Oracle® Communications LSMS

Incremental Upgrade/Installation Guide

Release 13.4

F23725-02 Revision 2

August 2020

ORACLE®

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

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

Refer to Appendix D for instructions on accessing My Oracle Support.

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1. INTRODUCTION

1.1 Purpose and Scope

This document describes methods utilized and procedures executed to perform the following tasks:

a. An initial installation of the LSMS 13.4 application software if it is not currently installed on an in-service E5-APP-B-02 system running a release of 64-bit version of TPD 7.6.x.
b. A split-mirror software upgrade on an in-service E5-APP-B-02 system running a release equal to 64-bit version of TPD 7.0.3 and LSMS Release 13.2.0.
c. An incremental software upgrade on an in-service E5-APP-B-02 system running a release equal to 64-bit version of TPD 7.4.x and LSMS Release 13.2.1.

The audience for this internal document consists of Oracle customers and the following groups: Software System, Product Verification, Documentation, and Customer Service including Software Operations and NPI. This document provides step-by-step instructions to execute any MPS split mirror upgrade or installation using an ISO image.

This document does not address requirements relating to the interaction, if any, between Oracle Communication EAGLE and MPS upgrades. This document does not address feature activation.

1.2 References

1.2.1 External

None

1.2.2 Internal (Oracle)

The following are references internal to Oracle. They are provided here to capture the source material used to create this document. Internal references are only available to Oracle's personnel.

[1] Software Upgrade Procedure Template, TM005074, Latest version, Oracle

[2] TPD Initial Product Manufacture User's Guide, 909-2130-001, Latest revision, Oracle

[3] LSMS 13.4 Maintenance Manual, Latest version, Oracle

[4] LSMS 13.4 Configuration Manual, Latest version, Oracle

[5] Full Upgrade to LSMS 13.4, Latest Version, Oracle

1.3 Software Release Numbering

Refer to Engineering Release Notes or other appropriate document with the most recent build numbers in order to identify the proper components (software loads etc.) that comprise the product's software release.

1.4 Acronyms

An alphabetized list of acronyms used in the document that are not included in [1]:

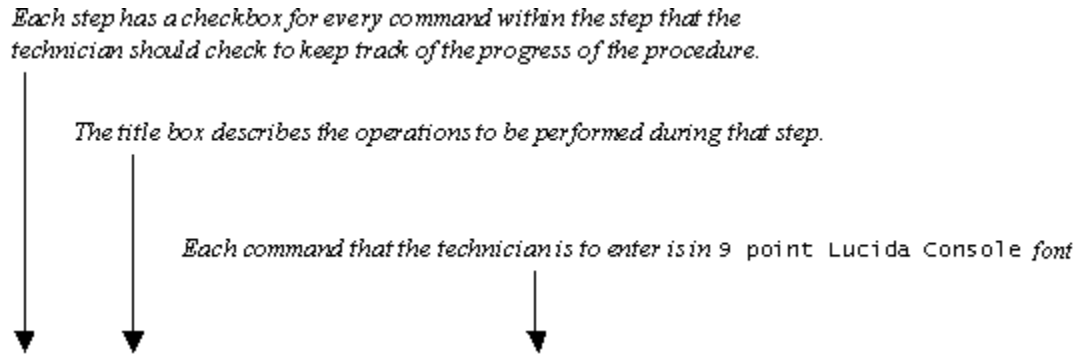
Table 1. Acronyms

E5-APP-B	E5 Based Application Card
E5-APP-B-02	E5 Based Application Card with 480GB Disk
GA	General Availability
IPM	Initial Product Manufacture
LA	Limited Availability
LSMS	Local Service Management System
OCELAP	Oracle Communications EAGLE LNP Application Processor
OCLSMS	Oracle Communication Local Service Management System
MPS	Multi-Purpose System
NPAC	Number Portability Administration Centre

NPI	New Product Introduction
NTP	Network Time Protocol
SCP	Secure Copy
SERVDI	Support ELAP Reload Via Database Image
SM	Service Module
TPD	Tekelec Platform Distribution
UTC	Universal Time Coordinated

1.5 Terminology

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:



1 ☐	MPS A: Verify all materials required are present	Materials are listed in Material List (Section3.1)

Figure 1: Example of a step that indicates the Server on which it needs to be executed

1 ☐	**MPS X:** Execute syscheck	#syscheck

Figure 2: Example of a step that needs to be executed on both MPS A and MPS B server

Other terminology follows.

Table 2. Terminology

Backout (abort)	The process to take a system back to a Source Release prior to completion of upgrade to Target release. Includes preservation of databases and system configuration.
Incremental Upgrade	The process to upgrade a system from Source Release to a Target Release including preservation of databases and system configuration.
Split Mirror Upgrade	Systems that use software RAID instead of hardware RAID can use the software RAID mirrors as a backout mechanism. Conceptually in a software RAID1 with two disks there are two sides to the mirror; let them be side A and side B. For a system with multiple software RAID devices, each device will have an A side and a B side. For an upgrade with a BACKOUT_TYPE=SPLIT_MIRROR the upgrade will break the mirrors at the beginning of the upgrade and perform the upgrade on the ***Asides*** of the mirrors. The other sides of the mirrors (***Bsides***) are left intact in their pre-upgrade state throughout the duration of the upgrade.

	When a backout is performed the system is rebooted into the same 'backout environment'. Inside this 'backout environment' the RAID mirrors are rebuilt from the ***Bsides*** of the arrays, thus restoring the system to the pre-upgrade state.
Non-preserving upgrade	"Upgrade" that does not adhere to the standard goals of software upgrade methodology. The outcome of the execution is that the system is running on the Target Release, however the Source Release database is **not** preserved.
Rollback	The process to take a system from a Target Release back to a Source Release including preservation of databases and system configuration.
Source release	Software release to split mirror upgrade from.
Target release	Software release to split mirror upgrade to.
Upgrade media	USB media or ISO image for E5-APP-B.

1.6 Recommendations

This procedure should be followed thoroughly utilizing the steps as written. **When planning to upgrade the server, contact My Oracle Support at least 48 hours before the split mirror upgrade process has been planned to be initiated.** In the event any unexpected results are returned while executing steps in this procedure halt the activity and contact Oracle My Oracle Support for assistance.

Please read the following notes on procedures:

1. Any procedure completion times are estimates. Times may vary due to differences in database size, user experience, and user preparation.
2. The shaded area within response steps must be verified in order to successfully complete that step.
3. Output displayed in the procedures' response steps is presented. Actual output varies depending on system. Output is presented for reference only.
4. Where possible, command response outputs are shown as accurately as possible. However, exceptions may include the following:
   - Information such as ***time*** and ***date***.
   - ANY information marked with "***XXXX***." Where appropriate, instructions are provided to determine what output should be expected in place of "***XXXX***."
5. After completing each step and **at each point where data is recorded from the screen, *the technician performing the split mirror upgrade must check each step***. A checkbox has been provided beneath each step number for this purpose.
6. Captured data is required for future support reference if My Oracle Support is not present during the split mirror upgrade.
7. In procedures that require a command to be executed on a specific LSMS, the command is prefaced with "MPS A:" or "MPS B:"
8. User Interface menu items displayed in this document were correct at the time the document was published but may appear differently at time that this procedure is executed.

1.7 Requirements

- Screen logging is required throughout the procedure. These logs should be made available to My Oracle Support in the event their assistance is needed.
- Target-release USB media or ISO image

2. GENERAL DESCRIPTION

This document defines the step-by-step actions performed to execute a software split mirror upgrade of an in-service MPS running the LSMS application from the source release to the target release on **E5-APP-B 02.**

The LSMS application can be installed and upgraded based on the table below.

Table 3. Install-Upgrade paths

TPD Release for IPM	LSMS Initial Installation Release
7.6.2.0.0_88.58.0 (64-bit)	13.4.y
Split Mirror Upgrade Source Release	**Split Mirror Upgrade Destination Release**
13.2.0.x/13.2.1.x/13.3.0.x/13.3.1.x	13.4.y

		TARGET RELEASE			
		13.2.1 (TPD 7.4)	13.3.0 (TPD 7.5)	13.3.1 (TPD 7.6.0)	13.4.0 (TPD 7.6.2)
SOURCE RELEASE	13.2.0 (TPD 7.0.3)	Split Mirror Upgrade	Split Mirror Upgrade	Split Mirror Upgrade	Split Mirror Upgrade
	13.2.1 (TPD 7.4)	NA	Incremental upgrade	Split Mirror Upgrade	Split Mirror Upgrade
	13.3.0 (TPD 7.5)	NA	NA	Split Mirror Upgrade	Split Mirror Upgrade
	13.3.1 (TPD 7.6.0)	NA	NA	NA	Split Mirror Upgrade

The LSMS upgrade paths are shown in the figures below. The general timeline for all processes to perform an upgrade, from pre-upgrade backups to a final system health check, is also included below.

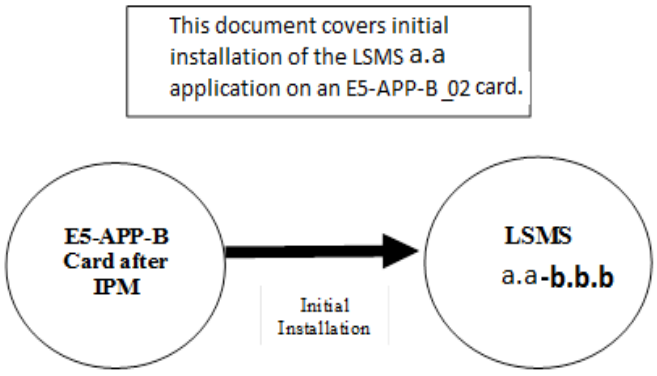


Figure 3: Initial Application Installation Path – Example shown

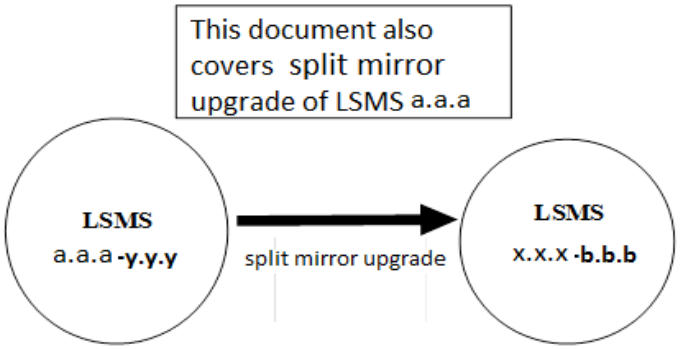


Figure 4: Split Mirror Upgrade Path - LSMS

Note: Same procedure of split mirror upgrade will be followed for all intermediate releases of 13.2.0.

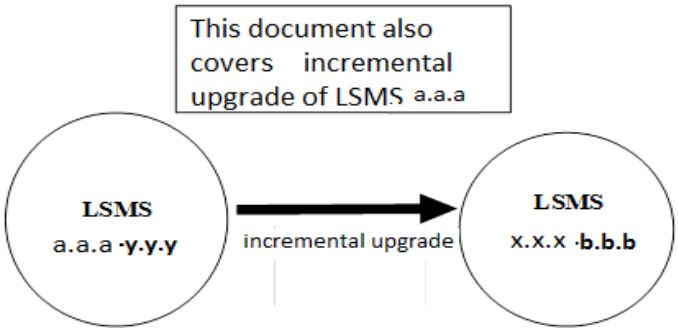


Figure 5: Incremental Upgrade Path - LSMS

Note: Same procedure of incremental upgrade will be followed for all intermediate releases.

Note: The only difference between split mirror upgrade and incremental upgrade is an extra step to add BACKOUT_TYPE=SPLIT_MIRROR in upgrade.conf. Only difference is the way backend is performed there is no difference how upgrade is performed. Same steps will be followed for split mirror upgrade and incremental upgrade.

3. INSTALL UPGRADE OVERVIEW

The general installation strategy is to IPM on the E5-APP-B server, and then install the application.

3.1 Required Materials

- Target-release TPD-USB media and a target-release LSMS ISO file.
- A terminal and null modem cable to establish a serial connection.

System configuration information like NTP Server IP, App IP, ELAP IP etc. Write down the system configuration information.

App IP: _____

App Gateway: _____

NTP Server IPs: _____

ELAP Server IPs: _____

NPAC Server IPs: _____

Other IPs required: _____

- Passwords for users on the local system:

LSMS USERS		
login	**MPS A password**	**MPS B password**
lsmsmgr		
lsmsadm		
root		
mysql dbroot user		
admusr		

Table 4: User Password Table

3.2 Installation Phases

The general installation strategy is to IPM the E5-APP-B server and then install the application.

The following table illustrates the progression of the installation process by procedure with estimated times. The estimated times and the phases that must be completed may vary due to differences in typing ability and system configuration. The phases outlined in Table 5 are to be executed in the order they are listed.

Phase	Elapsed Time (Minutes)		Activity	Procedure
	This Step	**Cum.**		
Connectivity setup	15	15	Set up connectivity to the MPS Servers.	**Procedure 1**
Verify install	5	20	Verify this should be an install.	**Procedure 2**
Pre-install check	15	35	Verify requirements for install are met.	**Procedure 3**
Pre-install health check	5	40	Run the syscheck utility to verify that all servers are operationally sound.	**Procedure 4**
Configure Server 1A	5	45	Set hostname, designation, function and time.	**Procedure 5**
Configure Server 1B	5	50	Set hostname, designation, function and time.	**Procedure 6**
Install Servers	30	80	Install software on sides 1A and 1B simultaneously.	**Procedure 7** **Procedure 8**

Phase	Elapsed Time (Minutes)		Activity	Procedure
	This Step	**Cum.**		
Post-install application processing	15	95	Perform first time configuration and configure time zone and clock.	**Procedure 9** **Procedure 10**
Network Configuration for LSMS Cards.	10	105	Perform the Network Configuration on MPS A server. ***Note**: For Single Subnet Configuration execute **Procedure 11** and for Segmented Subnet Configuration execute **Procedure 12**.	**Procedure 11** **OR** **Procedure 12**
Install TMN Toolkit and Marben OSI License Installation	10	115	Install TMN Toolkit and Marben OSI License	**Procedure 13**
Run switch_NANC528 script	5	120	Run switch_NANC528 script to switch to older npacagent binary which is not having NANC 528 changes. **Note: Executing this step will take the LSMS to older npacagent, which will not have NANC 528 changes. Skip this step if you do not want to move to older npacagent version.** **Read the NOTE provided in the Procedure 33 for more details.**	**Procedure 33**
Starting LSMS services	10	130	Start LSMS services	**Procedure 19**
Post-upgrade health check	5	135	Run the syscheck utility to verify all servers are operationally sound.	**Procedure 20**
Accept upgrade	5	140	Accept the upgrade on both sides 1A and 1B. Note: This is not a mandatory procedure but this needs to be executed if further split mirror upgrade is required.	**Procedure 27**
The following steps only need to be performed on the customer site.				

Table 5. Installation Phases

3.3 Split Mirror Upgrade Phases

The following table illustrates the progression of the split mirror upgrade process by procedure with estimated times and may vary due to differences in typing ability and system configuration. Split mirror upgrade should be done on Server 1B first and then on Server 1A. The phases outlined in Table 6 are to be executed in the order they are listed.

Phase	Elapsed Time (Minutes)		Activity	Procedure
	This Step	Cum.		
Connectivity setup	15	15	Set up connectivity to the MPS servers.	**Procedure 1**
Verify split mirror upgrade	5	20	Verify this a split mirror upgrade	**Procedure 2**
Pre-upgrade check	15	35	Verify requirements for upgrade are met.	**Procedure 3**
Pre-upgrade health check	5	40	Run the syscheck utility to verify that all servers are operationally sound.	**Procedure 4**
Pre-upgrade LSMS Node status	5	45	Run the LSMS Node Status to verify that the server's HA states are operationally sound.	**Procedure 14**
Split Mirror Upgrade on Server B	30	75	Execute the Split Mirror upgrade procedure on MPS B.	**Procedure 15**
Split Mirror Upgrade on Server A	30	105	Execute the Split Mirror upgrade procedure on MPS A.	**Procedure 16**
Run switch_NANC528 script	5	110	Run switch_NANC528 script to switch to older npacagent binary which is not having NANC 528 changes. **Note: Executing this step will take the LSMS to older npacagent, which will not have NANC 528 changes. Skip this step if you do not want to move to older npacagent version.** **Read the NOTE provided in the Procedure 33 for more details.**	**Procedure 33**
Start LSMS Services	10	120	Start LSMS Services	**Procedure 19**
Post-upgrade health check	5	125	Run the syscheck utility to verify that all servers are operationally sound.	**Procedure 20**
Accept upgrade on both servers A and B	5	130	Accept the upgrade on both servers. Note: This is not mandatory procedure. Once Accept Upgrade is executed, backout cannot be performed.	**Procedure 26**

Table 6. Split Mirror Upgrade Phases

3.4 Incremental Upgrade Phases

The following table illustrates the progression of the incremental upgrade process by procedure with estimated times and may vary due to differences in typing ability and system configuration. Incremental upgrade should be done on Server 1B first and then on Server 1A. The phases outlined in Table 7 are to be executed in the order they are listed.

Phase	Elapsed Time (Minutes)		Activity	Procedure
	This Step	Cum.		
Connectivity setup	15	15	Set up connectivity to the MPS servers.	**Procedure 1**
Verify upgrade	5	20	Verify this is an incremental upgrade.	**Procedure 2**
Pre-upgrade check	15	35	Verify requirements for upgrade are met.	**Procedure 3**
Pre-upgrade health check	5	40	Run the syscheck utility to verify that all servers are operationally sound.	**Procedure 4**
Pre-upgrade LSMS Node status	5	45	Run the LSMS Node Status to verify that the server's HA states are operationally sound.	**Procedure 14**
Upgrade on Server B	30	75	Execute the upgrade procedure on MPS B.	**Procedure 17**
Upgrade on Server A	30	105	Execute the upgrade procedure on MPS A.	**Procedure 18**
Run switch_NANC528 script	5	110	Run switch_NANC528 script to switch to older npacagent binary which is not having NANC 528 changes. **Note: Executing this step will take the LSMS to older npacagent, which will not have NANC 528 changes. Skip this step if you do not want to move to older npacagent version.** **Read the NOTE provided in the Procedure 33 for more details.**	**Procedure 33**
Start LSMS Services	10	120	Start LSMS Services	**Procedure 19**
Post-upgrade health check	5	125	Run the syscheck utility to verify that all servers are operationally sound.	**Procedure 20**
Accept upgrade on both servers A and B	5	130	Accept the upgrade on both servers. Note: This is not mandatory procedure. Once Accept Upgrade is executed, backout cannot be performed.	**Procedure 27**

Table 7. Incremental Upgrade Phases

3.5 Backout Phases

The following table illustrates the progression of the backout process by procedure with estimated times and may vary due to differences in typing ability and system configuration. The phases outlined in Table 8 are to be executed in the order they are listed.

Phase	Elapsed Time (Hours or Minutes)		Activity	Impact	Procedure
	This Step	Cum.			
Determine state of system	15-30	15-30	Investigate and determine the state of the LSMS system.	Cannot proceed with backout until failure analysis is complete. Some hand-fixes may be required before proceeding with backout.	**Contact MY ORACLE SUPPORT following the instructions on the front page or the instructions on the Appendix D.**
Backout MPS B server only.	30	45-60	If required, backout MPS B. If backout of MPS A and B is required, execute **Procedure 22**. Otherwise, if backout required only on MPS B, then execute **Procedure 21**.		**Procedure 21**
Backout MPS Servers A and B	100	145-160	Backout MPS A and B.		**Procedure 22**
Post-backout health check	5	150-165	Run the syscheck utility to verify the MPS server is operationally sound.	Verify that the backout was successful.	**Procedure 23**
Start LSMS services	10	160-175	Start LSMS services		**Procedure 19**

Table 8. Backout Procedure Overview

3.6 Log Files

All commands executed during upgrade or installation, are logged in the "/var/TKLC/log/upgrade/upgrade.log" file. This log file is automatically initiated when installation is invoked. This log file is rolled every time an upgrade is initiated. A total of up to five upgrade log files are stored on the server.

The upgrade wrapper script, ugwrap, logs its actions also to the "/var/TKLC/log/upgrade/ugwrap.log" file. This log file is rolled every time ugwrap is initiated. A total of up to five ugwrap log files are stored on the server.

4. UPGRADE PREPARATION

Procedure 1 Setting up the upgrade environment

Check off (√)each step as it is completed. Boxes have been provided for this purpose under each step number.

IF THIS PROCEDURE FAILS, CONTACT MY ORACLE SPPPORT AND **ASK FOR UPGRADE ASSISTANCE.**

Procedure 1: Setting up the upgrade environment

STEP #	This procedure sets up the split mirror upgrade environment. Windows are opened for both the MPS servers. Estimated time: 15 minutes **NOTE: Call My Oracle Support for assistance if modem access is the method use for incremental/split mirror upgrade.**	
1. ☐	Verify all materials required are present	Required materials: * Target-release USB or ISO image if software is being provided electronically. * The capability to log into a server, such as a PC with null modem cable for connection to serial port.
2. ☐	Establish a connection to MPS A.	If access to the LSMS servers is not available through an IP network, connect to the E5-APP-B card via the serial port as follows: For connecting the E5-APP-B A card, disconnect the console cable from the serial port on the E5-APP-B B card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B B card's adapter and use it for serial access. **Cable part numbers - 830-1220-xx**
3. ☐	Create a terminal window for MPS A.	Create a terminal window, establish a serial connection to the E5APPB MPS console port ttyS0 with the properties - 115200,N,8,1 and give it a title of **"MPS A"**
4. ☐	**MPS A**: Enable capture file and verify the correspondent file is created.	Enable the data capture and verify that the data capture file is created at the path specified.
5. ☐	**MPS A:** Login as a root user.	`Login: root` `Password: <root_password>`
6. ☐	**MPS A**: Start screen Session.	Execute the following command to start screen and establish a console session with MPS A. `# screen -L`
7. ☐	Establish a connection to MPS B.	If access to the LSMS servers is not available through an IP network, connect to the E5-APP-B card via the serial port as follows: For connecting the E5-APP-B B card, disconnect the console cable from the serial port on the E5-APP-B A card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B A card's adapter and use it for serial access. **Cable part numbers - 830-1220-xx**
8. ☐	Create a terminal window for MPS B.	Create a terminal window, establish a serial connection to the E5APPB MPS console port ttyS0 with the properties - 115200,N,8,1 and give it a title of **"MPS B"**

9. ☐	**MPS B**: Enable capture file and verify a correspondent file is created.	Enable the data capture and verify that the data capture file is created at the path specified.
10. ☐	**MPS B:** Login as a root user.	Login: **root** Password: **<root_password>**
11. ☐	**MPS B**: Start screen Session.	Execute the following command to start screen and establish a console session with MPS B. **# screen -L**
12. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 2 Determine if upgrade or installation is required

Procedure 2: Determine if split mirror upgrade or incremental upgrade or installation is required

STEP #	This procedure provides instructions to determine if this will be an initial installation or an incremental/split mirror upgrade of existing software. Estimated time: 5 minutes	
1. ☐	**MPS B:** Log in as the user "root"	Login: **root** Password: **<root_password>**
2. ☐	**MPS B:** Determine if the application is correctly installed on the server. (MPS B will be used to determine the current state of the servers. We will assume the state of the A server is the same.)	Execute an rpm query command and examine the output: **# rpm -qi TKLClsms** [root@lsmspri ~]# rpm -qi TKLClsms Name : TKLClsms Relocations: (not relocatable) Version : 13.30.0 Vendor: Tekelec Release : 13.2.0.0.0_132.6.0 Build Date: Wed 13 Apr 2016 01:57:12 PM EDT Install Date: Wed 20 Apr 2016 04:20:09 PM EDT Build Host: diablo-9.tekelec.com Group : TKLC/Application Source RPM: TKLClsms-13.30.0-13.2.0.0.0_132.6.0.src.rpm Size : 217882134 License: © TEKELEC 2004-2016 Signature : (none) Packager : <Open Systems> URL : http://www.tekelec.com/ Summary : Oracle Communications LSMS Package Description : This is the Oracle Communications LSMS Package. The package installs LSMS software. Local Service Management System (LSMS) is a secure and reliable Local Number Portability (LNP) system. If the output similar to the above example is displayed, then proceed with next step. Otherwise, proceed to step 4.

Procedure 2: Determine if split mirror upgrade or incremental upgrade or installation is required

3. ☐	**MPS B:** Determine the LSMS release currently installed.	Execute the following command and examine the output
		
		`# cat /usr/TKLC/lsms/bin/LSMSversion; ssh mate "cat /usr/TKLC/lsms/bin/LSMSversion"`
		
		`[root@lsmspri root]# cat /usr/TKLC/lsms/bin/LSMSversion; ssh mate "cat /usr/TKLC/lsms/bin/LSMSversion"`
		`13.2.0.0.0_132.6.0 Tekelec build 2016-04-13-13-49`
		`13.2.0.0.0_132.6.0 Tekelec build 2016-04-13-13-49`
		
		If the output similar to the above example is displayed, then skip to step 5.

4. ☐	**MPS B:** Initiate an installation if the application is not present on the server	If the application is not currently installed, output similar to the examples below will be returned from the **rpm –qi** command in the previous step. If this is the case, then an application installation is required. Refer to section no. 3.2 for LSMS installation.
		
		`# rpm -qi TKLClsms`
		`package TKLClsms is not installed`
		
		Skip to step 7.

5. ☐	**MPS B:** Determine which version of the application is present.	If the application is currently installed, get the Release number from step 3. Write down the release level now if this is a split mirror upgrade. **Release Level:_____**
6. ☐	**MPS B:** Determine if it is a Full Upgrade or Incremental upgrade or split mirror Upgrade.	If the current release for example is 13.0.x or 13.1.y and target release is 13.3.z, it is a Full Upgrade. Refer to document [5] for the **LSMS FULL UPGRADE** procedure, instead of this document. If the current release is for example 13.2.x and target release is 13.3.y, it is a **Split Mirror** Upgrade. If the current release is for example 13.2.x and target release is 13.3.y, it is an **Incremental** Upgrade. For exact paths, refer to Table 3.
7. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 3 Pre-upgrade requirements

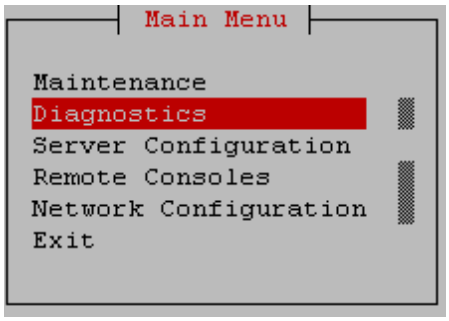
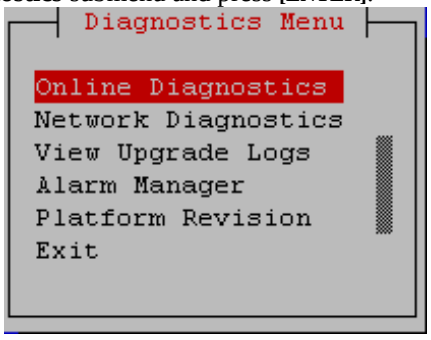
Procedure 3: Verifying Pre-Upgrade Requirements

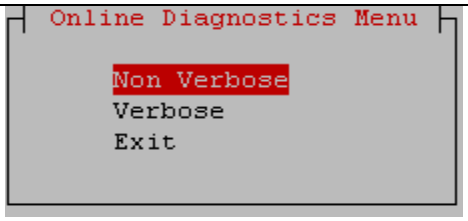
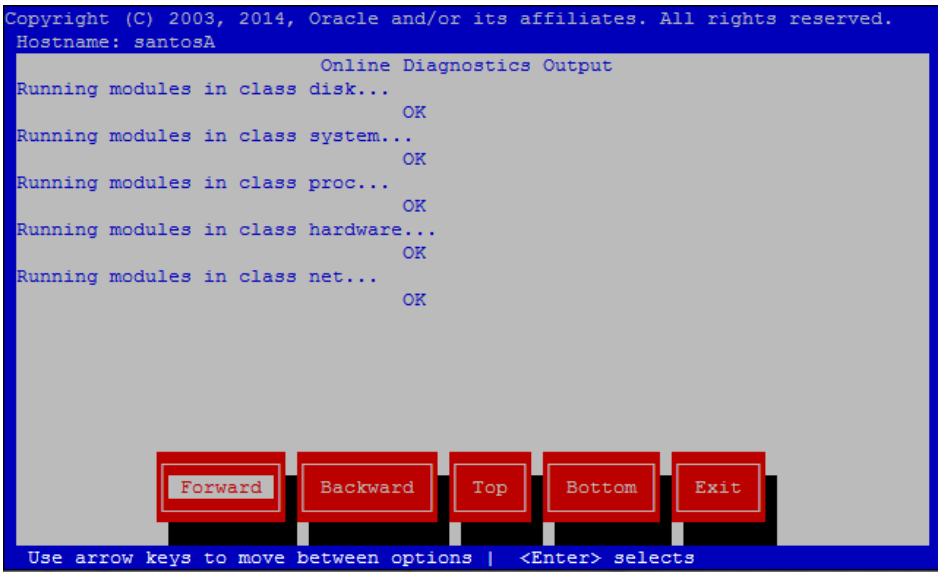
S T E P #	This procedure verifies that all pre-upgrade requirements have been met. Estimated time: 15 minutes	
1. ☐	**MPS X:** Verify all required materials are present.	Verify that the materials listed in Upgrade Material List (Section3.1) are present.

2. ☐	**MPS X:** Verify the availability of passwords for MPS systems.	Refer to Table 4 for the list of users.
3. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 4 System Health check

Procedure 4: Perform System Health Check

STEP #	This procedure performs a system health check on any MPS server. Estimated time: 5 minutes	
1. ☐	**MPS X:** Log in as the root user.	<hostname> console login: root Password: <root_password>
2. ☐	**MPS X:** Execute the platcfg menu.	**# su - platcfg**
3. ☐	**MPS X:** Select the Diagnostics submenu.	The platcfg **Main Menu** appears. On the **Main Menu**, select **Diagnostics** and press **[ENTER]**. 
4. ☐	**MPS X:** Select the Online Diagnostics submenu.	Select the **Online Diagnostics** submenu and press **[ENTER]**. 
5. ☐	**MPS X:** Select the Non-Verbose option.	Select the **Non-Verbose** option and press **[ENTER]**.

		
6. ☐	**MPS X:** Examine the output of the Online Diagnostics.	Example output shown below. Examine the actual output of the Online Diagnostics. 
7. ☐	**MPS X:** System Check Successful. System Check Failure.	Exit from the above menu. If the System Check was successful, return to the procedure that you came here from. If the "Server Disk Space Shortage Error" was there in the output, proceed to step 8 to clean up the '/' directory. If any other failures were detected by System Check, contact My Oracle Support following the instructions on the front page or the instructions on the 7.2Appendix D.

8. ☐	**MPS X:** Server clean-up to create space.	Execute the following command:
		# df -h /var/TKLC
		
		The output may look like:
		
		`[root@hostname ~]$ df -h /var/TKLC`
		`Filesystem Size Used Avail Use% Mounted on`
		`/dev/md7 3.9G 1.2G 2.6G 32% /var/TKLC`
		
		Verify that there is at least 600M in the Avail column. If not, clean up files until there is space available.
		
		CAUTION: Make sure you know what files you can remove safely before cleaning up. It is recommended that you only clean up files in the /var/TKLC/upgrade directory as this is a platform owned directory that should only contain ISO images. This directory should not be expected to contain images for any length of time as they can get purged.

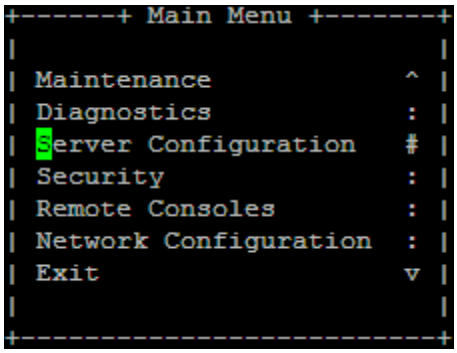
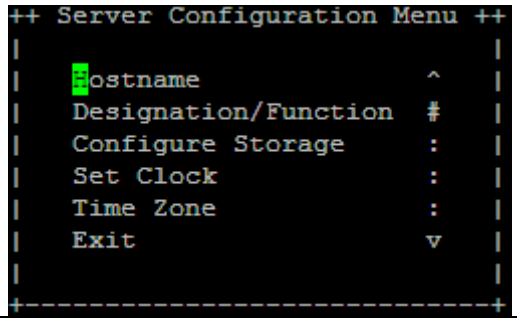
Procedure 4: Perform System Health Check

		Also, execute the following command to check space in '/lib/module' directory. **# df -h /lib/modules** [root@hostname ~]$ df -h /lib/modules Filesystem Size Used Avail Use% Mounted on /dev/md2 996M 353M 592M 38% / Verify that the Use% column does not exceed the value 80%.
9. ☐	**Procedure complete.**	This procedure is complete.

