions for the release
 could be installed, but should be jointly reviewed by you and Oracle before deployment to verify
 that these policies indeed do not use new conditions or actions.
- The support for configuration of MPE/MRA servers is limited to parameters that are available in the previous version. Specifically, Network Elements can be added.

Table 1 Mixed-version configurations supported

Policy Management	CMP	MRA	MPE	
system components on	R15.0.x	R15.0.x	R15.0.x	
CMP 15.0	Yes	No	No	
MRA 15.0	Yes	Yes	Yes	
MPE 15.0	Yes	Yes	Yes	

NOTE: Replication between CMP and DR-CMP is automatically disabled during upgrade of the CMP and DR-CMP from the previous release to release 15.0.x. The replication is automatically enabled after both active CMP and DR-CMP are upgraded to release 15.0.x.

1.2.4 Customer Impacts

The cluster upgrade proceeds by upgrading the standby server, then switching over from the active to the standby, then the spare server, and upgrading the new standby. The switchover of each non-CMP cluster has a small impact on traffic being processed at that cluster.

1.2.5 Rollback/Backout

The full pre-upgrade server image is stored on the server during the upgrade, and can be restored in the event of a problem during or after upgrade.

1.2.6 TPD Version

The Tekelec Platform Distribution (TPD) version needed for this release is included in the Policy Application Software Upgrade DIU ISO, and the TPD is upgraded to version 8.x as part of this procedure.

1.2.7 Loading Application Software

For upgrade of server application software, the recommended method is to copy the application DIU ISO images to the servers using the scp or ftp command.

1.2.8 Required Materials and Remote Access

The following materials and information are needed to run an upgrade:

- Policy Management 15.0.x software DIU ISO files
- Policy Management 15.0.x software Release Notes
- The capability to remotely login to the target server as admusr.

NOTE: The remote login can be done through SSH, local console, or iLO maintenance port. Ensure that the network firewall policy allows the required application and corresponded ports.

- The capability to secure copy (scp) from the local workstation being used to perform this upgrade to the target server, or otherwise be able to transfer binary files to the target server.
- User login IDs, passwords, IP addresses, and other administration information.
- VPN access to your network is required if that is the only method for remotely logging into the target servers. It must be also possible to access the Policy Management GUI.

1.2.8.1 Upgrade Media

See the release notes for the list of DIU ISO image files required for the Policy Management upgrade you are installing.

1.2.8.2 Login User IDs and Passwords

You must confirm login information for key interfaces, and document the information using Table 2.

NOTES:

- It is assumed that the login information may be common across sites. If not, record the information for each site.
- Consider the sensitivity of the information recorded in this table. While all of the information in the table is required to complete the upgrade, there may be security policies in place that prevent the actual recording of this information in a permanent form.

Table 2 Login IDs, Passwords and release Information

Item	Value
CMP servers	GUI Administrator Login User/Password
NOTE: Some older releases do not use admusr, instead use the default root Login using SSH.	
	admusr password:
MPE/MRA servers	admusr password:
Target OA	OA Administrator Login User/Password
Software Upgrade Target Release ¹	Target Release Number
	Policy Management 15.0.x software DIU ISO image filenames

1.3 Theory of Operation

1.3.1 Upgrade Manager Page

The Upgrade Manager was not up to the operator, with assistance from an MOP, to know the correct sequence of server selects and menu selections. The Upgrade Manager takes a different approach. It determines the next course of action to either

- Begin/continue upgrading a cluster
- Begin/continue backing out a cluster.

IMPORTANT: There is a point implicit in the list above: upgrade is now presented from a cluster perspective, instead of a server perspective.

In perspective has a number of ramifications, most noticeably it is not possible to select individual servers or to bulk select a group of servers. In fact, in order to perform any operation, it is necessary to select a cluster.

Certain operations are performed automatically on behalf of the operator. These operations are not presented to the operator as an option. However, the operator can see what has been done using the upgrade log.

¹ The ISO image filenames should match those referenced in the Release Notes for the target release.

Upgrade Manager

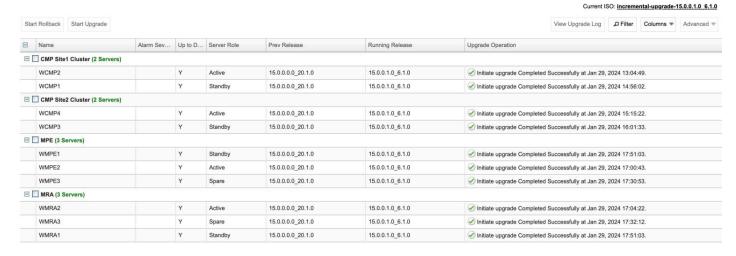


Figure 1 Sample display of the Upgrade Manager page

For the most part, the items in the display are self-explanatory. The following items are often used during the upgrade.

Start Rollback and Start Upgrade buttons (upper left):

If a cluster is selected and these buttons are disabled (grey), it means that there is not an appropriate action to take at this time. However, if a button is not disabled (white), then it means that there is a preferred action that can be taken to upgrade (or backout) the cluster. Normally, upgrading a cluster is a well-defined fixed procedure. However, in some cases there are a number of valid sequences. Selecting the preferred step causes the Upgrade Director to choose the default sequence. Only use the Upgrade Manager to perform upgrades unless the instructions direct otherwise.

Alarm Severity:

This column is used to indicate if there are alarms associated with a server. If so, it displays the severity of the most severe alarm here. It is important to explain the intent of this column. The intent is to give a visual indication that the particular server is experiencing alarms. This is not a reason to panic: During the upgrade, it is expected that the servers raise alarms:

The CMP raises alarms to indicate that it is initiating upgrade activity.

Servers reports alarms to indicate that their mate servers are offline.

However, if alarms are asserted for a server, it is good practice to look at the alarms prior to initiating upgrade activity on them.

• **Up to Date**: This column is used to indicate the state of the code on the server.

N—Server is running old code and must be upgraded

Y—Server is running new code.

N/A—Upgrade is not appropriate and/or the server is in a bad state

1.3.1.1 The Upgrade Log

Within the Upgrade Manager page, the operator can access the upgrade log. This displays attributes of the various actions (manual and automatic) that have been performed on the selected cluster. It is important to note that this is NOT the audit log. The audit log is meant to track what the operator has done. This log is meant to capture the sequence of upgrade activity—whether it was initiated by an operator or automatically triggered.

			Opg	grade Log							
Cluster Name: M Last Update: 01/	MPE /30/2024 11:08:10									₽ Filter	Columns *
ID	Parent ID	Action Name	Start Time	End Time	Duration	Scope	Hostname	Result	Mode	Descrip	tion
21	0	Preflight Check	01/16/2024 16:56:23	01/16/2024 16:57:05	0:00:42	Server	WMPE2	Success	Manual	User initia	ted action:
23	21	Upgrading server	01/16/2024 16:57:05	01/16/2024 17:02:50	0:05:44	Server	WMPE2	Success	Automatic	Automatic	action initi
24	21	Modify the role/replication attribut	01/16/2024 16:57:05	01/16/2024 16:57:07	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
27	21	Wait for replication to synchronize	01/16/2024 17:02:50	01/16/2024 17:12:25	0:09:35	Server	WMPE2	Success	Automatic	Automatic	action wai
29	0	Failover to new version	01/17/2024 10:33:28	01/17/2024 10:33:28	0:00:00	Cluster	MPE	Success	Manual	User initia	ted action:
30	0	Preflight Check	01/17/2024 10:36:37	01/17/2024 10:37:27	0:00:49	Server	WMPE3	Success	Manual	User initia	ted action:
32	30	Upgrading server	01/17/2024 10:37:27	01/17/2024 10:44:05	0:06:38	Server	WMPE3	Success	Automatic	Automatic	action initi
33	30	Modify the role/replication attribut	01/17/2024 10:37:27	01/17/2024 10:37:28	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
37	30	Wait for replication to synchronize	01/17/2024 10:44:05	01/17/2024 10:53:17	0:09:11	Server	WMPE3	Success	Automatic	Automatic	action wai
38	30	Modify the role/replication attribut	01/17/2024 10:44:05	01/17/2024 10:44:07	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
41	0	Preflight Check	01/17/2024 10:56:25	01/17/2024 10:57:17	0:00:51	Server	WMPE1	Success	Manual	User initia	ed action:
42	41	Upgrading server	01/17/2024 10:57:17	01/17/2024 11:03:46	0:06:28	Server	WMPE1	Success	Automatic	Automatic	action initi
43	41	Modify the role/replication attribut	01/17/2024 10:57:17	01/17/2024 10:57:19	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
47	41	Wait for replication to synchronize	01/17/2024 11:03:46	01/17/2024 11:13:07	0:09:21	Server	WMPE1	Success	Automatic	Automatic	action wai
48	41	Modify the role/replication attribut	01/17/2024 11:03:46	01/17/2024 11:03:47	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
53	0	Backing out server upgrade	01/23/2024 12:58:01	01/23/2024 13:00:21	0:02:20	Server	WMPE1	Success	Manual	User initia	ted action:
54	53	Modify the role/replication attribut	01/23/2024 12:58:01	01/23/2024 12:58:02	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
56	53	Waiting for replication to synchron	01/23/2024 13:00:21	01/23/2024 13:04:15	0:03:53	Server	WMPE1	Success	Automatic	Automatic	action wai
59	0	Backing out server upgrade	01/23/2024 13:18:56	01/23/2024 13:21:28	0:02:32	Server	WMPE3	Success	Manual	User initia	ted action:
60	59	Modify the role/replication attribut	01/23/2024 13:18:56	01/23/2024 13:18:58	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
32	59	Waiting for replication to synchron	01/23/2024 13:21:28	01/23/2024 13:25:05	0:03:36	Server	WMPE3	Success	Automatic	Automatic	action wai
33	0	Failover to old version	01/23/2024 13:43:11	01/23/2024 13:43:11	0:00:00	Cluster	MPE	Success	Manual	User initia	ted action:
67	0	Backing out server upgrade	01/23/2024 13:54:38	01/23/2024 13:56:54	0:02:15	Server	WMPE2	Success	Manual	User initia	ted action:
88	67	Modify the role/replication attribut	01/23/2024 13:54:38	01/23/2024 13:54:40	0:00:01	Cluster	MPE	Success	Automatic	Automatic	action for
69	67	Waiting for replication to synchron	01/23/2024 13:56:54	01/23/2024 14:00:35	0:03:40	Server	WMPE2	Success	Automatic	Automatic	action wai

Figure 2 Upgrade Log

1.3.1.2 Optional Actions

It is possible to perform every step in the upgrade process using the **Upgrade** and **Backout** buttons. When the operator clicks one of these buttons, the Upgrade Director performs the next preferred action. However, there are times that the operator may want to take a slightly different—but still legal—procedure. For example, the Upgrade Director has a preferred order in which it upgrades a georedundant cluster. However, if the operator wanted to deviate from that default procedure—say to restrict upgrade to servers in a particular site—then they can use the optional actions menu. It is important to note that this menu is ONLY populated with legal/reasonable actions. Actions that are wrong or inconsistent are not displayed.

If the operator selects an optional action, they can go back to using the default/preferred at any time

1.3.1.3 The ISO Select

In the upper right hand corner, there is an item called the **Current ISO.** In some respects the term ISO is misleading. A better description might be upgrade procedure. This item shows the upgrade procedure that is being used. In common cases, this is going to be either:

An upgrade to version XXX



To start a new upgrade, click on this item. The Upgrade Director searches for valid upgrade procedures. In order to minimize confusion, these upgrade procedures are usually embedded within a CMP ISO file. This way, the CMP ISO file is always tied to the corresponding upgrade procedure.

When you select a new ISO file, you are telling the Upgrade Director to abandon the current upgrade procedure in favor of a new procedure.

1.3.1.4 Upgrade Director Behavior

The Upgrade Director is a component that tracks the state of the servers, cluster and system during an upgrade. The Upgrade Director is hidden. However, there are conventions/operating principles that have visible effects.

1.3.1.5 Alarm Philosophy

During an upgrade, the Upgrade Manager asserts (that is, generates) and displays alarms. An upgrade typically triggers multiple minor, major, and critical alarms as servers are taken out of service, go into forced standby, or fail over. This is normal and to be expected. Figure 3 shows an example of an upgrade in progress asserting multiple transient alarms.

NOTE: Click on the active alarms summary, in the upper right corner of every CMP page, to display a list of current active alarms.

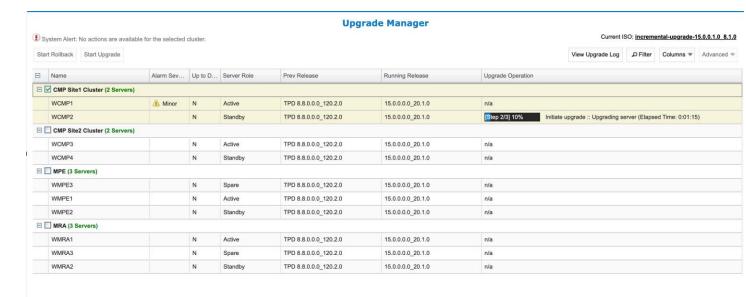


Figure 3 Upgrade in Progress Showing Transient Alarms

The Upgrade Manager clears alarms when appropriate, such as when server and cluster upgrades are complete. Table 3 lists transient alarms that the Upgrade Manager can assert during an upgrade.

Table 3 Transient Alarms Asserted During a Typical Upgrade

Alarm Number	Severity	Name
31227	Critical	HA availability status failed
31102	Minor	DB Replication from a master node DB has failed
31283	Critical	Lost Communication with server
70001	Critical	QP_procmgr failed
70007	Critical	Not all QP resources are ready
70025	Critical	QP Slave database is a different version than the master
31233	Major	HA Path Down
70004	Major	QP Processes down for maintenance
31101	Minor	DB replication to slave failure
31102	Minor	DB replication from a master node DB has failed
31106	Minor	DB merge to parent failure
31107	Minor	DB merge from child failure
31114	Minor	DB replication over SOAP has failed
31282	Minor	HA Management Fault
70500	Minor	System Mixed Version
70501	Minor	Cluster Mixed Version
70502	Minor	Cluster Replication Inhibited
70503	Minor	Server Forced Standby
70506	Minor	Upgrade Operation Failed
70507	Minor	Upgrade in Progress
70508	CRITICAL	Zombie Server

The Upgrade Manager also asserts an alarm if an unexpected error prevents it from continuing the upgrade. You should review all active alarms after each upgrade step to ensure that the alarms are expected. Alarms are described in the *Troubleshooting Guide*, Release 15.0, available at the Oracle Help Center.

1.3.1.6 General Upgrade Procedure

In general, the upgrade of a server goes through the following steps:

- **1.** Preflight checks—look for certain conditions which guarantee a failed upgrade. If such conditions are detected, fail. There are two principles behind the preflight checks.
- 2. It is better to fail early in a recoverable way than to fail late in an unrecoverable way.
- **3.** Preflight checks are VERY narrow. This prevents false positives for an otherwise valid upgrade.
- **4.** The upgrade itself

5. Wait for replication to synchronize.

This procedure is in place so that it should not be necessary to login to the target server to verify conditions. You should be able to stay on the Upgrade Manager page.

Upgrade Order

With a two-server cluster, there is only a single valid order:

- **1.** Upgrade the standby
- 2. Failover
- **3.** Upgrade the remaining server.

With georedundant clusters, there are many valid permutations. The default order that the Upgrade Director takes is:

- 1. Upgrade the standby server
- 2. Failover
- 3. Reapply the configuration

NOTE: This requires you to navigate away from the Upgrade Manager page

- 4. Upgrade the spare server
- 5. Upgrade the remaining server in the primary site

Unreachable Servers

During the course of an upgrade, servers can go unreachable. This is expected and the Upgrade Manager tries to be graceful about unreachable servers. However, if the CMP experiences a failover when another server is unreachable, this runs into limits. The promoted Upgrade Director does not have the full history/context. It waits until it can contact the unreachable server before it takes action on the server.

Reversing Directions

In general, it should be possible to reverse directions at any time. You should be able to upgrade a server in a cluster, back it out, upgrade it, upgrade its mate, back that out, etc. In this sense, upgrade/backout should be fully reversible. However, you are not permitted to reverse direction if there is an ongoing action: You cannot kick off a backout of a server if another server in the cluster is being upgraded. You have to wait for the upgrade to finish.

Mixed version and Forced Standby

As a general rule, if a cluster is in mixed version, then every server that is NOT running the same version as the active server must be in forced standby. This way, a simple failover does not cause a change in the version of code that is providing service.

NOTE: Forced standby is managed by the Upgrade Director and requires no action.

Failure Handling and Recovery

Failures fall into two categories:

- Failures that the Upgrade Director is able to recover from.
- Failures that the Upgrade Director cannot automatically recover from.

Any failure should generate an UPGRADE_OPERATION_FAILED alarm. In such cases, the operation can be attempted again. Ideally, the operator/support would investigate the original failure before

repeating. However, if the server is in an indeterminate state, the server is declared a ZOMBIE and no further action can be taken on the server. It requires direct action by support/engineering to repair.

For the current release, recovery or even deep failure diagnosis is not exposed via the GUI.

1.4 Upgrade Preparation

This section provides detailed procedures to prepare a system for upgrade. These procedures are run outside a maintenance window.

NOTE: If Veritas NetBackup is being used on the system, see the Maintenance Operation Procedure for pre and post upgrade steps.

Overview of steps:

- 1. Upgrade Primary (Site1) CMP
- 2. Upgrade Secondary (Site2) CMP (if applicable)
- 3. Segment 1 Site1:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters
- 4. Segment 1 Site2:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters
- 5. Segment 2 Site1:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters
- 6. Segment 2 Site2:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters

1.4.1 Prerequisites

The following procedure table verifies that all required prerequisite steps needed to be performed before the upgrade procedure begins.

Procedure 1 Prerequisites

Step	Procedure	Details
1.	Verify all required materials are present	As listed in section 1.2.8 Required Materials and Remote Access.
2.	Review Release Notes	Review Policy Management 15.0.x Release Notes for the following information: Individual software components and versions included in target release. New features included in target release. Issues (bugs) resolved in target release.

Step	Procedure	Details
		Known issues with target release.
		 Any further instructions that may be required to complete the software upgrade for the target release. In particular, the supported browsers: In release 15.0.x, only Mozilla Firefox and Google Chrome are fully supported.
		—End of Procedure—

1.4.2 Plan and Track Upgrades

The upgrade procedures in this document are divided into the following sequential steps:

- 1. Upgrade CMP clusters
- 2. Upgrade MPE/MRA clusters

Table 4 can be completed before performing the upgrade, to identify the clusters to be upgraded and plan the work. It can also be used to track the completion of the upgrades and assign work to different engineers.

NOTES:

- Policy changes or configuration changes should NOT be made while the system is in mixed-version operation.
- Time estimates are for upgrade procedure without backout procedure. Backout procedure time is typically the same as, or less than the upgrade procedure.

Table 4 Upgrade information

Step	Procedure	Result	Engineer	Time
1.	Use the following checklist to plan the cluster upgrades for the entire system.	Maintenance windows are planned		
2.	Upgrade Site1 and Site2 CMP clusters. Each cluster takes approximately 40-50 minutes to complete	Site Names and		3 hrs
3.	Upgrade Site1 MPE/MRA clusters for Segment-1	Site Names Cluster List:		2 hrs

Clusters for Site Names Cluster List:		Step	Engineer	Time
clusters for Site Names	Site Names Cluster List:	4.		2 hrs
	Site Names	5.		2 hrs
6. Upgrade Site2 clusters for Segment-2 Site Names Cluster List:	Site Names	6.		2 hrs

1.4.3 Perform System Health Check

Use this procedure to determine the health and status of the servers to be upgraded and must be run at least once within the time frame of 24 to 36 hours prior to the start of a maintenance window.

Procedure 2 Perform system health check

Step	Procedure	Result						
1.	CMP GUI Access	Open a supported browser (Mozilla Firefox or Google Chrome) to access the Primary CMP GUI on its VIP address and login to verify access.						

Step	Procedure	Result
2.	View Active Alarms	Identify the cause of any existing active alarms, and determine if these may have impact on the upgrade. Export current alarms to save into a file. IMPORTANT: Before starting any upgrade activity, ensure that all active alarms are understood and resolved.
3.	View KPI reports	Verify that the system is running within expected parameters. Export current KPIs into a file.
4.	Confirm NTP servers are reachable from all the servers (CMP, MPEs and MRAs) to be upgraded NOTE: If the time across the servers is out of synch, fix it and re-validate this step, before starting the upgrade procedures.	 Validate the IP connectivity between the server and NTP servers by PING. Confirm that time is synchronized on each server using the following CLI shell command: \$sudo chronyc tracking Confirm that date is correct on each server. Check that BIOS clock is synced with the clock using the following CLI shell command: \$sudo hwclock
		—End of Procedure—

1.4.4 Deploy Policy Management Upgrade Software

Software should be deployed to each Policy Management server <code>/var/TKLC/upgrade</code> directory, before the actual upgrade activities. This is typically done with utilities such as SCP, WGET or SFTP. Because of the large size of the software DIU ISO file, sufficient time should be planned to accomplish this step. For Policy Management release 15.0.x, each DIU ISO image size is about 8GB for CMP and about 7GB for non-CMP servers.

1.4.6.1 Deploying Policy Management Upgrade Software to Servers

There are four possible software images in this upgrade (CMP, MPE/MPE-LI or MRA). A single image must be deployed to the <code>/var/TKLC/upgrade</code> directory of each server to be upgraded, where the image is the correct type for that server. That is, the CMP software image must be deployed to the CMP servers, the MPE image deployed to the MPE servers, and so on.

IMPORTANT: If the deployed image type (CMP, MPE, MRA, etc.) does not match the existing installed software type, the upgrade fails. Example: An attempt to upgrade a CMP with an MPE software image fails during the Upgrade action.

Also, if multiple images are copied into the /var/TKLC/upgrade directory, the upgrade fails.

1.4.6.2 Distribute Application DIU ISO Image Files to Servers

This procedure applies to all server types. It assumes that the DIU ISO image files is electronically copied to the sites to be upgraded.

NOTE: DIU ISO transfers to the target systems may require a significant amount of time depending on the number of systems and the speed of the network. The DIU ISO transfers to the target systems should be performed prior to and outside of the scheduled maintenance window. Schedule the required maintenance windows accordingly before proceeding.

Manual Distribution

Procedure 3 Manual Distribution

Step	Procedure	Result
1.	Transfer DIU ISO files to Policy Management server.	 Transfer release 15.0.x DIU ISO files (CMP and non-CMP) into the /var/TKLC/upgrade directory on the respective server using one of the following methods:
		- SCP/WGET command
		- USB drive
		2. If the images are on a server in the same network, scp the files using the CLI, for example, for CMP:
		3. Copy CMP software DIU ISO file to ONE of the other CMP servers:
		<pre>\$sudo cp /var/TKLC/upgrade/cmp-15.0.0.1.0_x.x.0-x86_64- DIU.iso user@remote_host.com:/var/TKLC/upgrade</pre>
		4. Repeat for one server of all clusters.
		NOTE: After copying the DIU ISO to one of the respective servers, the DIU ISO Maintenance is used to upload to the rest of the servers.
		—End of Procedure—

1.4.6.3 Backups and Backup Locations

Perform the backups prior to the maintenance window period.

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 4 Backups and Backup Locations

Step	Procedure	Result
1.	SSH CLI/iLO: Access the server to be backed up NOTE: System	IMPORTANT: Server backups (for each CMP and non-CMP server, active/standby/spare), and the system backup (from the active CMP), must be collected and readily accessible for recovery operations.
	backup is done on active CMP servers	1. Login into the active Primary CMP server.
	ONLY.	2. Open the platcfg utility.
		\$sudo su - platcfg
		3. Navigate to:
		Policy Configuration → Backup and Restore → Server Backup
		4. Provide (or use the suggested) ISO backup filename in the default backup location path of:
		/var/camiant/backup/local_archive/serverbackup/ <filename>.iso</filename>
		The iso path: /var/camiant/backup/local_archive/server
		5. Go back to the previous menu.
		Policy Configuration→Backup and Restore
		6. Select System Backup.
		Provide (or use the suggested) tarball backup filename in the default backup location path of:
		<pre>/var/camiant/backup/local_archive/systembackup/<filename>.tar .gz</filename></pre>
		Set backup location The tarball path: /var/camiant/backup/local_archive/system OK Cancel

Step	Procedure	Result
2.	SSH CLI/iLO: Verify the backup DIU ISO file	If default location is accepted in the previous step, change to the following directory and verify the file. For example for an MPE server backup: \$ cd /var/camiant/backup/local_archive/serverbackup \$ ls <hostname> -cmp_15.0.0.0.0_20.1.0-serverbackup- <mm><dd><hhmm>.iso And for the system backup: \$ cd /var/camiant/backup/local_archive/systembackup \$ ls <hostname> -cmp_15.0.0.0.0_20.1.0-systembackup- <mm><dd><hhmm>.tar.gz</hhmm></dd></mm></hostname></hhmm></dd></mm></hostname>
3.	Copy backup files.	 Copy the files to remote server or local workstation/laptop. Example of a remote server copy. \$ sudo scp /var/camiant/backup/local_archive/systembackup/xx_tar.gz <remoteserver_ipaddress>:<destinationpath></destinationpath></remoteserver_ipaddress> Remove the backup ISO file from the TPD Sever. \$ sudo rm < backup_filename>.iso
4.	Identify backup location	Backup location is: Instructions to access to backups are as follows:
		—End of Procedure—

1.5 Upgrade CMP clusters (15.0 to 15.0.x)

Use this procedure to upgrade the Site1 CMP cluster, and if needed, upgrade the Site2 CMP cluster in a single maintenance window.

1.5.1 Upgrade CMP clusters Overview

- 1. Upgrade Primary CMP cluster
- 2. Start upgrade
- 3. Failover
- 4. Log back into the CMP GUI
- 5. Continue upgrade
- 6. Upgrade Secondary CMP cluster
- **7.** Start upgrade
- 8. Failover
- 9. Continue upgrade

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 2 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 Secondary site (this site is ready to become Primary site, if needed).

If the System is deployed with only ONE CMP, then the upgrade of the Secondary CMP can be skipped.

Identify the CMP sites to be upgraded, and verify which site is the Primary site and which site is the Secondary site:

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

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

IMPORTANT:

- Site1 CMP MUST be upgraded to the new release before the Site2 CMP
- CMP servers MUST be upgraded before the non-CMP clusters

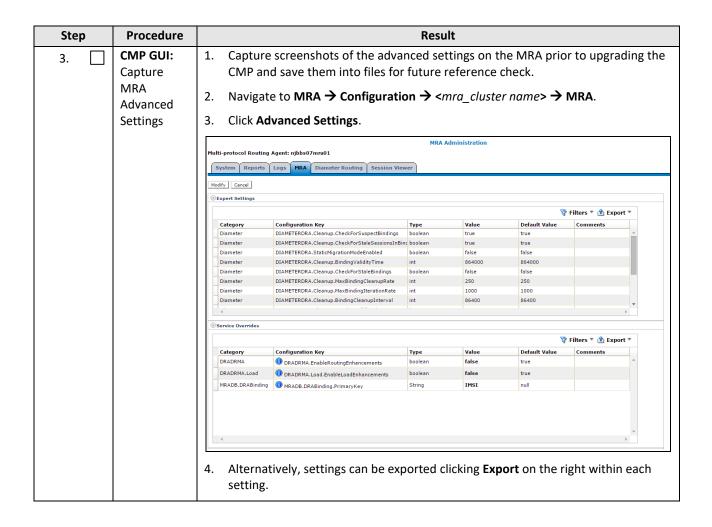
NOTE: The following steps use build 15.0 as example.

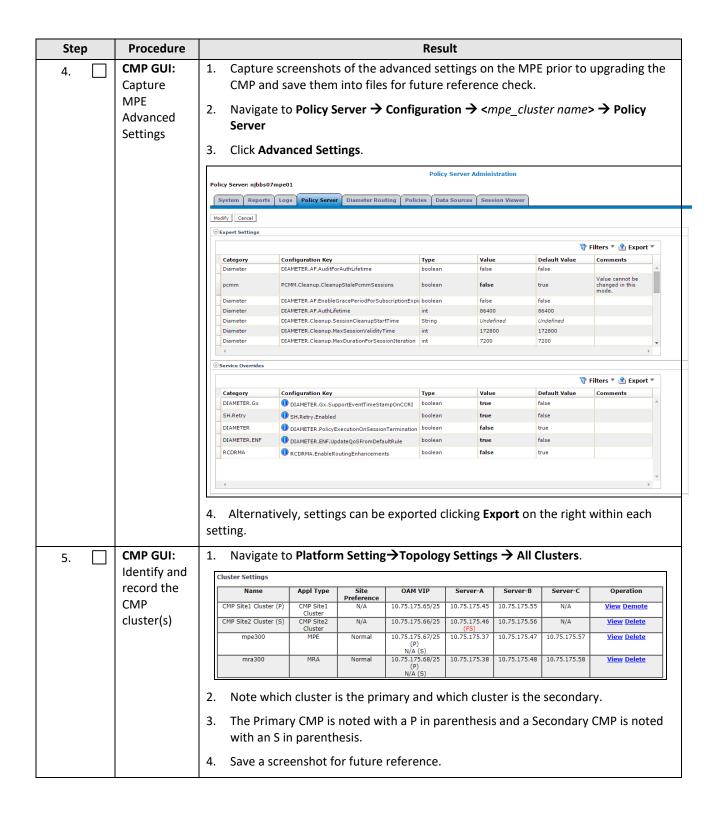
1.5.2 Upgrade Primary CMP cluster

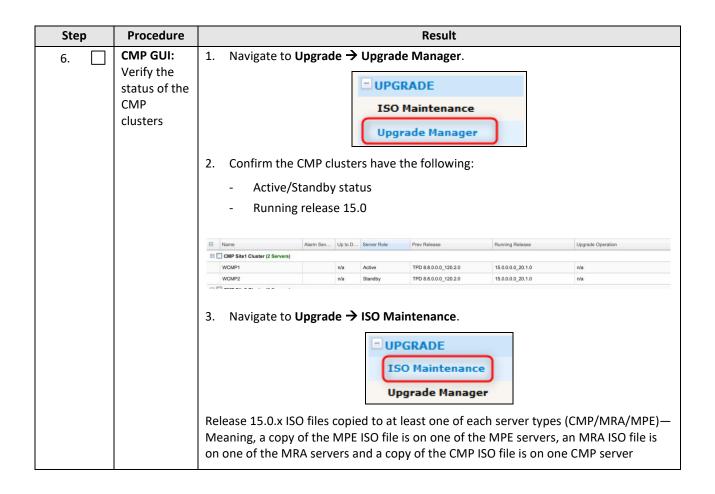
Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

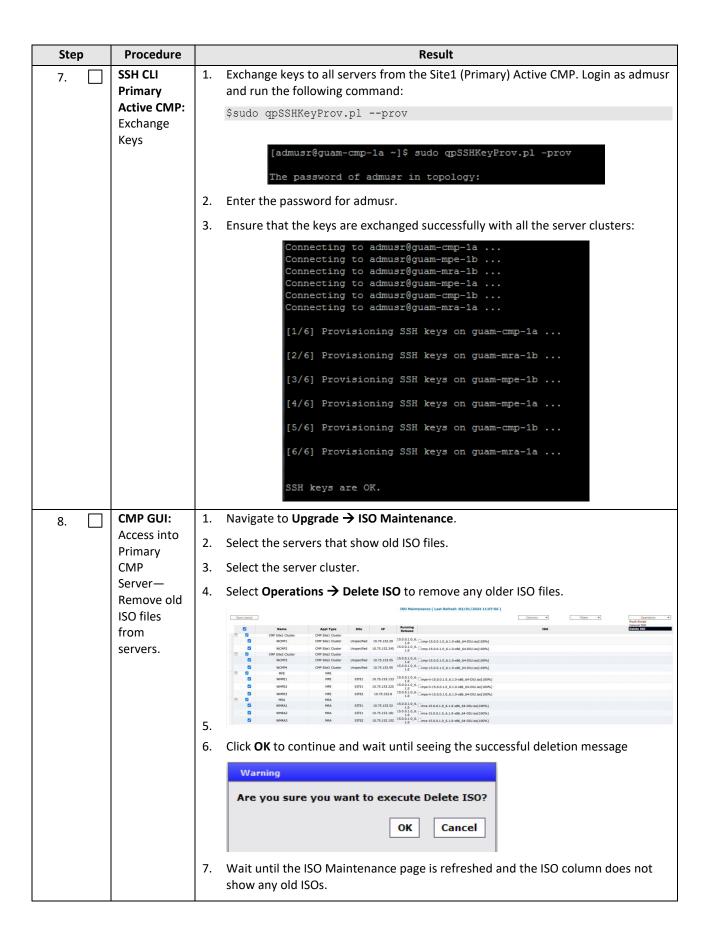
Procedure 5 Upgrade Primary CMP cluster

Step	Procedure								R	esult										
1.	CMP GUI:	1.	Navigate	to Syst	em V	/ide	Rep	orts	s →	Alar	ms-	→Ac	tive	Alaı	ms.					
	Verify alarm status.	2.	Confirm to procedure outdated	e. If ha	s criti	cal a	alarn	n lik	e 70	020	(The	e cur	rent	MY	'SQL	mas	ter	has a		ade
		3.	Capture a	screer	nshot	and	l sav	e it i	into	a file	e fo	r refe	eren	ce.						
		Dis;	play results per page: rst/Prev]1[Next/Last]	50 Total 1 pages		ati	Active		Last Re		10/201	8 10:32:	35) ilters		table Forma	st Sav	Cr	Ex	ajor M	linor O
2.	CMP GUI:	1.	Navigate	to Svst	em W	√ide	Ren	orts	s →	KPI	Das	hboa	ırd.							
	Verify Traffic Status - KPI Dashboard Report	2.	Confirm the few refress Capture the	sh upda	ates.										ected	l. Ob	ser	ve it	for	a
	Кероге	٥.	Oracle														09/09	/18 09:30		
												0/2018						0	al Maj O	0
																	Filters			hresholds
				TPS	PCD TI		Performa Total Ti		PDN		Active scribers	Cri	itical	Alai		Minor		Sent	ocol Err	ors teceived
			MRAs selected MPEs selected	0	0		0		0		0		0	0		0		0		0
			mr	a				Perfo	rmance	_			(onnectio			Alarms		Protoco	ol Errors
			MR	A	State	Local TPS	PCD TPS	Total TPS	PDN	Active Subscri bers	CPU %	Memory %	MPE	MRA	Network Element s		Major	Minor	Sent	Receive d
			_	erver-A) erver-B)	Active Standby	0	0	0	0	0	2	18	1 of 1	0 of 0	0 of 58	0	0	0	0	0
			МРЕ		State	TPS			PDN	Active Session	CPU %	Memory %	MRA	Data Sources		Critical	Major	Minor	Sent	Receive d
			o mpe(Se		Active Standby	0			0	0	2	12	1 of 1	1 of 1		0	0	0	0	0
											-	-								



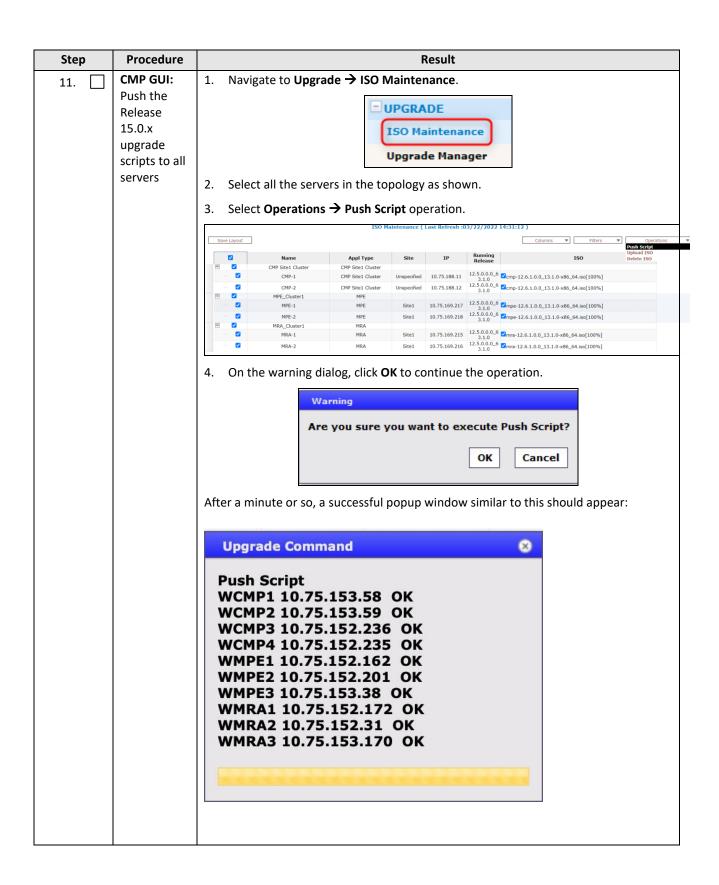




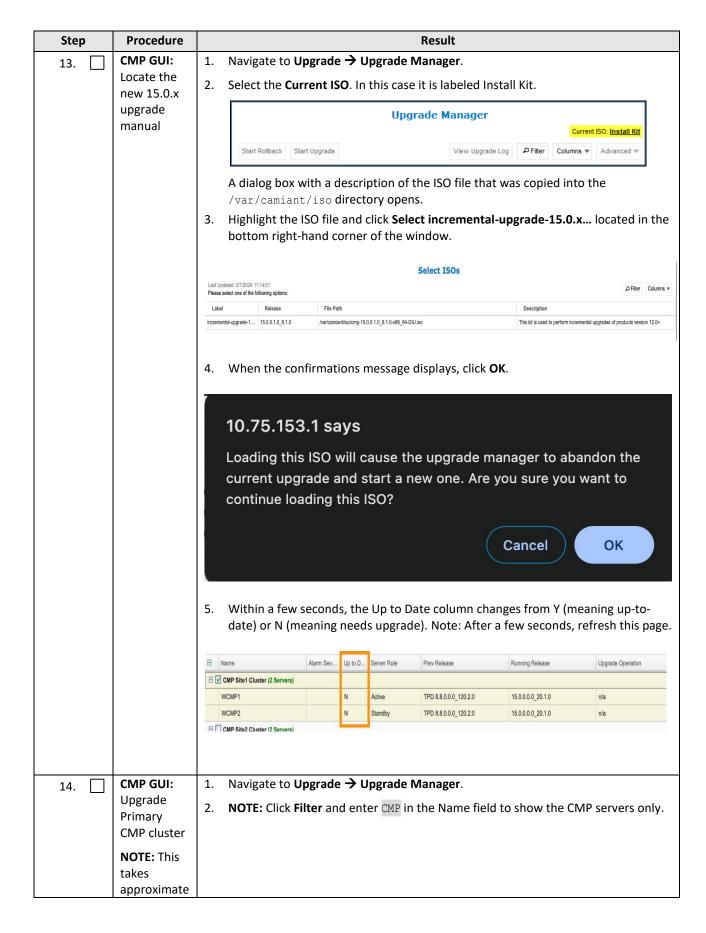


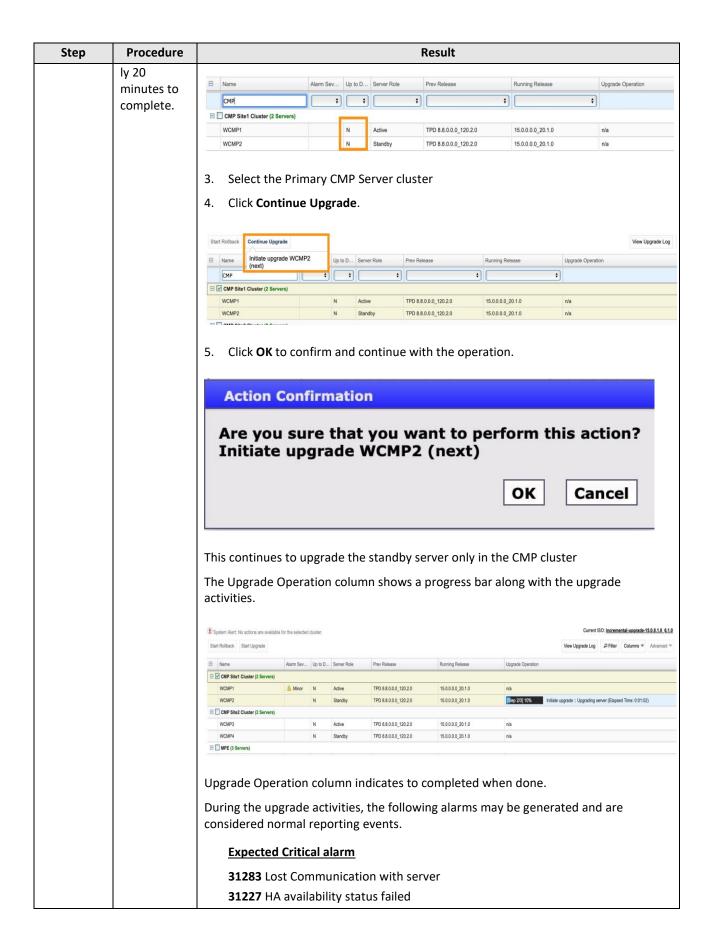
Step	Procedure	Result
9.	CMP GUI: Distribute ISO files to CMP/MPE/ MRA servers	 Navigate to Upgrade → ISO Maintenance. Filter by server type (optional, but preferred step) One application at a time, select one server type (CMP, MPE, etc.) to be upgraded.
	NOTE: This step depends on the ISO file type.	NOTE: The ISO files for each application type must be copied over to at least one server. See <u>Distribute Application DIU ISO Image Files to</u> Servers. 4. Select Operations → Upload ISO.
	Distribute ISO files accordingly.	See Larvoil Column Filter Copendant Filter Filter Copendant Filter Filte
		 Fill in the dialog with the following information: Mode: Select SCP ISO Server Hostname/IP: <ip_address_where_iso_files_are_located> User: admusr Password: <admusr_password_for_the_server></admusr_password_for_the_server></ip_address_where_iso_files_are_located>
		Source ISO file full path: /var/TKLC/upgrade/ <server_type_iso_filename> 7. Click Add. 8. When completed, the ISO column is populated with the ISO filename and a notification of [100%] 9. Repeat for all cluster types.</server_type_iso_filename>

