Oracle® Communications
Tekelec Platform

TVOE 2.7.0.0.0 Software Upgrade Procedure

Release 2.7.0.0.0

E54523-01

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ORACLE®

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.

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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 Host.

1.1   Purpose and Scope

This document contains detailed procedures for performing a software upgrade of the TVOE application running on HP server 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 Global Customer Support Center at
http://www.oracle.com/support/contact.html

Make the following selections on the Support telephone menu:

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

hen 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 6.7 Configuration Procedure Reference, E54521, Latest Revision, Oracle
[2] PM&C 5.7 Incremental Upgrade, E54387, Latest Revision, Oracle

1.4   Acronyms and Terminology

Table 1 - Acronyms

Acronym	Description
TVOE	Tekelec Virtualization Operating Environment
PM&C	Platform Management and Configuration

Table 2 - Terminology

Application	The software running on a guest of the TVOE host that performs a service.
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.

Backout	The process to take a system back to a Source Release after initiating an upgrade to a Target release. Includes preservation of system configuration.
ESWD	Electronic Software Delivery
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 Host	Physical server used to host the TVOE application.
Guest	A simulated computer running on a TVOE host. A TVOE host can have multiple guests.

1.5   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 **10 point bold Courier** *font*.

5	**ServerX:**	Establish a connection to the server using cu on the terminal server/console.
☐	Connect to the console of server	**$ cu –l /dev/ttyS7 ***

* The prompt will start with a '#' if running with administrator privileges, '$' otherwise.

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. Add TVOE software image to TVOE host

Warning
This Procedure will forcefully shut down all guests on the TVOE host! Guests should be shut down gracefully prior to executing this procedure by executing the appropriate application procedure. "**sudo /usr/bin/virsh list --all**" ***can be executed on the TVOE host to see a list guests and their state.***

- Procedure 6. Stand Alone TVOE host upgrade
- Procedure 7. TVOE Post-Upgrade Validation
- 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. **PM&C should never be used to upgrade its own host.** To perform a *PM&C Aided 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 3. Add 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 2.7.0.0.0:

Table 3. Application Upgrade Paths

Source TVOE Application Version	Target TVOE Application Version	Supported ways to Upgrade
2.0.W-X.X.X	2.7.0.0.0-Y.Y.Y*	• *Stand Alone TVOE host upgrade* • *PM&C Aided TVOE host upgrade*
2.5.W-X.X.X	2.7.0.0.0-Y.Y.Y*	• *Stand Alone TVOE host upgrade* • *PM&C Aided TVOE host upgrade*
2.7.0.0.0-X.X.X	2.7.0.0.0-Y.Y.Y*	• *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 two procedures indicated by the red boxes on the bottom row are procedures that should be provided by the Application teams.
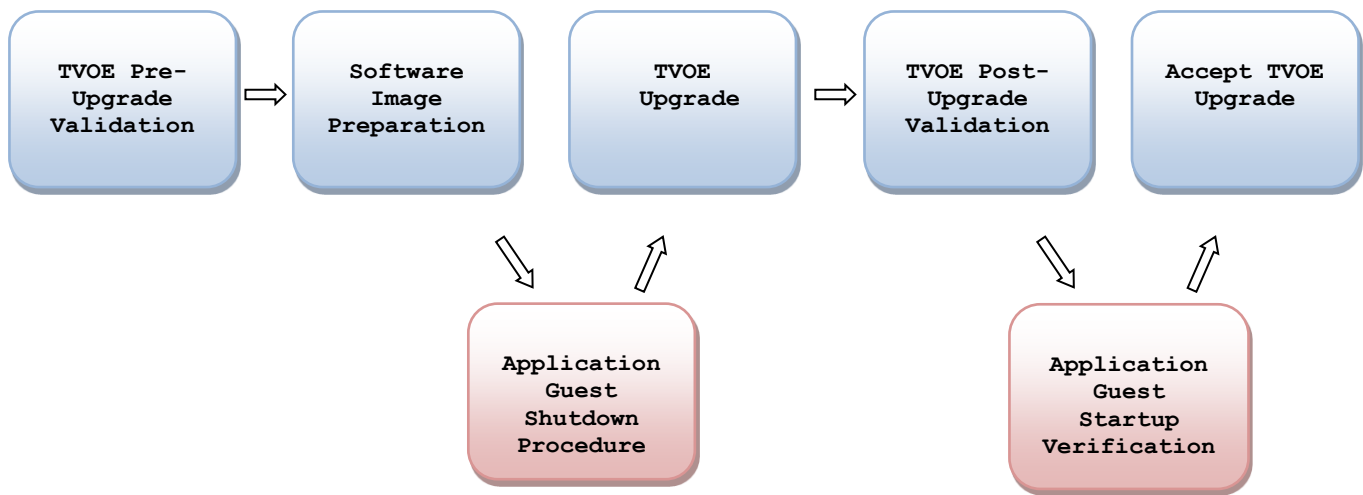
3 UPGRADE OVERVIEW