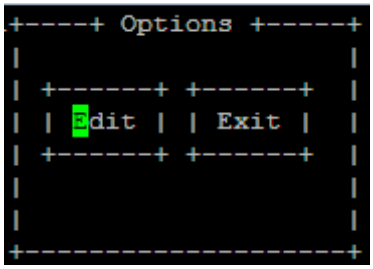
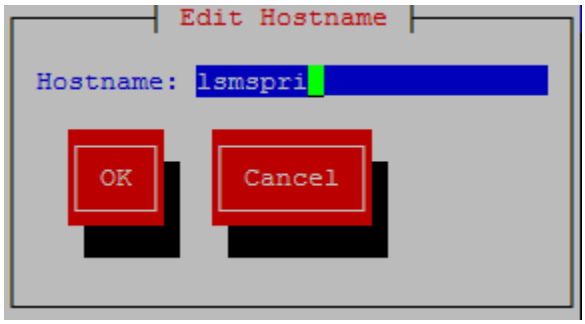
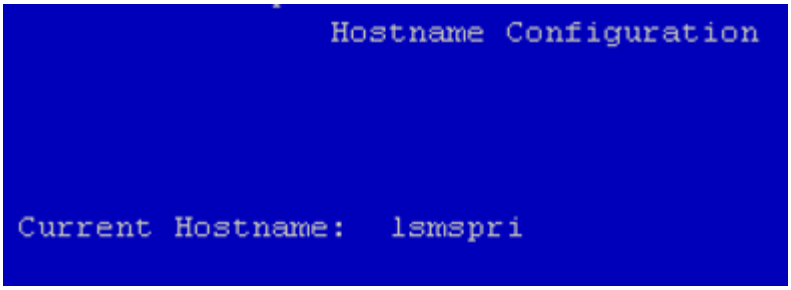
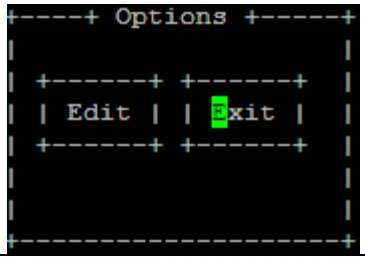
5. SOFTWARE INSTALLATION PROCEDURES

Procedure 5 Pre-Install configuration on server A

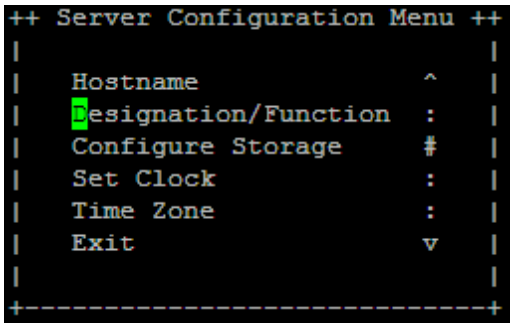
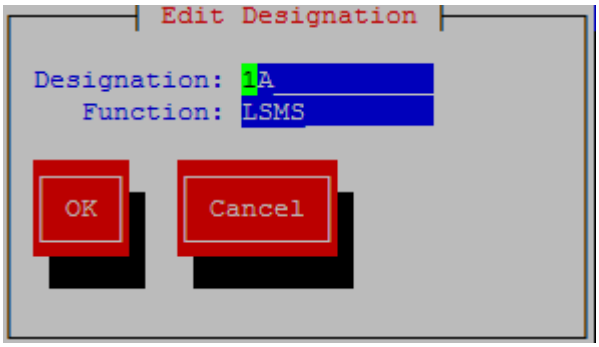
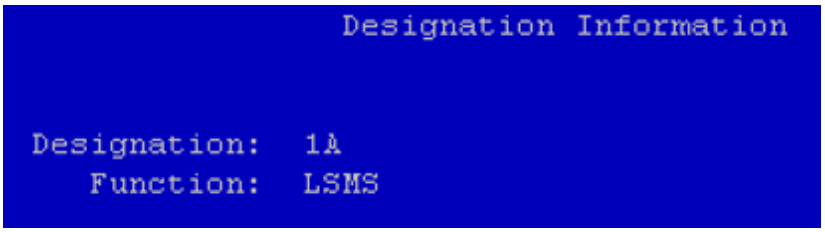
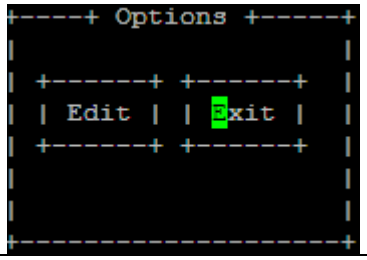
Procedure 5: Pre-Install configuration on server A

S T E P #	This procedure provides instructions to perform pre configuration for an initial install of the application. Estimated time: 5 minutes	
IMPORTANT: Installation of the Operating System on an Oracle Application Server should be completed before starting installation procedure. Refer to Procedure 29 or [2] for TPD installation guide.		
1. ☐	Connect to the Server.	If not already connected, connect to the E5-APP-B card via the serial port. For connecting the E5-APP-B A card, disconnect the console cable from the serial port on the E5-APP-B B card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B B card's adapter and use it for serial access. **Cable part numbers - 830-1220-xx**
2. ☐	**MPS A:** Log in as "admusr" user.	If not already logged in, then login as "admusr": [hostname] consolelogin: **admusr** password: **<admusr_password>**
3. ☐	**MPS A:** Start platcfg utility.	`$ sudo su - platcfg`
4. ☐	**MPS A:** Select "Server Configuration" Menu	Select **Server Configuration** and press [ENTER]. 
5. ☐	**MPS A:** Navigate to the Hostname screen.	Select **Hostname** and press**[ENTER]** 
6. ☐	**MPS A: Change** the host name.	Select **Edit** and press**[ENTER]**

Procedure 5: Pre-Install configuration on server A

		 Type in the host name. For example change hostname to **lsmspri** on **A** server.  Select **OK** and press **[ENTER]**. Note: While connected to the serial console, some console output might come when the user is using the serial console to configure the LSMS. Those serial output are harmless and can be ignored. Note: Only lsmspri is allowed as hostname for A server
7. ☐	**MPS A:** Verify that the Hostname is correct then select and press "Exit". **Otherwise repeat the step above.**	 
8. ☐	**MPS A:** Navigate to the Designation Information screen.	Select **Designation/Function** and press**[ENTER]**

Procedure 5: Pre-Install configuration on server A

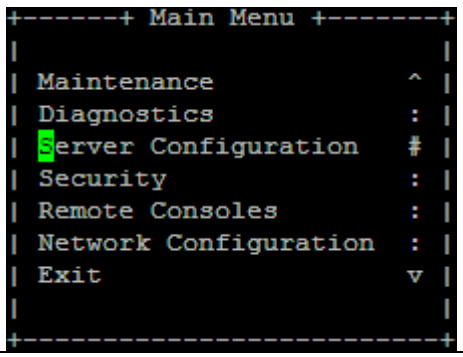
		
9. ☐	**MPS A:** 1) Select "Edit" from the options dialogue box. 2) Set the Designation as "1A" on Server A, Function as "LSMS" and press "OK". **NOTE:** Designation and Function should be entered in UPPERCASE.	
10. ☐	**MPS A:** Verify that the Designation and Function is correct then select and press "Exit". Otherwise repeat the step above.	 
11. ☐	**MPS A:** Exit from platcfg menu **NOTE:** **DO NOT**set the time zone in platcfg.	Select **EXIT** until the platcfg menu is closed and the command line is displayed.

Procedure 5: Pre-Install configuration on server A

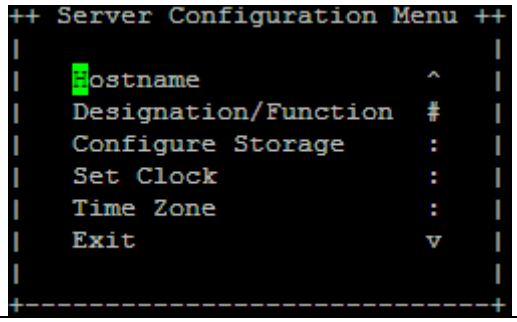
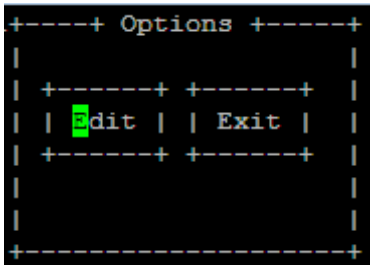
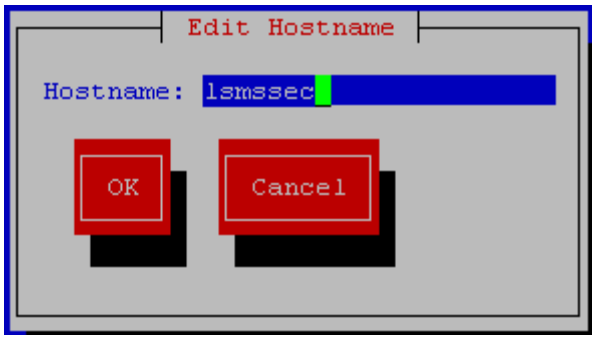
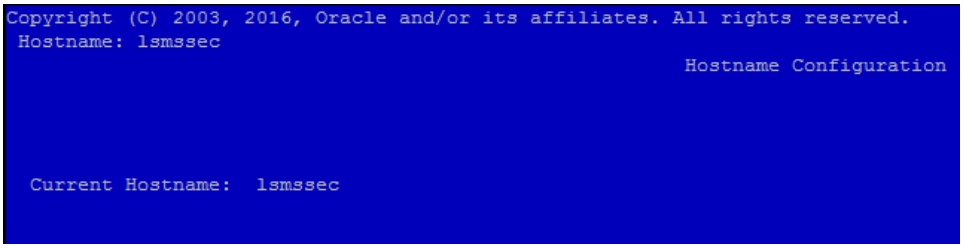
	The time zone will be set later in initial configurations.	
12. ☐	**Procedure complete.**	This procedure is complete.

Procedure 6 Pre-Install configuration on server B

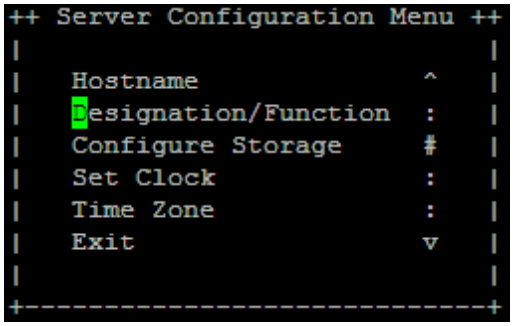
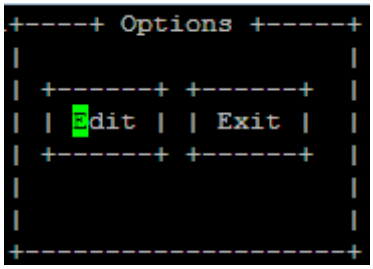
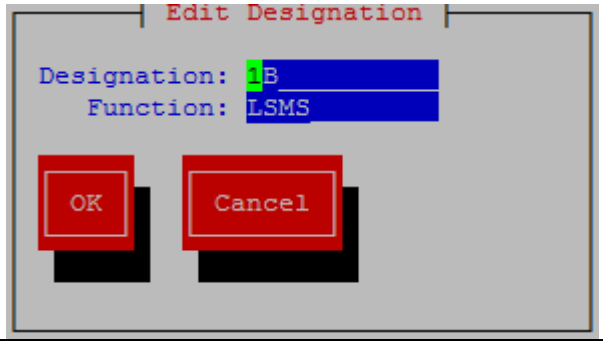
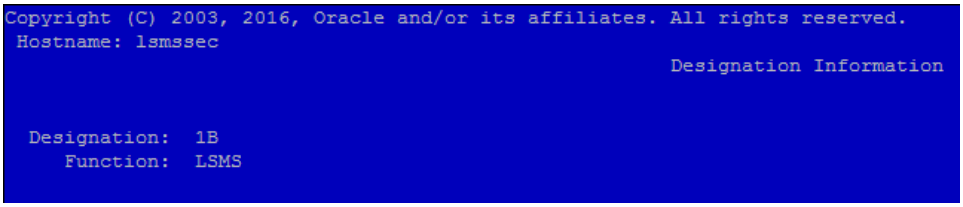
Procedure 6: Pre-Install configuration on server B

STEP #	This procedure provides instructions to perform pre configuration for an initial install of the application. Estimated time: 5 minutes	
IMPORTANT: Installation of the Operating System on anOracle Application Server should be completed before starting installation procedure. Refer to Procedure 29.or [2] for TPD installation guide.		
1. ☐	Connect to the Server.	If not already connected, connect to the E5-APP-B card via the serial port. For connecting the E5-APP-B card, disconnect the console cable from the serial port on the E5-APP-B A card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B A cards' adapter and use it for serial access. **Cable part numbers - 830-1220-xx**
2. ☐	**MPS B:** Log in as "admusr" user.	If not already logged in, then login as "admusr": [hostname] consolelogin: admusr password: <admusr_password>
3. ☐	**MPS B:** Start platcfg utility.	`$sudo su - platcfg`
4. ☐	**MPS B:** Navigate to the **Server Configuration** screen.	Select **Server Configuration** and press[ENTER] 
5. ☐	**MPS B:** Navigate to the Hostname screen.	Select **Hostname** and press**[ENTER]**

Procedure 6: Pre-Install configuration on server B

		
6. ☐	**MPS B:** Select **Edit** to edit the host name.	Select **Edit** and press**[ENTER]**  Type in the host name. For example change hostname to **lsmssec** on **B** server.  Select **OK** and press **[ENTER]**. Note: While connected to the serial console, some console output might come when the user is using the serial console to configure the LSMS. Those serial output are harmless and can be ignored. Note: Only lsmssec is allowed as hostname for B server
7. ☐	**MPS B:** Verify that the Hostname is correct then select and press “Exit”. **Otherwise repeat the step above.**	

Procedure 6: Pre-Install configuration on server B

8. ☐	**MPS B:** Navigate to the Designation Information screen.	Select **Designation/Function** and press**[ENTER]** 
9. ☐	**MPS B:** 1) Select "Edit" from the options dialogue box. 2) Set the Designation as "1B" on Server B, Function as "LSMS" and press "OK". **NOTE:** Designation and Function should be entered in UPPERCASE.	 
10. ☐	**MPS B:** Verify that the Designation and Function is correct then select and press "Exit". Otherwise repeat the step above.	

Procedure 6: Pre-Install configuration on server B

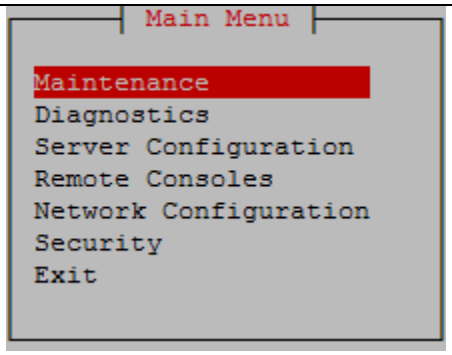
11. ☐	**MPS B:** Exit the platcfg menu **NOTE:** **DO NOT**set the time zone in platcfg. The time zone will be set later in initial configurations.	Select **EXIT** until the platcfg menu is closed and the command line is displayed.
12. ☐	**Procedure complete.**	This procedure is complete.

Procedure 7 Install Application on server A

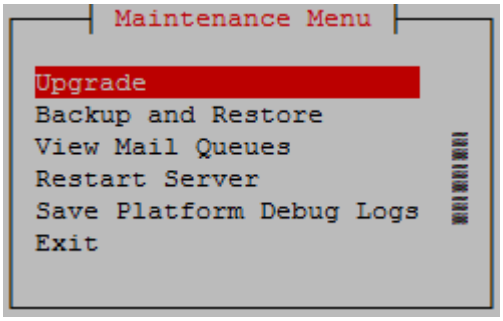
Procedure 7: Install Application on server A

STEP #	This procedure installs the application on the server. Estimated time: 30 minutes NOTE: Application can be installed simultaneously on both A and B servers
1. ☐	**MPS A:** Install LSMS on 1A.	Perform Procedure in **Procedure 24** or copy LSMS 13.3 ISO to /var/TKLC/upgrade directory.
2. ☐	Create a terminal window and log into MPS A.	If not already connected, connect to the E5-APP-B card via the serial Port. For connecting the E5-APP-B A card, disconnect the console cable from the serial port on the E5-APP-B B card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B B card's adapter and use it for serial access. **Cable part numbers - 830-1220-xx**
3. ☐	**MPS A**: Login prompt is displayed.	`<hostname> console login:` Note: Hit enter if no login prompt is displayed.
4. ☐	**MPS A:** log in as "admusr" user.	`[hostname] consolelogin: admusr` `password: password`
5. ☐	**MPS A:** Start platcfg utility.	`$ sudo su - platcfg`
6. ☐	**MPS A:** Early upgrade checks	The platcfg **Main Menu** appears. On the "**Main Menu"**, select **Maintenance** and press **[ENTER]**.

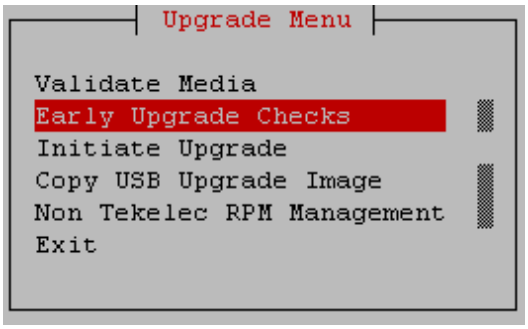
Procedure 7: Install Application on server A



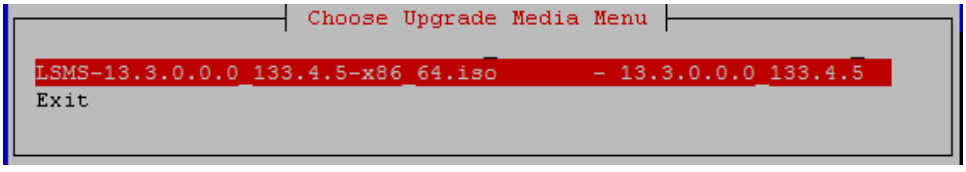
Select the "**Upgrade"** menu and press **[ENTER]**.



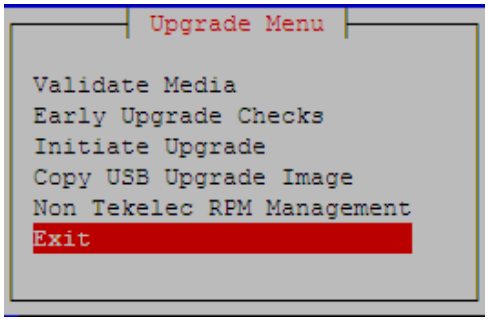
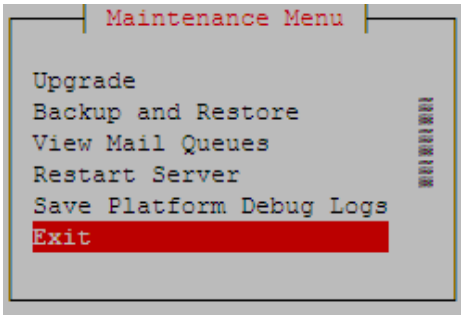
Select the "**Early Upgrade Checks**" menu to verify that the system is ready for upgrade.



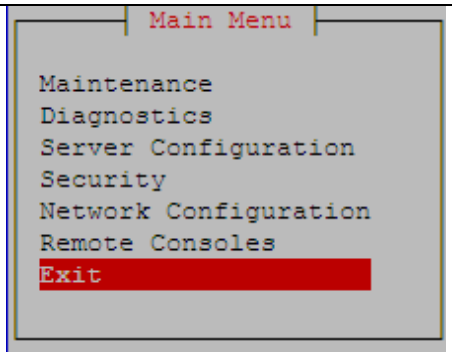
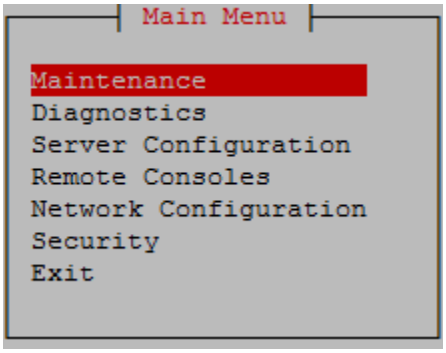
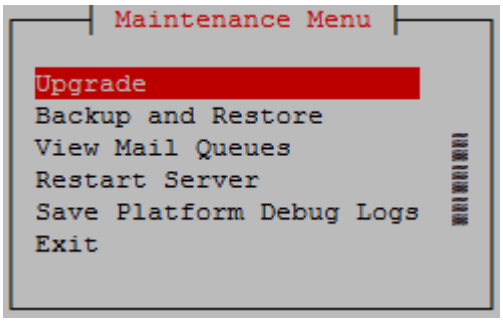
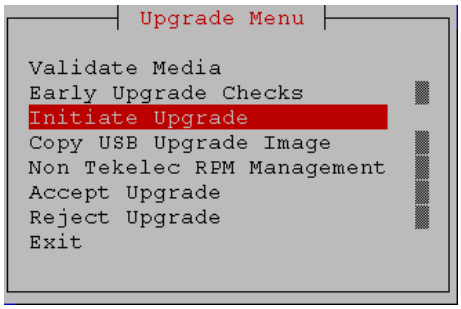
Select the desired upgrade media and press [ENTER].



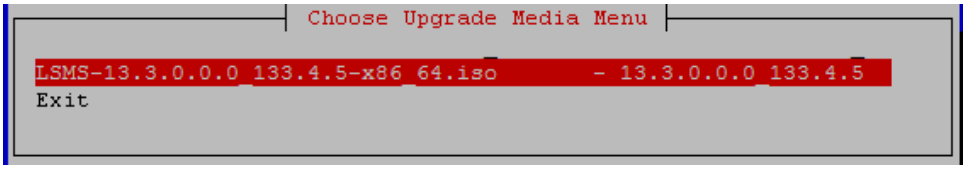
If the Early Upgrade Checks fail due to the ongoing syncing of raid mirrors, then please wait for the disk mirroring to be completed.

		Early Checks failed for the next upgrade Look at earlyChecks.log for more info tarting Early Upgrade Checks at 1011413059 Running earlyUpgradeChecks() for Upgrade::EarlyPolicy::TPDEarlyChecks upgrade policy... Verified server is not pending accept of previous upgrade ERROR: Raid mirrors are syncing! ERROR: md2 is syncing! ERROR: earlyUpgradeChecks() code failed for Upgrade::EarlyPolicy::TPDEarlyChecks ERROR: Failed running earlyUpgradeChecks() code Hardware architectures match Install products match. No Application installed yet.. Skip alarm check! ERROR: Early Upgrade Checks Failed! User has requested just to run early checks. No upgrade will be performed... Early Upgrade Checks finished at 1011413059 [admusr@epappri ~]$ cat /proc/mdstat Personalities : [raid1] md1 : active raid1 sdb2[1] sda2[0] 262080 blocks super 1.0 [2/2] [UU] md2 : active raid1 sda1[0] sdb1[1] 468447232 blocks super 1.1 [2/2] [UU] [=====>.....] resync = 29.7% (139377920/468447232) finish=73.0min speed=75060K/sec bitmap: 4/4 pages [16KB], 65536KB chunk unused devices: <none> Contact My Oracle Support following the instructions on the **7.2Appendix** D, if the early upgrade checks fail due to any other reason.
7. ☐	**MPS A:** Exit the platcfg menu	Select **Exit** and press **[ENTER]** to return to the **Maintenance Menu**.  Select **Exit** and press **[ENTER]** to return to the **Main Menu**.  Select **Exit** and press **[ENTER]**. The “platcfg” utility terminates.

Procedure 7: Install Application on server A

		
8. ☐	**MPS A:** Validate the upgrade media	Perform Procedure 25 to validate the media (typically ISO image).
9. ☐	**MPS A:** Select the Maintenance submenu Use the "Arrow" and the [**ENTER**] keys to navigate the Menu options as shown to choose the upgrade media.	The platcfg **Main Menu** appears. On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
10. ☐	**MPS A:** Navigate to the Upgrade menu.	Select the **Upgrade** menu and press **[ENTER]**. 
11. ☐	**MPS A:** Navigate to the Initiate Upgrade menu	Select the **Initiate Upgrade** menu and press **[ENTER]**. 

Procedure 7: Install Application on server A

12. ☐	**MPS A:** Select the Upgrade Media	The screen displays a message that it is searching for upgrade media. When the upgrade media is found, an Upgrade Media selection menu appears similar to the example below. Select the desired upgrade media and press **[ENTER]**. 
13. ☐	**MPS A:** Upgrade proceeds	The screen displays the following, indicating that the upgrade software is first running the upgrade checks and then proceeding with the upgrade. No Application installed yet.. Skip alarm check! Verified all raid mirrors are synced. Early Upgrade Checks Have Passed! Early Upgrade Checks finished at 1447429031 Initializing upgrade information... Many informational messages appear on the terminal screen as the upgrade proceeds. The messages are not shown here for clarity sake. When installation is complete, the server reboots.
14. ☐	**MPS A:** Upgrade completed	After the final reboot, the screen displays the login prompt as in the example below. 1503471288: Upstart Job alarmMgr: started #################### 1503471288: Upstart Job tpdProvd: started #################### 1503471289: Upstart Job syscheck: started #################### 1503471290: Upstart Job ntdMgr: started #################### Oracle Linux Server release 6.8 Kernel 2.6.32-642.15.1.el6prerel7.4.0.0.0_88.37.0.x86_64 on an x86_64 lsmspri login:
15. ☐	**MPS A:** log in as "root" user.	Login: **root** Password: **<root_password>**
16. ☐	**MPS A:** Check the upgrade logs and warnings.	**# grep "Upgrade returned success" /var/TKLC/log/upgrade/upgrade.log** The expected output is similar to the following: 1400786220:: Upgrade returned success!

		Note: Verify that the message "Upgrade returned success!" is displayed. If it is not, contact the Technical Assistance Center following the instructions on the front page. **# grep -i error /var/TKLC/log/upgrade/upgrade.log** Only below error is expected 1512594958::ERROR: Command returned non-zero exit code 768 (/sbin/service TKLCpldhcp start) **# grep -i error /var/TKLC/log/upgrade/ugwrap.log** There should be no error output. **# grep -i warning /var/TKLC/log/upgrade/upgrade.log** The following warning are expected: 1512594173::WARNING: /usr/TKLC/plat/etc/alarms/alarms.xml has been updated...reparsing xml... 1512594265::warning: erase unlink of /etc/ssm/hwmgmtd.conf failed: No such file or directory 1512594267::kexec-tools #warning: /etc/kdump.conf created as /etc/kdump.conf.rpmnew 1512594414::setup ##warning: /etc/shadow created as /etc/shadow.rpmnew 1512594430::ca-certificates ################warning: /etc/pki/tls/certs/ca-bundle.crt created as /etc/pki/tls/certs/ca-bundle.crt.rpmnew 1512594464::warning: user mysql does not exist - using root 1512594464::warning: group mysql does not exist - using root 1512594464::warning: user mysql does not exist - using root 1512594464::warning: group mysql does not exist - using root 1512594464::2017-12-06 16:07:44 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use --explicit_defaults_for_timestamp server option (see documentation for more details). 1512594465::2017-12-06 16:07:44 14331 [Warning] InnoDB: New log files created, LSN=45781 1512594465::2017-12-06 16:07:44 14331 [Warning] InnoDB: Creating foreign key constraint system tables. 1512594467::2017-12-06 16:07:46 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use --explicit_defaults_for_timestamp server option (see documentation for more details). 1512594468::WARNING: Default config file /etc/my.cnf exists on the system 1512594469::samhain warning: /etc/samhainrc created as /etc/samhainrc.rpmnew 1512594473::php-common #warning: /etc/php.ini created as /etc/php.ini.rpmnew 1512594551::initscripts ##warning: /etc/sysctl.conf created as /etc/sysctl.conf.rpmnew 1512594603::ntp warning: /etc/ntp.conf created as /etc/ntp.conf.rpmnew 1512594615::TKLCplat ################warning: /usr/TKLC/plat/etc/pid_conf created as /usr/TKLC/plat/etc/pid_conf.rpmnew 1512594615::#warning: /usr/TKLC/plat/etc/service_conf created as /usr/TKLC/plat/etc/service_conf.rpmnew 1512594630::TKLCalarms ###warning: /usr/TKLC/plat/etc/alarms/alarms.xml saved as /usr/TKLC/plat/etc/alarms/alarms.xml.rpmsave 1512594637::alarmMgr ###warning: /usr/TKLC/plat/etc/alarmMgr/alarmMgr.conf created as /usr/TKLC/plat/etc/alarmMgr/alarmMgr.conf.rpmnew

Procedure 7: Install Application on server A

		1512594770::WARNING: This capability is not defined in the default capabilities. 1512594770::WARNING: Nor is it defined in the current hardware ID's capabilities. 1512594770::WARNING: CAPABILITY: service__disabled 1512594770::WARNING: HARDWARE ID: E5APPB 1512594885::sudo warning: /etc/sudoers created as /etc/sudoers.rpmnew 1512594922::WARNING: TKLClsms-Config-1.4.9-13.2.1.0.0_132.22.0: Current hostname "lsmspri" being reset to default. 1512594923::WARNING: Hostname not changed because it is the same. 1512594966::WARNING: Could not write to config file /usr/my-new.cnf: Permission denied 1512594966::Installing MySQL system tables...2017-12-06 16:16:06 0 [Warning] 'THREAD_CONCURRENCY' is deprecated and will be removed in a future release. 1512594966::2017-12-06 16:16:06 31217 [Warning] The option innodb (skip-innodb) is deprecated and will be removed in a future release 1512594966::Filling help tables...2017-12-06 16:16:06 0 [Warning] 'THREAD_CONCURRENCY' is deprecated and will be removed in a future release. 1512594966::2017-12-06 16:16:06 31220 [Warning] The option innodb (skip-innodb) is deprecated and will be removed in a future release 1512594966::WARNING: Could not copy config file template /usr/share/mysql/my-default.cnf to 1512594966::WARNING: Default config file /etc/my.cnf exists on the system 1512594972::WARNING: A new file was added to xml alarm files...reparsing xml... 1512594972::WARNING: FILE: /usr/TKLC/plat/etc/alarms/lsmsAlarms.xml 1512594974::WARNING: Module variable EXPECTED_CPUS is deprecated! 1512594975::WARNING: CONFIG: /usr/TKLC/plat/lib/Syscheck/modules/system/cpu/config 1512594975::WARNING: Module variable EXPECTED_CPU_ALM is deprecated! 1512594975::WARNING: CONFIG: /usr/TKLC/plat/lib/Syscheck/modules/system/cpu/config
17. ☐	**MPSA:** Verify LSMS release.	**# rpm -qi TKLClsms** [root@lsmspri ~]# rpm -qi TKLClsms Name : TKLClsms Relocations: (not relocatable) Version : 13.48.0 Vendor: Tekelec Release : 13.3.0.0.0_133.4.0 Build Date: Mon 27 Nov 2017 11:47:25 AM EST Install Date: Thu 07 Dec 2017 06:17:31 AM EST Build Host: coach-10.tekelec.com Group : TKLC/Application Source RPM: TKLClsms-13.48.0-13.3.0.0.0_133.4.0.src.rpm Size : 216697178 License: © TEKELEC 2004-2017 Signature : (none) Packager : <Open Systems> URL : http://www.tekelec.com/ Summary : Oracle Communications LSMS Package Description : This is the Oracle Communications LSMS Package. The package installs LSMS software. Local Service Management System (LSMS) is a secure and reliable Local Number Portability (LNP) system.
18. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 8 Install Application on server B

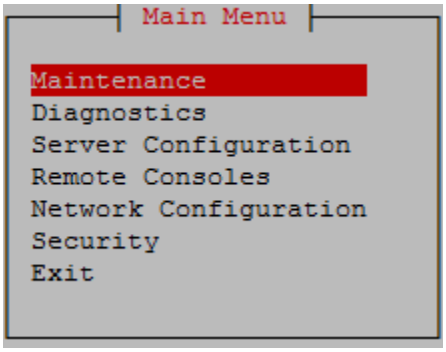
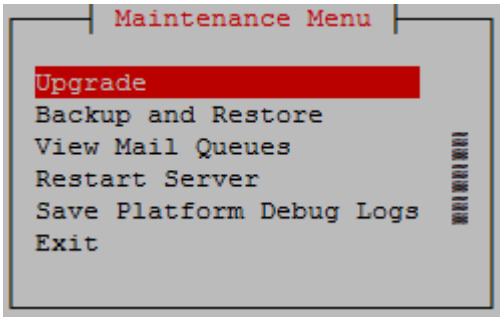
Procedure 8: Install Application on server B

S	This procedure installs the application on the server.

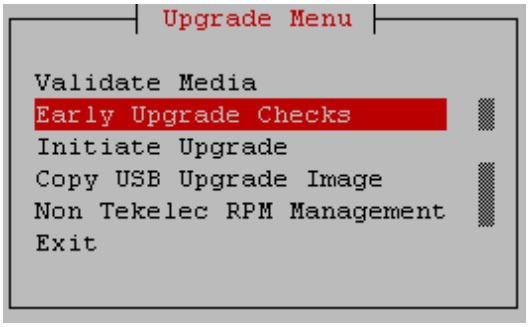
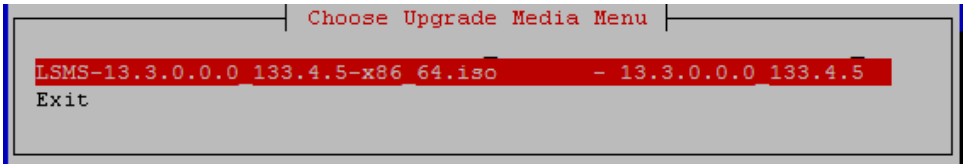
Procedure 8: Install Application on server B

TEP #	Estimated time: 30 minutes	
1. ☐	**MPS B:** Install LSMS on 1B.	Perform **Procedure 24** or copy LSMS 13.3 ISO to /var/TKLC/upgrade directory.
2. ☐	Create a terminal window and log into MPS A.	If not already connected, connect to the E5-APP-B card via the serial Port. For connecting the E5-APP-B A card, disconnect the console cable from the serial port on the E5-APP-B B card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B B card's adapter and use it for serial access. **Cable part numbers - 830-1220-xx**

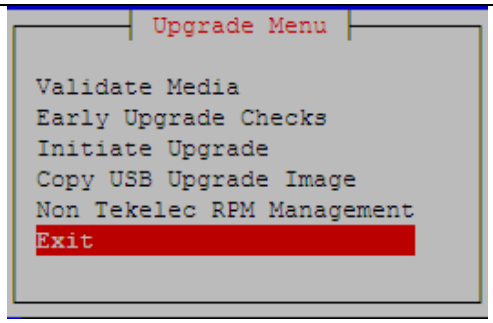
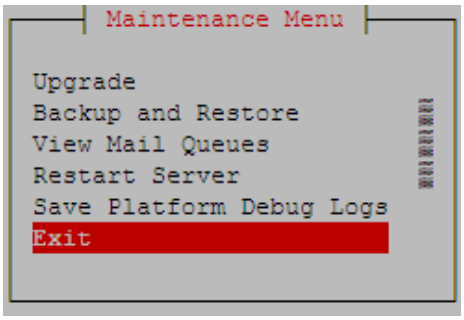
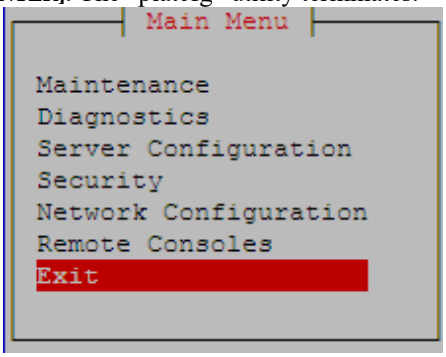
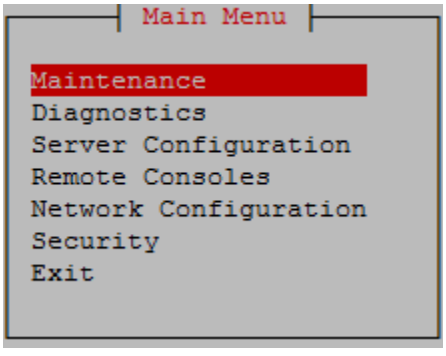
3. ☐	**MPS B:** Login prompt is displayed.	`<hostname> console login:`
		
		`Note: Hit enter if no login prompt is displayed.`

4. ☐	**MPS B:** log in as "admusr" user.	`[hostname] consolelogin: admusr` `password: <admusr_password>`
5. ☐	**MPS B:** Start platcfg utility by logging in as platcfg user.	**`$ sudo su - platcfg`**
6. ☐	**MPS B:** Navigate to the Maintenance Menu	The platcfg **Main Menu** appears. On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
7. ☐	**MPS B:** Navigate to the Upgrade menu.	Select the **Upgrade** menu and press **[ENTER]**. 
8. ☐	**MPS B**: Select Early Upgrade Checks	Select the "Early Upgrade Checks" menu to verify that the system is ready for upgrade.

