Oracle® Communications Platform

TVOE 3.2 Upgrade Procedure

Software Upgrade Procedure

Release 7.2

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Oracle® Communications Tekelec Virtualization Operating Environment (TVOE) 3.2 Release 7.2

Table of Contents

List of Figures

List of Tables

List of Procedures

Important Notices

⚠️ **CAUTION: Use only the procedure downloaded from Oracle Technology Network (OTN) (http://www.oracle.com/technetwork/indexes/documentation/oracle-comms-tekelec-2136003.html).**

Before upgrading your system, access **My Oracle Support** web portal (**https://support.oracle.com**) and review any Alerts that may be related to the System Health Check or the Upgrade.

Before beginning this procedure, contact Oracle Support to inform them of your upgrade plans.

1 Introduction

TVOE is a TPD based virtualization host. TVOE allows for virtualization of servers so that multiple applications can reside on one physical machine while still retaining dedicated resources. This means software solutions that include multiple applications and require several physical machines can be installed on very few (possibly one) TVOE Hosts.

1.1 Purpose and Scope

This document contains detailed procedures for performing a software upgrade of the TVOE application running on supported hardware. This document is not a standalone document and should be referenced by application procedures. The audience for this document is Oracle customers and the following Oracle groups:

- Manufacturing,
- Product Verification,
- Documentation,
- Customer Service including Software Operations and NPx,
- Application developers.

1.2 My Oracle Support

Web portal (preferred option): My Oracle Support (MOS) at https://support.oracle.com/

Phone: +1.800.223.1711 (toll-free in the US),

> Or retrieve your local hotline from Oracle Support Contacts Global Directory at
> http://www.oracle.com/support/contact.html

Make the following selections on the Support telephone menu:

> Select **2** for **New Service Request**

> Then select **3** for **Hardware, Networking, and Solaris Operating System Support**

> Then either

- select **1** for **Technical Issues**,
  When talking to the agent, please indicate that you are an existing Tekelec customer.

  Note: Oracle support personnel performing installations or upgrades on a customer site must obtain the customer Support Identification (SI) number prior to seeking assistance.
  OR
- select **2** for **Non-Technical Issues**, for example, for My Oracle Support (MOS) registration.
  When talking to the agent, mention that you are a Tekelec customer new to MOS.

1.3 References

[1] *Platform 7.2.x Configuration Procedure Reference*, E64363, Latest Revision, Oracle

[2] *PM&C 6.2 Incremental Upgrade*, E53487, Latest Revision, Oracle

1.4   Glossary

Table 1. Glossary

Acronym/Term	Definition
Accept	An action taken if the customer is satisfied with a system that has been upgraded. As part of an accept the temporary objects used to enable backout will be removed as they are no longer needed. Once an upgrade has been accepted, a reject (backout) can no longer be performed.
Application	The software running on a guest of the TVOE host that performs a service.
Backout	The process to take a system back to a Source Release after initiating an upgrade to a Target release. This includes restoring previous system configuration.
ESWD	Electronic Software Delivery
Guest	A simulated computer running on a TVOE host. A TVOE host can have multiple guests.
HIDS	Host Instrusion Detection System
PM&C	Platform Management and Configuration
PM&C Application	PM&C is an application that provides platform-level management functionality, such as the capability to manage and provision platform components of systems so they can host applications.
Reject	An action taken if the customer is not satisfied with a system that has been upgraded and wishes to backout the upgrade.
Source release	Software release to upgrade from.
Target release	Software release to upgrade to.
TVOE	Tekelec Virtualization Operating Environment
TVOE Host	Physical server used to host the TVOE application.

2 General Description

2.1 Ways to upgrade TVOE

An upgrade of a TVOE host can be performed in two different ways:

- Stand Alone TVOE host upgrade
- PM&C-Aided TVOE host upgrade

The *PM&C-Aided TVOE host upgrade* should be used whenever a PM&C is available and is not a guest on the TVOE host being upgraded. In cases where PM&C is a guest on the TVOE host that is being upgraded, the *Stand Alone TVOE host upgrade* procedure should be used.

2.1.1 Stand Alone TVOE host upgrade

When PM&C is not available, or the PM&C resides on the TVOE host being upgraded, the TVOE host will need to upgrade itself. This is performed by copying the TVOE software image to the TVOE host and then initiating an upgrade via platcfg. To perform a *Stand Alone TVOE host upgrade* please execute in order the following procedures from this document:

- Procedure 1. TVOE Pre-Upgrade Validation
- Procedure 2. Pre-Upgrade Backup
- Procedure 4. Adding TVOE software image to TVOE host

WARNING

Do not attempt to perform these procedures without first contacting Oracle Support.

This procedure will forcefully shut down all guests on the TVOE host!

Prior to executing this procedure, guests must be shut down gracefully by executing the appropriate application procedure. To see a list of guests and their states, execute the following on the TVOE host as admusr:

`sudo /usr/bin/virsh list --all`

- Procedure 6. Stand Alone TVOE host upgrade
- Procedure 7. TVOE Post-Upgrade Validation

> ## WARNING
> Do not attempt to perform these procedures without first contacting **Oracle Support**.
>
> This procedure will forcefully shut down all guests on the TVOE host!
>
> Prior to executing this procedure, guests must be shut down gracefully by executing the appropriate application procedure. To see a list of guests and their states, execute the following on the TVOE host as admusr:
>
> ### sudo /usr/bin/virsh list --all

- Procedure 8. Stand Alone TVOE Upgrade Accept
- Procedure 10. Post-Upgrade Backup

2.1.2 PM&C Aided TVOE host upgrade

When PM&C is available it should be used to upgrade the TVOE host.

Note: PM&C should never be used to upgrade its own host.