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.

- IP address of the TVOE host.

- A valid password for admusr user on the TVOE host.

- IP address for TVOE host remote console.

- A valid user name and password for the TVOE host remote console.

- SSH client application to connect to TVOE host and TVOE host remote console.

- IP address for PM&C Application.*

- Web browser to access PM&C Application per "Supported Internet Browsers and Versions" [2]*

- A valid password for a user with admin privileges in the PM&C Application.*

- A copy of reference [1]

- Application Release Notes for all applications deployed on guests.

* 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 4 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 4. Upgrade Execution Overview

Phase	Down time (Hours: Minutes)*	Elapsed time (Hours: Minutes)*	Activity	Impact
Pre- Upgrade Validation	0:00	0:01	Verifying TVOE host health.	None
Software Image Preparation	0:00	0:01	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.	A reboot will occur after the accept for some upgrade paths.

* The provided times are lab estimates of a worst case (TVOE 2.0 to TVOE 2.7.0.0.0) 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 5.

Table 5. Manual Backout Execution Overview

Phase	Down time (Hours: Minutes)*	Elapsed time (Hours: Minutes)*	Activity	Impact
Manual Backout	**0:25**	**0:25**	**Performing backout of previous upgrade.**	**All guests and any applications will not be running.**

* 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 on the TVOE host 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 Preparation

Prepare for the TVOE application upgrade by acquiring the software image of the target TVOE release. Additionally, record the connection information for the TVOE host and the PM&C Application in Table 6. Software Upgrade Preparation.

Table 6. Software Upgrade Preparation

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

* 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 shutdown 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   Pre-Upgrade Validation Execution

Procedure 1. TVOE Pre-Upgrade Validation

S T E P #	This procedure will 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.	
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 Technical Services or your Customer Service representative to obtain access.

2
☐
	TVOE Host:
	
	Log in and start capture
		Login 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 [↵ ]`
		`$ sudo /usr/bin/script $LOGDIR/TPreUV-$(date +%s).log [↵ ]`
		
		Output similar to the following will be output 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. **Additionally, any command run will be executed with root privileges.**

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.

Procedure 1. TVOE Pre-Upgrade Validation

4 ☐	**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 and administrator privileges will be dropped.
		
		`Script done, file is /var/TKLC/log/upgrade/TPreUV-`
		`1306426872.log`
		`$`

5.2   Pre-Upgrade Backup

Procedure 2. Pre-Upgrade Backup

S T E P #	This procedure will create a backup of the TVOE application. *Check off (√) each step as it is completed.* IF THIS PROCEDURE FAILS, CONTACT ORACLE SUPPORT.	
1 ☐	**PM&C Application:** **Create a backup of the TVOE host using PM&C**	Create a backup of the TVOE host by following the procedure below from reference [1]. ☐ "`3.10.1 Backup Procedure for TVOE`" [1]

5.3   Software Image Preparation

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

S T E P #	This procedure will add the TVOE application software image to the PM&C image repository. *Check off (√) each step as it is completed.* IF THIS PROCEDURE FAILS, CONTACT ORACLE SUPPORT.	
1 ☐	**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] ☐ "`3.7.9 Adding ISO Images to the PM&C Image Repository`" [1]

Procedure 4. Add TVOE software image to TVOE host

S T E P #	This procedure will add the TVOE application software image to the TVOE system. *Check off (√) each step as it is completed.* IF THIS PROCEDURE FAILS, CONTACT ORACLE SUPPORT.	