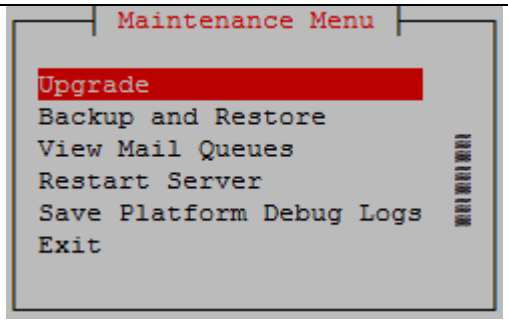
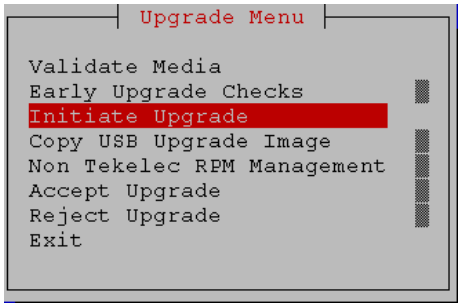
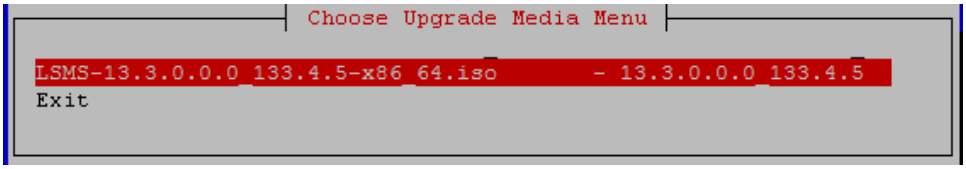
Procedure 8: Install Application on server B

		 Select the desired upgrade media and press [ENTER].  If the Early Upgrade Checks fail due to the ongoing syncing of raid mirrors, then please wait for the disk mirroring to be completed. Early Checks failed for the next upgrade Look at earlyChecks.log for more info tarting Early Upgrade Checks at 1011413059 Running earlyUpgradeChecks() for Upgrade::EarlyPolicy::TPDEarlyChecks upgrade policy... Verified server is not pending accept of previous upgrade ERROR: Raid mirrors are syncing! ERROR: md2 is syncing! ERROR: earlyUpgradeChecks() code failed for Upgrade::EarlyPolicy::TPDEarlyChecks ERROR: Failed running earlyUpgradeChecks() code Hardware architectures match Install products match. No Application installed yet.. Skip alarm check! ERROR: Early Upgrade Checks Failed! User has requested just to run early checks. No upgrade will be performed... Early Upgrade Checks finished at 1011413059 [admusr@epappri ~]$ cat /proc/mdstat Personalities : [raid1] md1 : active raid1 sdb2[1] sda2[0] 262080 blocks super 1.0 [2/2] [UU] md2 : active raid1 sda1[0] sdb1[1] 468447232 blocks super 1.1 [2/2] [UU] [=====>.....] resync = 29.7% (139377920/468447232) finish=73.0min speed=75060K/sec bitmap: 4/4 pages [16KB], 65536KB chunk unused devices: <none> Contact My Oracle Support following the instructions on the **7.2Appendix** D, if the early upgrade checks fail due to any other reason.
9. ☐	**MPS B:** Exit the platcfg menu	Select **Exit** and press **[ENTER]** to return to the **Maintenance Menu**.

Procedure 8: Install Application on server B

		 Select **Exit** and press **[ENTER]** to return to the **Main Menu**.  Select **Exit** and press **[ENTER]**. The "platcfg" utility terminates. 
10. ☐	**MPS B:** Validate the upgrade media	Perform Procedure 25 to validate the media (typically ISO image).
11. ☐	**MPS B:** Select the Maintenance submenu	The platcfg **Main Menu** appears. On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
12. ☐	**MPS B:** Navigate to the Upgrade menu.	Select the **Upgrade** menu and press **[ENTER]**.

Procedure 8: Install Application on server B

		
13. ☐	**MPS B:** Navigate to the Initiate Upgrade menu	Select the **Initiate Upgrade** menu and press **[ENTER]**. 
14. ☐	**MPS B:** Select the Upgrade Media	The screen displays a message that it is searching for upgrade media. When the upgrade media is found, an Upgrade Media selection menu appears similar to the example below. Select the desired upgrade media and press **[ENTER]**. 
15. ☐	**MPS B:** Upgrade proceeds	The screen displays the following, indicating that the upgrade software is first validating the media, and then proceeding with the upgrade. No Application installed yet.. Skip alarm check! Verified all raid mirrors are synced. Early Upgrade Checks Have Passed! Early Upgrade Checks finished at 1447429031 Initializing upgrade information... Many informational messages appear on the terminal screen as the upgrade proceeds. The messages are not shown here for clarity sake. When installation is complete, the server reboots.
16. ☐	**MPS B:** Upgrade completed	After the final reboot, the screen displays the login prompt as in the example below. 1503471288: Upstart Job alarmMgr: started ###################### 1503471288: Upstart Job tpdProvd: started ######################

Procedure 8: Install Application on server B

		1503471289: Upstart Job syscheck: started #################### 1503471290: Upstart Job ntdMgr: started #################### Oracle Linux Server release 6.8 Kernel 2.6.32-642.15.1.el6prerel7.4.0.0.0_88.37.0.x86_64 on an x86_64 lsmssec login:
17. ☐	**MPS B:** log in as "root" user.	Login: **root** Password: **<root_password>**
18. ☐	**MPS B:** Check the upgrade logs and warnings.	**# grep "Upgrade returned success" /var/TKLC/log/upgrade/upgrade.log** The expected output is similar to the following: 1400786220:: Upgrade returned success! Note: Verify that the message "Upgrade returned success!" is displayed. If it is not, contact the Technical Assistance Center following the instructions on the front page. **# grep -i error /var/TKLC/log/upgrade/upgrade.log** Only below error should be observed: 1503473419::ERROR: Command returned non-zero exit code 768 (/sbin/service TKLCpldhcp start) **# grep -i error /var/TKLC/log/upgrade/ugwrap.log** There should be no error output. **# grep -i warning /var/TKLC/log/upgrade/upgrade.log** The following warnings are expected: 1512594173::WARNING: /usr/TKLC/plat/etc/alarms/alarms.xml has been updated...reparsing xml... 1512594265::warning: erase unlink of /etc/ssm/hwmgmtd.conf failed: No such file or directory 1512594267::kexec-tools #warning: /etc/kdump.conf created as /etc/kdump.conf.rpmnew 1512594414::setup ##warning: /etc/shadow created as /etc/shadow.rpmnew 1512594430::ca-certificates ################warning: /etc/pki/tls/certs/ca-bundle.crt created as /etc/pki/tls/certs/ca-bundle.crt.rpmnew 1512594464::warning: user mysql does not exist - using root 1512594464::warning: group mysql does not exist - using root 1512594464::warning: user mysql does not exist - using root 1512594464::warning: group mysql does not exist - using root 1512594464::2017-12-06 16:07:44 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use --explicit_defaults_for_timestamp server option (see documentation for more details). 1512594465::2017-12-06 16:07:44 14331 [Warning] InnoDB: New log files created, LSN=45781

		1512594465::2017-12-06 16:07:44 14331 [Warning] InnoDB: Creating foreign key constraint system tables. 1512594467::2017-12-06 16:07:46 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use --explicit_defaults_for_timestamp server option (see documentation for more details). 1512594468::WARNING: Default config file /etc/my.cnf exists on the system 1512594469::samhain warning: /etc/samhainrc created as /etc/samhainrc.rpmnew 1512594473::php-common #warning: /etc/php.ini created as /etc/php.ini.rpmnew 1512594551::initscripts ##warning: /etc/sysctl.conf created as /etc/sysctl.conf.rpmnew 1512594603::ntp warning: /etc/ntp.conf created as /etc/ntp.conf.rpmnew 1512594615::TKLCplat ################warning: /usr/TKLC/plat/etc/pid_conf created as /usr/TKLC/plat/etc/pid_conf.rpmnew 1512594615::#warning: /usr/TKLC/plat/etc/service_conf created as /usr/TKLC/plat/etc/service_conf.rpmnew 1512594630::TKLCalarms ###warning: /usr/TKLC/plat/etc/alarms/alarms.xml saved as /usr/TKLC/plat/etc/alarms/alarms.xml.rpmsave 1512594637::alarmMgr ###warning: /usr/TKLC/plat/etc/alarmMgr/alarmMgr.conf created as /usr/TKLC/plat/etc/alarmMgr/alarmMgr.conf.rpmnew 1512594770::WARNING: This capability is not defined in the default capabilities. 1512594770::WARNING: Nor is it defined in the current hardware ID's capabilities. 1512594770::WARNING: CAPABILITY: service__disabled 1512594770::WARNING: HARDWARE ID: E5APPB 1512594885::sudo warning: /etc/sudoers created as /etc/sudoers.rpmnew 1512594922::WARNING: TKLClsms-Config-1.4.9-13.2.1.0.0_132.22.0: Current hostname "lsmspri" being reset to default. 1512594923::WARNING: Hostname not changed because it is the same. 1512594966::WARNING: Could not write to config file /usr/my-new.cnf: Permission denied 1512594966::Installing MySQL system tables...2017-12-06 16:16:06 0 [Warning] 'THREAD_CONCURRENCY' is deprecated and will be removed in a future release. 1512594966::2017-12-06 16:16:06 31217 [Warning] The option innodb (skip-innodb) is deprecated and will be removed in a future release 1512594966::Filling help tables...2017-12-06 16:16:06 0 [Warning] 'THREAD_CONCURRENCY' is deprecated and will be removed in a future release. 1512594966::2017-12-06 16:16:06 31220 [Warning] The option innodb (skip-innodb) is deprecated and will be removed in a future release 1512594966::WARNING: Could not copy config file template /usr/share/mysql/my-default.cnf to 1512594966::WARNING: Default config file /etc/my.cnf exists on the system 1512594972::WARNING: A new file was added to xml alarm files...reparsing xml... 1512594972::WARNING: FILE: /usr/TKLC/plat/etc/alarms/lsmsAlarms.xml 1512594974::WARNING: Module variable EXPECTED_CPUS is deprecated! 1512594975::WARNING: CONFIG: /usr/TKLC/plat/lib/Syscheck/modules/system/cpu/config

Procedure 8: Install Application on server B

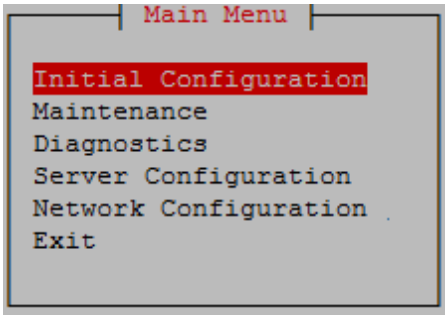
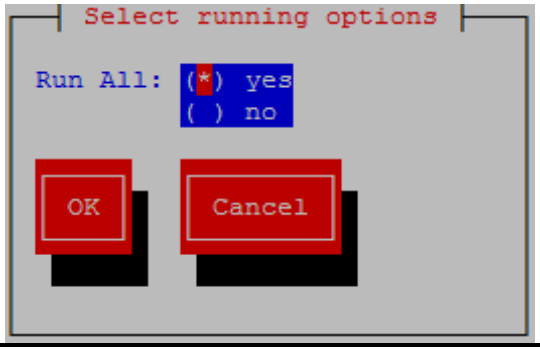
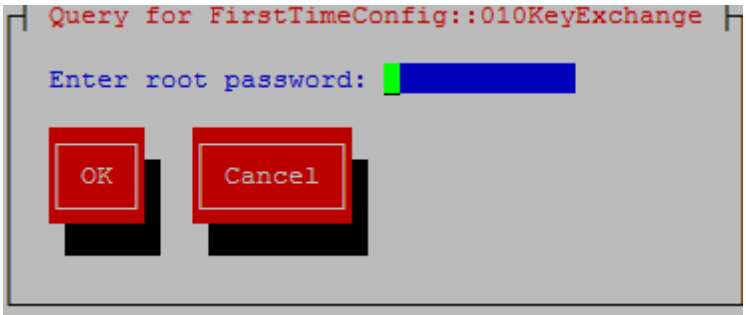
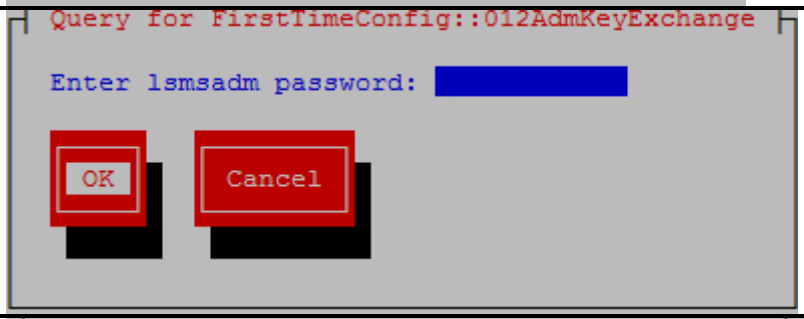
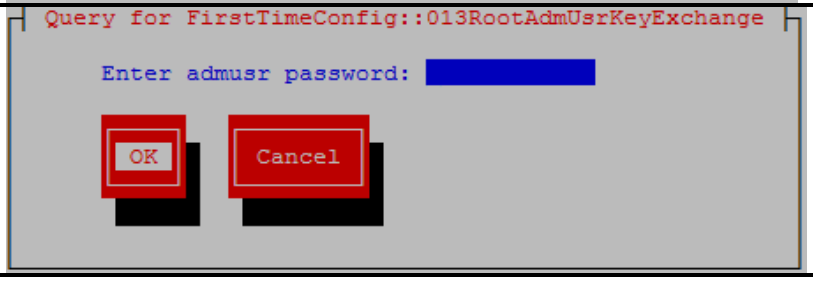
		1512594975::WARNING: Module variable EXPECTED_CPU_ALM is deprecated! 1512594975::WARNING: CONFIG: /usr/TKLC/plat/lib/Syscheck/modules/system/cpu/config
19. ☐	**MPSB:** Verify LSMS release.	**# rpm -qi TKLClsms** [root@lsmspri ~]# rpm -qi TKLClsms Name : TKLClsms Relocations: (not relocatable) Version : 13.48.0 Vendor: Tekelec Release : 13.3.0.0.0_133.4.0 Build Date: Mon 27 Nov 2017 11:47:25 AM EST Install Date: Thu 07 Dec 2017 06:17:31 AM EST Build Host: coach-10.tekelec.com Group : TKLC/Application Source RPM: TKLClsms-13.48.0-13.3.0.0.0_133.4.0.src.rpm Size : 216697178 License: © TEKELEC 2004-2017 Signature : (none) Packager : <Open Systems> URL : http://www.tekelec.com/ Summary : Oracle Communications LSMS Package Description : This is the Oracle Communications LSMS Package. The package installs LSMS software. Local Service Management System (LSMS) is a secure and reliable Local Number Portability (LNP) system.
20. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 9 Post-Initial Application Processing

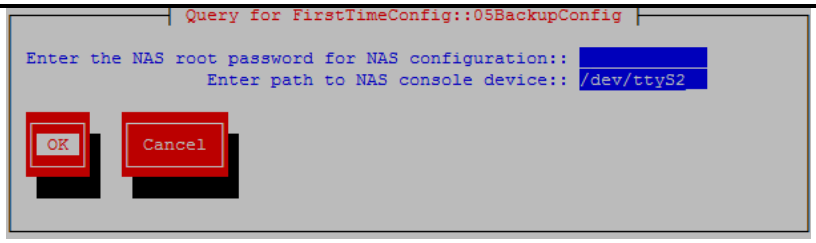
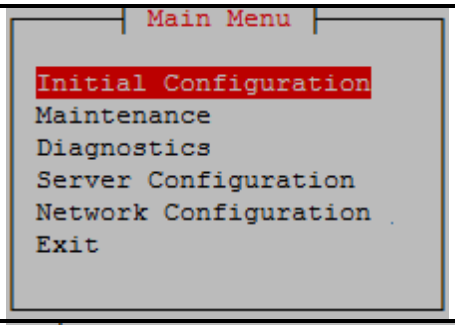
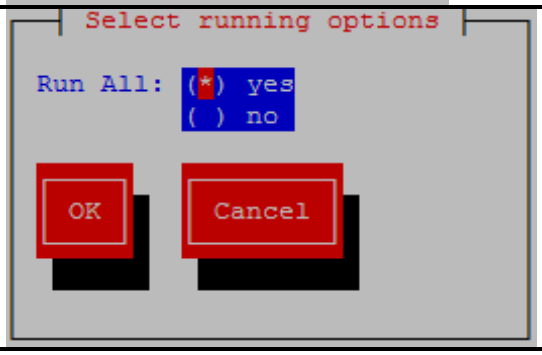
Procedure 9: Post-Initial Application Processing

STEP #	This procedure performs the post-install activity required by the LSMS application. Estimated time: 10 minutes **NOTE:** This procedure should not be completed if this is an upgrade. This procedure is only for initial installations of the application.
1. ☐	**MPS A:** Log in to the server as the user "root".	Login: **root** Password: **<root_password>**
2. ☐	**MPS A:** Start lsmsmgr utility by logging in as lsmsmgr user	**#su – lsmsmgr**
3. ☐	**MPS A:** Check serial connection with NAS is working fine	**#minicom nas** Press CTRL-A Z for help on special keys Oracle Linux Server release 6.7 Kernel 2.6.32-573.26.1.el6prerel7.0.3.0.0_86.46.0.x86_64 on an x86_64 The IPM FAILED on this server. Run verifyIPM for details. hostname702eb88fb7e4 login: Check serial connection if this screen is not displayed
4. ☐	**MPS A:** Select **"Initial Configuration"**	

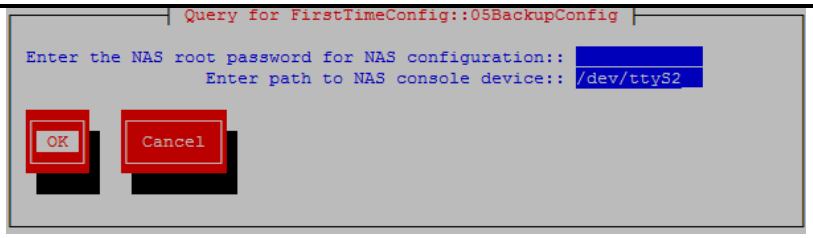
Procedure 9: Post-Initial Application Processing

		
5. ☐	**MPS A:** Select **"yes"** Select **OK** and press **[ENTER]**	
6. ☐	**MPS A:** Enter password for "root" Select **OK** and press **[ENTER]**	
7. ☐	**MPS A:** Enter password for "lsmsadm" Select **OK** and press **[ENTER]**	
8. ☐	**MPS A:** Enter password for "lsmsadm" Select **OK** and press **[ENTER]**	

Procedure 9: Post-Initial Application Processing

9. ☐	**MPS A:** Enter the NAS password used to login into NAS console. Accept the default serial port (ttyS2) when prompted for the path to the NAS console device. Select **OK** and press **[ENTER]**	
10. ☐	**MPS A:** Successful Key Exchange	A message is displayed indicating the root Key Exchange was successful. A message is displayed indicating the lsmsadm Key Exchange was successful. A message is displayed indicating the admusr Key Exchange was successful. A message is displayed indicating the Time Synchronization was successful. A message is displayed indicating the Database creation was successful. A message is displayed indicating the NAS Backup Configuration was successful. A message is displayed indicating the inhibiting of node was successful. Select **Exit** and press**[ENTER]**repeatedly to exit lsmsmgr
11. ☐	**MPS A:** Switch to mate	`# ssh mate`
12. ☐	**MPS B:** Start lsmsmgr	`# su - lsmsmgr`
13. ☐	**MPS B:** Select **"Initial Configuration"**	
14. ☐	**MPS B:** Select **"yes"** Select **OK** and press **[ENTER]**	

Procedure 9: Post-Initial Application Processing

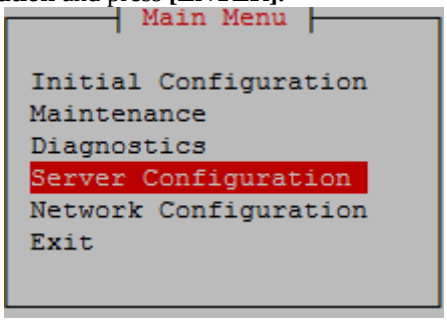
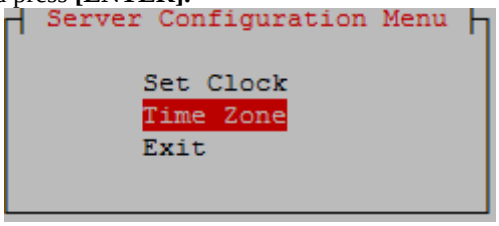
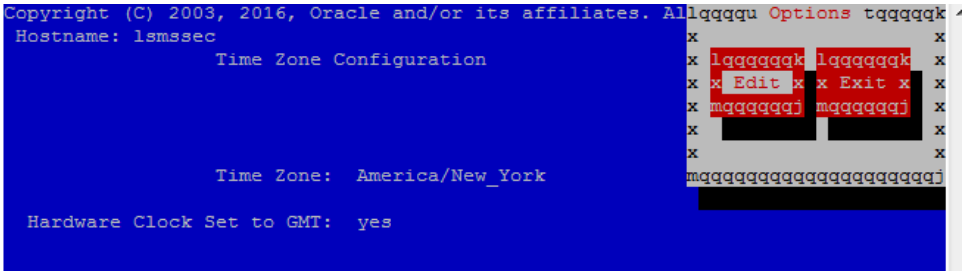
15. ☐	**MPS B:** Enter the NAS password used to login into NAS console. Select **OK** and press **[ENTER]**	
16.	**MPS B:** Database Creation and NAS Backup Configuration	A message is displayed indicating the Database creation was successful. A message is displayed indicating the NAS Backup Configuration was successful. Select **Exit** and press**[ENTER]**repeatedly to exit lsmsmgr
17. ☐	**MPS B:** Log into the LSMS B server via minicom.	`# minicom mate`
18. ☐	**MPS A:** Perform init 6 to reboot the LSMS B card.	`# init 6` Watch for errors during boot process. When the login prompt is displayed, exit from minicom.
19. ☐	**MPS A:** Log into the LSMSA server via minicom.	`# minicom mate`
20. ☐	**MPS B:** Perform init 6 to reboot the LSMS A card.	`# init 6` Watch for errors during boot process. When the login prompt is displayed, exit from minicom.
21. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 10 Configure Time zone and clock

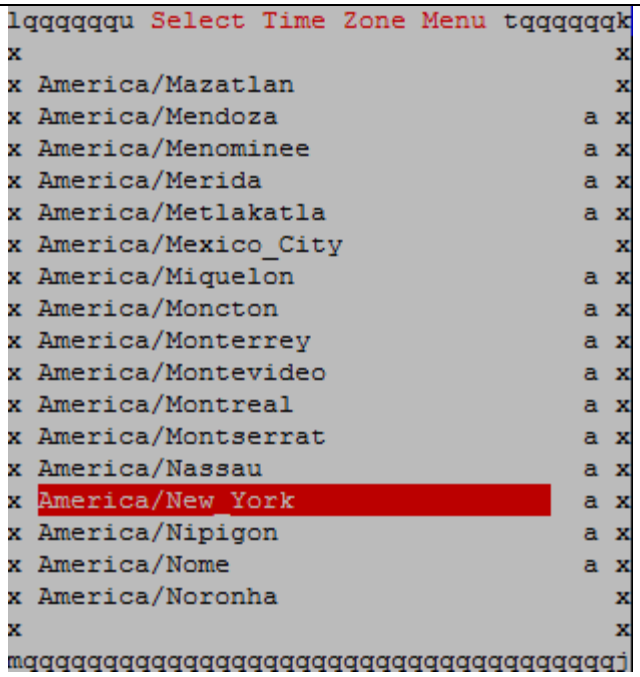
Procedure 10: Configure Time Zone and Clock

S T E P #	This procedure configures the time zone and clock. Estimated time: 5 minutes	
1. ☐	**MPS X:** Log in to the server as the user “root”.	`Login: root` `Password: <root_password>`

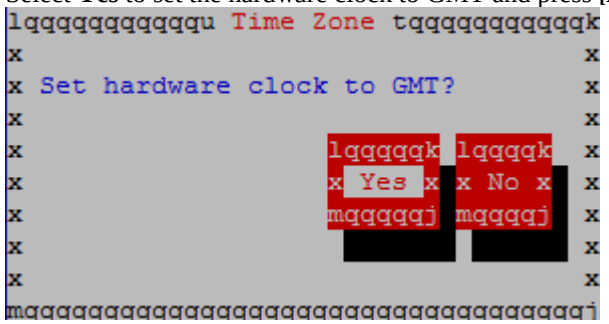
Procedure 10: Configure Time Zone and Clock

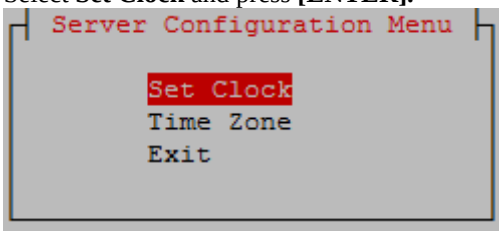
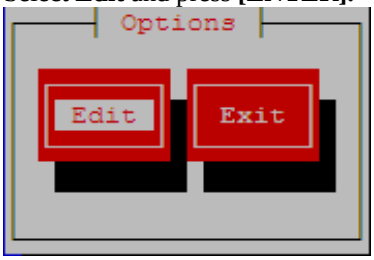
2. ☐	**MPSX:** Start lsmsmgr utility by logging in as lsmsmgr user.	`# su - lsmsmgr`
3. ☐	**MPSX::** Verify time zone.	Select **Server Configuration** and press **[ENTER].**  Select **Time Zone** and press **[ENTER].**  The screen shows the current time zone setting.  If this is not correct, select Edit and press [ENTER]. If the time zone is correct, select **Exit**, press **[ENTER]** and skip the next step
4. ☐	**MPSX:** Change time zone.	Select appropriate time zone and press **[ENTER].**

Procedure 10: Configure Time Zone and Clock

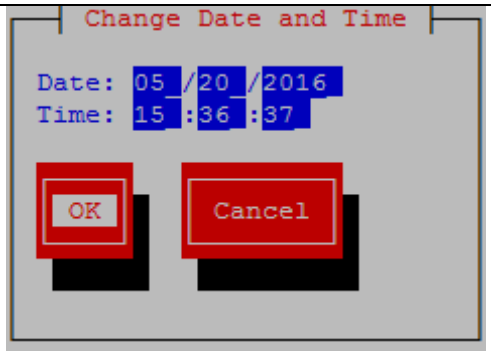
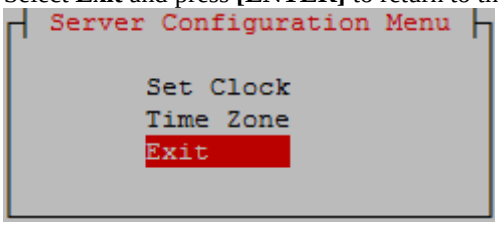
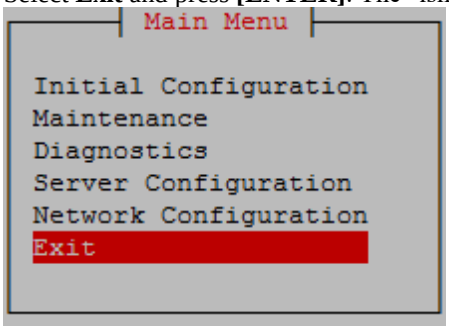


Select **Yes** to set the hardware clock to GMT and press **[ENTER].**



5. ☐	**MPS X:** Set clock.	Select **Set Clock** and press **[ENTER].**  Select **Edit** and press **[ENTER].**  Enter correct time.

Procedure 10: Configure Time Zone and Clock

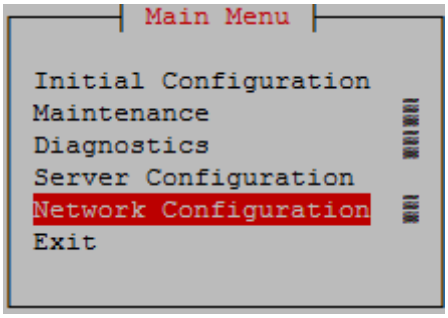
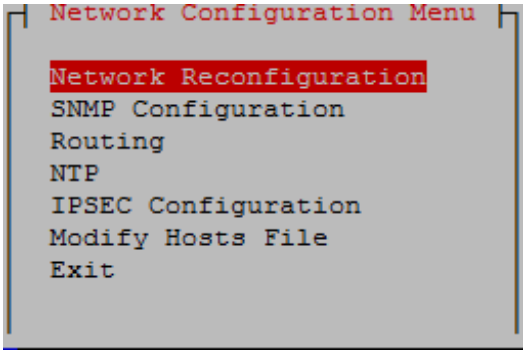
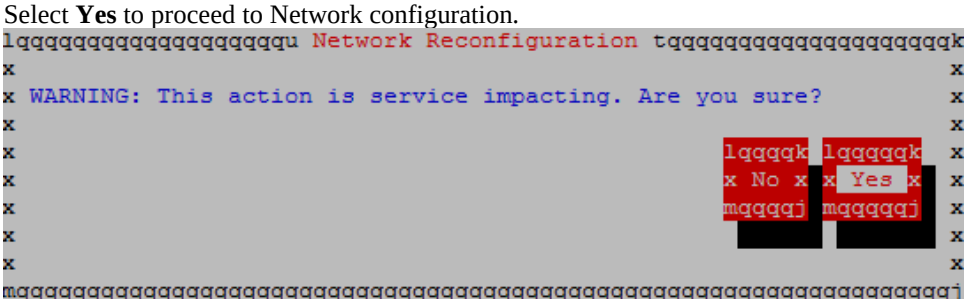
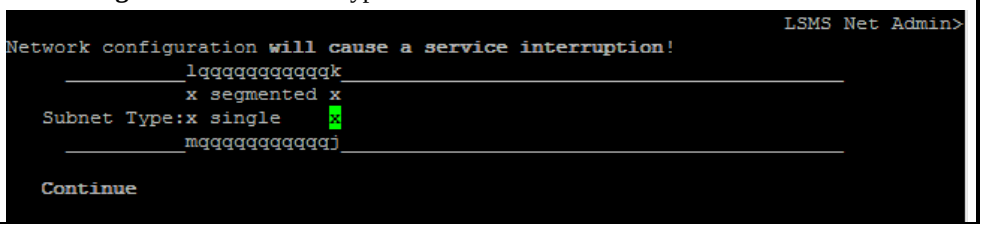
		 Use right arrow to get to **OK** and press **[ENTER].**
6. ☐	**MPS X:** Exit the lsmsmgr menu	Select **Exit** and press **[ENTER]** to return to the **Main Menu**.  Select **Exit** and press **[ENTER]**. The "lsmsmgr" utility terminates. 
7. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 11 Single Subnet Network Configuration

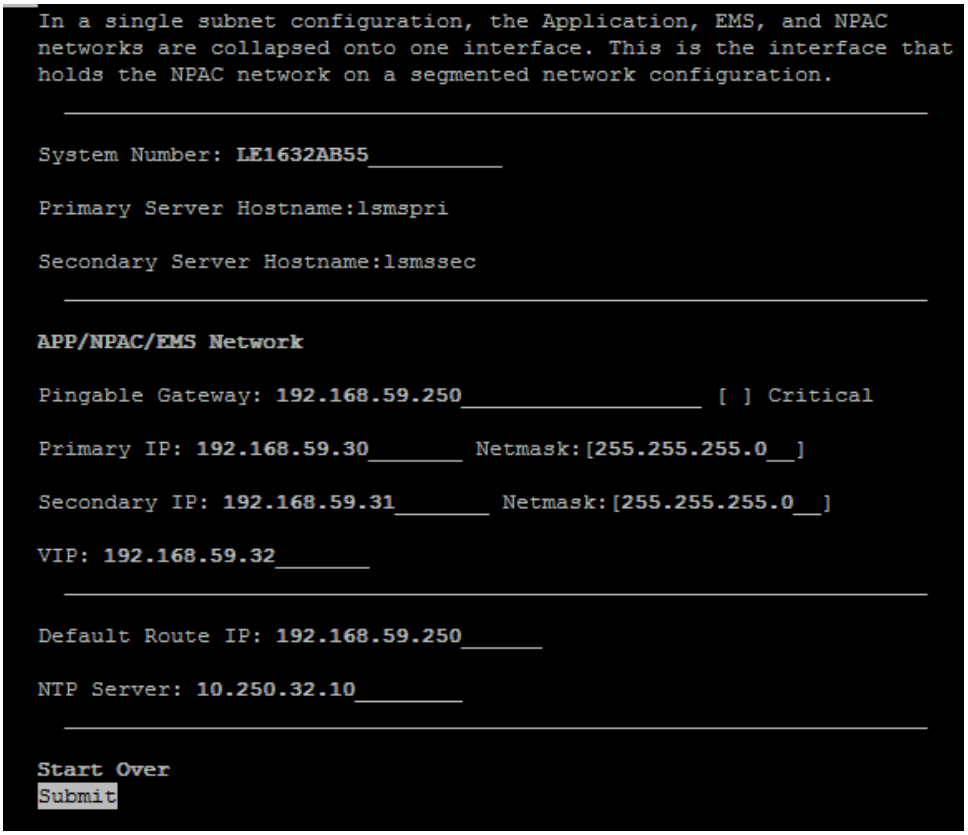
Procedure 11: Single Subnet Network Configuration

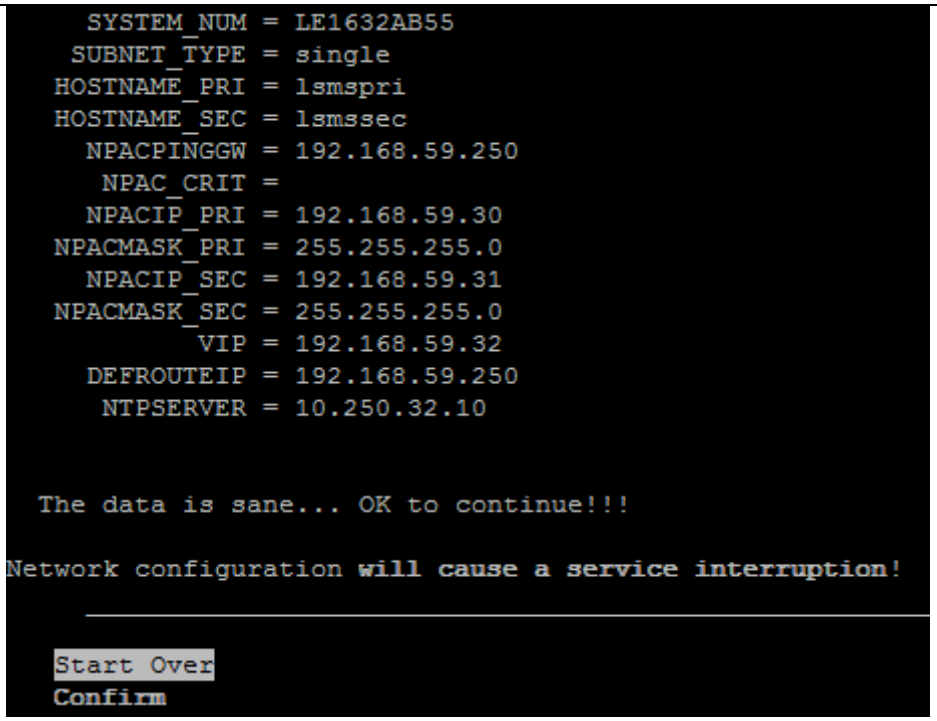
S T E P #	This procedure configures the system as single subnet at the customer site. Estimated time: 10 minutes	
1. ☐	**MPSA:** Log in to the server as the user "root".	Login: root Password: <root_password>

Procedure 11: Single Subnet Network Configuration

2. ☐	**MPS A:** Start lsmsmgr utility as lsmsmgr user.	`# su - lsmsmgr`
3. ☐	**MPS A:** Change the network configuration	Select **Network Configuration** and press **[ENTER].**  Select **Network Reconfiguration** and press **[ENTER].**  Select **Yes** to proceed to Network configuration.  A lynx driven screen will appear with the following prompt; Do you want to execute "/usr/TKLC/lsms/tools/lsmsnetAdm-bin/lsmsnetadm.cgi"? Type “Y/y” to continue and the next screen will appear and press the right arrow key to follow the link Select **Single** from the Subnet Type menu and then select **Continue**.  Network configuration **will cause a service interruption!** x segmented x Subnet Type:x single x Continue

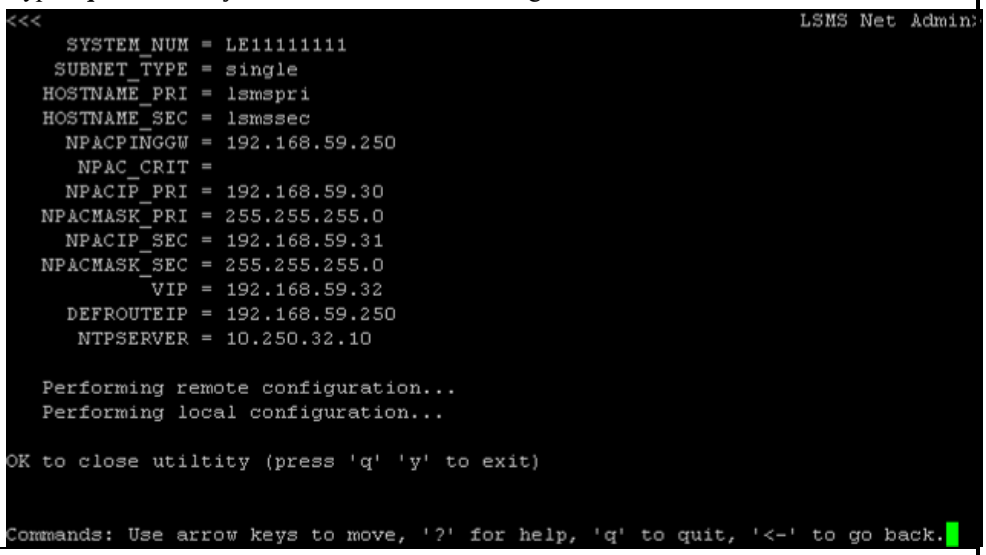
Procedure 11: Single Subnet Network Configuration

4. ☐	**MPS A:** Enter network values.	Using the up and down arrows, scroll through the text fields, entering the desired values (to enter the netmask, highlight the field and then use the enter key or right arrow key to display the dropdown menu, choose the desired value from the list) for each fields:  Once the values are entered press the down arrow to select the "Submit" button and press the right arrow to follow the link. **Note:** 1. IP of NTP server should be valid as it is required for the working of comcol HA. 2. The System Number shall be as follows: • LEYYWWMMXX • Where: ○ LE is the new System Number Prefix for LSMS. ○ YY = YEAR – year of the system shipment ○ WW= WEEK – calendar week of the YY year when the system is shipped ○ MM = MANUFACTURER (if other than TKLC) – Here 00 as Manufacturer is Oracle ○ XX = number in line of systems shipped that week
5. ☐	**MPS A:** Apply network settings	If the values pass a sanity test for validity, then the "Confirm" button will be visible. Use the down arrow to select "Confirm" and press the right arrow to apply the changes. If the sanity tests failed, the reasons will be stated. Use the left arrow key to go back to the edit screen.



