Oracle® Communications

Platform Management and Configuration, Release 6.6

Disaster Recovery Guide

E93269-01

August 2018

ORACLE®

 CAUTION: Use only the procedures included in this upgrade kit.

My Oracle Support (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at https://www.oracle.com/us/support/contact/index.html.

See more information on MOS in the Appendix D.

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1. Introduction

1.1 Purpose and Scope

In a disaster scenario in which the PMAC application has been lost, the procedures contained herein can be used to recover the PMAC application to its state at the time of the last backup. The PMAC application backup facility supports backup to a redundant PMAC Server or a NetBackup Server. If neither of these destinations are available, the backup data can be manually copied to a generic remote server. This document includes a section covering the additional option of restoring PMAC functionality on a redundant PMAC Server.

These procedures are intended to be run by Oracle personnel. This document assumes the user has basic knowledge of the Management Server hardware, and at least an intermediate skill set with the LINUX environment.

1.2 References

[1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide

[2] PMAC 6.6 Incremental Upgrade Procedure

[3] TVOE 3.6.x Disaster Recovery Procedure

1.3 Acronyms and Terminology

This section lists acronyms and terms specific to this document.

Table 1. Acronyms and Terms

Acronym/Term	Meaning
Backup Server	Server providing backup and recovery services (NetBackup)
iLO	Integrated Lights Out (HP RMS remote management port)
ILOM	Integrated Lights Out Manager (Oracle RMS remote management port)
IPM	Initial Product Manufacturing
ISO	The name ISO is taken from the ISO 9660 file system used with CD-ROM media, but an ISO image might also contain a UDF (ISO/IEC 13346) file system.
Management Server	The server on which the TVOE environment is installed. This could be: HP ProLiant DL 360 HP ProLiant DL 380 Oracle RMS (including Netra)
Management Server TVOE	The TVOE running on the Management Server and hosting the PMAC guest.
NetBackup Feature	Feature that provides support of the Symantec NetBackup client utility on an application server.
OSDC	Oracle Software Delivery Cloud
PMAC	Platform Management and Configuration application
RMS	Rack Mount Server
Redundant PMAC Server	An optional configuration of a second PMAC Server (Guest) running on the TVOE hypervisor on separate hardware from the Management Server
TPD	Tekelec Platform Distribution
TVOE	Tekelec Virtualization Operating Environment

1.4   How to Use this Document

Although this document is primarily to be used as an initial installation guide, its secondary purpose is as a reference for disaster recovery procedures. When executing this document for either purpose, there are a few points to help ensure the user understands the document's intent. These points are as follows:

- Before beginning a procedure, completely read the instructional text (it displays immediately after the section heading for each procedure) and all associated procedural WARNINGS or NOTES.

- Before execution of a STEP within a procedure, completely read the left and right columns including any STEP specific WARNINGS or NOTES.

If a procedural step fails to execute successfully, stop and contact Oracle's Help Center for assistance before attempting to continue. See Appendix D for information on contacting My Oracle Support (MOS).

Figure 1 shows an example of a procedural step used in this document.

- Any sub-steps within a step are referred to as step X.Y. The example in Figure 1 shows steps 1 through 3, and step 3.1.

- GUI menu items, action links, and buttons to be clicked on are in bold Arial font.

- GUI fields and values to take note of during a step are in bold Arial font.

- Where it is necessary to identify the server explicitly on which a particular step is to be taken, the server name is given in the title box for the step (for example, ServerX in step 2 Figure 1).

Each step has a checkbox the user should check to keep track of the progress of the procedure.

The Title column describes the operations to perform during that step.

Each command the user enters, and any response output, is formatted in `10-point Courier` font.

	Title	Directive/Result Step
1. ☐	Change directory	Change to the backout directory. `$ cd /var/TKLC/backout`
2. ☐	**ServerX**: Connect to the console of the server	Establish a connection to the server using cu on the terminal server/console. `$ cu –l /dev/ttyS7`
3. ☐	Verify Network Element data	View the Network Elements configuration data; verify the data; save and print report. Select **Configuration > Network Elements** to view Network Elements Configuration screen.

Figure 1. Example of a Procedure Step Used in This Document

2.   Prerequisites

2.1   Required actions to enable Disaster Recovery

For disaster recovery to work, a backup of the PMAC server must be made to a remote location, meaning a remote server, a redundant PMAC server, or a NetBackup server. That backup contains the data as it existed at the time the backup was created. Perform a periodic backup to prevent a loss of data. The local backup option does not preserve software/firmware ISO images that have been added on the primary PMAC, so these need to be added again after the restore (keep this additional media as well). In addition, a backup of the Management Server TVOE must be made and transferred to a remote location, unless a redundant PMAC server is being used to restore; in this case, the redundant PMAC server should already have TVOE properly configured. The TVOE backup contains the TVOE configuration data as it existed at the time of the backup. Ensure a TVOE backup is performed when TVOE configuration changes are made.

2.2   Required Tools for PMAC Disaster Recovery Procedure

These items/settings are required to perform a disaster recovery procedure for the PMAC application.

- Network Architecture Planning Document (NAPD) site-survey information (site specific).

- Bootable media with the TVOE release for the desired PMAC release level.

- PMAC 6.6 Install/Upgrade Media (via OSDC or USB).

- Media with the Firmware Maintenance.

- PMAC backup data.

- Network access to the iLO of the Management Server or local access to serial console.

- iLO administrative user name and password (for Management Server).

- Password for the TVOE user **admusr**.

- Password for the PMAC user **admusr**.

- Name of the PMAC guest defined on the Management Server TVOE

- Username and password for a PMAC GUI administrator user (for example, user **guiadmin**).

Note: Additional materials may be specified in these procedures.