1 ☐	**Verify there is enough space for TVOE software image**	Login as admusr user on the TVOE host and run the following to verify there is enough space on the server for the TVOE software image:
		
		 `$ df –h /var/TKLC/upgrade/ [↵ ]`
		
		 Output similar to the following will be displayed indicating 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. Add 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 please use the following command to copy the Backup ISO image to the TVOE host:
		
		    `$` **`scp <path_to_image>`**
		    `admusr@<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.
		
		— **SCP from Customer PC using Windows**
		  • Please 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**
		  • Attach the USB media to the TVOE host.
		
		    Login as admusr user 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/ 872-2701-101-2.7.0.0.0_84.4.0-TVOE-x86_64.iso`
		
		    `$ sudo /bin/cp /media/usb/ 872-2701-101-2.7.0.0.0_84.4.0-TVOE-x86_64.iso /var/TKLC/upgrade/`
		
		    Unmount the USB media:
		
		    `$ sudo /bin/umount /media/usb`

5.4 Software Upgrade Execution

<div style="border:3px solid black; padding:10px">

Warning

This Procedure will forcefully shut down all guests on the TVOE host! Guests should be shut down gracefully prior to executing this procedure by executing the appropriate application procedure. **"sudo /usr/bin/virsh list --all"** *can be executed on the TVOE host to see a list guests and their state.*

</div>

Procedure 5. PM&C Aided TVOE host upgrade

S T E P #	This procedure will 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.	
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.
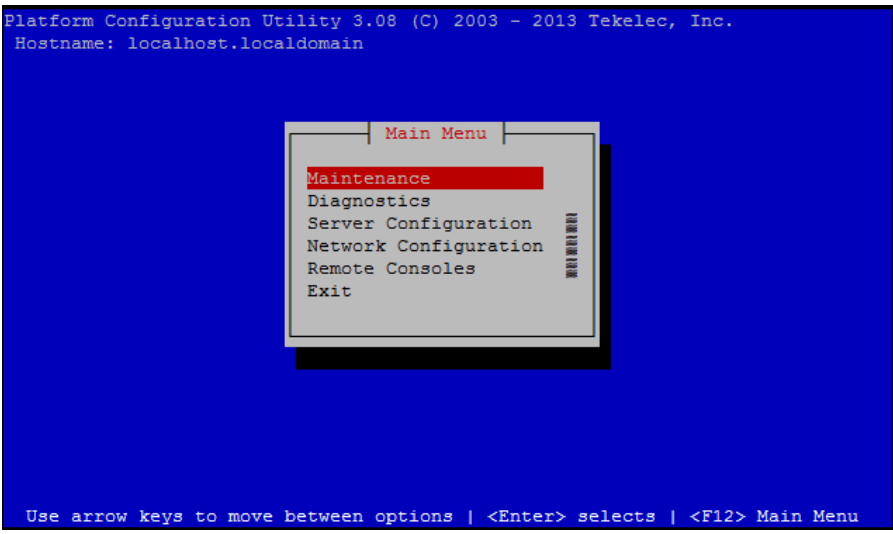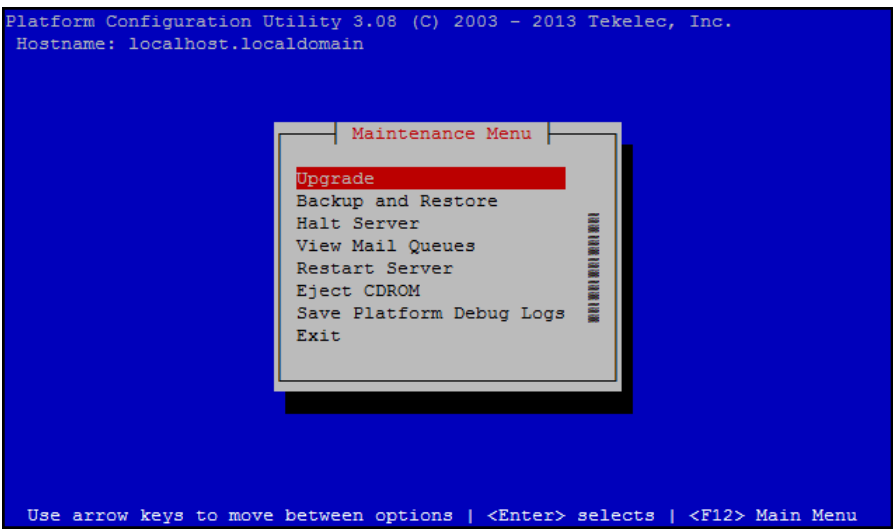
<div style="border:3px solid black; padding:10px">