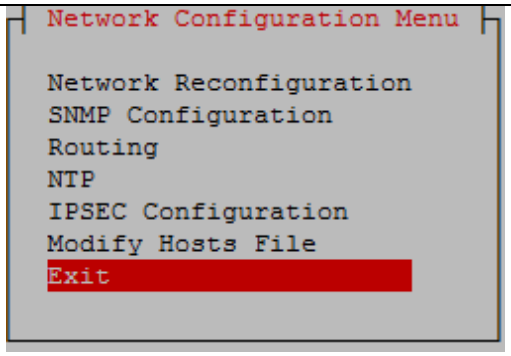
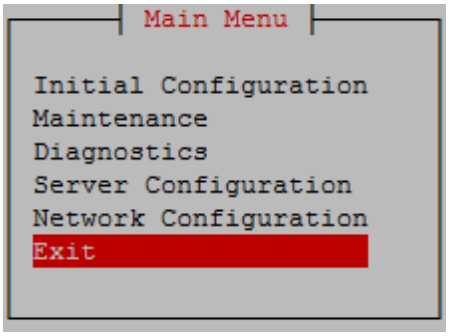
The execution could take a few minutes, be patient. The screen will eventually report the status of the completion. If an error occurs, contact My Oracle Support following the instructions on the7.2Appendix D.

Type "**q**" and then "**y**" to exit the Network Configuration.



6. ☐	**MPS A:** Exit the lsmsmgr menu	Select **Exit** and press **[ENTER]** to return to the **Main Menu**.

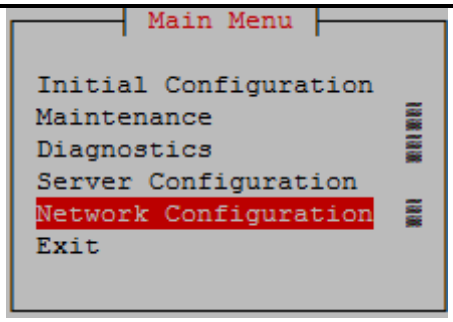
Procedure 11: Single Subnet Network Configuration

		 Select **Exit** and press **[ENTER]**. The "platcfg" utility terminates. 
7. ☐	**Procedure complete.**	Procedure is complete.

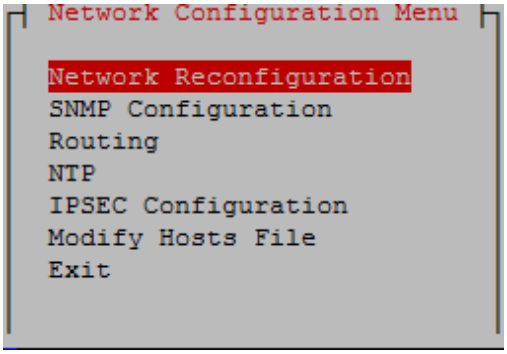
Procedure 12 Segmented Subnet Configuration

Procedure 12: Segmented Subnet Network Configuration

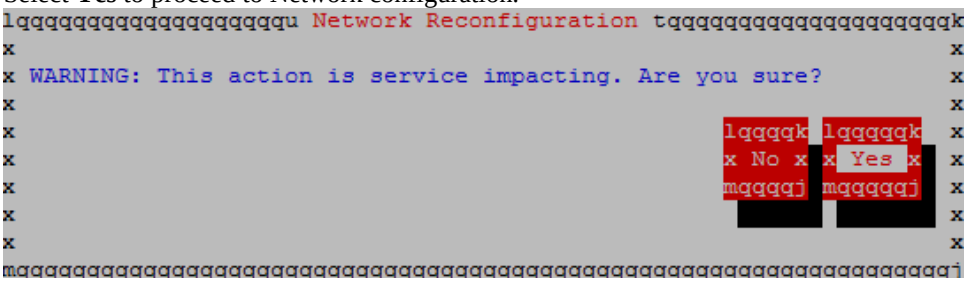
STEP #	This procedure configures the system as segmented subnet at the customer site. Estimated time: 10 minutes	
1. ☐	**MPS A:** Log in to the server as the user "root".	`Login: root` `Password: <root_password>`
2. ☐	**MPS A:** Start lsmsmgr utility by login as lsmsmgr user	`# su - lsmsmgr`
3. ☐	**MPS A:** Change the network configuration	Select **Network Configuration** and press **[ENTER].**



Select **Network Reconfiguration** and press **[ENTER].**



Select **Yes** to proceed to Network configuration.

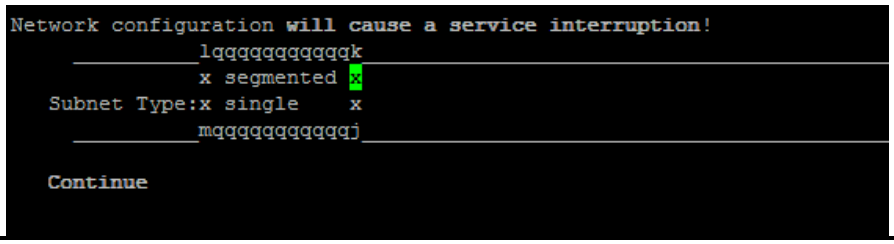


A lynx driven screen will appear with the following prompt;

Do you want to execute "//usr/TKLC/lsms/tools/lsmsnetAdm-bin/lsmsnetadm.cgi"?

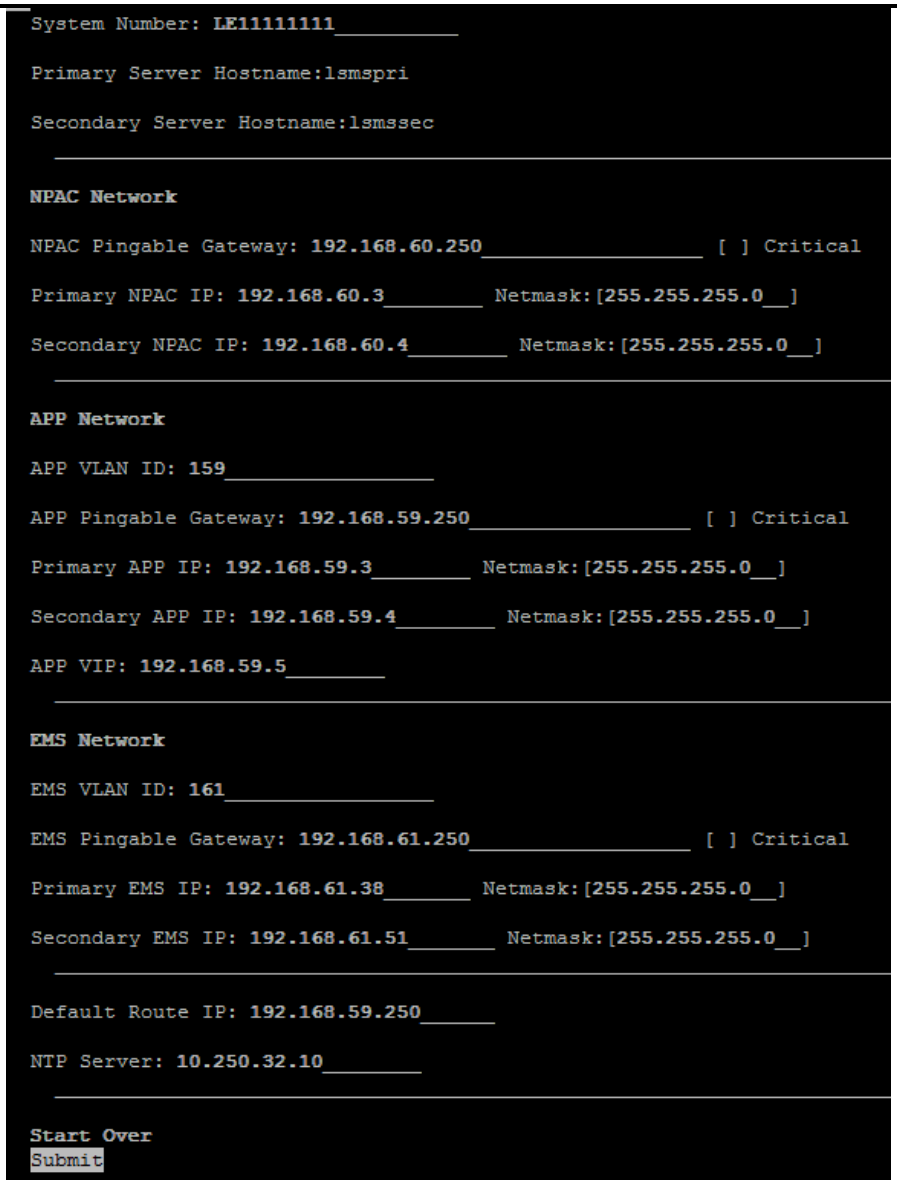
Type “Y/y” to continue and the next screen will appear and press the right arrow key to follow the link

Select **Segmented** from the Subnet Type menu and then select **Continue**.



4. ☐	**MPS A:** Enter network values.	Using the up and down arrows, scroll through the text fields, entering the desired values (to enter the netmask, highlight the field and then use the enter key or right arrow key to display the dropdown menu, choose the desired value from the list) for each fields:

Procedure 12: Segmented Subnet Network Configuration



Note:

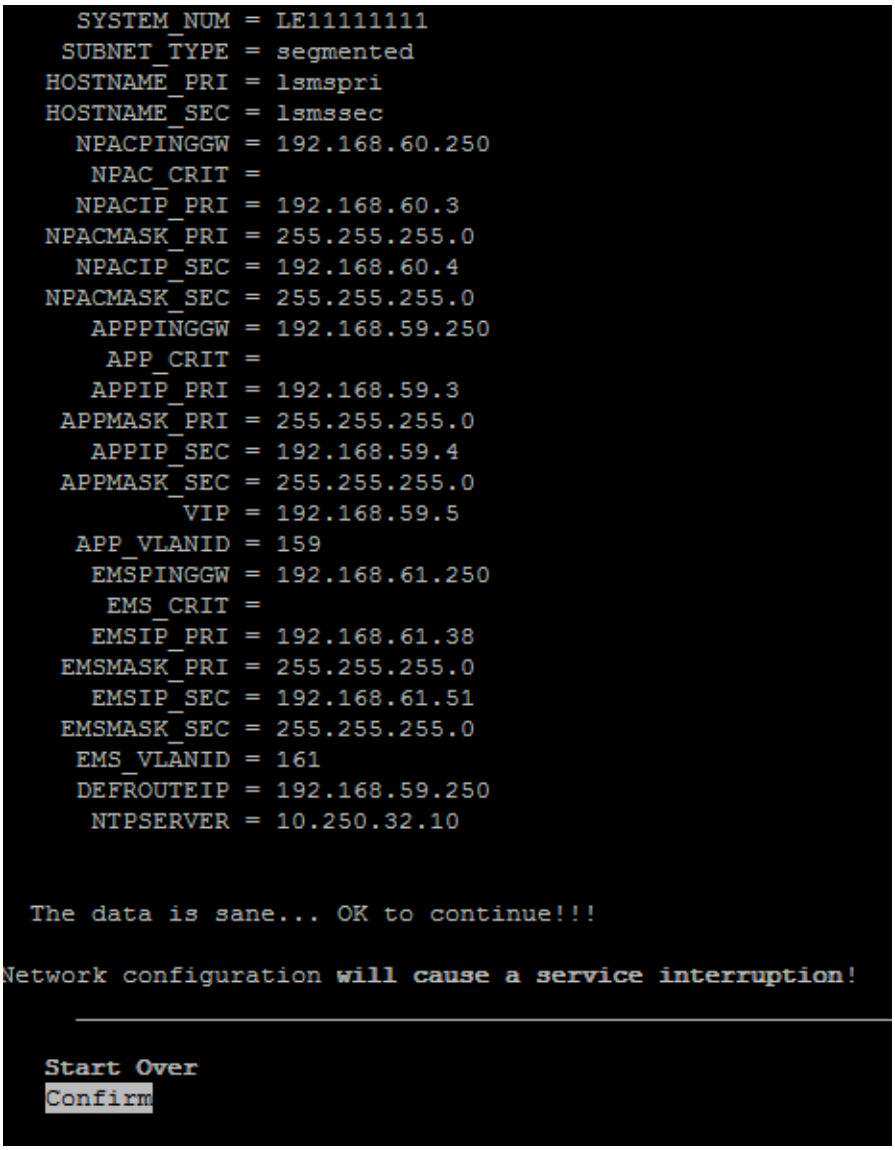
1. IP of NTP server should be valid as it is required for the working of comcol HA.
2. The System Number shall be as follows:

LEYYWWMMXX

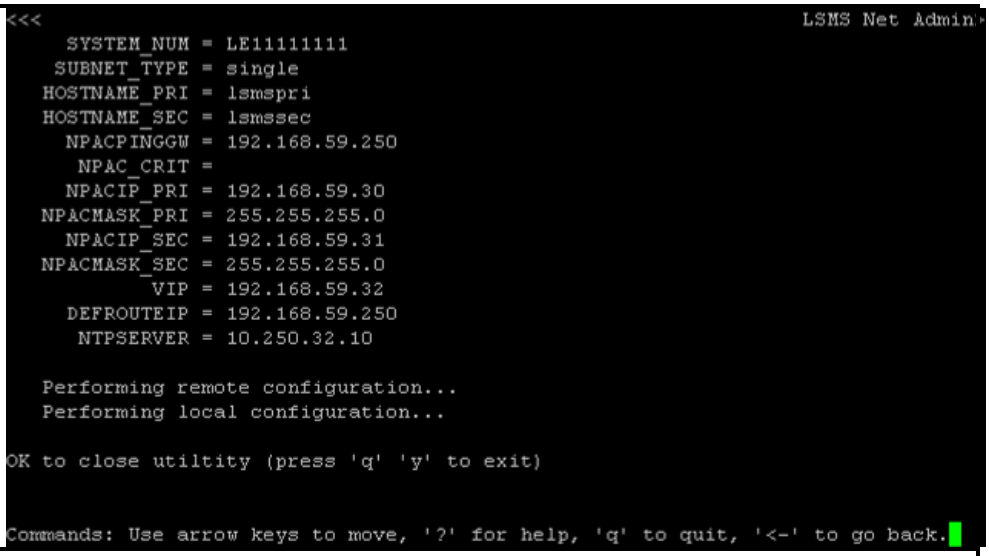
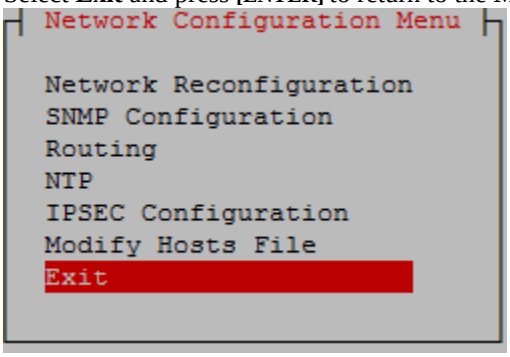
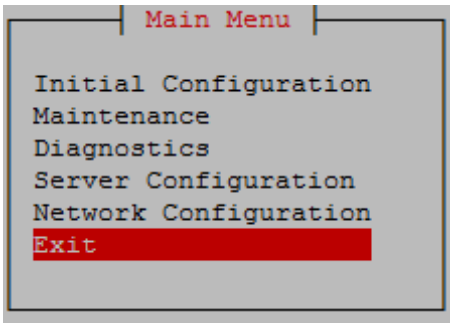
Where:

- LE is the new System Number Prefix for LSMS
- YY = YEAR – year of the system shipment
- WW= WEEK – calendar week of the YY year when the system is shipped
- MM = MANUFACTURER (if other than TKLC) – Here 00 as Manufacturer is Oracle
  XX = number in line of systems shipped that week

3. Default route should be the route of the APP IP address.

		Once the values are entered press the down arrow to select the "Submit" button and press the right arrow to follow the link.
5. ☐	**MPS A:** Apply network settings	If the values pass a sanity test for validity, then the "Confirm" button will be visible. Use the down arrow to select "Confirm" and press the right arrow to apply the changes. If the sanity tests failed, the reasons will be stated. Use the left arrow key to go back to the edit screen.  The execution could take a few minutes, be patient. The screen will eventually report the status of the completion. If an error occurs, contact My Oracle Support following the instructions on the Appendix D. Type "**q**" and then "**y**" to exit the Network Configuration.

Procedure 12: Segmented Subnet Network Configuration

		
6. ☐	**MPS A:** Exit the lsmsmgr menu	Select **Exit** and press **[ENTER]** to return to the **Main Menu**.  Select **Exit** and press **[ENTER]**. The "platcfg" utility terminates. 
7. ☐	**Procedure Complete.**	This procedure is complete **.**

Procedure 13 TMN Toolkit and Marben OSI License Installation

Note: Valid Licenses need to be installed on both A and B LSMS servers. Initially, temporary license keys will be used for the TMN Toolkit and the Marben OSI software. These keys will be replaced later with permanent license keys for licensed customers.

Download the temporary license keys from the Oracle Software Delivery Cloud, https://edelivery.oracle.com in the same manner that you obtained the LSMS software ISO images. Install the temporary license keys using the procedure below. The same set of temporary license keys can be installed on both A and B LSMS servers.

Note: After the LSMS software has been installed, if you are a licensed customer request the permanent license keys by going to https://licensecodes.oracle.com and provide the following information:

1. **host name, which is lsmspri for A and lsmssec for B; and**
2. **hostid, obtained by running the command "/usr/local/netech/bin/flexnet/lmhostid"; and**
3. **Mac address for Ethernet interface eth01 (interface name after IPMed but before LSMS installation) or eth0 (interface name after LSMS installation).**

You will receive the permanent license keys via email. It may take several days before you receive your permanent license keys. Once you receive the permanent license keys, repeat this procedure to install them.

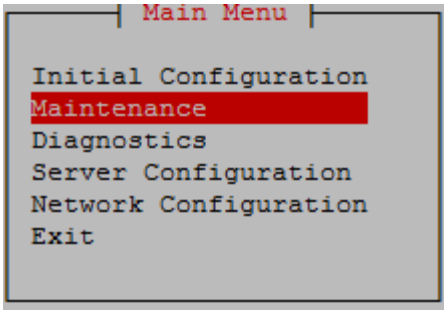
Procedure 13: TMN Toolkit and Marben OSI License Installation

STEP #	This procedure will install the TMN Toolkit License and the Marben OSI License to both A and B LSMS servers. Estimated time: 10 minutes	
1. ☐	**MPS X:**Log in to the server as the user "root"	`console login: root` `password: <root_password>`
2. ☐	**MPS X:**Install the TMN toolkit license file	Copy the TMN Toolkit license file to **/usr/local/netech/etc/license** and the Marben OSI license file to **/usr/TKLC/osi/conf/license** following the steps mentioned **in Procedure 31.**
3. ☐	**MPS X:** Reboot the server	Reboot the system to take effect of the installed license `# reboot`
4. ☐	**Procedure complete.**	Procedure is complete.

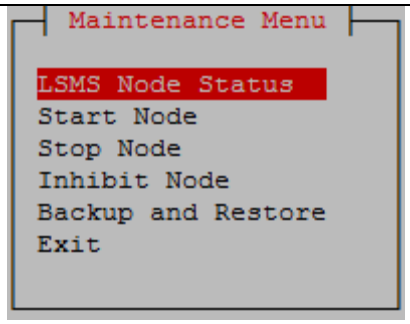
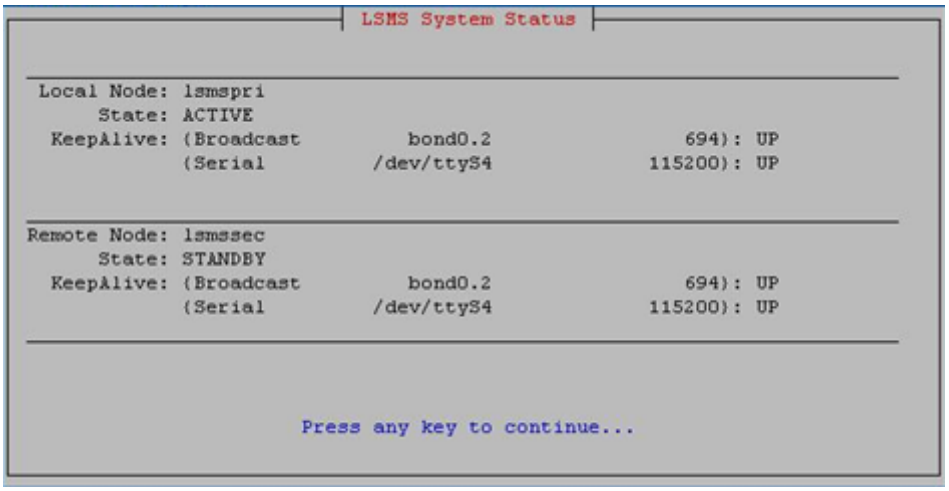
6. SOFTWARE UPGRADE PROCEDURES

Procedure 14 Pre-Upgrade LSMS Node Status

Procedure 14: Pre-Upgrade LSMS Node Status

S T E P #	This procedure performs a Node Status on any MPS running the LSMS application. Estimated time: 5 minutes **NOTE:** This procedure verifies that the 1A server is in the ACTIVE state and the 1B server is in the STANDBY state prior to beginning the split mirror upgrade. If it is determined that the servers are not in the previously described states, please contact MY ORACLE SUPPORT and ask for assistance in performing a system failover. This procedure also disables LSMS backup on both A and B servers. Please make sure to re-enable it after the upgrade is done. **WARNING**: If a system failover is to be performed then it ***must*** be verified that replication between the ACTIVE and STANDBY servers is functioning correctly before attempting the failover.	
1. ☐	**MPS A and B:** Log in to the server as the user "root".	`Login: root` `Password: <root_password>`
2. ☐	**MPS A and B:** Disable LSMS backup on both A and B servers	Execute the following command on both LSMS A and B to disable LSMS backup `# sed -i '/^#/! {/lsmsbkp_wrapper/ s/^/#/}' /etc/cron.d/lsmsbkp.cron`
3. ☐	**LSMS Active server:** Log in to the server as the user "root".	`Login: root` `Password: <root_password>`
4. ☐	**LSMS Active server:** Start the lsmsmgr utility by logging in as the lsmsmgr user.	`# su - lsmsmgr`
5. ☐	**LSMS Active server:** Make selections on the Main Menu of the Platform Configuration Utility.	On the **Main Menu**, select the **Maintenance** submenu, and press **[ENTER]**.  Select **LSMS Node Status**, and press **[ENTER]**.

Procedure 14: Pre-Upgrade LSMS Node Status

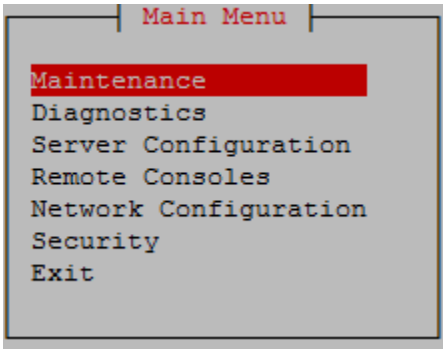
		
6. ☐	**LSMS Active server:** Examine the output of the LSMS Node Status and verify that the states of the Server lsmspri and lsmssec LSMS servers are "ACTIVE" and "STANDBY" respectively.	The LSMS System Status results appear on the screen, the "State:" information ***must*** match exactly with the following example. The following screen shot is an example of acceptable states for continuing an split mirror upgrade:  The following are examples of unacceptable states for continuing a split mirror upgrade: ACTIVE "lsmssec->TO_STANDBY" STANDBY "lsmssec->TO_STANDBY"
7. ☐	LSMS System Status Successful LSMS System Status Failure	If the LSMS System Status was successful return to Table 6. If LSMS System Status detected any failures, please contact MY ORACLE SUPPORT following the instruction on the **7.2Appendix D** and ask for assistance.
8. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 15 Split Mirror Upgrade on Server B

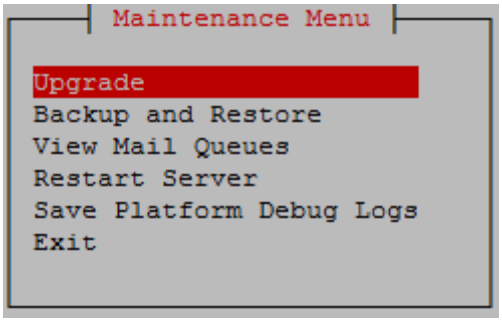
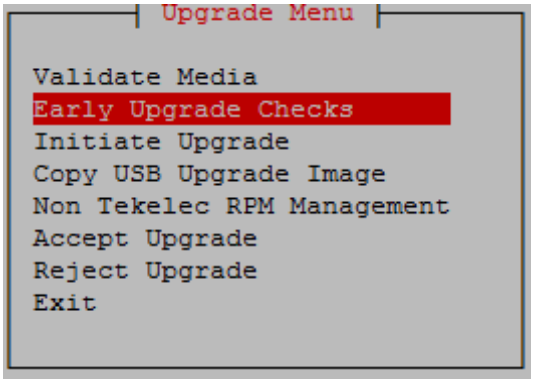
Procedure 15: Split mirror upgrade on Server B

S T E P #	This procedure performs the split mirror upgrade on the MPS-B server. Estimated time: 30 minutes	
1. ☐	**MPS B:** Split Mirror upgrade MPS server B	Perform Procedure in Procedure 24 or copy LSMS 13.3 ISO to /var/TKLC/upgrade directory.

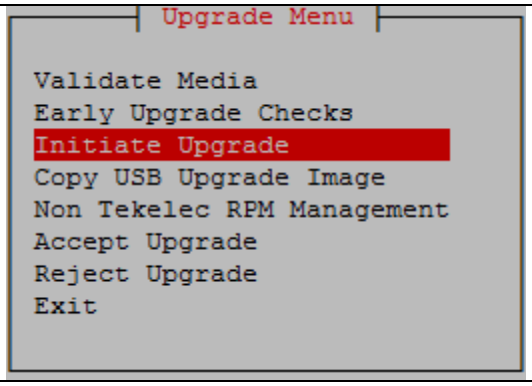
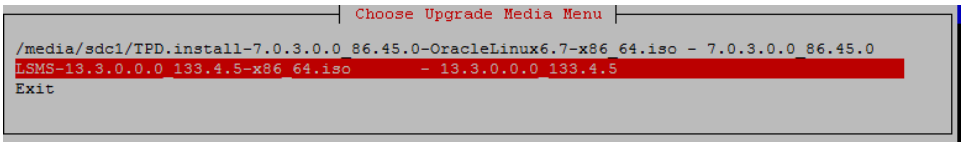
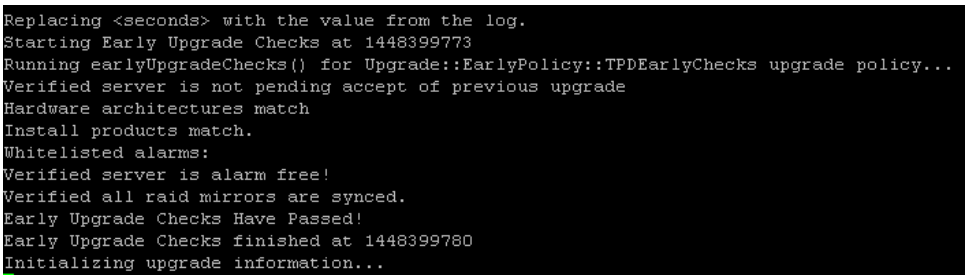
2. ☐	**MPS B: :** Create upgrade.conf for splitting mirrors.
	Use root user
		Create a file and add the line "BACKOUT_TYPE=SPLIT_MIRROR" (to trigger the split mirror upgrade) by executing the following command:
		
		# echo "BACKOUT_TYPE=SPLIT_MIRROR" >/usr/TKLC/plat/etc/upgrade/upgrade.conf
		
		Execute the following command to verify that the above command has been executed successfully:
		
		# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf
		
		The output should be:
		`[root@MPS-B ~]# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`
		`BACKOUT_TYPE=SPLIT_MIRROR`
		
		NOTE: Not performing this step will prevent any successful backout.

3. ☐	**MPS B:** Start platcfg utility by logging in as platcfg user	**# su - platcfg** On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
4. ☐	**MPS B**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**.

Procedure 15: Split mirror upgrade on Server B

		
5. ☐	**MPS B**: Select Early Upgrade Checks	Select the "**Early Upgrade Checks**" menu to verify that the system is ready for upgrade.  NOTE: If the Early Upgrade Checks fail due to the NTP related alarms, then execute step 6 , otherwise skip to step 7. Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the early upgrade checks fail due to the reason other than NTP related alarms.
6. ☐	**MPS B**: White List NTP Alarms	If the Early Upgrade Checks fail due to the NTP related alarms, then ignore the NTP alarms using the following commands: a. Exit the platcfg menu b. Change to root user using the "su –" command. c. vim /usr/TKLC/plat/etc/upgrade/upgrade.conf d. Edit the following line to include the NTP related alarms. EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2 For example – To whitelist the NTP alarm "tpdNTPDaemonNotSynchronizedWarning"which has the alarm code TKLCPLATMI10, the above mentioned line should be edited as EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2,TKSPLATMI10 Note: There should not be any space between two alarms i.e. between TKSPLATMI2 and TKSPLATMI10
7. ☐	**MPS B:** Navigate to the Initiate Upgrade menu.	Select the **Initiate Upgrade** menu and press **[ENTER]**.

Procedure 15: Split mirror upgrade on Server B

		
8. ☐	**MPS B:** Select the Upgrade Media	The screen displays a message that it is searching for upgrade media. When the upgrade media is found, an Upgrade Media selection menu appears similar to the example below. Select the desired upgrade media and press **[ENTER]**. 
9. ☐	**MPS B:** Split Mirror upgrade proceeds	The screen displays the following, indicating that the split mirror upgrade software is first running the upgrade checks, and then proceeding with the split mirror upgrade.  Many informational messages appear on the terminal screen as the split mirror upgrade proceeds. The messages are not shown here for clarity sake. When split mirror upgrade is complete, the server reboots.
10. ☐	**MPS B: U**pgrade completed	After the final reboot, the screen displays the login prompt as in the example below. 1503471288: Upstart Job alarmMgr: started #################### 1503471288: Upstart Job tpdProvd: started #################### 1503471289: Upstart Job syscheck: started #################### 1503471290: Upstart Job ntdMgr: started ####################

Procedure 15: Split mirror upgrade on Server B

		Oracle Linux Server release 6.8 Kernel 2.6.32-642.15.1.el6prerel7.4.0.0.0_88.37.0.x86_64 on an x86_64 lsmssec login:
11. ☐	**MPS B:** : Log in to the server as the user "root".	Login: **root** Password: **<root_password>**
12. ☐	**MPS B:** Verify the upgrade.	Examine the upgrade logs in the directory /var/TKLC/log/upgrade. **# grep -i error /var/TKLC/log/upgrade/upgrade.log** Following Errors are expected: 1462270310::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change current interface. 1462270311::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change interface of lsmspri. 1462270685::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270686::ERROR: Could not change current interface. 1462270686::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270687::ERROR: Could not change interface of lsmspri. 1465475856::ERROR: Config file is currently checked out! 1465475858::ERROR: LOCKED BY: root 1465475858::ERROR: CONFIG: /etc/motd 1465475858::ERROR: ELEMENT: /var/TKLC/rcs/etc/motd,v 1503473419::ERROR: Command returned non-zero exit code 768 (/sbin/service TKLCpldhcp start) If upgrade fails with an error message "Backup in progress", then execute Procedure 28 to stop the LSMS backup that is in progress. Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any error other than the above mentioned errors. Also note that sometime a carriage return is inserted in the log file causing some of the error messages to appear truncated. This is acceptable and should be ignored. **# grep -i warning /var/TKLC/log/upgrade/upgrade.log** The following warning are expected: 1462270311::Warning: Permanently added 'lsmspri,192.168.59.30' (RSA) to the list of known hosts. 1462871367::Checking network config files: WARNING: /usr/TKLC/plat/etc/alarms/alarms.xml has been updated...reparsing xml... Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any warnings other than the above mentioned warnings.
13. ☐	**MPS B**: Verify the Upgrade.	**# grep "Upgrade returned success" /var/TKLC/log/upgrade/upgrade.log** 1400786220:: Upgrade returned success!

Procedure 15: Split mirror upgrade on Server B

		Note: Verify that the message "Upgrade returned success!" is displayed. If it is not, contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D.

14. ☐	**MPS B:** View the ugwrap log	Execute the following commands from a prompt to view the ugwrap log:
		`# vi /var/TKLC/log/upgrade/ugwrap.log`
		
		Execute the following commands from a prompt to view errors/warnings:
		`# grep -i error /var/TKLC/log/upgrade/ugwrap.log`
		`12/03/2017 06:11:50 ERROR: Could not change current interface.`
		`12/03/2017 06:11:51 ERROR: Could not change interface of lsmspri.`
		`12/03/2017 06:18:06 ERROR: Could not change current interface.`
		`12/03/2017 06:18:06 ERROR: Could not change interface of lsmspri.`
		
		`# grep -i warning /var/TKLC/log/upgrade/ugwrap.log`
		`No warnings should be displayed.`

15. ☐	**MPS B:** Verify raid is broken	`[root@lsmssec ~]# cat /proc/mdstat`
		`Personalities : [raid1]`
		`md1 : active raid1 sda2[0]`
		`262080 blocks super 1.0 [2/1] [U_]`
		
		`md2 : active raid1 sda1[0]`
		`468447232 blocks super 1.1 [2/1] [U_]`
		`bitmap: 3/4 pages [12KB], 65536KB chunk`
		
		`unused devices: <none>`

16. ☐	**Procedure Complete.**	This procedure is complete.