To perform a PM&C Aided TVOE host upgrade, execute the following procedures in the order found in this document:

- Procedure 1. TVOE Pre-Upgrade Validation
- Procedure 2. Pre-Upgrade Backup
- Procedure 3. Adding TVOE software image to PM&C repository
- Procedure 5. PM&C Aided TVOE host upgrade
- Procedure 7. TVOE Post-Upgrade Validation
- Procedure 9. PM&C Aided TVOE Upgrade Accept
- Procedure 10. Post-Upgrade Backup

2.2 Supported Upgrade Paths

The following table specifies the supported upgrade paths for TVOE 3.2.:

Table 2. Application Upgrade Paths

Source TVOE Application Version	Target TVOE Application Version	Supported Ways to Upgrade
2.7.W.W.W-X.X.X	3.2.Z.Z.Z-Y.Y.Y*	• Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.0.W.W.W-X.X.X	3.2.Z.Z.Z-Y.Y.Y*	• Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.2.W.W.W-X.X.X	3.2.Z.Z.Z-Y.Y.Y*	• Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade

Table 2. Application Upgrade Paths

Source TVOE Application Version	Target TVOE Application Version	Supported Ways to Upgrade

* Y.Y.Y must represent a release that is greater than X.X.X. Upgrading TVOE to an older release is NOT supported.

2.3   Upgrade Flow

During the upgrade of the TVOE host, all guests will be shut down automatically. However, the order in which they will be shut down is random and will most likely not match the Application-recommended order. The script that automatically stops guests will wait a designated period of time (120 seconds by default) to allow for a graceful shutdown. After that time, the guest(s) will be stopped forcefully. The forceful shutdown is not desirable, and thus it is recommended that Applications are stopped and the guest(s) shut down prior to initiating the TVOE upgrade procedure. After upgrade of TVOE, the guest(s) (and the related Application[s]) will need to be verified to be up and functioning correctly. This is because TVOE is unaware of the application specific startup procedures.

Considering that Application teams will be providing procedures of their own, the overall upgrade procedure will look like the flow chart shown below. The five procedures indicated by the blue boxes on the top row are the procedures detailed by this document. The two procedures indicated by the red boxes on the bottom row are procedures that should be provided by the Application teams.

Figure 1. Upgrade Flow
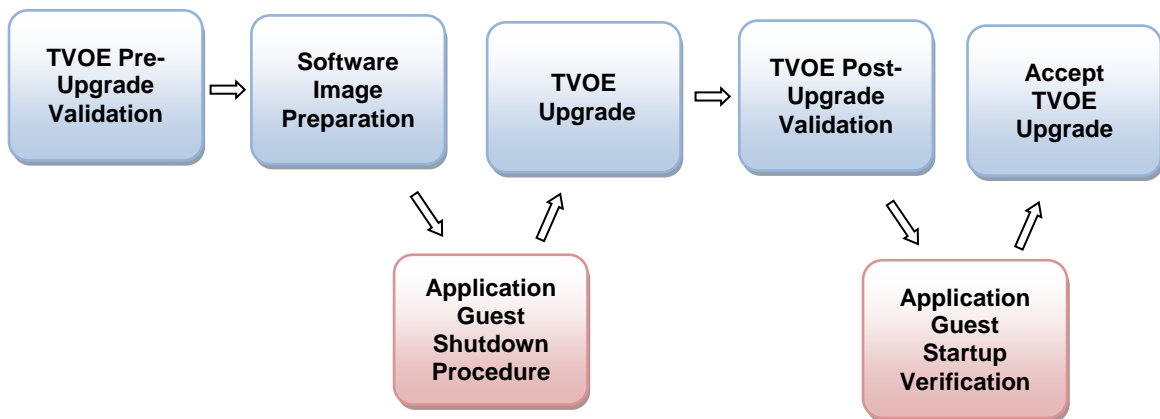
3 Upgrade Overview

This section provides a brief overview of the recommended method for upgrading a server from the source release to the target release of the TVOE application.

3.1   Required Materials

- Supported server running TVOE.
- TVOE software image of target release.
- Connection and login information as specified in Table 5. Connection and Login Information.
- SSH client application to connect to TVOE host and TVOE host remote console.
- Web browser to access PM&C Application per "Supported Internet Browsers and Versions" [2]*
- A copy of reference [1]

* Only needed if executing the *PM&C Aided TVOE host upgrade*.

3.2   Upgrade Execution Overview

As part of the upgrade process, the health of the system will first be verified. The upgrade will then be performed using the PM&C Application or the TVOE system itself. After upgrade the system's health will again be verified. If the system health is satisfactory, the upgrade will be accepted and the process will be complete. An overview of these procedures is shown in Table 3. Upgrade Execution Overview. The Pre-Upgrade Validation can be executed outside of the maintenance window. The Upgrade, Post-Upgrade Validation, and Upgrade Accept are executed in the maintenance window.

Table 3. Upgrade Execution Overview

Phase	Elapsed Time (Hrs:Min)	Downtime (Hrs:Min)	Activity	Impact
Pre- Upgrade Validation	0:01	0:00	Verifying TVOE host health.	None
Software Image Preparation	0:01	0:00	Add TVOE software image to TVOE or PM&C.	None
TVOE Upgrade	0:35	0:35	Performing TVOE application upgrade.	All guests and any applications will not be running.
Post Upgrade Validation	0:01	0:01	Verifying TVOE host health.	Problems with upgrade may degrade or prevent guests and applications from running.
Upgrade Accept	0:02	0:02	Accepting upgrade.	None

* The provided times are lab estimates of a worst case (TVOE 2.7 to TVOE 3.2) upgrade and may vary. Additionally, these estimates do not include the amount of time it takes to shut down or start up guests and their corresponding applications.

3.3   Backout Execution Overview

If an error is detected during upgrade of the TVOE Application, the upgrade will automatically be backed out. After an automatic backout refer to section 6.1.

If a manual backout becomes necessary then see section 6.2. An overview of this procedure is shown in Table 4.

Table 4. Manual Backout Execution Overview

Phase	Elapsed Time (Hrs:Min)	Downtime (Hrs:Min)	Activity	Impact
Manual Backout	0:25	0:25	Performing backout of previous upgrade	All guests and any applications will not be running

Note: The provided times are lab estimates and may vary. Additionally, these estimates do not include the amount of time it takes to shut down or start up guests and their corresponding applications.

3.4   Log Files

Pre and post upgrade validation steps will be captured using the script utility and stored in text files. All output from commands executed by the upgrade procedure during the upgrade will be logged in the /var/TKLC/log/upgrade/upgrade.log file on the TVOE host. No application logs will be affected by the TVOE upgrade.

4   Upgrade Preparation

- Acquire TVOE software image.
- Gather and log connection information for the TVOE host.
- Gather and log connection information for PM&C Application.*
- Transfer TVOE software image to the target site.

