

**Oracle® Communications
Platform**

Tekelec Virtualization Operating Environment (TVOE)

Software Upgrade Procedure

Release 3.5

E90680-01

November 2017

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

Table of Contents

- 1 INTRODUCTION.....6**
 - 1.1 Purpose and Scope.....6
 - 1.2 My Oracle Support6
 - 1.3 References6
 - 1.4 Glossary7

- 2 GENERAL DESCRIPTION.....8**
 - 2.1 Ways to upgrade TVOE8
 - 2.1.1 Stand Alone TVOE host upgrade8
 - 2.1.2 PM&C Aided TVOE host upgrade8
 - 2.2 Supported Upgrade Paths.....9
 - 2.3 Upgrade Flow10

- 3 UPGRADE OVERVIEW.....11**
 - 3.1 Required Materials11
 - 3.2 Upgrade Execution Overview.....11
 - 3.3 Backout Execution Overview11
 - 3.4 Log Files12

- 4 UPGRADE PREPARATION.....13**
 - 4.1 Software Upgrade Preparations.....13

- 5 SOFTWARE UPGRADE PROCEDURES.....14**
 - 5.1 Conventions.....14
 - 5.2 Pre-Upgrade Validation Execution15
 - 5.3 Pre-Upgrade Backup.....16
 - 5.4 Software Image Preparation16
 - 5.5 Software Upgrade Execution19
 - 5.6 Post Upgrade Validation Execution25
 - 5.7 Accepting TVOE upgrade26
 - 5.8 Post-Upgrade Backup28
 - 5.9 Enabling HIDS Post-Upgrade29

- 6 RECOVERY PROCEDURES31**
 - 6.1 Recovery After Failed Upgrade.....31
 - 6.2 Manual Backout (Reject).....31
 - 6.2.1 Manual Backout Execution31

- APPENDIX A. SWOPS SIGN OFF35**

- APPENDIX B. CUSTOMER SIGN OFF36**

- APPENDIX C. LOCATE PRODUCT DOCUMENTATION ON ORACLE HELP CENTER SITE37**

List of Figures

Figure 1. Upgrade Flow 10

List of Tables

Table 1. Glossary 7
Table 2. Application Upgrade Paths 9
Table 3. Upgrade Execution Overview 11
Table 4. Manual Backout Execution Overview 12
Table 5. Connection and Login Information 13

List of Procedures

Procedure 1. TVOE Pre-Upgrade Validation 15
Procedure 2. Pre-Upgrade Backup 16
Procedure 3. Adding TVOE software image to PM&C repository 16
Procedure 4. Adding TVOE software image to TVOE host 17
Procedure 5. PM&C Aided TVOE host upgrade 19
Procedure 6. Stand Alone TVOE host upgrade 19
Procedure 7. TVOE Post-Upgrade Validation 25
Procedure 8. Stand Alone TVOE Upgrade Accept 26
Procedure 9. PM&C Aided TVOE Upgrade Accept 28
Procedure 10. Post-Upgrade Backup 28
Procedure 11. Enabling HIDS Post-Upgrade 29
Procedure 12. TVOE Manual Backout 32

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

Important Notices



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

Before upgrading any system, please access My Oracle Support (MOS) (<https://support.oracle.com>) and review any Technical Service Bulletins (TSBs) that relate to this upgrade.

My Oracle Support (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>.

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] *PMAC 6.4 Tekelec Platform Configuration Reference Guide*, E81293, Latest Revision, Oracle
- [2] *PM&C 6.4 Incremental Upgrade*, E82636, Latest Revision, Oracle

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

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 Intrusion Detection System
PFS	Product Functional Specification
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.