2.3   Network Connections

The user must have network connectivity to the out-of-band console of the Management Server and the management network. The restore may affect the network settings so using the out-of-band console (or serial) prevents a loss of connectivity during the restore. If the restore is to be done on a redundant Management Server, then it is assumed the network connections mirror the primary Management Server to facilitate the restore.

3.   PMAC Disaster Recovery Procedure

These procedures may require, as a prerequisite, that the Management Server TVOE, hosting the PMAC application, be rebuilt. An IPM of the management server should be performed to the appropriate TVOE release. The TVOE may have non-PMAC guests running on it. Consult the application DR documents for details about recovering non-PMAC guests on the Management Server TVOE.

Following the TVOE restore, the PMAC instance is deployed using the PMAC upgrade media. The upgrade media is either physical media (USB) or a disk image (.iso file) from OSDC. After the PMAC is deployed, the PMAC backup data can be restored to the server using these procedures.

This document provides three alternative procedures. The appropriate procedure to use is determined by the location of the backup PMAC configuration archive: on customer-provided media, on a redundant Management Server, or on a Backup Server.

1. Section 3.1, Restore PMAC Server from Backup Media: Restores the primary PMAC on the Management Server TVOE where no redundant Management Server or backup server is available. The PMAC configuration is restored from a backup archive stored in a location you provide.

2. Section 3.2, Make the Redundant Management Server Primary: Restores the PMAC backup data to a redundant PMAC guest on a redundant Management Server TVOE. The PMAC configuration is restored from a backup archive residing on the redundant Management Server itself.

3. Section 3.3, Restore PMAC Server from a Backup Server: Restores the primary PMAC guest on the Management Server TVOE in a system with a backup server. The PMAC configuration is restored from a backup archive residing on a backup server you provide.

If none of the scenarios listed above are applicable, then a fresh installation is required. Fresh installations are beyond the scope of this document. Application-specific documents should be obtained based on the application running on the managed system.

Determine the correct procedure to follow based on the recovery desired. Also note the second procedure requires a redundant PMAC guest on a redundant Management Server to be installed, powered, network connected, and receiving periodic backup data from the primary PMAC. In the event that a redundant PMAC was available, but did not receive periodic backup data, then use the first procedure to restore PMAC from backup media, or the third procedure to restore from a backup server. In the event the backup server does not have the appropriate PMAC backup stored to it, then use the first procedure to restore the PMAC.

3.1   Restore PMAC Server from Backup Media

Procedure 1.   Restore PMAC from Backup Media

S T E P #	This procedure restores the PMAC application from backup media.
	 Notes:
	 • In addition to the requirements listed in section 2, this procedure also requires:
	     • FRU of faulty hardware already performed, if necessary.
	     • TVOE backup image.
	 • ISO images are not automatically recovered and need to be manually re-provisioned.
	 Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.
	 If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.	

1. ☐	Upgrade the Management Server firmware	Use the sections listed from reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide to upgrade the Management Server firmware: • Upgrade Management Server Firmware/DL360/DL380 Server OR • Upgrade Management Server Firmware/Oracle Rack Mount Server

Procedure 1.   Restore PMAC from Backup Media

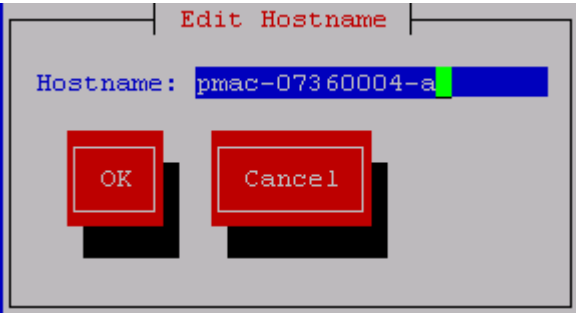| 2. ☐	Restore the Management Server TVOE	Use the section listed from reference [3] TVOE 3.6.x Disaster Recovery Procedure to restore the Management Server TVOE:
		
		• Restore TVOE Configuration From Backup Media
		
		When asked to verify the correct storage pools, ensure **vgguests** displays in the list:
		
		`[admusr@tvoe ~]$ sudo virsh -c "qemu:///system" pool-list`
		`Name                 State     Autostart`
		`---------------------------------------`
		`vgguests             active    yes`

3. ☐	Deploy the PMAC guest application	Use the section listed from reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide to deploy the PMAC guest application.
		
		To deploy the PMAC guest:
		
		• Deploy PMAC Guest procedure
		
		Note: If this is a dual-stack (IPv4/IPv6) installation, you can use either IPv4 or IPv6 addresses in the pmac-deploy command. The subsequent restoration of the PMAC database re-establishes both IPv4 and IPv6 addresses.
		
		To verify the deployment:
		
		• Set Up PMAC procedures. Steps:
		
		  • TVOE Management Server iLO: Log into the management server on the remote console
		  • Login with PMAC **admusr** Credentials
		  • Verify the PMAC configured correctly on first boot
		  • Perform a system health check on PMAC
		  • Verify the PMAC application release
		  • Logout of the virsh console
		  • Management Server iLO: Exit the TVOE console

4. ☐	Connect to the iLO/ILOM of the Management Server	Follow Appendix E.1, How to Access a Server Console Remotely, in reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide, to establish a connection to the iLO console of the Management Server.

5. ☐	Log into the TVOE host on the Management Server	Log into the TVOE console as user **admusr**:
		
		`login as: admusr`
		`Password:`
		`Last login: Thu Sep 24 19:40:52 2015 from`
		`10.154.124.23`

6. ☐	Log into the PMAC guest	Follow Appendix B of this document, Access the PMAC Command Prompt from the Management Server TVOE Console, to log into the PMAC guest console.