* Only needed if executing the *PM&C Aided TVOE host upgrade*.

4.1   Software Upgrade Preparations

Table 5. Connection and Login Information

Subject/Attribute	IP Address	Username	Password
PM&C Application GUI:*		**pmacadmin**	
PM&C FTP:*		**pmacftpusr**	
TVOE Host:		**admusr**	
		platcfg	
TVOE Host remote console:		**root/Administrator**	

* Only needed if executing the *PM&C Aided TVOE host upgrade* procedure.

5   Software Upgrade Procedures

Contact Oracle Support prior to executing this upgrade to ensure that the proper media are available for use.

<h2 style="text-align:center;color:red;">****   WARNING   *****</h2>

Do not start the upgrade process without the required information and materials described by this document.

Please read the following notes on upgrade procedures:

- Initiating this upgrade will shut down all guests running on the TVOE host.
- After completing each step and at each point where data is recorded from the screen, the technician performing the upgrade must initial each step. A check box should be provided.
- Captured data is required for future support reference if Oracle Technical Services is not present during the upgrade.

5.1   Conventions

Multiple servers may be involved with the procedures in this manual. Therefore, most steps in the written procedures begin with the name or type of server to which the step applies. For example:

Each step has a checkbox for every command within the step that the technician should check to keep track of the progress of the procedure.

The title box describes the operations to be performed during that step.

Each command that the technician is to enter is in 9 point Lucida Console font

1 ☐	**ServerX:** Connect to the console of server	`$ cu –1/dev/ttyS7`

Note: The prompt will start with a '#' if running with administrator privileges, '$' otherwise

5.2 Pre-Upgrade Validation Execution

Procedure 1. TVOE Pre-Upgrade Validation

S T E P	Use this procedure to verify the health of the TVOE host prior to software upgrade. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support	
	Task	**Description**
1 ☐	Verify the firmware on all equipment is up to date	**Note:** If hardware was not purchased from Oracle, please refer to the application release notes for guidance concerning the steps to take in upgrading firmware versions. For actual firmware and procedures, please contact the equipment's vendor. If hardware was purchased from Oracle, please visit the Firmware Beehive Online site to retrieve the Firmware Upgrade Pack release notes and the Firmware Upgrade Procedure. These documents provide specific instructions concerning how to upgrade firmware versions for the hardware deployed. If you do not have access to the Firmware Beehive Online site, please contact Oracle Support or your Customer Service representative to obtain access.

2 ☐	**TVOE Host:**
	Log in and start capture
		Start capturing the output to a file in the `/var/TKLC/log/upgrade` directory.
		
		`$ LOGDIR=/var/TKLC/log/upgrade [↵ ]`
		`$ sudo /usr/bin/script $LOGDIR/TPreUV-$(date +%s).log [↵ ]`
		
		The system returns output similar to the following to indicate that the log file has been created and the capture has started. Additionally, the prompt will be displayed as shown.
		
		`Script started, file is /var/TKLC/log/upgrade/TPreUV-`
		`1306426872.log`
		`$`
		
		At this point, any data input or output to the terminal window will be captured in the log file and can be viewed at a later time.

3 ☐	**TVOE Host:** Verify TVOE Host health	Run the following command to check alarm status on the TVOE host: `$ alarmMgr --alarmStatus [ ↵ ]` If any output is produced, an alarm is present on the system. Contact Oracle Support for information about how to proceed.

4 ☐	**TVOE Host:**
	Stop the capture and flush all data to the file
		Run the following command to stop the capture:
		
		`$ exit [↵ ]`
		
		The system returns output similar to the following to indicate that the capture has stopped and the log file has been closed.
		
		`Script done, file is /var/TKLC/log/upgrade/TPreUV-`
		`1306426872.log`
		`$`

---End of Procedure---		

5.3   Pre-Upgrade Backup

Procedure 2. Pre-Upgrade Backup

<table>
<tr>
<td rowspan="2">S
T
E
P</td>
<td colspan="2">Use this procedure to back up the TVOE host through the NetBackup Master Server or through the PM&C Application prior to the upgrade.

Check off (√) each step as it is completed. If this procedure fails, contact <u>Oracle Support</u>.</td>
</tr>
<tr>
<td>**Task**</td>
<td>**Description**</td>
</tr>
<tr>
<td>**1**
☐</td>
<td>**NetBackup**
Or
PM&C Application:
Create a backup of the TVOE host.</td>
<td>If NetBackup is being used, a backup should be initiated by the NetBackup Master Server and copied off of the system to be upgraded. Otherwise, a backup of the TVOE host must be created by following the procedure below from reference [1].

Note: This procedure does not include a backup of guest configuration or data. Refer to application documentation for instructions covering backing up the guests.

☐ 3.10.1 *Backup Procedure for TVOE* [1]</td>
</tr>
<tr>
<td colspan="3" align="center">**---End of Procedure---**</td>
</tr>
</table>

5.4   Software Image Preparation

Procedure 3. Adding TVOE software image to PM&C repository

<table>
<tr>
<td rowspan="2">S
T
E
P</td>
<td colspan="2">Use this procedure to add the TVOE software image to the PM&C Repository.
Check off (√) each step as it is completed. If this procedure fails, contact <u>Oracle Support</u>.</td>
</tr>
<tr>
<td>**Task**</td>
<td>**Description**</td>
</tr>
<tr>
<td>**1**
☐</td>
<td>**PM&C Application:**
Add TVOE software image to PM&C repository.</td>
<td>Add the target TVOE application software by executing the following procedure from reference [1]

☐ 3.7.9 *Adding ISO Images to the PM&C Image Repository* [1]</td>
</tr>
<tr>
<td colspan="3" align="center">**---End of Procedure---**</td>
</tr>
</table>

Procedure 4. Adding TVOE software image to TVOE host

S T E P	Use this procedure to add the TVOE software image to the TVOE host. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**TVOE Host:** Verify there is enough space on the server for TVOE software image	Log in as admusr and run the following to verify there is sufficient space on the TVOE host: **$ df –h /var/TKLC/upgrade/ [↵]** The system returns output similar to the following to indicate the disk usage of where the TVOE software image should reside. ``` Filesystem Size Used Avail Use% Mounted on /dev/mapper/vgroot-plat_var_tklc 4.0G 848M 3.0G 23% /var/TKLC ``` If the "Avail" column is smaller than the size of the TVOE software image, contact Oracle Support for information about how to proceed.