Warning

This Procedure will forcefully shut down all guests on the TVOE host! Guests should be shut down gracefully prior to executing this procedure by executing the appropriate application procedure. **"sudo /usr/bin/virsh list --all"** *can be executed on the TVOE host to see a list guests and their state.*

</div>
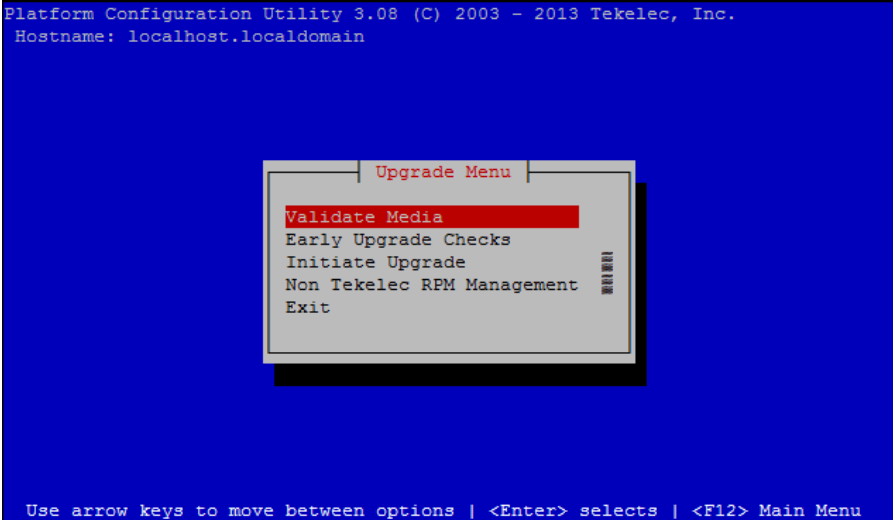
Procedure 6. Stand Alone TVOE host upgrade