Procedure 1.   Restore PMAC from Backup Media

7. ☐	Copy the PMAC backup file to the **/var/TKLC/smac /backup/** directory on the PMAC guest	Copy the appropriate backup file from the remote backup location to the deployed PMAC. There are too many possible backup scenarios to cover them all here.
		The example below is a simple scp from a remote backup location.
		Note: The remote user must have proper permissions to read the file on the remote server.
		
		If using IPv6 addresses, command requires shell escapes, for example, `admusr@[<ipV6addr>]:/<file>`
		
		`[admusr@pmac-07360004-a ~]$ sudo /usr/bin/scp -p \`
		`    user@remoteserver:/backup/<backup_file.pef> \`
		`    /var/TKLC/smac/backup/`
		
		Notes:
		
		• It is important to copy the correct backup file to use in the restore.
		
		• By default, PMAC restore uses the most recent file in **/var/TKLC/smac/backup** that starts with **backupPmac_**. If the name of the file copied to the system uses a different name or is not the most recent, then provide the name using the **--fileName** parameter.

8. ☐	Run alarmMgr. The alarmMgr, command output should display no failures	`[admusr@pmac ~]$ sudo /usr/TKLC/plat/bin/alarmMgr --alarmStatus` *Note:* If the output of alarmMgr is not empty, contact My Oracle Support (MOS).

9. ☐	From the command prompt of the PMAC guest, restore the PMAC data from backup	`[admusr@pmac-07360004-a ~]$ sudo`
		`/usr/TKLC/smac/bin/pmacadm restore`
		`PMAC Restore been successfully initiated as task ID 1`
		Notes:
		
		• The restore runs as a background task. To check the status of the background task, issue the `sudo /usr/TKLC/smac/bin/pmaccli getBgTasks` command. The result should eventually be PMAC Restore successful.
		
		• If more than one backup archive exists in the **/var/TKLC/smac/backup** directory, and you do not wish to restore from the latest backup, then use the **--fileName** option to identify the backup archive of interest. When using the **--fileName** option, the directory path of the backup should be included in the file name.

10. ☐	Verify the status of the PMAC application	Follow Appendix A Post-Restoration Verification to verify the successful restoration of the data. *Note:* If after the restoration of the PMAC, provisioned data does not represent the correct data, contact My Oracle Support (MOS).
11. ☐	Re-add required software images	If needed, follow the Adding ISO Images to the PMAC Image Repository procedure in reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide to provision any required ISO images.

3.2 Make the Redundant Management Server Primary

Procedure 2.   Restore PMAC backup on redundant Management Server

S T E P #	This procedure restores the PMAC application from a backup onto the redundant PMAC. *Note:* In addition to the requirements listed in section 2, this procedure also requires: • Access to the redundant Management Server Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.	
1. ☐	Disconnect the primary Management Server from the network and power down the unit	The removal of cabling and power ensures the IP addresses are in use by the primary Management Server are available to the redundant Management Server without potential conflict after the restore is initiated.
2. ☐	Transfer serial console connectivity from to the redundant Management Server	Note the physical port locations for the console connections attached to the primary Management Server TVOE. These connections are needed to replicate the redundant Management Server. The serial wiring for the redundant Management Server should already be run to the target aggregation switches. Disconnect the primary Management Server connections at the switches and replace them with the redundant Management Server connections.
3. ☐	Connect to the iLO/ILOM of the redundant Management Server	Follow Appendix E.1 "How to Access a Server Console Remotely," in reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide, to establish a connection to the iLO console of the redundant Management Server.

4.
☐
	Log into the TVOE host on the redundant Management Server	Log into the TVOE console as user **admusr**:
		<pre>login as: admusr
		Password:
		Last login: Thu Sep 24 19:40:52 2015 from
		10.154.124.23</pre>

5. ☐	Log into the PMAC guest on the redundant Management Server	Follow Appendix B of this document, Access the PMAC Command Prompt from the Management Server TVOE Console, to log into the PMAC guest console on the redundant Management Server.

Procedure 2.   Restore PMAC backup on redundant Management Server

6. ☐	Validate the release. ***Note***: It is expected that the redundant Manager Server is kept in sync with the primary Management Server as a regular part of the upgrade procedure	Verify the redundant Management Server release matches what the primary Management Server had installed. If not, then the redundant Management Server needs to be upgraded. ```[admusr@pmac ~]$ sudo /usr/TKLC/plat/bin/appRev Install Time: Tue Sep 15 12:50:26 2015 Product Name: PMAC Product Release: 6.6.0.0.0_66.5.0 Base Distro Product: TPD Base Distro Release: 7.6.0.0.0_88.48.0 Base Distro ISO: TPD.install-7.6.0.0.0_88.48.0- OracleLinux6.9-x86_64.iso ISO name: PMACBLD-6.6.0.0.0_66.5.0.iso OS: OracleLinux 6.9``` Verify the displayed release number matches that of the primary Management Server, if not, follow steps below: Use the sections listed from reference [2] PMAC 6.6 Incremental Upgrade Procedure to upgrade the Management Server PMAC application: • PMAC Upgrade Procedure on the Redundant PMAC • Post Upgrade Verification on the Redundant PMAC
7. ☐	Set the hostname to match that of the primary PMAC server	<mark>Reconfigure the hostname of this server to be the same as that of the PMAC guest it is replacing.</mark> Log into the CLI of the redundant PMAC guest server as the **admusr** user using the PMAC **admusr** password. Run this command: ```[admusr@pmac ~]$ sudo /bin/su - platcfg``` Navigate to **Server Configuration > Hostname**. Click **Edit** and press **Enter**. Change the hostname and click **OK**. Exit the platcfg tool. In this case, the hostname has been set to **pmac-07360004-a** to match the hostname saved with the backup.
8. ☐	Run alarmMgr. The alarmMgr, command output should display no failures	```[admusr@pmac ~]$ sudo /usr/TKLC/plat/bin/alarmMgr --alarmStatus``` ***Note:*** If the output of alarmMgr is not empty, contact My Oracle Support (MOS).