WARNING

Do not attempt to perform these upgrade 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
```

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
- Procedure 6. Stand Alone TVOE host upgrade
- Procedure 7. TVOE Post-Upgrade Validation
- Procedure 11. Enabling HIDS Post-Upgrade
- 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

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

- 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 11. Enabling HIDS Post-Upgrade
- Procedure 9. PM&C Aided TVOE Upgrade Accept
- Procedure 10. Post-Upgrade Backup

2.2 Supported Upgrade Paths

The following table outlines the supported upgrade paths for TVOE 3.5:

Table 2. Application Upgrade Paths

Source TVOE Application Version	Target TVOE Application Version	Supported Ways to Upgrade
2.7.W.0.0-X.X.X	3.5.0.0.0-Y.Y.Y*	<ul style="list-style-type: none"> • Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.0.Z.0.0-X.X.X	3.5.0.0.0-Y.Y.Y*	<ul style="list-style-type: none"> • Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.2.0.0.0-X.X.X	3.5.0.0.0-Y.Y.Y*	<ul style="list-style-type: none"> • Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.3.0.0.0-X.X.X	3.5.0.0.0-Y.Y.Y*	<ul style="list-style-type: none"> • Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.4.0.0.0-X.X.X	3.5.0.0.0-Y.Y.Y*	<ul style="list-style-type: none"> • Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade
3.5.0.0.0-X.X.X	3.5.0.0.0-Y.Y.Y*	<ul style="list-style-type: none"> • Stand Alone TVOE host upgrade • PM&C Aided TVOE host upgrade

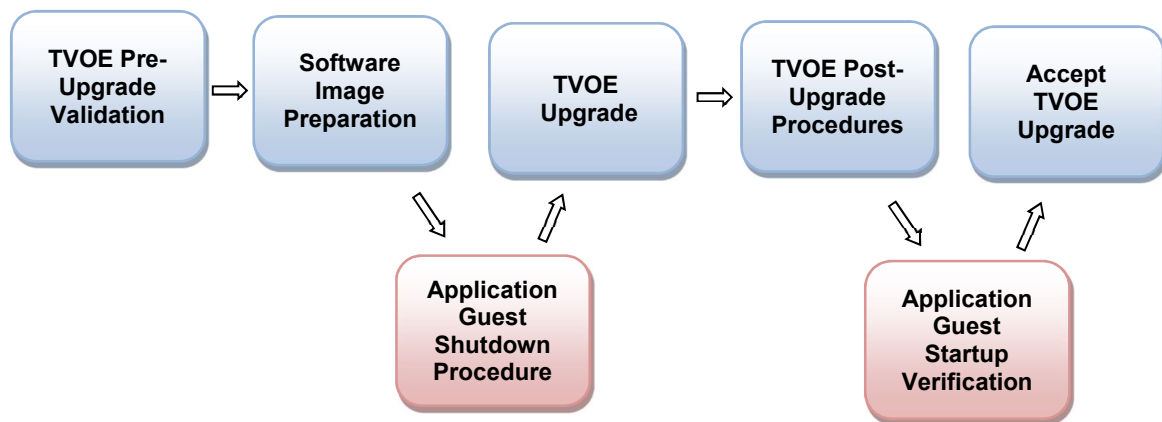
* Y.Y.Y must represent a release that is greater than X.X.X. Upgrading TVOE to an older release is NOT supported.

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 “TVOE Post-Upgrade Procedures” box includes the “TVOE Post-Upgrade Validation” and the optional “Enabling HIDS Post-Upgrade” procedures. 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



Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

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.
Enabling HIDS Post-Upgrade**	0:01	0:01	Enable HIDS.	None
Upgrade Accept	0:02	0:02	Accepting upgrade.	None

* The provided times are lab estimates of a worst case (TVOE 3.0 to TVOE 3.5) 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.

** This procedure is optional.

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.

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

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:*		guiadmin	
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.

**** WARNING ****

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 <input type="checkbox"/>	ServerX: Connect to the console of server	<code>\$ cu -1/dev/ttyS7</code>
-------------------------------	---	---------------------------------

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

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

5.2 Pre-Upgrade Validation Execution

Procedure 1. TVOE Pre-Upgrade Validation

STEP	Use this procedure to verify the health of the TVOE host prior to software upgrade. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support	