	Procedure					F	Result		
10.	CMP GUI:	1.	Nav	igate to Upgra	ade → ISO N	/lainte	nance.		
	Verify ISO distribution to all the	2.	Veri serv		lease 15.0.x	DIU ISO) file of	the co	rrect type is shown for each
	server	3.		en completed fication of [10		umn is	populat	ed wit	th the ISO filename and a
		is n	ot be		ator. This in	dicator		-	from the local machine, there ole when transferring ISO files
		[Name	Appl Type	Site	IP	Running Release	ISO
		· 10		CMP Site1 Cluster	CMP Site1 Cluster			Keiease	
		100		WCMP1	CMP Site1 Cluster	Unspecified	10.75.153.58	15.0.0.0.0_2	cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
				WCMP2	CMP Site1 Cluster	Unspecified	10.75.153.59		cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
		(=)		CMP Site2 Cluster	CMP Site2 Cluster			0.1.0	
				WCMP3	CMP Site2 Cluster	Unspecified	10.75.152.236	15.0.0.0.0_2	©cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
					CMP Site2 Cluster				cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
		e		WCMP4 MPE		Unspecified Unspecified	10.75.152.236 10.75.152.235		cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
				WCMP4	CMP Site2 Cluster CMP Site2 Cluster			15.0.0.0.0_2 0.1.0	cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
				WCMP4 MPE	CMP Site2 Cluster CMP Site2 Cluster MPE	Unspecified	10.75.152.235	15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0	<pre>Camp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]</pre> <pre>Campe-ii-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]</pre>
				WCMP4 MPE WMPE1 WMPE2	CMP Site2 Cluster CMP Site2 Cluster MPE MPE MPE	Unspecified SITE1 SITE1	10.75.152.235 10.75.152.162 10.75.152.201	15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0	@cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-#-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-#-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
		-	0	WCMP4 MPE WMPE1	CMP Site2 Cluster CMP Site2 Cluster MPE MPE	Unspecified SITE1	10.75.152.235	15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0	<pre>Camp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]</pre> <pre>Campe-ii-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]</pre>
				WCMP4 MPE WMPE1 WMPE2 WMPE3	CMP Site2 Cluster CMP Site2 Cluster MPE MPE MPE MPE MPE	Unspecified SITE1 SITE1	10.75.152.235 10.75.152.162 10.75.152.201	15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0	@cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-ii-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-ii-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-ii-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]
				WCMP4 MPE WMPE1 WMPE2 WMPE3 MRA	CMP Site2 Cluster CMP Site2 Cluster MPE MPE MPE MPE MPE MPE MPE MRA	Unspecified SITE1 SITE1 SITE2	10.75.152.235 10.75.152.162 10.75.152.201 10.75.153.38	15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0 15.0.0.0.0_2 0.1.0	@cmp-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-#-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%] @mpe-#-15.0.0.1.0_6.1.0-x86_64-DIU.iso[100%]

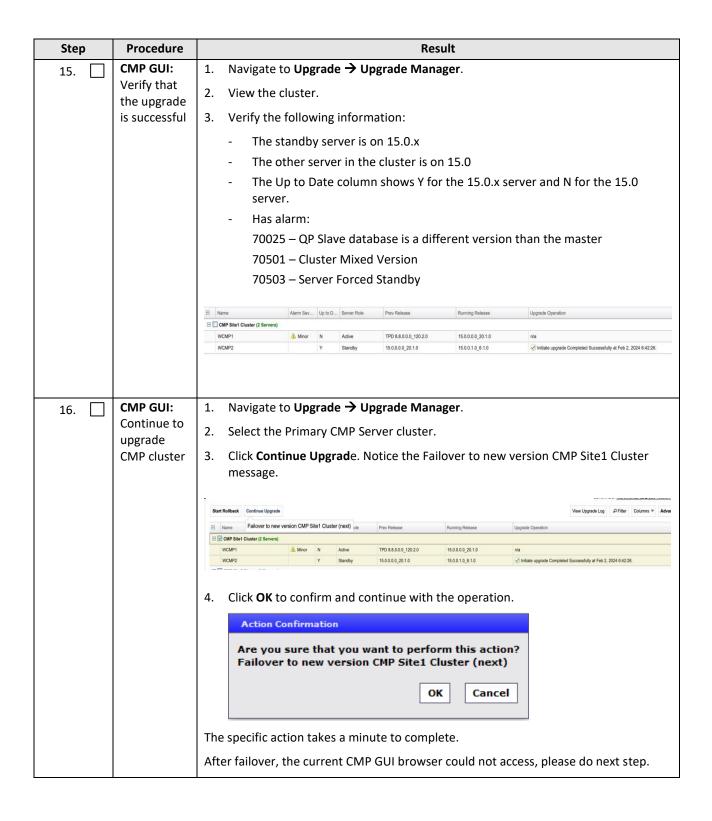


Step	Procedure		Result
12.	Active CMP: SSH to primary active CMP	1.	Logon to the primary active CMP as admusr and copy the 15.0.x DIU ISO file to the /var/camiant/iso directory:
			<pre>\$sudo cp /var/TKLC/upgrade/cmp-15.0.0.1.0_x.x.0-x86_64-DIU.iso /var/camiant/iso/</pre>
		2.	Verify the copy by using the following command:
			<pre>\$ ls /var/camiant/iso/</pre>

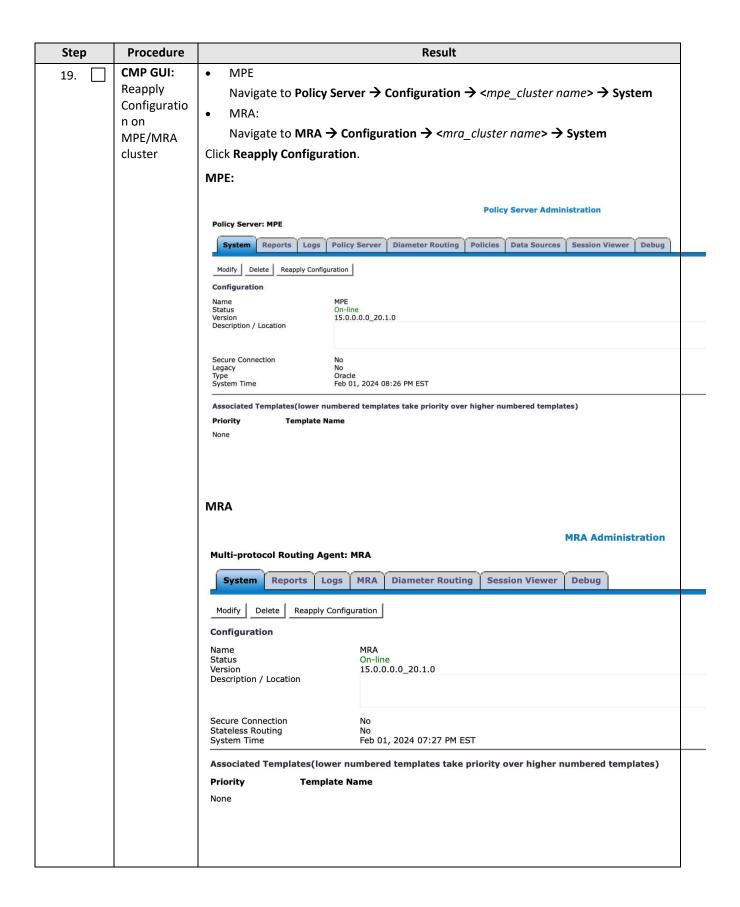


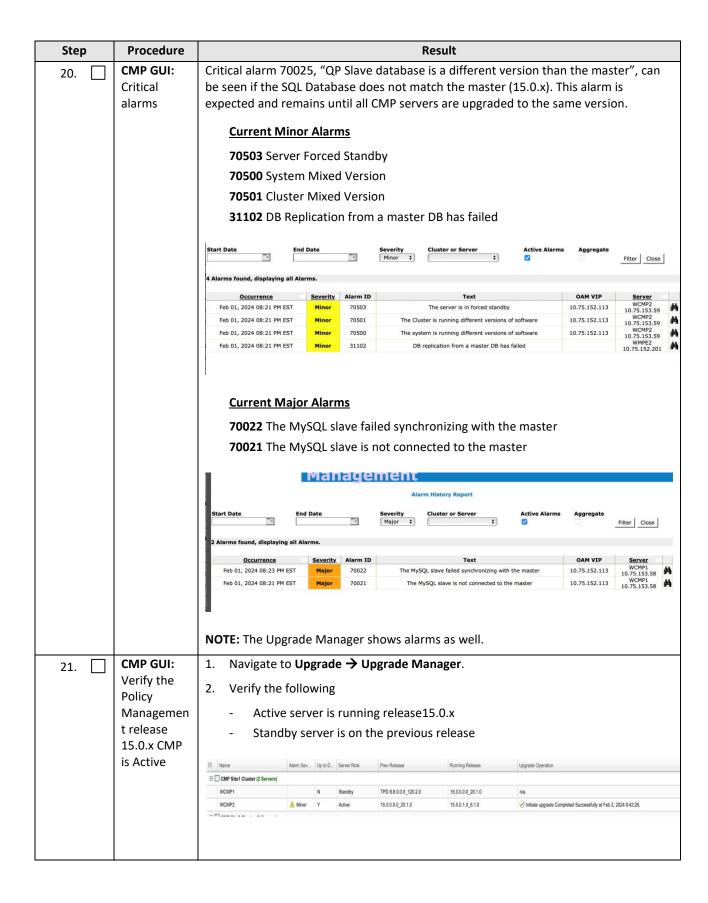


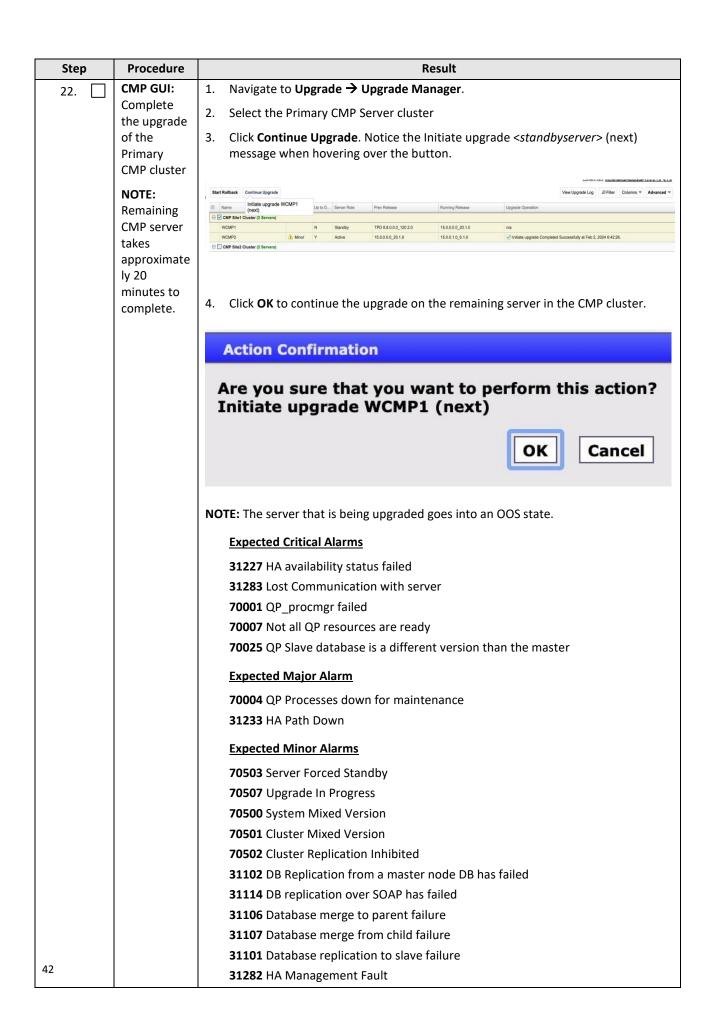
Step	Procedure	Result
		70025 QP Slave database is a different version than the master
		70001 QP_procmgr failed
		70007 Not all QP resources are ready
		Expected Major Alarm
		70004 QP Processes down for maintenance
		31233 HA Path Down
		Expected Minor Database replication Alarms
		70503 Server Forced Standby
		70507 Upgrade In Progress
		70500 System Mixed Version
		70501 Cluster Mixed Version
		70502 Cluster Replication Inhibited
		31102 DB Replication from a master node DB has failed
		31106 Database merge to parent failure
		31107 Database merge from child failure
		31101 Database replication to slave failure
		31114 DB replication over SOAP has failed
		31282 HA Management Fault
		Upgrade is complete on the standby server of the CMP cluster when the Initiate upgrade Completed successfully at message displays in the Upgrade Operation column.
		✓ Initiate upgrade Completed Successfully at Jan 29, 2024 13:04:49.
		✓ Initiate upgrade Completed Successfully at Jan 29, 2024 14:56:02.



Step	Procedure	Result
17.	CMP GUI: Login to the CMP server VIP	Close the current CMP GUI browser tab and reopen another browser tab with the same CMP VIP address. The Policy Management release CMP GUI login page opens as shown—login and password credentials are the same as the pre-upgrade.
		WELCOME Welcome to the Configuration Management Platform (CMP). Please enter your user name and password below to access the CMP desktop. If you do not have an existing user name or password, or if you have misplaced either, please contact the system administrator. - You have begad set or ever season has timed aud. Please enter your seamners and password to start a new season. USERNAME PASSIAGE Login
18.	CMP GUI: Verify new Policy Managemen t release	Navigate to Help→About . Verify the release displayed is 15.0.x. 15.0.0.1.0_6.1.0 Copyright (C) 2003, 2024 Oracle. All Rights Reserved.





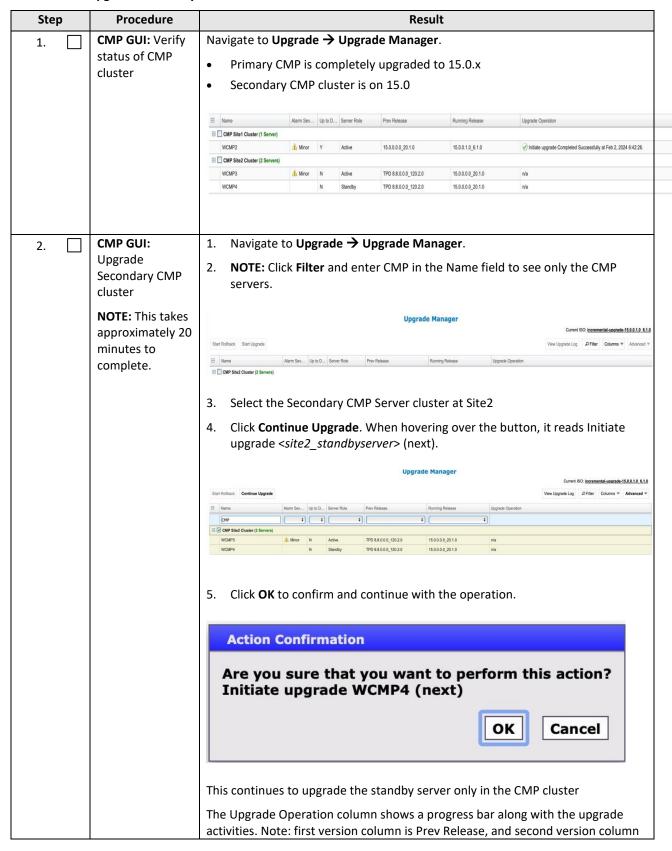


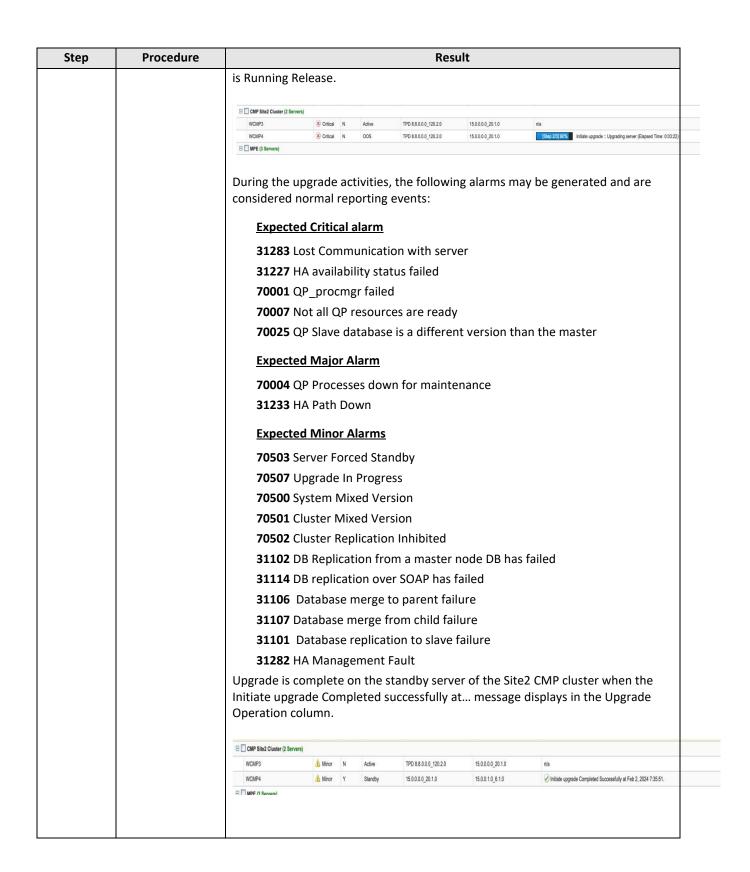
Step	Procedure	Result											
23.	CMP GUI:	Naviga	ate to Upgrade	Upgrade Ma	anager.								
	Tracking the upgrade complete	compl	The last step of the upgrade for the first CMP cluster is to wait for replication to complete.										
			the CMP cluster se erify that synchron				.og to	o open	a winc	lw wo	here you		
			Upgrade Log Cluster Name: CMP Site1 Cluster D Filter Columns **										
			Last Update: 02/02/2024 7:07:42										
			Paren Action Name	Start Time	End Time	Durat	Scope	Hostname	Result	Mode	Description		
			Preflight Check Upgrading server	02/02/2024 6:25:31	02/02/2024 6:26			WCMP2	Success	Manual	User initiated action: Automatic action initi		
			Modify the role/replication	02/02/2024 6:26:16	02/02/2024 6:35		Cluster	CMP Site1	Success	Automatic	Automatic action for		
		4	1 Wait for replication to sync	02/02/2024 6:33:02	02/02/2024 6:42			WCMP2	Success	Automatic	Automatic action wait.		
		5	0 Failover to new version	02/02/2024 6:51:05	02/02/2024 6:51	0:00:00	Cluster	CMP Site1	Success	Manual	User initiated action:		
		6	0 Preflight Check	02/02/2024 7:00:17	02/02/2024 7:01	0:00:54	Server	WCMP1	Success	Manual	User initiated action:		
	Verify the status of	WCMP2	V				610		di Initiata unerada Co	ompleted Successfully	at Jan 29, 2024 13:04:49.		
	upgraded CMP server.	VICAN-1	db Mnor Y	Active 15.0.1	0.00_20.1.0 0.00_20.1.0	15.00.10 15.00.10				ompleted Successfulty	et Jan 29, 2024 14:56:02.		
	. •	Succes		ıs shows the	following	for be	oth s	ervers i	initiate upgrade Ca		el Jan 29, 2024 14:56:02.		
	. •	Success cluste	r: 5.0.x in the Runnin	is shows the	following	for be	oth s	ervers i	initiate upgrade Ca		el Jan 29, 2024 14:56:02.		
	. •	Success cluste 1!	r: 5.0.x in the Runnin Y in the Up to Dat	is shows the g Release co e column	following	for bo	oth s	ervers i rs	n the	Primar	el Jan 29, 2024 14:56:02.		
	. •	Success cluste 1!	r: 5.0.x in the Runnin	is shows the g Release co e column	following	for bo	oth s	ervers i rs	n the	Primar	el Jan 29, 2024 14:56:02.		
25.	CMP server.	Success cluste 1! A	r: 5.0.x in the Runnin Y in the Up to Dat	is shows the g Release co e column ate for both	following	for bo	oth s	ervers i rs	n the	Primar	el Jan 29, 2024 14:56:02.		
25.	Proceed to next	Success cluste 1! A A Verify	r: 5.0.x in the Runnin Y in the Up to Dat ctive or Standby st	g Release co e column ate for both rmation:	following olumn for k	for bo	oth s	ervers i rs	n the	Primar	el Jan 29, 2024 14:56:02.		
25.	Proceed to next upgrade	Success cluste 1! A A Verify Pi	r: 5.0.x in the Runnin Y in the Up to Dat ctive or Standby st the following info	g Release co e column ate for both rmation: ning release	following olumn for k servers in	for bo	oth s	ervers i rs	n the	Primar	el Jan 29, 2024 14:56:02.		
25.	Proceed to next	Success cluste 1! A A Verify Pi Se	r: 5.0.x in the Runnin Y in the Up to Dat ctive or Standby st the following info	g Release co e column ate for both rmation: ning release release 15.0	following plumn for k servers in 15.0.x	for bo	oth s erve	ervers i rs ry CMP	n the	Primar er.	el Jan 29, 2024 14:56:02.		

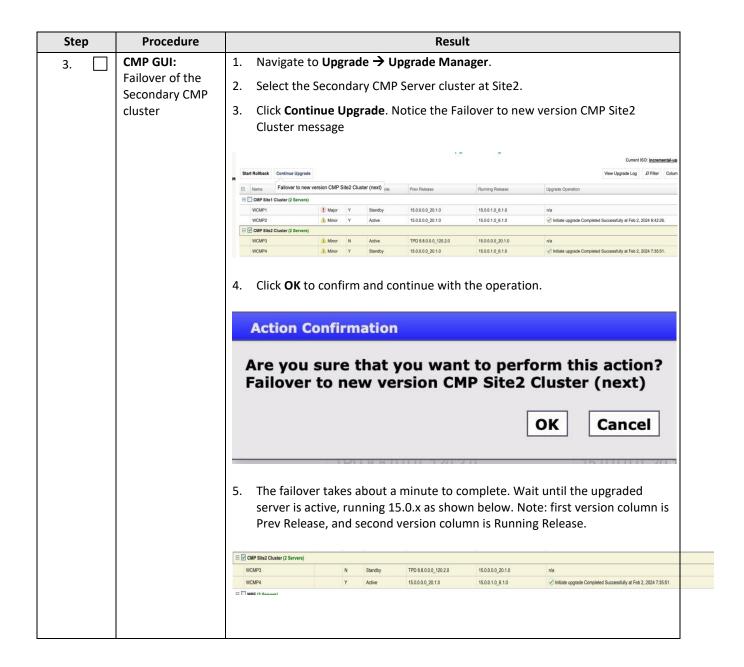
NOTE: A message "This system has been upgraded but the upgrade has not yet been accepted or rejected. Please accept or reject the upgrade soon." will be displayed after upgrade of each node in the terminal. This message is just a reminder to accept or reject the upgrade and can be ignored.

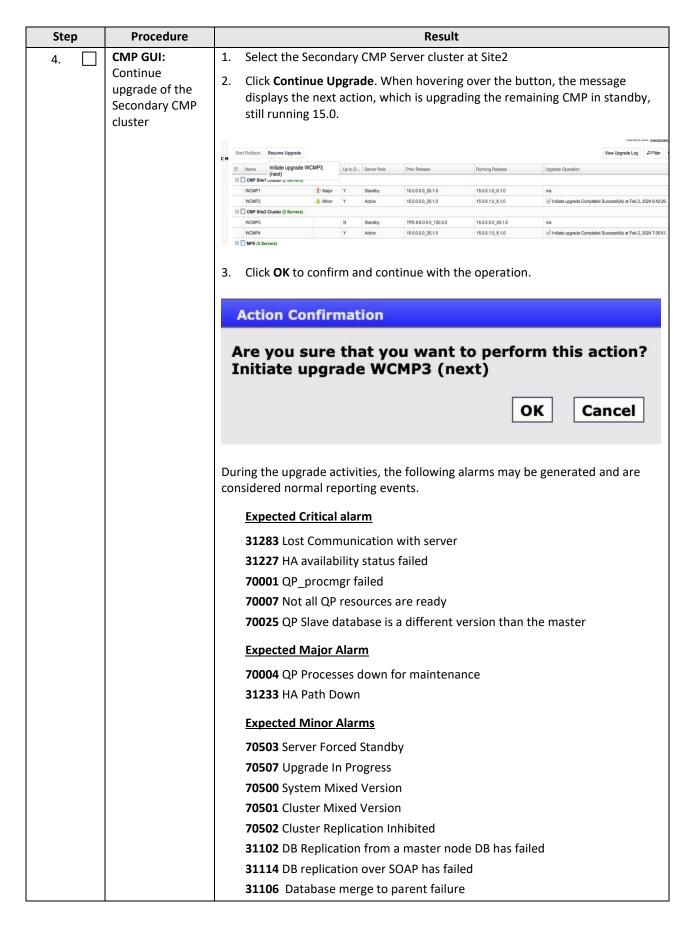
1.6 Upgrade Secondary CMP cluster

Procedure 6 Upgrade Secondary CMP cluster









Step	Procedure	Result
		31107 Database merge from child failure
		31101 Database replication to slave failure
		31282 HA Management Fault
5.	CMP GUI: Verify that the upgrade	Navigate to Upgrade → Upgrade Manager .
	completed	Successful upgrade status shows release 15.0.x in the Running Release column and the Upgrade Operation.
	successfully.	The Upgrade Operation column shows:
		Initiate Upgrade Completed Successfully at message
		The correct date and time.
		The correct date and time.
		WCMP2 V Standby 15.0.0.0.2,25.1.0 Sto.0.1.0,5.1.0 Printets upgrade Completed Successibly of Jan 29, 2004 13.0.4.49,
		E ☐ CMP Stact Chaster (5 Servers) WCMP4 Y Standay 156.000_201.0
		To Florida
6.	CMP GUI: Verify	Navigate to System Wide Reports → Alarms → Active Alarms .
	alarms	Expected Minor Alarms
		70500 System Mixed Version
	1	1
7.	Procedure is	Verify the following information:
7.	Procedure is complete.	Verify the following information: All CMP clusters upgrades are complete and running release 15.0.x
7.		All CMP clusters upgrades are complete and running release 15.0.x
7.		All CMP clusters upgrades are complete and running release 15.0.x

NOTE: A message "This system has been upgraded but the upgrade has not yet been accepted or rejected. Please accept or reject the upgrade soon." will be displayed after upgrade of each node in the terminal. This message is just a reminder to accept or reject the upgrade and can be ignored.

1.7 Upgrade NON-CMP clusters (MPE, MRA)

The following procedures upgrades a site/segment containing one or more MPE, MRA clusters.

NOTE: Different cluster types can be upgraded at the same time. For example, 2 MPEs and 2 MRAs can be upgraded in parallel.

The following steps use build 15.0 as example.

1.7.1 Upgrade Preparation

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 7: Configuration Preparation

Step	Procedure	Result
1.	CMP GUI: Access into CMP server	Use the supported browser to login as the admin user or as a user with administrative privileges.
2.	CMP GUI: Verify current Upgrade Manager status and software release 15.0.x DIU ISO files	 Navigate to Upgrade → Upgrade Manager. Verify that all CMP clusters have both Active, Standby status. Verify that all MPE and MRA clusters have an Active, Standby, and Spare server.
		 Verify that Policy Management release 15.0.x DIU ISO files are available on /var/TKLC/upgrade for all MPE, and MRA clusters. One DIU ISO per server Verify that the CMP cluster is upgraded successfully and running Policy Management release 15.0.x.
		—End of Procedure—

1.7.2 Upgrade MRA and MPE Servers

Use this procedure to upgrade one or more clusters (MPE and/or MRA).

This procedure is applicable for a 15.0 upgrade to 15.0.x

This section can be replicated for each site/segment to be upgraded, allowing you to add cluster and site specific information.

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

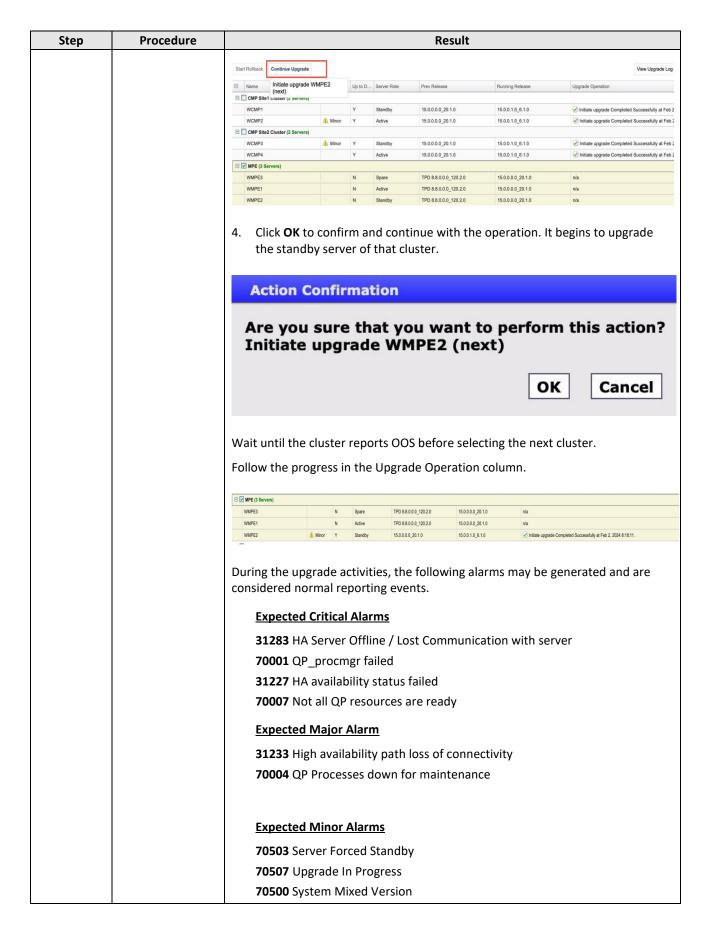
- 1. Select and start upgrade on the standby server
- 2. Failover
- 3. Re-apply configuration
- **4.** Continue to upgrade the spare server
- 5. Continue upgrade on remaining server
- 6. (MPE only) Re-apply configuration one MPE cluster at a time

NOTES:

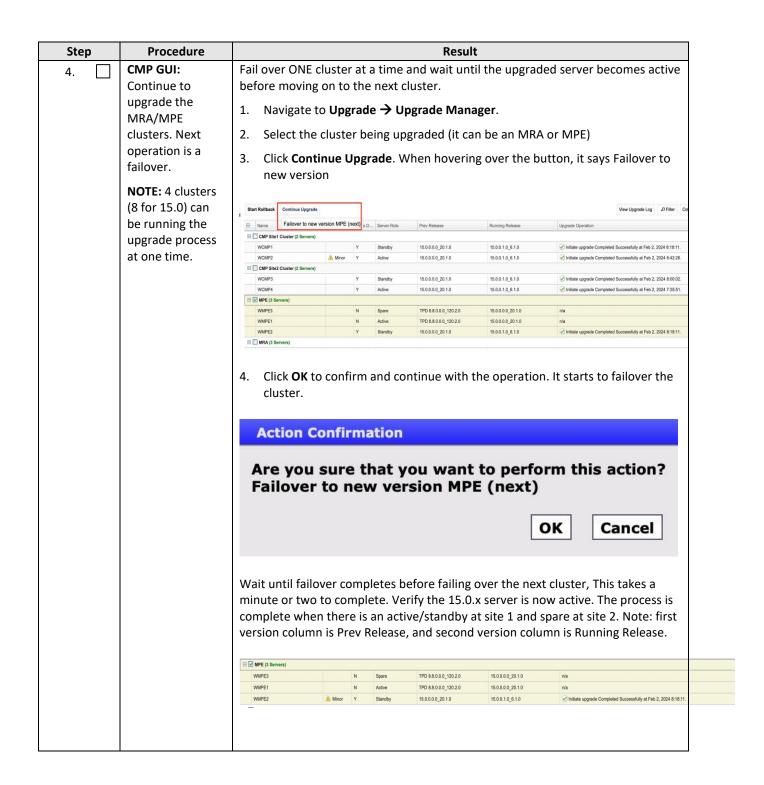
- All CMP clusters must be upgraded to Policy Management release 15.0.x prior to performing the following procedures.
- Four (4) clusters (8 for 15.0) can be running the upgrade at one time.
- Only ONE cluster can be selected for upgrade activity, bulk selection of servers is not supported in release 15.0.x.

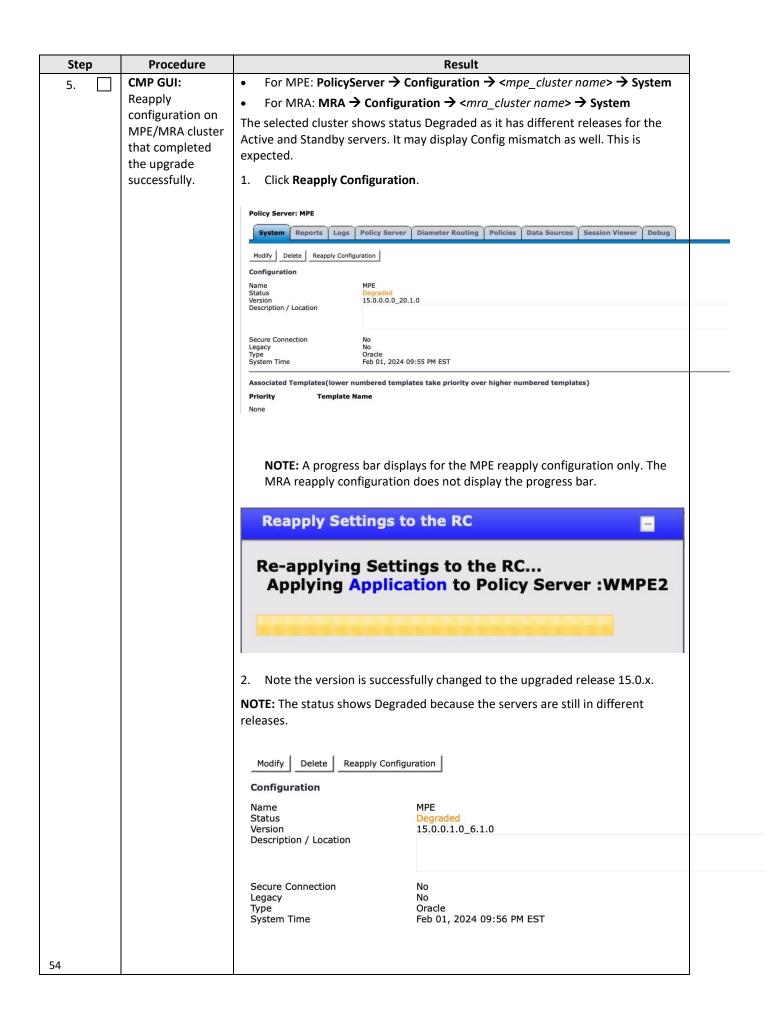
Procedure 8: Upgrade MRA and MPE Servers

Step	Procedure	Result
2	CMP GUI: Health checks on the MPE/MRA servers to be upgraded CMP GUI: Verify upgrade status of selected MPE/MRA site/segment	Perform the following: 1. Check for current active alarms 2. Reset MPE/MRA counters to make a baseline - For the MPE: Policy Server → Configuration → <server_name> → Reports → Reset Counters - For the MRA: MRA → Configuration → <server_name> → Reports → Reset Counters 3. Go to the KPI Dashboard and capture a screenshot. 4. System Wide Reports → KPI Dashboard 1. Navigate to Upgrade → Upgrade Manager. 2. Verify information for the MRA/MPE servers: - Current release 15.0 installed - Active/Standby/Spare status - DIU ISO version to be deployed is 15.0.x (verify the current DIU ISO files are 15.0.x by going to Upgrade → ISO Maintenance) Note: first version column is Prev Release, and second version column is Running Release. MPE</server_name></server_name>
3.	CMP GUI: Upgrade clusters NOTE: The upgrade of a single server takes approximately 20 minutes to complete.	 NOTE: Start the upgrade on ONE cluster. Wait until the cluster shows OOS, and then continue with the next cluster and so on. Up to 16 clusters may be running upgrade at any time. 1. Navigate to Upgrade → Upgrade Manager. 2. Select the cluster to be upgraded, it can be an MRA or MPE 3. Click Continue Upgrade.