Procedure 2.   Restore PMAC backup on redundant Management Server

9. ☐	From the command prompt of the Management Server, restore the PMAC data from backup	`[admusr@pmac ~]$ sudo /usr/TKLC/smac/bin/pmacadm restore` PMAC Restore been successfully initiated as task ID 1 ***Notes***: • The restore runs as a background task. To check the status of the background task, issue the `sudo /usr/TKLC/smac/bin/pmaccli getBgTasks` command. The result should eventually be PMAC Restore successful. • The restore sets the IP addresses for the control and management networks and initializes the PMAC application. • It is important to restore the correct backup. The latest backup may not be the backup that contains the system data of interest. This could be the case if the automatic backup, which is scheduled in the morning, is performed on the newly installed PMAC before the restoration of the data. If more than one backup archive exists in the **/var/TKLC/smac/backup** directory, and you do not want to restore from the latest backup, then use the **--fileName** option on the restore to select the backup archive of interest. When using the **--fileName** option, the directory path of the backup should be included in the file name.
10. ☐	Verify the status of the PMAC application	Follow Appendix A Post-Restoration Verification to verify the successful restoration of the data. If after the restoration of the PMAC, provisioned data does not represent the correct data, contact My Oracle Support (MOS).

3.3   Restore PMAC Server from a Backup Server

Procedure 3.   Restore PMAC Server From Backup Server

S T E P #	This procedure restores the PMAC application from a backup server. ***Note:*** In addition to the requirements listed in section 2, this procedure also requires: • FRU of faulty hardware already performed, if necessary. • Backup server configured to service PMAC Management Server backup client, the backup server network data, and appropriate backup server user and user password. • TVOE backup image. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.	
1. ☐	Upgrade the Management Server firmware	Use the sections listed from reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide to upgrade the Management Server firmware: • Upgrade Management Server Firmware/DL360/DL380 Server OR • Upgrade Management Server Firmware/Oracle Rack Mount Server
2. ☐	Restore the Management Server TVOE	Use the section listed from reference [2] PMAC 6.6 Incremental Upgrade Procedure to restore the Management Server TVOE: • Restore TVOE Configuration from Backup Media
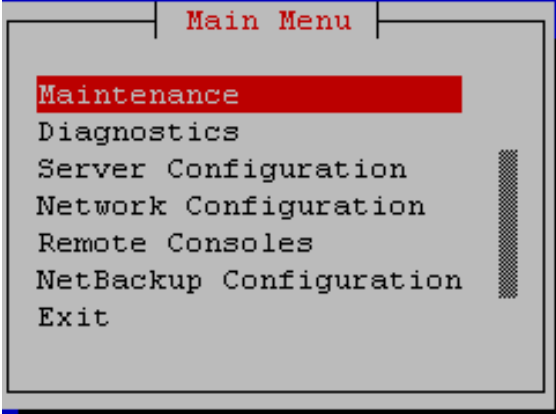
Procedure 3.   Restore PMAC Server From Backup Server

3. ☐	Deploy the PMAC guest application	Use the section listed from reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide to deploy the PMAC guest application.
		To deploy the PMAC guest:
		• Deploy PMAC Guest procedure
		Notes:
		• If this is a dual-stack (IPv4/IPv6) installation, you can use either IPv4 or IPv6 addresses in the pmac-deploy command. The subsequent restoration of the PMAC database re-establishes both IPv4 and IPv6 addresses.
		• This procedure restores from a NetBackup server, so specify the appropriate options when deploying PMAC for use with NetBackup.
		To verify the deployment:
		• Set Up PMAC procedures. Steps:
		• TVOE Management Server iLO: Log into the management server on the remote console
		• Login with PMAC **admusr** credentials
		• Verify the PMAC configured correctly on first boot
		• Perform a system health check on PMAC
		• "Verify the PMAC application release
		• Logout of the virsh console
		• Management Server iLO: Exit the TVOE console
4. ☐	Connect to the iLO/ILOM of the Management Server	Follow Appendix E.1, How to Access a Server Console Remotely, in reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide, to establish a connection to the iLO console of the Management Server.

5. ☐	Log into the TVOE host on the Management Server	Log into the TVOE console as user **admusr**:
		`login as: admusr`
		`Password:`
		`Last login: Thu Sep 24 19:40:52 2015 from`
		`10.154.124.23`

6. ☐	Log into the PMAC guest	Follow Appendix B of this document, Access the PMAC Command Prompt from the Management Server TVOE Console, to log into the PMAC guest console.

Procedure 3.   Restore PMAC Server From Backup Server

| 7. ☐ | Prepare PMAC guest to transfer the appropriate backup from Backup Server. Disable iptables, and enable the TPD platcfg backup configuration menus | Run these commands on the PMAC:

`[admusr@pmac ~] $` **`sudo /sbin/service iptables stop`**
`iptables: Flushing firewall rules:`
`[  OK  ]`
`iptables: Setting chains to policy ACCEPT: filter`
`[  OK  ]`
`[admusr@pmac ~]$` **`sudo /usr/TKLC/smac/etc/services/netbackup start`**
`Modified menu NBConfig --show`
`Set the following menus: NBConfig to visible=1`
`Modified menu NBInit --show`
`Set the following menus: NBInit to visible=1`
`Modified menu NBDeInit --show`
`Set the following menus: NBDeInit to visible=1`
`Modified menu NBInstall --show`
`Set the following menus: NBInstall to visible=1`
`Modified menu NBVerifyEnv --show`
`Set the following menus: NBVerifyEnv to visible=1`
`Modified menu NBVerify --show`
`Set the following menus: NBVerify to visible=1`