	Task	Description
1 <input type="checkbox"/>	Verify the firmware on all equipment is up to date	<p>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.</p> <p>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.</p>
2 <input type="checkbox"/>	TVOE Host: Log in and start capture	<p>Start capturing the output to a file in the <code>/var/TKLC/log/upgrade</code> directory.</p> <pre>\$ LOGDIR=/var/TKLC/log/upgrade [↵] \$ sudo /usr/bin/script \$LOGDIR/TPreUV-\$(date +%s).log [↵]</pre> <p>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.</p> <pre>Script started, file is /var/TKLC/log/upgrade/TPreUV-1306426872.log \$</pre> <p>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.</p>
3 <input type="checkbox"/>	TVOE Host: Verify TVOE Host health	<p>Run the following command to check alarm status on the TVOE host:</p> <pre>\$ alarmMgr --alarmStatus [↵]</pre> <p>If any output is produced, an alarm is present on the system. Contact Oracle Support for information about how to proceed.</p>
4 <input type="checkbox"/>	TVOE Host: Stop the capture and flush all data to the file	<p>Run the following command to stop the capture:</p> <pre>\$ exit [↵]</pre> <p>The system returns output similar to the following to indicate that the capture has stopped and the log file has been closed.</p> <pre>Script done, file is /var/TKLC/log/upgrade/TPreUV-1306426872.log \$</pre>
---End of Procedure---		

5.3 Pre-Upgrade Backup

Procedure 2. Pre-Upgrade Backup

S T E P	Use this procedure to back up the TVOE host through the NetBackup Master Server or through the PM&C Application prior to the upgrade. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	NetBackup Or PM&C Application: Create a backup of the TVOE host.	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. <input type="checkbox"/> <i>Backup Procedure for TVOE [1]</i>
---End of Procedure---		

5.4 Software Image Preparation

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

S T E P	Use this procedure to add the TVOE software image to the PM&C Repository. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	PM&C Application: Add TVOE software image to PM&C repository.	Add the target TVOE application software by executing the following procedure from reference [1] <input type="checkbox"/> <i>Adding ISO Images to the PM&C Image Repository [1]</i>
---End of Procedure---		

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

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. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	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. <pre>Filesystem Size Used Avail Use% Mounted on /dev/mapper/vgroot-plat_var_tk1c 4.0G 848M 3.0G 23% /var/TKLC</pre> 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