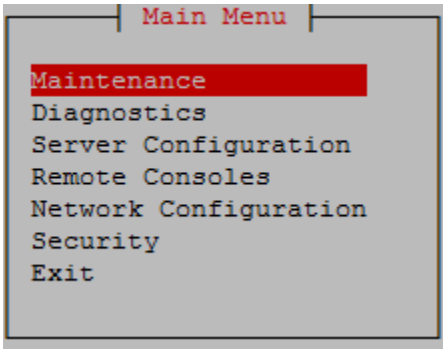
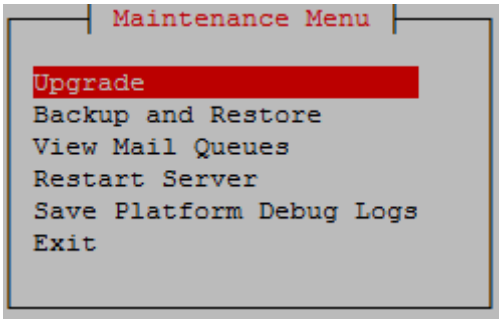
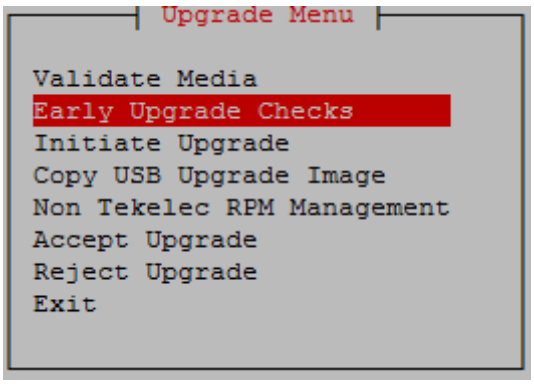
Procedure 16 Split Mirror Upgrade on Server A

Procedure 16: Split mirror upgrade on Server A

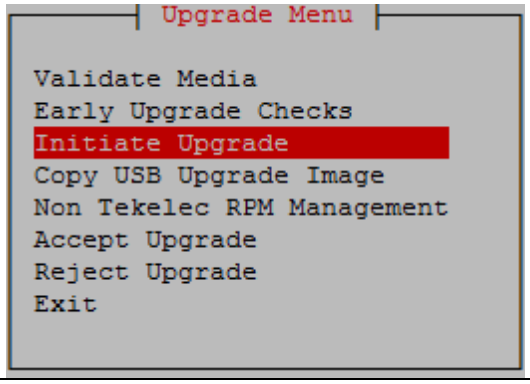
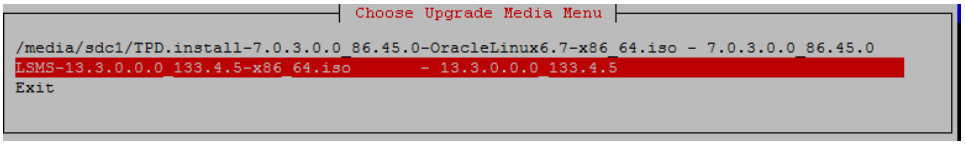
STEP #	This procedure performs the split mirror upgrade on the MPS-A server. Estimated time: 30 minutes	
1. ☐	**MPS A:** Split mirror upgrade MPS server A	Perform Procedure 24 or copy LSMS 13.3 ISO to /var/TKLC/upgrade directory.

2. ☐	**MPS A: :** Create upgrade.conf for splitting mirrors. Use root user	Create a file and add the line "BACKOUT_TYPE=SPLIT_MIRROR" (to trigger the split mirror upgrade) by executing the following command:
		
		`# echo "BACKOUT_TYPE=SPLIT_MIRROR" >/usr/TKLC/plat/etc/upgrade/upgrade.conf`
		
		Execute the following command to verify that the above command has been executed successfully:
		
		`# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`

		The output should be:
		`[root@MPS-B ~]# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`
		`BACKOUT_TYPE=SPLIT_MIRROR`
		
		NOTE: Not performing this step will prevent any successful backout.

3. ☐	**MPS A:** Start platcfg utility by logging in as platcfg user	`# su - platcfg` On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
4. ☐	**MPS A**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**. 
5. ☐	**MPS A**: Select Early Upgrade Checks	Select the "**Early Upgrade Checks**" menu to verify that the system is ready for upgrade.  NOTE: If the Early Upgrade Checks fail due to the NTP related alarms, then execute step 6, otherwise skip to step 7.

Procedure 16: Split mirror upgrade on Server A

		Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the early upgrade checks fail due to the reason other than NTP related alarms.
6. ☐	**MPS A**: White List NTP Alarms	If the Early Upgrade Checks fail due to the NTP related alarms, then ignore the NTP alarms using the following commands: a. Exit the platcfg menu b. Change to root user using the "su –" command. c. vim /usr/TKLC/plat/etc/upgrade/upgrade.conf d. Edit the following line to include the NTP related alarms. EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2 For example – To whitelist the NTP alarm "tpdNTPDaemonNotSynchronizedWarning" which has the alarm code TKLCPLATMI10, the above mentioned line should be edited as EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2,TKSPLATMI10 Note: There should not be any space between two alarms i.e. between TKSPLATMI2 and TKSPLATMI10
7. ☐	**MPS A:** Navigate to the Initiate Upgrade menu.	Select the **Initiate Upgrade** menu and press **[ENTER]**. 
8. ☐	**MPS A:** Select the Upgrade Media	The screen displays a message that it is searching for upgrade media. When the upgrade media is found, an Upgrade Media selection menu appears similar to the example below. Select the desired upgrade media and press **[ENTER]**. 
9. ☐	**MPS A:** Split Mirror upgrade proceeds	The screen displays the following, indicating that the split mirror upgrade software is first validating the media, and then proceeding with the split mirror upgrade.

Procedure 16: Split mirror upgrade on Server A

		Replacing <seconds> with the value from the log. Starting Early Upgrade Checks at 1448399773 Running earlyUpgradeChecks() for Upgrade::EarlyPolicy::TPDEarlyChecks upgrade policy... Verified server is not pending accept of previous upgrade Hardware architectures match Install products match. Whitelisted alarms: Verified server is alarm free! Verified all raid mirrors are synced. Early Upgrade Checks Have Passed! Early Upgrade Checks finished at 1448399780 Initializing upgrade information... Many informational messages appear on the terminal screen as the split mirror upgrade proceeds. The messages are not shown here for clarity sake. When split mirror upgrade is complete, the server reboots.
10. ☐	**MPS A:** Split Mirror upgrade completed	After the final reboot, the screen displays the login prompt as in the example below. 1503471288: Upstart Job alarmMgr: started #################### 1503471288: Upstart Job tpdProvd: started #################### 1503471289: Upstart Job syscheck: started #################### 1503471290: Upstart Job ntdMgr: started #################### Oracle Linux Server release 6.8 Kernel 2.6.32-642.15.1.el6prerel7.4.0.0.0_88.37.0.x86_64 on an x86_64 lsmspri login:
11. ☐	**MPS A:** Log in to the server as the user "root".	Login: **root** Password: **<root_password>**
12. ☐	**MPS A:** Verify the split mirror upgrade.	Examine the split mirror upgrade logs in the directory /var/TKLC/log/upgrade. **# grep -i error /var/TKLC/log/upgrade/upgrade.log** Following Errors are expected: 1462270310::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change current interface. 1462270311::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change interface of lsmspri. 1462270685::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270686::ERROR: Could not change current interface. 1462270686::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270687::ERROR: Could not change interface of lsmspri.

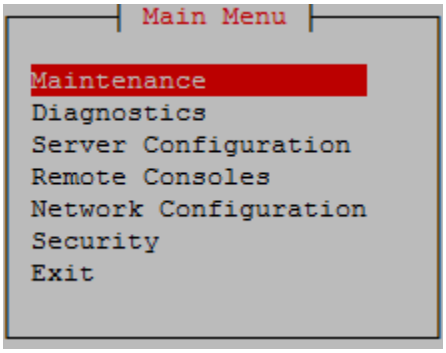
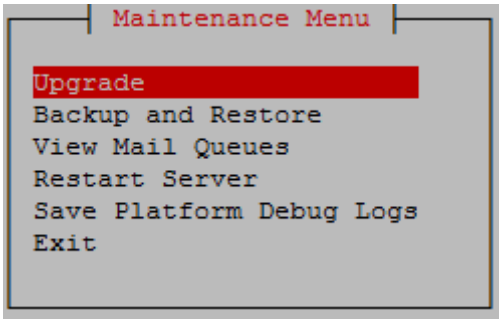
		1465475856::ERROR: Config file is currently checked out! 1465475858::ERROR: LOCKED BY: root 1465475858::ERROR: CONFIG: /etc/motd 1465475858::ERROR: ELEMENT: /var/TKLC/rcs/etc/motd,v If upgrade fails with an error message "Backup in progress", then execute Procedure 28 to stop the LSMS backup that is in progress. Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any error other than the above mentioned errors. Also note that sometime a carriage return is inserted in the log file causing some of the error messages to appear truncated. This is acceptable and should be ignored. **# grep -i warning /var/TKLC/log/upgrade/upgrade.log** The following warning are expected: 1462270311::Warning: Permanently added 'lsmspri 192.168.59.30' (RSA) to the list of known hosts. 1462871367::Checking network config files: WARNING: /usr/TKLC/plat/etc/alarms/alarms.xml has been updated...reparsing xml... Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any warnings other than the above mentioned warnings.
13. ☐	**MPS A:**Verify the Upgrade.	**# grep "Upgrade returned success" /var/TKLC/log/upgrade/upgrade.log** 1400786220:: Upgrade returned success! Note: Verify that the message “Upgrade returned success!” is displayed. If it is not, contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D.
14. ☐	**MPS A:** View the ugwrap log	Execute the following commands from a prompt to view the ugwrap log: **# vi /var/TKLC/log/upgrade/ugwrap.log** Execute the following commands from a prompt to view errors/warnings: **# grep -i error /var/TKLC/log/upgrade/ugwrap.log** 12/03/2017 06:11:50 ERROR: Could not change current interface. 12/03/2017 06:11:51 ERROR: Could not change interface of lsmspri. 12/03/2017 06:18:06 ERROR: Could not change current interface. 12/03/2017 06:18:06 ERROR: Could not change interface of lsmspri. **# grep -i warning /var/TKLC/log/upgrade/ugwrap.log** No warnings should be displayed.
15. ☐	**MPS A:** Verify raid is broken	[root@lsmspri ~]# cat /proc/mdstat Personalities : [raid1] md1 : active raid1 sda2[0] 262080 blocks super 1.0 [2/1] [U_] md2 : active raid1 sda1[0]

Procedure 16: Split mirror upgrade on Server A

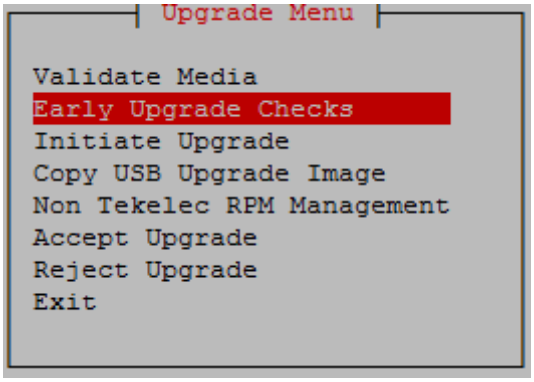
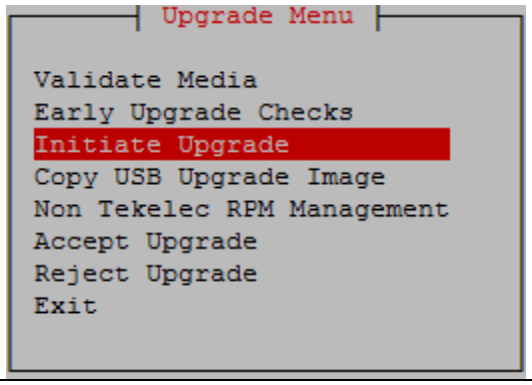
		468447232 blocks super 1.1 [2/1] [U_] bitmap: 3/4 pages [12KB], 65536KB chunk unused devices: <none>
16. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 17 Incremental Upgrade on Server B

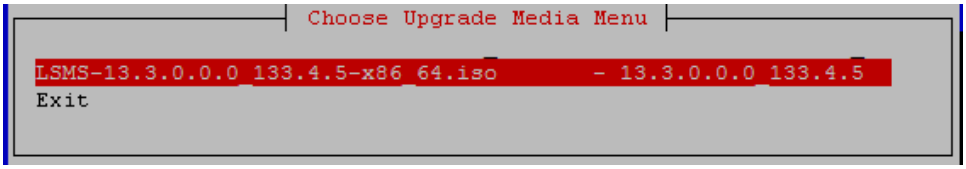
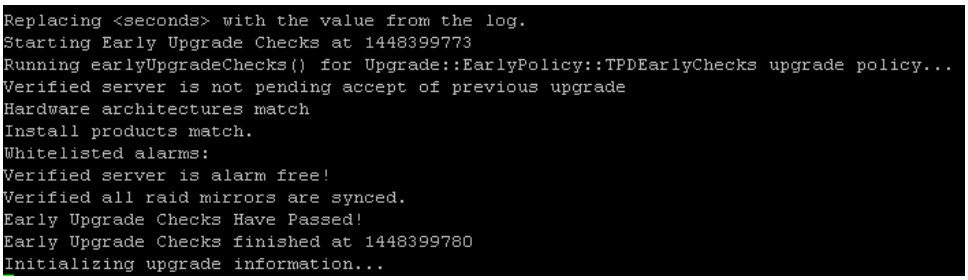
Procedure 17: Incremental upgrade on Server B

S T E P #	This procedure performs the Incremental upgrade on the MPS-B server. Estimated time: 30 minutes	
1. ☐	**MPS B:** Incremental upgrade MPS server B	Perform Procedure in Procedure 24 or copy LSMS 13.3 ISO to /var/TKLC/upgrade directory.
2. ☐	**MPS B:** Start platcfg utility by logging in as platcfg user	**# su - platcfg** On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
3. ☐	**MPS B**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**. 
4. ☐	**MPS B**: Select Early Upgrade Checks	Select the "**Early Upgrade Checks**" menu to verify that the system is ready for upgrade.

Procedure 17: Incremental upgrade on Server B

		 NOTE: If the Early Upgrade Checks fail due to the NTP related alarms, then execute step 6 , otherwise skip to step 7. Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the early upgrade checks fail due to the reason other than NTP related alarms.
5. ☐	**MPS B**: White List NTP Alarms	If the Early Upgrade Checks fail due to the NTP related alarms, then ignore the NTP alarms using the following commands: a. Exit the platcfg menu b. Change to root user using the "su –" command. c. vim /usr/TKLC/plat/etc/upgrade/upgrade.conf d. Edit the following line to include the NTP related alarms. EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2 For example – To whitelist the NTP alarm "tpdNTPDaemonNotSynchronizedWarning"which has the alarm code TKLCPLATMI10, the above mentioned line should be edited as EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2,TKSPLATMI10 Note: There should not be any space between two alarms i.e. between TKSPLATMI2 and TKSPLATMI10
6. ☐	**MPS B:** Navigate to the Initiate Upgrade menu.	Select the **Initiate Upgrade** menu and press **[ENTER]**. 
7. ☐	**MPS B:** Select the Upgrade Media	The screen displays a message that it is searching for upgrade media. When the upgrade media is found, an Upgrade Media selection menu appears similar to the example below.

Procedure 17: Incremental upgrade on Server B

		Select the desired upgrade media and press **[ENTER]**. 
8. ☐	**MPS B:** Upgrade proceeds	The screen displays the following, indicating that the split mirror upgrade software is first running the upgrade checks, and then proceeding with the split mirror upgrade.  Many informational messages appear on the terminal screen as the split mirror upgrade proceeds. The messages are not shown here for clarity sake. When split mirror upgrade is complete, the server reboots.
9. ☐	**MPS B: U**pgrade completed	After the final reboot, the screen displays the login prompt as in the example below. 1503471288: Upstart Job alarmMgr: started #################### 1503471288: Upstart Job tpdProvd: started #################### 1503471289: Upstart Job syscheck: started #################### 1503471290: Upstart Job ntdMgr: started #################### Oracle Linux Server release 6.8 Kernel 2.6.32-642.15.1.el6prerel7.4.0.0.0_88.37.0.x86_64 on an x86_64 lsmssec login:
10. ☐	**MPS B:** : Log in to the server as the user "root".	Login: **root** Password: **<root_password>**
11. ☐	**MPS B:** Verify the upgrade.	Examine the upgrade logs in the directory /var/TKLC/log/upgrade. **# grep -i error /var/TKLC/log/upgrade/upgrade.log** Following Errors are expected:

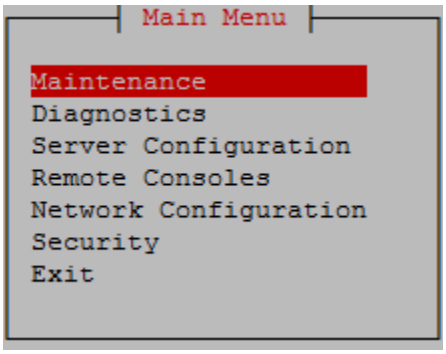
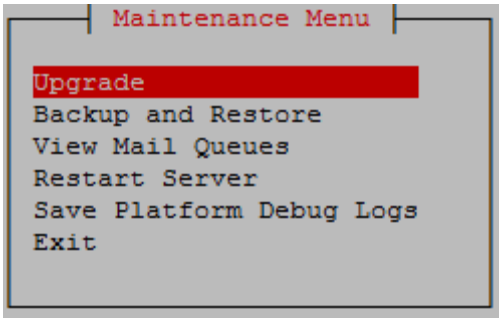
		1462270310::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change current interface. 1462270311::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change interface of lsmspri. 1462270685::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270686::ERROR: Could not change current interface. 1462270686::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270687::ERROR: Could not change interface of lsmspri. 1465475856::ERROR: Config file is currently checked out! 1465475858::ERROR: LOCKED BY: root 1465475858::ERROR: CONFIG: /etc/motd 1465475858::ERROR: ELEMENT: /var/TKLC/rcs/etc/motd,v 1503473419::ERROR: Command returned non-zero exit code 768 (/sbin/service TKLCpldhcp start) /var/TKLC/log/upgrade/upgrade.log 1512499051::ERROR: Command returned non-zero exit code 768 (/sbin/service TKLCpldhcp start)". Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any error other than the above mentioned errors. Also note that sometime a carriage return is inserted in the log file causing some of the error messages to appear truncated. This is acceptable and should be ignored. **# grep -i warning /var/TKLC/log/upgrade/upgrade.log** The following warning are expected: 1462270311::Warning: Permanently added 'lsmspri,192.168.59.30' (RSA) to the list of known hosts. 1462871367::Checking network config files: WARNING: /usr/TKLC/plat/etc/alarms/alarms.xml has been updated...reparsing xml... Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any warnings other than the above mentioned warnings.
12. ☐	**MPS B**: Verify the Upgrade.	**# grep "Upgrade returned success" /var/TKLC/log/upgrade/upgrade.log** 1400786220:: Upgrade returned success! Note: Verify that the message "Upgrade returned success!" is displayed. If it is not, contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D.
13. ☐	**MPS B:** View the ugwrap log	Execute the following commands from a prompt to view the ugwrap log: **# vi /var/TKLC/log/upgrade/ugwrap.log** Execute the following commands from a prompt to view errors/warnings: **# grep -i error /var/TKLC/log/upgrade/ugwrap.log** 06:11:50 ERROR: Could not change current interface. 05/03/2016 06:11:51 ERROR: Could not change interface of lsmspri.

Procedure 17: Incremental upgrade on Server B

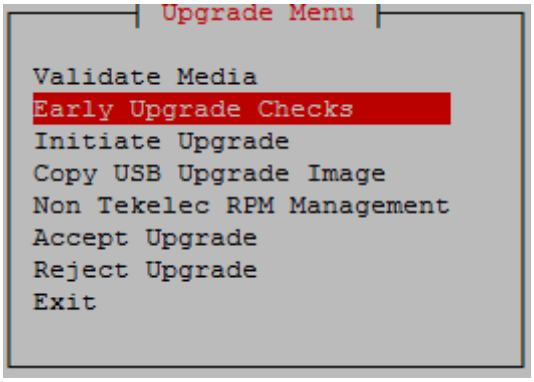
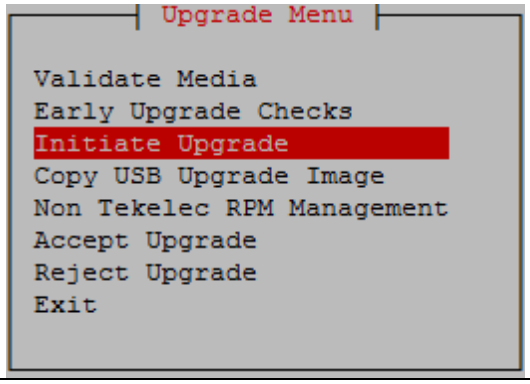
		05/03/2016 06:18:06 ERROR: Could not change current interface. 05/03/2016 06:18:06 ERROR: Could not change interface of lsmspri. **# grep -i warning /var/TKLC/log/upgrade/ugwrap.log** No warnings should be displayed.
14. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 18 Incremental Upgrade on Server A

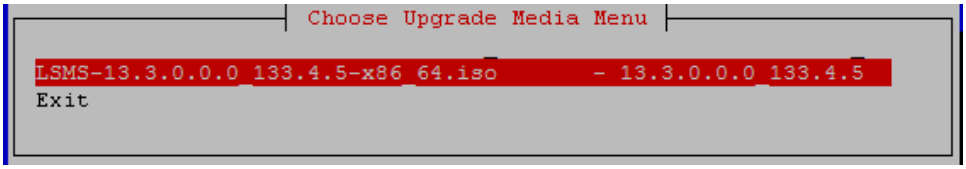
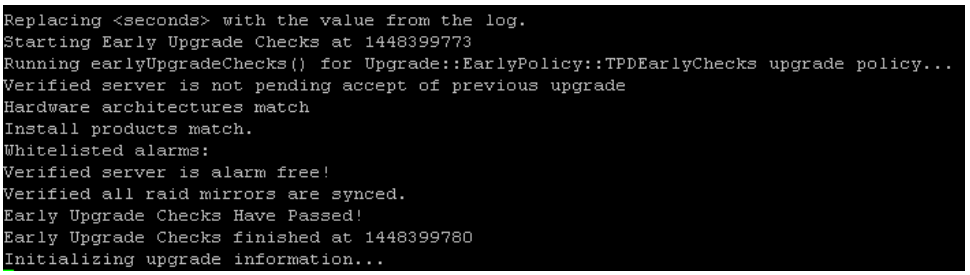
Procedure 18: Incremental upgrade on Server A

STEP #	This procedure performs the Incremental upgrade on the MPS-A server. Estimated time: 30 minutes	
1. ☐	**MPS A:** Incremental upgrade MPS server A	Perform Procedure 24 or copy LSMS 13.3 ISO to /var/TKLC/upgrade directory.
2. ☐	**MPS A:** Start platcfg utility by logging in as platcfg user	**# su - platcfg** On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
3. ☐	**MPS A**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**. 
4. ☐	**MPS A**: Select Early Upgrade Checks	Select the "**Early Upgrade Checks**" menu to verify that the system is ready for upgrade.

Procedure 18: Incremental upgrade on Server A

		 NOTE: If the Early Upgrade Checks fail due to the NTP related alarms, then execute step 6, otherwise skip to step 7. Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the early upgrade checks fail due to the reason other than NTP related alarms.
5. ☐	**MPS A**: White List NTP Alarms	If the Early Upgrade Checks fail due to the NTP related alarms, then ignore the NTP alarms using the following commands: a. Exit the platcfg menu b. Change to root user using the "su –" command. c. vim /usr/TKLC/plat/etc/upgrade/upgrade.conf d. Edit the following line to include the NTP related alarms. EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2 For example – To whitelist the NTP alarm "tpdNTPDaemonNotSynchronizedWarning" which has the alarm code TKLCPLATMI10, the above mentioned line should be edited as EARLY_CHECK_ALARM_WHITELIST=TKSPLATMI2,TKSPLATMI10 Note: There should not be any space between two alarms i.e. between TKSPLATMI2 and TKSPLATMI10. Following alarms might be observed TKSPLATMA28, TKSPLATMI16, TKSPLATMI19 so these should be added in White list
6. ☐	**MPS A:** Navigate to the Initiate Upgrade menu.	Select the **Initiate Upgrade** menu and press **[ENTER]**. 
7. ☐	**MPS A:** Select the Upgrade Media	The screen displays a message that it is searching for upgrade media. When the upgrade media is found, an Upgrade Media selection menu appears similar to the example below.

Procedure 18: Incremental upgrade on Server A

		Select the desired upgrade media and press **[ENTER]**. 
8. ☐	**MPS A: U**pgrade proceeds	The screen displays the following, indicating that the split mirror upgrade software is first validating the media, and then proceeding with the split mirror upgrade.  Many informational messages appear on the terminal screen as the split mirror upgrade proceeds. The messages are not shown here for clarity sake. When split mirror upgrade is complete, the server reboots.
9. ☐	**MPS A:** Split Mirror upgrade completed	After the final reboot, the screen displays the login prompt as in the example below. 1503471288: Upstart Job alarmMgr: started #################### 1503471288: Upstart Job tpdProvd: started #################### 1503471289: Upstart Job syscheck: started #################### 1503471290: Upstart Job ntdMgr: started #################### Oracle Linux Server release 6.8 Kernel 2.6.32-642.15.1.el6prerel7.4.0.0.0_88.37.0.x86_64 on an x86_64 lsmspri login:
10. ☐	**MPS A:** Log in to the server as the user "root".	Login: **root** Password: **<root_password>**
11. ☐	**MPS A:** Verify the split mirror upgrade.	Examine the split mirror upgrade logs in the directory /var/TKLC/log/upgrade. **# grep -i error /var/TKLC/log/upgrade/upgrade.log** Following Errors are expected: 1462270310::Master 'bond0', Slave 'eth2': Error: Change active failed

		1462270311::ERROR: Could not change current interface. 1462270311::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270311::ERROR: Could not change interface of lsmspri. 1462270685::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270686::ERROR: Could not change current interface. 1462270686::Master 'bond0', Slave 'eth2': Error: Change active failed 1462270687::ERROR: Could not change interface of lsmspri. 1465475856::ERROR: Config file is currently checked out! 1465475858::ERROR: LOCKED BY: root 1465475858::ERROR: CONFIG: /etc/motd 1465475858::ERROR: ELEMENT: /var/TKLC/rcs/etc/motd,v Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any error other than the above mentioned errors. Also note that sometime a carriage return is inserted in the log file causing some of the error messages to appear truncated. This is acceptable and should be ignored. **# grep -i warning /var/TKLC/log/upgrade/upgrade.log** The following warning are expected: 1462270311::Warning: Permanently added 'lsmspri 192.168.59.30' (RSA) to the list of known hosts. 1462871367::Checking network config files: WARNING: /usr/TKLC/plat/etc/alarms/alarms.xml has been updated...reparsing xml... Contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D, if the output contains any warnings other than the above mentioned warnings.
12. ☐	**MPS A:**Verify the Upgrade.	**# grep "Upgrade returned success" /var/TKLC/log/upgrade/upgrade.log** 1400786220:: Upgrade returned success! Note: Verify that the message “Upgrade returned success!” is displayed. If it is not, contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D.
13. ☐	**MPS A:** View the ugwrap log	Execute the following commands from a prompt to view the ugwrap log: **# vi /var/TKLC/log/upgrade/ugwrap.log** Execute the following commands from a prompt to view errors/warnings: **# grep -i error /var/TKLC/log/upgrade/ugwrap.lo05/03/2016** 06:11:50 ERROR: Could not change current interface. 05/03/2016 06:11:51 ERROR: Could not change interface of lsmspri. 05/03/2016 06:18:06 ERROR: Could not change current interface. 05/03/2016 06:18:06 ERROR: Could not change interface of lsmspri. **# grep -i warning /var/TKLC/log/upgrade/ugwrap.log** No warnings should be displayed.

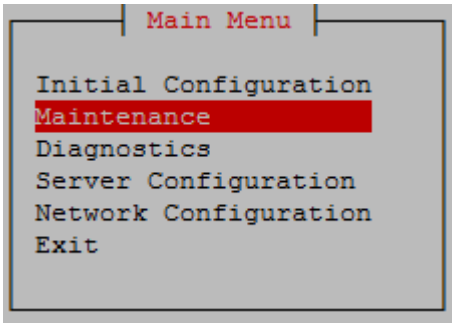
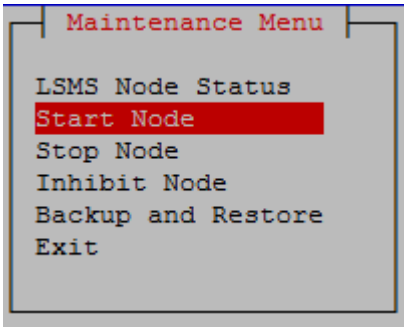
Procedure 18: Incremental upgrade on Server A

14. ☐	**MPS A:** Verify raid is broken	`[root@lsmspri ~]# cat /proc/mdstat`
		`Personalities : [raid1]`
		`md1 : active raid1 sda2[0]`
		`262080 blocks super 1.0 [2/1] [U_]`
		
		`md2 : active raid1 sda1[0]`
		`468447232 blocks super 1.1 [2/1] [U_]`
		`bitmap: 3/4 pages [12KB], 65536KB chunk`
		
		`unused devices: <none>`

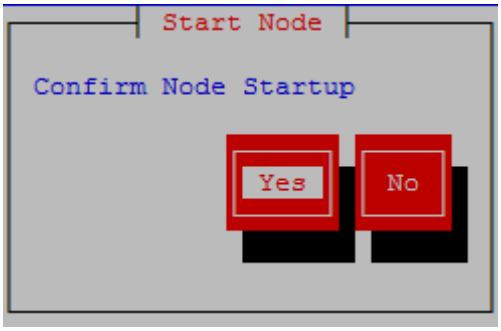
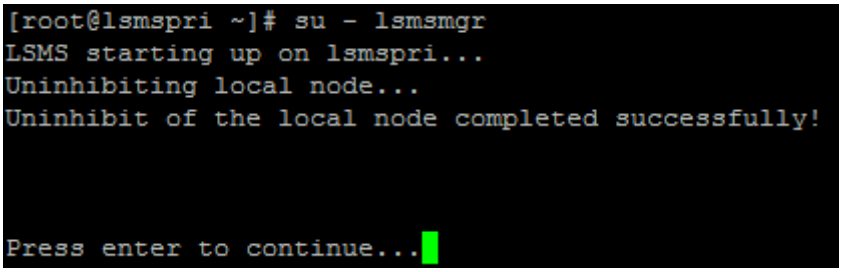
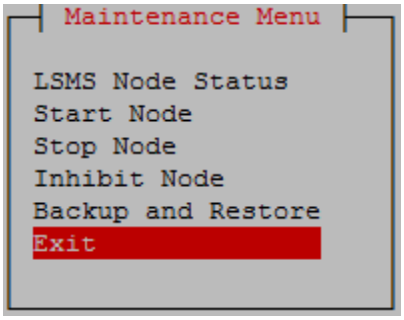
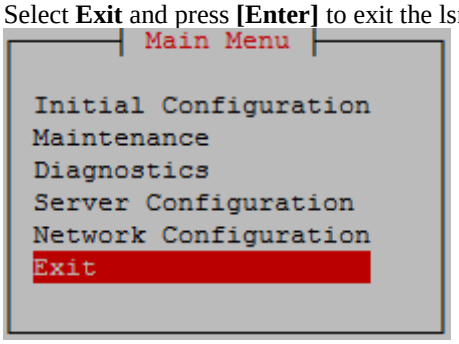
15. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 19 Start LSMS Services

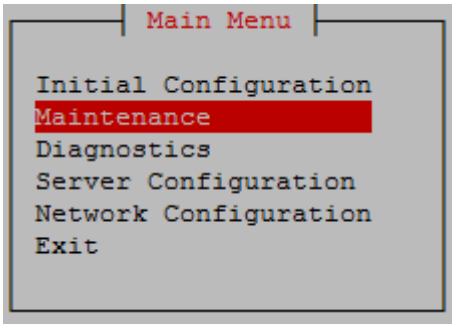
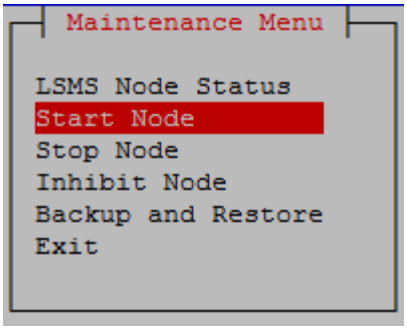
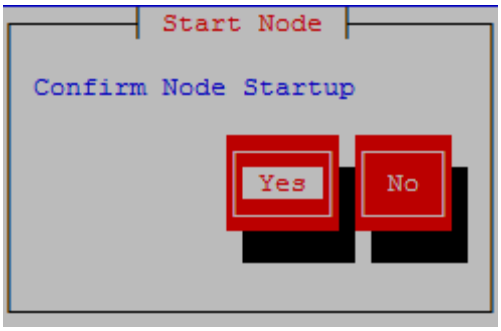
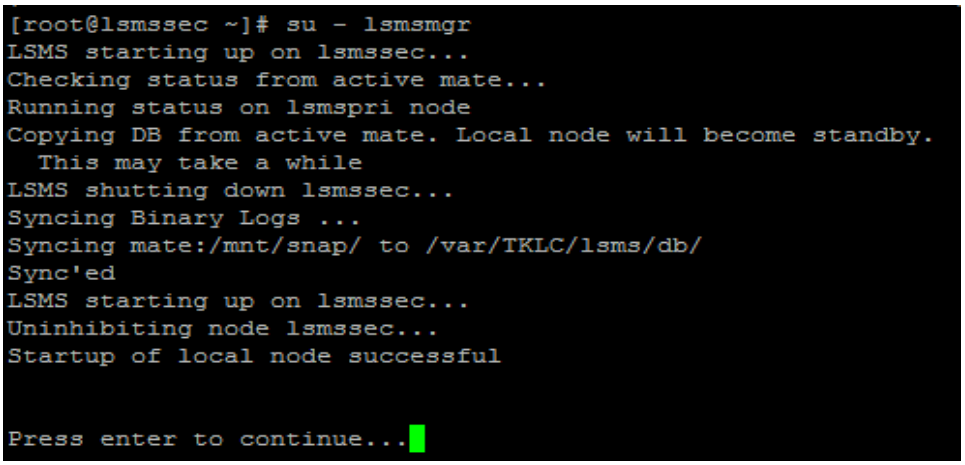
Procedure 19: Start LSMS services

STEP #	This procedure starts the LSMS services. Estimated time: 10 minutes	
1. ☐	**MPS A:** Log in to the server as the user "root".	`Login: root` `Password: <root_password>`
2. ☐	**MPS A:** Start lsmsmgr	`# su - lsmsmgr`
3. ☐	**MPS A:** Start Node - This will make node active and start application	On the "**Main Menu"**, select **Maintenance** and press **[ENTER]**.  Select **Start Node** and press **[ENTER]**. 

