Oracle® Communications Subscriber Data Management

Software Upgrade Procedure

9.1 to 9.2 Upgrade Procedure

E63812-01

February 2015

Caution: Contact the Oracle Tekelec Customer Care Center and inform them of your upgrade plans prior to beginning this or any upgrade procedure.

ORACLE®

Oracle Subscriber Data Management 9.1 to 9.2 Upgrade Procedure, Release 9.2

CAUTION: Use only the Upgrade procedure included in the Upgrade Kit.
Before upgrading any system, please access My Oracle Support (MOS) (https://support.oracle.com) and review any Technical Service Bulletins (TSBs) that relate to this upgrade.

My Oracle Support (MOS) (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.
Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html.
See more information on MOS in the Appendix section.

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1. INTRODUCTION

1.1 Purpose and Scope

This document describes methods utilized and procedures executed to perform a software upgrade on an in-service SDM HLR and/or LTE-HSS from 9.1 and 9.2 servers or blades. The audience for this document includes Oracle customers as well as these Oracle groups: Software Development, Software System, Product Verification, Documentation, and Customer Service including Software Operations and New Product Introduction (NPX). This document provides step-by-step instructions to execute SDM to 9.2 upgrade from ISO Distribution.

The execution of this procedure assumes that SDM 9.2 media (ISO file) has already been delivered to the customer's premises and delivered to the local workstation being used to perform this upgrade.

1.2 References

[1] 919-1620-001 Platform 5.x HP c-Class Configuration Procedure Reference
[2] TR005491 TPD Platform Configuration Toolset/Application Note, Revision 1.2
[3] PG005024 Software Developer's Guide to TPD Upgrade Programmer's Guide, Revision 3.6
[4] TR007229 Installing LTE HSS & HLR 9.1 on HP C-Classe G8, Revision 0.2

1.3 Software Release Numbering

SDM 9.2.x is comprised of 1 software component ISO. The SDM distribution is using the following release number convention:

<Major Release NB>.<Minor Release NB>.<Maintenance Release.NB>-<Major Build Number>.<Minor Build Number>.<Patch Number>

This document describes the upgrade procedure from 9.1.1-x.x.x to 9.2.0-x.x.x scheme.

1.4 Acronyms

Acronym	Description
BIOS	Basic Input Output System
BNS	Broadband Network Solutions
CD-ROM	Compact Disc Read-only Media
HLR	Home Location Register
HSS	Home Subscriber Server
IP	Internet Protocol
IPM	Initial Product Manufacture
ISO	ISO 9660 file system (when used in the context of this document)
LTE	Long Term Evolution
MOP	Method of Procedure
MPE	Multimedia Policy Engine
RPM	Red Hat Package Manager

Acronym	Description
SDM	Subscriber Data Management
SPR	Subscriber Policy Repository
SWU	Software Upgrade
TPD	Oracle Platform Distribution
UGWRAP	Upgrade Wrapper
UI	User Interface

Table 1: Acronyms

1.5 Terminology

Term	Description
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.
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 upgrade from.
Target release	Software release to upgrade to.
Active Blade	Refer to a command that must be applied on the blade running the active CoreSystemController service.
All Blades	Refer to a command that must be applied on all blades.
Standby Blade(s)	Refer to a command that must be applied to all service node blades and on the blade running the standby CoreSystemController service.

Table 2: Terminology

The following table is an example of the procedural steps used in this document. It contains the following:

- Each step has a checkbox that the user should check-off to keep track of the progress of the procedure.
- Sub-steps within a step are referred to as Step X.Y. The title box describes the operations to be performed during that step.
- GUI menu items, action links and buttons to be clicked on are in **bold Arial** font.
- GUI fields and values to take note of during a step are in **bold Arial** font.
- Each command that the user enters is formatted in **`10-point bold Courier`** font.
- Command output is formatted in `normal 8 to 10-point Courier` font.
- Variable user-entered command line input is surrounding by angled brackets and formatted in ***`<bold, italicized 10-point Courier>`*** font.
- Each SDM service name is formatted in *10-point italic Times New Roman* font.

Table 3: Example of procedure steps used in this document

Step	Procedure	
1 ☐	Upload the SDM 9.2.0 ISO in/var/TKLC/Upgrade	$ **scp <SDM 9.2.0 ISO file> root@<Active BLADE IP>:/var/TKLC/Upgrade**
2 ☐	Mount the ISO on /mnt/upgrade Verify that it is correctly mount.	# **loopMount oro /var/TKLC/Upgrade/<SDM 9.2.0 ISO file> /mnt/upgrade/** **#mount** /dev/mapper/vgroot-plat_root on / type ext3 (rw) proc on /proc type proc (rw) sysfs on /sys type sysfs (rw) devpts on /dev/pts type devpts (rw,gid=5,mode=620) /dev/sda1 on /boot type ext3 (rw) tmpfs on /dev/shm type tmpfs (rw) /dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw) none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw) none on /proc/fs/vmblock/mountPoint type vmblock (rw) /var/TKLC/upgrade/872-2409-101-9.2.0_5.0.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)

2. UPGRADE OVERVIEW

2.1 Upgrade Path

The upgrade is supported from SDM 9.1.1 to 9.2.0, geo-redundant or not.

To get the current version, login on the blade as root and call BlueVersion utility.

On geo-redundant updates, when upgrading a site, all HLR or LTE-HSS connections shall be re-directed to the geo-redundant site. The procedure to reconnect the HLR or LTE-HSS connections to geo-redundant SDMs is out of the scope of this document. Server reboot are required during the upgrade but those reboot occurs while the traffic is running on geo-redundant site.

2.2 General Overview

The upgrade is using the UGWRAP TPD mechanism for performing the upgrade. UGWRAP allow the system to run pre-upgrade and post-upgrade command. Therefore, the upgrade is first automatically backing up configuration files used by SDM and MySQL database in /var/TKLC/upgrade/SDM/. The upgrade is implemented in the UGWRAP plugin BlueUpgrade.pm located withing the 9.2.0 ISO. The plugin automatically take database backup, perform schema adaptation, migrate data and restore backup after the upgrade. The rpm upgrade is perform by TPD upgrade_server.

For standard geo-redundant upgrade, the upgrade is initiated on each blade through platcfg utility.

2.3 Rollback

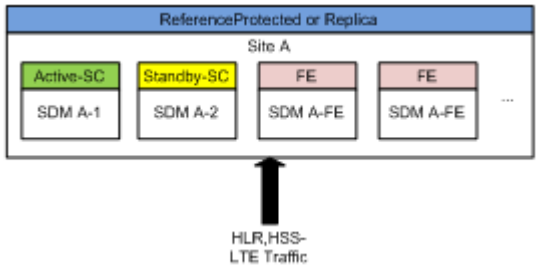
Rollback is the reverse of the upgrade. All upgrade path support rollback. The rollback will recover the initial software using TPD upgrade_server and then restore the database backup taken initially by the BlueUpgrade.pm plugin.

2.4 Upgrade Sequence Overview

The next table gives a general overview of the upgrade procedure. The initial setup is:

- Geo-redundancy is optional.
- Each site is running with 2 system controllers blades.
- On each site, one blade is running an active Database service while the other blade is running the standby Database service.
- Active Database and CoreSystemController service are running on the same blade.

Figure 1, Upgrade geo-Redundant or not – Initial Configuration



Upgrade Overview:

1. Take a full system backup on site A
2. Perform health check
3. Upgrade first site A front-end blades (A-FE) if applicable
4. Starts first site A front-end blades if applicable.
5. Repeat 3 and 4 for each additional front-end blade if applicable.
6. Upgrade site A standby blade (A-2)
7. Start site A standby blade (A-2)
8. Upgrade site A active blade (A-1)
9. Start site A active blade (A-1)
10. Repeat step 3 to 9 on site B if applicable.
11. Perform post-upgrade check.