The output of the above command in software version 7.7 is:

`[admusr@pmac ~]$` **`sudo /usr/TKLC/smac/etc/services/netbackup start`**
`Added NBConfig configuration.`
`Set the following menus: NBConfig to visible=1`
`Added NBInit configuration.`
`Set the following menus: NBInit to visible=1`
`Added NBDeInit configuration.`
`Set the following menus: NBDeInit to visible=1`
`Added NBInstall configuration.`
`Set the following menus: NBInstall to visible=1`
`Added NBVerifyEnv configuration.`
`Set the following menus: NBVerifyEnv to visible=1`
`Added NBVerify configuration.`
`Set the following menus: NBVerify to visible=1` |

Procedure 3.   Restore PMAC Server From Backup Server

8. ☐	Verify the TPD platcfg backup menus are visible, then exit the TPD platcfg utility	`[admusr@pmac-07360004-a ~]$ sudo /bin/su – platcfg` *Note:* In the example image above of the TPD platcfg utility Main Menu the backup menu is identified as **NetBackup Configuration**.

9. ☐	Verify the iptables rules are disabled on the PMAC guest	`[admusr@pmac ~]$ sudo /sbin/iptables –nL`
		`Chain INPUT (policy ACCEPT)`
		`target     prot opt source                 destination`
		`Chain FORWARD (policy ACCEPT)`
		`target     prot opt source                 destination`
		`Chain OUTPUT (policy ACCEPT)`
		`target     prot opt source                 destination`

10. ☐	Install backup utility client software on the PMAC guest	Use the section listed from reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide to configure the Management Server and reinstall the NetBackup client: • PMAC NetBackup Client Installation and Configuration *Note:* When executing the PMAC NetBackup Client Installation and Configuration procedure, start with step 4. The Initialize PMAC Application and Configure PMAC application prerequisites can be ignored.
11. ☐	From the backup server, verify the appropriate PMAC backup exists	Log into the backup server as the appropriate user, using the user password. Execute the appropriate commands to verify the PMAC backup exists for the desired date. *Notes*: • If the appropriate backup does not exist on the backup server, perform the restore using section 3.1, Restore PMAC Server from Backup Media. • The actions, and commands, required to verify the PMAC backups exist, and the commands required to perform backup and restore on the backup server are the responsibility of the site customer. • It is important to choose the correct backup file to use in the restore. The latest backup may not be the backup that contains the system data of interest. This could be the case if the automatic backup, which is scheduled in the morning, is performed on the newly installed PMAC before the restoration of the data.

Procedure 3. Restore PMAC Server From Backup Server

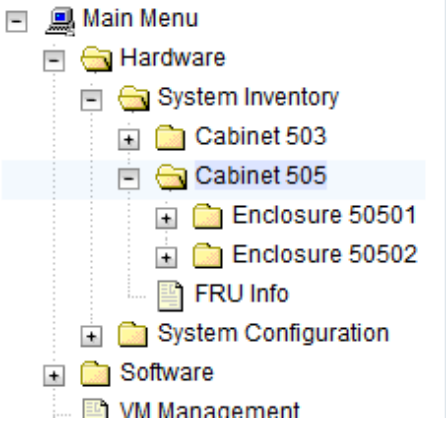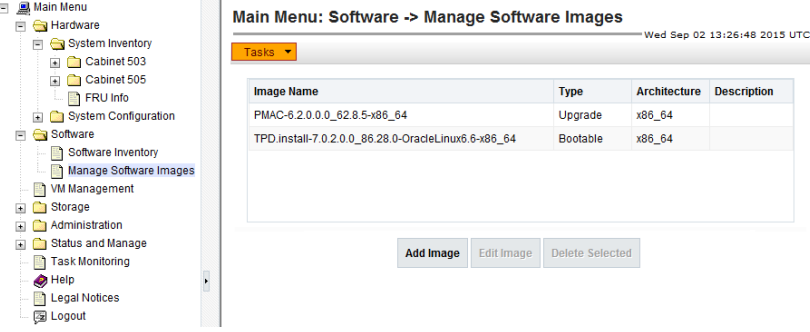|		
12. ☐	At the backup server, restore the PMAC backup file to the **/var/TKLC/smac /backup/** directory on the PMAC	Log into the backup server as the appropriate user, using the user password. Execute the appropriate commands to restore the PMAC Management Server backup for the desired date. *Note:* The actions, and commands, required to verify the PMAC backups exist, and the commands required to perform backup and restore on the backup server are the responsibility of the site customer.
13. ☐	Run alarmMgr. The alarmMgr, command output should display no failures	`[admusr@pmac ~]$ sudo /usr/TKLC/plat/bin/alarmMgr --alarmStatus` If the output of alarmMgr is not empty, contact My Oracle Support (MOS).
14. ☐	From the command prompt of the Management Server, restore the PMAC data from backup.	`[admusr@pmac-07360004-a ~]$ sudo /usr/TKLC/smac/bin/pmacadm restore` `PMAC Restore been successfully initiated as task ID 1` ***Notes***: • The restore runs as a background task. To check the status of the background task, issue the `sudo /usr/TKLC/smac/bin/pmaccli getBgTasks` command. The result should eventually be PMAC Restore successful. • If more than one backup archive exists in the **/var/TKLC/smac/backup** directory, and you do not wish to restore from the latest backup, then use the **--fileName** option to identify the backup archive of interest. When using the **--fileName** option, the directory path of the backup should be included in the file name.
15. ☐	Verify the status of the PMAC application	Follow Appendix A Post-Restoration Verification to verify the successful restoration of the data. If after the restoration of the PMAC, provisioned data does not represent the correct data, contact My Oracle Support (MOS).