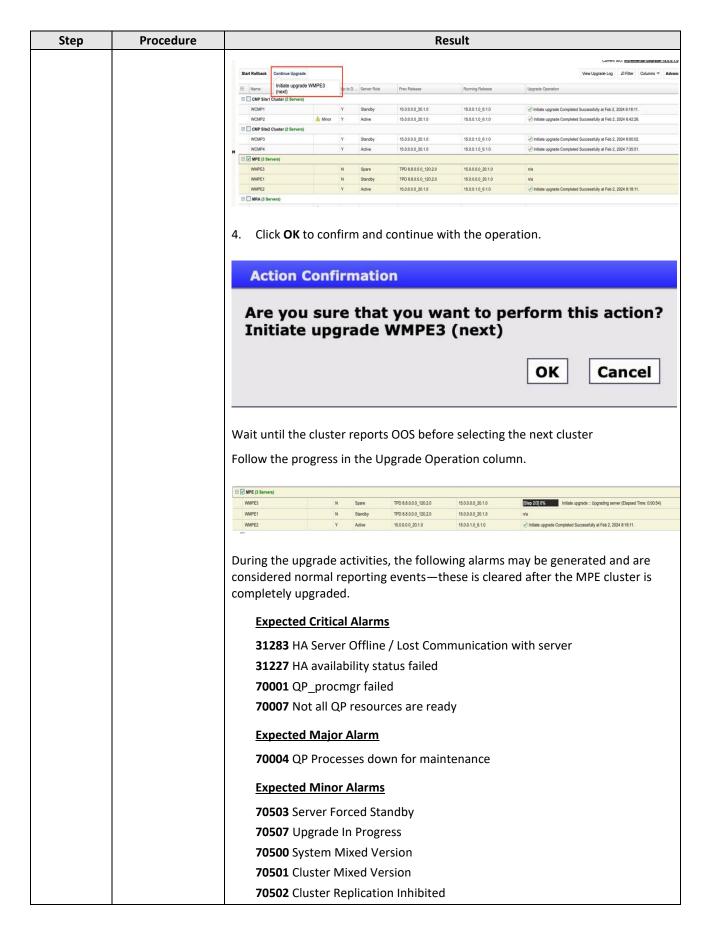


	70501 C	luster N	/liv/	ad Marc				
		iustei it	/IIX	eu vers	ion			
	70502 C	luster R	epl	ication	Inhibited			
	31102 D	B Repli	cati	on fror	m a master n	ode DB has t	failed	
	31114 DB replication over SOAP has failed							
	31106 Database merge to parent failure							
	31107 D	atabase	e m	erge fr	om child failu	ire		
	31101 D	atabase	e re	plication	on to slave fa	ilure		
	31282 H	A Mana	ige	ment F	ault			
	78001 R	sync Fa	iled	l				
	■ ✓ MPE (3 Servers) WMPE3		N	Spare	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	nia	
	WMPE1 WMPE2	⚠ Minor	N	Active	TPD 8.8.0.0.0_120.2.0 15.0.0.0.0_20.1.0	15.0.0.0.0_20.1.0 15.0.0.1.0_6.1.0	n/a Nitiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.	
	During the upgrade activities, the following alarms may be generated and are considered normal reporting events. Alarm 31224—HA configuration error (major) is raised noting that there is a configuration error. This clears a few minutes after the upgrade completes on the first server. The following minor alarms may be present:					noting that there is a upgrade completes on		
	<u>Expecte</u>	d Mino	r Al	arms				
	78001 R	sync Fa	iled	l				
	70500 S	-			sion			
	70501 C							

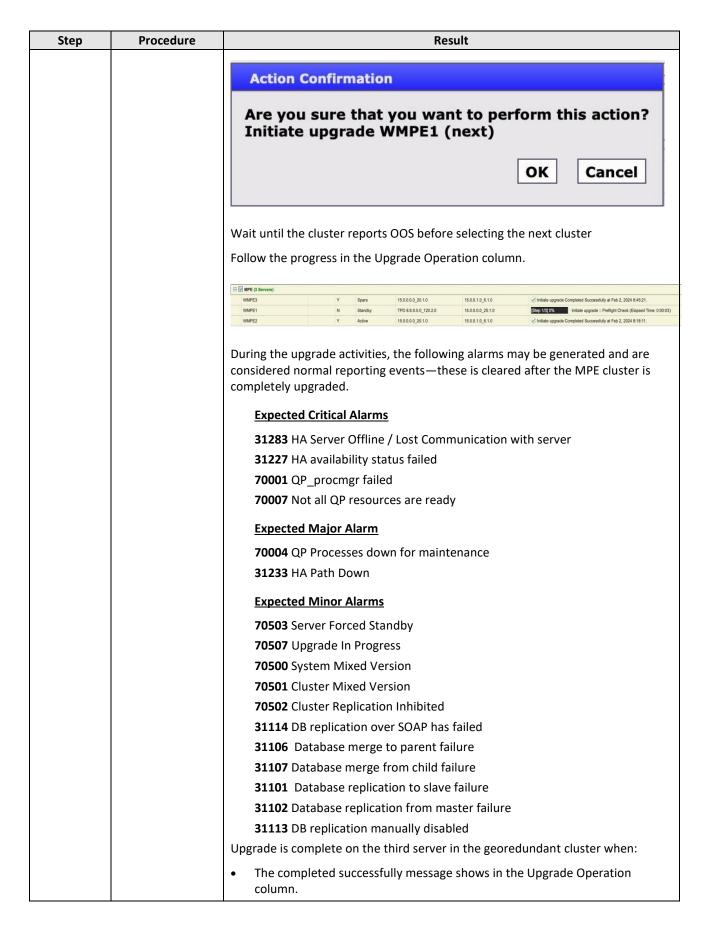




Step	Procedure	Result
6.	Procedure CMP GUI: Current alarms	Result During the upgrade activities, the following alarms may be generated and are considered normal reporting events. Expected Critical alarm None Expected Major Alarm 78001 Rsync Failed Expected Minor Alarms 70503 Server Forced Standby 70502 Cluster Replication Inhibited 70500 System Mixed Version 70501 Cluster Mixed Version 71402 Connectivity Lost 31101 Database replication to slave failure
7.	CMP GUI: Verify traffic becomes active within 90 seconds	 Navigate to Upgrade Manager → System Maintenance. If traffic is active, go to step 9. If traffic does not become active within 90 seconds: Select the Partially upgraded cluster, and select Operations → Rollback. The pre-15.0 MPE server should become active and resume handling traffic.
8.	CMP GUI: Reapply configuration	 For MPE: Policy Server → Configuration → <mpe_cluster name=""> → System</mpe_cluster> For MRA: MRA → Configuration → <mra_cluster name=""> → System</mra_cluster> Click Reapply Configuration Verify that the version is changed back to 15.0, and the action report success. If NOT, stop and contact Oracle support to back out of the partially upgraded cluster.
9.	CMP GUI: Continue upgrade of the MRA/MPE clusters. Next operation is initiate upgrade on the Spare server	Continue the upgrade on ONE cluster, when the server goes into OOS, continue with the next cluster and so on. NOTE: Up to 16 clusters can be running the upgrade process at one time. 1. Navigate to Upgrade → Upgrade Manager. 2. Select the checkbox for a cluster. - Select one cluster at a time - Can be an either an MRA or MPE cluster 3. Click Continue Upgrade. When hovering over the button, it reads Initiate upgrade on the spare server

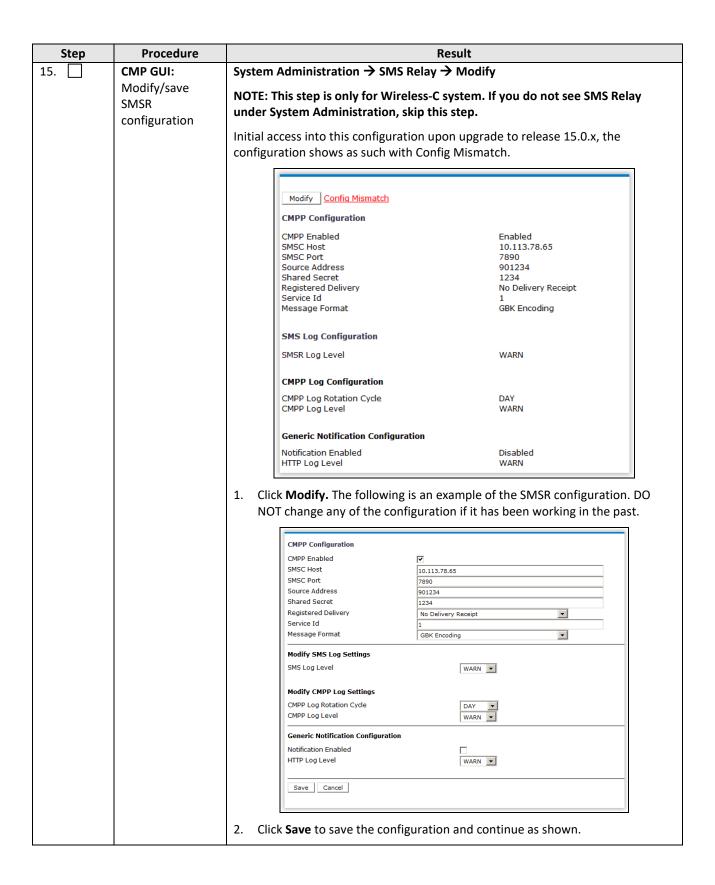


		• Th	e Initiat ograde C cond ve	e upg Operat	rade tion	e Comp columi	leted succes	ssfully mes version colu	undant cluster when: sage shows in the umn is Prev Release, a	ind
		WMPE3 WMPE1	vers)	A Minor						
				and and	Y N Y	Spare Standby Active	15.0.0.0_20.1.0 TPD 8.8.0.0_120.2.0 15.0.0.0_20.1.0	15.0.0.1.0_6.1.0 15.0.0.0_20.1.0 15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2 r/a Initiate upgrade Completed Successfully at Feb 2, 2 Initiate upgrade Completed Successfully at Feb 2, 2	
		• Th The Ac the pre	e Up to tive and	Date Spare elease	colu e se e. No	imn sho rvers a ote: firs	t version col). e 15.0.x and	the current Standby is Release, and second	s on
10.	CMP GUI: Continue to upgrade the MRA/MPE clusters. Next operation is Initiate upgrade on the standby server	with the one tin 1. Na 2. Se 3. Cli	ne next one. avigate the Select Can b ck Cont	check tone (e an e	grad kbox clus eithe Upgr	d so on e → U for a c ter at a er an M rade. W	Ograde Mana luster: time RA or MPE of	usters may bager. cluster ng over the b	goes into OOS, conting the upgrade outton, the message ograde of the standby	le at
		Start Rollback	Continue Upgrade						View Upgrade Log	₽ Filter Colu
		□ Name □ CMP Site	Initiate upgrade (next)	**WFE1	Up to D.	Server Role	Prev Release	Running Release	Upgrade Operation	
		WCMP1		A Minor	Y	Standby	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Ø Initiate upgrade Completed Successfully at Feb 2, Ø Initiate upgrade Completed Successfully at Feb 2,	
		The second of	2 Cluster (2 Servers)	as Minor	1.6	PERIO	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Triminate upgrave completed Successitury at Feb 2,	AUEN U.NE.ED.
		WCMP3 WCMP4			Y	Standby	15.0.0.020.1.0 15.0.0.0.0 20.1.0	15.0.0.1.0_6.1.0 15.0.0.1.0 6.1.0		
		WCMP4 ☐ ☑ MPE (3 Se	ervers)		1	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Feb 2,	zu24 /:a0:01.
		WMPE3		A Minor		Spare	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2,	2024 8:45:21.
		WMPE1 WMPE2			N Y	Standby	TPD 8.8.0.0.0_120.2.0 15.0.0.0.0_20.1.0	15.0.0.0.0_20.1.0 15.0.0.1.0_6.1.0	n/a Initiate upgrade Completed Successfully at Feb 2,	2024 8:18:11.
		☐ MRA (3 Se	ervers)							
		WMRA1		A Minor	N	Active	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	nia	
		WMRA3			N	Spare	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	n/a	



Step	Procedure	Result							
		The server goes back to the Standby state.							
		The Up to Date column shows a Y (YES). Note: first version column is Prev							
		Release, and second version column is Running Release.							
		□ ☑ MME () Services)							
		WMPE3 Y Spare 15.00.0.0_20.1.0 15.00.1.0_6.1.0 ☑ Initiate upgrade Completed Successfully at Feb. 1, 2024 1333.00. WMPE1 N Standby 15.00.1.0_6.1.0 15.00.0.0_20.1.0 ☑ Initiate baseload Completed Successfully at Feb. 1, 2024 1505.02.1.							
		WMPE2 Y Active 15.0.0.0.2,20.1.0 15.0.0.1.0,6.1.0 ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 17.00x43.							
		All servers are now running release 15.0.x.							
11.	Exchange SSH	1. Enter the following command: \$ sudo qpSSHKeyProv.plprov							
	Keys	You are prompted: The password of admusr in topology							
		Note : The above command to exchange SSH keys needs to be run on the active CMP only.							
		2. Enter the admusr password (admusr_password). The procedure exchanges							
		keys with the rest of the servers in the Policy Management topology. If the key exchange is successful, the procedure displays the message "SSH keys							
		are OK."							
12.	CMP GUI: Reapply	 Navigate to Policy Server → Configuration → <mpe_cluster name=""> →</mpe_cluster> System 							
	configuration on the fully	2. Click Reapply Configuration.							
	upgraded MPE clusters.	NOTE: A progress bar displays for the MPE reapply configuration.							
		Reapply Settings to the RC							
		Re-applying Settings to the RC Applying Application to Policy Server :WMPE2							
13.	Repeat steps 1 through 14 for the next MPE or MRA clusters	Proceed with next cluster(s)							

Step	Procedure					Result			
14.	Upgrade	At this point all servers have been upgraded.							
	Completed	Start Rollback Start Upgrade			Current ISO: <u>incremental usegnade-15.0.6.1.0_5.1.0</u> View Upgrade Log				
		□ Name	Alarm Sev Up to	D Server Role	Prev Release	Running Release	Upgrade Operation		
		☐ CMP Site1 Cluster (2 Servers)							
		WCMP2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 13:04:49.		
		WCMP1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 14:56:02.		
		☐ CMP Site2 Cluster (2 Servers)							
		WCMP4	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 15:15:22.		
		WCMP3	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 16:01:33.		
		☐ MPE (3 Servers)							
		WMPE1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:51:03.		
		WMPE2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:00:43.		
		WMPE3	Y	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:30:53.		
		☐ MRA (3 Servers)							
		WMRA2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:04:22.		
		WMRA3	Y	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:32:12.		
		WMRA1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:51:03.		
		WMRA1	Y	Standby	15.0.0.0_20.1.0	1500.10_51.0			



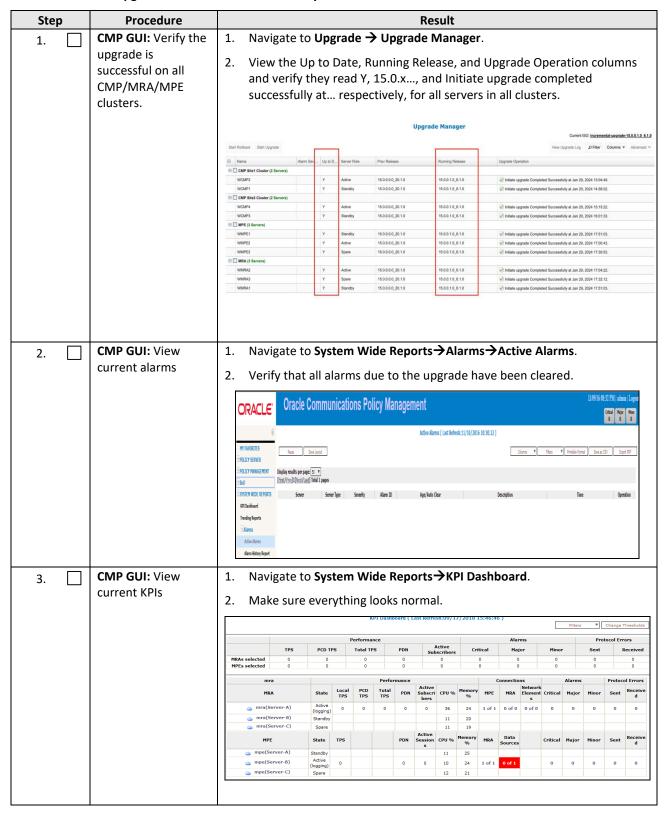
Step	Procedure	Result
		Modify SMD Confirm No.
		CMPP Configuration CMPP Enabled Enabled SMSC Host 10.113.78.65 SMSC Port 7890 Source Address 901234 Shared Secret 1234 Registered Delivery No Delivery Receipt Service Id 1 Message Format GBK Encoding
		SMS Log Configuration SMSR Log Level WARN
		CMPP Log Configuration
		CMPP Log Rotation Cycle DAY CMPP Log Level WARN
		Generic Notification Configuration
		Notification Enabled HTTP Log Level WARN
		NOTE: The Config Mismatch message is not there with the saved configuration.
		—End of Procedure—

NOTE: A message "This system has been upgraded but the upgrade has not yet been accepted or rejected. Please accept or reject the upgrade soon." will be displayed after upgrade of each node in the terminal. This message is just a reminder to accept or reject the upgrade and can be ignored.

1.8 Post Upgrade health Check for wireless systems

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

Procedure 9 Post Upgrade health Check for wireless systems



Step	Procedure	Result						
4.	CMP GUI: Replication stats	Navigate to System Wide Reports → Others → MPE/MRA Rep Stats (for a wireless system)						
		Wireless:						
		MPE/MRARep Stats (Last Refresh:09/17/2018 15:47:38)						
		Pause Save Layout Columns ▼ Filters ▼ Printable Format Save as CSV Export PDF						
		Display results per page: 50 v [First/Prev]1[Next/Last] Total 1 pages						
		Cluster Name	Server Type	Cluster State	Blade State	Sync State	Replication Delta(Min:Sec)	
		⊟ mpe	MPE				0:0.5	
		MPE175-47 (Active) ->MPE175-37 (Standby)	MPE		Ø ok	Ø ok	0:0.495	
		MPE175-47 (Active) ->MPE175-57 (Spare)	MPE				0:0.5	
		□ mra	MRA				0:0.503	
		MRA175-38 (Active) ->MRA175-48 (Standby)	MRA			Ø ok	0:0.497	
		MRA175-38 (Active) ->MRA175-58 (Spare)	MRA			Ø ok	0:0.501	
		—End of Procedure	_					

1.9 Backout (ROLLBACK) 15.0 wireless mode

Use this procedure if an issue is found during the upgrade, as well as post-upgrade which impacts network performance.

The Policy Management system is backed out to the previous release.

Oracle strongly recommends consulting My Oracle Support before initiating the backout procedure. They determine the appropriate course of recovery options.

1.9.1 Backout Sequence

The backout sequence order is the reverse of the upgrade order. The following is the overall backout sequence:

- 1. Back out the non-CMP clusters (from both Site1 and Site2, if applicable)
- 2. Back out the Secondary CMP cluster (if applicable)
- 3. Back out the Primary CMP cluster

During a backout, it is important to control what version of the software is currently active. This control must be maintained even if there are unexpected failures.

NOTE: In the case of a non-CMP clusters, the upgrade/backout is NOT complete until the operator performs a Reapply Configuration from the CMP. The MRA/MPE can still operate, but may not be fully functional.

1.9.2 Pre-requisites

No new policies or features have been configured or run on the upgraded release.

The CMP cluster cannot backout if other non-CMP Policy Management servers are still on the upgraded release.

1.9.3 Backout of Fully Upgraded Cluster

Prior to performing this procedure, Oracle recommends consulting My Oracle Support to discuss the next appropriate course of actions.

Use this to backout a cluster that has been fully upgraded. At the end of this procedure, all servers of the target cluster is on a pre-15.0.x release with Active, Standby, or Spare status.

Expected pre-conditions:

- 1. Primary Active CMP is on Release 15.0.x
- 2. Secondary CMP cluster is on Release 15.0.x
- 3. All MPE/MRA Clusters are on Release 15.0.x

1.10.3.1 Backout Sequence

This procedure applies to a cluster. The non-CMP cluster types (MRA, MPE) is in georedundant mode with active, standby, and spare servers. CMP clusters may be in Site1 or Site2. Each server backout will take about 20 minutes.

NOTE: It is possible, and desirable, to backout multiple clusters in parallel. However, in order to do this, each cluster must start the backout procedure one at a time, staggering by about 1 minute each.

Overview on Backout/Rollback MRA/MPE cluster

The following sequence preserves the cluster as a georedundant MRA/MPE cluster.

- **1.** Back out of the standby server.
- 2. Back out of the spare server.
- 3. Fail over.
- 4. Reapply the configuration.
- **5.** Back out of the new standby server.

Backout Secondary CMP (if applicable)

NOTE: At this time, all MPEs and MRAs must be backed out to the previous release.

Use the CMP GUI (Upgrade Manager) to backout the Secondary CMP cluster

Backout Primary CMP

NOTE: At this time, all of the MPE/MRA clusters must be backed out, the Secondary CMP must also be backed out.

- 1. Back out of the Primary standby CMP cluster.
- 2. Failover to older version CMP cluster.
- 3. Log back into the Primary CMP VIP.
- **4.** If needed, go to **Policy Server** → **Configuration** → **Policy Server** and click **Reapply Configuration**.
- **5.** Wait for 10-15 minutes before the rollback of secondary CMP (in Primary Site) to allow secondary site CMP nodes to sync with the new MySQL master.
- 6. Back out of the new standby server.

1.10.3.2 Back-out Partially Upgraded MPE/MRA Cluster

Use this procedure to back-out a partially upgraded MPE/MRA Cluster.

Expected Pre-conditions:

- 1. Primary Active CMP is on Release 15.0.x
- 2. Cluster is any of MPE or MRA
- 3. One server of target cluster is on Release 15.0.x
- 4. Other servers of target cluster are on Release 15.0

NOTES:

This procedure must be performed within a maintenance window.

- This procedure takes approximately 15 minutes per blade.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

Procedure 10: Back-out Partially Upgraded MPE/MRA Cluster

Step	Procedure	Details							
1.	CMP GUI: Verify the	Navigate to Upgrade → Upgrade Manager .							
	status of affected Clusters	Confirm status of the cluster to be backed out:							
		•	Primary A	ctive (CMP is	on Release	15.0.x		
			Target Clu 15.0.x	uster h	as 2 se	rvers on Re	elease 15.0	, and 1 server on Release	
		• .	Active ser	ver is	on 15.0)			
2.	MPE/MRA SSH: Verify	1.	Using SSH	I, log ir	nto the	Standby so	erver to be	backed out as admusr.	
	/var/log/messages file		\$ ls -lh /var/log/messages						
	size						/log/messa he next ste	ages is above 20M, run the	
			\$ sudo c /var/cam	-	_	_	eBack-out	;	
			\$ sudo c	at /de	ev/nul	l > /var/	'log/messa	iges	
							file pric	or to back-out. Copy is -out"	
		3.	Verify:						
			\$ ls -lh	/var	/log/m	essages			
3.	CMP GUI: Verify the status of affected Clusters		Navigate '	to Upg	rade –	Upgrade	Manager.		
		2. Select the partially upgraded cluster to back-out.							
	NOTE: This takes approximately 15 minutes	3.	Select the	cluste	er (one	cluster at	a time) (car	n be an MRA or MPE)	
	to complete.		Click Start server to				ng over the	e button, it indicates the	
								Current ISO. Incremental-urgress-13.4.4.1.5	
		Start Rol		Up ti	o D Server Role	Prov Rolease	Running Release	View Upgrade Log □ □ Filter Columns ▼ Advant Upgrade Operation	
			P Site1 Cluster (2 Servers)	Y	Standby	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.	
		wer		₫ Minor Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Ø Initiate upgrade Completed Successfully at Feb 2, 2024 6:42:26.	
		wor	MP3	Y	Standby	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2024 8:00:02.	
		M WCI	MP4 E (3 Servers)	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0		
		WM	PE3	N	Spare	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	n/a	
		WM		N Y	Standby	TPD 8.8.0.0.0_120.2.0 15.0.0.0.0_20.1.0	15.0.0.0.0_20.1.0 15.0.0.1.0_6.1.0	n/a initiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.	
			IA (3 Servers)						
L	1	<u> </u>							

Step	Procedure				De	tails	LUDE N. I BURNEVIN LUDGE, N. II.
		Continue Rollback Resume Upgrade					View Upgrade Log
		Initiate backout WMPE3 (back)	Alarm Severity U	p to D Server Role	Prev Release	Running Release	Upgrade Operation
		☐ CMP Site1 Cluster (2 Servers) WCMP1	1	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.
		WCMP2	⚠ Minor		15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	
		☐ CMP Site2 Cluster (2 Servers) WCMP3	١	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Feb 2, 2024 8:00:02.
		WCMP4 WCMP4 WMPE (3 Servers)	١	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	⊘ Initiate upgrade Completed Successfully at Feb 2, 2024 7:35:51.
		WMPE3	h	Spare	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	nta
		WMPE1 WMPE2		Standby	TPD 8.8.0.0.0_120.2.0 15.0.0.0.0_20.1.0	15.0.0.0.0_20.1.0 15.0.0.1.0_6.1.0	n/a // Initiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.
		⊞ MRA (3 Servers)					The control of the co
		out. Follow the property of the baconsidered no cluster is come cluster in cluster in cluster is come cluster in cluster i	ogress ick-out ormal ipletel ic eqp_ ie high ot all C gnaling gh ava i Majo ie QP p gh ava gh ava i Mino ie serv i upgra ie Clus is replic is replic	status t activiti reportir y backe al Alarr procmg availab R resou g bonde iilability r Alarm process iilability ir Alarm er is in ade/bac ter is ru cation to	in the Upgries, the follong events. To dout. Institute of the follong events. To dout. Institute of the follong events of the following events	ade Opera bwing alar hese alarr as failed is failed di ady is down ffline en brought down of connecti dby n on a serv rent versic 3 has failed er DB has	ms may be generated and are ns are cleared after the ue to raised alarms down for maintenance vivity er is in progress ons of software defailed
				_	, ,	•	oy a s/w fault ved a message
			_	•			as not received a heartbeat
					n a child So of configura		e has failed via SOAP has failed
			-		atency has		
					cy jar files f		53110140
							sions of software
			-		ion Inhibite		
				-			d by a s/w fault
		21100 111	ום טם ו	chiicati	on brocess	is iiiipaiie	u by a 3/ w lault

out Completed Successfully) ② Initiate backout Completed Successfully at Feb 1, 2024 12:53:00. 4. □ MPE/MRA SSH: Verify syscheck and /tmp directory permission 1. Login to back-out server and verify that there are not anyt any failures in syscheck: ⑤ sudo syscheck [root@MPE175-37 admusr] # syscheck Running modules in class disk ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	Step	Procedure	Details
### Initiate backout Completed Successfully at Feb 1, 2024 12:53:00. #### Initiate backout Completed Successfully at Feb 1, 2024 12:53:00. ##################################			Back-out of the server is complete when the following message (Initiate Back-
### At It			out Completed Successfully)
### At It			
syscheck and /tmp directory permission Solido syscheck			Initiate backout Completed Successfully at Feb 1, 2024 12:53:00.
syscheck and /tmp directory permission Solido syscheck			
syscheck and /tmp directory permission Solido syscheck			
S sudo syscheck	4.		
[root@MPE178-37 admusr]			
Running modules in class disk OK Running modules in class net OK Running modules in class proc OK Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MPE175-37 admusr] # 2. Verify/tmp directory permissions: \$ ls -1 / 3. NOTE: Permissions should be the following, dwwxwxwwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ ls -1 / 6. Perform syscheck again: \$ sudo syscheck			
Running modules in class hardware OK Running modules in class proc OK Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MFE175-37 admusr] #			
Running modules in class net OK Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MPE175-37 admusr]# 2. Verify /tmp directory permissions: \$ ls -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ ls -1 / 6. Perform syscheck again: \$ sudo syscheck			
Running modules in class net OK Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MPE175-37 admusr]# 2. Verify /tmp directory permissions: \$ ls -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ ls -1 / 6. Perform syscheck again: \$ sudo syscheck			Punning modules in class hardware
Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MFE175-37 admusr] # 2. Verify /tmp directory permissions: \$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			
Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MFE175-37 admusr] # 2. Verify /tmp directory permissions: \$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			
Running modules in class proc OK Running modules in class system OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MPE175-37 admusr]# 2. Verify/tmp directory permissions: \$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			
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LOG LOCATION: /var/TKLC/log/syscheck/fail_log [root@MPE175-37 admusr]# 2. Verify /tmp directory permissions: \$ ls -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ ls -1 / 6. Perform syscheck again: \$ sudo syscheck			Running modules in class system
<pre>Iroot@MPE175-37 admusr]# 2. Verify /tmp directory permissions: \$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck</pre>			OK
<pre>Iroot@MPE175-37 admusr]# 2. Verify /tmp directory permissions: \$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck</pre>			LOG LOCATION: /var/TKLC/log/syscheck/fail log
\$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			[root@MPE175-37 admusr]#
\$ 1s -1 / 3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			2 Verify / directory permissions
3. NOTE: Permissions should be the following, drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			
drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			
 4. If the permissions are not as listed above then perform the following; otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck 			
<pre>otherwise skip to next step: \$ sudo chmod 777 /tmp \$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ ls -l / 6. Perform syscheck again: \$ sudo syscheck</pre>			
<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp \$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck</pre>			,
\$ sudo chmod +t /tmp 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			\$ sudo chmod 777 /tmp
 5. Verify: \$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck 			<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>
\$ 1s -1 / 6. Perform syscheck again: \$ sudo syscheck			\$ sudo chmod +t /tmp
6. Perform syscheck again: \$ sudo syscheck			5. Verify:
\$ sudo syscheck			\$ ls -1 /
			6. Perform syscheck again:
Find of Dress days			\$ sudo syscheck
—Ena of Procedure—			—End of Procedure—

1.10.3.3 Back-out Fully Upgraded MPE/MRA Cluster

Use this procedure to back-out fully upgraded MPE/MRA Clusters.

Prior to performing this procedure, Oracle recommends consulting the Technical Services team to discuss the next appropriate course of actions.

This procedure is used to back-out a cluster that has been fully upgraded. At the end of this procedure, all servers of the target cluster is on Release 15.0 (MRA, MPE, CMP) with Active, Standby status.

Expected pre-conditions:

- 1. Primary Active CMP is on Release 15.0.x
- 2. Cluster is of MPE or MRA
- **3.** Servers of target cluster are on Release 15.0.x in either in Active, Standby, Force Standby or Spare role

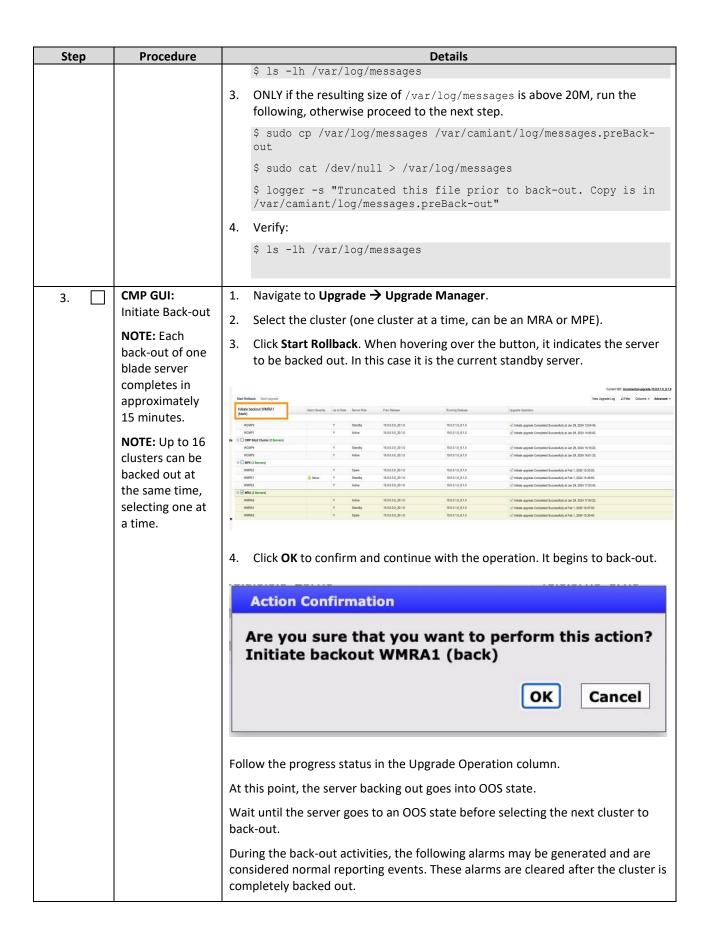
NOTES:

- This procedure must be performed within a maintenance window.
- This procedure takes approximately 45-60 minutes per MPE or MRA cluster.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

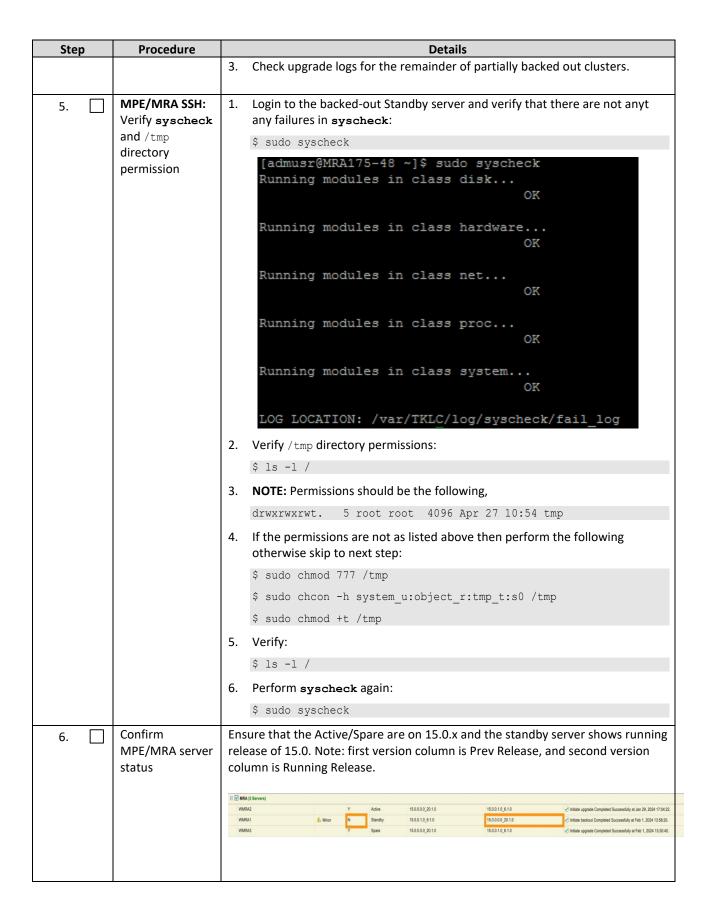
Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

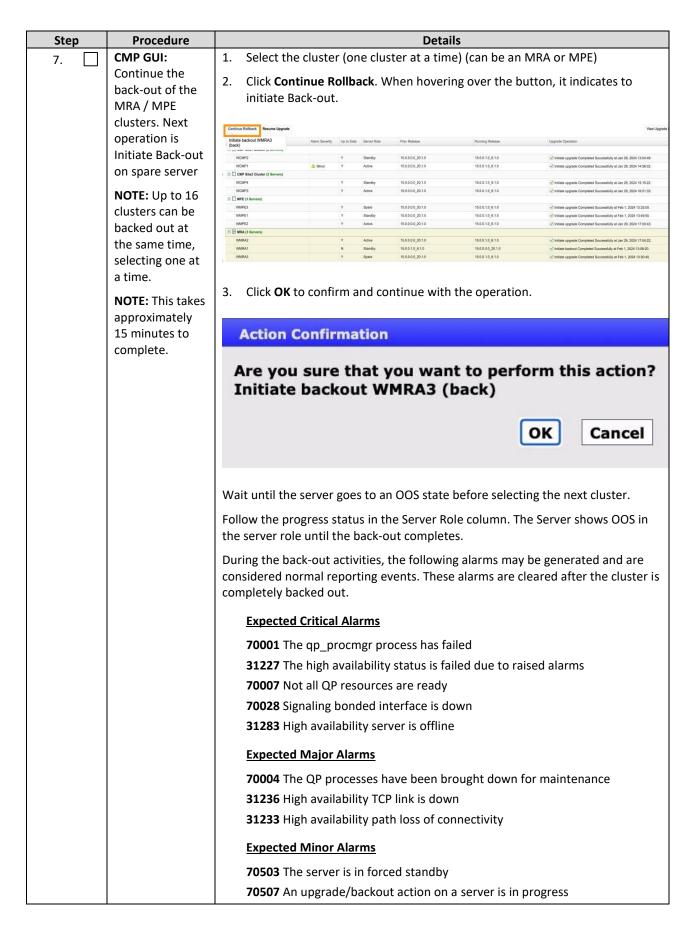
Procedure 11 Back-out Fully Upgraded MPE/MRA Cluster

Step	Procedure	Details						
1	Procedure CMP GUI: Verify the status of affected Clusters	Details 1. Navigate to Upgrade → Upgrade Manager. 2. Confirm status of the cluster is backed out: - Primary Active CMP is on Release 15.0.x - MPE/MRA is on Release 15.0.x Up to Date column shows Y for all servers EXAMPLE:						
		Start Rollback Start Upgrade		1	Up	grade Manager	Current ISO incremental-secured-158.8.1.8.1.8.1.8. View Upgrade Log	
		■ Name Alarm Se	v Up to D	Server Role	Prev Release	Running Release	Upgrade Operation	
		☐ CMP Site1 Cluster (2 Servers) WCMP2	Y	Active	15.0.0.0.0 20.1.0	15.0.0.1.0 6.1.0		
		WCMP2 WCMP1	Y	Standby	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0 15.0.0.1.0_6.1.0	Ø Initiate upgrade Completed Successfully at Jan 29, 2024 13:04-49. Ø Initiate upgrade Completed Successfully at Jan 29, 2024 14:58:02.	
		☐ CMP Site2 Cluster (2 Servers)		Sunsey	18.00.00_20.1.0	15.0.0.1.0_6.1.0	e innate upgrade Completed Successruly at Jan 29, 2024 14:56:02.	
							✓ Initiate upgrade Completed Successfully at Jan 29, 2024 15:15:22.	
		WCMP3	Y	Standby	15.0.0.0.0 20.1.0	15.0.0.1.0_6.1.0		
		⊞ MPE (3 Servers)),(10.00.000			
		WMPE1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:51:03.	
		WMPE2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:00:43.	
		WMPE3	Y	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:30:53.	
		☐ MRA (3 Servers)		100				
		WMRA2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:04:22.	
		WMRA3	Y	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:32:12.	
		WMRA1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:51:03.	
2.	MPE/MRA SSH: Verify /var/log/messa ges file size	admusr.			•	-	rvers to be backed out as er the failover later on in this	



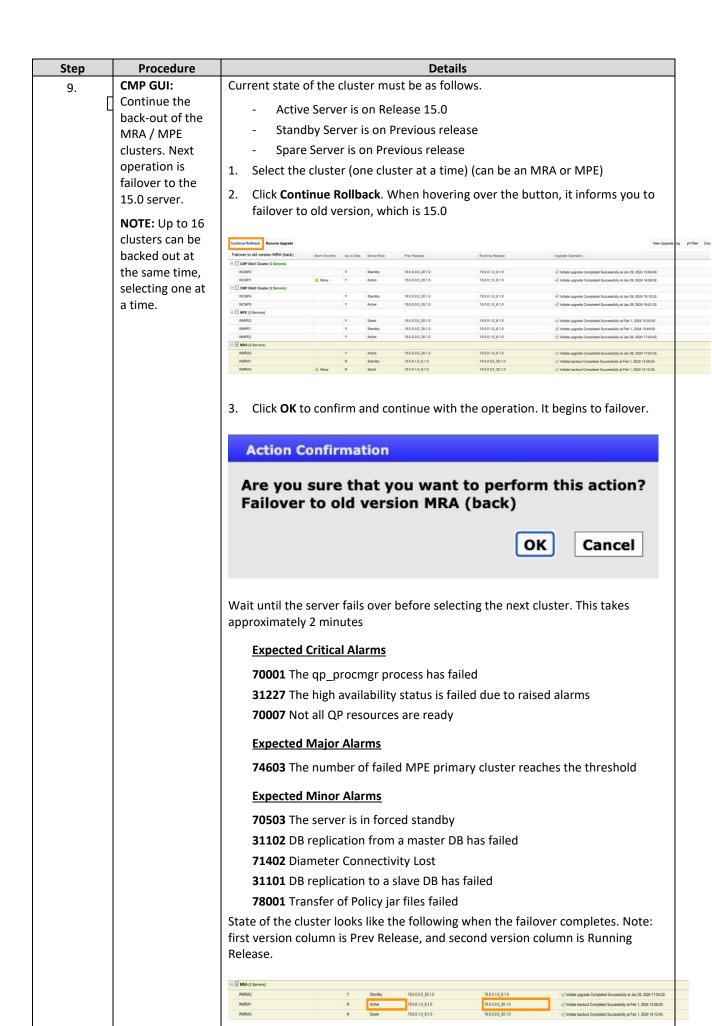
Step	Procedure	Details						
		Expected Critical Alarms						
		70001 The qp_procmgr process has failed						
		31227 The high availability status is failed due to raised alarms						
		70007 Not all QP resources are ready						
		70028 Signaling bonded interface is down						
		31283 High availability server is offline						
		Expected Major Alarms						
		70004 The QP processes have been brought down for maintenance						
		31236 High availability TCP link is down						
		31233 High availability path loss of connectivity						
		Expected Minor Alarms						
		70503 The server is in forced standby						
		70507 An upgrade/backout action on a server is in progress						
		70501 The Cluster is running different versions of software						
		31101 DB replication to a slave DB has failed						
		31102 DB replication from a master DB has failed						
		31282 The HA manager (cmha) is impaired by a s/w fault						
		31232 High availability server has not received a message						
		31107 DB merging from a child Source Node has failed						
		31114 DB Replication of configuration data via SOAP has failed						
		31104 DB Replication latency has exceeded thresholds						
		78001 Transfer of Policy jar files failed						
		70500 The system is running difference versions of software						
		70502 Cluster Replication Inhibited						
		31100 The DB replication process is impaired by a s/w fault						
		Back-out of the server is complete when the following message (initiate Back-out						
		completed successfully) displays in the Upgrade Operation column. The server						
		shows running release of 15.0 and return to standby with an N in the Up To Date column. Note: first version column is Prev Release, and second version column is						
		Running Release.						
		WMRA1						
		WMRA3 Y Standby 15.0.0.0.0,20.1.0 15.0.0.1.0,6.1.0						
	CMP GUI: Verify	Select the partially backed out cluster						
4.	the back-out is							
	successful	2. Select the View Upgrade LOG						
		171 0 Backing out server upgrade 02/01/2024 13:52:24 02/01/2024 13:54:36 0.02:12 Server WMRA1 Success Manual User initiated action: initia						
		172 171 Modify the nole-replication attributes 0201/2024 13:52:24 0201/2024 13:52:25 0:00:01 Cluster MRA Success Automatic Automatic action for mana 173 171 Waiting for replication to synchronize 0201/2024 13:54:36 0201/2024 13:58:20 0.03:44 Server WMRA1 Success Automatic Automatic action waitFor						