Contact the Oracle Tekelec Customer Care Center at 1-888-FOR-TKLC (1-888-367-8552); or 1-919-460-2150 (international) for time estimates for each portion of the upgrade process.

2.5 Required Materials

The following materials and information are needed to execute an upgrade:

1. Target-release SDM 9.2.0 software media. Either as an ISO image file or in physical CD media format.
2. The capability to log into the target server as root. Note: The login may be through ssh, local console, or iLo/RMM maintenance port.
3. The capability to secure copy (scp) from the local workstation being used to perform this upgrade to the target server, or otherwise be able to transfer binary files to the target server.
4. User logins, passwords, IP addresses and other administration information.

VPN access to the customer's network is required if that is the only method to log into the target servers. It must be also possible to access the SDM WebCI (TCP port 8080). The WebCI may be tunneled via VPN for Remote access.

3. UPGRADE PREPARATION

This section provides the information that is needs to be retrieved before executing the upgrade and the procedures required to prepare the system for upgrade execution.

3.1 SW load, Login, Password and IP Addresses

Prior to executing the upgrade, obtain the information stored in table below.

Table 4, SW Load, Login, Password and IP Addresses

Item	Value
Site A – Server 1 & Server 2 & FEs	Server 1 Public IP Address(ssh):
	Server 1 Slot ID1:
	Server 2 Public IP Address(ssh):
	Server 2 Slot ID:
	Public OAMP Virtual IP Address (webci):
	Geo-Redundancy VIP:
	root password (ssh):
	WebCI admin password:
	Site A Front-End Slot IDs:
	Site A Front-End Public IP Address (ssh):
Site B – Server 1 & Server 2 & FEs	Server 1 Public IP Address(ssh):
	Server 1 Slot ID:
	Server 2 Public IP Address(ssh):
	Server 2 Slot ID:
	Public OAMP Virtual IP Address (WebCI):
	Geo-Redundancy VIP:

[1] Slot ID is obtained by login on the server through ssh (root account) and retrieving value of SLOTID attribute in file /etc/sysconfig/blue.

Item	Value
	root password (ssh):
	WebCI admin password:
	Site B Front-End Slot IDs:
	Site B Front-End Public IP Address (ssh):
Software Upgrade Pack Target Release	Target Release Number:
	SDM 9.1.1 software ISO Image (.iso) file name:

3.2 Prerequisites

This procedure verifies that all required prerequisite steps needed to perform an upgrade have been completed.

Procedure 1, Prerequisites

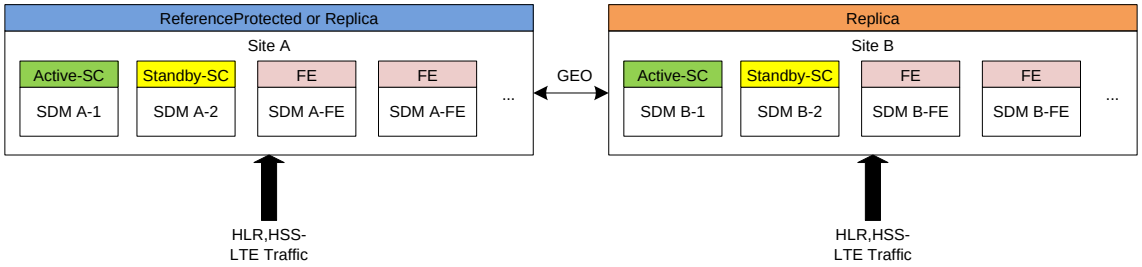
Step	Procedure	Description
1. ☐	Verify all required materials are present	Materials are listed in Section 2.5: Required Materials. Verify required materials are present.
2. ☐	Verify all administration data needed during upgrade	Double-check that all information in Section 3.1 is filled-in and accurate.
3. ☐	Contact the Oracle Tekelec Customer Care Center	Contact the Oracle Tekelec Customer Care Center and inform them of your plans to upgrade this system.

3.3 Cluster and Geo-Redundancy Configuration

To avoid traffic impact, the procedure describes in this document follow a strict order based on the initial servers HA states and geo-redundancy states. The two geo-redundant sites are referred as Site A and Site B where Site A is the site that has an initial geo-redundancy state of ReferenceProtected and Site B is the site that has an initial state of Replica.

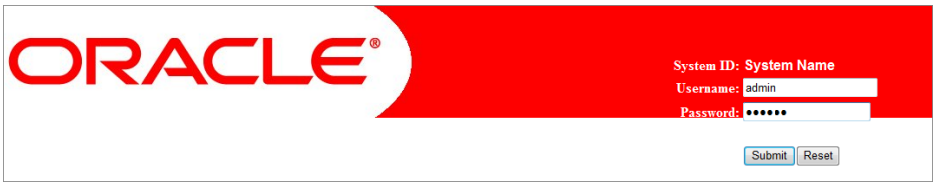
Servers on site A are referred as SDM A-1, SDM A-2 and SDM A-FE. Servers on site B are referred as SDM B-1, SDM B-2 and SDM B-FE. Blades running active Database services are identified as SDM A-1 or SDM B-1. Blades running standby Database services are identified as SDM A-2 and SDM B-2. On each server, the CoreSystemController and Database server HaRole shall be the same. Front-end nodes are referred as SDM A-FE and SDM B-FE. This results in the configuration below:

Figure 2, Upgrade geo-Redundant Configuration

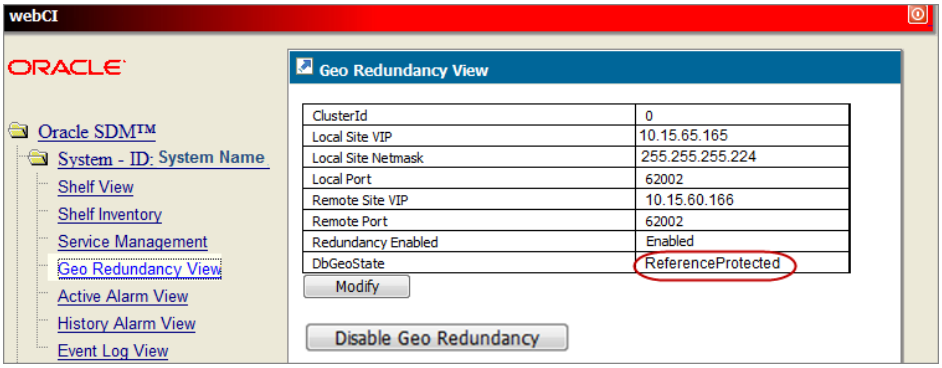


The following procedure will show how to identify each geo-redundant site, servers and to setup correctly server HaRole prior to executing the upgrade.