Appendix A. Post-Restoration Verification

Procedure 4. Post-Restoration Verification

S T E P #	This procedure verifies the PMAC configuration following the restoration procedure. *Note:* This procedure assumes the restoration steps have been completed. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.	
1. ☐	**PMAC GUI**: Login	If necessary, open a web browser and enter: `https://<PMAC Guest Server IP>` Login with administrator credentials. **ORACLE®** Oracle System Login Tue Sep 1 20:26:21 2015 UTC **Log In** Enter your username and password to log in Session was logged out at 8:26:21 pm. Username: [ ] Password: [ ] ☐ Change password **Log In** Unauthorized access is prohibited. This Oracle system requires the use of Microsoft Internet Explorer 9.0, 10.0, or 11.0 with support for JavaScript and cookies. Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners. Copyright © 2010, 2015, Oracle and/or its affiliates. All rights reserved.
2. ☐	Verify the Restore Task completes	Navigate to the Task Monitoring page on the menu. Verify the restore background task completes successfully. **Notes**: • After the restore is complete, you should see **Add Enclosure** tasks start for all previously provisioned enclosures. **These should be allowed to complete before continuing**. • After the restore is complete, you may see some tasks mentioning ISO images being deleted. This is normal behavior when executing Procedure 1. These ISO images may be re-provisioned manually.
3. ☐	Connect to the iLO/ILOM of the Management Server	Follow Appendix E.1, How to Access a Server Console Remotely, in reference [1] PMAC 6.6 Oracle Communications Tekelec Platform Configuration Guide, to establish a connection to the iLO console of the Management Server.

Procedure 4.   Post-Restoration Verification

4. ☐	Log into the TVOE host on the Management Server	Log into the TVOE console as user **admusr**:
		
		`login as: admusr`
		`Password:`
		`Last login: Thu Sep 24 19:40:52 2015 from`
		`10.154.124.23`

5. ☐	Log into the PMAC guest	Follow Appendix B of this document, Access the PMAC Command Prompt from the Management Server TVOE Console, to log into the PMAC guest console.

6. ☐	Check for missing interfaces	If interfaces other than the control and management interfaces existed, they must be manually recreated. From the PMAC guest, verify no configured, but not active devices exists, such as the highlighted example below. Typically, this is a netBackup dedicated device.
		
		`[admusr@pmac ~]$ sudo /sbin/service network status`
		`Configured devices:`
		`lo control management otherdevice`
		`Currently active devices:`
		`lo control management`
		
		Use Appendix C of this document if a missing device must be recreated. Note the name shown, it must be used as the guest device name.

7. ☐	Verify the status of the PMAC application	`[admusr@pmac ~]$ sudo /usr/TKLC/smac/bin/sentry status`
		`sending status command...`
		`PMAC Sentry Status`
		`------------------`
		`sentryd started: Thu May 31 13:56:47 2012`
		`Current activity mode: ACTIVE`
		`Process          PID    Status          StartTS                 NumR`
		`---------------- ------ ---------- --------------------- ----`
		`smacTalk         21423  running  Thu May 31 13:56:47 2012  1`
		`smacMon          21448  running  Thu May 31 13:56:47 2012  1`
		`hpiPortAudit     21471  running  Thu May 31 13:56:47 2012  1`
		`snmpEventHandler 21494  running  Thu May 31 13:56:47 2012  1`
		`Mon Jun 11 13:26:50 2012`
		`Command Complete.`

8. ☐	Run alarmMgr. The alarmMgr, command output should display no failures	`[admusr@pmac ~]$ sudo /usr/TKLC/plat/bin/alarmMgr --alarmStatus`
9. ☐	Verify the connectivity to the aggregate switches	Execute Procedure 5 to verify the connectivity to the aggregate switches.
10. ☐	Exit the command line session	`[admusr@pmac ~]$ exit`

Procedure 4. Post-Restoration Verification

11. ☐	Verify the System Inventory looks correct through the PMAC GUI. ***Note***: The hardware discovery may take some time to complete. The screen capture assumes discovery is complete for all enclosures.	Select the **System Inventory** node and verify the previously provisioned enclosures are present.
12. ☐	Verify Software Images	Navigate to the Manage Software Images GUI to verify all images you want to have are available for installation/upgrade. ***Note:*** If this was a restore performed by following Procedure 1, ISO images need to be added manually.
13. ☐	Verify the Software Inventory looks correct through the PMAC GUI. ***Note***: The software discovery may take some time to complete.	Navigate to **Software** > **Software Inventory**. Verify all the servers (blades, RMS, VMs) are listed and have the details filled in (assuming TVOE or TPD is installed on the server).

Procedure 5.   Post-Restoration Verification for Switches

S T E P #	This procedure verifies the connectivity to the switches, and console access to aggregation switches following the restoration procedure. ***Note:*** This procedure assumes the restoration steps have been completed, and the netConfig repository for the switches are accurate. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.		

1.
☐
	From the PMAC login, test network access to all switches	The netConfig validate command tests netConfig access to all managed switches. The command should display 1 **Validating …** line per device showing the switch hostname.
		
		`[admusr@pmac ~]$ sudo netConfig --repo validate`
		`Validating aggA...`
		`Validating aggB...`
		`Validating bay1R...`
		`Validating bay2R...`
		
		Note: If any **Failed to connect** error messages display, contact My Oracle Support (MOS).		

2.
☐
	List aggregation switches	If the system has aggregation switches with console access, continue with this step; otherwise, this procedure is complete.
		
		The netConfig listDevices command displays all devices. Only the 4948 Model aggregation devices need to be identified1. The **Device** names are used in the next step. This example identifies **aggA**.
		