S T E P #	This procedure will 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.
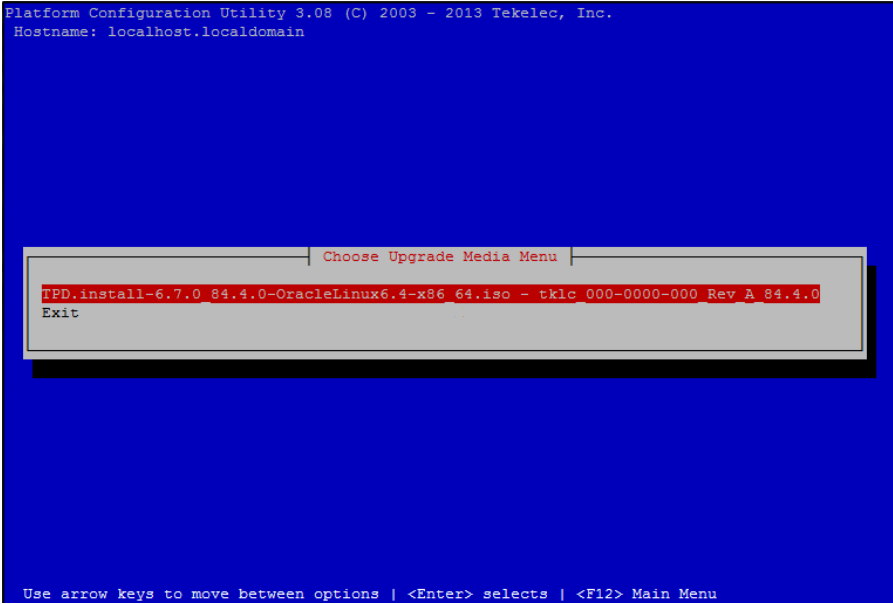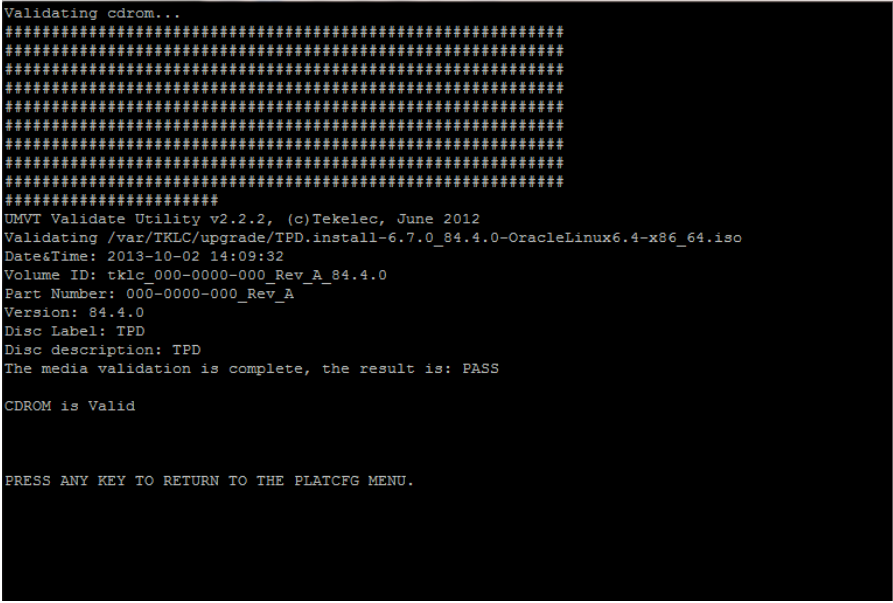
Procedure 5. PM&C Aided TVOE host upgrade

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:** **Start platcfg**	Log in as the platcfg user to start platcfg.
| 3 ☐ | **TVOE Host Remote Console:**<br><br>**Select "Maintenance"** | ```
Platform Configuration Utility 3.08 (C) 2003 - 2013 Tekelec, Inc.
 Hostname: localhost.localdomain



                          ┤ Main Menu ├

                         Maintenance
                         Diagnostics
                         Server Configuration
                         Network Configuration
                         Remote Consoles
                         Exit




   Use arrow keys to move between options | <Enter> selects | <F12> Main Menu
``` |
| 4 ☐ | **TVOE Host Remote Console:**<br><br>**Select "Upgrade"** | ```
Platform Configuration Utility 3.08 (C) 2003 - 2013 Tekelec, Inc.
 Hostname: localhost.localdomain


                        ┤ 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
``` |

Procedure 5. PM&C Aided TVOE host upgrade

5 ☐	**TVOE Host Remote Console:** **Select "Validate Media"**	Platform Configuration Utility 3.08 (C) 2003 – 2013 Tekelec, Inc. Hostname: localhost.localdomain ┤ 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