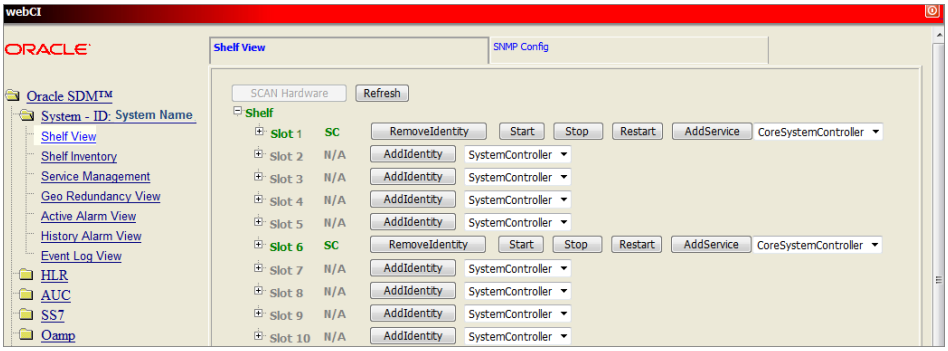
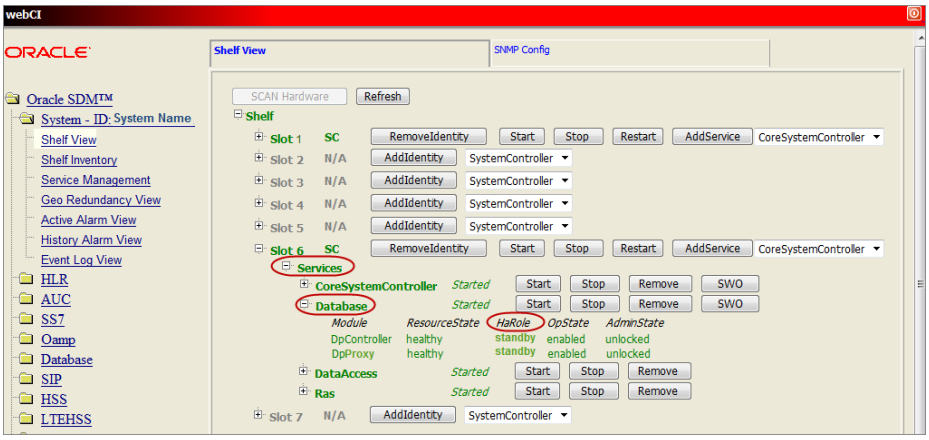
Procedure 2. Sites & servers identification, HA state check

S T E P #	This procedure is used to identify geo-redundant sites, servers in each site and provide the step required to configure correctly server HaRole prior to executing the upgrade. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Using Site A OAMP VIP recorded in section 3.1; connect to the WebCI using a Web Browser with admin user. The WebCI URL is: http://<OAMP VIP>:8080/webci/	

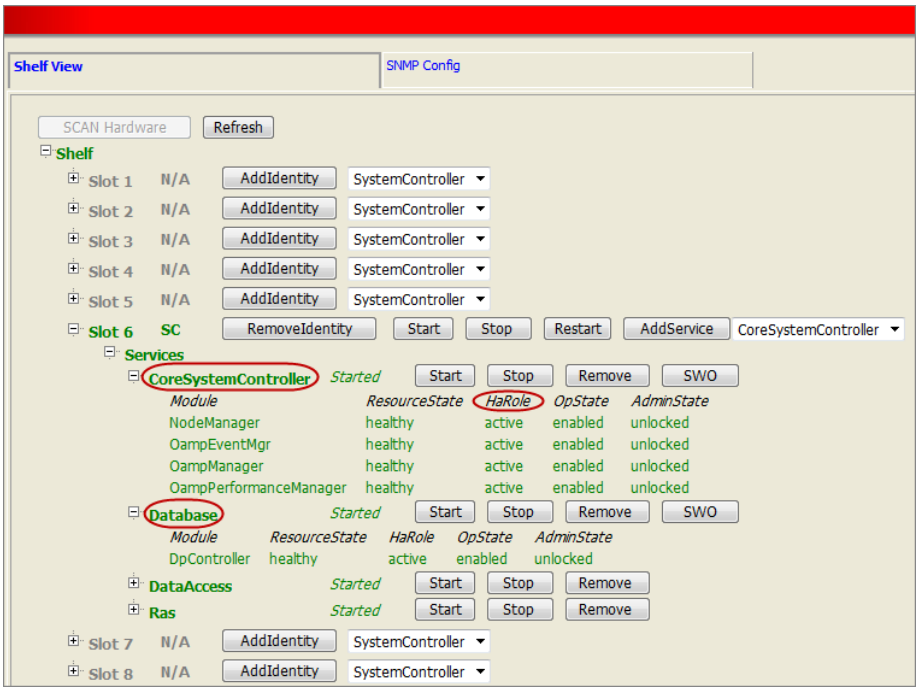
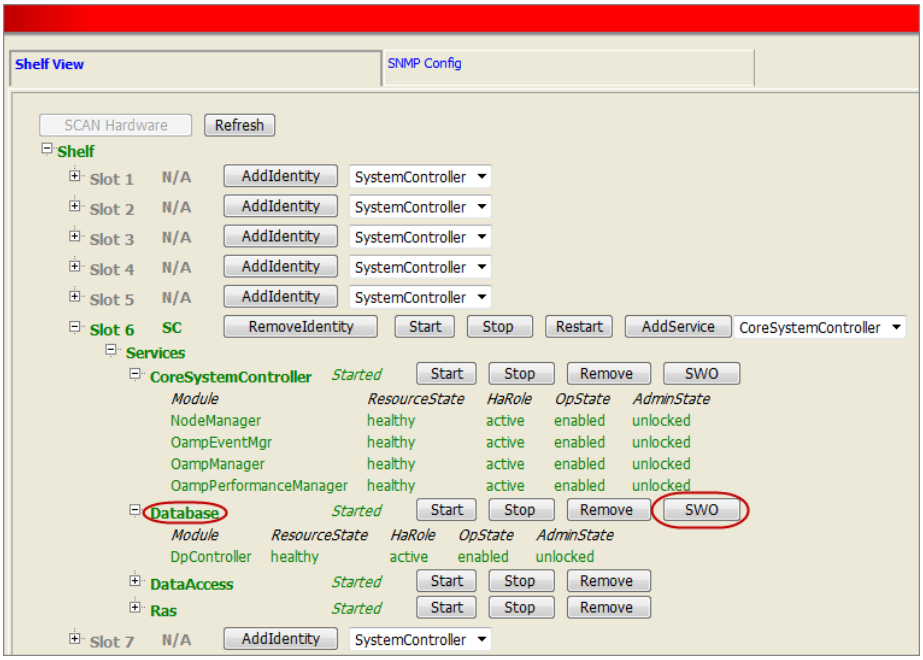
Procedure 2. Sites & servers identification, HA state check

2	From the WebCI left panel, navigate to: ☐ Oracle SDM > System > Geo Redundancy View ☐ Look at the value of DbGeoState attribute. ☐ If value is ReferenceProtected, record OAMP VIP in Colum #1 of Table 5. This site is now referred as Site A. ☐ If value is Replica, record OAMP VIP in Colum 6 of Table 5. This site is now referred as Site B. ☐ If the value is not ReferenceProtected or Replica, call the Oracle Tekelec Customer Care Center and inform them that Geo-Redundancy is down at customer site.	
3	☐ Check the Geo-Redundancy state of second site.	Using Site B Oamp VIP recorded in section 3.1; connect to the WebCI using a Web Browser with admin user. Perform the same check as step 2 to identify that site as Site A or Site B.