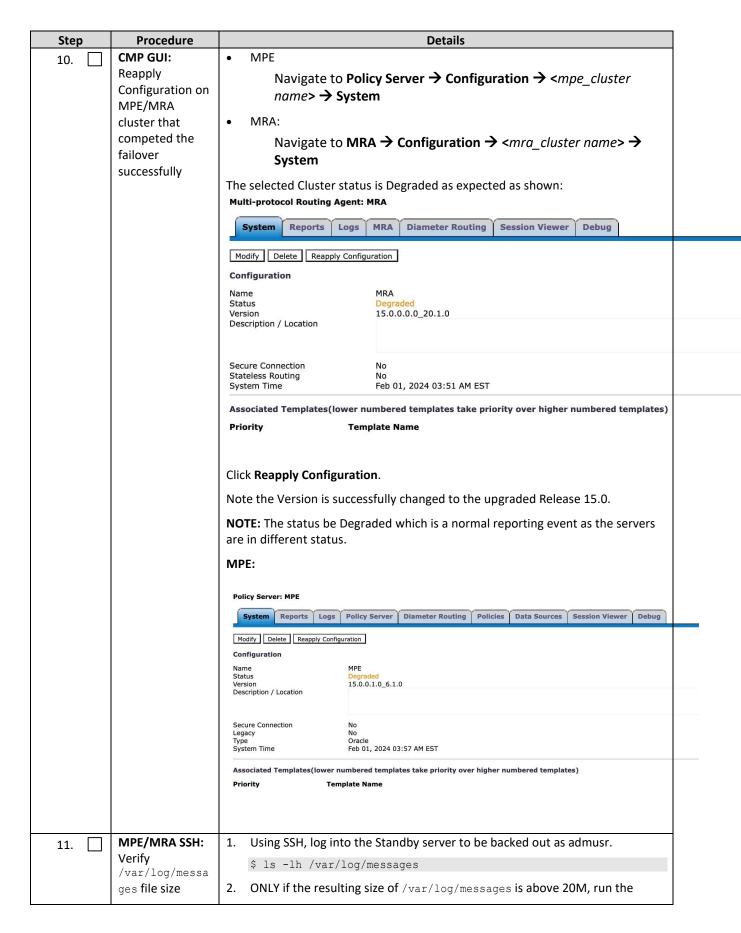




Step	Procedure	Details
		70501 The Cluster is running different versions of software
		31101 DB replication to a slave DB has failed
		31102 DB replication from a master DB has failed
		31282 The HA manager (cmha) is impaired by a s/w fault
		31232 High availability server has not received a message
		31107 DB merging from a child Source Node has failed
		31114 DB Replication of configuration data via SOAP has failed
		31104 DB Replication latency has exceeded thresholds
		78001 Transfer of Policy jar files failed
		70500 The system is running difference versions of software
		70502 Cluster Replication Inhibited
		31100 The DB replication process is impaired by a s/w fault
		Back-out of the server is complete when the following message (initiate Back-out completed successfully) displays in the Upgrade Operation column. The server goes back to running release of 15.0. Note: first version column is Prev Release,
		and second version column is Running Release.
		E ☐ MRA (3 Servers)
		WMRA2 Y Active 15,00.00_20.1.0 15,00.1.0_8.1.0 ⊕ Initiate spgrade Completed Successfully at Jan 28, 2004 1704 22. WMRA1 M Standby 15,00.1.0_8.1.0 15,00.8.0_20.1.0 ⊕ Initiate backout Completed Successfully at Feb 1, 2004 1358 20. WMRA3 B Moor N Sports 15,00.1.0_8.1.0 15,00.0.0_20.1.0 ⊕ Initiate backout Completed Successfully at Feb 1, 2004 1472-40.
8.	MPE/MRA SSH:	Login to the backed-out Spare server as admusr.
8.	Verify syscheck	
	and /tmp	
	directory permission	\$ sudo syscheck
	permission	[admusr@MRA175-58 ~]\$ sudo syscheck Running modules in class disk
		OK
		Running modules in class hardware
		OK
		Running modules in class net
		OK
		Dunning wedules in aless ares
		Running modules in class proc OK
		Running modules in class system
		OK
		LOG LOCATION: /var/TKLC/log/syscheck/fail_log [admusr@MRA175-58 ~]\$
		3. Verify /tmp directory permissions:
		\$ 1s -1 /
		4. NOTE: Permissions should be the following,

Step	Procedure	Details
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp
		 If the permissions are not as listed above then perform the following otherwise skip to next step:
		\$ sudo chmod 777 /tmp
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>
		\$ sudo chmod +t /tmp
		6. Verify:
		\$ ls -1 /
		7. Perform syscheck again:
		\$ sudo syscheck



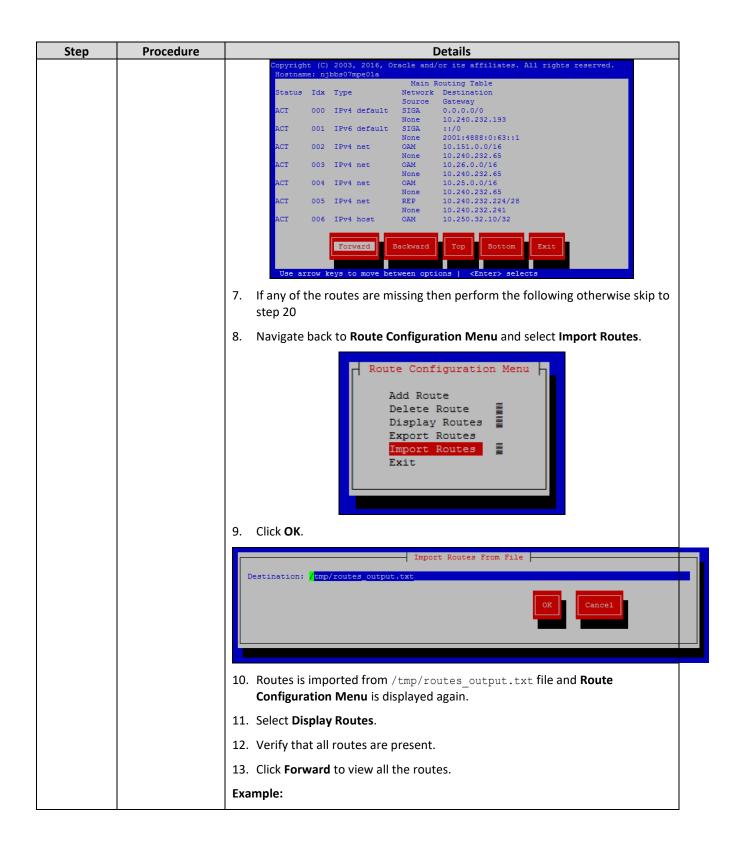


Step	Procedure	Details								
3334		following, otherwise proceed to the next step.								
		<pre>\$ sudo cp /var/log/messages /var/camiant/log/messages.preBack- out</pre>								
		<pre>\$ sudo cat /dev/null > /var/log/messages</pre>								
		<pre>\$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out"</pre>								
		3. Verify:								
		\$ ls -lh /var/log/messages								
12.	CMP GUI:	1. Select the cluster (one cluster at a time) (can be an MRA or MPE)								
	Complete Back- out of cluster(s)	Click Continue Rollback . When hovering over the button, it indicates the back-out server.								
	NOTE: Up to 16									
	clusters can be backed out at	Continue Rollback Resume Upgrade Veeu Upgrad								
	the same time,	WCMP2								
	selecting one at	□ CMP Stad Cluster (3 Servins) WCMP4 Y Standby 158.00.0,20.10 158.01.0,6.10								
	a time.	WOXP9 Y Active 15.0.0.0, 251.0 15.0.1.0, 51.0								
	NOTE: Each	WAMPE1 V Standby 158.0 0.0 20.1.0 158.0 1.0,4.1.0 ⊘ Initials signate Compiled Soccessibly of the 1, 2004 134930 WAMPE2 V Active 158.0 0.0,2.03.1.0 158.0.1.0,4.1.0 ⊘ Initiae signate Compiled Soccessibly at Jan 79, 2024 178043. □								
	back-out of a	WMRA2 Y Stendby 15.00.0,20.1.0 15.00.1.0,5.1.0 ✓ Initials upgrade Completed Soccessfully at Jan 29, 2024 17.04.22 WMRA1 N Active 150.0.0,25.1.0 15.00.0,20.1.0 ✓ Initials backload Completed Soccessfully at First 1, 2024 1359.20.								
	one blade server completes in	996943 N Spare 15.0.0.1.0, €.1.0 15.0.0.0,20.1.0								
	approximately 15 minutes.	3. Click OK to confirm and continue with the operation. It begins to back-out. Follow the progress status in the Upgrade Operation column. During the back-out activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the cluster is completely backed out. Expected Critical Alarms 70001 The qp_procmgr process has failed 31227 The high availability status is failed due to raised alarms 70007 Not all QP resources are ready 70028 Signaling bonded interface is down 31283 High availability server is offline Expected Major Alarms 70004 The QP processes have been brought down for maintenance 31236 High availability TCP link is down 31233 High availability path loss of connectivity Expected Minor Alarms 70503 The server is in forced standby 70507 An upgrade/backout action on a server is in progress 70501 The Cluster is running different versions of software 70502 Cluster Replication Inhibited								

31101 DB replication to a slave DB has failed 31102 DB replication from a master DB has failed 31282 The HA manager (cmha) is impaired by a s/w fault 31232 High availability server has not received a message 31284 High availability remote subscriber has not received a heartbeat 31107 DB merging from a child Source Node has failed 31114 DB Replication of configuration data via SOAP has failed 31104 DB Replication latency has exceeded thresholds 78001 Transfer of Policy jar files failed 70500 The system is running difference versions of software 31100 The DB replication process is impaired by a s/w fault Back-out of the server is complete when the following message (initiate Back-out completed successfully) displays in the Upgrade Operation column. Verify in Upgrade Log that that back-out was successful: 101 8 Basing summer agrabs (20000011524 (20000011544) (200000011544) (20000011544) (20000011544) (20000011544) (20000011544) (20000011544) (20000011544) (20000011544) (20000011544) (2000000011544) (200000011544) (200000011544) (200000011544) (200000011544) (2000000011544) (2000000000000000000000000000000000000	31102 DB replication from a master DB has failed 31282 The HA manager (cmha) is impaired by a s/w fault 31232 High availability server has not received a message 31284 High availability remote subscriber has not received a heartbeat 31107 DB merging from a child Source Node has failed 31114 DB Replication of configuration data via SOAP has failed 31104 DB Replication latency has exceeded thresholds 78001 Transfer of Policy jar files failed 70500 The system is running difference versions of software 31100 The DB replication process is impaired by a s/w fault Back-out of the server is complete when the following message (initiate Back-out completed successfully) displays in the Upgrade Operation column. Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful: Verify in Upgrade Log that that back-out was successful; Verify in Upgrade Log that back back-out was successful; Verify in Upgrade Log that back-out was successful; Verify in Upgrade Verify in U	31102 DB replication from a master DB has failed 31282 The HA manager (cmha) is impaired by a s/w fault 31232 High availability server has not received a message 31284 High availability remote subscriber has not received a heartbeat 31107 DB merging from a child Source Node has failed 31114 DB Replication of configuration data via SOAP has failed 31104 DB Replication latency has exceeded thresholds 78001 Transfer of Policy jar files failed 70500 The system is running difference versions of software 31100 The DB replication process is impaired by a s/w fault Back-out of the server is complete when the following message (initiate Baccompleted successfully) displays in the Upgrade Operation column. Verify in Upgrade Log that that back-out was successful: 17									
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177 0 Fellower to did version 02/01/2024 14:18:31 02/01/2024 14:18:31 0.00:00 Cluster MRA Success Manual User initiated action. Failower 178 0 Backing out server upgrade 02/01/2024 14:28:21 02/01/2024 14:31:44 0:02:22 Server WMRA2 Success Manual User initiated action. initiated 179 178 Modify the releiresplication attributes of thi. 02/01/2024 14:28:21 02/01/2024 14:28:23 0:00:01 Cluster MRA Success Automatic Automatic action for managing 189 Walling for registration to synchronize 02/01/2024 14:38:44 02/01/2024 14:38:20 0:00:38 Server WMRA2 Success Automatic Automatic action was fire-five.	177 0 Fellower to old version (02/01/2024 14:18:31 02/01/2024 14:18:31 00:000 Cluster MRA Success Manual User initiated action: Fallow 178 0 Backing out server upgrade (02/01/2024 14:28:21 02/01/2024 14:31:44 00:02:22 Server WMRA2 Success Manual User initiated action: initiate 179 178 Modify the relehrsplication attributes of thi. 02/01/2024 14:28:21 02/01/2024 14:28:23 0:00:01 Cluster MRA Success Automatic Automatic action for managing 180 178 Walking for regication to synchronizes 02/01/2024 14:31:44 02/01/2024 14:35:20 0:03:36 Server WMRA2 Success Automatic Automatic action for managing 178 Modify the relehrsplication attributes of thi. 02/01/2024 14:31:44 02/01/2024 14:31:45 0:00:01 Cluster MRA Success Automatic Automatic action for managing 178 Modify the relehrsplication attributes of thi. 02/01/2024 14:31:45 0:00:01 Cluster MRA Success Automatic Automatic action for managing 178 Modify the relehrsplication attributes of this point and show active/standby/spare. Note: first version column is Prev Release, and second version column is Running Release.	177 0 Felloser to old version									
178 0 Backing out server upgrade 0201/2024 14/29/21 0201/2024 14/31:44 00/22 Server WMRA2 Success Manual User initiated action: initiated action: initiated action: initiated action initiated ac	178 0 Backing out server upgrade 0201/2024 14:28:21 0201/2024 14:31:44 02:22 Server WMRAZ Success Manual User initiated action: initiate 179 178 Modify the relaineplication statistics of th. 0201/2024 14:28:21 0201/2024 14:28:23 00:001 Cluster MRA Success Automatic Automatic action for managing 180 178 Waiting for replication to synchronizes 0201/2024 14:31:44 0201/2024 14:35:20 00:336 Server WMRAZ Success Automatic Automatic action waiting 181 178 Modify the relaineplication attributes of th. 0201/2024 14:31:44 0201/2024 14:31:45 00:001 Cluster MRA Success Automatic Automatic action for managing 181 178 Modify the relaineplication attributes of th. 0201/2024 14:31:44 0201/2024 14:31:45 00:001 Cluster MRA Success Automatic Automatic action for managing 181 178 Modify the relaineplication attributes of the control of the servers is on Release 15.0 at this point and show active/standby/spare. Note: first version column is Prev Release, and second version column is Running Release. □ MRA (Servers) WMMAZ No. Servers (Servers) WMMAZ No. Servers (Servers) WMMAZ No. Servers (Servers) WMMAZ No. Servers (Servers) (Servers	178 0 Backing out server upgrade 0001/2024 14:28:21 0001/12024 14:28:23 000:01 Cluster WRA Success Automatic Automatics 178 Waiting for regication to synchronizes 02:01/2024 14:28:21 0001/2024 14:28:23 000:01 Cluster WRA Success Automatic Automatics 181 178 Waiting for regication to synchronizes 02:01/2024 14:31:44 02:01/2024 14:35:20 003:36 Server WWRA2 Success Automatic Automatics 181 178 Modify the releiroplication attributes of th 02:01/2024 14:31:44 02:01/2024 14:35:45 00:00:01 Cluster WRA Success Automatic Automatics 181 178 World the servers is on Release 15:0 at this point and show active/standby/s Note: first version column is Prev Release, and second version column is Ru Release. □ MRA2 Success Automatic Success Automatics Success Automatics Success Automatics Success Succ									
179 178 Modify the relerisplication attributes of th. 02/01/2024 14/29/21 02/01/2024 14/29/23 0/00/01 Cluster MRA Success Automatic Automatic action for managing 180 178 Walling for replication to synchronize 0/2/01/2024 14/31/44 0/2/01/2024 14/35/20 0/03/36 Server WMRA2 Success Automatic Automatic action waitForRey	The Modify the mideriplication attributes of th. 0201/2024 14:28:23	178 Modify the risk-replication attributes of th. 0201/2024 14:28:21 0201/2024 14:28:23 0.00.01 Cluster MRA Success Automatic Automatics 180 178 Wasting for replication to synchronizes 0201/2024 14:31:44 0201/2024 14:35:20 0.03.36 Server WMRA2 Success Automatic Automatics 181 178 Modify the risk-replication attributes of th. 0201/2024 14:31:44 0201/2024 14:31:45 0.00.01 Cluster MRA Success Automatic Automatics of the Servers is on Release 15:0 at this point and show active/standby/s Note: first version column is Prev Release, and second version column is Ru Release. □ MAG(3 Servers) □ MAG(3 Servers) □ WMRA2 N Success Nuternatic Nuternatics Nu									
180 178 Walting for replication to synchronize 0201/2024 14.31:44 0201/2024 14.35:20 0:03:36 Server WMRA2 Success Automatic Automatic action wall-Gridge	180 178 Walking for registration to spectronize	All of the servers is on Release 15.0 at this point and show active/standby/s Note: first version column is Prev Release, and second version column is Ru Release.									
	All of the servers is on Release 15.0 at this point and show active/standby/spare. Note: first version column is Prev Release, and second version column is Running Release.	All of the servers is on Release 15.0 at this point and show active/standby/s Note: first version column is Prev Release, and second version column is Ru Release.									
	Note: first version column is Prev Release, and second version column is Running Release. MAA.0 Servery	Note: first version column is Prev Release, and second version column is Ru Release. MAA D Bernery WMR42 N Standby 15.00.1.9, 8.10 15.00.0.20.1.0 Printed backoot Completed Successfully of Feb. WMR41 N Active 15.00.0.1.0, 8.10 15.00.0.20.1.0 Printed backoot Completed Successfully of Feb. WMR41 N Active 15.00.0.1.0, 8.10 15.00.0.20.1.0 Printed backoot Completed Successfully of Feb.	ction for managin								
	Note: first version column is Prev Release, and second version column is Running Release.	Note: first version column is Prev Release, and second version column is Ru Release. MAR Mark									
	Note: first version column is Prev Release, and second version column is Running Release. MMA 0 Servers	Note: first version column is Prev Release, and second version column is Ru Release.									
	Release.	Release. □ MAD (3 Servers) WARNAZ N Standby 15.0.0.1.0, 8.1.0 15.0.0.0, 25.1.0	-								
	■ MARA (3 Serverns) WARRA (2 Serverns) WARRA (3 Serverns) WAR	□ MARA (3 Servers)	nning								
	■ MARA (3 Serverns) WARRA (2 Serverns) WARRA (3 Serverns) WAR	□ MARA (3 Servers)	_								
Note: first version column is Prev Release, and second version column is Running	WMMA2 N Standby 15.0.0.1.0_6.1.0 15.0.0.0.2_0.1.0 © Initiate backed Completed Successfully of Feb 1, 2004 14:05:00 WMMA1 N Active 15.0.0.1.0_6.1.0 15.0.0.0.0_20.1.0 © Initiate backed Completed Successfully of Feb 1, 2004 13:05:00	WMMV2 N Standby 15.0.0.1.0, 6.1.0 15.0.0.0, 28.1.0 ✓ Initiate backout Completed Successfully at Find VMWA1 N Active 15.0.0.1.0, 6.1.0 15.0.0.0, 28.1.0 ✓ Initiate backout Completed Successfully at Find									
Note: first version column is Prev Release, and second version column is Running	WMMA2 N Standby 15.00.1.0_6.10 15.00.06_20.1.0 © initiate backout Comprised Successfully of Feb 1, 2004 14:05:00 WMMA1 N Active 15.00.0.0_6.1.0 15.00.0.0_20.1.0 © initiate backout Comprised Successfully of Feb 1, 2004 13:50:00	WMMV2 N Standby 15.05.1.0_6.1.0 15.00.0.0_28.1.0 ✓ Initiate backout Completed Successfully at Find WWRA1 N Active 15.00.0.0_26.1.0 15.00.0.0_28.1.0 ✓ Initiate backout Completed Successfully at Find									
Note: first version column is Prev Release, and second version column is Running	WMRA1 N Active 15.0.0.1.0_6.1.0 15.0.0.0.0_20.1.0 ⊗ Initiate backout Completed Successfully at Feb 1, 2004 13:98.20	WMRA1 N Active 15.0.0.1.0, 6.1.0 15.0.0.0, 20.1.0 ⊗ Initiate Tackout Completed Successfully at Febr									
Note: first version column is Prev Release, and second version column is Running Release.											
Note: first version column is Prev Release, and second version column is Running Release.	10 1900										
Note: first version column is Prev Release, and second version column is Running Release.			.,								
Note: first version column is Prev Release, and second version column is Running Release.											

Step	Procedure	Details						
13.	MPE/MRA SSH:	Login to the backed-out Standby server as admusr.						
	Verify syscheck and /tmp	2. Verify that there are not any failures in syscheck:						
	directory	\$ sudo syscheck						
	permission	[admusr@MRA175-38 ~]\$ sudo syscheck Running modules in class disk OK						
		Running modules in class hardware OK						
		Running modules in class net OK						
		Running modules in class proc OK						
		Running modules in class system OK						
		LOG LOCATION: /var/TKLC/log/syscheck/fail_log [admusr@MRA175-38 ~]\$						
		3. Verify /tmp directory permissions:						
		\$ ls -1 /						
		4. NOTE: Permissions should be the following,						
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp						
		If the permissions are not as listed above then perform the following otherwise skip to next step:						
		\$ sudo chmod 777 /tmp						
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>						
		\$ sudo chmod +t /tmp						
		6. Verify:						
		\$ 1s -1 /						
		7. Perform syscheck again:						
	CNAD CLUE Vanife	\$ sudo syscheck						
14.	cmP GUI: Verify that backed out cluster is processing traffic normally.	Verify Cluster is processing traffic normally: Navigate to System Wide Reports → KPI Dashboard .						

Step	Procedure	Details									
		KPI Dashboard (Last Refresh:02/01/2024 14:43:10) Files * Charge Treshvist									
		Performance Polk Active Subscribers Alarma Protocol Errors									
		MPEs selected 0 0 0 4468 4465 0 0 0 0 0									
		MEA Performance CPU Name of PCD MEA MEM Name of Name CPU Name of Name of PCD CPU Name of Name of Name of PCD CPU Name of									
		MRA(Server-8) Standy 8 19 6 21									
		(a) HPE(Server-d.) Forest Standy 9 23 (a) HPE(Server-d.) Active 0 4488 4465 8 42 1 of 1 0 of 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0									
		and indicatorics Space 8 23									
15.	CMP GUI: Verify alarms	1. Navigate to System Wide Reports → Alarms → Active Alarms.									
	aidillis	2. Verify that there are not any unexpected active alarms present.									
		NOTE: Some Alarms take approximately 30 minutes to 1 hour to auto clear.									
		NOTE: After the backout of the clusters, if Critical Alarm 31283 (High									
		availability server is offline) does not clear, then REP route might be									
		missing from the backed-out server. Therefore Routes need to be									
		verified and added. In this case, proceed to next step, otherwise, skip to step 20.									
46 🗆	MPE/MRA SSH:	Login into MPE/MRA server as admusr									
16.	Verify routes										
		2. Copy routes_output.txt from /home/admusr to /tmp									
		<pre>\$ sudo cp routes_output.txt /tmp \$ cd /tmp</pre>									
		\$ 1s									
		routes output.txt									
		Todoos_output.ext									
		WARNING: It is critical that proper exit of the platcfg menu is strictly									
		adhered to. Not exiting the platcfg menu and or in the event of a blade service									
		interruption occur while still within the platcfg menu can cause an adverse									
		impact to application functionality on the blade. If this occurs contact Oracle personnel immediately and alert Maintenance Engineering.									
		3. Run the platcfg utility:									
		\$ sudo su - platcfg									
		4. Navigate to Policy Configuration → Routing Config → Display Routes.									
		5. Verify that all routes are present.									
		6. Click Forward to view all the routes.									
		Example:									



Step	Procedure	Details									
		Copyright (C) 2003, 2016, Oracle and/or its affiliates. All rights reserved. Hostname: njbbs07mpe01a									
		Main Routing Table									
		Status Idx Type Network Destination Source Gateway									
		ACT 000 IPv4 default SIGA 0.0.0.0/0									
		None 10.240.232.193 ACT 001 IPv6 default SIGA ::/0									
		None 2001:4888:0:63::1									
		ACT 002 IPv4 net 0AM 10.151.0.0/16									
		None 10.240.232.65 ACT 003 IPv4 net OAM 10.26.0.0/16									
		None 10.240.232.65									
		ACT 004 IPv4 net 0AM 10.25.0.0/16 None 10.240.232.65									
		ACT 005 IPv4 net REP 10.240.232.224/28									
		None 10.240.232.241 ACT 006 IPv4 host OAM 10.250.32.10/32									
		ACI 000 IFVI NOSC OAN 10.250.32.10/32									
	Use arrow keys to move between options <enter> selects</enter>										
14. Exit the platcfg utility											
	WARNING: It is critical that proper exit of the platcfg menu is strictly adhered to. Not exiting the platcfg menu and or in the event of a blade service interruption occur while still within the platcfg menu can cause an adverse impact to application functionality on the blade. If this occurs contact Oracle personnel immediately and alert Maintenance Engineering.										
17.	Repeat for other clusters as needed Repeat this procedure for remainder of MPE/MRA servers, if not fully backed out yet.										
18.	syscheck and modules are still operationally OK before progressing to the next procedure.										
	verify that alarms are clear.	 Navigate to System Wide Reports → Alarms → Active Alarms. 									
		2. Verify that there are not any unexpected active alarms present.									
		NOTE: Some Alarms take appoximately 30 minutes to 1 hour to auto clear.									
		—End of Procedure—									

1.10.3.4 Back-out Fully Upgraded Secondary CMP cluster

Use this procedure to back-out a fully upgraded Secondary CMP cluster.

Expected Pre-conditions:

- 1. Primary Active CMP is on Release 15.0.x
- 2. Secondary CMP cluster is on Release 15.0.x
- 3. All MPE/MRA Clusters are on Release 15.0

NOTES:

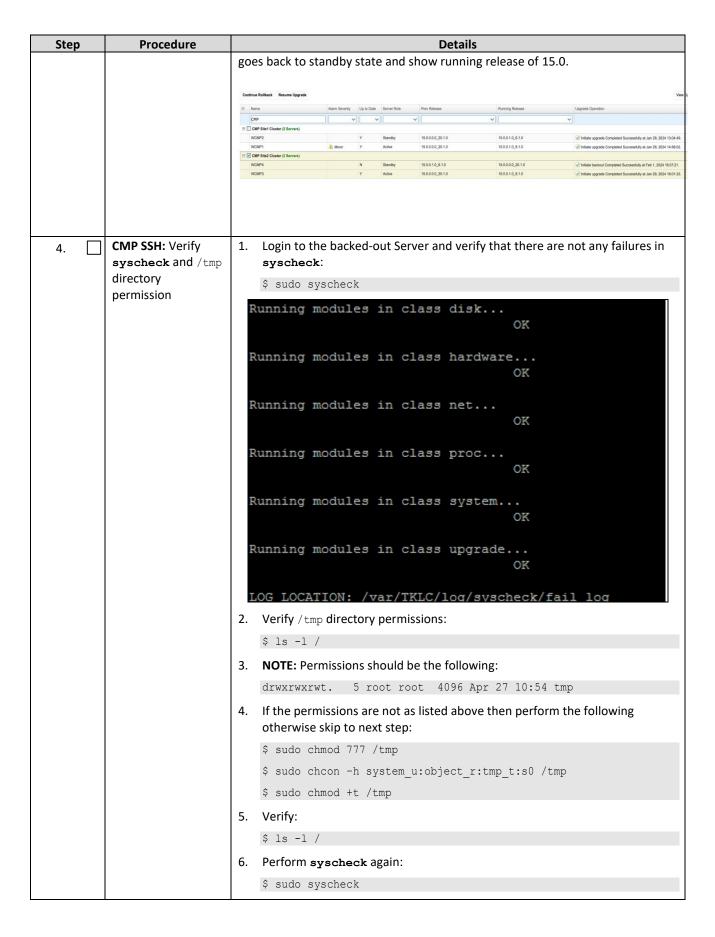
- This procedure must be performed within a maintenance window.
- This procedure takes approximately 45-60 minutes.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 12: Back-out Fully Upgraded Secondary CMP cluster

Step	Procedure	Details
1.	CMP GUI: Verify the status of CMP clusters	Details 1. Navigate to Upgrade → Upgrade Manager. 2. Confirm status of the cluster to be backed out: - Primary Active CMP is on Release 15.0.x - Secondary CMP cluster is on Release 15.0.x - Up to Date column shows Y for all servers 3. Click Filter and enter cmp in the Name field. Example: Barrichade. Blast Logarde Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.00.000 20.18 Vene Logarde Complete Successity of the 20.000 13.000 20.18 Vene Logarde Complete Successity of the 20.000 13.000 20.18 Vene Logarde Complete Successity of the 20.000 13.000 20.18 Vene Logarde Complete Successity of the 20.000
2.	CMP SSH: Verify /var/log/messages file size	 Using SSH, log into the Standby server to be backed out as admusr \$ ls -lh /var/log/messages ONLY if the resulting size of /var/log/messages is above 20M, run the following, otherwise proceed to the next step. \$ sudo cp /var/log/messages /var/camiant/log/messages.preBackout \$ sudo cat /dev/null > /var/log/messages \$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out" Verify: \$ ls -lh /var/log/messages
3.	CMP GUI: Back-out clusters NOTE: Each back- out of one server takes about 20 minutes to complete.	 Navigate to Upgrade → Upgrade Manager. Select the Secondary CMP cluster Click Start Rollback. When hovering over the button, it indicates the backout server.

Step	Procedure					Details					
						150		Current ISO: Incremental upgrade-15.8.0.1.0, 6.1.5			
		Start Rollback Start Upgrade Initiate backout WCMP4						View Upgrade Log JJ Filter Columns + Advanced +			
		(back)	Alarm Severity Up to Date	Server Role Standby	15.0.0.0.0_20:1.0	150.010,810	Upgrade Operation initiate upgrade Completed Successfully of	Jan 28, 2024 13 04 48			
		WCMP1 □ CMP Site2 Cluster (2 Servers)	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_61.0	⊘ Invitate upgrade Correleted Successfully at				
		WCMP4 WCMP3 B MPE Q Serversi	Y Y	Standby Active	15.0.0.0,20.1.0 15.0.0.0,20.1.0	15.0.0.1.0_6.1.0 15.0.0.1.0_6.1.0	Intitate upgrade Completed Successfully at Intitate upgrade Completed Successfully at				
		WMPE3 WMPE3 WMPE1	N N	Spare Standby	15.0.0.1.0_8.1.0 15.0.0.1.0_8.1.0	15.0.0.0, 20.1.0	☑ Initiate backout Completed Succeeduly of ☑ Initiate backout Completed Successfully at				
		WMPE2 E MRA (3 Servers)	N	Active	15.0.0.1.0_6.1.0	16.0.0.0_20.1.0	initiate backout Completed Successfully of	Feb 1, 2024 15:50:20.			
		WMRA2 WMRA1 WMRA3	N A Minor N	Standby Active	1500.10_6.10 1500.10_6.10 1500.10_6.10	15.0.0.0, 20.1.0 15.0.0.0, 20.1.0 15.0.0.0, 20.1.0	⊘ Initiate backout Completed Successfully at ⊘ Initiate backout Completed Successfully at ⊘ Initiate backout Completed Successfully at	Feb 1, 2024 13:58:20.			
		 Click OK to confirm and continue with the operation. It begins to back-out Server goes into an OOS server Role Follow the progress status in the Upgrade Operation column. During the back-out activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the cluster 									
		Expected				has failed					
				_	-	has failed.					
			_		-		ue to raised ala	irms			
		31283 Hi	_	-							
		70007 No				-					
						ifferent sche	ma version tha	in the master			
		70004 Th				een brought	down for mair	ntenanc e			
		70004 The QP processes have been brought down for maintenance 31236 High availability TCP link is down									
			_	-		s of connecti	vitv				
			_	-	=	onnected to	-				
		Expected	d Minor A	Marm	<u>15</u>						
		70503 Th	ne server	is in	forced st	andby					
		70507 Ar	n upgrade	e/bac	kout acti	on on a serv	er is in progres	S			
		70501 Th	ne Cluster	r is ru	ınning dif	fferent version	ons of software	!			
		70502 CI	uster Rep	olicat	ion Inhib	ited					
			•				ed a message				
			_	-		DB has failed	_				
						ster DB has t					
			•			Source Node					
							via SOAP has fa	niled			
			-		_			ineu			
				_	-	t Merge Nod		(initiata Deele e.)			
					-			e (initiate Back-out imn. The server			



Step	Procedure	Details
5.	CMP GUI: Continue	Select Secondary CMP cluster.
	the back-out. Next	2. Navigate to Upgrade → Upgrade Manager.
	operation is failover.	3. Select the Secondary CMP cluster
		4. Click Continue Rollback . When hovering over the button, it informs you to
		failover.
		· · · · · · · · · · · · · · · · · · ·
		Continue Relation Research Upganite New Opposition (Indicated Research Upganite Research Upganite Columns * Advanced Relation for the Opposition (Indicated Research Upganite Columns * Advanced Relation (Indicated Relati
		□ Code Start Columns; WCMP2 Y Danniny 15.00.00,201.0 15.00.00,41.0 ⊘Initian aggress Completed Successfully at Jun 20, 2004 13.04.0.
		WOOP1
		WCAP9 Y Adher 15,00.00_20.1.0 15,00.1.0,41.0 ⊘ Initiate aggress Complete DecreaseApy at air 28, 2024 16.01.33.
		5. Click OK to confirm and continue with the operation. It begins to failover.
		Follow the progress status in the Server Role column. Wait for the server to show standby.
		Expected Critical Alarms
		70001 The qp_procmgr process has failed.
		31227 The high availability status is failed due to raised alarms
		31283 High availability server is offline
		70007 Not all QP resources are ready
		70025 The MySQL slave has a different schema version than the master
		74604 Policy cluster is offline
		Expected Major Alarms
		70004 The QP processes have been brought down for maintenance
		31233 High availability path loss of connectivity
		70021 The MySQL slave is not connected to the master
		Expected Minor Alarms
		70503 The server is in forced standby
		70507 An upgrade/backout action on a server is in progress
		70501 The Cluster is running different versions of software
		70502 Cluster Replication Inhibited
		31232 High availability server has not received a message
		31101 DB replication to a slave DB has failed
		31102 DB replication from a master DB has failed 31107 DB merging from a child Source Node has failed
		31114 DB Replication of configuration data via SOAP has failed
		31106 DB merging to the parent Merge Node has failed
		70500 The system is running different versions of software

Step	Procedure	Details
6.	CMP SSH: Verify	Using SSH, log into the Standby server to be backed out as admusr.
	/var/log/messages	<pre>\$ ls -lh /var/log/messages</pre>
	file size	 ONLY if the resulting size of /var/log/messages is above 20M, run the following, otherwise proceed to the next step.
		<pre>\$ sudo cp /var/log/messages /var/camiant/log/messages.preBack- out</pre>
		<pre>\$ sudo cat /dev/null > /var/log/messages</pre>
		<pre>\$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out"</pre>
		3. Verify:
		<pre>\$ ls -lh /var/log/messages</pre>
7.	CMP GUI: Continue	1. Navigate to Upgrade → Upgrade Manager.
•	the backed-out.	Select the Secondary CMP cluster.
	Next operation is Initiate Back-out	3. Click Continue Rollback . When hovering over the button, it informs you to
	NOTE: Each back-	rollback.
	out of one server	Upgrade Manager Convil 50 Incremitatiograph - 13.8.1 J. 3.1.9
	takes about 20 minutes to	Continue Builback Research Upgrade Vent Upgrade Laborator WCMUPS Allows Source Rules Vent Upgrade Laborator VCMUPS Allows Source Rules Proc Release Running Release Upgrade Convention Upgrade Convention
	complete.	Biol3
		WOSP2 Y Steeley 15.00.00, 25.10 15.00.00, 25.10
		WODP4 N Active 156.0.1.0, ±1.0 156.0.0.2, ±1.0 C Intelle backward Completes Successfully of Feb 1, 2004 1607.21.
		4. Click OK to confirm and continue with the operation. It begins to failover.
		5. Follow the progress status in the Server Role column. Wait until the server to back-out comes to Standby state before continuing.
		6. Back-out of the server is complete when the following message (initiate Back-out completed successfully) displays in the Upgrade Operation column.
		Comment of the commen
		☐ ☐ CNP Stat2 Cluster (2 Servers)
		WCMP4 N Active 15.00.10_61.0 15.00.00_201.0
		WCMP3 <u>& Minor</u> N Standby 15.00.10 <u>6.1.0</u> 15.00.00_201.10 ✓ Initiale backout Completed Successfully at Feb 1, 2024 16:32:31.
		Expected Critical Alarms
		70001 The qp procmgr process has failed.
		31227 The high availability status is failed due to raised alarms 31283 High availability server is offline
		70007 Not all QP resources are ready
		70025 The MySQL slave has a different schema version than the master
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Expected Minor Alarms 70503 The server is in forced standby 70507 An upgrade/backout action on a server is in progress 70501 The Cluster is running different versions of software 70502 Cluster Replication Inhibited 31232 High availability server has not received a message 31101 DB replication to a slave DB has failed 31102 DB replication from a master DB has failed 31107 DB merging from a child Source Node has failed 31106 DB merging from a child Source Node has failed 31106 DB merging to the parent Merge Node has failed 70500 The system is running different versions of software 7. Verify in Upgrade Log that that back-out was successful: 8. All Secondary CMP servers is on Release 15.0 at this point and show active/standby 150 Bacing act serve upgate (2001/2014 16022) (2001/2				317	233 High availa	bility path	loss of cor	nect	ivity				
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198 197 Modify the role/replication attributes 02/01/2024 16:25:29 02/01/2024 16:25:30 0:00:01 Cluster CMP Site2 Clu Success Automatic action for automatic action for synchronize 199 197 Waiting for replication to synchronize 02/01/2024 16:27:57 02/01/2024 16:32:31 0:04:33 Server WCMP3 Success Automatic action was automatic.			196	0	Failover to old version	02/01/2024 16:23:15	02/01/2024 16:23:15	0:00:00	Cluster	CMP Site2 Clu	Success	Manual	User initiated action: Failo
199 197 Waiting for replication to synchronize 02/01/2024 16:27:57 02/01/2024 16:32:31 0:04:33 Server WCMP3 Success Automatic Automatic action w			197	0	Backing out server upgrade	02/01/2024 16:25:29	02/01/2024 16:27:57	0:02:27	Server	WCMP3	Success	Manual	User initiated action: initiat
			198	197	Modify the role/replication attributes	02/01/2024 16:25:29	02/01/2024 16:25:30	0:00:01	Cluster	CMP Site2 Clu	Success	Automatic	Automatic action for mana
200 197 Modify the role/replication attributes 02/01/2024 16:27:57 02/01/2024 16:27:58 0:00:01 Cluster CMP Site2 Clu Success Automatic action 6													Automatic action waitForR
			200	197	Modify the role/replication attributes	02/01/2024 16:27:57	02/01/2024 16:27:58	0:00:01	Cluster	CMP Site2 Clu	Success	Automatic	Automatic action for mana

Step	Procedure	Details			
8.	CMP SSH: Verify	Login to the backed-out Server as admusr.			
	syscheck and /tmp directory	2. Verify that there are not any failures in syscheck.			
	permission	\$ sudo syscheck			
		Running modules in class disk			
		OK			
		Running modules in class hardware			
		OK			
		Running modules in class net			
		OK			
		Running modules in class proc			
		OK			
		Running modules in class system			
		OK			
		Running modules in class upgrade			
		OK			
		LOG LOCATION: /var/TKLC/log/svscheck/fail log			
		3. Verify /tmp directory permissions:			
		\$ 1s -1 /			
		9. NOTE: Permissions should be the following,			
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp			
		4. If the permissions are not as listed above then perform the following			
		otherwise skip to next step:			
		\$ sudo chmod 777 /tmp			
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>			
		\$ sudo chmod +t /tmp			
		5. Verify:			
		\$ ls -1 /			
		6. Perform syscheck again:			
		\$ sudo syscheck			
		—End of Procedure—			

1.10.3.5 Back-out Fully Upgraded Primary CMP cluster

Use this procedure to back-out a fully upgraded Primary CMP cluster.