Procedure 5. PM&C Aided TVOE host upgrade

| 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:

```
Platform Configuration Utility 3.08 (C) 2003 - 2013 Tekelec, Inc.
 Hostname: localhost.localdomain
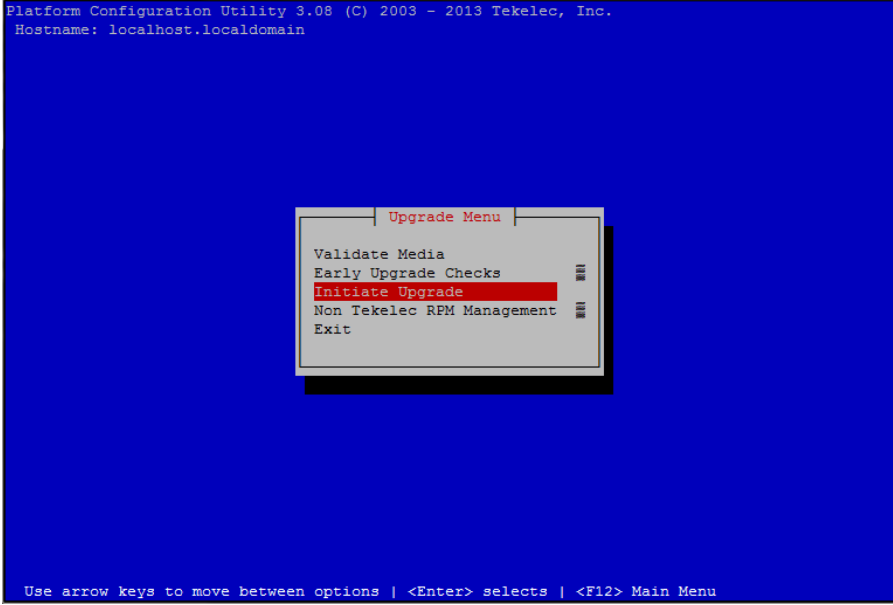
                          ┤ Choose Upgrade Media Menu ├

  TPD.install-6.7.0_84.4.0-OracleLinux6.4-x86_64.iso - tklc_000-0000-000_Rev_A_84.4.0
  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/TPD.install-6.7.0_84.4.0-OracleLinux6.4-x86_64.iso
Date&Time: 2013-10-02 14:09:32
Volume ID: tklc_000-0000-000_Rev_A_84.4.0
Part Number: 000-0000-000_Rev_A
Version: 84.4.0
Disc Label: TPD
Disc description: TPD
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 5.35.2) and this procedure should be started from the beginning. |

Procedure 5. PM&C Aided TVOE host upgrade

| 7 ☐ | **TVOE Host Remote Console:**<br><br>**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:<br><br>```
Platform Configuration Utility 3.08 (C) 2003 - 2013 Tekelec, Inc.
 Hostname: localhost.localdomain




                          ┤ 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
``` |

Procedure 5. PM&C Aided TVOE host upgrade

8 ☐	**TVOE Host Remote Console:** **Start upgrade by selecting the TVOE software image to upgrade from**	 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:
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]

5.5 Post-Upgrade Validation Execution

Procedure 7. TVOE Post-Upgrade Validation

S T E P #	This procedure will verify the health of the TVOE host after the software upgrade. *Check off (√) each step as it is completed.* IF THIS PROCEDURE FAILS, CONTACT ORACLE SUPPORT.	

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 [↵ ]`
		`$ sudo /usr/bin/script $LOGDIR/TPostUV-$(date +%s).log`
		`[↵ ]`
		
		Output similar to the following will be output 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. **Additionally, any command run will be executed with root privileges.**

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.
		
		`# appRev`
		`        Install Time: Fri Oct 4 16:08:33 2013`
		`        Product Name: TVOE`
		`     Product Release: 2.7.0.0.0_84.4.0`
		`     Part Number ISO: 872-2701-104`
		`     Part Number USB: 872-2701-104`
		` Base Distro Product: TPD`
		` Base Distro Release: 6.7.0.0.0_84.4.0`
		`     Base Distro ISO: TPD.install-6.7.0.0.0_84.4.0-`
		`OracleLinux6.4-x86_64.iso`
		`                  OS: OracleLinux 6.4`
		
		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.