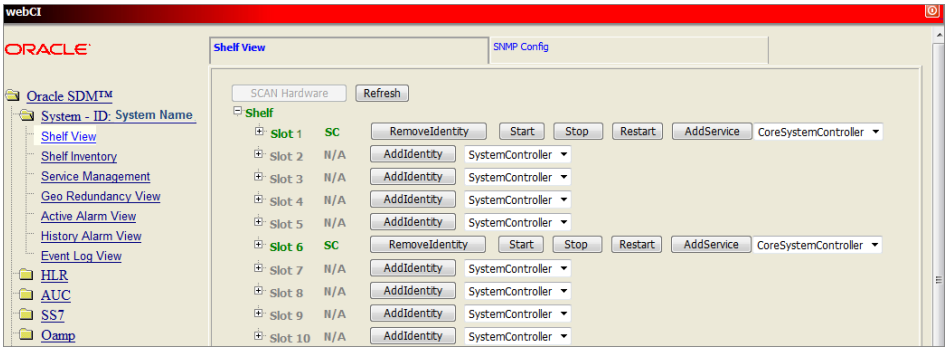
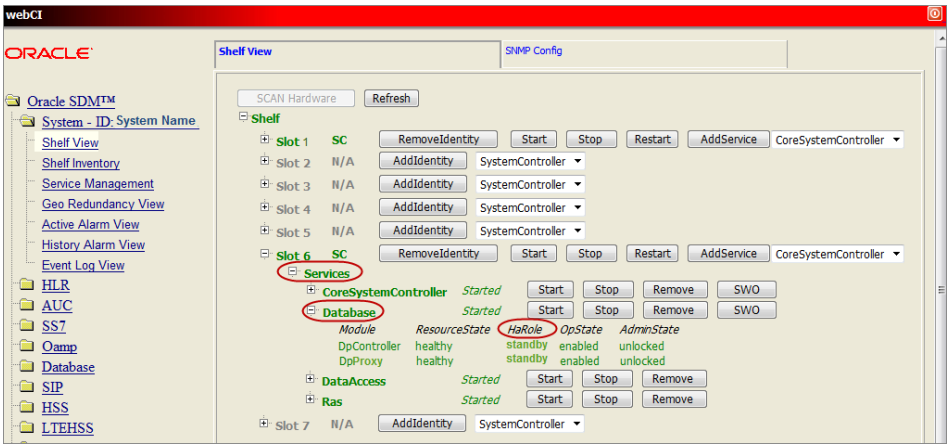
Procedure 2. Sites & servers identification, HA state check

4	Validate System Configuration and State of Site A. ☐ Log in Site A WebCI as recorded in Table 5. ☐ Make sure that 2 and only 2 slots have identity SC (SystemController) assigned and that both slots are highlighted in green.	Go to Oracle SDM > System > Shelf View. 
5	Identify SDM A-1 and SDM A-2 blades. ☐ Still from Shelf View, expand first Slot up to Database Service	 If HaRole is **Active** for all module, record slot IP Address and Slot ID from section 3.1 in columns #2 & #3(SDM A-1) of Table 5. If HaRole is **Standby** for all module, record slot IP Address and Slot ID from section 3.1 in columns #4 & #5 (SDM A-2) of Table 5 Repeat for the other slot.

Procedure 2. Sites & servers identification, HA state check

6 ☐	Verify that HaRole of CoreSystemController and Database service are the same on each slot of Site B. Still from Shelf View, expand CoreSystemController and Database services from SDM A-1 slot (as recorded in Table 5).	
☐	If both services' HaRole IS NOT the same click on the SWO button of Database service.	

Procedure 2. Sites & servers identification, HA state check

7	Validate System Configuration and State of Site B. ☐ Log in Site B WebCI as recorded in Table 5. ☐ Make sure that 2 and only 2 slot have identity SC (SystemController) assigned and that both slot are highlighted in green.	Go to Oracle SDM > System > Shelf View. 
8	Identify SDM B-1 and SDM B-2 blades. ☐ Still from Shelf View, expand first Slot up to Database Service	 If HaRole is **Active** for all module, record slot IP Address and Slot ID from section 3.1 in columns #7 & #8(SDM B-1) of Table 5. If HaRole is **Standby** for all module, record slot IP Address and Slot ID from section 3.1 in columns #9 & #10 (SDM B-2) of Table 5 Repeat for the other slot.

Procedure 2. Sites & servers identification, HA state check

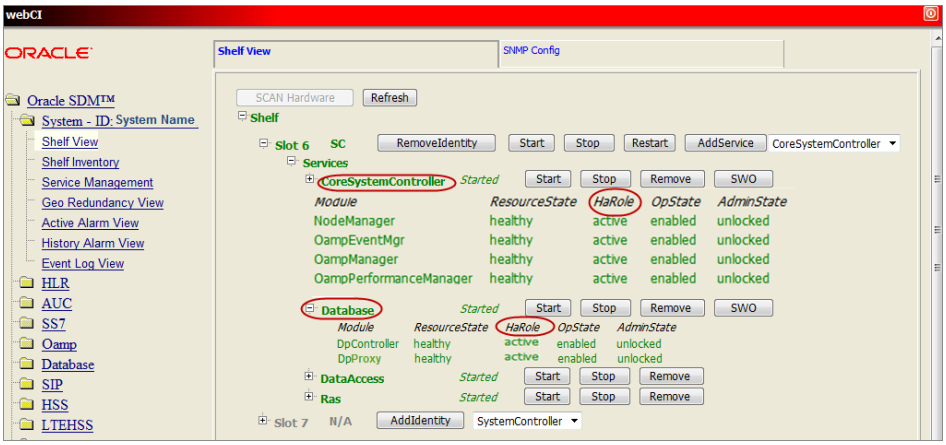
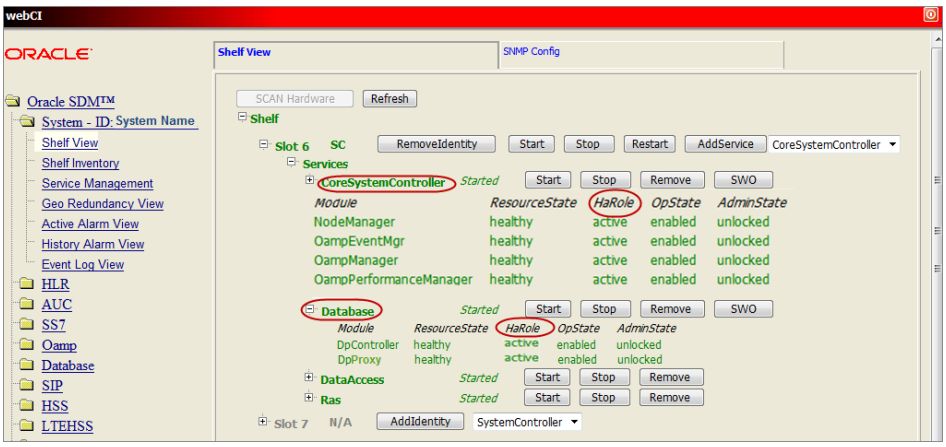
9 ☐ ☐	Verify that HaRole of CoreSystemController and Database service are the same on each slot of Site B. Still from Shelf View, expand CoreSystemController and Database services from SDM A-1 slot (as recorded in Table 5). If both services' HaRole IS NOT the same click on the SWO button of CoreSystemController service.	 