Expected Pre-conditions:

- 1. Primary Active CMP cluster is on Release 15.0.x.
- 2. Secondary CMP, MPE and MRA Clusters are on Release 15.0.

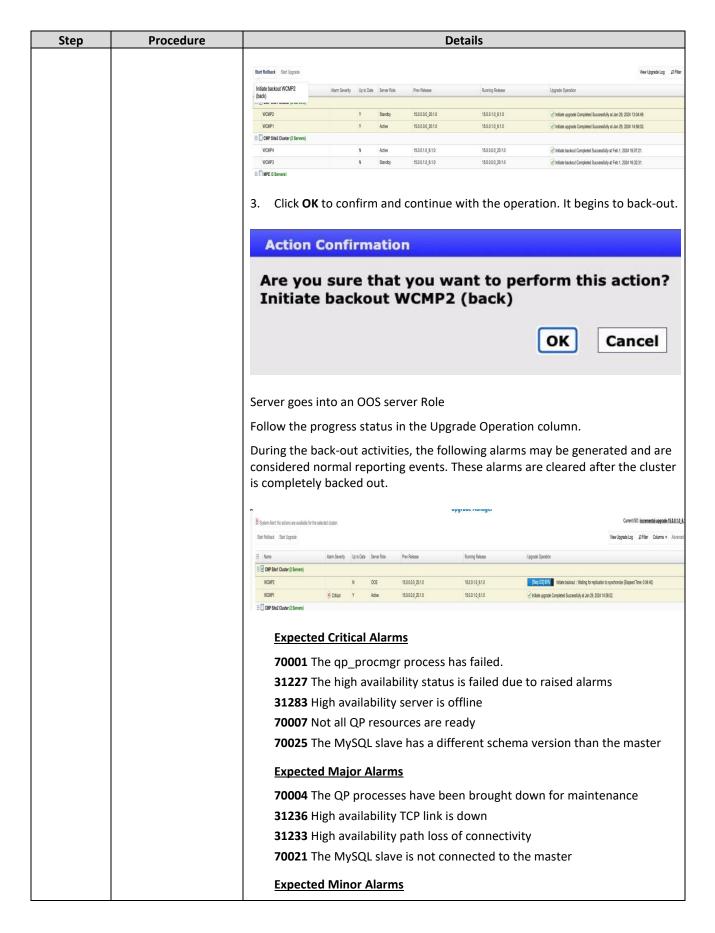
NOTES:

- This procedure must be performed within a maintenance window.
- This procedure takes approximately 45-60 minutes.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

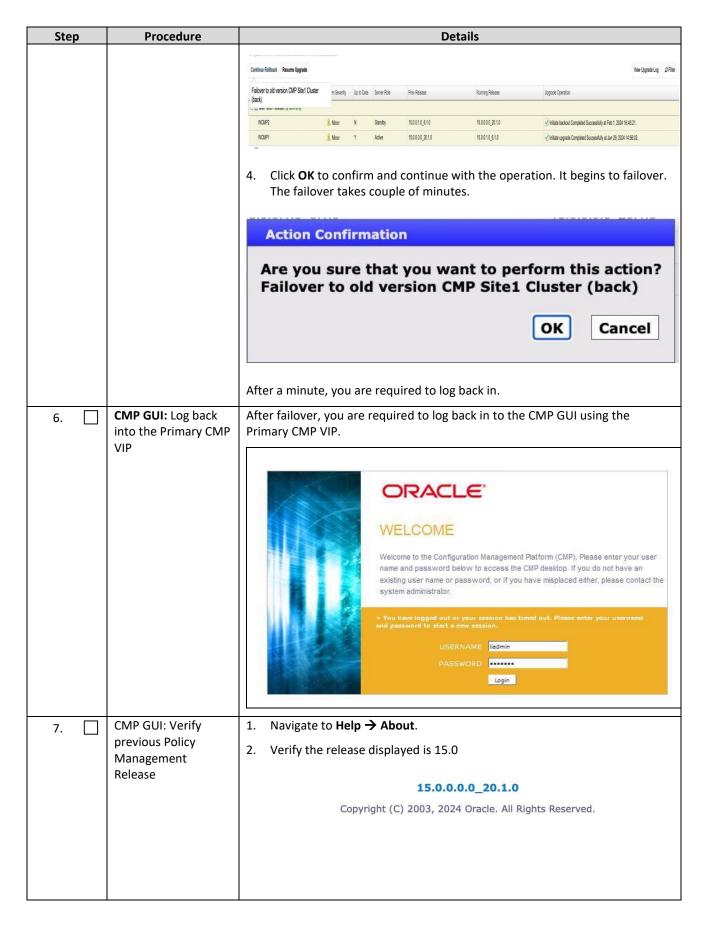
Procedure 13: Back-out Fully Upgraded Primary CMP cluster

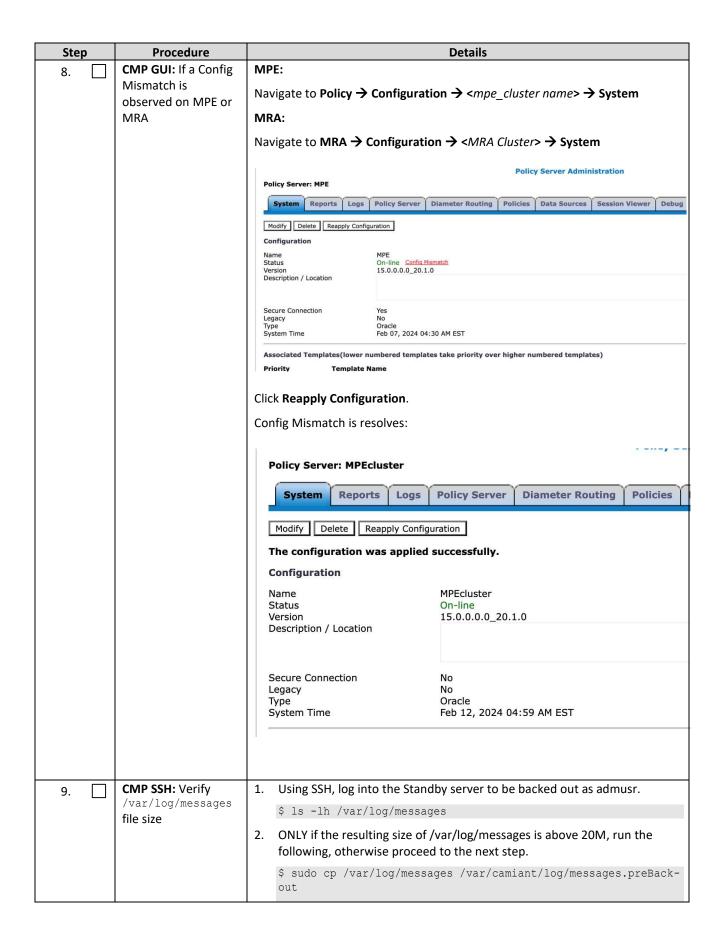
Step	Procedure	Details			
1.	Procedure CMP GUI: Verify the status of CMP clusters	Details 1. Navigate to Upgrade → Upgrade Manager 2. Confirm status of the cluster to be backed out: - Primary Active CMP is on Release 15.0.x - Secondary CMP, MPE and MRA Clusters are on Release 15.0 - Up to Date column shows Y for all servers in Primary CMP cluster - Click Filter and enter cmp in the Name field. Example: Name			
2.	CMP SSH: Verify /var/log/messages file size	 Using SSH, log into the Standby server to be backed out as admusr. <pre>\$ ls -lh /var/log/messages</pre> <pre>ONLY if the resulting size of /var/log/messages is above 20M, run the following, otherwise proceed to the next step. <pre>\$ sudo cp /var/log/messages /var/camiant/log/messages.preBack-out</pre> <pre>\$ sudo cat /dev/null > /var/log/messages</pre> <pre>\$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out"</pre> </pre> Verify: <pre>\$ ls -lh /var/log/messages</pre> 			
3.	cMP GUI: Back-out standby server of Primary CMP cluster NOTE: Back-out of one server takes about 20 minutes to complete.	Select the Primary CMP cluster Click Start Rollback . When hovering over the button, it indicates the server to back out.			



Step	Procedure	Details						
		70503 Th	e serve	er is i	n forc	ed standby		
		70507 Ar	n upgra	de/b	ackou	t action on	a server is in	progress
		70501 Th	e Clust	er is	runnii	ng different	versions of s	oftware
		70502 Cl				_		
				-			received a m	orcano.
		31232 High availability server has not received a message						
		31101 DB replication to a slave DB has failed						
		31102 DE	31102 DB replication from a master DB has failed					
		31107 DB merging from a child Source Node has failed						
		31114 DB Replication of configuration data via SOAP has failed						
		31106 DB merging to the parent Merge Node has failed						
		70500 The system is running different versions of software						
		Back-out of the server is complete when the initiate Back-out completed successfully message displays in the Upgrade Operation column. The server goes back to standby state and show running release of 15.0						
		□ Name Alam Severity Lip to Date Server Rick Prev Ricksese Running Ralesse Upgrade Operation						
		☐						
		WCMP2	A Minor	N	Standby	15.0.0.1.0_6.1.0	15.0.0.0_20.1.0	Initiate backout Completed Successfully at Feb 1, 2024 16:45:21.
		WCMP1 15.00.00_201.0 15.00.10_6.1.0 ☑ Initiate upgrade Completed Successfully at Jan 29, 2024 14.56:02.						

Step	Procedure	Details				
4.	CMP SSH: Verify	Login to the backed-out Server as admusr.				
	syscheck and /tmp	2. Verify that there are not any failures in syscheck:				
	directory permission	\$ sudo syscheck				
		Running modules in class disk OK				
		Running modules in class hardware OK				
		Running modules in class net OK				
		Running modules in class proc OK				
		Running modules in class system OK				
		Running modules in class upgrade OK				
		LOG LOCATION: /var/TKLC/log/svscheck/fail log				
		3. Verify /tmp directory permissions:				
		\$ 1s -1 /				
		10. NOTE: Permissions should be the following,				
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp				
		otherwise skip to next step:				
		\$ sudo chmod 777 /tmp				
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>				
		\$ sudo chmod +t /tmp				
		5. Verify:				
		\$ 1s -1 /				
		6. Perform syscheck again:				
		\$ sudo syscheck				
5.	CMP GUI: Continue	Navigate to Upgrade → Upgrade Manager.				
	the back-out. Next operation is failover.	2. Select the Primary CMP cluster.				
	operation is fallovel.	3. Click Continue Rollback . When hovering over the button, it informs you to failover.				

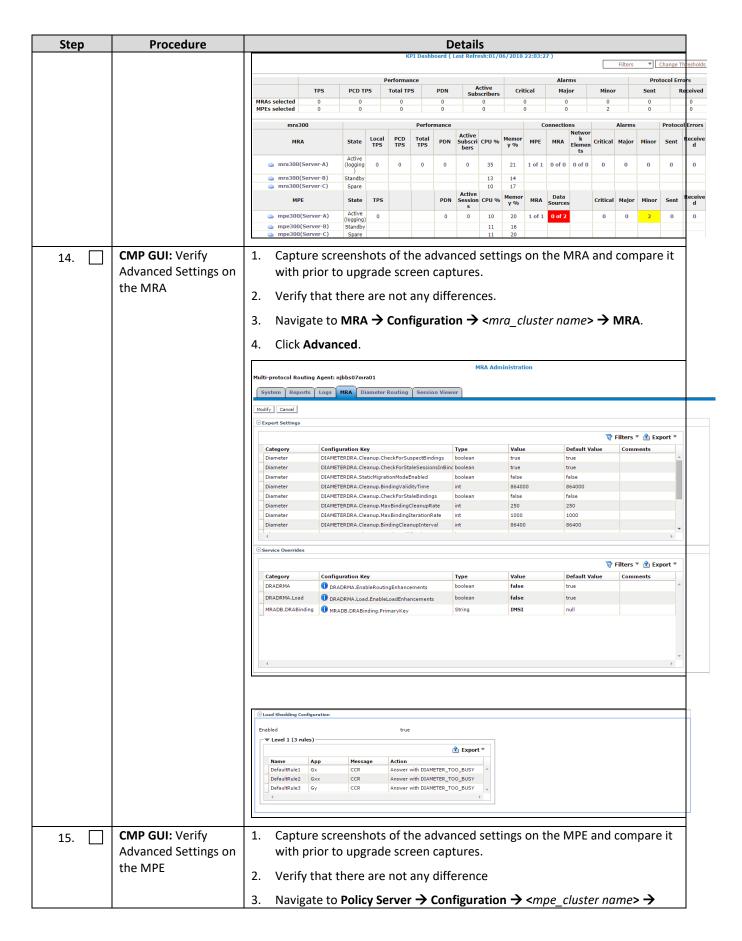


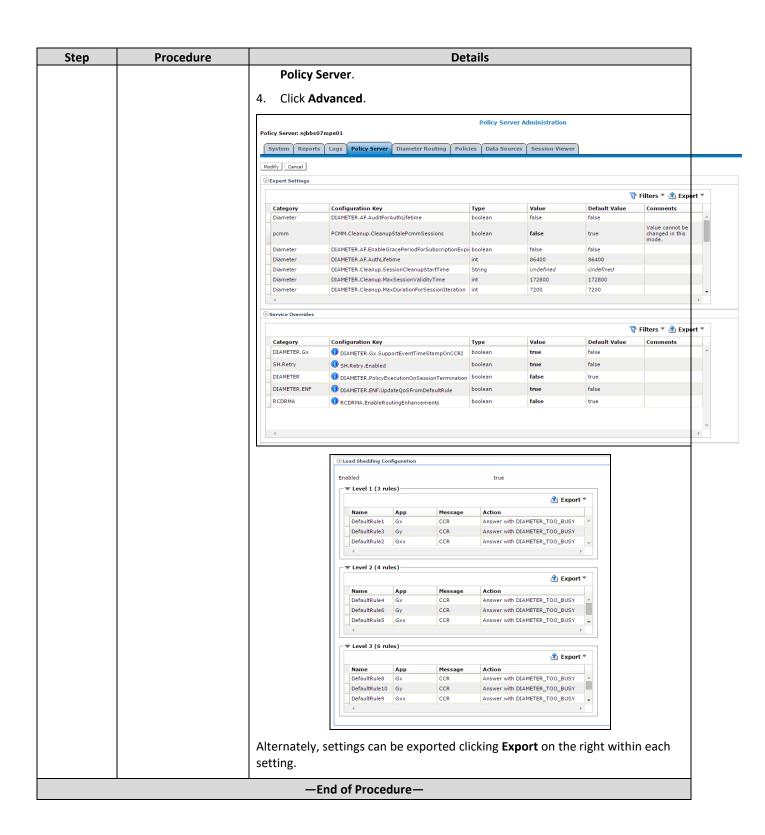


Step	Procedure	Details
		<pre>\$ sudo cat /dev/null > /var/log/messages</pre>
		<pre>\$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out"</pre>
		3. Verify:
		<pre>\$ ls -lh /var/log/messages</pre>
10.	CMP GUI: Continue	Navigate to Upgrade → Upgrade Manager.
	the back-out of the Primary CMP cluster	2. Select the Primary CMP cluster.
	NOTE: Back-out of one server takes about 15 minutes to	Click Continue Rollback. When hovering over the button, it indicates the server to get backed out. At this point it is the remaining standby server.
	complete.	Continue Reliback Start Upgrade View Opprade Log Piter Continue Reliback Start Upgrade Log Piter Pit
	Note: Wait for	Initiate backout WCMP1 Alam Seventy Up to Date Server Role Prev Release Running Release Upgrade Operations
	approximately 10	WSMP2 d. Minor N Active 15.00.10, £1.10 15.00.00, 20.1.10 √ Initiate backout Completed Successfully at Feb 1, 2004 16.49-24.
	minutes to allow the secondary CMP	WXIP1 Y Standby 15.00.0_20.1.0 15.00.0.0_4.1.0 ✓ Initiate upgrade Completed Successfully at Jan 29, 2024 V4 56102.
	Cluster to identify and change its (MySQL) master, that is, the new active CMP node. Alarms will appear and go automatically after the process happens.	4. Click OK to confirm and continue with the operation. It begins to back-out. Server goes into an OOS server Role Action Confirmation Are you sure that you want to perform this action? Initiate backout WCMP1 (back) OK Cancel Follow the progress status In the Upgrade Operation column. During the back-out activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the cluster is completely backed out.
		Expected Critical Alarms
		70001 The qp_process has failed.
		31227 The high availability status is failed due to raised alarms
		31283 High availability server is offline
		70007 Not all QP resources are ready
		70025 The MySQL slave has a different schema version than the master
		Expected Major Alarms
		70004 The QP processes have been brought down for maintenance
		31236 High availability TCP link is down
		31233 High availability path loss of connectivity
		70021 The MySQL slave is not connected to the master

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70 70 33 33 33 33 32 70 Back-cout co	0507 An upg 0501 The Clu 0502 Cluster 1232 High av 1101 DB repl 1102 DB repl 1107 DB mei 1114 DB Rep 1106 DB mei 0500 The sys out of the se	rade/bar ster is ru Replicat ailability ication t ication f ging fro ication ging to t tem is ru ver is cc cessfully	ckout action unning differ tion Inhibite y server has to a slave DE from a master m a child So of configura the parent Nunning differ omplete when y) displays in	on a serent version of recession of the urce No attention data where the tention the Upper the U	sions of soft eived a mess ed s failed de has failed a via SOAP I ode has faile sions of soft ollowing me grade Opera	cware sage d has fail ed cware ssage (led (initiat olumn				
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Back-co	0500 The sysout of the seompleted suc	tem is ruver is co	unning differ omplete whe y) displays in	rent vers en the fo	sions of soft Illowing me grade Opera	tware ssage (ation co	olumn				
Back-co	out of the se impleted suc	ver is co	omplete who y) displays ir	en the fo	ollowing me grade Opera	ssage (ation co	olumn				
out co	mpleted suc	cessfully	y) displays in	the Up	grade Opera	ation co	olumn				
			y state and	SHOW th	e previous i	eiease	Back-out of the server is complete when the following message (initiate Back-out completed successfully) displays in the Upgrade Operation column. The server goes back to standby state and show the previous release.				
B Name Alarm Severity Up to Date Server Role Prev Release Running Release Upgrade Operation											
E ☑ CIRP Start Cluster (2 Servins) WCNP2						Cusassand day and Early 4 (2020) 4 (2020) 2					
WCMP1	<u>(4)</u> M3				15.0.0.0_20.1.0			Successfully at Feb 1, 2024 17:09:34			
Note : Post primary and secondary CMP clusters rollback, few alarms maybe reported that might not be cleared (70501, 70500 and 70503), these are false alarms. To clear these alarms run <i>sudo service qp_procmgr restart</i> on the affected server. (If active CMP qp_procmgr is restarted, switchover will happen). Verify in Upgrade Log that that backout was successful:						0503),					
201 0	Backing out server upgrade	02/01/2024 16	6:38:21 02/01/2024 16	6:49:24 0:11:03	Server WCMP2	Success	Manual	User initiated action: i			
202 201	Modify the role/replication att	ou 02/01/2024 16	6:38:21 02/01/2024 16	6:38:22 0:00:01	Cluster CMP Site1 Cl.	Success	Automatic	Automatic action for			
203 0	Backing out server upgrade	02/01/2024 17	7:02:41 02/01/2024 17	7:05:17 0:02:36	Server WCMP1	Success	Manual	User initiated action: i			
204 203	Modify the role/replication att	ou 02/01/2024 1	7:02:41 02/01/2024 17	7:02:42 0:00:01	Cluster CMP Site1 Cl.	Success	Automatic	Automatic action for			
205 203	Waiting for replication to sync	ro 02/01/2024 1	7:05:17 02/01/2024 17	7:09:34 0:04:17	Server WCMP1	Success	Automatic	Automatic action wait			
	Note: mayb these qp_pr is rest Verif 201 0 202 201 203 0 204 203 205 203 All Pri	Note: Post prima maybe reported these are false all app_procmgr restor is restarted, switch verify in Upgrade 201 0 Backing out server upgrade 202 201 Modify the role/replication attril 203 0 Backing out server upgrade 204 203 Modify the role/replication attril 205 203 Waiting for replication to synch	Note: Post primary and maybe reported that mithese are false alarms. Tappprocmgr restart on the is restarted, switchover Verify in Upgrade Log to Backing out server upgrade 202 101 Modify the role replication attribu 0201/2024 10204 10204 10205 203 Modify the role replication attribu 0201/2024 10205 203 Waiting for replication to synchro 02/01/2024 10205 203 203 203 203 203 203 203	Note: Post primary and secondary maybe reported that might not be these are false alarms. To clear the approach of the affected is restarted, switchover will happen verify in Upgrade Log that that based on Backing out server upgrade and backing out	Note: Post primary and secondary CMP clumaybe reported that might not be cleared these are false alarms. To clear these alarm app_procmgr restart on the affected server is restarted, switchover will happen). Verify in Upgrade Log that that backout w 201 0 Backing out server upgrade 0201/2024 16:38:21 02/01/2024 16:49:24 0:11:03 00 Backing out server upgrade 02/01/2024 16:38:21 02/01/2024 16:38:22 0:00:01 00:00:00:00:00:00:00:00:00:00:00:00:00:	Note: Post primary and secondary CMP clusters rollb maybe reported that might not be cleared (70501, 70 these are false alarms. To clear these alarms run suda ap_procmgr restart on the affected server. (If active is restarted, switchover will happen). Verify in Upgrade Log that that backout was success: 201 0 Backing out server upgrade 2001/2024 1638:21 2001/2024 16:49:24 0:11:03 Server WCMP2 202 201 Modify the roleireplication attribu 20201/2024 16:38:21 0201/2024 17:05:17 0:02:36 Server WCMP1 204 203 Modify the roleireplication attribu 20201/2024 17:02:41 0201/2024 17:03:42 0:00:00 Cluster CMP Site1 CL. 205 203 Waiting for replication to synchro 20201/2024 17:05:17 0201/2024 17:09:34 0:04:17 Server WCMP1 All Primary CMP servers is on Release 15:0 at this point an	Note: Post primary and secondary CMP clusters rollback, for maybe reported that might not be cleared (70501, 70500 at these are false alarms. To clear these alarms run sudo serving—procmgr restart on the affected server. (If active CMP clis restarted, switchover will happen). Verify in Upgrade Log that that backout was successful: 201 0 Backing out server upgrade 0201/2024 16:38:21 0201/2024 16:49:24 0:11:03 Server WCMP2 Success 203 0 Backing out server upgrade 0201/2024 16:38:21 0201/2024 16:38:22 0:00:01 Cluster CMP Site I Cl Success 204 203 Modify the rolereplication attribu 0201/2024 17:02:41 0201/2024 17:09:47 0:00:01 Cluster CMP Site I Cl Success 205 203 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:34 0:00:417 Server WCMP1 Success 205 203 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:34 0:00:417 Server WCMP1 Success 205 203 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:34 0:00:417 Server WCMP1 Success 205 203 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:34 0:00:417 Server WCMP1 Success 205 203 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:34 0:00:417 Server WCMP1 Success 205 205 205 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:48 0:00:417 Server WCMP1 Success 205 205 205 Waiting for replication to synchro 0201/2024 17:09:47 020:12024 17:09:48 0:00:417 Server WCMP1 Success 205 205 205 205 205 205 205 205 205 205	Note: Post primary and secondary CMP clusters rollback, few all maybe reported that might not be cleared (70501, 70500 and 70 these are false alarms. To clear these alarms run sudo service qp_procmgr restart on the affected server. (If active CMP qp_pr is restarted, switchover will happen). Verify in Upgrade Log that that backout was successful: 201 0 Backing out server upgrade 0201/2024 16:38:21 0201/2024 16:38:22 00001 Cluster CMP Stel CL Success Manual 202 201 Modify the roleireplication attribu 0201/2024 17:02:41 0201/2024 17:02:42 00001 Cluster CMP Stel CL Success Automatic 203 0 Waiting for regilication to synchro 0201/2024 17:02:41 0201/2024 17:09:34 0:04:17 Server WCMP1 Success Automatic 205 203 Waiting for regilication to synchro 0201/2024 17:09:17 0201/2024 17:09:34 0:04:17 Server WCMP1 Success Automatic 205 203 Waiting for regilication to synchro 0201/2024 17:09:17 0201/2024 17:09:34 0:04:17 Server WCMP1 Success Automatic 205 203 Waiting for regilication to synchro 0201/2024 17:05:17 0201/2024 17:09:34 0:04:17 Server WCMP1 Success Automatic 205 203 Waiting for regilication to synchro 0201/2024 17:05:17 0201/2024 17:09:34 0:04:17 Server WCMP1 Success Automatic			

Step	Procedure	Details
11.	CMP SSH: Verify	Login to the backed-out Server as admusr
	syscheck and /tmp directory permission	2. Verify that there are not any failures in syscheck:
	, .	\$ sudo syscheck
		Running modules in class disk OK Running modules in class hardware OK Running modules in class net OK Running modules in class proc OK
		Running modules in class system OK Running modules in class upgrade OK LOG LOCATION: /var/TKLC/log/syscheck/fail log
		3. Verify /tmp directory permissions:
		\$ ls -1 /
		NOTE: Permissions should be the following,
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp
		4. If the permissions are not as listed above then perform the following otherwise skip to next step:
		\$ sudo chmod 777 /tmp
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>
		\$ sudo chmod +t /tmp
		5. Verify:
		\$ ls -1 /
		6. Perform syscheck again:
		\$ sudo syscheck
12.	CMP GUI: Verify	 Navigate to System Wide Reports → Alarms → Active Alarms.
	Alarm Status.	2. Confirm that any existing alarm is understood.
		Oracle Communications Policy Management Active Alarms (Stats Reset: Interval / Lest Refresh: 01/15/2016 10:16:13) Proces See Legent See as CEV Septemble See as CEV See as CEV
13.	CMP GUI: Verify Traffic Status - KPI Dashboard Report	 Navigate to System Wide Reports → KPI Dashboard. Confirm that all Connections and Traffic status are as expected. Observe it for a few screen refresh updates.





2 GEOREDUNDANCY DISABLED

2.1 Introduction

2.1.1 Purpose and Scope

This document describes methods utilized and procedures to perform a software upgrade of Oracle Communications Policy Management Release 15.0 to Release 15.0.x when georedundancy on non-CMP components (MPE/MRA) is disabled.

The non-georedundant MPE/MRA cluster scheme only has two servers active and standby co-located on one site.

Two sites can be used in Policy Management deployments, namely, a Site1 or Primary Site and a Site2 or Secondary Site. The primary MRA/MPE cluster of active and standby resides on Site1 while the secondary MRA/MPE cluster of active and standby resides on Site2 for disaster recovery.

2.1.2 Acronyms

Table 5: Acronyms

Acronym	Meaning
CMP	Configuration Management Product
	NOTE: It usually refers to the CMP on the primary site
DR-CMP	Configuration Management Platform for Disaster Recovery
	NOTE: It refers to the CMP on the secondary site
DSR	Diameter Signaling Router
GUI	Graphical User Interface
LVM	Logical Volume Manager
MPE	Multimedia Policy Engine
MPE-LI	MPE for Lawful Intercept - a type of Multimedia Policy Engine
MRA	Multiprotocol Routing Agent (also referred to as Policy Front End or PFE)
PC	Policy Counter
PCEF	Policy Control Enforcement Function
PCRF	Policy and Charging Rules Function—An Oracle Communications Policy Management system
TPD	Tekelec Platform Distribution
UE	User Equipment
ИМ	Upgrade Manager—The CMP GUI pages that the operator uses to perform an upgrade
VO	Verification Office
MOP	Method of Procedure
OOS	Out of Service

Acronym	Meaning
IPM	Initial product manufacture

2.1.3 Terminology

Table 6: Terminology

Term	Description
Primary Site (Site1)	A site where the MPE/MRA primary cluster exists with co-located Active and Standby servers.
Secondary Site (Site2)	A site where the MPE/MRA secondary cluster exists with co-located Active and Standby servers for disaster recovery.
Spare Server or Server-C	Server that is ready to take over from the Active server if both the Active and Standby servers fail. It is generally in a different location than the Active and Standby servers.

2.1.4 Software Release Numbering

TPD: 8.xCOMCOL: 6.6

• Policy Management Release 15.0

2.1.5 Upgrade Overview

This section lists the required materials and information needed to perform Policy Management Release 15.0 software upgrades.

2.1.6 Upgrade Status Values

Table 7: Upgrade Status Values

Status	Condition
ОК	All servers are up-to-date and no alarms are present.
Info	No alarms are present, but a condition (such as out-of-date) is present that the operator should be made aware of.
Minor	At least one minor alarm is present.
Major	At least one major alarm is present.
Offline	The server cannot be reached.
Degraded	At least one server in the cluster cannot be reached.
Critical	At least one critical alarm is present.
Active	The server is active.
Standby	The server is in standby mode as part of normal operations.
Forced Standby	The server is in standby mode because it has been placed into that state via direct operator intervention or as part of the upgrade.
Offline	The server cannot be reached.
Zombie	The server is in a state where it cannot recover automatically and requires direct operator intervention.

2.1.7 Upgrade Path

This upgrade document supports the following upgrade path:

• Policy Management 15.0 (fresh install) to 15.0.x (full DIU ISO) (Major Path)

NOTE:

- If the official upgrade paths mentioned in the release documents of each supported version is not followed, please contact Oracle Support before upgrading to 15.0.x. (Refer to individual patch release document to see the supported upgrade paths.)
- 15.0 to 15.0.x upgrade is only applicable for VM based environments.

2.1.8 Upgrade Information

2.1.8.1 Upgrade Sequence

An upgrade procedure applies to an Active/Standby pair of servers. This pair of servers is referred to as a cluster or HA cluster. A cluster can be of different types: CMP, MRA or MPE depending on the mode. For a CMP cluster, the cluster status may also be Primary site and/or Secondary site.

A deployment may consist of multiple clusters.

Required Cluster Upgrade Sequence

Policy Management Server software upgrades are performed on a cluster by cluster basis at the primary and secondary sites within the same maintenance window.

The following is the general upgrade sequence, specific procedures/steps can further be documented by an Oracle provided MOP.

The following are the steps for a Policy Management system upgrade procedure (specific process are documented by an Oracle provided MOP):

- 1. Upgrade Primary (Site1) CMP
- 2. Upgrade Secondary (Site2) CMP (if applicable)
- 3. Upgrade MPE/MRA (see note below)

NOTE: MPE/MRA clusters can be upgraded in parallel. (upgrades from 12.5.0 where 8 clusters can be upgraded in parallel, and from 12.6 where 16 clusters can be upgraded in parallel).

2.1.8.2 Policy Management Release Mixed-Version Operation and Limitation

The general expectation is that a system that is running in a mixed version configuration should support features and perform at a level of the previous version. Thus, a system that is running pre-15.0.x release and 15.0.x release in mixed configuration would support the performance and capacity of the pre-15.0 release. The mixed version Policy Management configuration would also support pre-15.0.x features.

Since the CMP is the first Policy Management system component that is upgraded to the new version, the Release 15.0.x CMP manages MRA/MPE servers in a pre-15.0.x release. In this mixed version configuration, a Release 15.0.x CMP does not prevent an operator from configuring anything that can be configured in a previous release and all configuration items from the previous release are still available. However, the configuration changes during the upgrade of Policy Management system are discouraged and have limited support.

In the mixed version, a Release 15.0.x CMP has the following limitations while running in a mixed version environment:

- New features must not be enabled until the upgrades of all servers managed by that CMP are completed. This also applies to using policy rules that include new conditions and actions introduced in the release.
- As a general guideline, policy rules should not be changed while running in a mixed version
 environment. If it is necessary to make changes to the policy rules while running in a mixed
 version environment changes that do not utilize new conditions and actions for the release
 could be installed, but should be jointly reviewed by the you and Oracle before deployment to
 verify that these policies indeed do not use new conditions or actions.
- The support for configuration of MPE/MRA servers is limited to parameters that are available in the previous version. Specifically:
 - Network Elements can be added

Table 8: Mixed-version configurations supported

Policy Management	CMP	MRA	MPE
system components on	R15.0.x	R15.0.x	R15.0.x
CMP 15.0	Yes	No	No
MRA 15.0	Yes	Yes	Yes
MPE 15.0	Yes	Yes	Yes

NOTE: Replication between CMP and DR-CMP is automatically disabled during upgrade of CMP and DR-CMP to Release 15.0.x. The replication is automatically enabled after both active CMP and DR-CMP are upgraded to Release 15.0.x.

2.1.9 Customer Impacts

The cluster upgrade proceeds by upgrading the Standby server, switching over from the Active to the Standby, and upgrading the second server (that is, the new Standby). The switchover of each cluster has a small impact on traffic being processed at that cluster, as in the past releases upgrades.

2.1.10 Rollback/Backout

The full pre-upgrade server image is stored on the server during the upgrade, and can be restored in the event of a problem discovered during or after upgrade.

2.1.11 TPD Version

The Tekelec Product Distribution (TPD) version needed for this release is included in the Policy Application Software Upgrade DUI ISO, and TPD is upgraded to version 8.x as part of this procedure.

2.1.12 Loading Application software

For upgrade of server application software, the recommended method is to copy the application DIU ISO images to the servers using scp or ftp.

2.1.13 Required Materials and Remote Access

- 1. Policy Management 15.0.x software DIU-ISO files
- 2. Policy Management 15.0.x software Release Notes
- **3.** The capability to remote login to the target server as admusr.

NOTE: The remote login can be done through SSH, local console. Ensure the network firewall policy allows the required application and corresponded ports.

- **4.** The capability to secure copy (scp) from the local workstation being used to perform this upgrade to the target server, or otherwise be able to transfer binary files to the target server.
- **5.** User logins, passwords, IP addresses and other administration information.
- **6.** VPN access to the network is required if that is the only method for remote logging into the target servers. It must be also possible to access the Policy Management GUI.

2.1.14 Upgrade Media

See the release notes for the list of DIU ISO image files required for the Policy Management upgrade you are installing.

2.1.14.1 Logins, Passwords and Server IP Addresses

The IP address assignments for each site, from the appropriate Oracle Network IP Site Survey/NAPD, must be available. This ensures that the necessary administration information is available prior to an upgrade.

Further, need to confirm login information for key interfaces, and document in table below.

It is assumed that the logins may be common across sites. If not, record the information for each site.

NOTE: Consider the sensitivity of the information recorded in this table. While all of the information in the table is required to complete the upgrade, there may be security policies in place that prevent the actual recording of this information in permanent form.

Table-9: Logins, Passwords and Server IP Addresses

Item	Value
CMP servers	GUI Administrator Login User/Password:
	admusr password:
MRA/MPE servers	admusr password:
Target OA	OA Administrator Login: User/Password
Software Upgrade Target Release ²	Target Release Number:
	Policy Management 15.0 software DIU ISO image filenames.

2.2 Theory of Operation

2.2.1 Upgrade Manager Page

The Upgrade Manager represents a significant shift from some of the previous upgrade pages. In the past it was up to the operator, with assistance from a MOP, to know the correct sequence of server selects and menu selects. The new upgrade manager takes a different approach. It determines the next course of action to either:

- 1. Begin/continue upgrading a cluster
- 2. Begin/continue backing out a cluster.

There is an important point implicit in the list above:

Upgrade is now presented from a cluster perspective, instead of a server perspective.

The shift in perspective has a number of ramifications, most noticeably it is not possible to select individual servers or bulk select a group of servers. In fact, in order to perform any operation, it is necessary to select a cluster first.

Another major shift is that certain operations are performed automatically on behalf of the operator. These operations are not even presented to the operator as an option. However, the operator can see what has been done via the upgrade log.

² The ISO image filenames should match those referenced in the Release Notes for the target release.

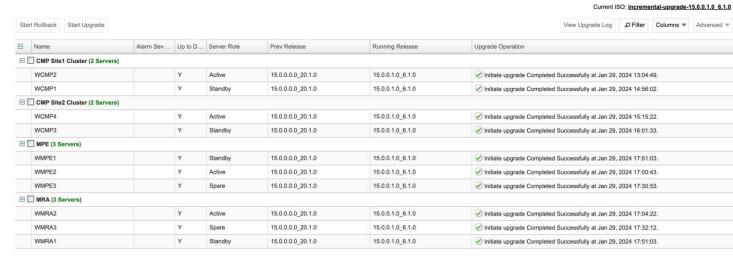


Figure 4: Sample display of the upgrade manager page.

For the most part, the items in the display are fairly self-explanatory. With that said, there are three items that deserve a deeper discussion.

Start Rollback or Start Upgrade buttons (upper left)

If these buttons are greyed out, it means that there is not an appropriate action to take at this time. However, if a button is not greyed out, then it means that there is a preferred action that can be taken to upgrade (or backout) the cluster. Normally, upgrading a cluster is a well-defined fixed procedure. However, in some cases there are a number of valid sequences. Selecting the preferred step causes the upgrade director to choose the default sequence. It is strongly recommended to exclusively use these buttons to upgrade or backout a cluster.

Alarm Severity

This column is used to indicate if there are alarms associated with a server. If so, it displays the severity of the most severe alarm here. It is important to explain the intent of this column. The intent is to give a visual indication that the particular server is experiencing alarms. This is not a reason to panic: During the upgrade we expect servers to raise alarms:

- The CMP raises alarms simply to indicate that it is initiating upgrade activity.
- Servers report alarms to indicate that their mate servers are offline.

However, if alarms are asserted for a server, it is good practice to look at the alarms prior to initiating upgrade activity on them.

Up to Date

This column is used to indicate the state of the code on the server.

N

The server is running old code and must be upgraded

Y

The server is running new code.

N/A

Upgrade is not appropriate and/or the server is in a bad state

2.2.2 The Upgrade Log

Within the Upgrade Manager page, the operator can access the upgrade log. This displays attributes of the various actions (manual and automatic) that have been performed on the selected cluster. It is important to note that this is NOT the audit log. The audit log is meant to track what the operator has done. This log is meant to capture the sequence of upgrade activity—whether it was initiated by an operator or automatically triggered.



Figure 5: Upgrade Log

2.2.2.1 Optional Actions

It is possible to perform every step in the upgrade process just using the **Upgrade** and **Backout** buttons. When the operator clicks these buttons, the upgrade director performs the next preferred action. However, there are times that the operator may want to take a slightly different—but still legal—procedure. For example, the upgrade director has a preferred order in which it upgrades a cluster. However, if the operator wanted to deviate from that default procedure—say to restrict upgrade to servers in a particular site—then they can use the optional actions menu. It is important to note that this menu is ONLY be populated with legal/reasonable actions. Actions that are wrong or inconsistent are not displayed.

If the operator selects an optional action, they can go back to using the default/preferred at any time.

2.2.2.2 The DIU ISO Select

In the upper right hand corner, there is an item called the current DIU ISO. In some respects the term DIU ISO is misleading. A better description might be upgrade procedure. This item shows the upgrade procedure that is being used. In common cases, this is going to work out to either:

- A standard (full) upgrade to version XXX
- An incremental upgrade to version XXX

To start a new upgrade, click this item. The upgrade director searches for the valid upgrade procedures. To minimize confusion, the upgrade procedures are embedded in the CMP DIU ISO file. This way, the CMP DIU ISO file is tied to the corresponding upgrade procedure.



When you select a new DIU ISO file, you are telling the upgrade director to abandon its current upgrade procedure in favor of a new procedure.



2.2.2.3 Upgrade Director Behavior

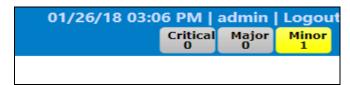
The Upgrade Director (UD) is a component that tracks the state of the servers, cluster, and system during an upgrade. The UD is hidden. However, there are conventions and operating principles that are visible.

Alarm Philosophy

NOTE: During an upgrade, the Upgrade Manager asserts (that is, generates) and displays alarms. An upgrade typically triggers multiple minor, major, and critical alarms as servers are taken out of service, go into forced standby, or fail over. This is normal and to be expected.

In general, the Upgrade Director raises alarms if:

- A server is somehow impaired.
- There is activity expected of an operator.



The table summarizes the alarms that can be raised during a 15.0.x upgrade.