Procedure 7. TVOE Post-Upgrade Validation

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

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:
		
		`# alarmMgr --alarmStatus`
		`SEQ: 1 UPTIME: 52 BIRTH: 1342633142 TYPE: SET ALARM:`
		`TKSPLATMI33|tpdServerUpgradePendingAccept|1.3.6.1.4.1.3`
		`23.5.3.18.3.1.3.33`
		
		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.

5.6   Accepting TVOE upgrade

Procedure 8. Stand Alone TVOE Upgrade Accept

S T E P #	This procedure will accept the 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.
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:**
	
	Accept upgrade
		Log in as admusr user on the TVOE host and run the following command to accept the upgrade:
		
		`$ `**`sudo /var/TKLC/backout/accept [ ↵ ]`**
		
		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:
		
		`$ sudo /var/TKLC/backout/accept`
		`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`
		
		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 5.3, Procedure 4. `$ `**`sudo /bin/rm /var/TKLC/upgrade/ 872-2701-101-2.7.0.0.0_84.4.0-TVOE-x86_64.iso`**

Procedure 8. Stand Alone TVOE Upgrade Accept

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]

Procedure 9. PM&C Aided TVOE Upgrade Accept

S T E P #	This procedure will 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.	
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.

5.7 Post-Upgrade Backup

Procedure 10. Post-Upgrade Backup

S T E P #	This procedure will create a backup of the TVOE application. _Check off (√) each step as it is completed._ IF THIS PROCEDURE FAILS, CONTACT ORACLE SUPPORT.	
1 ☐	**PM&C Application:** **Perform an accept of TVOE upgrade using PM&C**	Create a backup of the TVOE host by following the procedure below from reference [1]. ☐ "3.10.1 Backup Procedure for TVOE" [1]

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 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 in order 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! Any guests should have been shut down gracefully prior to executing this procedure by executing the appropriate application procedure. "sudo /usr/bin/virsh list --all" can be executed on the TVOE host to see a list guests and their state.

Procedure 11. TVOE Manual Backout

S T E P #	This procedure will backout the most recent upgrade. *Check off (√) each step as it is completed.* IF THIS PROCEDURE FAILS, CONTACT ORACLE SUPPORT.	
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 11. 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 [ ↵ ]`
		
		 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 Oracle Support 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 6.4`
		`Kernel 2.6.32-358.14.1.el6prerel6.7.0.0.0_84.2.0.x86_64`
		`on an x86_64`
		
		 `hostname1342210584 login:`

Procedure 11. TVOE Manual Backout

4 ☐	**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. ``` # appRev Install Time: Fri Jul 13 16:08:33 2012 Product Name: TVOE Product Release: 2.7.0.0.0_84.4.0 Part Number ISO: 872-2701-104 Part Number USB: 872-2701-104 Base Distro Product: TPD Base Distro Release: 6.7.0.0.0_84.4.0 Base Distro ISO: TPD.install-6.7.0.0.0_84.4.0- OracleLinux6.4-x86_64.iso OS: OracleLinux 6.4 ``` 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.
5 ☐	**TVOE Host Remote Console:** **Check server health**	Run the following command to check the health of the server: $ **sudo /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. Backout is complete. Application Guest Startup Verification procedures can now be run.
6 ☐	**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]

APPENDIX A - SWOPS SIGN OFF

Date	Test Case	Description of Failures and/or Issues. Any CSR's / RMA's 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 successfully completed without failure.

Sign your name, showing approval of this procedure, and fax this page and the above completed matrix to Oracle, FAX # 919-460-3669.

Customer: 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 the customer representative. A copy of this page should be given to the customer for their records. The SWOPS supervisor will also maintain a signed copy of this completion for future reference.

Oracle Signature: _____   **Date:** _____

Customer Signature: _____   **Date:** _____

APPENDIX C - LOCATE PRODUCT DOCUMENTATION ON THE 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 the document requires Adobe Acrobat Reader, which can be downloaded at www.adobe.com.

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

2. Under **Applications**, click the link for **Communications.** 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).

5. To download a file to your location, right-click the PDF link and select **Save Target As**.