<p>2</p> <p><input type="checkbox"/></p>	<p>Add TVOE software image to TVOE host</p>	<p>Place a copy of the TVOE software image into the <code>/var/TKLC/upgrade/</code> directory on the TVOE host by utilizing scp or USB media.</p> <ul style="list-style-type: none"> • 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/ <p>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. <ul style="list-style-type: none"> • SCP from Customer PC using Windows Use WinSCP to copy the TVOE ISO image to the TVOE host. Refer to <i>Appendix A: Using WinSCP</i> from reference [1] for help using WinSCP. • USB Media <ol style="list-style-type: none"> 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-3.5.0.0.0_88.41.0-x86_64.iso <p>Replacing <FULL_PATH_TO_TVOE_ISO> with the output of the command above, copy the ISO to the <code>/var/TKLC/upgrade</code> directory: \$ sudo /bin/cp <FULL_PATH_TO_TVOE_ISO> /var/TKLC/upgrade/ 3. Unmount the USB media: \$ sudo /bin/umount /media/usb <p style="text-align: center;">---End of Procedure---</p> </p></p>
---	---	--

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

5.5 Software Upgrade Execution

Procedure 5. PM&C Aided TVOE host upgrade

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

S T E P	Use this procedure to upgrade TVOE using PM&C. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	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. <input type="checkbox"/> “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---		

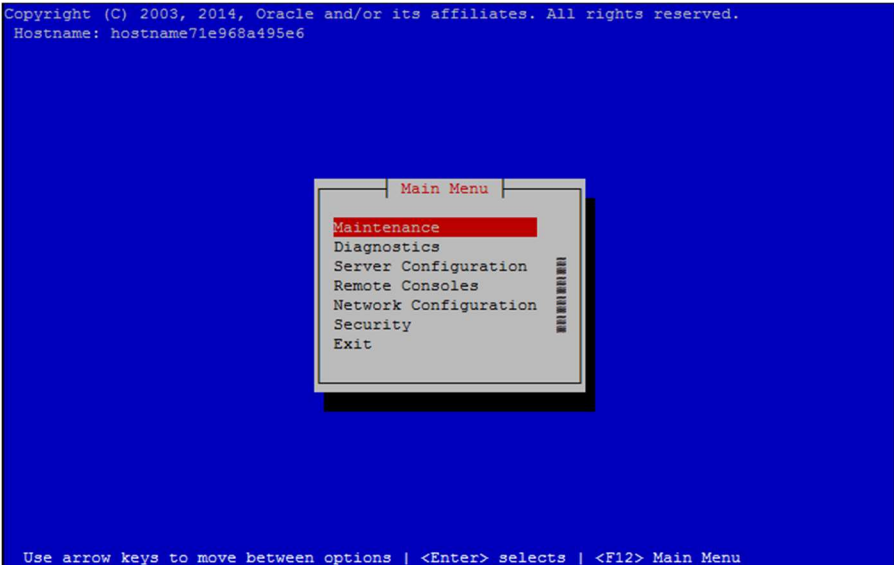
Procedure 6. Stand Alone TVOE host upgrade

WARNING

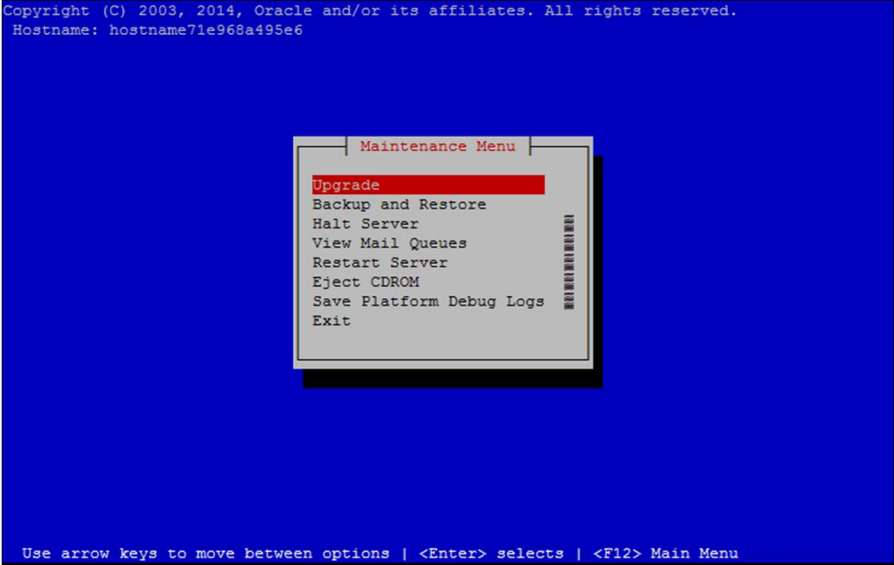
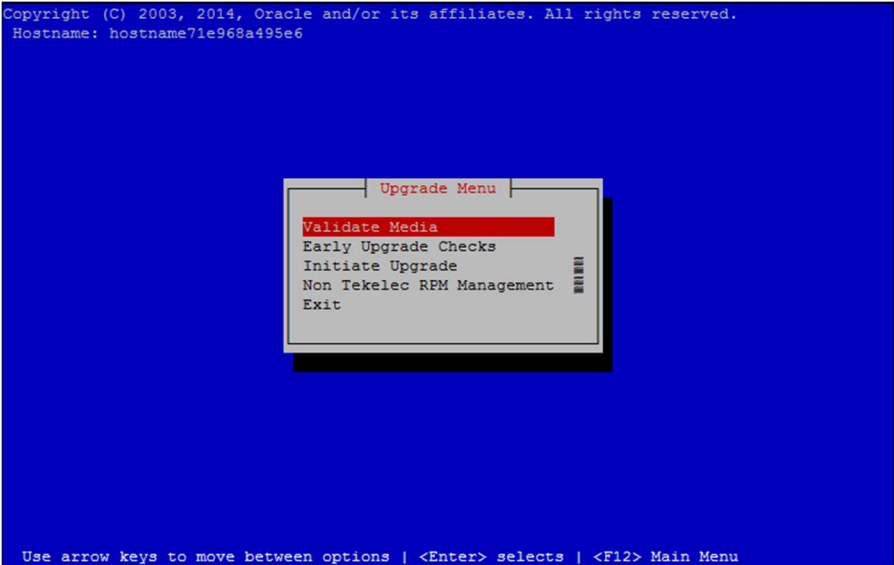
This procedure will forcefully shut down all guests on the TVOE host! Prior to executing this procedure, guests must be shut down gracefully by executing the appropriate application procedure.

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

sudo /usr/bin/virsh list --all

S T E P	Use this procedure to upgrade the TVOE application on the server from the source release to the target release. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	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. “How to Access a Server Console Remotely” [1] Note: It is imperative to log into the remote console when performing this step and not just SSH to the server!
2 <input type="checkbox"/>	TVOE Host Remote Console: Login as the platcfg user.	Log in as the platcfg user to start platcfg:
3 <input type="checkbox"/>	TVOE Host Remote Console: Select “Maintenance”	 <p>The screenshot shows a terminal window with a blue background. At the top, it displays copyright information: "Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved." followed by "Hostname: hostname71e968a495e6". In the center, a white box titled "Main Menu" contains a list of options: "Maintenance" (highlighted in red), "Diagnostics", "Server Configuration", "Remote Consoles", "Network Configuration", "Security", and "Exit". At the bottom of the terminal, instructions read: "Use arrow keys to move between options <Enter> selects <F12> Main Menu".</p>

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

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

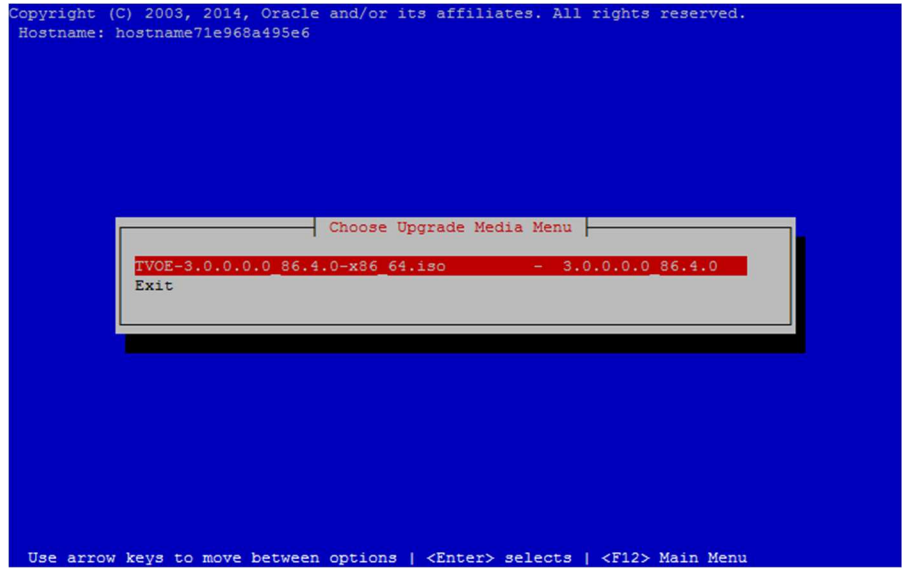
6

TVOE Host Remote Console:

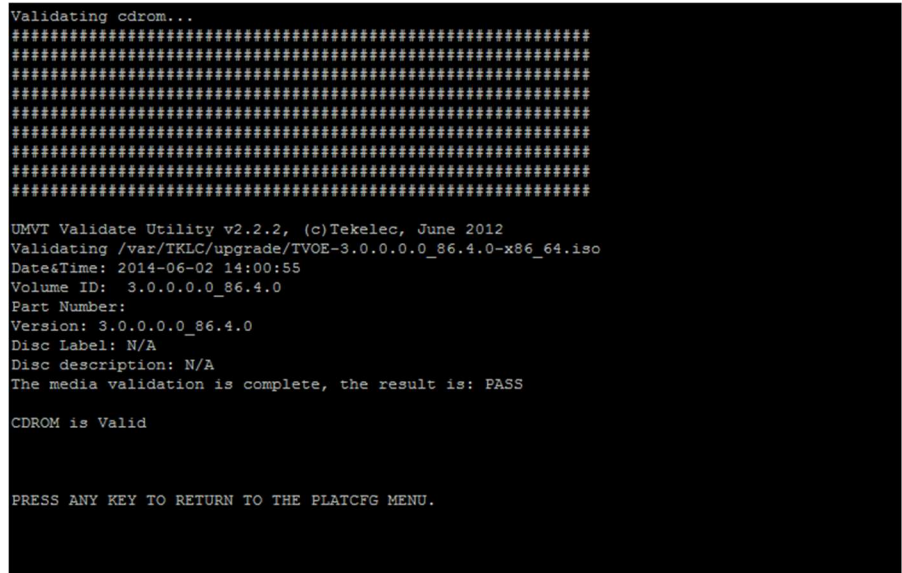
Validate TVOE software image.



Select the TVOE ISO image or optical media drive like is shown in the following screenshot:

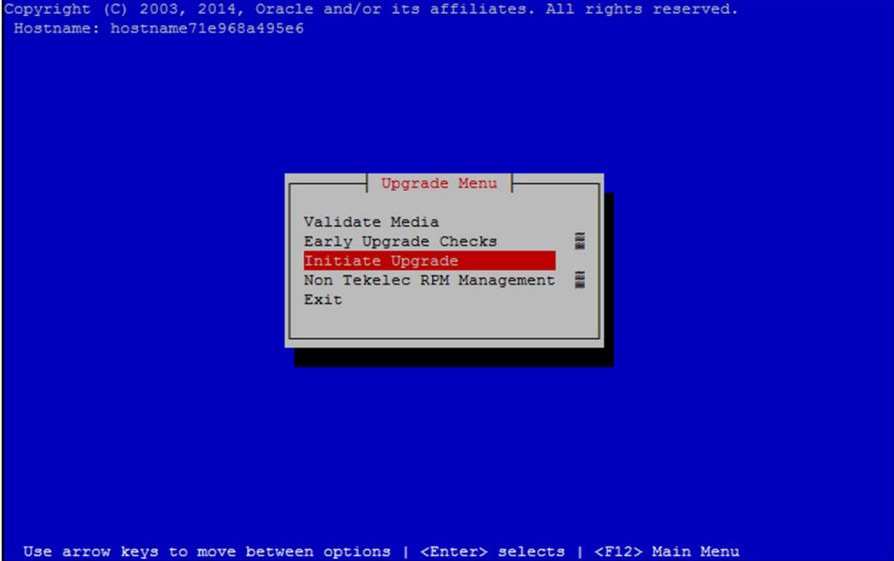


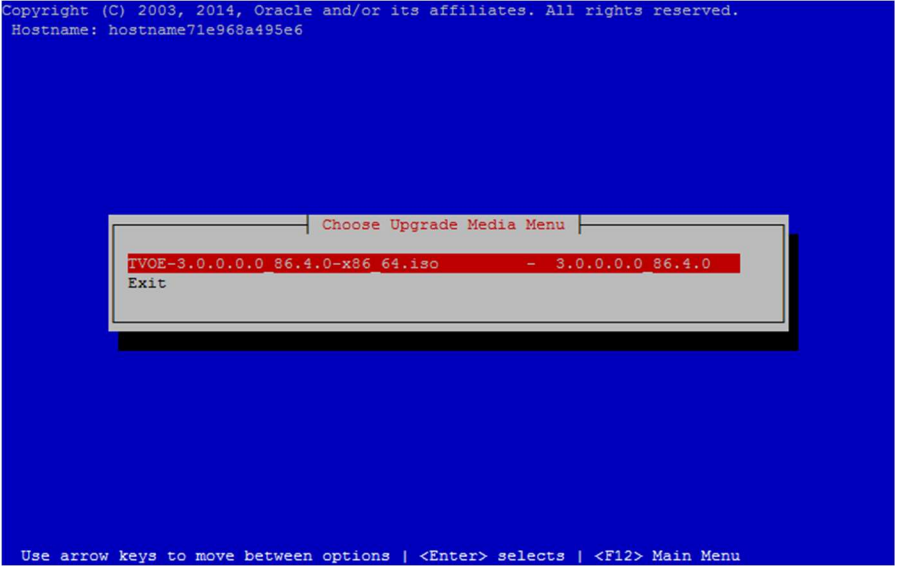
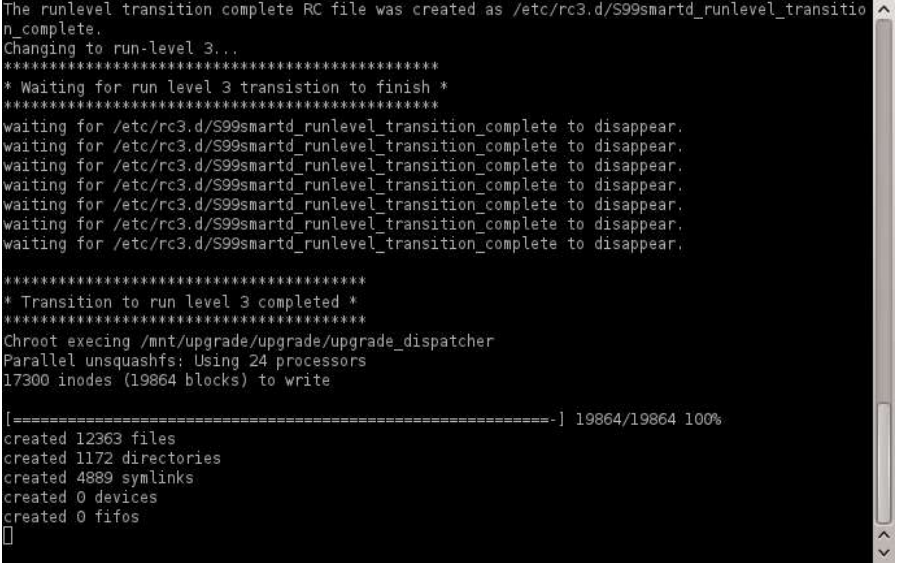
The image will be validated and output similar to the following will be shown:



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.

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

<p>7</p> <p><input type="checkbox"/></p>	<p>TVOE Host Remote Console:</p> <p>Return to “Upgrade Menu” and select “Initiate Upgrade”</p>	<p>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:</p> 
---	---	--

<p>8</p> <p><input type="checkbox"/></p>	<p>TVOE Host Remote Console:</p> <p>Start upgrade by selecting the TVOE software image to upgrade from</p>	 <p>The screenshot shows a blue terminal window with a white box titled "Choose Upgrade Media Menu". Inside the box, the option "TVOE-3.0.0.0.0 86.4.0-x86 64.iso" is highlighted in red. Below it is "Exit". At the bottom of the terminal, it says "Use arrow keys to move between options <Enter> selects <F12> Main Menu".</p> <p>Copyright (C) 2003, 2014, Oracle and/or its affiliates. All rights reserved. Hostname: hostname71e968a495e6</p>
<p>9</p> <p><input type="checkbox"/></p>	<p>TVOE Host Remote Console:</p> <p>Upgrade is complete</p>	<p>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:</p>  <p>The screenshot shows a terminal window with the following text: 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 transition 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. ***** * 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 □</p>
<p>10</p> <p><input type="checkbox"/></p>	<p>TVOE Host Remote Console:</p> <p>Log out</p>	<p>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.</p> <p>Using the sections listed below from reference [1], log out of the remote console.</p> <p><input type="checkbox"/> “How to Access a Server Console Remotely” [1]</p>
<p>---End of Procedure---</p>		

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

5.6 Post Upgrade Validation Execution

Procedure 7. TVOE Post-Upgrade Validation

STEP	Use this procedure to <purpose of procedure>. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	TVOE Host: Log in and start capture	<p>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.</p> <pre>\$ LOGDIR=/var/TKLC/log/upgrade [↵] \$ sudo /usr/bin/script \$LOGDIR/TPostUV-\$(date +%s).log [↵]</pre> <p>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.</p> <pre>Script started, file is /var/TKLC/log/upgrade/TPostUV- 1306426872.log \$</pre> <p>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.</p>
2 <input type="checkbox"/>	TVOE Host: Check TVOE revision	<p>Run the following command to check the application revision of the server:</p> <pre># appRev [↵]</pre> <p>The command should produce a Product Release that reflects the Target release of the system that was upgraded.</p> <pre>Install Time: Mon Jun 2 11:09:36 2017 Product Name: TVOE Product Release: 3.5.0.0.0_88.41.0 Base Distro Product: TPD Base Distro Release: 7.5.0.0.0_88.41.0 Base Distro ISO: TPD.install-7.5.0.0.0_88.41.0- OracleLinux6.9-x86_64.iso ISO name: TVOE-3.5.0.0.0_88.32.0-x86_64.iso OS: OracleLinux 6.9</pre> <p>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.</p>