		`    [admusr@pmac ~]$ sudo netConfig --repo listDevices`
		`    Device: aggA`
		`        Vendor:   Cisco`
		`        Model:    4948E-F`
		`        Access:   Network: 10.240.72.36`
		`        Live Protocol Configured`
		
		Note: This example output does not show a complete response, several devices are likely to be shown.		

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1 If there are many devices, the output may be reduced by appending " `| grep –B2 4948`" to the command.

Procedure 5. Post-Restoration Verification for Switches

3. ☐	Test console access to aggregation switches	Execute this step for each named aggregation switch identified in the previous step.
		
		Create a file replacing the string **SWITCH_NAME** with the switch hostname identified. The cat command is terminated with a Control-D.
		
		```[admusr@pmac ~]$ cat > /tmp/consoleTest```
		```<configure apiVersionMin="1.0">```
		``` <procedure access="oob">```
		``` <device>SWITCH_NAME</device>```
		``` <task>```
		``` <command>getVersion</command>```
		``` </task>```
		``` </procedure>```
		```</configure>```
		```[control-D]```
		
		This check validates the file just created (any output means the file content is incorrect, and you may attempt to recreate it again):
		
		```[admusr@pmac ~]$ xmllint –noout /tmp/consoleTest```
		
		This netConfig command uses the console to display the version. It should look similar to this:
		
		```[admusr@pmac ~]$ sudo netConfig --```
		```file=/tmp/consoleTest```
		```Firmware Version: (cat4500e-ENTSERVICESK9-M), Version```
		```12.2(54)WO```
		
		Note: If the connection failed, contact My Oracle Support (MOS).

4. ☐	Remove test file	The file created in the previous step may be deleted. ```[admusr@pmac ~]$ rm /tmp/consoleTest```

Appendix B. Access the PMAC Command Prompt from the Management Server TVOE Console

Procedure 6. Access the PMAC Command Prompt from the Management Server TVOE Console
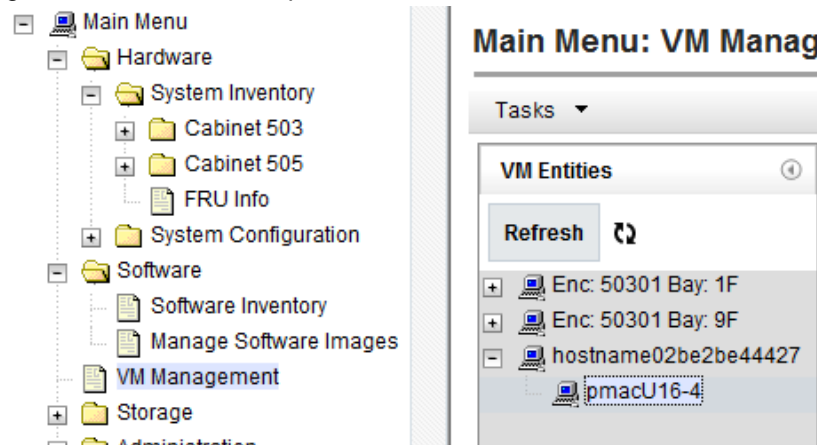
S T E P #	This procedure provides instructions on how to access the PMAC command prompt from the TVOE command prompt. *Note:* Make sure to capture a log of all lines appearing on the screen on the laptop, desktop, or other computer used when executing this procedure. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.

1. ☐	Determine the name of the PMAC guest	From the TVOE console, list the guests and locate the one representing the PMAC:
		
		```[admusr@tvoe ~]$ sudo /usr/bin/virsh list```
		``` Id Name State```
		``` --```
		``` 11 pmac-07360004-a running```

Procedure 6. **Access the PMAC Command Prompt from the Management Server TVOE Console**

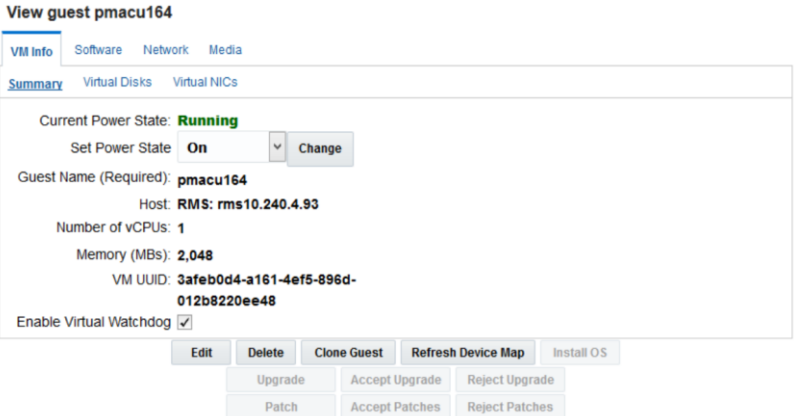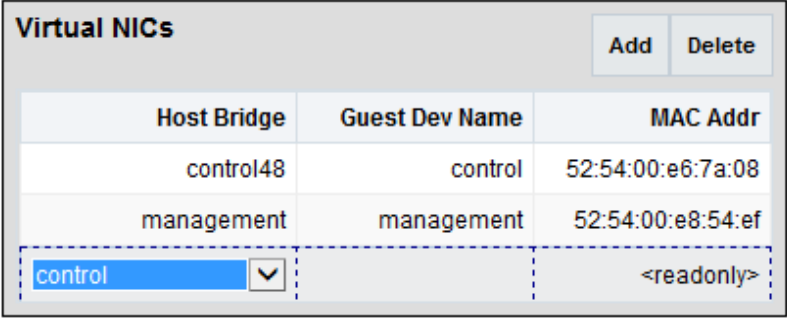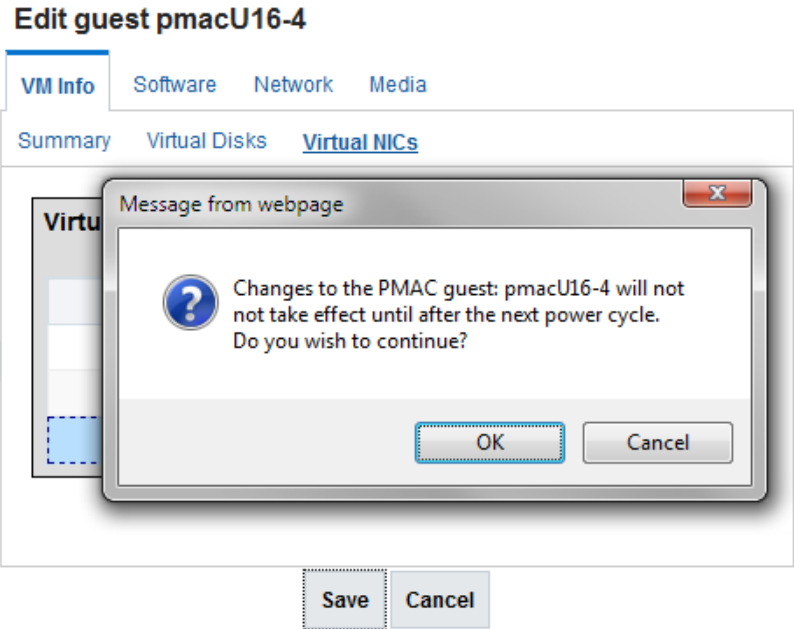| 2. ☐	Log into the PMAC guest	From the TVOE console, log into the PMAC Guest console using the guest name from the previous step. It may be necessary to press **Enter** to get a login prompt. Log into the PMAC console as the **admusr** user:
| | | ```
[admusr@tvoe]$ sudo /usr/bin/virsh console pmac-07360004-a
Connected to domain pmac-07360004-a
Escape character is ^]
Oracle Linux Server release 6.6
Kernel 2.6.32-504.23.4.el6prerel7.2.0.0.0_88.6.0.x86_64 on an x86_64
pmac-07360004-a login: admusr
Password:
Last login: Fri Sep 25 16:04:57 from 10.25.81.98
``` |