Table 5 Alarm summary

Alarm ID	Severity	Name	Description
70500	Minor	SYSTEM_MIXED_VERSION	The servers in the topology are running different versions of software. Upgrade of the

Alarm ID	Severity	Name	Description
			system is not complete.
70501	Minor	CLUSTER_MIXED_VERSION	The servers in the specified cluster are running different versions of software. The upgrade of the cluster is not complete.
70502	Minor	REPLICATION_INHIBITED	Replication is inhibited to the specified server. It is not receiving session information.
70503	Minor	SERVER_FORCED_STANDBY	The specified server has been placed in forced standby and cannot provide service.
70506	Minor	UPGRADE_OPERATION_FAILED	An upgrade operation failed on the specified server.
70507	Minor	UPGRADE_IN_PROGRESS	An upgrade/backout is currently in progress on the server. It may leave the cluster, become unreachable or even reboot.
70508	Critical	ZOMBIE_SERVER	The server is in an indeterminate state and must be repaired by support.

General Upgrade Procedure

In general, the upgrade of a server goes through three steps.

- 1. Preflight checks—look for certain conditions which guarantee a failed upgrade. If such conditions are detected, the upgrade fails. There are two principles behind the preflight checks
 - a. It is better to fail early in a recoverable way than to fail late in an unrecoverable way.
 - b. Preflight checks are VERY narrow. We do not want a false positive preventing an otherwise valid upgrade.
- 2. The upgrade itself
- **3.** Wait for replication to synchronize.

This procedure is in place so that it should not be necessary for an operator to login to the target server to verify conditions. They should be able to comfortably stay on the upgrade manager page.

Unreachable Servers

During the course of an upgrade, servers can go unreachable. This is expected and the Upgrade Manager tries to be graceful about unreachable servers. However, if the CMP experiences a failover when another server is unreachable, this runs into limits. The promoted UD does not have the full history/context. It waits until it can contact the unreachable server before it takes action on the server.

Reversing Directions

In general, it should be possible to reverse directions at any time. You should be able to upgrade a server in a cluster, back it out, upgrade it, upgrade its mate, back it out, and so on. In this sense, upgrade/backout should be fully reversible. However, you are not permitted to reverse direction if there is an ongoing action: You cannot kick off a backout of a server if another server in the cluster is being upgraded. You have to wait for the upgrade to finish.

Mixed Version and Forced Standby

As a general rule, if a cluster is in mixed version, then every server that is NOT running the same version as the active server must be in forced standby. This way, a simple failover does not cause a change in the version of code that is providing service.

Failure Handling and Recovery

Failures fall into two categories:

- Failures that the upgrade director is able to recover from.
- Failures that the upgrade director cannot automatically recover from.

Any failure should generate an UPGRADE_OPERATION_FAILED alarm. In such cases, the operation can be attempted again. Ideally, the operator/support would investigate the original failure before repeating. However, if the server is in an indeterminate state, the server is declared a ZOMBIE and no further action can be taken on the server. It requires direct action by support or engineering to repair.

For the current release, recovery or even deep failure diagnosis, is not something that we expose via the GUI.

2.3 Upgrade Preparation

This section provides detailed procedures to prepare a system for upgrade. These procedures are performed outside a maintenance window.

Overview:

- 1. Upgrade Primary (Site1) CMP
- 2. Upgrade Secondary (Site2) CMP (if applicable)
- 3. Segment 1 Site 1:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters
- 4. Segment 1 Site 2:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters
- **5.** Segment 2 Site 1:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters
- 6. Segment 2 Site 2:
 - a. Upgrade MPE clusters
 - b. Upgrade MRA clusters

2.3.1 Prerequisites

The following Procedure 16 table verifies that all required prerequisite steps needed to be performed before the upgrade procedure begins.

Procedure 14 Prerequisites

Step	Procedure	Details		
1.	Review Release	Review Policy Management Release 15.0.x for the following information:		
	Notes	 Individual Software components and versions included in target release New features included in target release 		
		Issues (Oracle BUGs) resolved in target release		
		Known Issues with target release		
		 Any further instructions that may be required to complete the Software Upgrade for the target release. In particular, the supported browsers: In release 15.0.x, only Mozilla Firefox and Google Chrome are fully supported. 		
	—End of Procedure—			

2.3.2 Plan and Track Upgrades

The upgrade procedures in this document are divided into the following three main sequential steps:

- 1.Upgrade CMP cluster(s)
- 2. Upgrade non-CMP clusters

The following table can be completed first before performing the upgrade, to identify the clusters to be upgraded and plan the work. It can also be used to track the completion of the upgrades, and assign work to different engineers.

NOTES:

- **1.** Policy changes or configuration changes should NOT be made while the system is in mixed-version operation.
- **2.** Time estimates are for upgrade procedures without backout procedure. Backout procedure time is typically same as, or less than the upgrade procedure.

Step	Procedure	Result	Engineer	Time
1.	Use the following checklist to plan the cluster upgrades for the entire system.	Maintenance windows are planned		
2. 🗌	Upgrade Site1 and Site2 CMP clusters	Site Names &		3 hrs

Step	Procedure	Result	Engineer	Time
3.	Upgrade Site1 non- CMP clusters for Segment-1	Site Names Cluster List:		2 hrs
4. \square	Upgrade Site2 clusters for Segment-1	Site Names Cluster List:		2 hrs
5.	Upgrade Site1 clusters for Segment-2	Site Names Cluster List:		2 hrs
6.	Upgrade Site2 clusters for Segment-2	Site Names Cluster List:		2 hrs

2.3.3 Perform System Health Check

Use this procedure to determine the health and status of the servers to be upgraded and must be performed at least once within the time frame of 24-36 hours prior to the start of a maintenance window.

Procedure 15 Perform System Heath Check

Step	Procedure	Result		
1.	CMP GUI access	Open a supported browser (Mozilla Firefox or Google Chrome) to access the Primary CMP GUI on its VIP address and login to verify access.		
2.	View active alarms	Identify the cause of any existing active alarms, and determine if these may have impact on the upgrade. Export current Alarms to save into a file. IMPORTANT: Before starting any upgrade activity, ensure that all active alarms are understood and resolved.		
3.	View KPI reports	Verify that the system is running within expected parameters. Export current KPIs to save into a file.		
4.	Confirm NTP servers reachable from all the servers (CMP and non- CMP) to be upgraded	 Validate the IP connectivity between the server and NTP servers with the ping command. Confirm that time is synchronized on each server with CLI shell command of: <pre>[admusr@CMP1194 ~]\$ sudo chronyc tracking</pre> 		
	NOTE: If the time across the servers is out of synch, fix it first and revalidate this step, before starting the upgrade procedures.	 3. Confirm the date is correct on each server. 4. Check that the BIOS clock is synced with the clock using the shell hwclock command: [admusr@CMP1194 ~]\$ sudo hwclock 		
—End of Procedure—				

2.3.4 Deploy Policy Management Upgrade Software

Software should be deployed to each policy server <code>/var/TKLC/upgrade</code> directory, before the actual upgrade activities. This is typically done with utilities such as SCP, WGET, SFTP, or the Upgrade Manager. Because of the large size of the software ISO files, sufficient time should be planned to accomplish this step. For Policy Management Release 15.0.x, each DIU ISO image size is about 8GB for CMP and about 7GB for non-CMP servers.

2.3.4.1 Deploying Policy Management Upgrade Software to Servers

There are several possible software images in this upgrade (CMP, MPE, MPE-LI, MRA). A single image must be deployed to the <code>/var/TKLC/upgrade</code> directory of each server to be upgraded, where the image is the correct type for that server. Therefore, the CMP software image must be deployed to the CMP servers, the MPE image deployed to the MPE servers, the MRA image deployed to the MRA servers and so on.

IMPORTANT: If the deployed image type (CMP, MPE, MRA) does not match the existing installed software type, the upgrade fails. Example: an attempt to upgrade a CMP with a MPE software image fails during the upgrade action.

If multiple images are copied into the /var/TKLC/upgrade directory, the upgrade fails.

2.3.4.2 Distribute Application ISO Image Files to Servers

This procedure applies to all server types. It assumes that the ISO image files are copied to the sites to be upgraded.

NOTE: ISO transfers to the target systems may require a significant amount of time depending on the number of systems and the speed of the network. The ISO transfers to the target systems should be performed prior to, outside of, the scheduled maintenance window. Schedule the required maintenance windows accordingly before proceeding.

Procedure 16 Distribute Application ISO Image Files to Servers

Step	Procedure	Result		
1.	Transfer ISO files to Policy Management Servers.	Transfer release 15.0.x ISO files (CMP and non-CMP) into the /var/TKLC/upgrade directory on the respective server using one of the following methods		
		SCP/WGET command		
		USB drive		
		OR, if the images are on a server on the same network, scp via CLI.		
		Copy CMP software ISO to ONE of the other CMP servers:		
		\$sudo scp 872-* <cmp-15.0.x>:/var/TKLC/upgrade/</cmp-15.0.x>		
		Copy MPE software ISO to ONE of the other MPE servers:		
		\$sudo scp 872-* <mpe-15.0.x>:/var/TKLC/upgrade/</mpe-15.0.x>		
		Copy MPE-Li software ISO to ONE of the other MPE-Li servers:		
		\$sudo scp 872-* <mpe-li-15.0.x>:/var/TKLC/upgrade/</mpe-li-15.0.x>		
		Copy MRA software ISO to ONE of the other MRA servers:		
		\$sudo scp 872-* <mra-15.0.x>:/var/TKLC/upgrade/</mra-15.0.x>		
		NOTE: After copying the ISO to one of the respective servers, the ISO Maintenance option is used to upload to the rest of the servers.		
	—End of Procedure—			

2.3.4.3 Backups and Backup Locations

Procedure 17 Backup servers before upgrading servers

Step	Procedure	Result
1.	SSH CLI/ iLO: Access the server to be backed up	IMPORTANT: Server backups (for all CMP and non-CMP active and standby servers), and the system backup (from the active CMP), must be collected and readily accessible for recovery operations.
	NOTE: System Backup is done on Active	1. Login into the ACTIVE Primary CMP server.
	CMPs ONLY	2. Open the platcfg utility.
		\$sudo su - platcfg
		3. Navigate to Policy Configuration → Backup and Restore → Server Backup
		Enter an ISO backup filename (or use the suggested one) in the default backup location path:
		<pre>var/camiant/backup/local_archive/serverbackup/<serverbackup>. iso</serverbackup></pre>
		The iso path: /var/camiant/backup/local_archive/server OK Cancel
		5. Click OK .
		 Go back to the previous menu (Policy Configuration→Backup and Restore) and select System Backup.
		7. Enter a tarball backup filename (or use the suggested one) in the default backup location path:
		<pre>/var/camiant/backup/local_archive/systembackup/<systembackup> .tar.gz</systembackup></pre>
		The tarball path: /var/camiant/backup/local_archive/system OK Cancel

Step	Procedure	Result		
2.	SSH CLI/iLO: Verify the backup file	If the default location is accepted in the previous step, change directory to the following and verify the file exists:		
		<pre>\$ cd /var/camiant/backup/local_archive/serverbackup</pre>		
		<pre>\$ ls <hostname>-<servertype>_xx-serverbackup- <yyyy><mm><dd><hhmm>.iso</hhmm></dd></mm></yyyy></servertype></hostname></pre>		
		And:		
		<pre>\$ cd /var/camiant/backup/local_archive/systembackup</pre>		
		<pre>\$ ls <hostname>-cmp_xx-systembackup- <yyyy><mm><dd><hhmm>.tar.gz</hhmm></dd></mm></yyyy></hostname></pre>		
3.	Copy backup files.	Copy the ISO and tarball files to a safe location, for example, for a server backup file:		
		<pre>\$sudo scp -p /var/camiant/backup/local_archive/serverbackup/<serverbackup> .iso <remoteserverip>:<destinationpath></destinationpath></remoteserverip></serverbackup></pre>		
		Another option is to scp the server and system backup files to your local workstation.		
		After copying to remote server/workstation, remove the backup files from the server.		
		\$sudo rm <serverbackup>.iso</serverbackup>		
4.	Identify backup location	Backup location is:		
		Instructions to access to backups are as follows:		
	—End of Procedure—			

2.4 Upgrade CMP Clusters (15.0 to 15.0.x) wireless mode

2.4.1 Upgrade CMP Clusters Overview

The following is an overview of CMP Cluster upgrade.

1. Upgrade Primary CMP cluster

Use the CMP GUI, Upgrade

Upgrade Manager and upgrade the CMP Primary Site 1

- a. Start Upgrade
- b. Failover
- c. Log back into the CMP GUI
- d. Continue Upgrade
- 2. Upgrade The Secondary CMP cluster

Use the CMP GUI, Upgrade → Upgrade Manager and upgrade the CMP Secondary Site 2

- a. Start Upgrade
- b. Failover
- c. Continue Upgrade

It is assumed that the CMPs may be deployed as 2 Geo-Redundant clusters, identified as Site-1 and Site-2 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 Secondary site (this site is ready to become Primary site, if needed).

CMP Sites Georedundant Status	Operator Site Name	Site Designation from Topology Form (Site1 or Site2)
Primary Site		·
Secondary Site		
Note the Information on this CMP cluster:		
Cluster Name		
Server-A Hostname		
Server-A IP Address		
Server-A Status		
Server-B Hostname		
Server-B IP Address		
Server-B Status		

IMPORTANT:

- CMP servers MUST be upgraded first, before the MPE or MRA clusters
- Site1 CMP MUST be upgraded to the new release first, before the Site2 CMP (if applicable)

2.4.1.1 Upgrade CMP Cluster

Use this procedure to upgrade a Primary CMP Cluster.

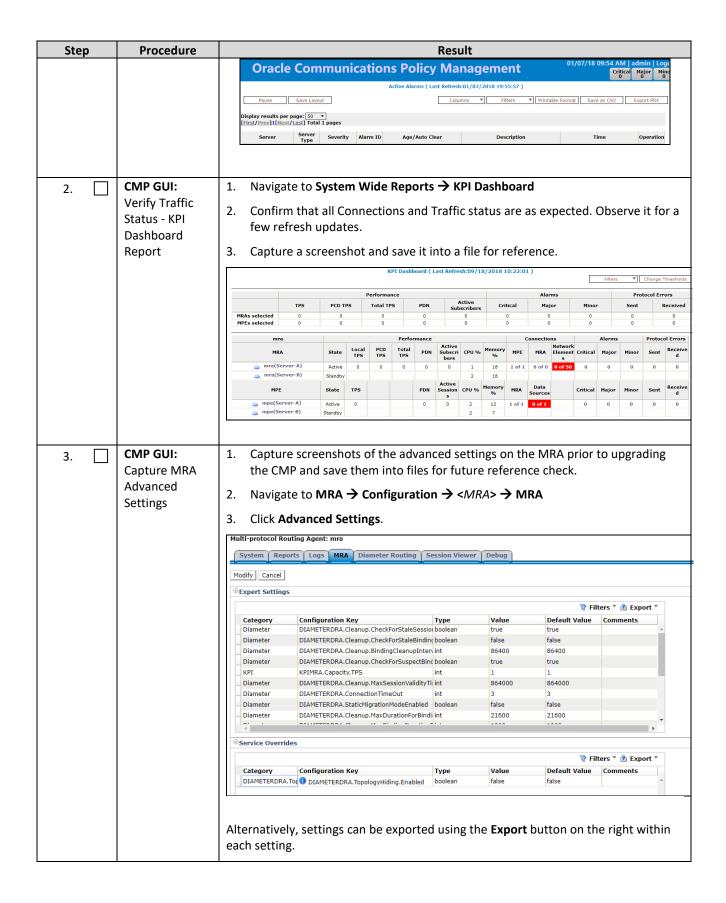
NOTES:

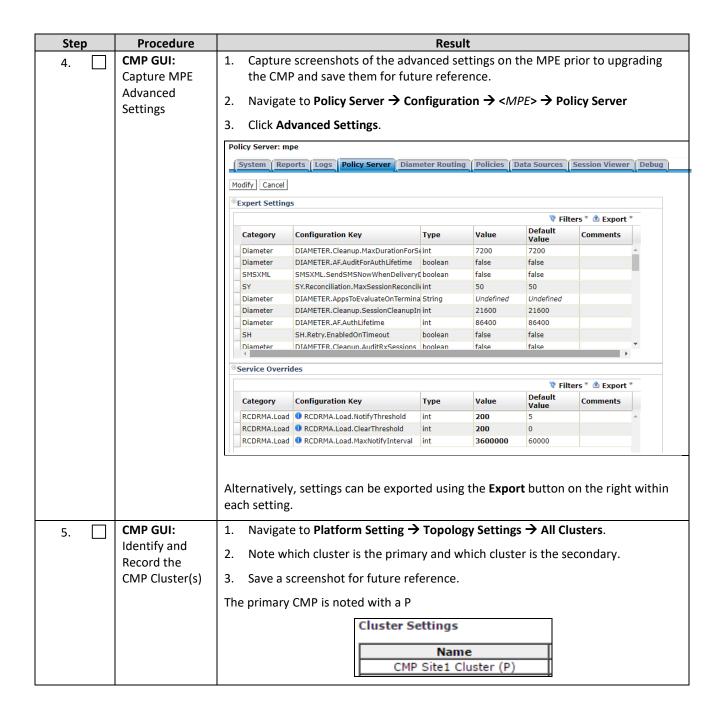
- This procedure must be performed in a maintenance window.
- This procedure takes approximately 60-75 minutes.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

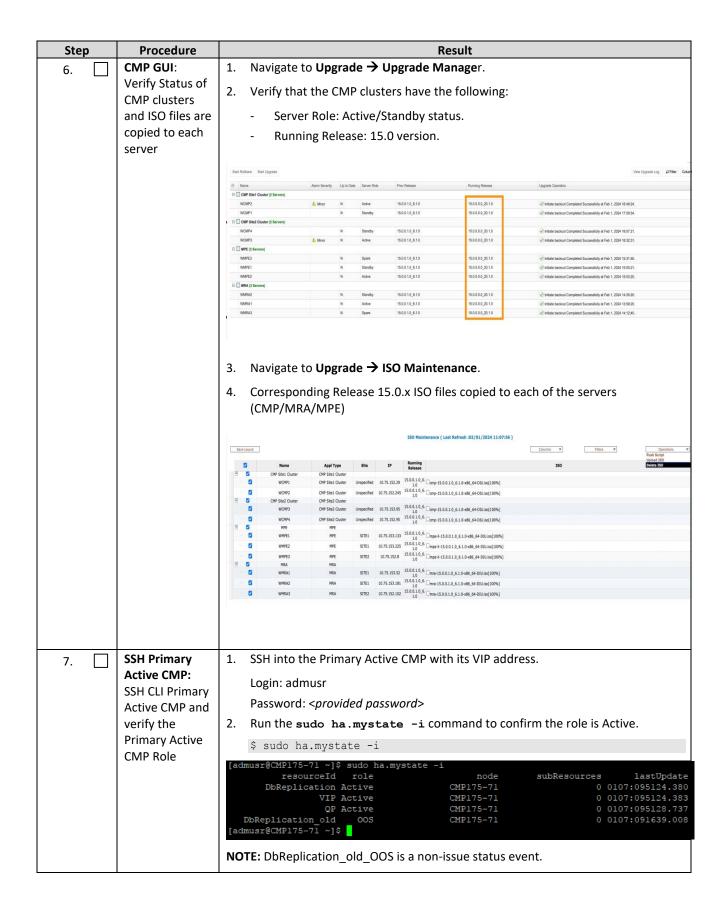
Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 18 Upgrade CMP Cluster

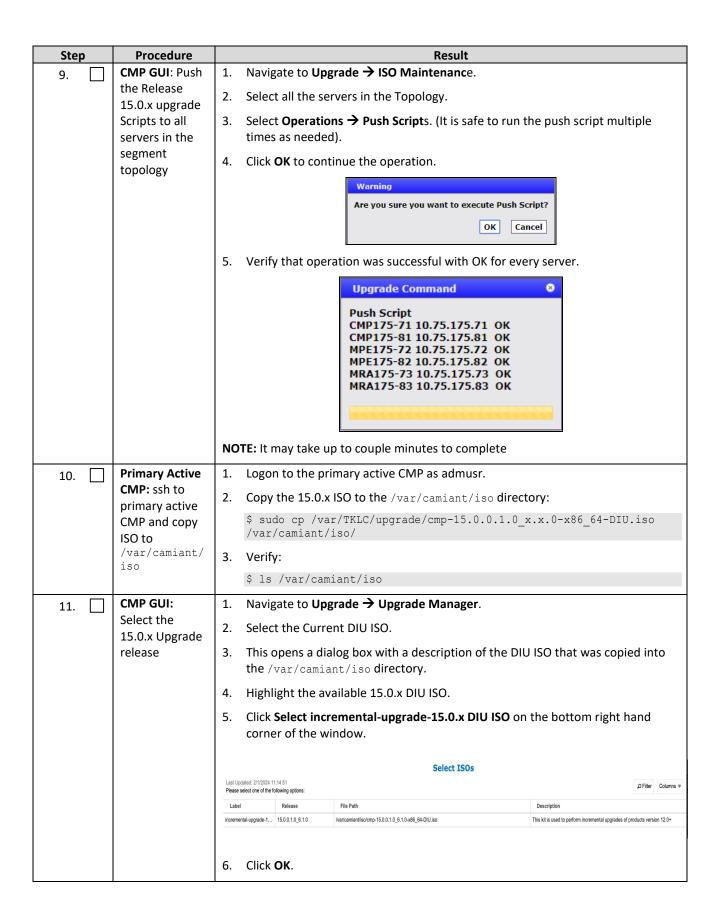
Step	Procedure	Result
1.	CMP GUI:	1. Navigate to System Wide Reports → Alarms → Active Alarms
	Verify Alarm Status.	Confirm that any existing alarm is understood and there is not any impact to the Upgrade procedure.
		3. Capture a screenshot and save it into a file for reference.

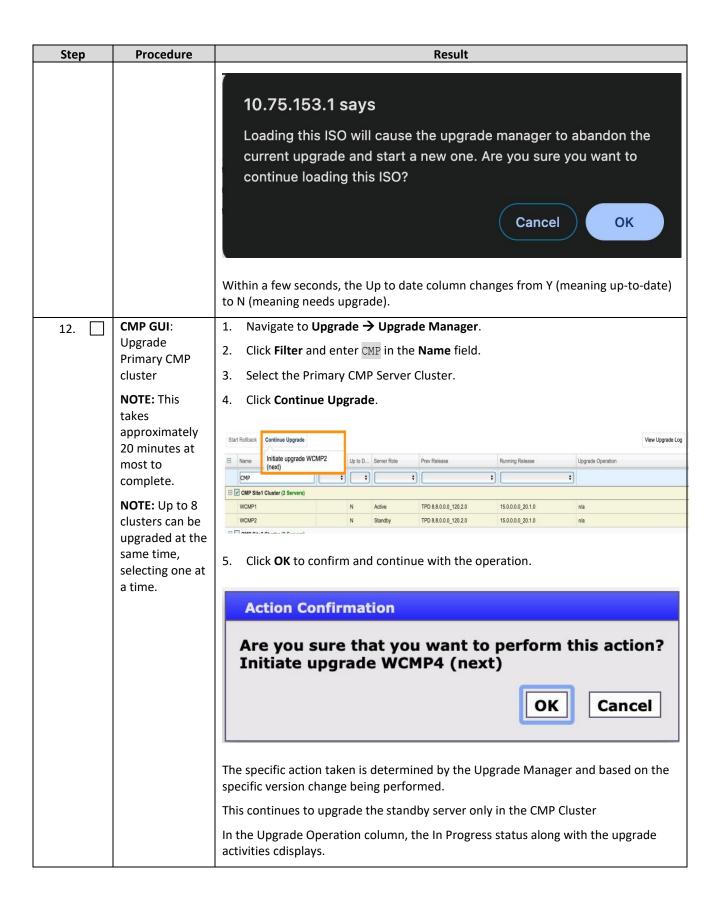




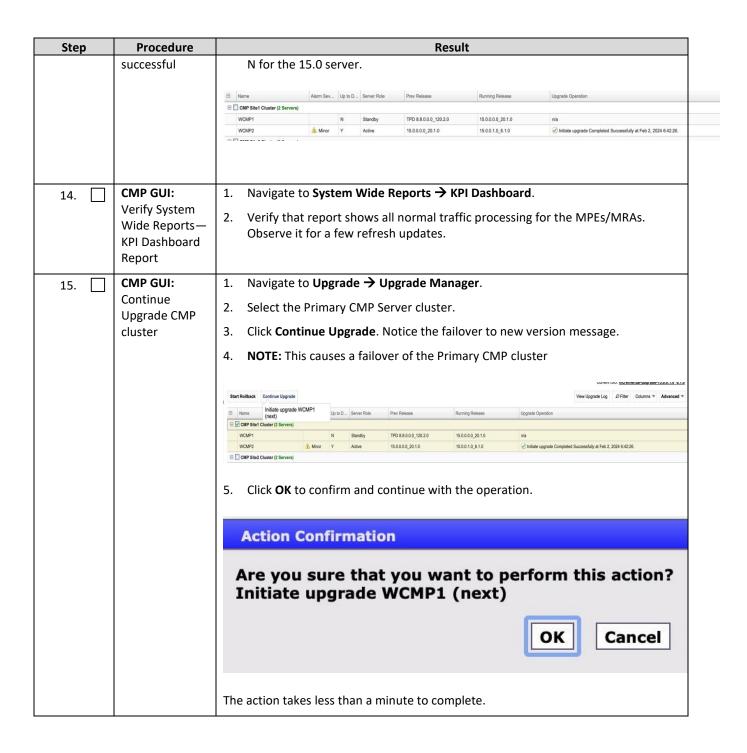


Step	Procedure		Result
8.	SSH Primary	1.	Exchange keys to all servers from the SITE 1 Active Primary CMP.
	Active CMP: exchange keys	2.	Login as admusr user.
	,	3.	Notes: This step could be skipped if your system was fresh installed in R15.0.
			<pre>\$ sudo mount -o loop /var/TKLC/upgrade/cmp-15.0.0.1.0_x.x.0- x86_64-DIU.iso/mnt/upgrade/</pre>
			<pre>\$ sudo cp /mnt/upgrade/upgrade/policyScripts/*.pl /opt/camiant/bin</pre>
		NO	TE: If prompted, answer Yes to all.
			<pre>\$ sudo umount /mnt/upgrade</pre>
			<pre>\$ sudo qpSSHKeyProv.plprov</pre>
		•	Required to enter the PASSWORD for admusr user.
		•	Ensure that the Keys are exchanged successfully with all the server clusters
		For	example:
			<pre>\$ sudo qpSSHKeyProv.plprov</pre>
			The password of admusr in topology: <admusr password=""></admusr>
			Connecting to admusr@njbbs07cmp01b
			Connecting to admusr@njbbs07cmp01a
			Connecting to admusr@txsls07mra01b
			Connecting to admusr@njbbs07mpe02a
			Connecting to admusr@txsls07mpe01b
			Connecting to admusr@njbbs07mra01a
			[16/17] Provisioning SSH keys on txsls07mpe02b
			[17/17] Provisioning SSH keys on njbbs07mra01b
			SSH keys are OK.

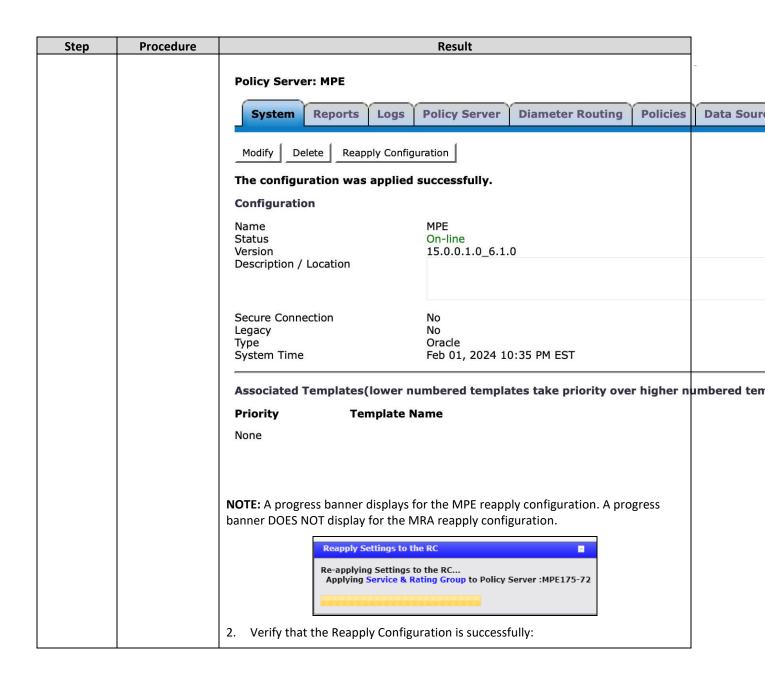




Step	Step Procedure	Result							
		□ CMP Sta2 Cluster (2 Servers)							
		WCMP3 X Critical N Active TPD 8.8.0.0.0_120.2.0 15.00.0.0_20.1.0 n/a							
		WCMP4 Scrience N OOS TPD 8.8.0.0.0_120.2.0 15.0.0.0.20.1.0 Step 2/3 50% Initiate upgrade : Upgrading server (Elapsed Time: 0:00.222)							
		□ mrc (Janves)							
		Upgrade Status changes to Completed Successfully when done.							
		During the Upgrade activities, the following alarms may be generated and are considered normal reporting events:							
		Expected Critical Alarms							
		70001 The qp_procmgr process has failed							
		31227 The high availability status is failed due to raised alarms							
		70007 Not all QP resources are ready							
		70025 The MySQL slave has a different schema version than the master							
		31283 High availability server is offline							
		Expected Major Alarms							
		70004 The QP processes have been brought down for maintenance							
		31233 High availability path loss of connectivity							
		70021 The MySQL slave is not connected to the master							
		Expected Minor Alarms							
		70503 The server is in forced standby							
		70507 An upgrade/backout action on a server is in progress							
		70501 The Cluster is running different versions of software							
		70502 Cluster Replication Inhibited							
		70500 The system is running difference versions of software							
		31101 DB replication to a slave DB has failed							
		31106 DB merging to the parent Merge Node has failed							
		31107 DB merging from a child Source Node has failed							
		31102 DB replication from a master DB has failed							
		31114 DB Replication of configuration data via SOAP has failed							
		31105 The DB merge process (inetmerge) is impaired by a s/w fault							
		Upgrade is complete on the first CMP server in the cluster when the following							
		message (completed successfully) displays in the Upgrade Operation column.							
		Initiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.							
		Initiate upgrade Completed Successfully at Feb 2, 2024 6:42:26.							
13.	CMP GUI:	 Navigate to Upgrade → Upgrade Manager. 							
	Verify the upgrade is	2. View the cluster. At this point, one server is on 15.0.x and the other server in the cluster is on 15.0. The Up To Date column shows Y for the 15.0.x server and							

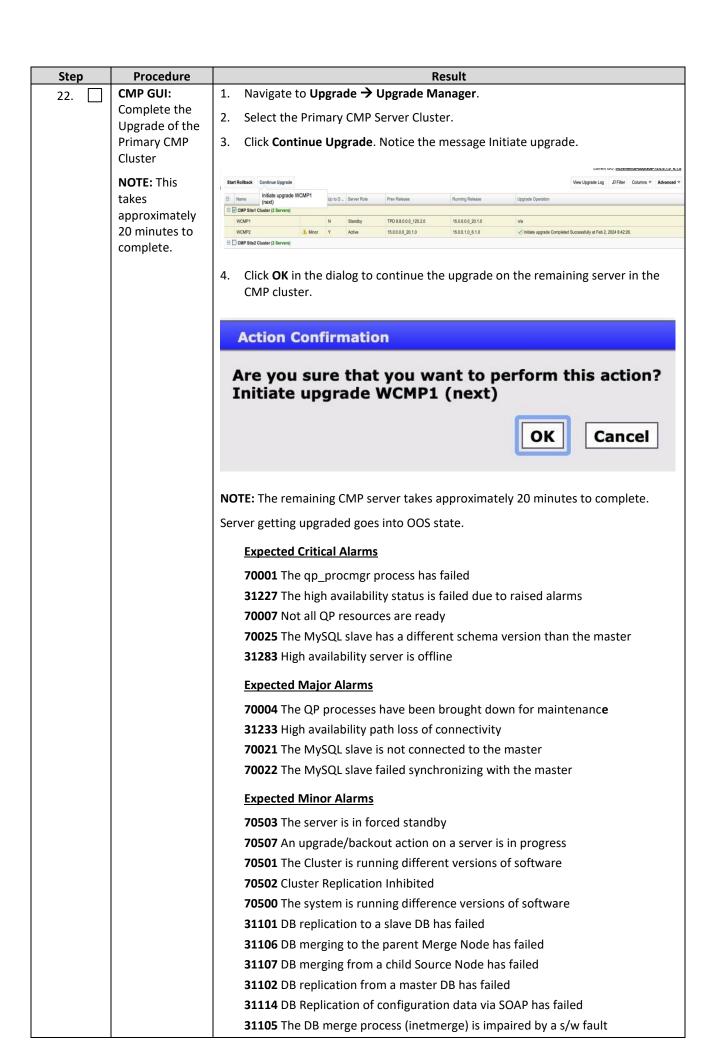


rocedure	Result
to the server VIP	Close the current CMP GUI browser tab and reopen another browser tab with the same CMP VIP address. The Policy Management Release 15.0.x CMP GUI Login displays as shown. Login and password credentials are the same as the pre-upgrade.
	WELCOME Welcome to the Configuration Management Platform (CMP). Please enter your user name and password below to access the CMP desktop. If you do not have an existing user name or password, or if you have misplaced either, please contact the system administrator. USERNAME PASSWORD Login COPYRIGHT © 2003, 2017 ORACLE, ALL RIGHTS RESERVED.
fy Policy	 Navigate to Help→About. Verify the release displayed is 15.0.x. NOTE: Any '15.0.0.1.0_x.y.z' is correct 15.0.0.1.0_6.1.0 Copyright (C) 2003, 2024 Oracle. All Rights Reserved.
IPE/MRA r	For MRA: MRA → Configuration → < MRA cluster> → System The selected cluster has the status shown as Degraded and still shows the old release version. Config mismatch may be displayed as well.
p	ly uration



	Result											rocedure	Step Procedure						
												MPE	Server:	Policy S					
Dat	olicies	ting F	r Rou	neter	Dian	r	erve	icy S	Poli	Logs	ts	Repor	em	Syste					
								n	juratio	ly Confi	Reap	te R	Delet	Modify					
							ully.	essf	succ	applie	vas	tion v	figura	The con					
							-							Configu					
						1.0	0_6	-line			n			Name Status Version Descript					
								icle	No No Ora			tion		Secure C Legacy Type					
			I	M ES	35 PI	10:3	2024	01,	Feb				Time	System					
umbe	igher ni	v over h								ower	tesi	mnlat							
umbe	igher nı	y over h						ered	umbe			17.	ted Te	Associa					
umbe	igher ni	y over h						ered	umbe	ower i		17.	ted Te						
umbe	igher n	y over h						ered	umbe			17.	ted Te	Associa Priority					
umbe	igher n	y over h						ered	umbe			17.	ted Te	Associa Priority					
umbe		y over h	riorit	ike p	es ta	hboa	temp	ered	Name	ide Re	m V	Syster eport	ted Te	Associa Priority None 1. Navig 2. Verify	P GUI: fy traffic	9.			
075	Protocol Err	Es/MRA:	ne MP	for th	es ta	hboa	I Das	> KP	oorts -	ide Re ws all n	m V sho	Syster eport or few	gate to y that r	Associa Priority None 1. Navig 2. Verify		9. 🗌			
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o is Received 0 0 ol Errori Receiv	Protocol Err Sent R	Es/MRAs	ne MP	for th	ard.	hboaccess	I Das	> KP	oorts -	ide Report Note of the Note of	m V shoo	Syster eport or few	gate to y that r	Associa Priority None 1. Navig 2. Verify Obse		9.			
ors Receiver 0 0	Protocol Err. Sent R	Es/MRAs	ne MP	for th	ard.	hboaccess	I Das I CPU %	> KP	orts -	ide Report attes record attes record attes record attes record attes record attention	m V shoo	Syster eport or few	gate to y that r rve it fo	Associa Priority None 1. Navig 2. Verify Obse		9.			
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ors Receiver 0 0 ol Errors Receiver d	Protocol Err. Sent R 0 0 Protoco Minor Sent 0 0	Minor 0 1 Alarms Critical Major 0 0	ne MP	for th	ard. ing f	hboaccess	I Das I C pro	Su Subscribers	orts - ormal fresh.	ide Report attes record attes record attes record attes record attes record attention	m V sho	Syster eport or few PCD T 0 0 State Active Standby	gate to y that r rve it for TPS 0 0 0 a A erver-A) erver-B) erver-B	Associa Priority None 1. Navig 2. Verify Obse MRAs selected MPEs selected mr. MR. mra(St.		9.			

Step	Procedure				Resul	t			
20.	CMP GUI: Critical Alarms	•	alarms	•	•		abase matches tl MPs have been u		
		Occurrence	Severit	y Alarm ID		Text	OAM	VIP <u>Ser</u>	ver
		Sep 18, 2018 02:58 AM EDT	Critica	70025	The MySQL slave has a	a different schema version	than the master. 10.75.1	75.121 CMP1 10.75.	
		Current Mi 70503 Serv 70501 Clust	er Ford ter Mix	ced Stanked Vers	ion				
		70500 Syste				i-i-fd-bdb	40.75	CMP1	75-51
		Sep 18, 2018 02:58 AM EDT Sep 18, 2018 02:58 AM EDT	Minor	70503 70501		erver is in forced standby inning different versions of	10.75.: F software 10.75.:	10.75.	175.51 75-51
		Sep 18, 2018 02:58 AM EDT	Minor	70500		inning different versions of		10.75.	
21.	CMP GUI: Verify the Policy Management Release 15.0 CMP is Active	2. Verify the f - Active - Standb	Upgra ollowin	ade→ Up ng - is on Ru	also displays al pgrade Manag nning Release the previous Re	15.0.x			
		☐ ✓ CMP Site1 Cluster (2 Servers)			Lesson on the second	These recovered	liv.		
	ĺ	WCMP1	N	Standby	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	n/a		
		WCMP2	A Minor Y	Active	15.0.0.0.0 20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Succes	efully at Eah 2 2024 C.4	2-26



	Procedure	Result											
23.	CMP GUI: Tracking the	 Navigate to Upgrade → Upgrade Manager. The last step in the upgrade for the first CMP cluster is to wait for replication to 											
	upgrade complete	complete.											
				the upgra iew Upgr		CMP clusto	er.						
				Site2 Cluster		J		-					
				2024 9:10:39								L	□ Filter Columns ▼
		ID	Paren	Action Name		Start Time	End Time	Durat	Scope	Hostname	Result	Mode	Description
ļ		10	0	Preflight Check		02/02/2024 7:19:26	02/02/2024 7:20	0:00:45	Server	WCMP4	Success	Manual	User initiated action:
ļ		11	10	Upgrading server		02/02/2024 7:20:11	02/02/2024 7:26	0:05:49	Server	WCMP4	Success	Automatic	Automatic action initi
ļ		12	10	Modify the role/replic		02/02/2024 7:20:11	02/02/2024 7:20	0:00:01	Cluster	CMP Site2	Success	Automatic	Automatic action for
ļ		13	10	Wait for replication to		02/02/2024 7:26:01	02/02/2024 7:35	0:09:50	Server	WCMP4	Success	Automatic	Automatic action wait
ļ		14	0	Failover to new vers		02/02/2024 7:37:16	02/02/2024 7:37	0:00:00	Cluster	CMP Site2	Success	Manual	User initiated action:
ļ		15 16	0	Failover to old version	on	02/02/2024 7:39:12	02/02/2024 7:39	0:00:00	Cluster	CMP Site2 WCMP3	Success	Manual	User initiated action:
ļ		17	16	Preflight Check Upgrading server		02/02/2024 7:43:48	02/02/2024 7:44	0:00:43	Server	WCMP3	Success	Automatic	Automatic action initi
ļ		18			cation	02/02/2024 7:44:31	02/02/2024 7:30	0:00:10	Cluster	CMP Site2	Success	Automatic	Automatic action for
ļ		19	16	Wait for replication to sync		02/02/2024 7:50:50	02/02/2024 8:00	0:09:11	Server	WCMP3	Success	Automatic	Automatic action wait
24.	CMP GUI: Verify the status of the		ate to	o Upgrade	• Ма	nager → U	lpgrade M	anag	er.				
"								1					
i	ungraded CMP	1200		1000000	. Up to D.	. Server Role Prev	Release	Running F	Release	Upgra	ade Operation		
	upgraded CMP	☐ CMP Si		1000000						Upgra	ade Operation		
	upgraded CMP server.	□ CMP Si		1000000	Υ	Active 15.0	0.0.0_20.1.0	15.0.0.1.0	_6.1.0			impleted Succes	sfully at Jan 29, 2024 13:04:49.
		☐ CMP Si		? Servers)		Active 15.0			_6.1.0	⊘ In	itiate upgrade Co		sfully at Jan 29, 2024 13:04:49. sfully at Jan 29, 2024 14:56:02.
		□ CMP SI WCMP2 WCMP1 □ CMP SI R	ucces	e Servers) Servers) Servers upgrang Release	ade s	Active 15.0	vs both ser	15.0.0.1.0 15.0.0.1.0 vers	Leilo Leilo runn s in t	ing the	itiate upgrade Co itiate upgrade Co Relea To Dat	se 15.	sfully at Jan 29, 2024 14:56:02.
25. 🗆		B CMP SI WCMP2 WCMP1 B CMP SI R A	ucces unni	(Servers) 555ful upgrang Release	ade se colo	Active 15.0 Standby 15.0 Status show umn and Y e for both s	vs both ser for both ser	vers erver he Pr	runn s in t	ing the	itiate upgrade Co itiate upgrade Co Relea To Dat	se 15.	sfully at Jan 29, 2024 14:56:02.
25.	Proceed to next upgrade	■ CMPSI WCMP2 WCMP1 ■ CMPSI At this	ucces unni ctive	(Servers) 555ful upgrang Release	ade se colo	Active 15.0 Standby 15.0 Status show umn and Y e for both s y Site-1 is re	vs both ser for both ser	vers erver he Pr	runn s in t	ing the	itiate upgrade Co itiate upgrade Co Relea To Dat	se 15.	sfully at Jan 29, 2024 14:56:02.
25.	server. Proceed to next	Comp signature Comp signature Comp signature At this Signature Signature Comp signature	ucces unnii ctive s poil	ssful upgrang Release /standby standby	ade se colostate	Active 15.0 Standby 15.0 Status show umn and Y e for both s y Site-1 is re	vs both ser for both se ervers in t	vers erver he Pr	runn s in t imar 15.0	ing the he Up 1	Relea Fo Dat	se 15. e colu	sfully at Jan 29, 2024 14:56:02.