3 <input type="checkbox"/>	TVOE Host: Verify TVOE upgrade logs	<p>Run the following command to verify the upgrade was successful.</p> <pre># verifyUpgrade [↵]</pre> <p>If any error output is produced, the upgrade was not successful. Contact Oracle Support for information about how to proceed.</p>

Procedure 7. TVOE Post-Upgrade Validation

<p>4</p> <p><input type="checkbox"/></p>	<p>TVOE Host: Verify TVOE Host health</p>	<p>Run the following command to check alarm status on the TVOE Host.</p> <pre># alarmMgr --alarmStatus [↵]</pre> <p>The “tpdServerUpgradePendingAccept” alarm should be present, but no other alarms should exist. An example of acceptable alarm output is shown below:</p> <pre>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</pre> <p>If any alarm other than the “tpdServerUpgradePendingAccept” is present, contact Oracle Support for information about how to proceed.</p>
<p>5</p>	<p>TVOE Host: Stop the capture and flush all data to the file</p>	<p>Run the following command to stop the capture.</p> <pre># exit [↵]</pre> <p>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.</p> <pre>Script done, file is /var/TKLC/log/upgrade/TPostUV-1306426872.log \$</pre> <p>The Post-Upgrade Validation is now complete. Application Guest Startup Verification procedures can now be run and administrator privileges will be dropped.</p>
<p>---End of Procedure---</p>		

5.7 Accepting TVOE upgrade

Procedure 8. Stand Alone TVOE Upgrade Accept

<p>S T E P</p>	<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.</p> <p><i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support.</p>	
	Task	Description
<p>1</p> <p><input type="checkbox"/></p>	<p>TVOE Host Remote Console: Log in.</p>	<p>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.</p> <p><input type="checkbox"/> “How to Access a Server Console Remotely” [1]</p> <p>Note: It is imperative to log into the remote console when performing this step and not just SSH to the server!</p>

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

Procedure 8. Stand Alone TVOE Upgrade Accept

<p>2 <input type="checkbox"/></p>	<p>TVOE Host Remote Console: Accept upgrade</p>	<p>Log in as admusr user on the TVOE host and run the following command to accept the upgrade:</p> <p>\$ sudo /var/TKLC/backout/accept [↵]</p> <p>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:</p> <pre>Called with options: --accept Loading Upgrade::Backout::RPM Accepting Upgrade Setting POST_UPGRADE_ACTION to ACCEPT in upgrade info. Cleaning backout directory. Cleaning 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</pre> <p>The upgrade accept is now complete.</p>
<p>3 <input type="checkbox"/></p>	<p>TVOE Host Remote Console: Remove the TVOE Application ISO</p>	<p>Remove the TVOE application ISO, which was copied over in Section 5.4, Procedure 4. Adding TVOE software image to TVOE host.</p> <p>\$ sudo /bin/rm /var/TKLC/upgrade/TVOE-3.5.0.0.0_88.41.0-x86_64.iso</p>