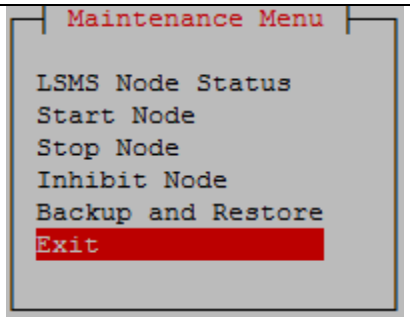
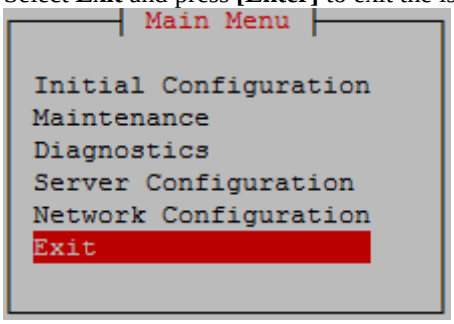
Procedure 19: Start LSMS services

		Select **Yes** to confirm node startup press **[Enter].**  Press **Enter** once the node is uninhibited successfully.  Select **Exit** and press **[Enter]** to return to Main Menu.  Select **Exit** and press **[Enter]** to exit the lsmsmgr menu. 
4. ☐	**MPS A:** Switch to mate	`#ssh mate`
5. ☐	**MPS B:** Log in to the server as the user "root".	`Login: root` `Password: <root_password>`
6. ☐	**MPS B:** Start lsmsmgr	`# su - lsmsmgr`

Procedure 19: Start LSMS services

7. ☐	**MPS B:** Start Node - This will make node standby and start application	On the "**Main Menu"**, select **Maintenance** and press **[ENTER]**.  Select **Start Node** and press **[ENTER]**.  Select **Yes** to confirm node startup press **[Enter].**  Press **Enter** once the node is uninhibited successfully.  Select **Exit** and press **[Enter]** to return to Main Menu.

Procedure 19: Start LSMS services

		 Select **Exit** and press **[Enter]** to exit the lsmsmgr menu. 
8. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 20 Post-Upgrade Health Check

Procedure 20: Post-Upgrade Health Check

S T E P #	This procedure determines the health of the Server after a split mirror upgrade. This procedure will perform a syscheck on each LSMS server, verify that MySQL replication is functioning correctly between the two LSMS servers, and capture command output to be used later. This procedure also enables LSMS backup on both A and B servers if it was disabled prior to upgrade. Estimated time: 5 minutes	
1. ☐	**MPS A and B:** Login to the server as the user "root".	`Login: root` `Password: <root_password>`
2. ☐	**MPS A and B :** Verify Health of the Server	Execute Procedure 23 on the 1A and 1B servers to verify the health of the server. **NOTE**: If this upgrade is an initial installation of the LSMS application. Some errors will be present until the system is fully configured and installed at the customer site. Only verify that the following syscheck classes pass (the first 3 classes in the output): • `disk` • `hardware` • `net`

Procedure 20: Post-Upgrade Health Check

3. ☐	**MPS A and B:** Enable LSMS backup on both A and B servers	Execute the following command on both LSMS A and B if LSMS backup was disabled prior to upgrade. Otherwise skip to next step. `# sed -i '/^#/ {/lsmsbkp_wrapper/ s/^#//}' /etc/cron.d/lsmsbkp.cron`
4. ☐	**MPS A and B:** Execute the "hastatus" command to verify the HA state of this server.	Execute the following command on both LSMS A and B to verify the HA state of mated LSMS pair. `# hastatus` Verify that the hastatus of one of the servers is Active and the other is Standby. **WARNING**: If the output from the above command is anything else other than "ACTIVE" and "STANDBY", do not proceed with this procedure and contact My Oracle Support following the instructions on the Appendix D.

5. ☐	**LSMS Standby Server:** Verify that the STANDBY server's MySQL replication is functioning properly	Execute the following command to verify that MySQL replication is working correctly on the STANDBY LSMS server:
		
		`# tail /var/TKLC/lsms/logs/dbreplMon.log`
		
		If MySQL replication is functioning correctly then the following output will be observed, make sure that at least the last line of your output matches the lines below.
		
		`Thu Dec 07 05:58:12 2017 All tests passed on STANDBY`
		`FIPS integrity verification test failed.`
		`FIPS integrity verification test failed.`
		`Thu Dec 07 05:59:19 2017 All tests passed on STANDBY`
		`FIPS integrity verification test failed.`
		`FIPS integrity verification test failed.`
		`Thu Dec 07 06:00:25 2017 All tests passed on STANDBY`
		`FIPS integrity verification test failed.`
		`FIPS integrity verification test failed.`
		`Thu Dec 07 06:01:32 2017 All tests passed on STANDBY`
		
		WARNING: If at least the last line of your output does not match the lines above then do not proceed with this upgrade and contact My Oracle Support for assistance.

6. ☐	**LSMS Active Server:** Login as the user "lsmsadm" on the ACTIVE server.	# `su - lsmsadm`
7. ☐	**LSMS Active Server:** Capture the output of the "lsmsdb –c counts" command.	Execute the following command on the ACTIVE LSMS server to display the current LSMS database counts: `# lsmsdb -c counts` **NOTE**: Capture the output from this command and make it available to My Oracle Support if required.

8. ☐	**LSMS Active Server:** Capture the output of the "lsmsdb –c features" command.	Execute the following command on the ATIVE LSMS server to display the current LSMS feature configuration: `# lsmsdb -c features` **NOTE**: Capture the output from this command and make it available to My Oracle Support if required.
9. ☐	**LSMS Active Server:** Capture the output of the "sentry status" command.	Execute the following command on the ACTIVE LSMS server to display the current LSMS sentry status: `# sentry status` **NOTE**: Verify that the output displays a Status of "running" for all processes; the regional processes (npacagents) may or may not be associated in the Comment field. If the output from this command displays any other Status than "running" contact My Oracle Support and ask for assistance. Capture the output from this command and make it available to My Oracle Support if required.
10. ☐	**Procedure Complete.**	This procedure is complete.

7. SOFTWARE RECOVERY PROCEDURES

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 the MY ORACLE SUPPORT***
following the instruction on the front page or the instructions on the 7.2Appendix D.

NOTE: These recovery procedures are provided for the backout of a split mirror upgrade ONLY (i.e., from an split mirror upgraded system). Backout of an initial installation is not supported.

7.1 Backout Setup

The reason to execute a backout has a direct impact on any backout preparation that must be done. Since the reason cannot be known ahead of time, no definitive procedure can be written.

My Oracle Support personnel will have to have login access to the affected MPS server, probe the server for the root cause of the problem, and execute whatever setup or cleanup is necessary in order to prepare the MPS server for backout.

7.2 Perform Backout

No matter the initial cause of the upgrade problem, once all necessary corrective steps have been taken to prepare for the backout, then the following procedure can be executed to perform a backout.

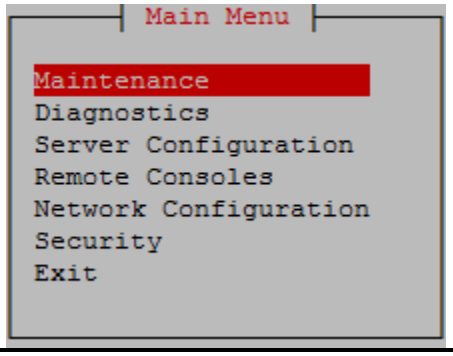
Note: Procedure for backout will remain same whether upgrade was incremental or split mirror, only output will be different.

Procedure 21 Server B Backout

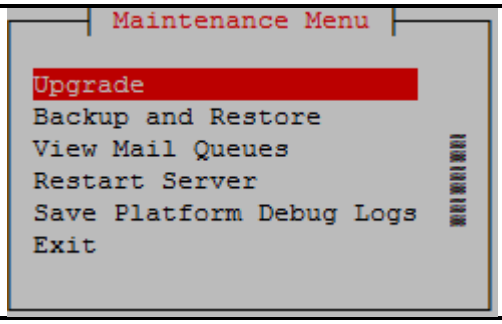
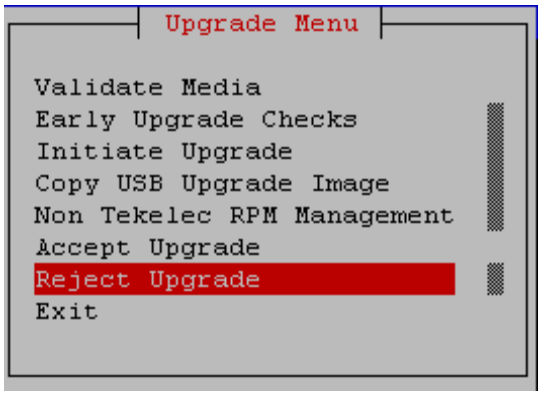
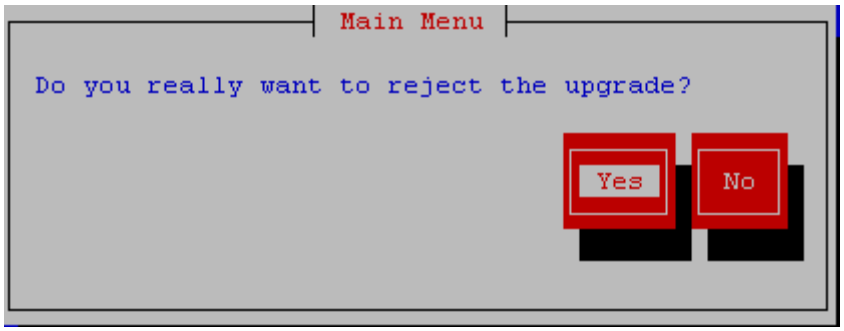
Procedure 21: Server B Backout

S T E P #	This procedure provides instructions to perform backout on MPS B server. Estimated time: 30 minutes **Note: Execute this procedure if only MPS B has been upgraded or partially upgraded and MPS A is still at the pre-upgrade release.** **Note: If the upgrade has been accepted, this procedure cannot be executed.** **Note: Make sure USB is not connected with the setup before running this procedure.**	
1. ☐	Terminate all previous connections (ssh).	If not already connected, connect to the E5-APP-B card via the serial port. For connecting the E5-APP-B B card, disconnect the console cable from the serial port on the E5-APP-B A card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B A cards adapter and use it for serial access. **Cable part numbers - 830-1220-xx**

Procedure 21: Server B Backout

		Skip to step 5 if connected through serial console.
2. ☐	Create a terminal window and establish a connection by logging into MPS A. Log in to MPS A.	In a newly created terminal window labeled "MPS B – from MPS A", connect directly into MPS A. **# ssh root@<MPS A>** **Password: <password>**
3. ☐	**MPS A**: Start screen session **MPS A:** Connect to the console MPS B.	Execute the following commands to start screen and establish a console session to MPS B. **# screen -L** Execute the following command on MPS: **# minicom mate** OR **# cu -l /dev/ttyS1 -s 115200**
4. ☐	**MPS B**: Login prompt is displayed.	<hostname> console login: Note: Hit enter if no login prompt is displayed
5. ☐	**MPS B**: Log in to the server as user "root".	If not already logged-in, then log in. Login: **root** Password: **<root_password>**
6. ☐	**MPS B:** Check if upgrade was incremental upgrade or split mirror	If output of below command is as mentioned below it was an incremental upgrade. **# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf** cat: /usr/TKLC/plat/etc/upgrade/upgrade.conf: No such file or directory If output of below command is as mentioned below it was a split mirror upgrade. **# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf** BACKOUT_TYPE=SPLIT_MIRROR
7. ☐	**MPS B:** Execute the platcfg menu.	**# su - platcfg**
8. ☐	**MPS B**: Select the Maintenance submenu.	The platcfg **Main Menu** appears. On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
9. ☐	**MPS B**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**.

Procedure 21: Server B Backout

		
10. ☐	**MPS B**: Reject Split Mirror upgrade	Select the "Reject Upgrade" menu and press [ENTER].  
11. ☐	**MPS B**: Backout proceeds.	Many informational messages will come across the terminal screen as the backout proceeds. After Backout a message "Backout is Complete System will reboot now" will be displayed on screen wait for system to reboot. After reboot disk will start to sync incase upgrade was split mirror, wait for sync to complete. If upgrade was incremental upgrade system will be in backed out state post reboot.

12. ☐	**MPS B**: Verify that raid is repaired
	Note: Skip this step if upgrade was incremental upgrade
		`[root@lsmssec ~]# cat /proc/mdstat`
		`Personalities : [raid1]`
		`md1 : active raid1 sdb2[2] sda2[0]`
		`262080 blocks super 1.0 [2/2] [UU]`
		
		`md2 : active raid1 sdb1[1] sda1[0]`
		`468447232 blocks super 1.1 [2/2] [UU]`
		`bitmap: 1/4 pages [4KB], 65536KB chunk`
		
		`unused devices: <none>`

13. ☐	**MPS B**: Verify the Backout	Examine the logs in the directory /var/TKLC/log/upgrade and verify that no errors were reported.

Procedure 21: Server B Backout

		`# grep -i error /var/TKLC/log/upgrade/upgrade.log`
		`# grep -i error /var/TKLC/log/upgrade/ugwrap.log`
		
		Examine the output of the above commands to determine if any errors were reported.
		
		Refer to section 3.6to know more about logging.

14. ☐	**MPS B**: Verify the Backout.	If the backout was ***not*** successful and errors were recorded in the logs, then contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D for further instructions. If the backout ***was*** successful, then continue with the following step.
15. ☐	**MPS B**: Reboot the MPS.	Perform the following commands to reboot the MPS: `# init 6`
16. ☐	**MPS B**: Login to MPS B.	If the login prompt appears, continue on to step17. If the login prompt does not appear due to disconnect, go to step15.

17. ☐	Create a terminal window and establish a connection by logging into MPS A.
	
	Log into MPS A.
		In a newly created terminal window labeled "**MPS B – from MPS A**", connect directly into MPS A.
		
		`# ssh root@<MPS A>`
		`Password: <password>`

18. ☐	**MPS A**: Rejoin previous screen session on MPS B.	Execute the following command to disconnect and then rejoin previous screen session: `# screen -dr`
19. ☐	**MPS B**: Verify Health of MPS B.	Execute Procedure 23 on MPS B to verify the health of the server
20. ☐	Reconnect console cable.	On E5-APP-B card, reconnect the console cable between the serial port labeled 'S0' on E5-APP-B B card's adapter and the serial port labeled 'S1' on the E5-APP-B A card's adapter. **Cable part numbers - 830-1220-xx**
21. ☐	**Procedure complete.**	This procedure is complete.

The application should now be running at the original software release level

Procedure 22 Backout both Server A and B

Procedure 22: Backout both Server A and B

S T E P #	This procedure provides instructions to perform backout on both servers MPS A and B. Estimated time: 100 minutes **Note: Execute this procedure only if both MPS A and MPS B have been upgraded or partially upgraded and you wish to backout both servers to the previous version.** **Note: If the upgrade has been accepted, this procedure cannot be performed.** **Note: Make sure USB is not connected with the setup before running this procedure.**	
1. ☐	Terminate all previous connections (ssh).	If not already connected, connect to the E5-APP-B card via the serial port. For connecting the E5-APP-B A card, disconnect the console cable from the serial porton the E5-APP-B B card's adapter. The cable should be disconnected at the point where it connects to the serial port labeled 'S1' on the E5-APP-B B card's adapter and use it for serial access. **Cable part numbers - 830-1220-xx** Skip to step 5 if connected through serial console.

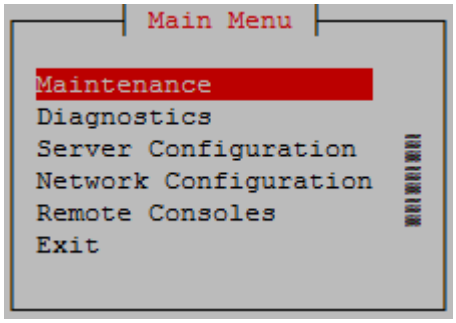
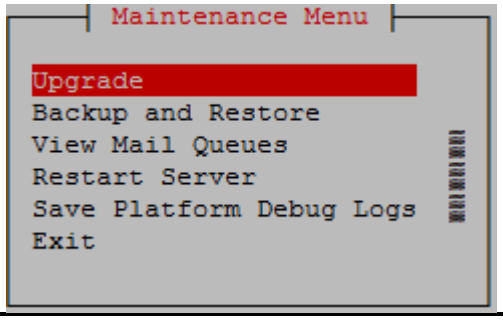
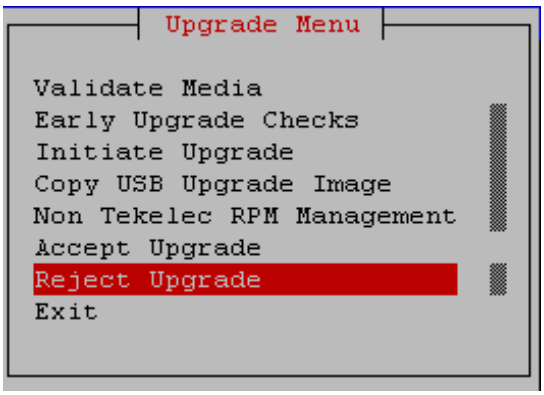
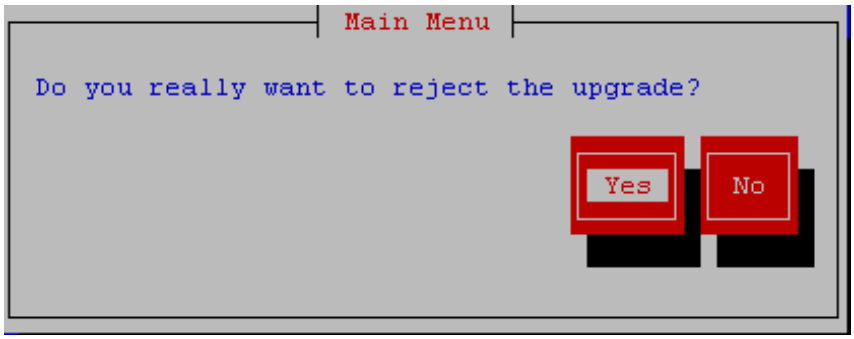
2. ☐	Create a terminal window and establish a connection by logging into MPS B.
	
	Log into MPS B.
		In a newly created terminal window labeled "**MPS A – from MPS B**", connect directly into MPS B.
		
		`# ssh root@< MPS B>`
		`Password: <root_password>`

3. ☐	**MPS B**: Start screen session.
	
	MPS B: Connect to the console of MPS A.
		Execute the following commands to start screen and establish a console session to MPS A.
		
		`# screen -L`
		
		Execute the following command on MPS:
		
		`# minicom mate`
		OR
		`# cu -l /dev/ttyS1 -s 115200`

4. ☐	**MPS A**: Login prompt is displayed.	`<hostname> console login:` Note: Hit enter if no login prompt is displayed.
5. ☐	**MPS A:** Log in to the server as user "root".	`Login: root` `Password: <root_password>`

6. ☐	**MPS A:** Check if upgrade was incremental upgrade or split mirror	If output of below command is as mentioned below it was an incremental upgrade.
		`# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`
		`cat: /usr/TKLC/plat/etc/upgrade/upgrade.conf: No such file or directory`
		
		If output of below command is as mentioned below it was a split mirror upgrade.
		`# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`
		`BACKOUT_TYPE=SPLIT_MIRROR`

Procedure 22: Backout both Server A and B

7. ☐	**MPS A:** Execute the platcfg menu.	`# su - platcfg`
8. ☐	**MPS A**: Select the Maintenance submenu.	The platcfg **Main Menu** appears. On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
9. ☐	**MPSA**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**. 
10. ☐	**MPS A**: Reject Split Mirror Upgrade	Select the "Reject Upgrade" menu and press [ENTER].  

Procedure 22: Backout both Server A and B

11. ☐	**MPS A**: Backout proceeds.	Many informational messages will come across the terminal screen as the backout proceeds. After Backout a message "Backout is Complete System will reboot now" will be displayed on screen wait for system to reboot. After reboot disk will start to sync incase upgrade was split mirror, wait for sync to complete. If upgrade was incremental upgrade system will be in backed out state post reboot.

12. ☐	**MPS A**: Verify that raid is repaired
	Note: Skip this step if upgrade was incremental upgrade
		`[root@lsmspri ~]# cat /proc/mdstat`
		`Personalities : [raid1]`
		`md1 : active raid1 sdb2[2] sda2[0]`
		`262080 blocks super 1.0 [2/2] [UU]`
		
		`md2 : active raid1 sdb1[1] sda1[0]`
		`468447232 blocks super 1.1 [2/2] [UU]`
		`bitmap: 1/4 pages [4KB], 65536KB chunk`
		
		`unused devices: <none>`

13. ☐	**MPS A**: Verify the Backout.	Examine the logs in the directory /var/TKLC/log/upgrade and verify that no errors were reported.
		
		`# grep -i error /var/TKLC/log/upgrade/upgrade.log`
		`# grep -i error /var/TKLC/log/upgrade/ugwrap.log`
		
		Examine the output of the above commands to determine if any errors were reported.
		
		Refer to section 3.6to know more about logging.

14. ☐	**MPS A**: Verify the Backout.	If the backout was ***not*** successful and errors were recorded in the logs, then contact My Oracle Support following the instructions on the front page or the instructions on the Appendix D for further instructions. If the backout ***was*** successful, then continue with the following steps.
15. ☐	**MPS A**: Reboot the MPS.	Perform the following commands to reboot the MPS: `#init 6`
16. ☐	**MPS A**: Login to MPS A.	If the login prompt appears, skip to step 17. If the login prompt does not appear due to disconnect, go to step 15.

17. ☐	Create a terminal window and establish a connection by logging into MPS B.
	
	Log into MPS B.
		In a newly created terminal window labeled "**MPS A – from MPS B**", connect directly into MPS B.
		
		`# ssh root@< MPS B>`
		`Password: <root_password>`

18. ☐	**MPS B**: Rejoin previous screen session on MPS A.	Execute the following command to disconnect and then rejoin previous screen session: `# screen -dr`
19. ☐	**MPS A**: Verify Health of MPS A.	Execute Procedure 23 on MPS A to verify the health of the server.
20. ☐	Terminate all previous connections (ssh).	If not already connected, connect to the E5-APP-B card via the serial port. For connecting the E5-APP-B B card, disconnect the console cable from the serial port on the E5-APP-B A card's adapter. The cable should be disconnected at the point where

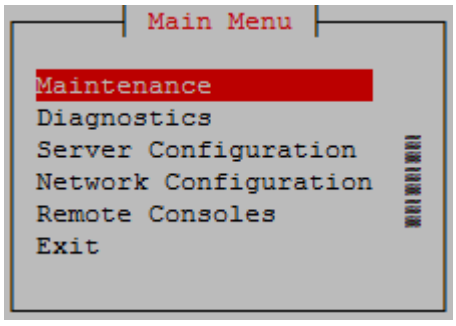
		it connects to the serial port labeled 'S1' on the E5-APP-B A cards adapter and use it for serial access. Skip to step 24, if connected through serial console.

21. ☐	Create a terminal window and establish a connection by logging into MPS A.
	
	Log into MPS A.
		In a newly created terminal window labeled "**MPS B – from MPS A**", connect directly into MPS A.
		
		`# ssh root@< MPS A>`
		`Password: <root_password>`

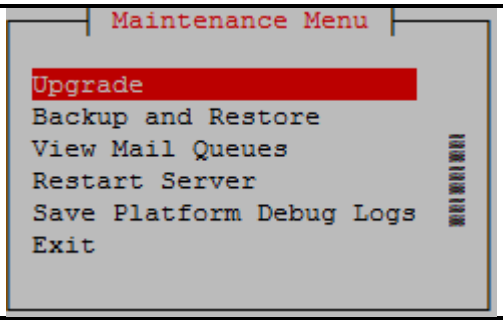
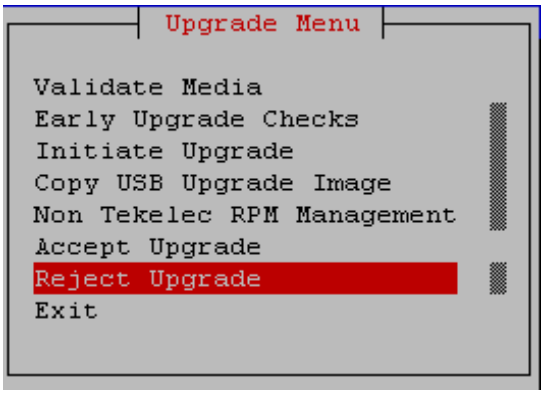
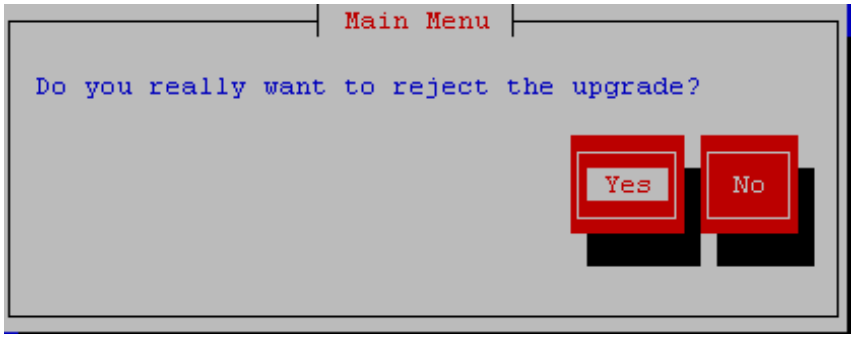
22. ☐	**MPS A**: Start screen session.
	
	MPS A: Connect to the console of MPS B.
		Execute the following commands to start screen and establish a console session to MPS B.
		
		`# screen -L`
		
		Execute the following command on MPS:
		
		`# minicom mate`
		OR
		`# cu -l /dev/ttyS1 -s 115200`

23. ☐	**MPS B**: Login prompt is displayed.	`<hostname> console login:` Note: Hit enter if no login prompt is displayed.
24. ☐	**MPS B:** Log in to the server as user "root".	`Login: root` `Password: <root_password>`

25. ☐	**MPS B:** Check if upgrade was incremental upgrade or split mirror	If output of below command is as mentioned below it was an incremental upgrade.
		`# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`
		`cat: /usr/TKLC/plat/etc/upgrade/upgrade.conf: No such file or directory`
		
		If output of below command is as mentioned below it was a split mirror upgrade.
		`# cat /usr/TKLC/plat/etc/upgrade/upgrade.conf`
		`BACKOUT_TYPE=SPLIT_MIRROR`

26. ☐	**MPS B:** Execute the platcfg menu.	`# su - platcfg`
27. ☐	**MPS B**: Select the Maintenance submenu.	The platcfg **Main Menu** appears. On the **Main Menu**, select **Maintenance** and press **[ENTER]**. 
28. ☐	**MPSB**: Select the Upgrade submenu.	Select the **Upgrade** menu and press **[ENTER]**.

Procedure 22: Backout both Server A and B

		
29. ☐	**MPSB**: Reject Split Mirror upgrade	Select the "Reject Upgrade" menu and press [ENTER].  
30. ☐	**MPS B**: Backout proceeds.	Many informational messages will come across the terminal screen as the backout proceeds. After Backout a message "Backout is Complete System will reboot now" will be displayed on screen wait for system to reboot. After reboot disk will start to sync incase upgrade was split mirror, wait for sync to complete. If upgrade was incremental upgrade system will be in backed out state post reboot.

31. ☐	**MPS B**: Verify that raid is repaired
	Note: Skip this step if upgrade was incremental upgrade
		`[root@lsmssec ~]# cat /proc/mdstat`
		`Personalities : [raid1]`
		`md1 : active raid1 sdb2[2] sda2[0]`
		`262080 blocks super 1.0 [2/2] [UU]`
		
		`md2 : active raid1 sdb1[1] sda1[0]`
		`468447232 blocks super 1.1 [2/2] [UU]`
		`bitmap: 1/4 pages [4KB], 65536KB chunk`
		
		`unused devices: <none>`

32.	**MPS B**: Verify the Backout.	Only perform this step on a backout of a split mirror upgrade.

Procedure 22: Backout both Server A and B

☐		Examine the logs in the directory/var/TKLC/log/upgrade and verify that no errors were reported.
		
		`# grep -i error /var/TKLC/log/upgrade/upgrade.log`
		`# grep -i error /var/TKLC/log/upgrade/ugwrap.log`
		
		Examine the output of the above command to determine if any errors were reported.
		
		Refer to section 3.6to know more about logging.

33. ☐	**MPS B**: Verify the Backout.	If the backout was ***not*** successful and errors were recorded in the logs, then contact the Technical Assistance Center following the instructions on the front page or the instructions on the Appendix for further instructions. If the backout ***was*** successful, then enter continue with the following steps:
34. ☐	**MPS B**: Reboot the MPS.	Perform the following commands to reboot the MPS: `# init 6`
35. ☐	**MPS B**: Login to MPS B.	If the login prompt appears, skip to step 38 . If the login prompt does not appear due to disconnect, go to step 36

36. ☐	Create a terminal window and establish a connection by logging into MPS A.
	
	Log into MPS A
		In a newly created terminal window labeled "**MPS** B – from **MPS** A", connect directly into MPS A.
		
		`# ssh root@< MPS A>`
		`Password: <root_password>`

37. ☐	**MPS A**: Rejoin previous screen session on MPS B	Execute the following command to disconnect and then rejoin previous screen session: `# screen -dr`
38. ☐	**MPS B:** Log in to the server as user "root".	`<hostname> console login: root` `Password: <root_password>`
39. ☐	**MPS B**: Verify Health of MPS B	Execute Procedure 23on MPS B to verify the health of the server.
40. ☐	**Procedure complete.**	This procedure is complete.

The application should now be running at the original software release level.

Procedure 23 Perform System Health Check

Procedure 23: Perform System Health Check

S T E P #	This procedure performs a system health check on any MPS. Estimated time: 5 minutes	
1. ☐	**MPS X:** Execute syscheck	**# syscheck** Running modules in class disk... OK Running modules in class services... OK Running modules in class system... OK Running modules in class lsmshc... OK Running modules in class hardware... OK Running modules in class proc... OK Running modules in class net... OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log In case of Split Mirror Upgrade below error will be observed in syscheck output: Running modules in class disk... * meta: FAILURE:: MAJOR::3000000000000002 -- Server Internal Disk Error * meta: FAILURE:: md status check failed. * meta: FAILURE:: MAJOR::3000000000000002 -- Server Internal Disk Error * meta: FAILURE:: md configuration check failed. Active md config doesn't match /etc/raidtab. One or more module in class "disk" FAILED
2. ☐	**MPS X:**Verify contents of survMon last state file.	Execute the following command to verify that the last state/status of the "lsmssurv" process is stop: [root@lsmspri ~]# **cat /usr/TKLC/lsms/config/lsmsSurv.last** STOP
3. ☐	**MPS X:**Start Surveillance (survMon).	Execute the following command to "lsmssurv" process, this will start the LSMS survMon: [root@lsmspri ~]# **/usr/TKLC/lsms/bin/lsmssurv start** **LSMS Surveillance feature started**

Procedure 23: Perform System Health Check

4. ☐	**MPS X:**Verify contents of survMon last state file.	Execute the following command to verify that the last state/status of the "lsmssurv" process is start, this will ensure that the crond daemon will restart it upon a failure:
		`[root@lsmspri ~]# cat /usr/TKLC/lsms/config/lsmsSurv.last`
		`START`
		
		You have successfully completed this procedure, return to the procedure from which you came.

	MPS X: System Check Failure	.If System Check detected any failures, please contact the My Oracle Support and ask for assistance. Any errors must be well understood before proceeding with the upgrade, errors concerning core files may be ignored. **Note:** that if no application is installed, the message "No alarm dispatch utility available" is not a failure.
5. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 24 ISO Image copy from USB Media

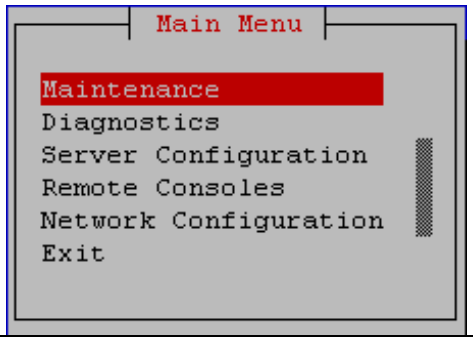
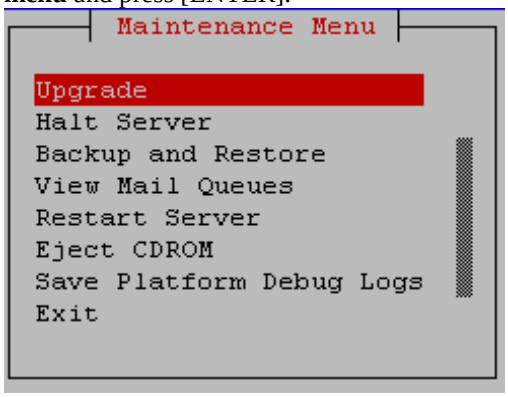
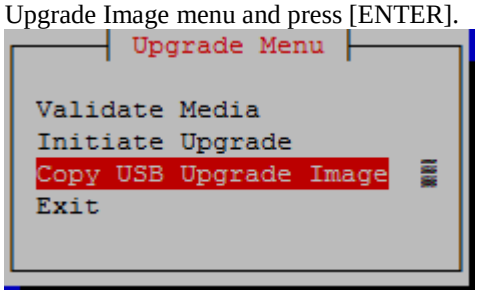
Procedure 24: ISO Image copy from USB Media

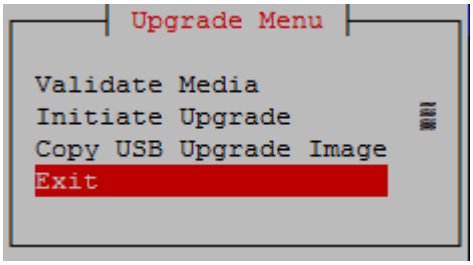
S T E P #	This procedure provides instructions to copy an ISO image from an USB media. Estimated time: 5 minutes	
1. ☐	**MPS X:** Insert USB.	Insert media in USB drive
2. ☐	**MPS X:** Log in to the server as the "root" user.	`[hostname] consolelogin: root` `password: password`

3. ☐	**MPS X:** Run syscheck to make sure there is no error.	Execute the following command:
		`# syscheck`
		The output should look like:
		`[root@hostname ~]# syscheck`
		`Running modules in class proc...`
		`OK`
		`Running modules in class services...`
		`OK`
		`Running modules in class system...`
		`OK`
		`Running modules in class disk...`
		`OK`
		`Running modules in class hardware...`
		`OK`
		`Running modules in class net...`
		`OK`
		`LOG LOCATION: /var/TKLC/log/syscheck/fail_log`

4. ☐	**MPS X:** Verify ISO image doesn't already exist.	Execute the following command to perform directory listing: `# ls -al /var/TKLC/upgrade` The output should look like:

		[root@hostname ~]# ls -al /var/TKLC/upgrade total 16 dr-xr-xr-x 2 root root 4096 Oct 22 16:31 . dr-xr-xr-x 21 root root 4096 Oct 18 13:40 .. If an ISO image exists, remove it by executing the following command: **# rm -f /var/TKLC/upgrade/<ISO image>**
5. ☐	**MPS X:** Delete unwanted ISOs from USB media.	Execute the following command to create a directory to mount the USB media: **# mkdir -p /mnt/usb** Execute the following command to get the USB drive name: **# fdisk -l |grep FAT** The output should look like: /dev/sdc1 * 1 812 831472 6 FAT16 Execute the following command to mount the USB media using the USB drive name from the output above: **# mount /dev/sdc1 /mnt/usb** Execute the following command to perform directory listing and verify the file name format is as expected: **# ls -al /mnt/usb** The output should look like: [root@hostname ~]# # ls -al /mnt/usb total 629400 dr-xr-xr-x 2 root root 4096 Dec 5 13:33 . dr-xr-xr-x 22 root root 4096 Dec 5 13:55 .. -rw-r--r-- 1 root root 853002240 Dec 5 16:20 LSMS-13.2.1.0.0_132.18.0-x86_64.iso Only one ISO file should be listed, if additional files are listed, execute the following command to remove unwanted ISOs: **# rm -f /mnt/usb/<ISO_NAME>.iso** For e.g., **# rm -f /mnt/usb/LSMS-13.3.0.0.0_133.4.0-x86_64.iso**
6. ☐	**MPS X:** Verify space exists for ISO.	Execute the following command to verify the available disk space: **# df -h /var/TKLC** The output should look like: [root@lsmspri log]# df -h /var/TKLC Filesystem Size Used Avail Use% Mounted on /dev/mapper/vgroot-plat_var_tklc 3.9G 1.2G 2.5G 32% /var/TKLC Verify that there is at least 1G in the Avail column. If not, clean up files until there is space available. **CAUTION: Make sure you know what files you can remove safely before cleaning up. It is recommended that you only clean up files in the /var/TKLC/upgrade directory as this is a platform owned directory that should only contain ISO images. This directory should not be expected to contain images for any length of time as they can get purged. Contact My Oracle Support beforehand if removing files other than the /var/TKLC/upgrade directory as removing files is dangerous.**

7. ☐	**MPS X:** Start platcfg utility.	Execute the following command to change the user: `# su - platcfg`
8. ☐	**MPS X:** Select the Maintenance submenu.	On the Main Menu of the Platform Configuration Utility, select **Maintenance** and press **[ENTER]**. 
9. ☐	**MPS X:** Select the Upgrade submenu.	Select the **Upgrade menu** and press [ENTER]. 
10. ☐	**MPS X:** Select Copy USB Upgrade Image submenu.	Select the Copy USB Upgrade Image menu and press [ENTER]. 
11. ☐	**MPS X:** The ISO will be copied from the USB media to /var/TKLC/upgrade. Press any key to return to Upgrade menu.	Copying /mnt/upgrade/ LSMS-13.3.0.0.0_133.4.0-x86_64.iso PRESS ANY KEY TO RETURN TO THE PLATCFG MENU.
12. ☐	**MPS X:** Exit platcfg.	Select Exit and press [ENTER] repeatedly until the “platcfg” utility terminates.