Procedure 4. Adding TVOE software image to TVOE host

2 ☐	Add TVOE software image to TVOE host	Place a copy of the TVOE software image into the /var/TKLC/upgrade/ directory on the TVOE host by utilizing scp or USB media.
		
		 • SCP from Customer PC using Linux
		 From the command line of a Linux machine, use the following command to copy the Backup ISO image to the TVOE host:
		
		 `$ scp <path_to_image> <user>@<TVOE_ip>:/var/TKLC/upgrade/`
		
		 Where **`<path_to_image>`** is the path to the TVOE ISO image local to the Customer PC and **`<TVOE_ip>`** is the TVOE IP address. **`<user>`** should be root if the TVOE release is 2.0 and admusr if the TVOE release is 2.5 or newer.
		
		 • SCP from Customer PC using Windows
		 Use WinSCP to copy the TVOE ISO image to the TVOE host. Refer to *Appendix A: Using WinSCP* from reference [1] for help using WinSCP.
		
		 • USB Media
		
		 1. Attach the USB media to the TVOE host.
		
		 2. Login as admusr on the TVOE host and run the following to list ISOs on the USB media and copy them to the host:
		
		 `$ sudo /bin/ls /media/*/*.iso`
		 `/media/usb/TVOE-3.2.0.0.0_88.4.0-x86_64.iso`
		
		 Replacing **<FULL_PATH_TO_TVOE_ISO>** with the output of the command above, copy the ISO to the /var/TKLC/upgrade directory:
		
		 `$ sudo /bin/cp <FULL_PATH_TO_TVOE_ISO> /var/TKLC/upgrade/`
		
		 3. Unmount the USB media:
		
		 `$ sudo /bin/umount /media/usb`

		---End of Procedure---

5.5   Software Upgrade Execution

WARNING

This procedure will forcefully shut down all guests on the TVOE host! Prior to executing this procedure, guests must be shut down gracefully by executing the appropriate application procedure.

To see a list of guests and their states, execute the following on the TVOE host as admusr:

`sudo /usr/bin/virsh list --all`

Procedure 5. PM&C Aided TVOE host upgrade

S T E P	Use this procedure to upgrade TVOE using PM&C. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**PM&C Application:** Perform upgrade of TVOE application using PM&C	Upgrade TVOE application by following steps 1-9 from the procedure below from reference [1]. **Note:** Do not perform step 10. Step 10 includes accepting the upgrade, which will be performed after upgrade verification steps. ☐ "3.7.11 Install/Upgrade Applications Using PM&C" [1] As part of the upgrade process, the server will reboot. If the upgrade fails as described by the procedure, refer to Section 6.1.
---End of Procedure---		

WARNING

This procedure will forcefully shut down all guests on the TVOE host! Prior to executing this procedure, guests must be shut down gracefully by executing the appropriate application procedure.
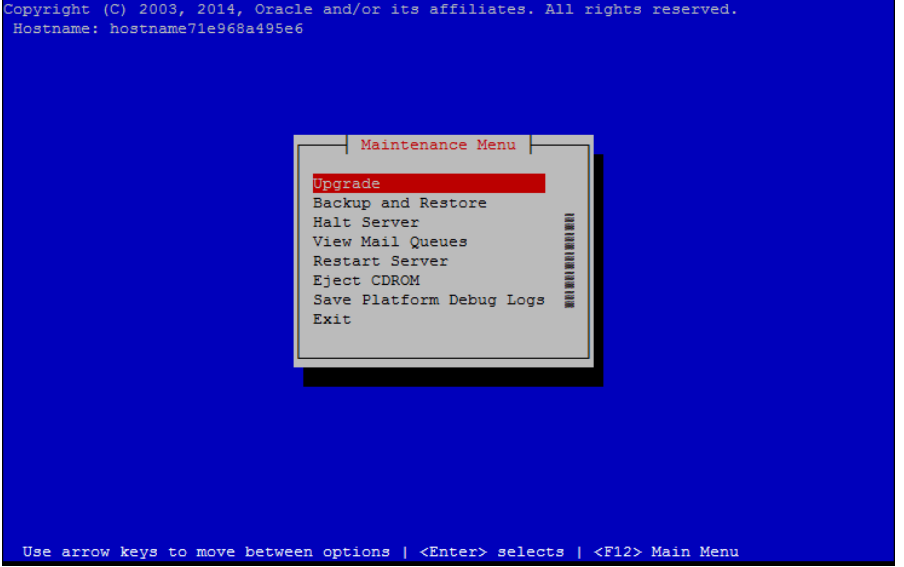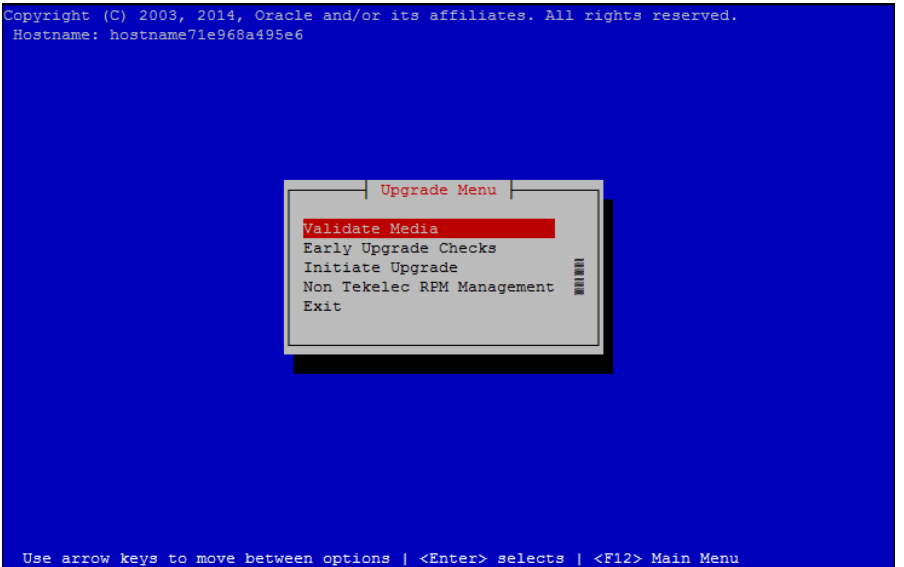
To see a list of guests and their states, execute the following on the TVOE host as admusr:
`sudo /usr/bin/virsh list --all`
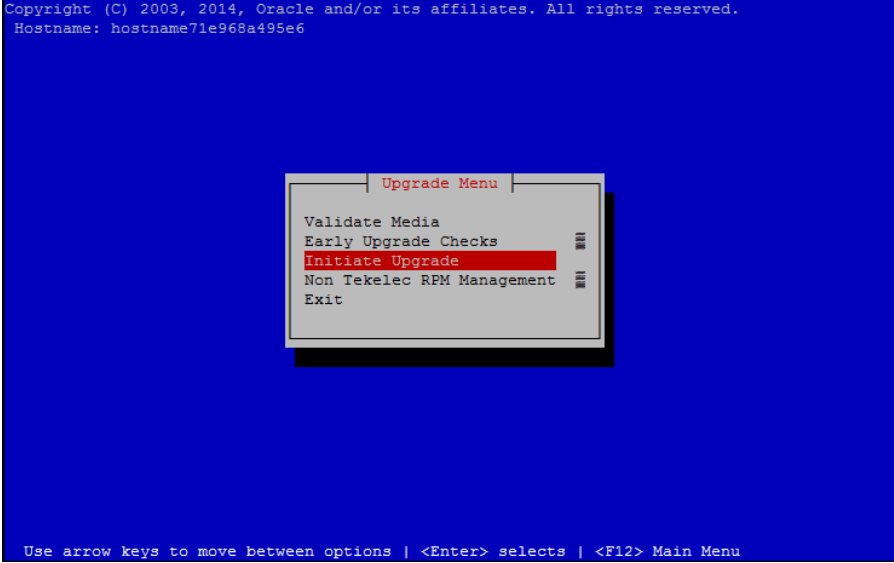
Procedure 6. Stand Alone TVOE host upgrade