<p>4 <input type="checkbox"/></p>	<p>TVOE Host Remote Console: Log out.</p>	<p>Using the sections listed below from reference [1], log out of the remote console.</p> <p><input type="checkbox"/> “How to Access a Server Console Remotely” [1]</p>
<p>---End of Procedure---</p>		

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. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	PM&C Application: Perform an accept of TVOE upgrade using PM&C	Accept the TVOE upgrade by following the procedure below from reference [1]. <input type="checkbox"/> “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. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	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]. <input type="checkbox"/> “Backup Procedure for TVOE” [1]
---End of Procedure---		

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

5.9 Enabling HIDS Post-Upgrade

Procedure 11. Enabling HIDS Post-Upgrade

STEP	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 <input type="checkbox"/>	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. “How to Access a Server Console Remotely” [1]
2 <input type="checkbox"/>	TVOE Host Remote Console: Determine HIDS status	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 determine the HIDS status. <ul style="list-style-type: none"> • If the status indicates “ENABLED” then the procedure is completed. • If the status indicates “CONFIGURED” then continue to step 3 of this procedure. • If the status indicates “INITIALIZED” then continue to step 4 of this procedure. <p>\$ /usr/TKLC/plat/bin/hidsMgr --status [↵]</p> <p>Example output is shown below:</p> <p>HIDS Monitoring State: CONFIGURED</p>
3 <input type="checkbox"/>	TVOE Host Remote Console: Initialize 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 initialize HIDS. <p>\$ /usr/TKLC/plat/bin/hidsMgr --initialize [↵]</p> <p>Example output is shown below:</p> <p>LOG: HIDS monitoring has been Initialized HIDS baseline has been initialized New State: INITIALIZED</p>

Procedure 11. Enabling HIDS Post-Upgrade

<p>4 <input type="checkbox"/></p>	<p>TVOE Host Remote Console: Enable HIDS</p>	<p>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.</p> <p>\$ /usr/TKLC/plat/bin/hidsMgr --enable [↵]</p> <p>Example output is shown below:</p> <p>HIDS monitoring has successfully been enabled New State: ENABLED</p>
<p>5 <input type="checkbox"/></p>	<p>TVOE Host Remote Console: Enable HIDS</p>	<p>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 determine the HIDS status.</p> <p>\$ /usr/TKLC/plat/bin/hidsMgr --status [↵]</p> <p>Example output is shown below:</p> <p>HIDS Monitoring State: ENABLED</p>
<p>---End of Procedure---</p>		

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. <i>Check off (✓) each step as it is completed.</i> If this procedure fails, contact Oracle Support .	
	Task	Description
1 <input type="checkbox"/>	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. <input type="checkbox"/> “How to Access a Server Console Remotely” [1] Note: It is imperative to log into the remote console when performing this step and not just SSH to the server!