		
13. ☐	**MPS X: Unmount USB media**	Execute the following command to unmount the USB media: `# umount /mnt/usb`
14. ☐	**MPS X:** Verify ISO image exists.	Execute the following command to perform directory listing: `# ls -al /var/TKLC/upgrade` The output should look like: [root@lsmspri log]# ls -al /var/TKLC/upgrade total 895152 drwxrwxr-x. 2 root admgrp 4096 Apr 20 17:16 . dr-xr-xr-x. 20 root root 4096 Apr 20 18:01 .. -r-------- 1 admusr admgrp 916621312 Apr 20 17:16 LSMS-13.3.0.0.0_133.4.0-x86_64.iso Repeat this procedure from step 5 if LSMS ISO file is not as expected.
15. ☐	**MPS X:** Logout from server.	Logout from the server by executing the following command: `# logout`
16. ☐	**MPS X:** Remove USB media.	Remove media fromUSB drive.
17. ☐	**Procedure Complete.**	This procedure is complete.

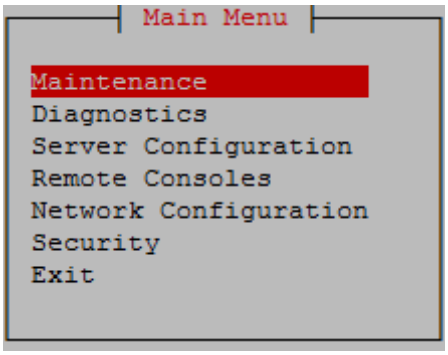
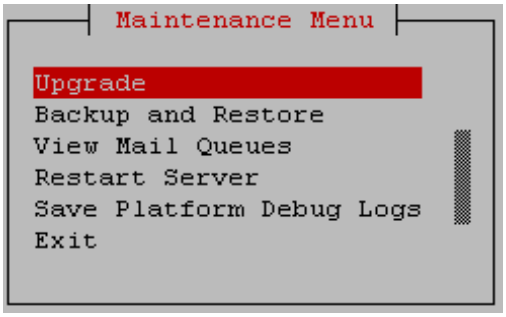
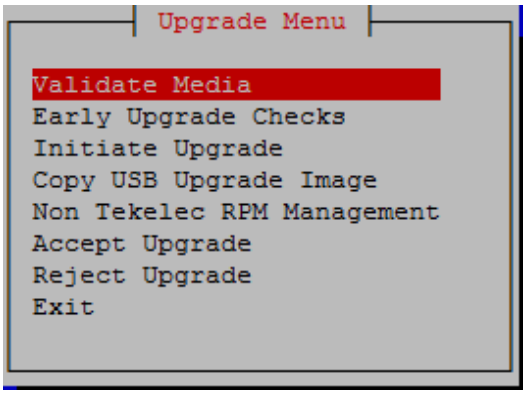
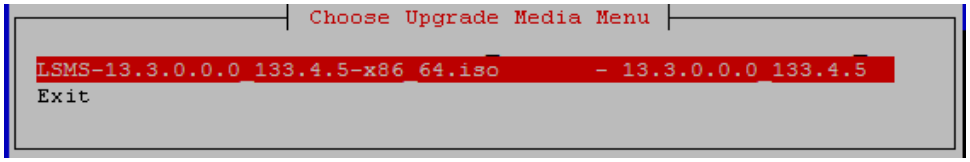
Procedure 25 Validate Upgrade Media

This procedure is used to execute a validation of the Upgrade Media (typically an ISO image) separately from executing an upgrade. The upgrade process automatically validates the upgrade media. However, sometime the user may wish to perform just a validation before proceeding with upgrade, thus the reason for this separate process.

Procedure 25: Validate Upgrade Media

S T E P #	This procedure provides instructions to perform a validation of the upgrade media on the server. This procedure assumes that the E5-APP-B IPM procedure has been executed and the user has LSMS Upgrade ISO image available. Estimated time: 5 minutes	
1. ☐	**MPS X:** Start platcfg utility by logining as platcfg user.	`# su - platcfg`

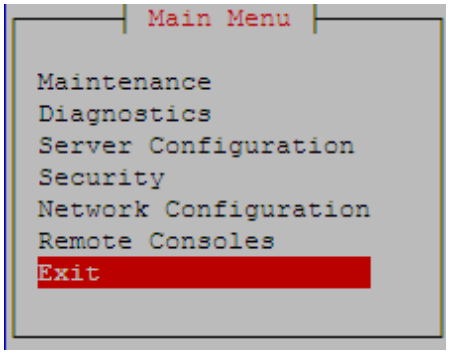
Procedure 25: Validate Upgrade Media

2. ☐	**MPS X:** Select the Maintenance submenu	On the **Main Menu** of the Platform Configuration Utility, select **Maintenance** and press **[ENTER]**. 
3. ☐	**MPS X:** Navigate to the media validation function.	Select the **Upgrade** menu and press **[ENTER]**.  Select the **Validate Media** menu and press **[ENTER]**. 
4. ☐	**MPS X:** Output from the Validate Media selection.	The screen displays a message that it is searching for upgrade media. Once the upgrade media is found, an Upgrade Media selection menu appears similar to the example below. Select the desired upgrade media and press **[ENTER]**. There should only be one selection available, as in the example below. 
5. ☐	**MPS X:** View the Validation results	The results of the validation are displayed, similar to the example below. Press **[ENTER]** to continue.

Procedure 25: Validate Upgrade Media

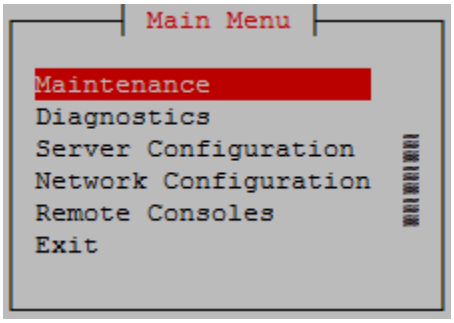
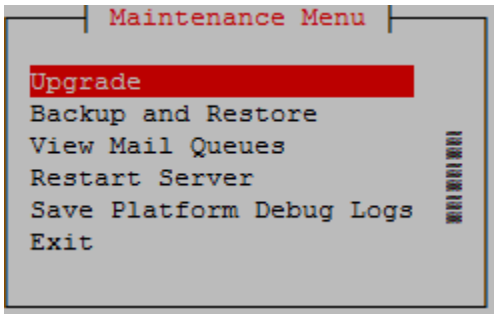
		root@lsmspri:~ Validating cdrom... ## ## ##

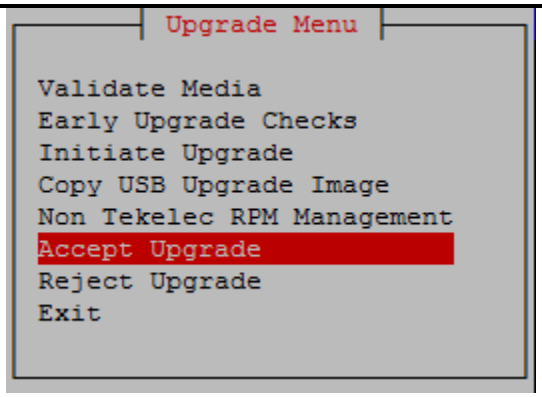
Procedure 25: Validate Upgrade Media

		
7. ☐	**Procedure Complete.**	This procedure is complete.

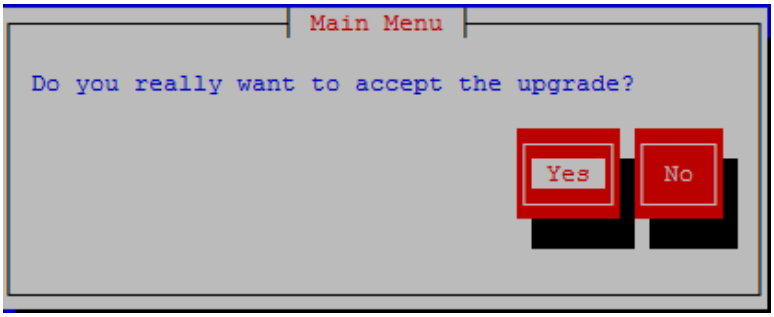
Procedure 26 Accept Split Mirror Upgrade

Procedure 26: Accept Split Mirror Upgrade

S T E P #	This procedure provides instructions to accept an upgrade with split-mirror Estimated time: 5 minutes Note: There is no need to accept the upgrade immediately after upgrade. Check the system for a couple of days to verify that the system is working fine after the upgrade. After finding that the system is working fine, accept the upgrade. If something not working as intended or breaking frequently (Should not be the case), then after a couple of days one can reject the upgrade to go back to the previous release.
1. ☐	**MPS A:** Accept Upgrade	`# su - platcfg`  



Note: The "Reject Upgrade" menu is also available after the LSMS installation. However, this option should not be used after the first installation of application. It should be used in subsequent upgrades to return to a previous application release.




```
Called with options: --accept
Loading Backout::BackoutType::SPLIT_MIRROR
Accepting Upgrade
Re-joining raid mirrors.
        Adding /dev/sdb2 to /dev/md1
mdadm: added /dev/sdb2
        Adding /dev/sdb1 to /dev/md2
```

```
+--------------------+ Message +---------------------+
|                                                     |
| The accept has completed.                           |
|                                                     |
|                                                     |
|                                                     |
|                                                     |
|                                                     |
|                                                     |
|                                                     |
|                                                     |
|                                                     |
|            Press any key to continue...             |
|                                                     |
+-----------------------------------------------------+
```

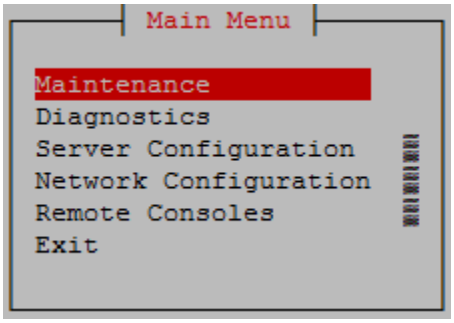
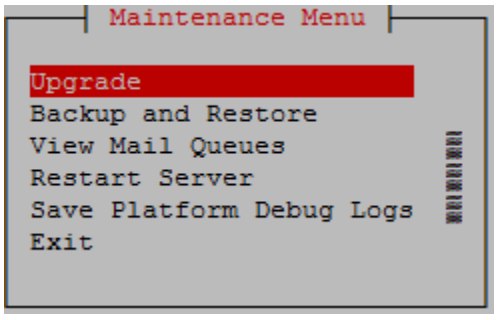
Procedure 26: Accept Split Mirror Upgrade

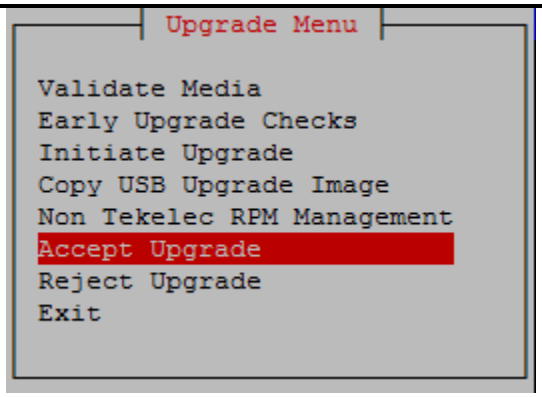
2. ☐	**MPS A**: Verify that raid is repaired	`[root@lsmspri ~]# cat /proc/mdstat`
		`Personalities : [raid1]`
		`md1 : active raid1 sdb2[2] sda2[0]`
		`262080 blocks super 1.0 [2/2] [UU]`
		
		`md2 : active raid1 sdb1[1] sda1[0]`
		`468447232 blocks super 1.1 [2/2] [UU]`
		`bitmap: 1/4 pages [4KB], 65536KB chunk`
		
		`unused devices: <none>`

3. ☐	**Repeat the steps for MPS B.**	Repeat the above steps 1 and 2on MPS B to accept upgrade.
4. ☐	**Procedure complete.**	This procedure is complete.

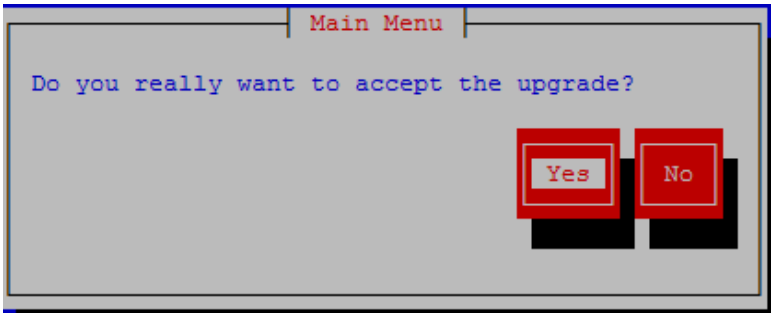
Procedure 27 Accept Incremental Upgrade

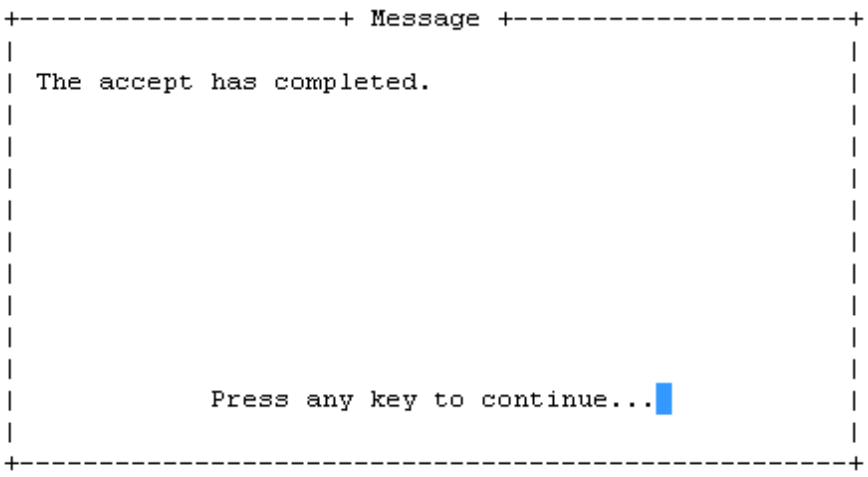
Procedure 27: Accept Incremental Upgrade

STEP #	This procedure provides instructions to accept an upgrade with split-mirror Estimated time: 5 minutes Note: There is no need to accept the upgrade immediately after upgrade. Check the system for a couple of days to verify that the system is working fine after the upgrade. After finding that the system is working fine, accept the upgrade. If something not working as intended or breaking frequently (Should not be the case), then after a couple of days one can reject the upgrade to go back to the previous release.
1. ☐	**MPS A:** Accept Upgrade	`# su - platcfg`  



Note: The "Reject Upgrade" menu is also available after the LSMS installation. However, this option should not be used after the first installation of application. It should be used in subsequent upgrades to return to a previous application release.





2. ☐	**Repeat the steps for MPS B.**	Repeat the above step on MPS B to accept upgrade.
3. ☐	**Procedure complete.**	This procedure is complete.

Procedure 28 Stopping an LSMS backup in progress

Procedure 28: Stopping an LSMS backup in process

S T E P #	This procedure explains how to terminate an LSMS backup if one is running prior to performing an upgrade. The backup cannot be stopped currently via a stop command or specific signal but will have to be manually terminated. If the user reboots the server prior to executing steps 2-6 that will terminate the backup, but then steps 7-17 should be executed immediately after the reboot to ensure things are properly cleaned up. Estimated time: 5 minutes **Note**: The user should perform all of the following commands as the LSMS root user. The snapshot is only mounted during the db portion of the backup but this phase will consume the majority of the time required to perform a backup. The snapshot will not be mounted during the platform and logs portion of the backup but terminating it may leave TOC file and backup server LOCK file cleanup necessary as described in step11, 13, and 16 below.	
1. ☐	**MPS X:** Login as the user "root".	**[hostname] consolelogin: root** **password: <root_password>**
2. ☐	**MPS X:** Determine the PID of the "lsmsbkp" process.	Execute the following command to determine if the "lsmsbkp" process is actively running: **[root@lsmssec ~]# ps -ef | grep lsmsbkp | grep -v grep** root 25938 11126 0 15:08 pts/3 00:00:00 /bin/bash /usr/TKLC/lsms/tools/lsmsbkp_wrapper root 25976 25938 0 15:08 pts/3 00:00:00 /bin/sh /usr/TKLC/lsms/tools/lsmsbkp If a LSMS backup is in progress the output will show two processes running. Record the PID(process id) of the "lsmsbkp" process and proceed to the next step of this procedure. PID: _____ If the above command returns no output then proceed to Step 7 of this procedure to verify that the logical volume does not exist and is not mounted.
3. ☐	**MPS X:** Terminate the "lsmsbkp" process.	Execute the following command to terminate the "lsmsbkp" process: **[root@lsmssec ~]# kill -9 <lsmsbkp PID>**
4. ☐	**MPS X:** Monitor the "lsmsbkp_wrapper" process until it terminates.	After the lsmsbkp process is terminated the lsmsbkp_wrapper should also terminate, Execute the following command to monitor this until no output is displayed. **[root@lsmssec ~]# ps -ef | grep lsmsbkp_wrapper| grep -v grep** If after several minutes the "lsmsbkp_wrapper" process does not terminate then it can be terminated using the method described previously in step 3 this time for the "lsmsbkp_wrapper" process.
5. ☐	**MPS X:** Check the "netbackup" process	Most likely the backup will be terminated during the database phase of the backup as this is the longest running phase. We need to check for and terminate the netbackup routine which is actually doing the work*:* Execute the following command to determine if the "netbackup" process is actively running: **[root@lsmssec mnt]# ps -ef | grep netbackup| grep -v grep**

Procedure 28: Stopping an LSMS backup in process

		root 14937 13435 5 15:35 pts/3 00:00:00 /usr/bin/perl -T /usr/TKLC/plat/bin/netbackup --config=/usr/TKLC/plat/etc/BackupTK/lsmsdb.xml --repository=db
6. ☐	**MPS X:** Terminate the "netbackup" process.	Execute the following command to terminate the "netbackup" process: [root@lsmssec mnt]# **kill -9 <netbackup PID>**
7. ☐	**MPS X:** Verify the mount point for the backup snapshot exists.	Execute the following command toverify that the dbbackup logical volume is mounted at the mount point /mnt/backup/var/TKLC/lsms/db : [root@lsmssec ~]# **df -h** Filesystem Size Used Avail Use% Mounted on /dev/mapper/vgroot-plat_root 976M 287M 639M 31% / tmpfs 3.9G 0 3.9G 0% /dev/shm /dev/md1 244M 48M 184M 21% /boot /dev/mapper/vgroot-plat_tmp 976M 1.7M 924M 1% /tmp /dev/mapper/vgroot-plat_usr 3.9G 2.4G 1.3G 65% /usr /dev/mapper/vgroot-plat_var 976M 210M 716M 23% /var /dev/mapper/vgroot-plat_var_tklc 3.9G 1.2G 2.5G 32% /var/TKLC /dev/mapper/vgroot-lsms_root 3.9G 8.2M 3.7G 1% /var/TKLC/lsms /dev/mapper/vgroot-lsms_db 210G 63M 199G 1% /var/TKLC/lsms/db /dev/mapper/vgroot-lsms_external 2.0G 3.0M 1.9G 1% /var/TKLC/lsms/external /dev/mapper/vgroot-lsms_free 138G 61M 131G 1% /var/TKLC/lsms/free /dev/mapper/vgroot-lsms_logs 36G 49M 34G 1% /var/TKLC/lsms/logs /dev/sdc1 1.1G 1.1G 7.5M 100% /media/sdc1/dev/mapper/vgroot-dbbackup 82G 1.2G 77G 2% /mnt/backup/var/TKLC/lsms/db If /mnt/backup/var/TKLC/lsms/db is not mounted proceed to Step 9 of this procedure.
8. ☐	**MPS X:** Umount the mount point for the backup snapshot.	Execute the following command to un-mount the mount point for the snapshot: [root@lsmssec mnt]#**umount /mnt/backup/var/TKLC/lsms/db** Execute the following command to verify that the mount point for the snapshot has been unmounted. The commands output will look like the following when mount point for the snapshot has been unmounted: [root@lsmssec ~]# **df -h** Filesystem Size Used Avail Use% Mounted on /dev/mapper/vgroot-plat_root 976M 287M 639M 31% / tmpfs 3.9G 0 3.9G 0% /dev/shm /dev/md1 244M 48M 184M 21% /boot /dev/mapper/vgroot-plat_tmp 976M 1.7M 924M 1% /tmp /dev/mapper/vgroot-plat_usr 3.9G 2.4G 1.3G 65% /usr /dev/mapper/vgroot-plat_var 976M 210M 716M 23% /var /dev/mapper/vgroot-plat_var_tklc 3.9G 1.2G 2.5G 32% /var/TKLC /dev/mapper/vgroot-lsms_root

```
                        3.9G  8.2M  3.7G   1% /var/TKLC/lsms
/dev/mapper/vgroot-lsms_db
                        210G   63M  199G   1% /var/TKLC/lsms/db
/dev/mapper/vgroot-lsms_external
                        2.0G  3.0M  1.9G   1%
/var/TKLC/lsms/external
/dev/mapper/vgroot-lsms_free
                        138G   61M  131G   1% /var/TKLC/lsms/free
/dev/mapper/vgroot-lsms_logs
                         36G   49M   34G   1% /var/TKLC/lsms/logs
/dev/sdc1               1.1G  1.1G  7.5M 100% /media/sdc1
```

9. ☐ **MPS X:** Verify that the dbbackup logical volume exists.

Execute the following command toverify that the backup snapshot logical volume exists:

```
[root@lsmssec ~]# lvdisplay
  --- Logical volume ---
  LV Name                plat root
      .
   (output omitted)
      .
   --- Logical volume ---
  LV Name                plat swap
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                plat_var
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                plat_usr
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                plat tmp
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                plat_var_tklc
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                lsms_root
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                lsms logs
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                lsms external
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                lsms_free
      .
   (output omitted)
      .
  --- Logical volume ---
  LV Name                lsms_db
      .
   (output omitted)
      .
  --- Logical volume ---
```

		LV Name ***/dev/vgroot/dbbackup*** ***VG Name*** ***vgroot*** ***LV UUID*** ***DFmRiq-0Osz-o3bZ-M2mB-huaD-EE7M-KH3mOF*** ***LV Write Access*** ***read/write*** ***LV snapshot status*** ***active destination for /dev/vgroot/lsms-db*** ***LV Status*** ***available*** ***# open*** ***1*** ***LV Size*** ***83.00 GB*** ***Current LE*** ***2656*** ***COW-table size*** ***8.00 GB*** ***COW-table LE*** ***256*** ***Allocated to snapshot*** ***0.00%*** ***Snapshot chunk size*** ***8.00 KB*** ***Segments*** ***1*** ***Allocation*** ***inherit*** ***Read ahead sectors*** ***0*** ***Block device*** ***253:5*** If the logical volume/dev/vgroot/dbbackup does not exist proceed to Step 11 of this procedure.

10. ☐	**MPS X:** Remove the dbbackup logical volume using lvremove.	Execute the following command to remove the /dev/vgroot/dbbackup logical volume:
		`[root@lsmssec mnt]# lvremove /dev/vgroot/dbbackup`
		`Do you really want to remove active logical volume "dbbackup"? [y/n]: y`
		`Logical volume "dbbackup" successfully removed`
		Execute the following command to verify that the logical volume has been removed. The commands output will look like the following when the snapshot lv have been removed:
		`[root@lsmssec ~]# lvdisplay`
		`--- Logical volume ---`
		`LV Name plat root`
		`.`
		`(output omitted)`
		`.`
		`--- Logical volume ---`
		`LV Name plat swap`
		`.`
		`(output omitted)`
		`.`
		`--- Logical volume ---`
		`LV Name plat var`
		`.`
		`(output omitted)`
		`.`
		`--- Logical volume ---`
		`LV Name plat_usr`
		`.`
		`(output omitted)`
		`.`
		`--- Logical volume ---`
		`LV Name plat_tmp`
		`.`
		`(output omitted)`
		`.`
		`--- Logical volume ---`
		`LV Name plat var tklc`
		`.`
		`(output omitted)`
		`.`
		`--- Logical volume ---`
		`LV Name lsms root`

		. *(output omitted)* . --- Logical volume --- LV Name lsms_logs . *(output omitted)* . --- Logical volume --- LV Name lsms external . *(output omitted)* . --- Logical volume --- LV Name lsms_free . *(output omitted)* . --- Logical volume --- LV Name lsms db . *(output omitted)* .

11. ☐	**MPS X:** Verify the existence of a TOC file in the "/mnt/backup" directory.	Execute the following command to change directory to "/mnt/backup":
		`[root@lsmssec mnt]# cd /mnt/backup`
		Execute the following command to verify the existence of a TOC (Table Of Contents) file exists in "/mnt/backup";
		`[root@lsmssec backup]# ls`
		TOC var
		Note: If no TOC file exists proceed to the Step 13 of this procedure.

12. ☐	**MPS X:** Remove the TOC file in the "/mnt/backup" directory.	Execute the following command to remove the TOC file in "/mnt/backup":
		`[root@lsmssec backup]# rm TOC`
		`rm: remove regular file `TOC'? y`

13. ☐	**MPS X:** Verify the existence of a TOC file in the "/" directory.	Execute the following command to change directory to "/":
		`[root@lsmssec backup]# cd /`
		Execute the following command to verify the existence of a TOC (Table Of Contents) file exists in "/";
		`[root@lsmssec backup]# ls`
		bin etc lib misc proc selinux tftpboot usr
		boot home lost+found mnt root srv tmp var
		dev initrd media opt sbin sys **TOC**
		Note: If no TOC file exists proceed to the Step 15 of this procedure.

14. ☐	**MPS X:** Remove the TOC file in the "/" directory.	Execute the following command to remove the TOC file in "/mnt/backup":
		`[root@lsmssec backup]# rm TOC`
		`rm: remove regular file `/TOC'? y`

Procedure 28: Stopping an LSMS backup in process

15. ☐	**MPS X**: SSH to the backup server.	Execute the following command to SSH to the NAS: `[root@lsmssec backup]# ssh backupserver`

16. ☐	**MPS X:** Verify the existence of any LOCK.* files in the "/Volumes/LVstorage" directory on the NAS.	On the NAS execute the following command to change directory to "/Volumes/LVstorage":
		
		`[root@CE64CDAE root]# cd /Volumes/LVstorage`
		
		Execute the following command to verify the existence of a LOCK file exists in "/Volumes/LVstorage":
		
		`[root@CE64CDAE LVstorage]# ls`
		`db  LOCK.db  logs_lsmspri logs_lsmssec  lsmspri  lsmssec`
		
		Note: In this example a db directory LOCK file exists, but it is possible for a lock file to exist for any of the five directories listed: LOCK.db, LOCK.logs_lsmspri, LOCK.logs_lsmssec, LOCK.lsmspri, and/or LOCK.lsmssec
		
		Note: If no LOCK file exists proceed to Step 18 of this procedure.

17. ☐	**MPS X:** Remove any LOCK.* files in the "/Volumes/LVstorage" directory on the NAS.	Execute the following command to remove the LOCK.* files in "/Volumes/LVstorage":
		
		`[root@CE64CDAE LVstorage]# rm LOCK.db`
		`rm: remove regular file `LOCK.db'? y`
		
		Note: In the following example a db directory LOCK file is being removed, it is possible for a lock file to exist for any of the five directories listed.

18. ☐	**Procedure complete.**	This procedure is complete.

Procedure 29 IPM with TPD 7.5.X

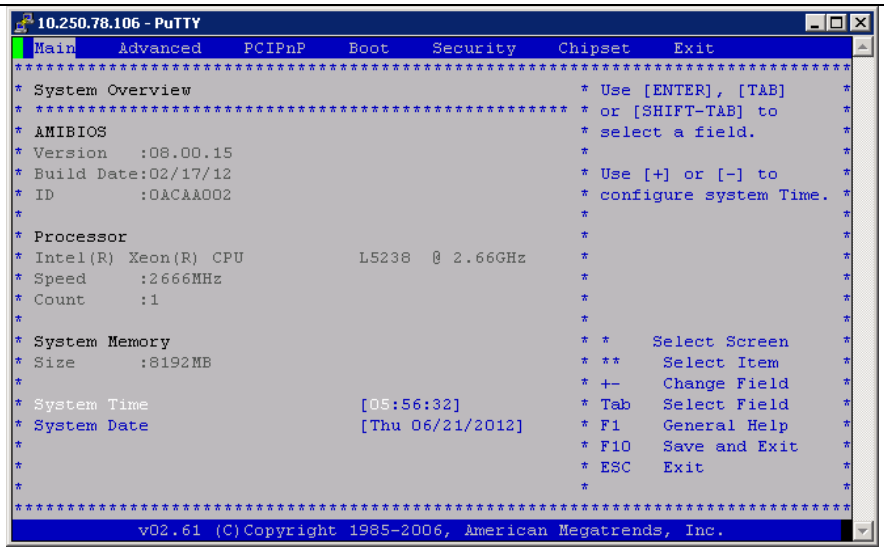
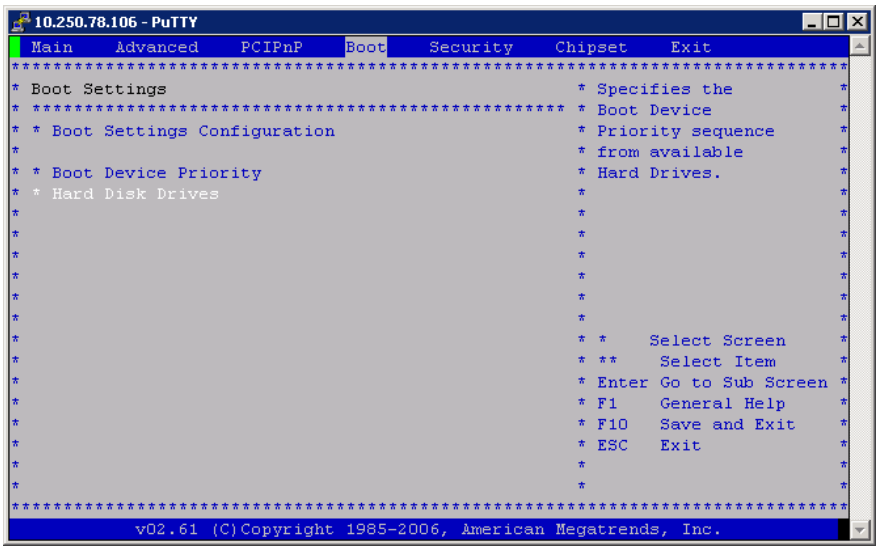
Procedure 29: IPM with TPD 7.5.x

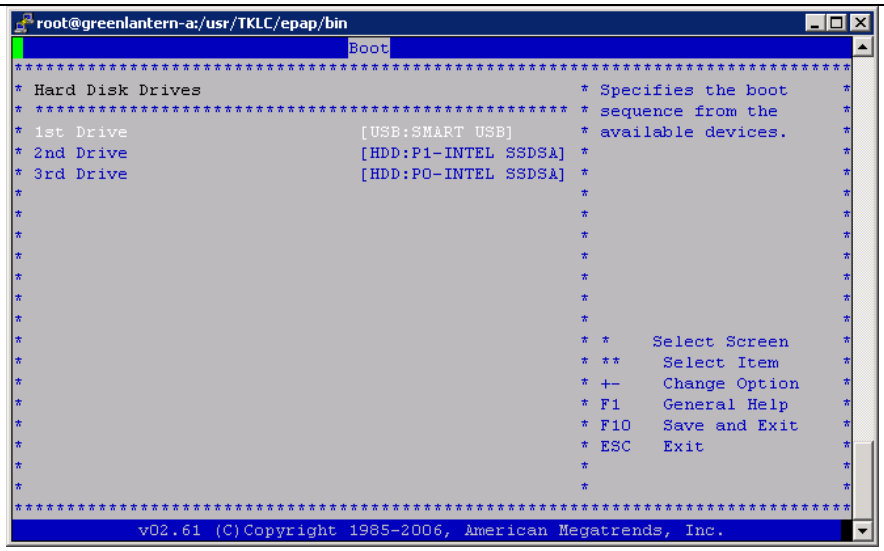
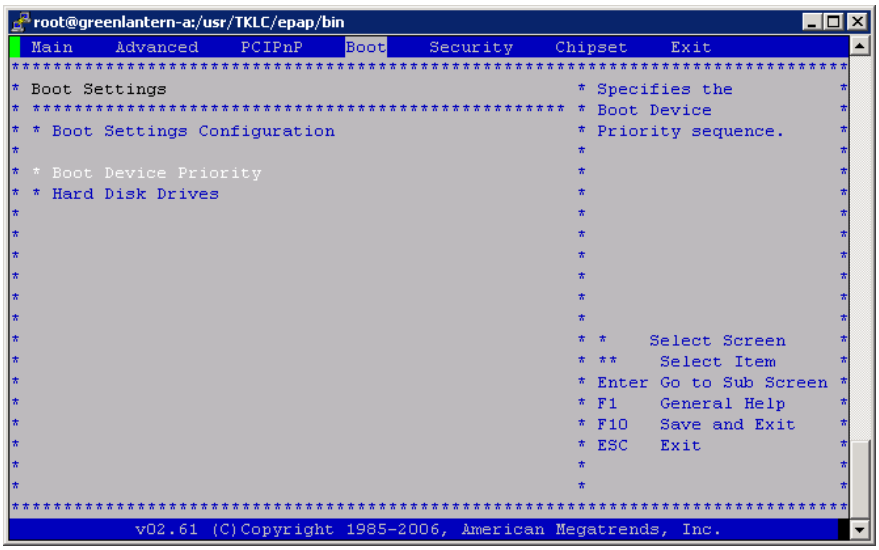
STEP #	This procedure will IPM the E5-APP-B Server. Estimated time: 5 minutes	
1. ☐	**MPS X:** Insert TPD 7.5.X USB media into the USB port	IPM LSMS servers with 7.5.x.0.0-y.z.0.