Table 5. Sites and Servers Identification

#	Item	Value
1	Site A – OAMP VIP	
2	SDM A-1 IP Addresses	
3	SDM A-1 Slot ID	
4	SDM A-2 IP Addresses	
5	SDM A-2 Slot ID	
6	Site B – OAMP VIP	
7	SDM B-1 IP Addresses	
8	SDM B-1 Slot ID	
9	SDM B-2 IP Addresses	
10	SDM B-2 Slot ID	
11	SDM A Front-End Nodes IP Addresses	
12	SDM B Front-End Nodes IP Addresses	

3.4 Perform System Health Check & Backup Customer Data

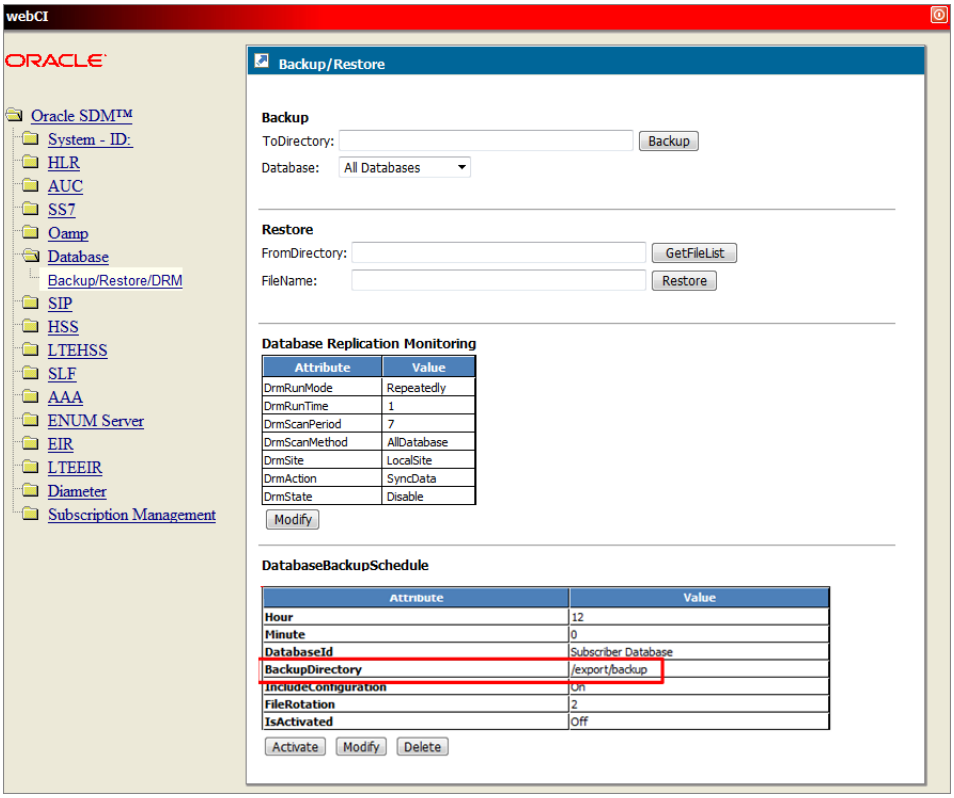
Procedure 3. System Health Check & Backup Customer Data

S T E P #		
	This procedure is part of Software Upgrade Preparation and is used to determine the health and status of a server. In this procedure, we also take care of back upping any sensitive customer data. This must be executed at least once within the time frame of 24-36 hours prior to the start of a maintenance window. Must be executed on each server of each geo-redundant site. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	1) Log into the server through ssh as with root account	login as: **root** password: **<enter password>**
2 ☐	Verify System Health is Normal by running the syscheck command 1. Examine the output of the syscheck command to determine if any errors or failures were reported. 2. If any failures are reported, that are not explicitly corrected with the firmware release being installed, then contact Oracle Tekelec Customer Care Center for further instructions. 3. If syscheck reports all modules as "OK" (Normal state), then continue with the remaining steps.	# **syscheck** Running modules in class disk... OK Running modules in class hardware... OK Running modules in class system... OK Running modules in class proc... OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log #

Procedure 3. System Health Check & Backup Customer Data

3 ☐	Verify SSH connectivity and host keys. Run the sdm-ssh-tool with –check option to verify that ssh keys are properly configured. Then if the config is not OK, run sdm-ssh-tool –fix to resolve the ssh keys issues.	While both system are running in geo-redundant configuration, call: SPR A (active blade): # **sdm-ssh-tool --check** SPR B (active blade): # **sdm-ssh-tool --check** If the check return errors, please follow instruction in section 9.0 of [5] in order to properly configure /etc/sysconfig/sdm-ssh.conf. Then fix the configuration: SPR A # **sdm-ssh-tool --reset** SPR B # **sdm-ssh-tool --reset** SPR A # **sdm-ssh-tool --fix --wizard-override** SPR B # **sdm-ssh-tool --fix --wizard-override** SPR A # **sdm-ssh-tool --check** SPR B # **sdm-ssh-tool --check**

Procedure 3. System Health Check & Backup Customer Data

4 ☐	Backup sensitive data. Check with the customer if any sensitive data such as daily backup are kept on each server. In such case, those file should be save to a remote location prior to executing the upgrade. To check if a daily backup schedule have been registered, open the WebCI of each site, and go into: **Oracle SDM > Database > Backup/Restore/SDM** Scroll down on the page and check if a DatabaseBackupSchedule has been configured. The location of daily backup can be found by reading BackupDirectory attribute. If such daily backup schedule exists, at least, the last backup file should be saved to a remote location.	

4. SOFTWARE UPGRADE PROCEDURE FROM 9.1.1 TO 9.2.0 GEO-REDUNDANT CONFIGURATION

4.1 Software Upgrade Execution

There procedures are executed inside a maintenance window.

During that procedure, external nodes connected to HLR or LTE-HSS may need to be modified to re-direct all traffic to specific SDM geo-redundant site.

4.1.1 Copy ISO Image File

This procedure transfers the SDM software upgrade ISO to each server /var/TKLC/upgrade directory.

Note: ISO transfers to the target systems may require a significant amount of time depending on the number of systems and the bandwidth of the network. The ISO transfers to the target systems should be performed prior to and outside of the scheduled maintenance window. Schedule the required maintenance windows accordingly before proceeding.

The iso images are put in the /var/TKLC/upgrade directory on the server. Because the iso images are large, the following procedure includes instructions to check space available before copying the iso to this directory.

Procedure 4. Copy ISO Image File to target systems

S T E P #	This procedure updalod the SDM upgrade ISO to each server. This procedure is repeated on each server (SDM A-1, SDM A-2, SDM A-FE, SDM B-1, SDM B-2, SDM B-FE) Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the server through ssh using root account.	1. For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2. Enter **root** password for server when prompted.

2 ☐	Verify enough space exists for ISO
	Verify that there is at least **1 GB** in the **Avail** column. If not, clean up files until there is space available.
	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. Removing files other than those in directory **/var/TKLC/upgrade** is potentially dangerous.
		`# df -h /var/TKLC/`
		`Filesystem Size Used Avail Use% Mounted on`
		`/dev/mapper/vgroot-plat_var_tklc`
		`3.9G 2.4G 1.4G 65% /var/TKLC`

Procedure 4. Copy ISO Image File to target systems

3 ☐	Copy SDM 9.2.0 software ISO image file from the local workstation to the target server upgrade directory.	From the local workstation: 1. Copy SDM 9.2 software ISO to target server **# scp <*ISO Name*> root@<*server SSH IP*>:/var/TKLC/upgrade** Example: `# scp 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso root@xx.xx.xx.xx:/var/TKLC/upgrade` 2. Enter **root** password for server when prompted.
4 ☐	Verify ISO image files where copied to correct location. Examine output of the command and verify that both ISO files are present and that file sizes appear correct.	From the server: **# ls –l /var/TKLC/upgrade**
5 ☐	Repeat step 1 to 4 on all SC servers (SDM A-1, A-2, B-1, B-2) and FE servers	