2 <input type="checkbox"/>	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: <pre>\$ 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</pre> Note: If any of the snapshot percentages are at 100.00% then stop this procedure. It is not possible to backout this machine. Contact Oracle Support for information about how to proceed.
3 <input type="checkbox"/>	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: <pre>Oracle Linux Server release 6.8 Kernel 2.6.32-642.6.1.el6prere17.4.0.0.0_88.32.0.x86_64 on an x86_64 hostname1342210584 login:</pre>

Tekelec Virtualization Operating Environment (TVOE) Software Upgrade Procedure

Procedure 12. TVOE Manual Backout

4		<p>Start capturing the output to a file in the <code>/var/TKLC/log/upgrade</code> directory.</p> <pre>\$ LOGDIR=/var/TKLC/log/upgrade [↵] # sudo /usr/bin/script \$LOGDIR/TPostB-\$(date +%s).log [↵]</pre> <p>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.</p> <pre>Script started, file is /var/TKLC/log/upgrade/TPostB- 1306426872.log \$</pre> <p>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.</p>
5	<p>TVOE Host Remote Console: <input type="checkbox"/> Check server health</p>	<p>Log in as <code>admusr</code> user and run the following:</p> <pre># appRev [↵]</pre> <p>The command should produce a Product Release that reflects the Source release of the system that was upgraded.</p> <pre>Install Time: Tue Aug 5 16:35:01 2016 Product Name: TVOE Product Release: 3.4.0.0.0_88.32.0 Base Distro Product: TPD Base Distro Release: 7.4.0.0.0_88.32.0 Base Distro ISO: TPD.install-7.4.0.0.0_88.32.0- OracleLinux6.8-x86_64.iso ISO name: TVOE-3.4.0.0.0_88.32.0-x86_64.iso OS: OracleLinux 6.8</pre> <p>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.</p>
6	<p>TVOE Host Remote Console: <input type="checkbox"/> Check server health</p>	<p>Run the following command to check the health of the server:</p> <pre># /usr/TKLC/plat/bin/alarmMgr --alarmStatus [↵]</pre> <p>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.</p>
7	<p>TVOE Host: Stop the capture and flush all data to the file</p>	<p>Run the following command to stop the capture.</p> <pre># exit [↵]</pre> <p>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.</p> <pre>Script done, file is /var/TKLC/log/upgrade/TPostB- 1306426872.log \$</pre> <p>Application Guest Startup Verification procedures can now be run.</p>

Procedure 12. TVOE Manual Backout

<p>8 <input type="checkbox"/></p>	<p>TVOE Host Remote Console: Log out.</p>	<p>Using the sections listed below from reference [1], log out of the remote console.</p> <p><input type="checkbox"/> “How to Access a Server Console Remotely” [1]</p>
<p style="text-align: center;">---End of Procedure---</p>		

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

*** 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 [Oracle Support](#) 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: _____

Appendix C. Locate Product Documentation on Oracle Help Center Site

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 will appear under the headings “Network 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 appears.

5. 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