NOTE: A message "This system has been upgraded but the upgrade has not yet been accepted or rejected. Please accept or reject the upgrade soon." will be displayed after upgrade of each node in the terminal. This message is just a reminder to accept or reject the upgrade and can be ignored.

2.5 Upgrade non-cmp clusters 15.0 to 15.0.x

Use the following procedures to upgrade a site/segment containing one or more non-CMP clusters such as MPEs, MRAs.

NOTES: Different types of non-CMP clusters can be upgraded at the same time. 2 MPEs and 2 MRAs, for example, can be upgraded in parallel.

2.5.1 Site/Segment Upgrade Preparation

2.5.1.1 Configuration Preparation

Procedure 19 Preparation for NON-CMP Upgrade

Step	Procedure	Result
1.	CMP GUI: Access into CMP server	Use the supported browser to login as admin user or as a user with administrative privileges.
2.	CMP GUI: Verify current Upgrade Manager status and Software Release 15.0.x DIU ISO files	 Upgrade → Upgrade Manager Verify that all CMP clusters have both Active and Standby status. Verify that all MPE & MRA clusters have both Active and Standby status. Verify that the CMP cluster is upgraded successfully and running Policy Management Release 15.0.x Upgrade → ISO Maintenance Verify that Policy Management release 15.0.x DIU ISO files are available for all clusters. One DIU ISO per server
		—End of Procedure—

2.5.2 Upgrade Non-CMP Clusters (MPE or MRA)

Use this procedure to upgrade one or more non-CMP clusters at a site/segment.

This procedure is applicable for a 15.0 upgrade to 15.0.x

This section can be replicated for each site/segment to be upgraded, to allow the upgrade engineer to add cluster and site specific information.

The following sequence of server types to be upgraded for the system

- 1. Upgrade MRAs
- 2. Upgrade MPEs after MRA upgrade is done

The upgrade procedure is essentially the same for any non-CMP cluster.

- 1. Select and start upgrade on the Standby server
- 2. Failover
- 3. Continue upgrade on remaining server
- **4.** Re-apply configuration

NOTES:

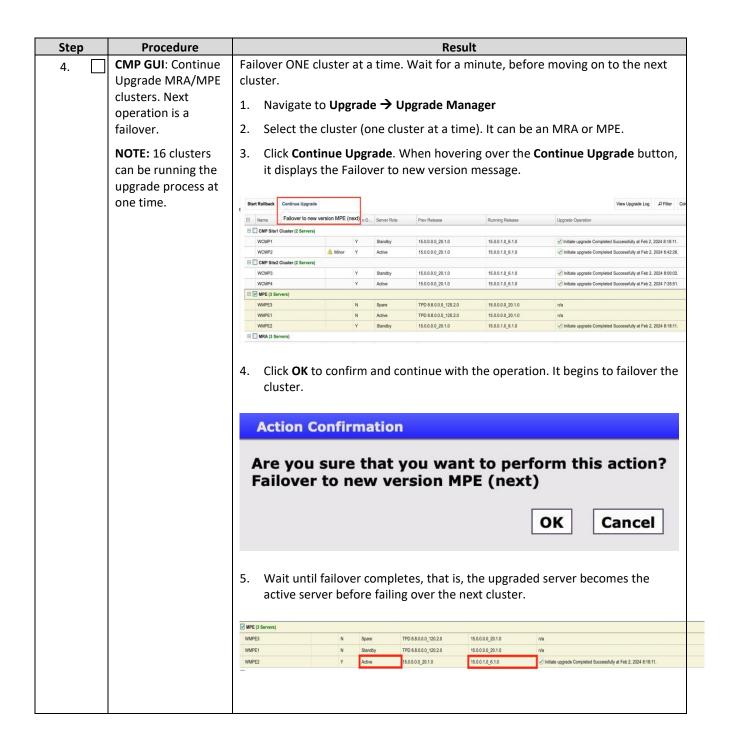
- All CMP clusters must have been upgraded to Policy Management release 15.0.x before performing the following procedures.
- The maximum clusters to be running the upgrade at one time is 16.

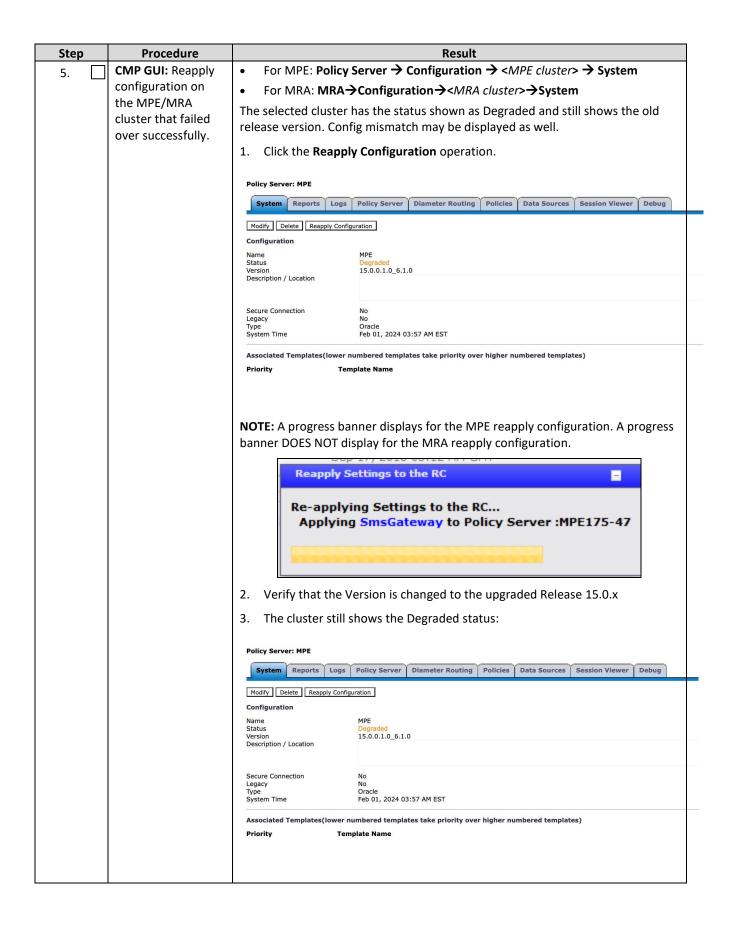
Procedure 20 Upgrade NON-CMP Servers

Step	Procedure	Result
1.	CMP GUI: Health	Check for current active alarms
ı. U	checks on the servers to be upgraded	 For the MPE: Policy Server→Configuration→Reports → Reset Counters For the MRA: MRA→Configuration→Reports → Reset Counters
		Check KPI Dashboard (capture and save screenshot to a file)
2.	CMP GUI: Verify upgrade status of selected MPE/MRA site/segment	 Navigate to Upgrade → Upgrade Manager. Verify information for the MRAs/MPEs: Current Release 15.0 installed Running with Active/Standby status Navigate to Upgrade → ISO Maintenance Verify the ISO version to be deployed is 15.0.x
		CMP Site2 Cluster
3.	CMP GUI: Upgrade clusters NOTE: The upgrade of one server takes approximately 20 minutes to complete.	 Start the upgrade on ONE cluster. Wait until the cluster shows OOS state, then continue with the next cluster and so on. Up to 16 clusters may be running upgrade at any one time. 1. Navigate to Upgrade → Upgrade Manager 2. Click the checkbox for the desired cluster (one cluster at a time.) It can be an MRA or an MPE. 3. Click Continue Upgrade or Resume Upgrade
		Start Rollands Continue Upgrade Vene Upgrade Log D Filter Columns * Advance Institute upgrade WMPE3 Upgrade Cyter Rollands Upgra

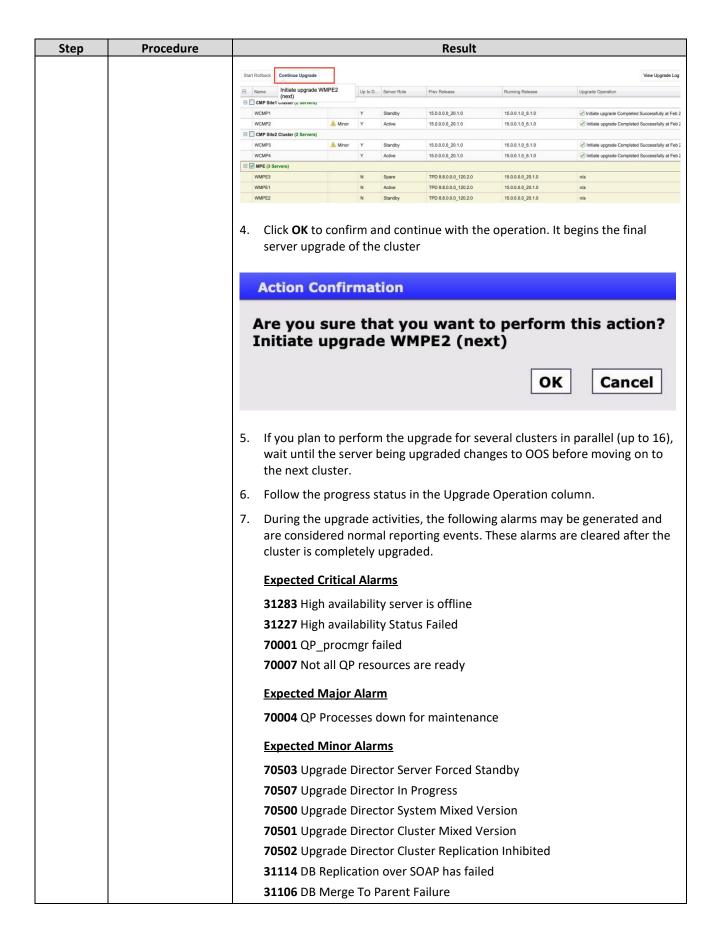
Step	Procedure	Result
		⊟ ☑ MPE (I Servers)
		WMPE3 N Spare TPD 8.8.0.0_120.2.0 15.0.0.0_20.1.0 Stop 230 6% Initiate upgrader : Upgrading server (Elapsed Time: 0:00.54) WMPE1 N Standby TPD 8.8.0.0_120.2.0 15.0.0.0_20.1.0 rvla
		WAMPE2 Y Active 15.0.0.0, 20.1.0 15.0.0.1.0_6.1.0 € Initiate upgrade Completed Successfully at Feb 2, 2024 818.11.
		 Wait until the standby server reports OOS before selecting the next cluster Follow the progress status in the Upgrade Operation column. During the upgrade activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the clusters are completely upgraded. Expected Critical Alarms 31283 High availability server is offline 70001 QP_procmgr failed 31227 High availability status failed
		70007 Not all QP resources are ready Expected Major Alarm: 70004 QP Processes down for maintenance
		31233 High availability path loss of connectivity
		Expected Minor Alarms 70503 Upgrade Director Server Forced Standby
		70507 Upgrade Director In Progress
		70500 Upgrade Director System Mixed Version
		70501 Upgrade Director Cluster Mixed Version
		70502 Cluster Replication Inhibited
		31114 DB Replication over SOAP has failed
		31102 DB replication from a master DB has failed
		31106 DB Merge To Parent Failure
		31107 DB Merge From Child Failure
		31101 DB Replication To Slave Failure
		31282 HA management fault
		78001 RSYNC Failed
		Upgrade is complete on the first server of the cluster when the Initiate upgrade completed successfully at message displays in the Upgrade Operation column. The server goes back to standby state when the upgrade completes.

Step	Procedure		Result							
		⊟ ☐ CMP Site2 Cluster (2 Servers)								
		WCMP3		Υ	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2024 8:00:02.		
		WCMP4		Υ	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2024 7:35:51.		
		☐ ☑ MPE (3 Servers)								
		WMPE3	A Minor	Υ	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2024 8:45:21.		
		WMPE1		N	Standby	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	n/a		
		WMPE2		Υ	Active	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 2, 2024 8:18:11.		
		☐ MRA (3 Servers)								
		WMRA1	A Minor	N	Active	TPD 8.8.0.0.0_120.2.0	15.0.0.0.0_20.1.0	n/a		
		WMRA3 WMRA2		N N	Spare	TPD 8.8.0.0.0_120.2.0 TPD 8.8.0.0.0_120.2.0	15.0.0.0_20.1.0 15.0.0.0_20.1.0	n/a		
		A number of o	differe	nt a	ılarms r	may be raised	d at this poir	nt:		
		Expected	<u>Mino</u>	r Al	arms					
		78001 RS	YNC F	aile	d					
		70500 Th	e syste	em	is runni	ng different	versions of s	oftware		
		70501 Th	e Clus	ter	is runni	ng different	versions of s	software		
		70503 Th	0.000	٠. :	. : £	1 . 11				

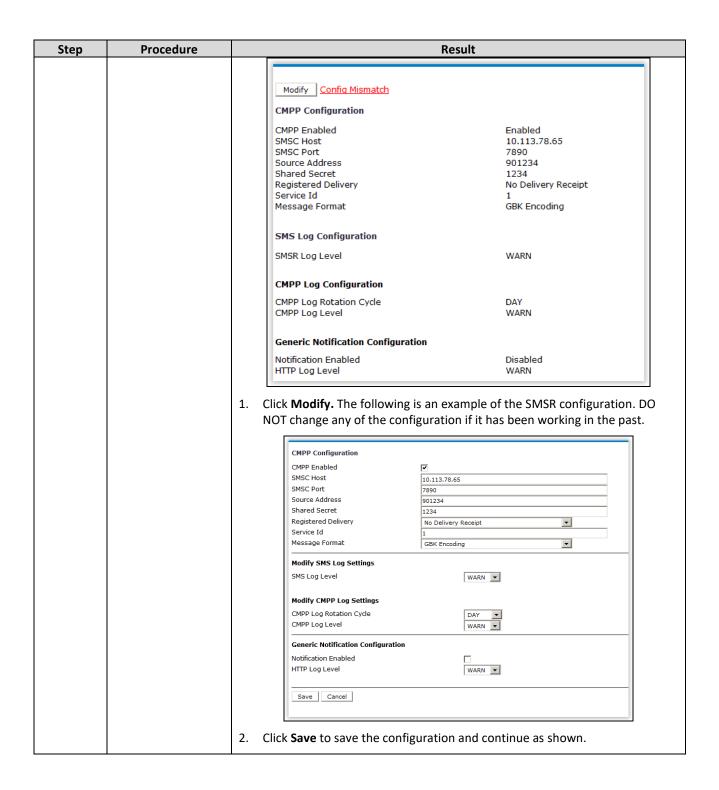




Step	Procedure	Result
6.	CMP GUI: Current	Some of the alarms below may appear:
	alarms	Expected Critical alarm
		None
		Expected Major Alarm
		Expected Major Alarm
		78001 Rsync Failed
		Expected Minor Alarms
		70500 The system is running different versions of software
		70501 The Cluster is running different versions of software
		70503 The server is in forced standby
		71402 Diameter Connectivity Lost
		31101 DB Replication To Slave Failure
		31113 DB Replication Manually Disabled
7.	CMP GUI: Verify	1. Navigate to Upgrade Manager → System Maintenance
	traffic becomes active within 90	- If traffic is active, go to step 9.
	seconds	- If traffic does not become active within 90 seconds:
		 Select the checkbox for the partially upgraded cluster, and select Operations → Rollback.
		The pre-15.0.x MPE server should become active and resume handling traffic.
8.	CMP GUI: Reapply configuration	 Navigate to Policy Server → Configuration → <mpe_cluster name=""> →</mpe_cluster> System or
		MRA → Configuration → <mra_cluster name=""> → System</mra_cluster>
		2. Click Reapply Configuration
		Verify that the version is changed back to 15.0, and the action report success.
		If NOT, stop and contact Oracle support to back out of the partially upgraded cluster.
9.	CMP GUI: Continue Upgrade MRA/MPE clusters. Upgrade	Continue the upgrade on ONE cluster at a time and when the server goes into OOS, continue with the next cluster and so on. Up to 16 clusters may be running upgrade at one time.
	on the Standby server	1. Navigate to Upgrade → Upgrade Manager.
	SCIVEI	2. Select a cluster (one cluster at a time), it can be an MRA or an MPE.
		Click Continue Upgrade . When hovering over the Continue Upgrade button, it displays the Initiate upgrade on the standby server message.



Step	Procedure				Resu	ılt				
		31107	DB Merg	e From	Child Failure					
		31101 DB Replication To Slave Failure 31102 DB Replication from Master Failure								
		31102	ов керіі	cation f	rom Master Fa	ilure				
		31113	DB Repli	cation r	nanually Disab	led				
		at message	e display	s in the	Upgrade Ope		leted successfully The server goes back to s).			
		B ☐ MPE (3 Servers)								
		WMPE3		Y Spar	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 1, 2024 13:33:00.			
		WMPE1	⚠ Minor	Y Stan		15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Feb 1, 2024 13:49:50.			
		WMPE2		Y Activ	15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:00:43.			
	MPE/MRA cluster(s)	WCASP2 WCASP1 CASP Black Cluster (2 Servers) WCASP4 WCASP4 MPE (2 Servers) WMPE3 WMPE2 MMPE2 MMPE2 MMPE2 MMPE2	∆ Meor	Y Ac	ndby 15.0.0.0_20.1.0 15.0.0.0_20.1.0 16.0.0.0_20.1.0 15.0.0.0_20.1.0	1500.10_8.10 1500.10_8.10 1500.10_8.10 1500.10_8.10 1500.10_8.10 1500.10_8.10	⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 13 04-49. ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 14 56-02. ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 14 56-02. ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 15 15-22. ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 16 01-33. ⊘ Initiate upgrade Completed Successfully at Feb 1, 2024 13-33-00. ⊘ Initiate upgrade Completed Successfully at Feb 1, 2024 13-38-50. ⊘ Initiate upgrade Completed Successfully at Feb 1, 2024 13-38-50. ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 17:00-43.			
		WMRA2		Y Ac	ive 15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:04:22.			
		WMRA1			ndby 15.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Feb 1, 2024 13:47:00.			
11.	CMP GUI: Modify/save SMSR configuration	System Administration → SMS Relay → Modify NOTE: This step is only for Wireless-C system. If you do not see SMS Relay under System Administration, skip this step. Initial access into this configuration upon upgrade to release 15.0.x, the								
					with Config N		ease 13.0.x, tile			



Step	Procedure	Result	
эсер	Procedure	Modify CMPP Configuration CMPP Enabled SMSC Host SMSC Port Source Address Shared Secret Registered Delivery Service Id Message Format SMS Log Configuration	Enabled 10.113.78.65 7890 901234 1234 No Delivery Receipt 1 GBK Encoding
		SMSR Log Level	WARN
		CMPP Log Configuration	
		CMPP Log Rotation Cycle CMPP Log Level	DAY WARN
		Generic Notification Configuration	
		Notification Enabled HTTP Log Level	Disabled WARN
		NOTE: The Config Mismatch message is not	there with the saved configuration.
		—End of Procedure—	

NOTE: A message "This system has been upgraded but the upgrade has not yet been accepted or rejected. Please accept or reject the upgrade soon." will be displayed after upgrade of each node in the terminal. This message is just a reminder to accept or reject the upgrade and can be ignored.

2.6 Post Upgrade health Check for wireless systems

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

Procedure 21 Health Check after upgrade completed

Step	Procedure			_		Result					
1.	 CMP GUI: Verify the upgrade is successful on all 1. Navigate to Upgrade → Upgrade Manager. 2. View the Up to Date, Running Release, and Upgrade Operation of the Upgrade Operation of								-		lumns
	clusters.	and verify they read Y, 15.0.x, and Initiate upgrade completed									
	ciasters.	success	fully at	. resp	ectively,	for all se	rvers in	all clust	ters.		
						Upgrade Manage	r		Current ISI	O: incremental-up	grade-15.0.0.1.0 6.1.0
		Start Rollback Start Upgrade							View Upgrade Log		
		■ Name	Alarm Sev Up to D	Server Role	Prev Release	Running Releas	se Upg	rade Operation			
		☐ CMP Site1 Cluster (2 Servers)				'					
		WCMP2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.			d Successfully at Jan 29, 2		
		WCMP1 CMP Site2 Cluster (2 Servers)	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.	0	nitiate upgrade Completer	d Successfully at Jan 29, 2	2024 14:56:02.	
		WCMP4	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.	0	nitiate upgrade Completer	d Successfully at Jan 29, 2	2024 15:15:22.	
		WCMP3	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.	0	nitiate upgrade Complete	d Successfully at Jan 29, 2	2024 16:01:33.	
		☐ MPE (3 Servers) WMPE1	Y	Standby	15.0.0.0 20.1.0	15.0.0.1.0 6.1.	0 2	nitiate upgrade Complete	d Successfully at Jan 29, 2	2024 17:51-na	
		WMPE1	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.			d Successfully at Jan 29, 2 d Successfully at Jan 29, 2		
		WMPE3	Y	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.	0	nitiate upgrade Complete	d Successfully at Jan 29, 2	2024 17:30:53.	
		☐ MRA (3 Servers) WMRA2		Active	15.0.0.0.0 20.1.0	15.0.0.1.0 6.1.	. 2	elifato unassata Carrai	d Successfully at Jan 29, 2	0024 47.04-00	
		WMRA3	Y	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1. 15.0.0.1.0_6.1.			d Successfully at Jan 29, 2 d Successfully at Jan 29, 2		
		WMRA1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.	0	nitiate upgrade Complete	d Successfully at Jan 29, 2	2024 17:51:03.	
			hat all a	larms	Active Alarms	he upgrad	de have 9/2018 15:04:2	been c	leared.	ave as CSV	Evenet PDE
		Display results per page: [First/Prev]1[Next/Last]7 Server Server F	50 v Fotal 1 pages crver ype Severity	/ Alarm II	D Age/Au	to Clear	Descrip	tion	1	Time	Operation
3.	CMP GUI: View current KPIs	Elizat/Prov/JifReat/Last)	rotal 1 pages rver Severity Set to Sys	tem V	Vide Rep	oorts → KI	PI Dashb	ord.			
3.		Elizat/Prov/JifReat/Last)	rotal 1 pages rver Severity Set to Sys	tem V	Vide Rep	oorts → KI	PI Dashb	ord.			Operation Change Thresholds
3.		1. Navigat 2. Make si	retal 1 pages rver Severity Te to Sys ure the (tem V	Vide Reper stats a	oorts→KI are increr	PI Dashk menting	proper	ly.	ers #	Change Thresholds
3.		1. Navigat 2. Make st	retal 1 pages rever Severity Se to Sys ure the (tem V	Vide Reperstats a	oorts→KI are increr (Last Refresh:097) Active Subscriber	PI Dashk menting	proper	ly.	ers ¥	Change Thresholds
3.		1. Navigat 2. Make si	retal 1 pages rver Severity Te to Sys ure the (tem V	Vide Reper stats a	oorts→KI are increr (Last Refresh:097) Active Subscriber	PI Dashk menting	proper	ly.	ers #	Change Thresholds
3.		1. Navigat 2. Make Si	retal 1 pages rever Severity Se to Sys ure the (tem V	Vide Reperstats a	oorts → KI are incren	PI Dashk menting	proper	ly.	Pro Sent 0 0	Change Thresholds
3.		1. Navigat 2. Make Si MRAs selected HPEs selected	retal 1 pages rever Severity Se to Sys ure the (tem V	Vide Reperstats a	N Subscriberro	PI Dashk menting	proper Alarms Major 0 Connections	Minor	Pro Sent	Change Thresholds tocol Errors Received 0 0
3.		1. Navigat 2. Make Si HRAs selected HPEs selected HRA	ree to Sys The to	tem V	Vide Reperstats a	DOORTS -> KI BACTIVE Subscribers O Active Subscribers O Active CPU % bers	PI Dashk menting (9/2018 15:11:4	proper Alarms Major 0 Connections	Minor 0 0 Alar	Pro Sent	Change Thresholds tocol Errors Received 0 0 Protocol Errors
3.		1. Navigat 2. Make Si MRAs selected MPEs selected mra	retal 1 pages rever Severity The to Sys	Perfc Perfc Perfc Propertor Tot	Vide Reperstats a	DOORTS → KI BACTIVE Subscribers COD Subscribers CPU % Subscribers	PI Dashk menting	proper Alarms Major 0 Connections	Minor 0 0 Alar	Pro Sent 0 0 0 0 0 0 0 0 0	Change Thresholds tocol Errors Received 0 0 Protocol Errors
3.		1. Navigat 2. Make SI HRAs selected HPEs selected HRA	retal 1 pages rever Severity See to Sys The talk of talk	Perfc Perfc Perfc Propertor Tot	Vide Reperson States at RPI Dashboard	DOORTS → KI BACTIVE Subscribers CO Active DON Subscri CPU % Subscribers CPU % DON Subscri CPU % DO	PI Dashk menting 9/2018 15:11:4 Critical Critical Memory HPE 17 18 1 of 1	Alarms Major Connections MRA Elem	Minor O O Alarrk Alarrk TcHical Maj	Pro Sent 0 0 Minor	Change Thresholds tocol Errors Received 0 0 Protocol Errors Sent Receive d 0 0 Receive Receive
3.		1. Navigat 2. Make st HRAs selected HPEs selected HRA mra(Server-1 mra HRA	retal 1 pages rever Severity Ce to Sys ure the (PS PCD 1 0 0 0 State Active State	Perference Total	Vide Reperson States at RPI Dashboard Primance all TPS PD Primance Performan Performan Performan Performan Post TPS Pi	DOORTS → KI BACTIVE Subscribers CO Active DON Subscri CPU % Subscribers CPU % DON Subscri CPU % DO	PI Dashk menting 9/2018 15:11:4 Critical Critical Memory HPE 17 18 1 of 1	Proper Alarms Major 0 Connections MEA Elements 0 out 0	Minor O Alark Critical Maj	Pro Sent 0 0 Minor	Change Thresholds tocol Errors Received 0 0 Protocol Errors Sent Receive d
3.		1. Navigat 2. Make SI HRAs selected HPEs selected mra mra(Server-I m	rectal 1 pages rectal 2 pages See to Sys Ge to Sys The first the General 2 pages PE PCD 1 pages State A) Standby State	Perference Total	Vide Reperson States at RPI Dashboard Primance all TPS PD Primance Performan Performan Performan Performan Post TPS Pi	Doorts → KI Bare increr If (Last Refresh: 097) N Active Subscribers O O O O O O O O O O O O O O O O O O O	PI Dashk menting 9/2018 15:11:4 Critical Critical Memory HPE 17 18 1 of 1	Proper Alarms Major 0 Connections MEA Elements 0 out 0	Minor O Alark Critical Maj	Pro Sent 0 0 ms tor Minor 0 Minor	Change Thresholds tocol Errors Received 0 0 Protocol Errors Sent Receive d 0 0 Receive Receive
3.		1. Navigat 2. Make si MRAs selected MPEs selected Mra Mra Mra Mra(Server-I MPE Mpe(Server-I Mpe(Mex) M	rectal 1 pages rectal 2 pages See to Sys Ge to Sys The first the General 2 pages PE PCD 1 pages State A) Standby State	Perfection Total	Vide Reperstats a RPI Dashboard or Stats a RPI Dashboard or State of State	Doorts → KI Bare increr If (Last Refresh: 097) N Active Subscribers O O O O O O O O O O O O O O O O O O O	PI Dashk menting G9/2018 15:11:4 Critical O O Nemory HPE 17 18 1 of 1 1 Hemory MEA 6	Alarms Major 0 0 Connections MRA Elementos	Minor O Alara Alara Hajo Critical Maj	Pro Sent 0 0 ms tor Minor 0 Minor	Change Thresholds tocol Errors Received 0 0 0 Protocol Errors Sent ded 0 0 0 Received d Received

Step	Procedure		Result					
3.	CMP GUI: Replication stats	 Navigate to System Wide Reports→Others→MPE/MRA Rep Stats (for a wireless system) 						
		2. Verify all clusters and servers are in OK state.						
		MPE/MRARep Stats (Last Refresh:09/19/2018 15:12:44) Pause						
		Display results per page: SO						
		Cluster Name	Server Type	Cluster State	Blade State	Sync State	Replication Delta(Min:Sec)	
			MPE MPE	Ø ok	 ⊘ oκ	 ⊘ OK	0:0.497 0:0.497	
		☐ mra MRA175-53 (Active) ->MRA175-43 (Standby)	MRA MRA		 Ø ок	 Ø ok	0:0.502	
3.	Verify System Health	1. Use the sudo syscheck co 2. Verify that each class test re \$ sudo syscheck Running modules in class LOG LOCATION: /var/TKLC/log/	turns OK disk hardwa net proc sproc system	. OK re ON OK . OK	mple:			
		—End of Procedure—						
		—Ella di Fiocedare—						

2.7 Backout (ROLLBACK) 15.0 wireless mode

This procedure is performed if an issue is found during the upgrade, as well as post-upgrade which impacts network performance.

The Policy Management system is backed out to the previous release.

Oracle strongly recommends consulting My Oracle Support before initiating the backout procedure. They determine the appropriate course of recovery options.

2.7.1 Backout Sequence

The Backout sequence order is the reverse of the Upgrade order as in the following sequence:

- 1. Backout MRA/MPE
- 2. Backout the Secondary CMP cluster (if applicable)
- **3.** Backout the Primary CMP cluster.

During a backout, it is important to control what version of the software is currently active. This control must be maintained even if there are unexpected failures.

NOTE: In the case of a non-CMP clusters, the upgrade/backout is NOT complete until the operator performs a Reapply Configuration from the CMP. The MRA/MPE can still operate, but may not be fully functional.

2.7.1.1 Pre-requisites

No new policies or features have been configured or run on the upgraded release.

The CMP cluster cannot backout if other non-CMP Policy Management servers are still on the upgraded release.

2.7.1.2 Backout of Fully Upgraded Cluster

Prior to performing this procedure, Oracle recommends consulting My Oracle Support to discuss the next appropriate course of actions.

Use this procedure to backout a cluster that has been fully upgraded. At the end of this procedure, all servers of the target cluster are on a pre-15.0 release with Active, Standby status.

Expected pre-conditions:

- The primary active CMP is on release 15.0.x
- The cluster servers to be backed out are on release 15.0

2.7.1.3 Backout Sequence

This procedure applies to a cluster. The non-CMP cluster types (MRA, MPE) are in non-georedundant mode with active, standby servers. CMP clusters may be in Site1 or Site2.

NOTE: It is possible, and desirable, to backout multiple clusters in parallel. However, in order to do this, each cluster must start the backout procedure one at a time, staggering by about 1 minute each.

Overview on Backout/Rollback MRA/MPE cluster

The following sequence preserves the cluster as a georedundant MRA/MPE cluster.

- 1. Back out of the standby server
- 2. Fail over
- 3. Reapply the configuration
- 4. Back out of the new standby server

Backout Secondary CMP (if applicable)

NOTE: At this time, all MPEs and MRAs must be backed out to the previous release.

Use the CMP GUI (Upgrade Manager) to backout the Secondary CMP cluster.

Backout Primary CMP (From 15.0.x to 15.0)

NOTE: At this time, all the MPE/MRA clusters must be backed out, the Secondary CMP must also be backed out.

- 1. Use the CMP GUI (Upgrade Manager) to backout the Primary standby CMP cluster.
- 2. Select the CMP cluster and click **Start Rollback** on the top left to initiate backout on Standby CMP.



3. Click **Continue Rollback**, which fails over to older version CMP cluster.



- 4. Log in to the Primary CMP VIP.
- **5.** Wait for 10-15 minutes before the rollback of secondary CMP (in Primary Site) to allow secondary site CMP nodes to sync with the new MySQL master.
- 6. Use the 15.0 Upgrade Manager to complete backout of the Primary CMP cluster.



7. If needed, go to Policy Server → Configuration → Policy Server and click Reapply Configuration.

2.7.1.4 Back-out Partially Upgraded MPE/MRA Cluster

Use this procedure to back-out a partially upgraded MPE/MRA Cluster.

Expected Pre-conditions:

- 1. Primary Active CMP is on Release 15.0.x
- 2. Cluster is any of MPE or MRA
- 3. One server of target cluster is on Release 15.0.x
- 4. Other servers of target cluster are on Release 15.0

NOTES:

- This procedure must be performed within a maintenance window.
- This procedure takes approximately 15 minutes at most per server.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 22 Back-out Partially Upgraded MPE/MRA Cluster

Step	Procedure	Result
1.	CMP GUI: Verify	 Navigate to Upgrade → Upgrade Manager
	the status of affected Clusters	2. Confirm status of the cluster to be backed out:
		- Primary Active CMP is on Release 15.0.x
		 Target Cluster has 1 server on Release 15.0, and 1 server on Release 15.0.x
		- Active server is on 15.0
2.	MPE/MRA SSH:	1. Using SSH, login to the Standby server to be backed out as admusr.
	Verify /var/log/ messages file	<pre>\$ ls -lh /var/log/messages</pre>
	size	 ONLY if the resulting size of /var/log/messages is above 20M, run the following, otherwise proceed to the next step.
		<pre>\$ sudo cp /var/log/messages /var/camiant/log/messages.preBack-out</pre>

Step	Procedure	Result
		<pre>\$ sudo cat /dev/null > /var/log/messages</pre>
		<pre>\$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out"</pre>
		3. Verify:
		\$ ls -lh /var/log/messages
3.	CMP GUI: Verify	1. Select Start Rollback or Continue Rollback . When hovering over the button, it
	the status of affected Clusters	indicates the server to get backed out.
	NOTE: This takes	Start Rollbeck Start Liganos - View Liganos - View Liganos - Liganos - Advanced - Institute backed WMRA1
	approximately 15 minutes to	WCMP2 Y Blandby 15.00.06_20.10 15.00.16_5.10 Printine approxim Completed Sourcestably of an 27, 2024 1.504.80 WCMP1 Y Advise 15.00.06_20.31.0 15.00.16_5.1.0 Printine approxim Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestably at land 20, 2024 1.454.02 Printine approximation (Completed Sourcestable Account (Completed Sourcestab
	complete.	6
	·	
		WWFG2 Y Actival \$1,00.06_2%1.0 \$1,00.05_4.1.0 € Initiate approach Comprising Successibly at Jan 28, 2014 17 00-03.
		WWWAQ Y Actival 150.008_28/1.0 150.018_51.0 ✓ intrinsing cognition Congression Science (and page 100 completed Sc
		2. Click OK to confirm and continue with the operation. It begins to back-out. 3. Follow the progress status in the Upgrade Operation column. During the back-out activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the cluster is completely backed out. Expected Critical Alarms 70001 The qp_procmgr process has failed 31227 The high availability status is failed due to raised alarms 70007 Not all QP resources are ready 70028 Signaling bonded interface is down 31283 High availability server is offline Expected Major Alarms 70004 The QP processes have been brought down for maintenance 31236 High availability TCP link is down 31233 High availability path loss of connectivity
		Expected Minor Alarms
		70503 The server is in forced standby
		70507 An upgrade/backout action on a server is in progress
		70501 The Cluster is running different versions of software
		70502 Cluster Replication Inhibited
		31101 DB replication to a slave DB has failed
		31102 DB replication from a master DB has failed
		31282 The HA manager (cmha) is impaired by a s/w fault
		31232 High availability server has not received a message
		31284 High availability remote subscriber has not received a heartbeat

Step	Procedure	Result
		31107 DB merging from a child Source Node has failed
		31114 DB Replication of configuration data via SOAP has failed
		31104 DB Replication latency has exceeded thresholds
		78001 Transfer of Policy jar files failed
		70500 The system is running difference versions of software
		31100 The DB replication process is impaired by a s/w fault
		Back-out of the server is complete when the successful completion message (Initiate Back-out Completed Successfully)
		Initiate backout Completed Successfully at Feb 1, 2024 12:53:00.

Step	Procedure	Result
4.	MPE/MRA SSH:	1. Login to the back-out server and verify that there are no failures in syscheck:
	Verify syscheck and /tmp	\$ sudo syscheck
	directory	[admusr@njbbs07mpe ~]\$ sudo syscheck
	permission	Running modules in class disk OK
		Running modules in class hardware
		OK
		Running modules in class net
		OK
		Running modules in class proc
		OK
		Running modules in class system
		OK
		Running modules in class upgrade
		OK
		LOG LOCATION: /var/TKLC/log/syscheck/fail log
		[admusr@njbbs07mpe ~]\$
		2. Verify /tmp directory permissions:
		\$ 1s -1 /
		3. NOTE: Permissions should be the following,
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp
		4. If the permissions are not as listed above then perform the following;
		otherwise skip to next step:
		\$ sudo chmod 777 /tmp
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>
		\$ sudo chmod +t /tmp
		5. Verify:
		\$ ls -1 /
		6. Perform syscheck again:
		\$ sudo syscheck
		—End of Procedure—
		—End of Procedure—

2.7.1.5 Back-out Fully Upgraded MPE/MRA Cluster

Use this procedure to back-out a fully upgraded MPE/MRA Clusters.

Prior to performing this procedure, Oracle recommends first consulting the Technical Services team to discuss the next appropriate course of actions.

At the end of this procedure, all servers of the target cluster are on Release 15.0 (MRA, MPE, CMP) with Active, Standby status.

Expected pre-conditions:

- **1.** Primary Active CMP is on Release 15.0.x.
- 2. Cluster is of MPE or MRA.
- **3.** Servers of target cluster are on Release 15.0.x in either in Active, Standby or Force Standby role.