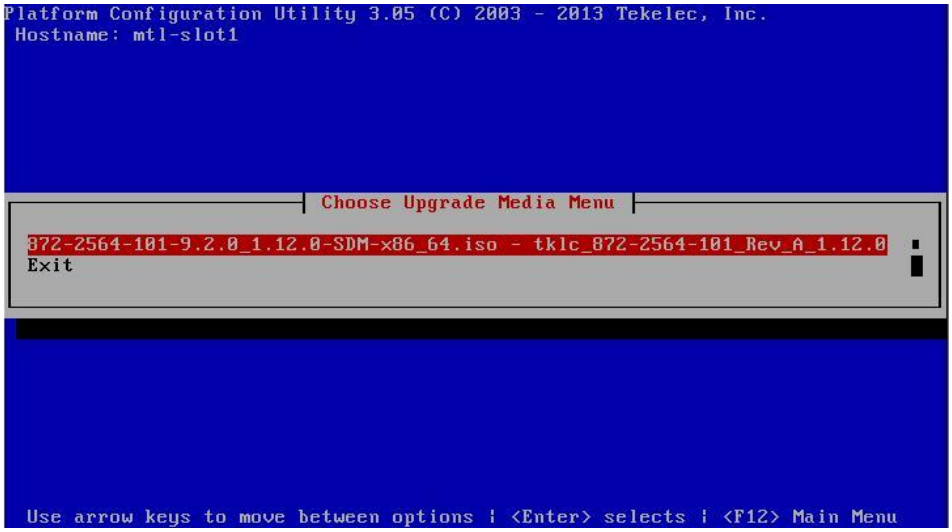
4.1.2 Validate ISO image file

Detailed steps are shown in the procedure below to validate the resulting ISO image file on the target system.

Procedure 5. Validate & Mount ISO image file

S T E P #	Detailed steps are shown in the procedure below to validate the resulting ISO image file on the target system. This procedure is repeated on each server (SDM A-1, SDM A-2, SDM A-FE, SDM B-1, SDM B-2, SDM B-FE) Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the server through ssh using root account.	1. For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2. Enter **root** password for server when prompted.

Procedure 5. Validate & Mount ISO image file

2 ☐	Using platcfg, validate the SDM 9.2.0 software ISO is found.	**# su – platcfg** **Maintenance → Upgrade → Validate Media** 

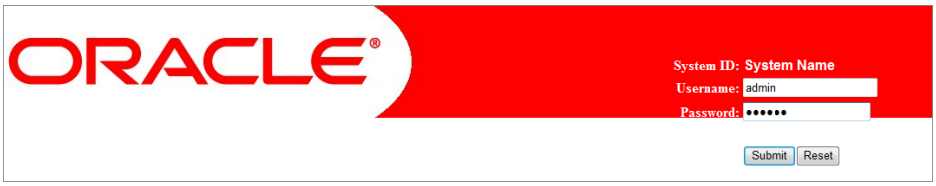
Procedure 5. Validate & Mount ISO image file

3 ☐	Validate SDM 9.2.0 sofware ISO.	Validating cdrom... Validating cdrom... ## ## ## ## ## ## ## ## ## ## ## ## ############ UMVT Validate Utility v2.2.1, (c)Tekelec, June 2010 Validating /var/TKLC/upgrade/872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso Date&Time: 2012-12-07 13:28:04 Volume ID: tklc_872-2564-101_Rev_A_3.0.0 Part Number: 872-2564-101_Rev_A Version: 3.0.0 Disc Label: SDM Disc description: SDM The media validation is complete, the result is: PASS CDROM is Valid PRESS ANY KEY TO RETURN TO THE PLATCFG MENU. **Note: Do not continue if ISO image validation reports any errors or is invalid. Instead remove the ISO file and either re-copy it to the target system or regenerate it from physical media.**
4 ☐	Repeat step 1 to 3 on each SC server (SPR A-1, SPR A-2, SPR B-1, SPR B-2) and FE servers.	

4.1.3 Switch Traffic to Site A, Disable Geo-Redundancy on site A and force site B as Reference

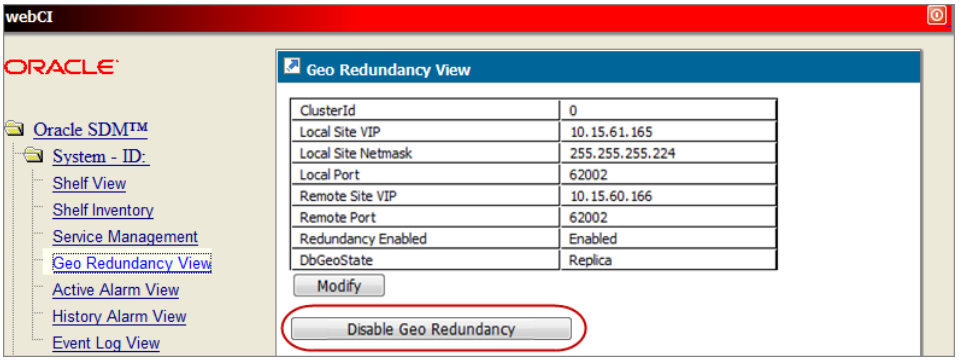
This procedure provides the steps required prepare the system to upgrade site B. The external HLR and LTE-HSS traffic must be redirected to site A and geo-redundance will be disabled on site A.

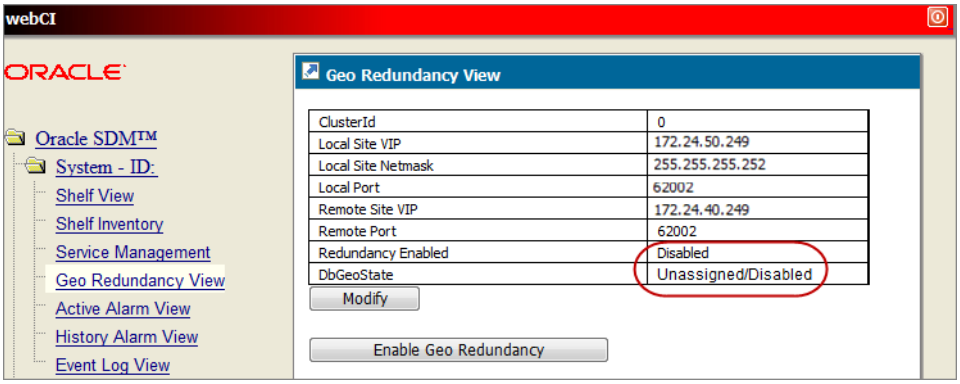
Procedure 6. Switch Traffic to Site A, Disable Geo-Redundancy on site A and force site B as Reference

S T E P #	Provides the step required to switch traffic to site A and disable geo-redundancy on site A. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	
1 ☐	Redirect all traffic and provisioning traffic to Site A SDM.	All SS7/Sigtran/Diameter traffic and provisioning traffic must be redirected to site A SDM since site B will be completely shutdown. The procedure to switch traffic and provisioning is outside the scope of this procedure. .
2 ☐	Connect to Site A WebCI	1-) Connect to site A WebCI with `admin` user using site A Public OAMP IP address and WebCI admin password as defined in section 3.1. First, open a web browser and login to url: *http://<Public OAMP Ip Address>:8080/webci* 2-) On the login page, enter `admin` user, password and click *Submit*.  2-) Enter **`root`** password for server when prompted.

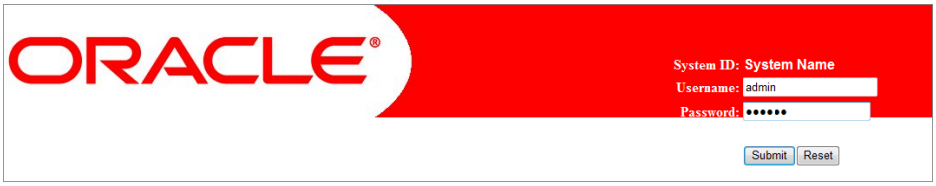
Procedure 6. Switch Traffic to Site A, Disable Geo-Redundancy on site A and force site B as Reference

<table>
<tr>
<td>3
☐

☐</td>
<td>Disable Geo-Redundancy</td>
<td>1-) In WebCI, go to System>Geo-Redundancy View
2-) Click on Disable Geo-Redundancy button.
 