Appendix C. Restore PMAC Guest Devices

Procedure 7. **Create Guest Interface**

S T E P #	This procedure provides instructions on how to create the guest device on a PMAC.
	Note: Make sure to capture a log of all lines appearing on the screen on the laptop, desktop, or other computer used when executing this procedure.
	Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.
	If this procedure fails, contact My Oracle Support (MOS) and ask for assistance.
1. ☐	View the PMAC guest	From the PMAC GUI, navigate to **VM Management** and select the PMAC guest in the VM Entries pane.

Procedure 7. Create Guest Interface

2. ☐	Edit the guest	Click **Edit**. View guest pmacu164 VM Info Software Network Media Summary Virtual Disks Virtual NICs Current Power State: **Running** Set Power State On Change Guest Name (Required): **pmacu164** Host: **RMS: rms10.240.4.93** Number of vCPUs: **1** Memory (MBs): **2,048** VM UUID: **3afeb0d4-a161-4ef5-896d-012b8220ee48** Enable Virtual Watchdog ✓ Edit Delete Clone Guest Refresh Device Map Install OS Upgrade Accept Upgrade Reject Upgrade Patch Accept Patches Reject Patches
3. ☐	Add the device	Click **Virtual NICs** and **Add** on the Virtual NICs list. For the Host Bridge, select the TVOE bridge name from the list. For The Guest Dev Name, type the name from the **service network status** output in the calling procedure. **Virtual NICs** Add Delete Host Bridge	Guest Dev Name	MAC Addr control48	control	52:54:00:e6:7a:08 management	management	52:54:00:e8:54:ef control		\<readonly\>
4. ☐	Save the device	Click **Save** and confirm: **Edit guest pmacU16-4** VM Info Software Network Media Summary Virtual Disks **Virtual NICs** Message from webpage Changes to the PMAC guest: pmacU16-4 will not not take effect until after the next power cycle. Do you wish to continue? OK Cancel Save Cancel

Procedure 7.   Create Guest Interface

5. ☐	From the TVOE login, restart the guest	Shut down and restart the PMAC guest to get the new guest device.
| | | ```
[admusr@tvoe]$ sudo /usr/bin/virsh destroy pmac57
Domain pmac57 destroyed
[admusr@tvoe]$ sudo /usr/bin/virsh start pmac57
Domain pmac57 started
``` |

Appendix D.   My Oracle Support (MOS)

MOS (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at **1-800-223-1711** (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. When calling, make the selections in the sequence shown below on the Support telephone menu:

1.   Select **2** for New Service Request.

2.   Select **3** for Hardware, Networking and Solaris Operating System Support.

3.   Select one of the following options:

- For technical issues such as creating a new Service Request (SR), select 1.
- For non-technical issues such as registration or assistance with MOS, select 2.

You are connected to a live agent who can assist you with MOS registration and opening a support ticket. MOS is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the CAS main number at 1-800-223-1711 (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at **http://www.oracle.com/us/support/contact/index.html**. The emergency response provides immediate coverage, automatic escalation, and other features to ensure the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Locate Product Documentation on the Oracle Help Center

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, http://docs.oracle.com. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

1. Access the **Oracle Help Center** site at http://docs.oracle.com.

2. Click Industries.

3. Under the **Oracle Communications** subheading, click the **Oracle Communications documentation** link. The Communications Documentation page appears. Most products covered by these documentation sets display under the headings N**etwork Session Delivery and Control Infrastructure** or **Platforms**.

4. Click on your Product and then the Release Number. A list of the entire documentation set for the selected product and release displays. To download a file to your location, right-click the PDF link, select `Save target as` (or similar command based on your browser), and save to a local folder.