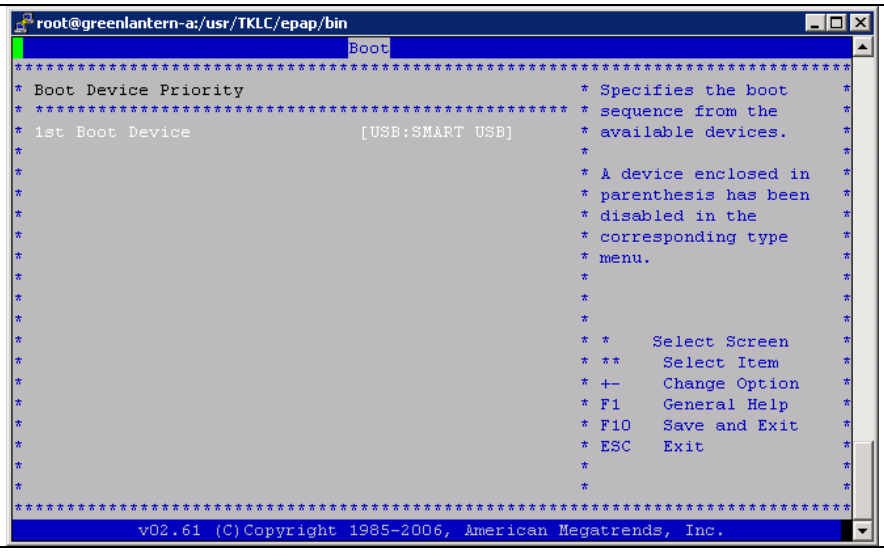
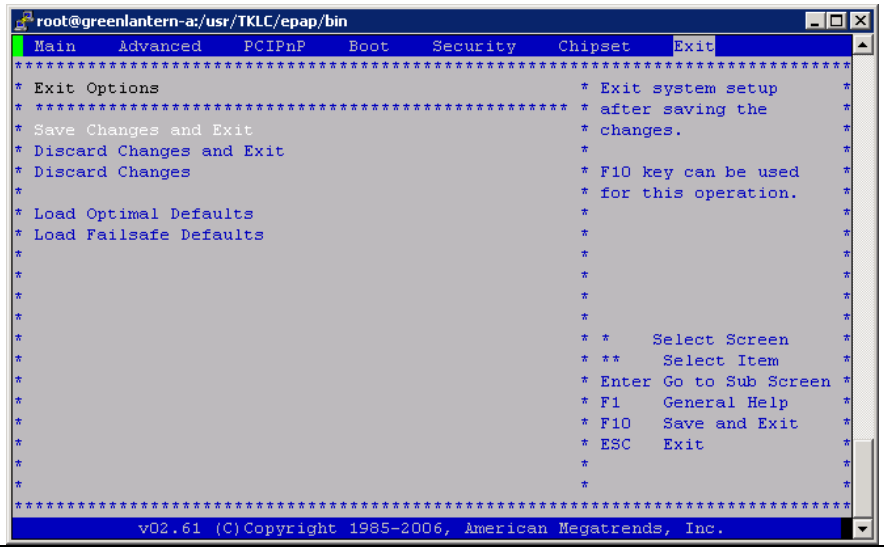
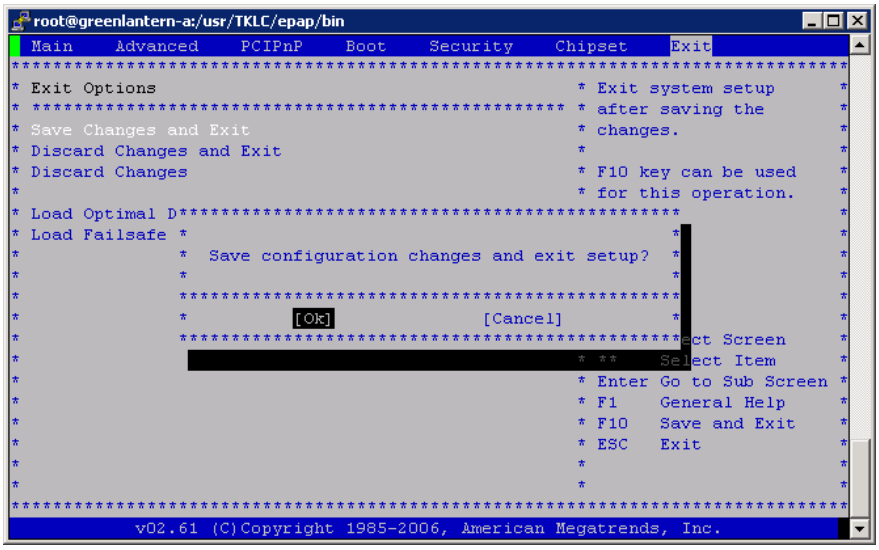
2. ☐	**MPS X:** If necessary, log in to the server as the user "root"	If not already logged in to the MPS server, then login as user "root".
		
		`console login:  root`
		`password:  <root_password>`

3. ☐	**MPS X:** Reboot server	`# reboot`

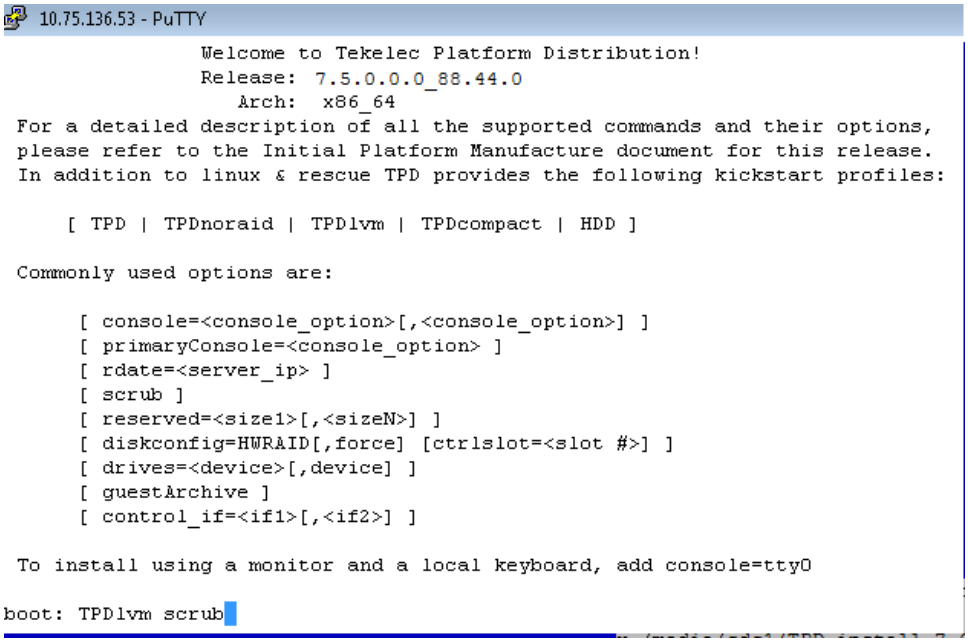
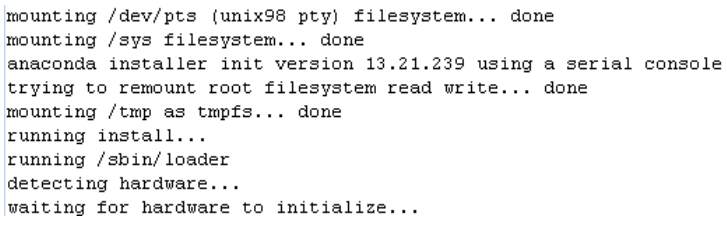
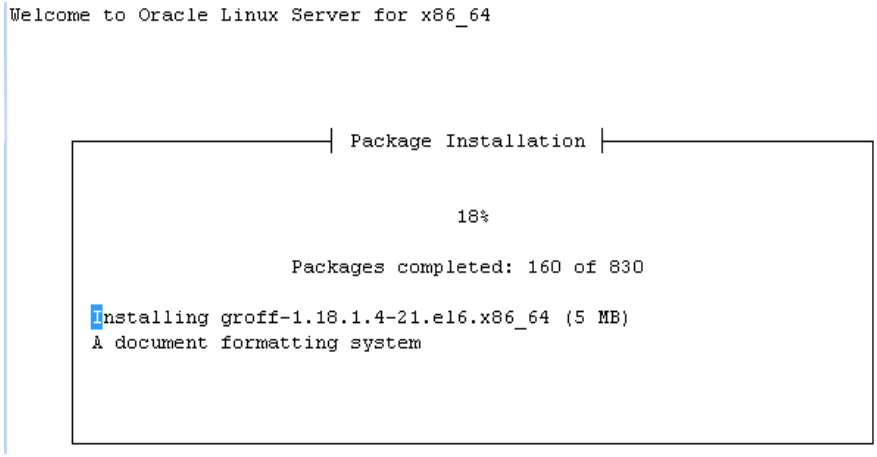
Procedure 29: IPM with TPD 7.5.x

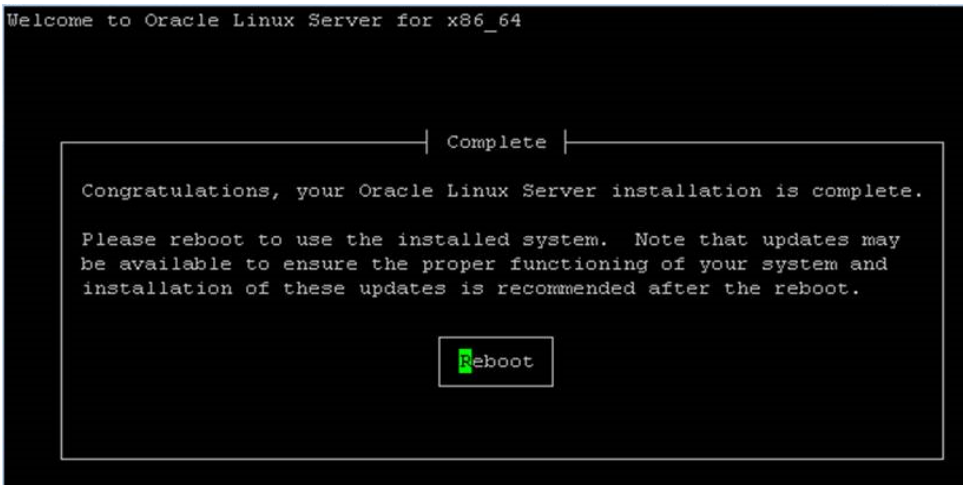
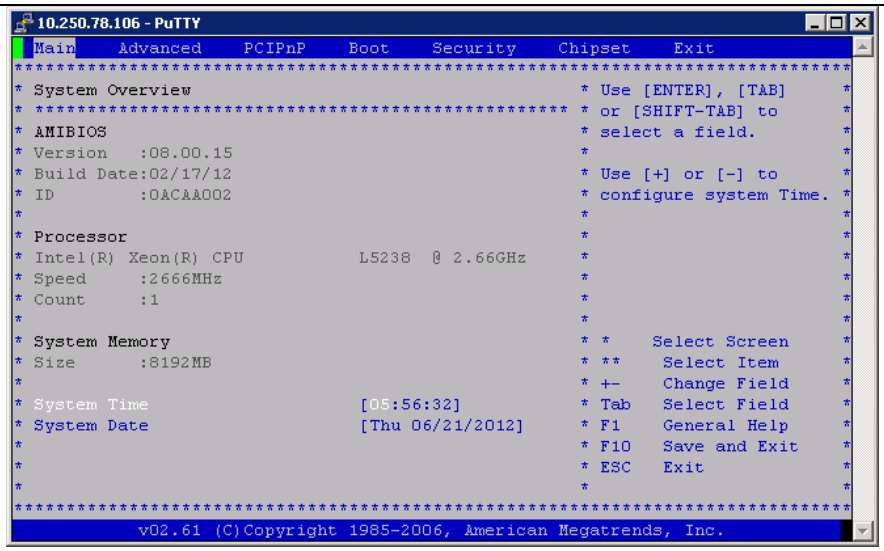
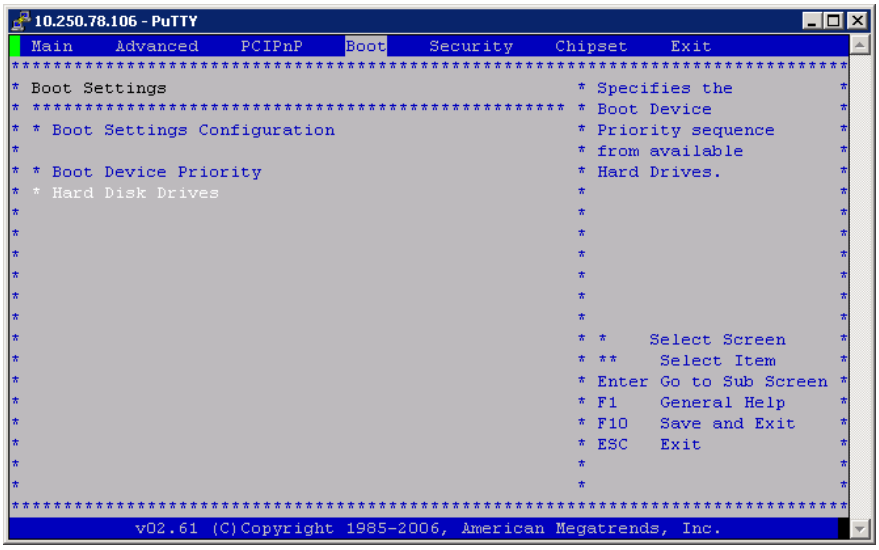
4. ☐	**MPS X:** Press 'del' key to enter the BIOS	
5. ☐	**MPS X:** Set System Time and Date	Set the System Time and Date and time to GMT (Greenwich Mean Time).
6. ☐	**MPS X:** Select *Boot* → *Hard Disk Drives* option	
7. ☐	**MPS X:** Press 'Enter' key and select USB as the 1st Drive	

		
8. ☐	**MPS X:** Press 'Esc' key and select Boot Device Priority	
9. ☐	**MPS X:** Verify that the 1st Boot Device is set to USB.	

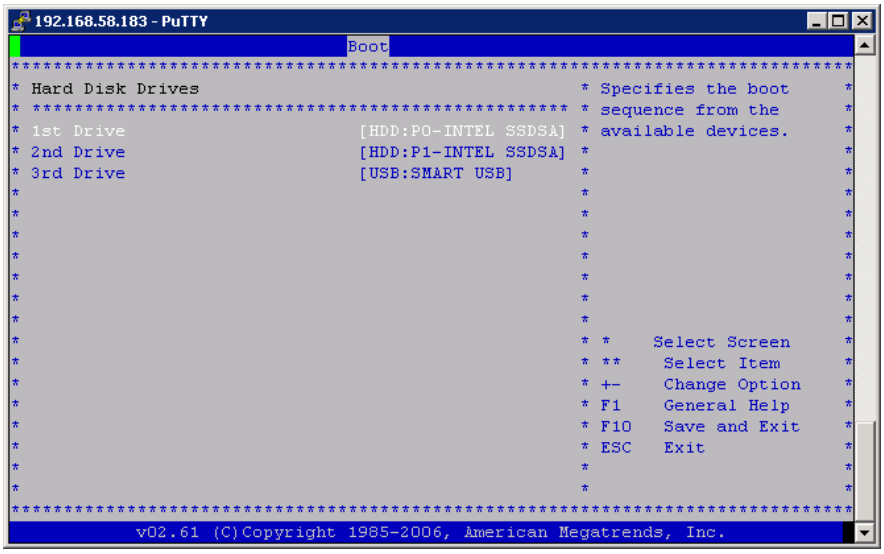
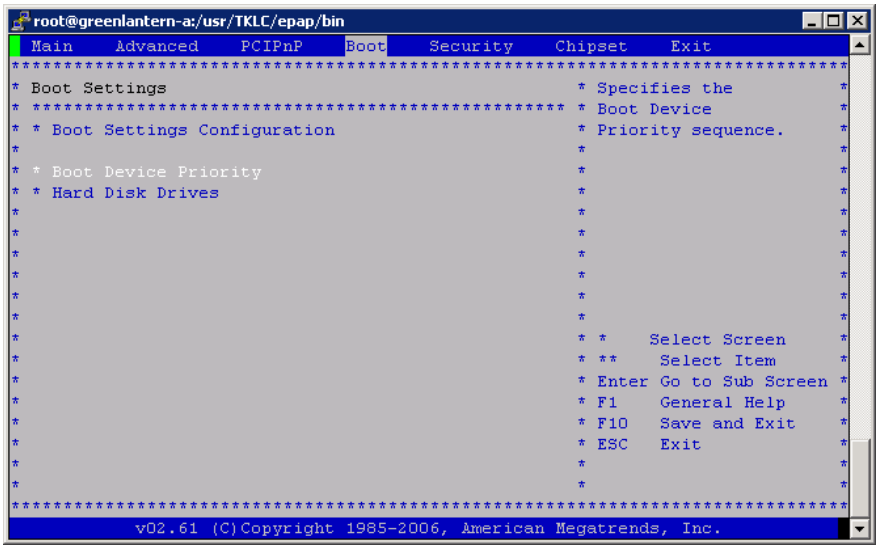
		
10. ☐	**MPS X:** Press 'Esc' key and select *Exit* → *Save Changes and Exit* option	
11. ☐	**MPS X:** Select [OK] to save the configuration changes. The server will reboot and TPD boot prompt will appear.	

Procedure 29: IPM with TPD 7.5.x

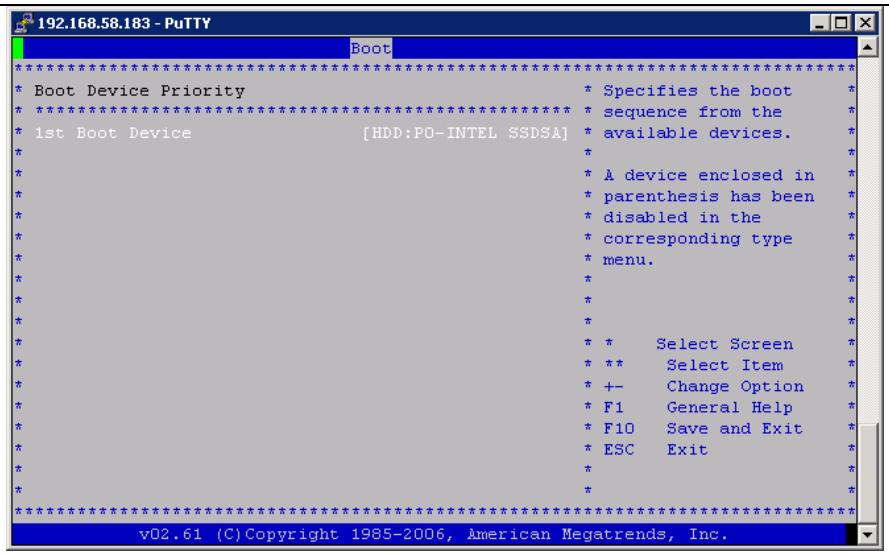
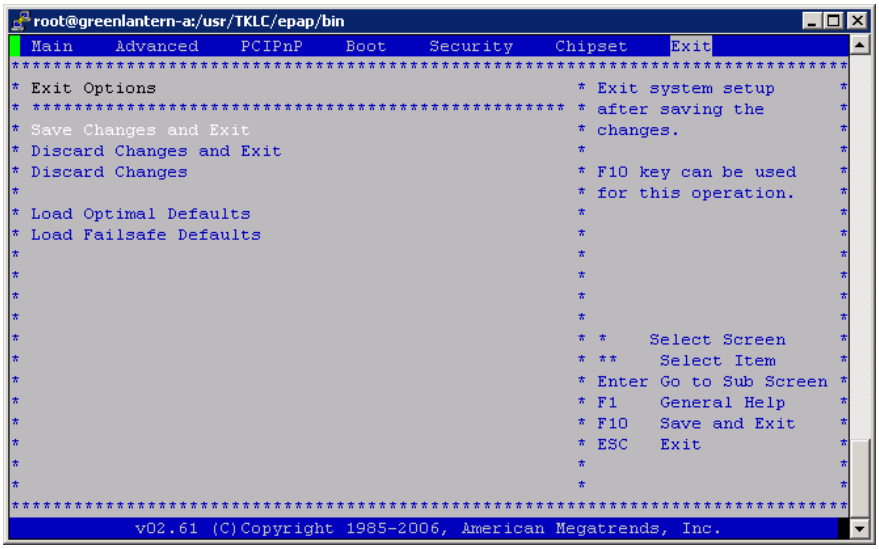
12. ☐	**MPS X:** "Execute command 'TPDlvm scrub' as shown, and it will start IPM process."	
13. ☐	**MPS X:** After a few seconds, additional messages will begin scrolling by on the screen as the Linux kernel boots, and then the drive formatting and file system creation steps will begin.	
14. ☐	**MPS X:** Once the drive formatting and file system creation steps are complete, the screen at right will appear indicating that the package installation has begin.	

15. ☐	**MPS X:** Once all the packages have been successfully installed, the screen at right will appear letting you know the installation process is complete. **Remove USB media before Reboot.** **Press <ENTER> to reboot the system and continue with the next step.**	
16. ☐	**MPS X:** Press 'del' key to enter the BIOS	
17. ☐	**MPS X:** Select *Boot* → *Hard Disk Drives* option	

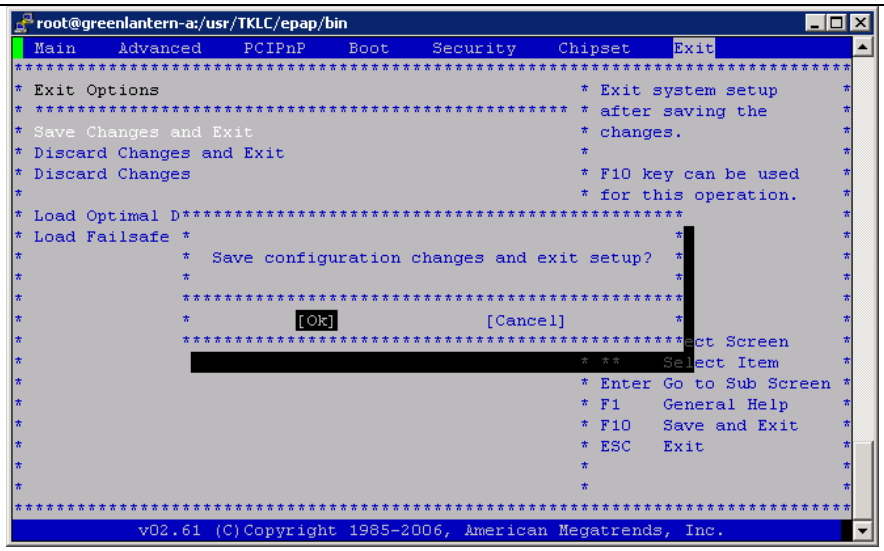
Procedure 29: IPM with TPD 7.5.x

18. ☐	**MPS X:** Press 'Enter' key and select HDD:P0 as the 1st Drive	
19. ☐	**MPS X:** Press 'Esc' key and select Boot Device Priority	
20. ☐	**MPS X:** Verify that the 1st Boot Device is set to HDD:P0.	

Procedure 29: IPM with TPD 7.5.x

		
21. ☐	**MPS X:** Press 'Esc' key and select *Exit* → *Save Changes and Exit* option	
22. ☐	**MPS X:** Select [OK] to save the configuration changes.The server will reboot. Remove USB media fromUSB drive.	

Procedure 29: IPM with TPD 7.5.x

		 When the message "Upstart Job ntdMgr: started", is displayed, press the Enter Key to get the Login prompt.
23. ☐	**MPS X:**Log in to the server as the user "root"	`Login: root` `Password: <root_password>`
24. ☐	**MPS X:** Verify that the platform revision is same as the ISO used.	`# getPlatRev` `7.5.x.0.0-y.z.0<LSMS>`
25. ☐	**Procedure complete.**	This procedure is complete.

Procedure 30 Copying License Files using SCP

Procedure 30: Copying License Files using SCP

STEP #	This procedure will help copying the license files from a desktop to LSMS server Estimated time: 5 minutes	
1. ☐	**Server X:**Login to server where license files are present	Login to server using ID and password where license files are copied
2. ☐	**Server X:**SCP the TMN Toolkit license file from server to LSMS server	`scp <TMN Toolkit license file> root@<LSMS IP>:/usr/local/netech/etc/license`
3. ☐	**LSMS MPS:** Check if the license file has been copied correctly	Run command to check for license file : `# cat /usr/local/netech/etc/license` Expected Output : Contents of license file should be displayed

Procedure 30: Copying License Files using SCP

4. ☐	**Server X:**SCP the Marben OSI license file from server to LSMS server	`scp <Marben OSI license file> root@<LSMS IP>:/usr/TKLC/osi/conf/license`
5. ☐	**LSMS MPS:** Check if the license file has been copied correctly	Run command to check for license file : `# cat /usr/TKLC/osi/conf/license` Expected Output : Contents of license file should be displayed
6. ☐	**Procedure complete.**	This procedure is complete.

Procedure 31 Copying License Files from USB

Procedure 31: Copying License Files from USB

STEP #	This procedure will help copying the license files from a desktop to LSMS server. Estimated time: 5 minutes	
1. ☐	**Server X:** Copy license files to USB	Connect USB to desktop and copy the 2 license files from desktop to USB.
2. ☐	**LSMS MPS:** Confirm how the USB is enumerated on LSMS server	Connect the USB which contains the license files to LSMS MPS and check how it is enumerated using command: `# dmesg | grep -i "removable disk"` Expected output sd 6:0:0:0: Attached scsi removable disk sdc This shows USB is enumerated as /dev/sdc
3. ☐	**LSMS MPS:** Determine the partition name	Run command fdisk –l on enumerated name device to determine partition name: `# fdisk -l /dev/sdc` Expected Output : Disk /dev/sdc: 2013 MB, 2013265920 bytes 256 heads, 63 sectors/track, 243 cylinders Units = cylinders of 16128 * 512 = 8257536 bytes Device Boot Start End Blocks Id System /dev/sdc1 * 1 110 887008+ b W95 FAT32 This shows that partition name is /dev/sdc1

4. ☐	**LSMS MPS:** Mount the USB	Run below commands to mount the USB to /tmp/usb
		
		`# mkdir -p /tmp/usb`
		`# mount /dev/sdc1 /tmp/usb`

5. ☐	**LSMS MPS**: Copy TMN Toolkit license file from /tmp/usb directory	`# cp /tmp/usb/<TMN Toolkit license-file> /usr/local/netech/etc/license`

Procedure 31: Copying License Files from USB

6. ☐	**LSMS MPS:** Check if the license file has been copied correctly	Run command to check for license file : `# cat /usr/local/netech/etc/license` Expected Output : Contents of license file should be displayed
7. ☐	**LSMS MPS**: Copy Marben OSI license file from /tmp/usb directory	`# cp /tmp/usb/<Marben OSI license-file> /usr/TKLC/osi/conf/license`
8. ☐	**LSMS MPS:** Check if the license file has been copied correctly	Run command to check for license file : `# cat /usr/TKLC/osi/conf/license` Expected Output : Contents of license file should be displayed
9. ☐	**LSMS MPS:** Unmount the USB	Unmount the USB using command: `# umount /tmp/usb`
10. ☐	**Procedure Complete.**	This procedure is complete.

Procedure 32 Password change for LSMS System Users

Procedure 32: Password change for LSMS System Users

STEP #	This procedure will change the password for the LSMS System User(s).	
1. ☐	**MPS A:** Log on Server A with the LSMS System User for which the password is to be changed.	`[hostname]:  <LSMS System User>` `password:  <lsmsadm_password>`

2. ☐	**MPS A:** Change Password for an LSMS system user	Execute the command to change to password of an existing LSMS user.
		
		`$ passwd`
		Changing password for user <LSMS System User>.
		Changing password for <LSMS System User>..
		(current) UNIX password: **<Enter the current password here>**
		New password: **<Enter the new password here>**
		Retype new password: **<Retype the new password here>**
		passwd: all authentication tokens updated successfully.
		
		Note: The Linux “passwd” command used to change the password of Linux users, follows the Linux PAM rules. Refer to the Linux manual for the PAM rules.
		
		`# man pam_cracklib`

Procedure 32: Password change for LSMS System Users

3. ☐	**MPS B:** Change Password	**Repeat steps 1 and 2 on MPS B also.** Note: The new password on MPS A and B should be same.
4. ☐	**Procedure Complete**	This procedure is complete.

Procedure 33 Run switch_NANC528 script to switch to older npacagent on LSMS

Procedure 33 : Run switch_NANC528 script to switch to older npacagent on LSMS

STEP #	This procedure will switch the npacagent binary on LSMS to older version which will not have NANC 528 changes. NOTE: NANC528 changes will take effect from 25-Oct-2020. If you are upgrading the LSMS before NANC528 is enabled by iConnectiv, run the procedure to switch to older npacagent. On the other hand, if you are running the LSMS upgrade after NANC528 is enabled by iConnectiv (i.e. after 25-Oct-2020), do not run this procedure as you will need the newer npacagent compatible with NANC528 changes which is already in effect. Note: Skip this step if you do not want to switch to older npacagent version.	
1. ☐	**MPS A:** Log on to LSMS Server A with lsmsadm user.	# `su - lsmsadm`
2. ☐	**MPS A:** Check if the hidden file /usr/TKLC/lsms/bin/.NANC_528 is present on the server. Remove the file /usr/TKLC/lsms/bin/.NANC_528, if present. **Note: If this is a fresh installation of LSMS 13.4 or 13.4.1 this hidden file will not be present on the server. Also, if this is an upgrade from 13.3 release, the hidden file will not be present. The file will mostly be present when it is an upgrade from 13.4 to 13.4.1 release.**	Check if the hidden file is present on the server. If the file is present output will be something like: **[lsmsadm@lsmspri ~]$ ls -altr /usr/TKLC/lsms/bin/.NANC_528** -rw-r----- 1 lsmsadm lsms 2 Jul 31 02:53 /usr/TKLC/lsms/bin/.NANC_528 If the file is not present output will be: **[lsmsadm@lsmspri ~]$ ls -altr /usr/TKLC/lsms/bin/.NANC_528** ls: cannot access /usr/TKLC/lsms/bin/.NANC_528: No such file or directory If the hidden file is present then remove the hidden by below command: **[lsmsadm@lsmspri ~]$ rm -rf /usr/TKLC/lsms/bin/.NANC_528** Now check again, the file should not be present now. **[lsmsadm@lsmspri ~]$ ls -altr /usr/TKLC/lsms/bin/.NANC_528** ls: cannot access /usr/TKLC/lsms/bin/.NANC_528: No such file or directory

Procedure 33 : Run switch_NANC528 script to switch to older npacagent on LSMS

3. ☐	**MPS B:** Run the **/usr/TKLC/lsms/bin/switch_NANC528** script to switch to older npacagent version.	**[lsmsadm@lsmspri ~]$ /usr/TKLC/lsms/bin/switch_NANC528** INFO: This script is used for switching between older and newer npacagent. LSMS should be stopped for this process to continue. Checking whether LSMS is stopped... INFO: No active node found, We can proceed... INFO: You are going to switch to older version of npacagent that will not have NANC 528 updates. Are you sure you want to continue? (y/n) y INFO: Binary replaced successfully on local server, Replacing it on mate now. FIPS integrity verification test failed. INFO: Binary replaced on mate successfully
4. ☐	**Procedure Complete**	This procedure is complete.

Procedure 34 E5-APP-B Halt/Shutown

Procedure 34: E5-APP-B Halt/Shutdown

STEP #	This procedure will halt the E5-APP-B hardrware.	
1. ☐	**E5APPB Card:** Slide the ejector switch	**On the APP-B card, slide the Ejector switch (4) up to the UNLOCKED position. Refer to** Figure 6. Caution: If the Ejector switch goes from locked to unlocked and the E5-APP-B card is in service, the card will halt.
2. ☐	**E5APPB Card:** Monitor the Eject Status LED	WAIT for the E5-APP-B Eject Status LED to go from blinking red to a steady red.
3. ☐	**E5APPB Card:** Lever Release	Grasp the upper and lower card Inject/Eject (I/E) lever release (3) just underneath the I/E lever, and press it to meet the I/E lever. This is the mechanical interlock for the card. Refer to Figure 7.
4. ☐	**E5APPB Card:** Pull out the levers	While holding the I/E interlock and lever, pull the levers (2) away from the shelf until they are parallel to the floor. Refer to Figure 7.
5. ☐	**E5APPB Card:** Slide the ejector switch	Remove the E5-APP-B card from the EAGLE shelf.
6. ☐	**Procedure Complete**	This procedure is complete.

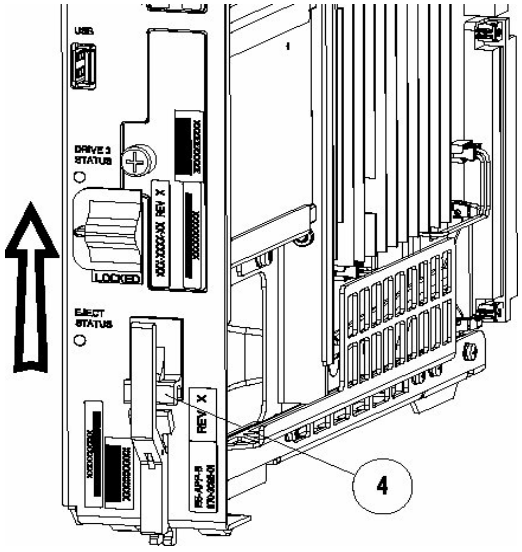


Figure 6: Slide the Ejector Switch

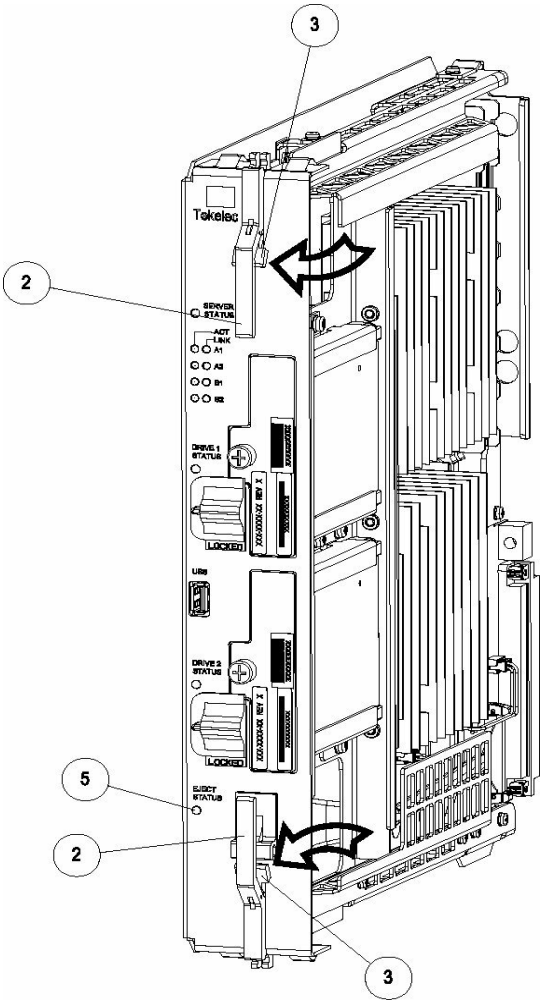


Figure 7: Slide the Ejector Switch

APPENDIX B. SWOPS SIGN OFF

Discrepancy List

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 C. 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 email this page and the above completed Table to Tekelec, email: upgrades@tekelec.com.

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 D. MY ORACLE SUPPORT

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

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

Before beginning this procedure, contact My Oracle Support and inform them of your upgrade plans. If installing for an Oracle customer on a customer site, obtain the customer's Support Identifier (SI) before requesting assistance.

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

Phone: Contact your local Oracle Global Customer Support Center (http://www.oracle.com/support/contact.html)

Make the following selections on the Support telephone menu:

1. Select '**2**' for New Service Request
2. Select '**3**' for Hardware, Networking and Solaris Operating System Support
3. Select '**1**' for Technical Issues and when talking to the agent, please indicate that you are an existing Oracle customer