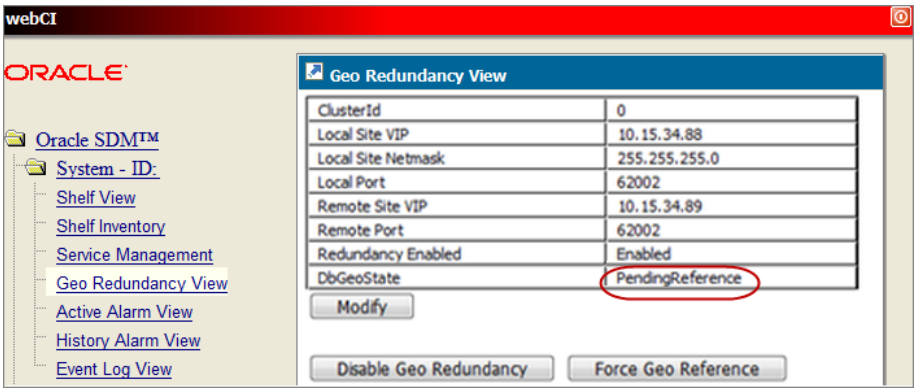
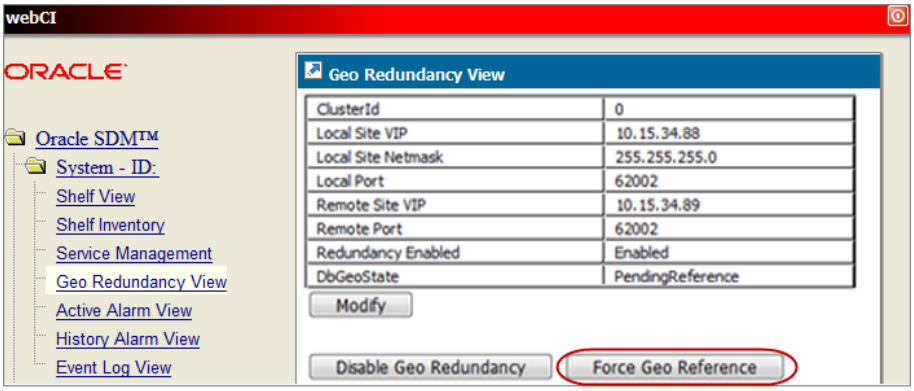
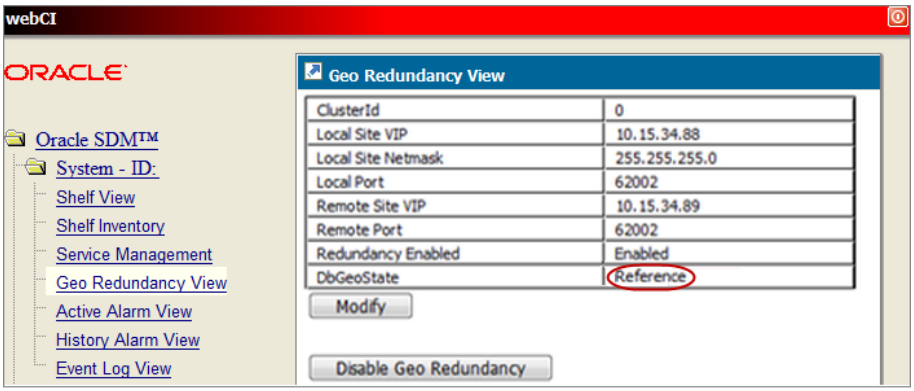
3-) Make sure that DbGeoState go to UnassignedDisabled and that Redundancy is Disabled:
 
</td>
</tr>
<tr>
<td></td>
<td>Connect to Site B WebCI</td>
<td>1-) Connect to site B WebCI with <code>admin</code> user using site B Public OAMP IP address and WebCI admin password as defined in section 3.1. First, open a web browser and login to url:

http://<Public OAMP Ip Address>:8080/webci

2-) On the login page, enter <code>admin</code> user, password and click Submit.
 

3-) Enter <code>root</code> password for server when prompted.</td>
</tr>
</table>

Procedure 6. Switch Traffic to Site A, Disable Geo-Redundancy on site A and force site B as Reference

4 ☐	Configure Site B as Reference.	1-) Still Site B, verify that DbGeoState is set to *PendingReference* state.  2-) Click on *Force Geo Reference* to switch DbGeoState to *Reference*.  3-) Verify that DbGeoState go to *Reference* state. 
5 ☐	Go to next procedure	

4.1.4 Upgrade Replica – Front-End Nodes

If the system is configured with Front-End Nodes, those servers must be upgraded first on the replica site. A node is configured as *FrontEnd* when the identity assigned to its slot is FrontEndNode. If no slot is configured as *FrontEnd*, you can skip that section and directly go to next section 4.1.5.

This procedure provides the steps required to upgrade the front-end blade on the replica site to SDM 9.2.0. The upgrade is initiated by calling `Initiate Upgrade` from platcfg tool. This command will call in the background `ugwrap` tool on the upgrade media. `ugwrap` will call a set a scripts that will automatically backup the mysql configuration and launch `upgrade_server`. `Upgrade_server` will automatically upgrade TPD to version 5.1.1 and install SDM 9.2.0 software package.

After that procedure, the will be upgraded to SDM 9.2.0 and configured the same way as it was prior to execute the upgrade.

At the end of the procedure, no SDM applications (blue service) will be started on that node.

THIS PROCEDURE MUST BE EXECUTED ON ALL FRONT-END SERVER OF REPLICA SITE.

Procedure 7. Upgrade Replica – FrontEnd Nodes

S T E P #		
	Provides the step to upgrade SDM B Front-End nodes to SDM 9.2.0. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

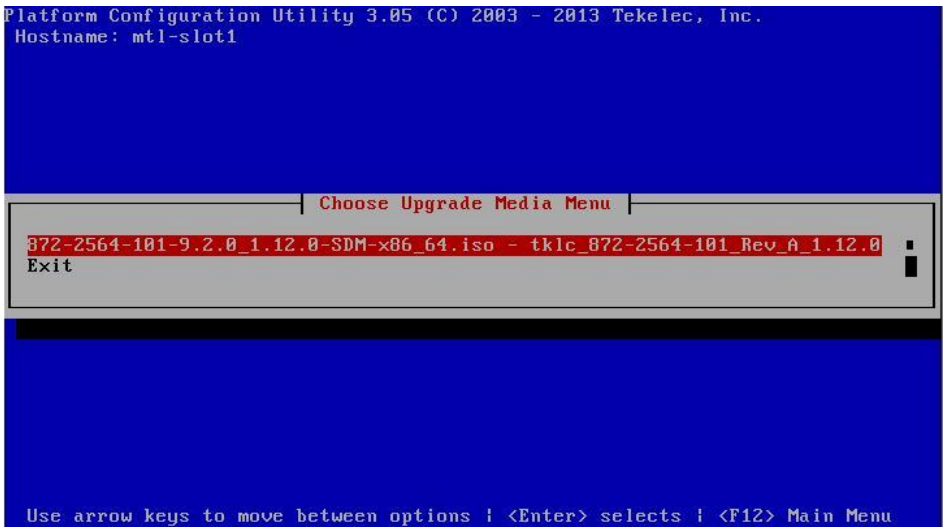
1 ☐	Connect to the SDM B front-end blade through ssh with root accout using IP address recorded in iterm #12 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