S T E P	Use this procedure to upgrade the TVOE application on the server from the source release to the target release . *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**TVOE Host Remote Console:** Log in.	Using the sections listed below from reference [1], log in to the remote console by using a SSH client to connect to the IP address of the TVOE host remote console. "Appendix G: How to Access a Server Console Remotely" [1] **Note:** It is imperative to log into the remote console when preforming this step and not just SSH to the server!
2 ☐	**TVOE Host Remote Console:** Login as the platcfg user.	Log in as the platcfg user to start platcfg.
3 ☐	**TVOE Host Remote Console:** Select "Maintenance"	Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved. Hostname: hostname71e968a495e6 ┤ Main Menu ├ Maintenance Diagnostics Server Configuration Remote Consoles Network Configuration Security Exit Use arrow keys to move between options | <Enter> selects | <F12> Main Menu
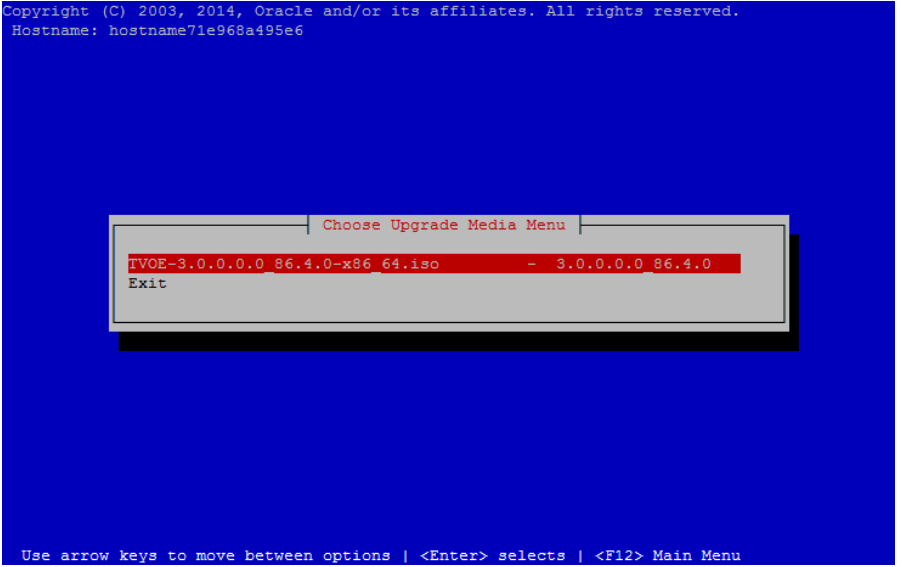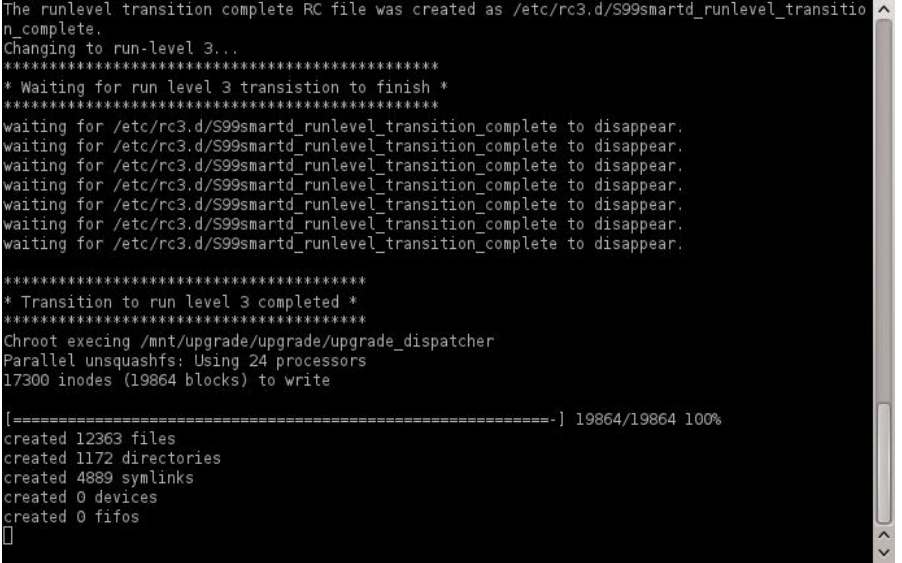
Procedure 6. Stand Alone TVOE host upgrade