NOTES:

- This procedure must be performed within a maintenance window.
- This takes approximately 45-60 minutes per MPE or MRA cluster.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

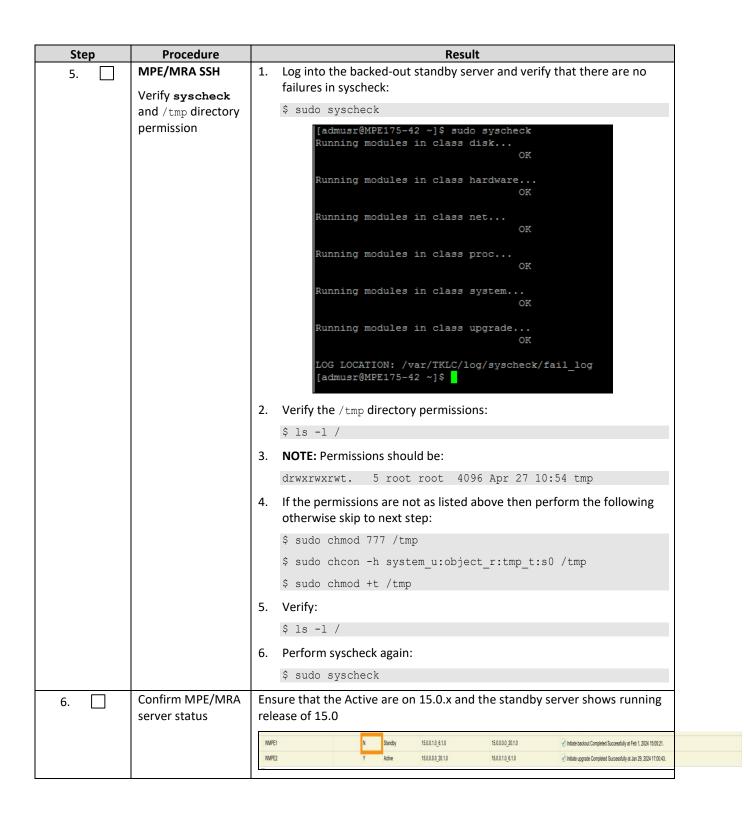
Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

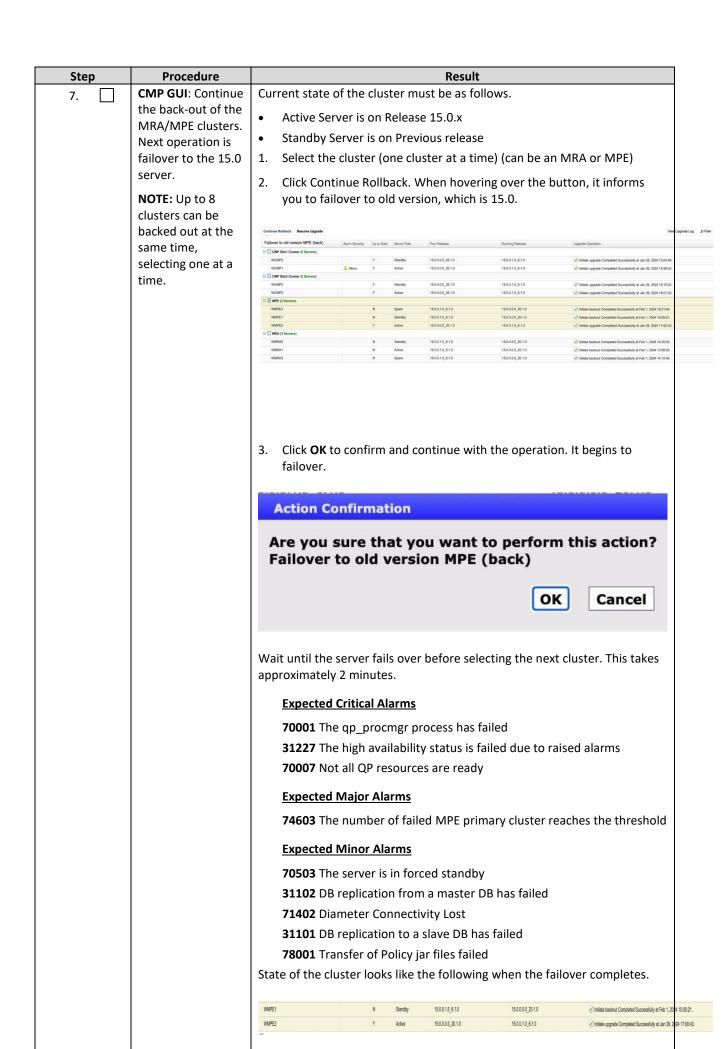
Procedure 23 Back-out Fully Upgraded MPE/MRA Cluster

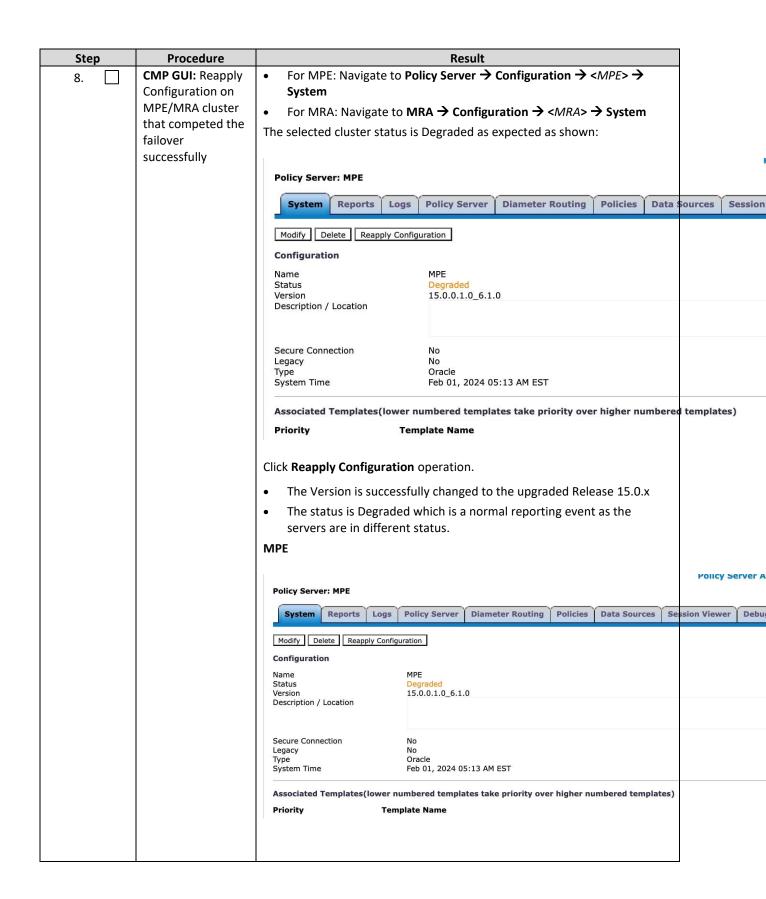
Step	Procedure				ı	Result	
1.	CMP GUI: Verify the status of affected Clusters	 Navigate to Upgrade → Upgrade Manager Confirm status of the cluster is backed out: Primary Active CMP is on Release 15.0.x MPE/MRA is on Release 15.0.x Up to Date Column shows Y for all servers in this cluster EXAMPLE 					
		2				grade rianage.	Current ISO: incremental-ungrade-15.0.0.1.0 6.1.0
		Start Rollback Start Upgrade					View Upgrade Log □ □ Filter □ Columns ▼ □ Advanced ▼
		Name Alar	m Sev Up to D	Server Role	Prev Release	Running Release	Upgrade Operation
		☐ CMP Site1 Cluster (2 Servers)					
		WCMP2 WCMP1	Y	Active	15.0.0.0_20.1.0	15.00.1.0_6.1.0 15.00.1.0 6.1.0	⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 13:04:49. ⊘ Initiate upgrade Completed Successfully at Jan 29, 2024 14:56:02.
		☐ CMP Site2 Cluster (2 Servers)			1		
		WCMP4	Υ	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 15:15:22.
		WCMP3 MPE (3 Servers)	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 16:01:33.
		WMPE1	Y	Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:51:03.
		WMPE2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:00:43.
		WMPE3 I MRA (3 Servers)	Υ	Spare	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	Initiate upgrade Completed Successfully at Jan 29, 2024 17:30:53.
		WMRA2	Y	Active	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0	✓ Initiate upgrade Completed Successfully at Jan 29, 2024 17:04:22.
		WMRA3	Y	Spane Standby	15.0.0.0.0_20.1.0	15.0.0.1.0_6.1.0 15.0.0.1.0 6.1.0	Ø Initiate upgrade Completed Successfully at Jan 29, 2024 17:32-12. Ø Initiate upgrade Completed Successfully at Jan 29, 2024 17:51:03.
2.	MPE/MRA SSH: Verify /var/log/ messages file size	NOTE: The procedure \$ 1s -1h 2. ONLY if the	ne Actre. /var	tive so	/messages	ecked after s ar/log/me	be backed out as admusr the failover later on in this sages is above 20M, run the to the next step.
		\$ sudo c; /var/cam \$ sudo c.	p /va iant/ at /d	ar/log/i /log/i dev/n	g/message messages. ull > /va	es preBack-car/log/mes	put
						ges.preBad	

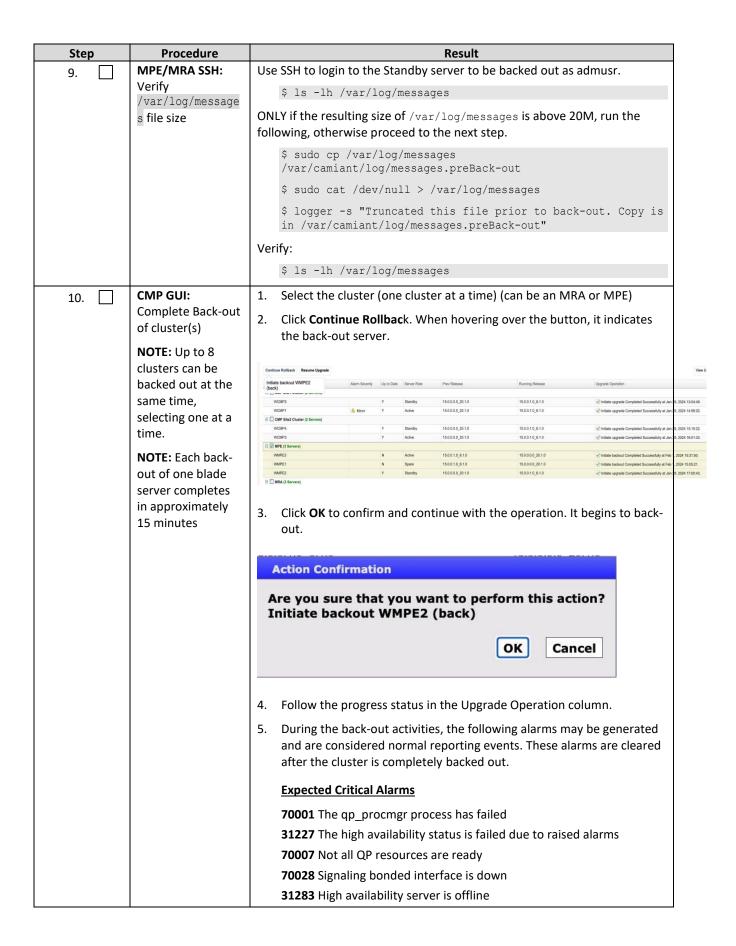
	Procedure	Result
		\$ ls -lh /var/log/messages
3.	CMP GUI: Initiate Back-out NOTES: Each back-out of one blade server completes in approximately 15 minutes. Up to 8 clusters can be backed out at the same time, selecting one at a time.	1. Navigate to Upgrade → Upgrade Manager 2. Select the cluster (one cluster at a time) (can be an MRA or MPE) 3. Click Start Rollback. When hovering over the button, it indicates the server to be backed out. In this case it is the current standby server. Start Rollback Start Lograde
		Action Confirmation Are you sure that you want to perform this action? Initiate backout WMPE1 (back) OK Cancel

Step	Procedure	Result					
		31236 High availability TCP link is down					
		31233 High availability path loss of connectivity					
		Expected Minor Alarms					
		70503 The server is in forced standby					
		70507 An upgrade/backout action on a server is in progress					
		70501 The Cluster is running different versions of software					
		70502 Cluster Replication Inhibited					
		31101 DB replication to a slave DB has failed					
		31102 DB replication from a master DB has failed					
		31282 The HA manager (cmha) is impaired by a s/w fault					
		31232 High availability server has not received a message					
		31107 DB merging from a child Source Node has failed					
		31114 DB Replication of configuration data via SOAP has failed					
		31104 DB Replication latency has exceeded thresholds					
		78001 Transfer of Policy jar files failed					
		70500 The system is running difference versions of software					
		31100 The DB replication process is impaired by a s/w fault					
		Back-out of the server is complete when the successful completion displays					
		in the Upgrade Operation column. The server shows running release of 15.0 and return to standby with an N in the Up To Date Column.					
		15.5 and return to standay with an Win the Op To Bate column.					
		WMPE1 N Standby 15.00.1.0 € 10.00.0.20.1.0					
		WMPE2 Y Active 15.00.00_20.1.0 15.00.1.0_6.1.0					
		Note:					
		If the alarms 70501 and/or 70507 are not cleared, please follow the below					
		steps: 1. Navigate to Upgrade -> Upgrade Manager.					
		2. In the Current ISO section, click Select ISO Button and select a previous					
		iso.					
		iso. 3. Now the alarms should get cleared.					
		3. Now the alarms should get cleared.					
, ,	CMP GUI	3. Now the alarms should get cleared.4. (optional) Revert the Step 2 and select the ISO of current version.					
4.	CMP GUI	3. Now the alarms should get cleared. 4. (optional) Revert the Step 2 and select the ISO of current version. 1. Select the partially Backed out cluster					
4.	CMP GUI Verify the back-out is successful	3. Now the alarms should get cleared.4. (optional) Revert the Step 2 and select the ISO of current version.					
4.	Verify the back-out	3. Now the alarms should get cleared. 4. (optional) Revert the Step 2 and select the ISO of current version. 1. Select the partially Backed out cluster					
4.	Verify the back-out	 Now the alarms should get cleared. (optional) Revert the Step 2 and select the ISO of current version. Select the partially Backed out cluster Select the View Upgrade LOG 					





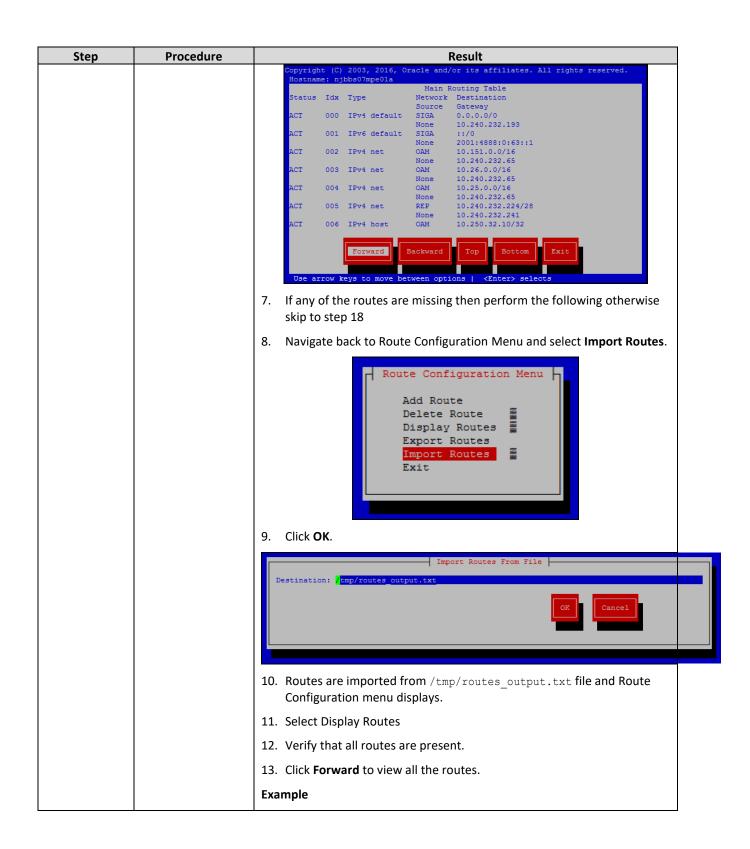




Step	Procedure	Result
		Expected Major Alarms
		70004 The QP processes have been brought down for maintenance
		31236 High availability TCP link is down
		31233 High availability path loss of connectivity
		Expected Minor Alarms
		70503 The server is in forced standby
		70507 An upgrade/backout action on a server is in progress
		70501 The Cluster is running different versions of software
		70502 Cluster Replication Inhibited
		31101 DB replication to a slave DB has failed
		31102 DB replication from a master DB has failed
		31282 The HA manager (cmha) is impaired by a s/w fault
		31232 High availability server has not received a message
		31284 High availability remote subscriber has not received a heartbeat
		31107 DB merging from a child Source Node has failed
		31114 DB Replication of configuration data via SOAP has failed
		31104 DB Replication latency has exceeded thresholds
		78001 Transfer of Policy jar files failed
		70500 The system is running difference versions of software
		31100 The DB replication process is impaired by a s/w fault
		6. Back-out of the server is complete when the successful completion message (initiate Back-out completed successfully) displays in the Upgrade Operation column.
		7. Verify in Upgrade Log that that back-out was successful:
		8. All of the servers are on Release 15.0 at this point and show active/standby
		WMPE1 N Standby 15.00.1.9_6.1.0 15.00.00_20.1.0 Pinitate backout Completed Successfully at Feb 1;
		WMPE2 A Minor N Active 15.00.1.0_6.1.0 15.0.0.0_20.1.0 Initiate backout Completed Successfully at Feb 1,7

Step	Procedure	Result
11.	MPE/MRA SSH:	1. Login to the backed-out standby server as admusr.
	Verify syscheck and /tmp directory	2. Verify that there are no failures in syscheck:
	permission	\$ sudo syscheck
		[admusr@MPE175-52 ~]\$ sudo syscheck
		Running modules in class disk OK
		Running modules in class hardware
		OK
		Running modules in class net
		OK
		Running modules in class proc
		OK
		Running modules in class system
		OK
		Dunning modulos in allega ungueda
		Running modules in class upgrade OK
		LOG LOCATION: /var/TKLC/log/syscheck/fail_log [admusr@MPE175-52 ~]\$
		_
		3. Verify /tmp directory permissions:
		\$ 1s -1 /
		4. NOTE: Permissions should be the following,
		drwxrwxrwt. 5 root root 4096 Apr 27 10:54 tmp
		5. If the permissions are not as listed above then perform the following otherwise skip to next step:
		\$ sudo chmod 777 /tmp
		<pre>\$ sudo chcon -h system_u:object_r:tmp_t:s0 /tmp</pre>
		\$ sudo chmod +t /tmp
		6. Verify:
		\$ ls -1 /
		7. Perform syscheck again:
		\$ sudo syscheck
12.	CMP GUI: Verify	Verify Cluster is processing traffic normally.
12.	that backed out	Navigate to System Wide Reports → KPI Dashboard .
	cluster is	
	processing traffic normally.	
	<u>'</u>	

Step	Procedure	Result																	
						К	PI Dashl	board (I	Last Refr	esh:09/	19/2018	17:44:1	9)			Filters	۳	Chang	ge Threshol
						erforma				Active			Ala				Pro	toco I	Errors
		MRAs selected	TPS	PCD T	PS	Total TP	es	PDN 0		Active ibscriber	S Cr	ritical 0	Mag		Minor	•	Sent 0		Receive 0
		MPEs selected 0 0 0 0 0 0 0 1 0									0								
		MI	_	State	Local TPS	PCD TPS	Total TPS	PDN	Active Subscr bers		Memory %		MRA	Network Element	Critical	Alarms Major	Minor	Sen	nt Recei
		a mra(:	Server-A)	Standby Active	0	0	0	0	0	2	17 19	1 of 1	0 of 0	0 of 58	0	0	0		0
		MP	E	State	TPS			PDN	Active		Memory %	MRA	Data Sources		Critical	Major	Minor	Sen	nt Recei
		_	erver-A) erver-B)	Active Standby	0			0	0	2	6	1 of 1	0 of 1		0	0	1	þ	0
				Standby							, ,								
13.	CMP GUI: Verify	1. Navi	gate to	Syste	em V	Vide	Rep	oort	s →	Alar	ms -	→ A	ctive	Aları	ms				
	alarms	2. Veri	fy that t	there	are	no ι	ınex	рес	ted	activ	e ala	arms	pre	sent.					
		NOTE: So	me ala	rms r	nay	take	30	min	utes	to 1	l hou	ır fo	r aut	to cle	arin	ıg tiı	me.		
14.	MPE/MRA SSH:	Login into MPE/MRA server as admusr.																	
	Verify routes		routes	_out	put.	txt f	rom	the	/hc	me/	admu	sr d	lirect	toy to	the	e/t	mp		
		\$ sı	ıdo cp	rout	es_c	outp	out.	txt	/tm	np									
		\$ 00	l/tmp																
		\$ 15	;																
		rout	es_out	put.	txt														
		adhere service in advers		ot exi tion ct to	iting occu appl	the r wl icat	plathile ion the helicon to helicon the he	tcfg still func mm	mei witl	nu a nin t nality ntely	nd o he p / on	r in latc the	the of the figure of the figur	event enu d e. If t	of an a	a bla caus occ	ade se ar	1	
		3. Star	the pla	atcfg	utili	ty.													
		\$ sı	ıdo su	- pl	atc	£g													
		4. Navi	gate to	Polic	у Сс	nfig	gura	tion	→ I	Rout	ing (Conf	fig -)	Disp	olay	Ro	utes		
		5. Click	Forwa	rd to	viev	v all	the	rou	tes.										
		6. Veri	fy that a	all rou	utes	are	pres	ent											
		Example																	



Step	Procedure	Result							
		Copyright (C) 2003, 2016, Oracle and/or its affiliates. All rights reserved. Hostname: njbbs07mpe01a Main Routing Table							
		Status Idx Type Network Destination Source Gateway							
		ACT 000 IPv4 default SIGA 0.0.0.0/0 None 10.240.232.193							
		ACT 001 IPv6 default SIGA ::/0 None 2001:4888:0:63::1							
		ACT 002 IPv4 net OAM 10.151.0.0/16							
		None 10.240.232.65 ACT 003 IPv4 net 0AM 10.26.0.0/16							
		None 10.240.232.65 ACT 004 IPv4 net 0AM 10.25.0.0/16							
		None 10.240.232.65 ACT 005 IPv4 net REP 10.240.232.224/28							
		None 10.240.232.241 ACT 006 IPv4 host OAM 10.250.32.10/32							
		ACI 000 IFV1 1050 OAN 10.250.32.10/32							
		Forward Backward Top Bottom Exit							
		Use arrow keys to move between options <enter> selects</enter>							
		14. Exit platcfg utility							
		WARNING: It is critical that proper exit of the platcfg menu is strictly adhered to. Not exiting the platcfg menu and or in the event of a blade service interruption occur while still within the platcfg menu can cause an adverse impact to application functionality on the blade. If this occurs contact Oracle personnel immediately and alert Maintenance Engineering.							
15.	Repeat for other clusters as needed	Repeat this procedure for the remaining MPE/MRA servers.							
16.	Perform syscheck and verify that alarms are clear.	Another syscheck on all the back-out servers can be performed to ensure all modules are still operationally OK before progressing to the next Procedure.							
		1. Navigate to System Wide Reports → Alarms → Active Alarms							
		2. Verify that there are no unexpected active alarms present.							
		NOTE: Some alarms may take 30 minutes to 1 hour for auto clearing time.							
	1	—End of Procedure—							

2.7.1.6 Back-out Fully Upgraded Primary CMP Cluster

Use this to back-out a fully upgraded Primary CMP Cluster.

Expected Pre-conditions:

- 1. Primary Active CMP Cluster is on Release 15.0.x
- 2. Secondary CMP, MPE and MRA Clusters are on Release 15.0

NOTES:

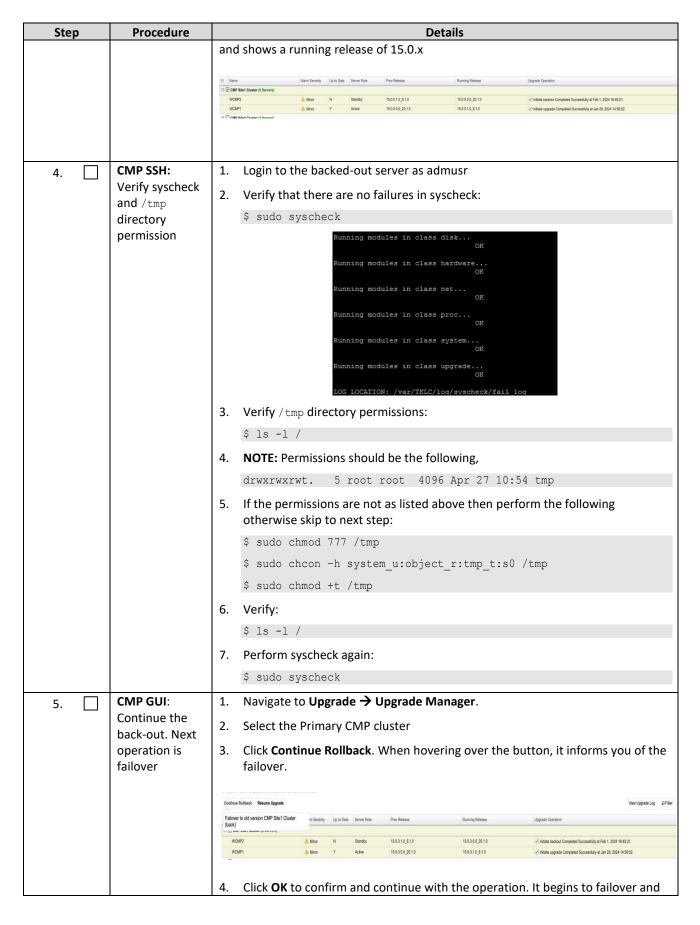
- This procedure must be performed within a maintenance window.
- This procedure takes approximately 40 minutes.
- If this procedure fails, contact Oracle Technical Services and ask for ASSISTANCE.

Check off ($\sqrt{}$) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 24 Back-out Fully Upgraded Primary CMP Cluster

Step	Procedure	Details
1.	CMP GUI:	1. Navigate to Upgrade → Upgrade Manager
	Verify the status of CMP Clusters	2. Confirm status of the cluster to be backed out: - Primary Active CMP is on Release 15.0.x - Secondary CMP, MPE and MRA Clusters are on Release 15.0 - Up to Date Column shows Y for all servers in Primary CMP Cluster 3. Click Filter and enter CMP in the Name field. Example Control (10 Incominate Appendix Manage Column of Manage Column o
2.	CMP SSH: Verify /var/log/ messages file size	1. SSH into the standby server to be backed out as admusr. \$ ls -lh /var/log/messages 2. ONLY if the resulting size of /var/log/messages is above 20M, run the following, otherwise proceed to the next step. \$ sudo cp /var/log/messages /var/camiant/log/messages.preBack-out \$ sudo cat /dev/null > /var/log/messages \$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out" 3. Verify: \$ ls -lh /var/log/messages
3.	cmp GUI: Back- out standby server of Primary CMP cluster NOTE: Back-out of one server takes approximately 20 minutes to complete.	2. Click Start Rollback. When hovering over the button, it indicates the server to back out. Sear Rollback Start Rollback. When hovering over the button, it indicates the server to back out. Sear Rollback Start Ligged West Ligged West Ligged West Ligged William Server Roll Per Rollback Running Release Ligged Countries WILLIAM WILLIAM WILLIAM Running Release Ligged Countries Running Running Release Ligged Countries Running Release

Step	Procedure	Details							
		Action Confirmation							
		Are you sure that you want to perform this action? Initiate backout WCMP2 (back)							
		OK Cancel							
		4. Server goes into an OOS server role.							
		5. Follow the progress status in the Upgrade Operation column.							
		During the back-out activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the cluster is completely backed out.							
		Expected Critical Alarms							
		70001 The qp_procmgr process has failed.							
		31227 The high availability status is failed due to raised alarms							
		31283 High availability server is offline							
		70007 Not all QP resources are ready							
		70025 The MySQL slave has a different schema version than the master							
		Expected Major Alarms							
		70004 The QP processes have been brought down for maintenance							
		31236 High availability TCP link is down							
		31233 High availability path loss of connectivity							
		70021 The MySQL slave is not connected to the master							
		Expected Minor Alarms							
		70503 The server is in forced standby							
		70507 An upgrade/backout action on a server is in progress							
		70501 The Cluster is running different versions of software							
		70502 Cluster Replication Inhibited							
		31232 High availability server has not received a message							
		31101 DB replication to a slave DB has failed							
		31102 DB replication from a master DB has failed							
		31107 DB merging from a child Source Node has failed							
		31114 DB Replication of configuration data via SOAP has failed							
		31106 DB merging to the parent Merge Node has failed							
		70500 The system is running different versions of software							
		Back-out of the server is complete when the successful completion message displays in the Upgrade Operation column. The server goes back to standby state							

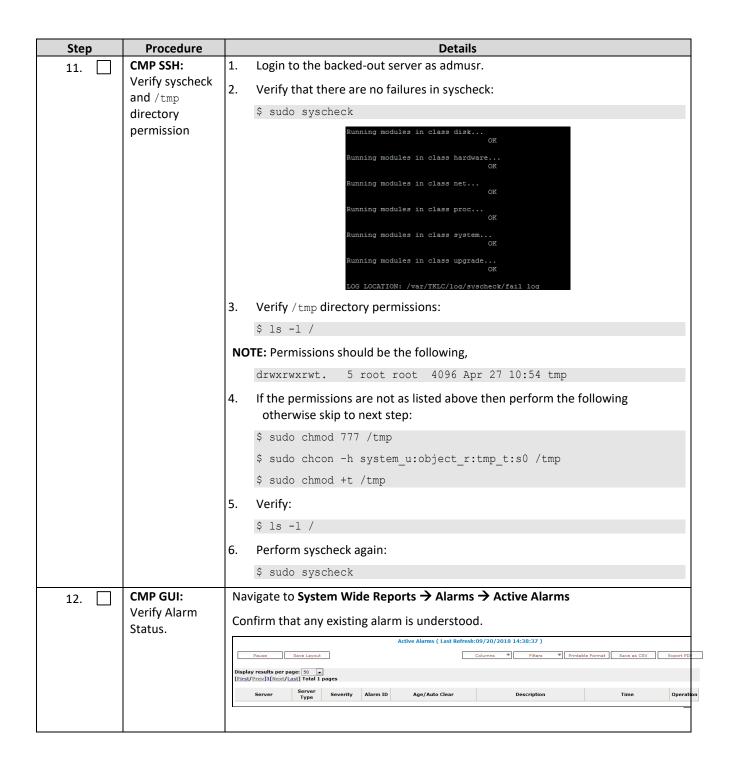


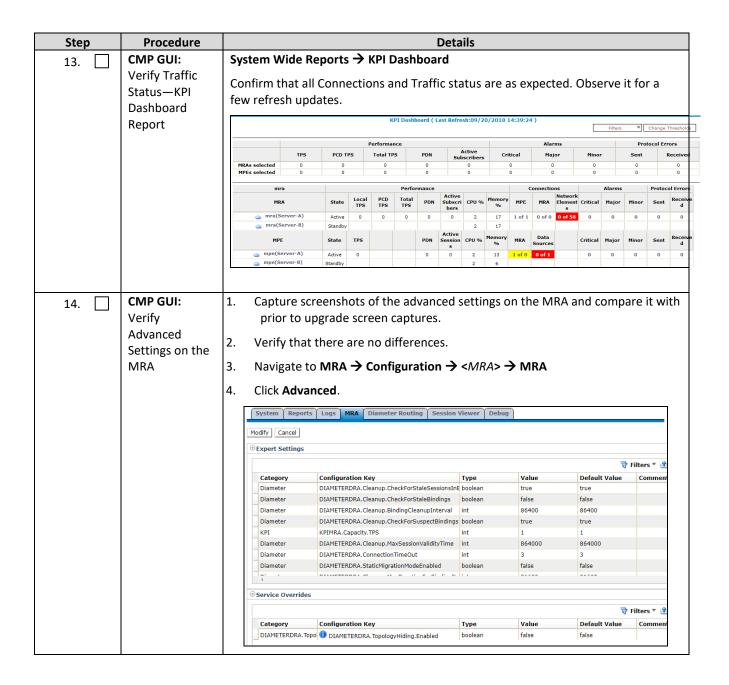
Step	Procedure	Details								
332		takes couple of minutes to complete.								
		Action Confirmation								
		Section (Management) and the contract of the Section (Contract of the S								
		Are you sure that you want to perform this action? Failover to old version CMP Site1 Cluster (back)								
		ranover to old version chir Site! Cluster (back)								
		OK Cancel								
		After a minute, you are required to log back in.								
6.	CMP GUI: Log	After failover, you are required to log back in to the CMP GUI using the Primary								
	back into the Primary CMP	CMP VIP.								
	VIP	ODACLE'								
		ORACLE"								
		WELCOME								
		Welcome to the Configuration Management Platform (CMP). Please enter your user name and password below to access the CMP desktop. If you do not have an existing								
		user name or password, or if you have misplaced either, please contact the system administrator.								
		» You have logged out or your session has timed out. Please enter your username and password to start a new session.								
		USERNAME admin								
		PASSWORD								
		Login								
		COPYRIGHT © 2003, 2022 ORACLE. ALL RIGHTS RESERVED.								
7.	CMP GUI:	1. Navigate to Help → About .								
	Verify previous	2. Verify the release displayed is 15.0.x.								
	Policy Management									
	release	15.0.0.0.0_20.1.0								
		Copyright (C) 2003, 2024 Oracle. All Rights Reserved.								

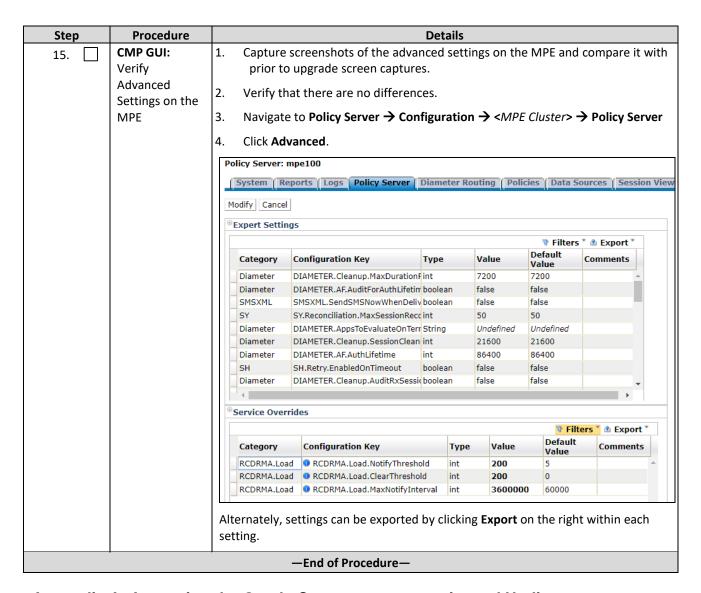
Step	Procedure	Details					
8.	CMP GUI: If a Config Mismatch is observed on	MPE: Navigate to Policy → Configuration → <mpe cluster=""> → System MRA:</mpe>					
	MPE or MRA	Navigate to MRA → Configuration → MRA Cluster> → System					
		Policy Server: MPE System Reports Logs Policy Server Diameter Routing Policies Data Sources Session Viewer Debug Modify Delete Reapply Configuration Configuration Name MPE Status On-line Config Mismatch Version 15.0.0.0.0_20.1.0 Description / Location Secure Connection Yes Legacy No Type Oracle System Time Feb 07, 2024 04:30 AM EST Associated Templates (lower numbered templates take priority over higher numbered templates) Priority Template Name Click Reapply Configuration.					
		Config Mismatch is resolved:					
		Policy Server: MPEcluster					
		System Reports Logs Policy Server Diameter Routing Policies					
		Modify Delete Reapply Configuration					
		The configuration was applied successfully. Configuration					
		Name MPEcluster Status On-line Version 15.0.0.0.0_20.1.0 Description / Location					
		Modify Delete Reapply Configuration The configuration was applied successfully. Configuration Name MPEcluster Status On-line Version 15.0.0.0.0_20.1.0					
9.	CMP SSH: Verify /var/log/	 Use SSH to login to the Standby server to be backed out as admusr \$ ls -lh /var/log/messages 					
	messages file size	 ONLY if the resulting size of /var/log/messages is above 20M, run the following, otherwise proceed to the next step. 					

Step P	Procedure	Details
		<pre>\$ sudo cp /var/log/messages /var/camiant/log/messages.preBack-out</pre>
		<pre>\$ sudo cat /dev/null > /var/log/messages</pre>
		<pre>\$ logger -s "Truncated this file prior to back-out. Copy is in /var/camiant/log/messages.preBack-out"</pre>
	;	3. Verify:
		\$ ls -lh /var/log/messages
10. CM	P GUI:	1. Navigate to Upgrade → Upgrade Manager
Con	ntinue the	2. Select the Primary CMP Cluster.
	mary CMP	3. Click Continue Rollback . When hovering over the button, it indicates the server to get backed out. At this point it is the remaining standby server.
of o	TE: Back-out one server es oroximately	Confine Rollback Distribuyords
	minutes to nplete.	E ☐ CMP Staz Cluster (2 Serven)
10-3	TE: Wait for 15 minutes	4. Click OK to confirm and continue with the operation. It begins to back-out. The server goes in an OOS server role
rolll secc (in F to a secc CMI sync new	ore the back of ondary CMP Primary Site) illow ondary site P nodes to c with the v MySQL	Action Confirmation Are you sure that you want to perform this action? Initiate backout WCMP1 (back) OK Cancel
mas	master.	Follow the progress status in the Upgrade Operation column.
		During the back-out activities, the following alarms may be generated and are considered normal reporting events. These alarms are cleared after the cluster is completely backed out.
		Expected Critical Alarms
		70001 The qp_procmgr process has failed.
		31227 The high availability status is failed due to raised alarms
		31283 High availability server is offline
		70007 Not all QP resources are ready
		70025 The MySQL slave has a different schema version than the master
		Expected Major Alarms
		70004 The QP processes have been brought down for maintenance
		31236 High availability TCP link is down
		31233 High availability path loss of connectivity
		70021 The MySQL slave is not connected to the master

Step	itep Procedure Details										
		<u>E</u> >	pected Minor	<u>Alarms</u>							
		70	503 The server	r is in force	ed standby						
)507 An upgrad			Serve	or is i	n nrogre	200		
)501 The Cluste		_	ersio	ns oi	Sortwa	re		
		70)502 Cluster Re	plication I	nhibited						
		31	31232 High availability server has not received a message								
		31101 DB replication to a slave DB has failed									
			L 102 DB replica								
			•								
			L 107 DB mergin	_							
		31114 DB Replication of configuration data via SOAP has failed									
		31	L 106 DB mergin	g to the pa	arent Merge	Nod	e has	failed			
		70	500 The syster	n is runnin	g different v	ersio	ns of	softwa	re		
			out of the serve		_					macca	σo
			s in the Upgra	•				•			•
			ows the previo	-		iiie s	CIVCI	gues no	ick to	Stariu	Jy state
		and si	lows the previo	us release	•						
		FI Name	Alarm Severity	Up to Date Server Role	Prev Release	Run	ning Release		Upgrade Operation		
		☐ ☑ CMP Site1 C	10000000	31.0.00		1000			Tel A. Anne A. Anne A.	70	
		WCMP2	& Minor	N Active	15.0.0.1.0_6.1.0		1.0.0.0_20.1.0		9		y at Feb 1, 2024 16:49:24.
		WCMP1		N Standby	15.0.0.1.0_6.1.0	15.0	1.0.0.0_20.1.0		Initiate backou	t Completed Successful	y at Feb 1, 2024 17:09:34.
		5. Ve	erify in Upgrade	Log that t	that back-ou	t was	suc	cessful:			
		201 0	Backing out server upgrade	02/01/2024 16:38:21	02/01/2024 16:49:24	0:11:03	Server	WCMP2	Success	Manual	User initiated action: i.
		202 201	Modify the role/replication attribu	02/01/2024 16:38:21	02/01/2024 16:38:22	0:00:01	Cluster	CMP Site1 Cl	Success	Automatic	Automatic action for
		203 0	Backing out server upgrade	02/01/2024 17:02:41	02/01/2024 17:05:17	0:02:36	Server	WCMP1	Success	Manual	User initiated action: i.
		204 203	Modify the role/replication attribu	02/01/2024 17:02:41	02/01/2024 17:02:42	0:00:01	Cluster	CMP Site1 Cl	Success	Automatic	Automatic action for
		205 203	Waiting for replication to synchro	. 02/01/2024 17:05:17	02/01/2024 17:09:34	0:04:17	Server	WCMP1	Success	Automatic	Automatic action wait.
			~~~ (N/D ~~ ··· ·	2 KC 2 K2 C :-	Release 15.0	1 ~+ +1			ch a		/standb.







### Appendix A. Accessing the Oracle Customer support site and Hotlines

Access to the Oracle Customer Support site is restricted to current Oracle customers only. This section describes how to log into the Oracle Customer Support site and link to Oracle Support Hotlines

1. Log into the Oracle Customer Support site at <a href="https://support.oracle.com">https://support.oracle.com</a>

Refer Oracle Support Hotlines <a href="http://www.oracle.com/us/support/contact/index.html">http://www.oracle.com/us/corporate/acquisitions/tekelec/support/index.html</a> and <a href="http://www.oracle.com/us/corporate/acquisitions/tekelec/support/index.html">http://www.oracle.com/us/corporate/acquisitions/tekelec/support/index.html</a>