4 ☐	**TVOE Host Remote Console:** Select "Upgrade"	Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved. Hostname: hostname71e968a495e6 ─┤ Maintenance Menu ├─ Upgrade Backup and Restore Halt Server View Mail Queues Restart Server Eject CDROM Save Platform Debug Logs Exit Use arrow keys to move between options | <Enter> selects | <F12> Main Menu
5 ☐	**TVOE Host Remote Console:** Select "Validate Media"	Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved. Hostname: hostname71e968a495e6 ─┤ Upgrade Menu ├─ Validate Media Early Upgrade Checks Initiate Upgrade Non Tekelec RPM Management Exit Use arrow keys to move between options | <Enter> selects | <F12> Main Menu

6 ☐	**TVOE Host Remote Console:** Validate TVOE software image.	Select the TVOE ISO image or optical media drive like is shown in the following screenshot:

Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved.
Hostname: hostname71e968a495e6

┤ Choose Upgrade Media Menu ├

TVOE-3.0.0.0.0_86.4.0-x86_64.iso   - 3.0.0.0.0_86.4.0
Exit

Use arrow keys to move between options | <Enter> selects | <F12> Main Menu

The image will be validated and output similar to the following will be shown:

```
Validating cdrom...
#######################################################
#######################################################
#######################################################
#######################################################
#######################################################
#######################################################
#######################################################
#######################################################
#######################################################

UMVT Validate Utility v2.2.2, (c)Tekelec, June 2012
Validating /var/TKLC/upgrade/TVOE-3.0.0.0.0_86.4.0-x86_64.iso
Date&Time: 2014-06-02 14:00:55
Volume ID:  3.0.0.0.0_86.4.0
Part Number:
Version: 3.0.0.0.0_86.4.0
Disc Label: N/A
Disc description: N/A
The media validation is complete, the result is: PASS

CDROM is Valid




PRESS ANY KEY TO RETURN TO THE PLATCFG MENU.
```

If the image validation fails, this procedure should be stopped. The image should be retransferred to the TVOE host (see Section 5.2 Pre-Upgrade Validation Execution) and this procedure should be started from the beginning.

| 7 ☐ | **TVOE Host Remote Console:**
Return to "Upgrade Menu" and select "Initiate Upgrade" | Press **ENTER** to return to the "Choose Upgrade Media Menu" and then select "Exit" to return to the "Upgrade Menu". Finally, select "Initiate Upgrade" as shown in the following screenshot:

![Upgrade Menu screenshot showing: Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved. Hostname: hostname71e968a495e6. Upgrade Menu with options: Validate Media, Early Upgrade Checks, Initiate Upgrade (highlighted), Non Tekelec RPM Management, Exit. Use arrow keys to move between options \| \<Enter\> selects \| \<F12\> Main Menu] |

8 ☐	**TVOE Host Remote Console:** Start upgrade by selecting the TVOE software image to upgrade from	Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved. Hostname: hostname71e968a495e6 ┤ Choose Upgrade Media Menu ├ TVOE-3.0.0.0.0_86.4.0-x86_64.iso – 3.0.0.0.0_86.4.0 Exit Use arrow keys to move between options | <Enter> selects | <F12> Main Menu
		After selecting the image by pressing **ENTER** the upgrade will start and log messages will be output. Some of the very first log messages are shown in the following picture: The runlevel transition complete RC file was created as /etc/rc3.d/S99smartd_runlevel_transition_complete. Changing to run-level 3... ** * Waiting for run level 3 transistion to finish * ** waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. waiting for /etc/rc3.d/S99smartd_runlevel_transition_complete to disappear. ** * Transition to run level 3 completed * ** Chroot execing /mnt/upgrade/upgrade/upgrade_dispatcher Parallel unsquashfs: Using 24 processors 17300 inodes (19864 blocks) to write [===-] 19864/19864 100% created 12363 files created 1172 directories created 4889 symlinks created 0 devices created 0 fifos
9 ☐	**TVOE Host Remote Console:** Upgrade is complete	Once the upgrade process is finished the TVOE host will be rebooted and will finally come back to the login prompt. At this point the upgrade is complete.
10 ☐	**TVOE Host Remote Console:** Log out	Using the sections listed below from reference [1], log out of the remote console. ☐ "Appendix G: How to Access a Server Console Remotely" [1]
		---End of Procedure---

5.6   Post Upgrade Validation Execution

Procedure 7. TVOE Post-Upgrade Validation

S T E P	Use this procedure to <purpose of procedure>. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**

1 ☐	**TVOE Host:** Log in and start capture	Log in as admusr user on the TVOE host and run the following to start capturing the output to a file in the /var/TKLC/log/upgrade directory.
		
		 `$ LOGDIR=/var/TKLC/log/upgrade [↵ ]`
		 `$ /usr/bin/script $LOGDIR/TPostUV-$(date +%s).log [↵ ]`
		
		 The system returns output similar to the following to indicate that the log file has been created and the capture has started. Additionally, the prompt will be displayed as shown.
		
		 `Script started, file is /var/TKLC/log/upgrade/TPostUV-`
		`1306426872.log`
		`$`
		
		 At this point, any data input or output to the terminal window will be captured in the log file and can be viewed at a later time.

2 ☐	**TVOE Host:** Check TVOE revision	Run the following command to check the application revision of the server:
		
		 `$  appRev [ ↵ ]`
		
		 The command should produce a Product Release that reflects the Target release of the system that was upgraded.
		
		 ``` Install Time: Mon Apr 13 09:51:01 2015 Product Name: TPD Product Release: 7.2.0.0.0_88.3.0 Base Distro Product: Base Distro Release: Base Distro ISO: ISO name: TPD.install-7.2.0.0.0_88.3.0-OracleLinux6.6-x86_64.iso OS: OracleLinux 6.6```
		
		 If the Product Release does not match the Target release, then the upgrade was not successful. Contact Oracle Support for information about how to proceed.

3 ☐	**TVOE Host:** Verify TVOE upgrade logs	Run the following command to verify the upgrade was successful. `$  sudo verifyUpgrade [ ↵ ]` If any error output is produced, the upgrade was not successful. Contact Oracle Support for information about how to proceed.

Procedure 7. TVOE Post-Upgrade Validation

4 ☐	**TVOE Host:**
	Verify TVOE Host health
		Run the following command to check alarm status on the TVOE Host.
		
		\$ alarmMgr --alarmStatus [↵]
		
		The "tpdServerUpgradePendingAccept" alarm should be present, but no other alarms should exist. An example of acceptable alarm output is shown below:
		
		`SEQ: 1 UPTIME: 52 BIRTH: 1342633142 TYPE: SET ALARM:`
		`TKSPLATMI33|tpdServerUpgradePendingAccept|1.3.6.1.4.1.323.5.3.`
		`18.3.1.3.33`
		
		If any alarm other than the "tpdServerUpgradePendingAccept" is present, contact Oracle Support for information about how to proceed.

5	**TVOE Host:**
	Stop the capture and flush all data to the file
		Run the following command to stop the capture.
		        \$ exit [↵]
		Output similar to the following will be output to indicate that the capture has stopped and the log file has been closed. Additionally, the prompt will be displayed as shown.
		
		`Script done, file is /var/TKLC/log/upgrade/TPostUV-`
		`1306426872.log`
		`$`
		
		The Post-Upgrade Validation is now complete. Application Guest Startup Verification procedures can now be run and administrator privileges will be dropped.

	---End of Procedure---	

5.7 Accepting TVOE upgrade

Procedure 8. Stand Alone TVOE Upgrade Accept

S T E P	Use this procedure to accept the TVOE upgrade. After this procedure is performed the server **will not be able to be backed out** to the pre-upgrade state. Please do not execute this procedure unless the health of the TVOE host and each guest has been verified. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**TVOE Host Remote Console:** Log in.	Using the sections listed below from reference [1], log in to the remote console by using a SSH client to connect to the IP address of the TVOE host remote console. ☐ "Appendix G: How to Access a Server Console Remotely" [1] **Note:** It is imperative to log into the remote console when preforming this step and not just SSH to the server!

Procedure 8. Stand Alone TVOE Upgrade Accept

| 2 ☐ | **TVOE Host Remote Console:** Accept upgrade | Log in as admusr user on the TVOE host and run the following command to accept the upgrade:<br><br>**$ sudo /var/TKLC/backout/accept [ ↵ ]**<br><br>As part of the accept, the system may reboot if it is required. If no reboot is required, the accept script will simply return. Example output from the accept is shown below:<br><br>```
Called with options: --accept
Loading Upgrade::Backout::RPM
Accepting Upgrade
Setting POST_UPGRADE_ACTION to ACCEPT in upgrade info.
Cleaning backout directory.
Clearing Upgrade Accept/Reject alarm.
Cleaning message from MOTD.
Cleaning up RPM config backup files...
Checking /
Checking /boot
Checking /tmp
Checking /usr
Checking /var
Checking /var/TKLC
Starting cleanup of RCS repository.
 INFO: Removing '/var/lib/prelink/force' from RCS repository
```<br><br>The upgrade accept is now complete. |
|---|---|---|
3 ☐	**TVOE Host Remote Console:** Remove the TVOE Application ISO	Remove the TVOE application ISO, which was copied over in Section 5.4, Procedure 4. Adding TVOE software image to TVOE host. **$ sudo /bin/rm /var/TKLC/upgrade/TVOE-3.2.0.0.0_88.4.0-x86_64.iso**
4 ☐	**TVOE Host Remote Console:** Log out.	Using the sections listed below from reference [1], log out of the remote console. ☐ "Appendix G: How to Access a Server Console Remotely" [1]
---End of Procedure---		

Procedure 9. PM&C Aided TVOE Upgrade Accept

S T E P	Use this procedure to upgrade the TVOE application on the server from the source release to the target release. After this procedure is performed the server **will not be able to be backed out** to the pre-upgrade state. Please do not execute this procedure unless the health of the TVOE host and each guest has been verified. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**PM&C Application:** Perform an accept of TVOE upgrade using PM&C	Accept the TVOE upgrade by following the procedure below from reference [1]. ☐ "3.7.18 Accepting Upgrades Using PM&C" [1] As part of the accept the system may reboot if it is required.
---End of Procedure---		

5.8   Post-Upgrade Backup

Procedure 10. Post-Upgrade Backup

S T E P	Use this procedure to create a backup of the TVOE application. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**NetBackup** **or** **PM&C Application:** Perform a post-upgrade backup of the TVOE	If NetBackup is being used, a backup should be initiated by the NetBackup Master Server. Otherwise, create a backup of the TVOE host by following the procedure below from reference [1]. ☐ "3.10.1 Backup Procedure for TVOE" [1]
---End of Procedure---		

5.9   Enabling HIDS Post-Upgrade

Procedure 11. Enabling HIDS Post-Upgrade

S T E P	Note: This procedure is optional. Use this procedure to enable HIDS on the TVOE application. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1	**TVOE Host Remote Console:** Log in.	Using the sections listed below from reference [1], log in to the remote console by using a SSH client to connect to the IP address of the TVOE host remote console. "`Appendix G: How to Access a Server Console Remotely`" [1]

2 ☐	**TVOE Host Remote Console:**
	Enable HIDS
		If it is desired for the host intrusion detection system to be enabled, run the command below via the TVOE host remote console, logged in as the root user. This will enable HIDS using the default configuration.
		
		`$ /usr/TKLC/plat/bin/hidsMgr --enable [ ↵ ]`
		
		Example output is shown below:
		
		`HIDS monitoring has successfully been enabled`
		`New State: ENABLED`

	---End of Procedure---	

6   Recovery Procedures

6.1   Recovery After Failed Upgrade

If the TVOE upgrade fails, the upgrade will be backed out automatically and rebooted several times. After the final reboot, the guest(s) should be running and the system should be at the same state it was before the upgrade. Please contact Oracle Support (see section My_Oracle_Support).to determine the cause of the failure before attempting a new upgrade.

6.2   Manual Backout (Reject)

A manual backout, also known as a reject, will revert the TVOE host back to the original version of the software. No setup is required to execute a manual backout of an incremental upgrade.

Note: A reject cannot be performed after an upgrade has been accepted.

6.2.1   Manual Backout Execution

Execute this section only if there is a problem and it is desired to revert back to the pre-upgrade version of the software.

WARNING

Do not attempt to perform these backout procedures without first contacting Oracle Support.

This procedure will forcefully shut down all guests on the TVOE host!

Prior to executing this procedure, guests must be shut down gracefully by executing the appropriate application procedure. To see a list of guests and their states, execute the following on the TVOE host as admusr:

```
sudo /usr/bin/virsh list --all
```

Procedure 12. TVOE Manual Backout

S T E P	Use this procedure to back out the most recent upgrade. *Check off (√) each step as it is completed.* If this procedure fails, contact Oracle Support.	
	Task	**Description**
1 ☐	**TVOE Host Remote Console:** Log in.	Using the sections listed below from reference [1], log in to the remote console by using a SSH client to connect to the IP address of the TVOE host remote console. ☐ "Appendix G: How to Access a Server Console Remotely" [1] **Note:** It is imperative to log into the remote console when preforming this step and not just SSH to the server!

Procedure 12. TVOE Manual Backout

2 ☐	**TVOE Host Remote Console:** Verify backout is possible	Login as admusr user on the TVOE host console and run the following command to check that status of the logical volumes that will be used for backout: **$ sudo /sbin/lvs -o lv_name,snap_percent @upgrade | tee /var/TKLC/log/TPreB-$(date +%s).log [↵]** Typical output will look something like the following: ``` $ sudo /sbin/lvs -o lv_name,snap_percent @upgrade LV Snap% plat_root_snap 27.52 plat_usr_snap 7.70 plat_var_snap 5.08 plat_var_tklc_snap 19.14 ``` **Note:** If any of the snapshot percentages are at 100.00% then stop this procedure. It is not possible to backout this machine. Contact <u>Oracle Support</u> for information about how to proceed.

3 ☐	**TVOE Host Remote Console:**
	 Manually backout upgrade
		Initiate the backout by running the following command:
		
		 $ sudo /var/TKLC/backout/reject --noprompt [↵]
		
		 The system will undergo a backout. As part of the process, the system will reboot several times. After completing the final reboot, the login prompt will be presented. Some of the final startup output along with an example of the login prompt is shown below:
		
		 ``` Oracle Linux Server release 6.6 Kernel 2.6.32-504.12.2.el6prerel7.2.0.0.0_88.3.0.x86_64 on an x86_64 ```
		 ``` hostname1342210584 login: ```

4		Start capturing the output to a file in the `/var/TKLC/log/upgrade` directory. **$ LOGDIR=/var/TKLC/log/upgrade [↵]** **$ /usr/bin/script $LOGDIR/TPostB-$(date +%s).log [↵]** The system returns output similar to the following to indicate that the log file has been created and the capture has started. Additionally, the prompt will be displayed as shown. ``` Script started, file is /var/TKLC/log/upgrade/TPostB- 1306426872.log $ ``` At this point, any data input or output to the terminal window will be captured in the log file and can be viewed at a later time.

Procedure 12. TVOE Manual Backout

5 ☐	**TVOE Host Remote Console:** Check server health	Log in as admusr user and run the following:
		
		`$ appRev [ ↵ ]`
		
		The command should produce a Product Release that reflects the Source release of the system that was upgraded.
		
		<pre> Install Time: Mon Apr 13 09:51:01 2015
		     Product Name: TPD
		   Product Release: 7.2.0.0.0_88.3.0
		 Base Distro Product:
		 Base Distro Release:
		    Base Distro ISO:
		         ISO name: TPD.install-7.2.0.0.0_88.3.0-
		OracleLinux6.6-x86_64.iso
		               OS: OracleLinux 6.6</pre>
		If the product release does not match the Source release, then the backout was not successful. Contact Oracle Support for information about how to proceed.

6 ☐	**TVOE Host Remote Console:** Check server health	Run the following command to check the health of the server: `$ /usr/TKLC/plat/bin/alarmMgr --alarmStatus [ ↵ ]` If any output is produced, an alarm is present on the system. Contact Oracle Support for information about how to proceed. Otherwise the backout is complete.

7 ☐	**TVOE Host:** **Stop the capture and flush all data to the file**	Run the following command to stop the capture.
		`$ exit [↵ ]`
		Output similar to the following will be output to indicate that the capture has stopped and the log file has been closed. Additionally, the prompt will be displayed as shown.
		
		`Script done, file is /var/TKLC/log/upgrade/TPostB-1306426872.log`
		`$`
		Application Guest Startup Verification procedures can now be run.

8 ☐	**TVOE Host Remote Console:** Log out.	Using the sections listed below from reference [1], log out of the remote console. ☐ "Appendix G: How to Access a Server Console Remotely" [1]
---End of Procedure---		

Appendix A.   SWOPS Sign Off

Discrepancy List

Date	Test Case	Description of Failure/Issues. Any CSRs/RMAs issued during Acceptance. Discrepancy	Resolution and SWOPS Engineer Responsible	Resolution Date

Appendix B.   Customer Sign Off

Sign-Off Record

<div>

*** Please review this entire document. ***

This is to certify that all steps required for the upgrade completed successfully without failure.

Sign your name to show approval of this procedure.

Then contact <u>Oracle Support</u> **to provide them with this page and the Discrepancy List.**

Company Name: _____   Date: _____

Site: Location: _____

Customer:(Print)_____   Phone: _____

Fax:: _____

Start Date: _____   Completion Date: _____

This procedure has been approved by the undersigned. Any deviations from this procedure must be approved by both Oracle and customer representatives. A copy of this page was given to the customer representative. The SWOPS supervisor will maintain the signed original.

Oracle: (Print) _____   Date:_____

</div>

Appendix C.   Locate Product Documentation on Oracle Technology Network Site

Oracle customer documentation is available on the web at the Oracle Technology Network (OTN) 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 *www.adobe.com*.

Log into the Oracle Customer Support site at *http://docs.oracle.com*.

1. Under **Applications**, click the link for **Communications.**

2. The *Oracle Communications Documentation* window opens with Tekelec shown near the top.

3. Click **Oracle Communications Documentation for Tekelec Products**.

4. Navigate to your Product and then the Release Number, and click the **View** link (the Download link will retrieve the entire documentation set).