2 ☐	Verify that SDM software is at version 9.1.1	**If Source Version is 9.1.1:**
		`# BlueVersion`
		`* Blueslice version: 9.1.1_8.3.0`

3 ☐	Validate TPD is at version 5.1.1-73.5.1.	**If Source Version is 9.1.1:**
		`# getPlatRev`
		`5.1.1-73.5.1`

4 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 7. Upgrade Replica – FrontEnd Nodes

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	**# su - platcfg** **Maintenance → Upgrade → Initiate Upgrade** Then, select the appropriate ISO upgrade media  **NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:** ▪ **/var/TKLC/log/upgrade/upgrade.log** ▪ **/var/TKLC/log/upgrade/ugwrap.log** ▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log** ▪ **/var/log/messages** **The server reboot will occurs after the display of following message:** **Starting syscheck: [OK]** **Enabling applications on the server...** **Applications Enabled.** **Running /usr/TKLC/plat/bin/service_conf reconfig** **UPGRADE IS COMPLETE** **Waiting for reboot** **Updating platform revision file...** **A reboot of the server is required.** **The server will be rebooted in 10 seconds** **[root@tpdvm15 ~]**

Procedure 7. Upgrade Replica – FrontEnd Nodes

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log through ssh **# ssh** root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion **# tail –f /var/TKLC/log/upgrade/ugwrap.log** 3-) The following message indicates that the upgrade has completed successfully. 5/10/2012 15:51:32 LOG ENTRY STARTED 05/10/2012 15:51:32 IN> BlueUpgrade::new() 05/10/2012 15:51:32 OUT> BlueUpgrade::new() 05/10/2012 15:51:32 Initializing Upgrade Wrapper... 05/10/2012 15:51:32 No methods to run in run queue... 05/10/2012 15:51:32 Re-enabling application components... 05/10/2012 15:51:32 Not a major upgrade. 05/10/2012 15:51:32 Upgrading DB from release [9.1] 05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log] **05/10/2012 16:02:22 SDM upgrade succeed** 05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted... 05/10/2012 16:02:22 Checking mount point: / 05/10/2012 16:02:22 Checking mount point: /proc 05/10/2012 16:02:22 Checking mount point: /sys 05/10/2012 16:02:22 Checking mount point: /dev/pts 05/10/2012 16:02:22 Checking mount point: /boot 05/10/2012 16:02:22 Checking mount point: /dev/shm 05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM 05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc 05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint 05/10/2012 16:02:22 Checking mount point: /mnt/upgrade 05/10/2012 16:02:22 Will unmount in 5 seconds... 05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade
7 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
8 ☐	If server upgrade failed, rollback	1-) If server upgrade failed, backout using recovery procedure described in section 6.1.
9 ☐	Proceed with next procedure	

4.1.5 Upgrade Replica – Standby Blade (SDM B-2)

This procedure provides the steps required to upgrade the standby blade on the replica site to SDM 9.2.0. The upgrade is initiated by calling `Initiate Upgrade` from platcfg tool. This command will call in the background `ugwrap` tool on the upgrade media. `ugwrap` will call a set a scripts that will automatically backup the mysql configuration and launch `upgrade_server`. `Upgrade_server` will automatically upgrade TPD to version 5.1.1 and install SDM 9.2.0 software package.

Once SDM 9.2.0 installation will complete, ugwrap will reload and upgrade the mysql configuration databases (blueoam, bluehss, bluedbg, poldbg, blueis).

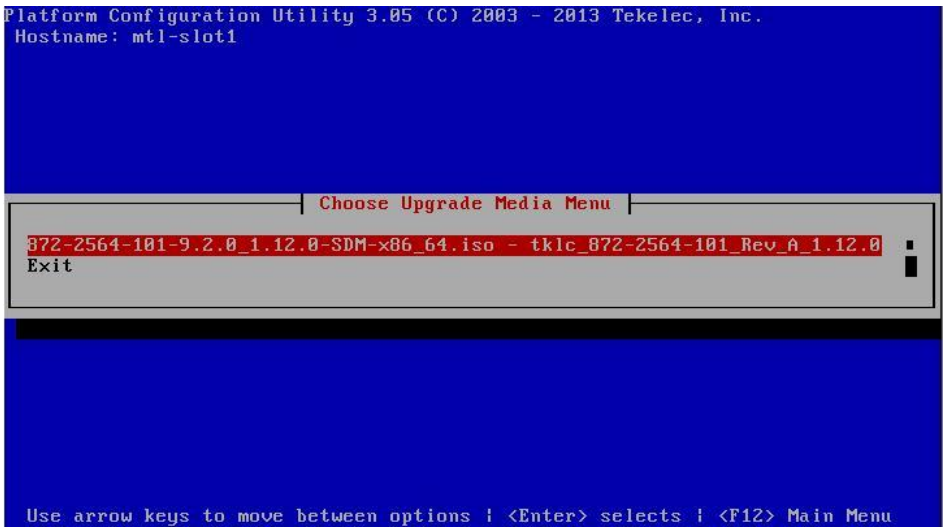
After that procedure, the server SDM B-2 will be upgraded to SDM 9.2.0 and configured the same way as it was prior to execute the upgrade. However, the subscribers' databases (poldb, bluedb, bluedbvol) will be empty. Subscribers data will be retrieved later from Site A using a subscribers migration procedure.

At the end of the procedure, no SDM applications (blue service) will be started on that node.

Procedure 8. Upgrade Replica – Standby Blade (SDM B-2)

S T E P #	Provides the step to upgrade SDM B-2 to SDM 9.2.0. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM B-2 blade through ssh with root accout using IP address recorded in iterm #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Verify that SDM software is at version 9.1.1	**If Source Version is 9.1.1:** **# BlueVersion** *** Blueslice version: 9.1.1_8.3.0**
3 ☐	Validate TPD is at version 5.1.1-73.5.1 if source version is SDM 9.1.1	**If Source Version is 9.1.1:** **# getPlatRev** 5.1.1-73.5.1
4 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 8. Upgrade Replica – Standby Blade (SDM B-2)

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	**# su - platcfg** **Maintenance → Upgrade → Initiate Upgrade** Then, select the appropriate ISO upgrade media  **NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:** ▪ **/var/TKLC/log/upgrade/upgrade.log** ▪ **/var/TKLC/log/upgrade/ugwrap.log** ▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log** ▪ **/var/log/messages** **The server reboot will occurs after the display of following message:** **Starting syscheck: [OK]** **Enabling applications on the server...** **Applications Enabled.** **Running /usr/TKLC/plat/bin/service_conf reconfig** **UPGRADE IS COMPLETE** **Waiting for reboot** **Updating platform revisions file...** **A reboot of the server is required.** **The server will be rebooted in 10 seconds** **[root@tpdvm15 ~]**

Procedure 8. Upgrade Replica – Standby Blade (SDM B-2)

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log on SDM B-2 through ssh **# ssh** root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion **# tail –f /var/TKLC/log/upgrade/ugwrap.log** 3-) The following message indicates that the upgrade has completed successfully. 5/10/2012 15:51:32 LOG ENTRY STARTED 05/10/2012 15:51:32 IN> BlueUpgrade::new() 05/10/2012 15:51:32 OUT> BlueUpgrade::new() 05/10/2012 15:51:32 Initializing Upgrade Wrapper... 05/10/2012 15:51:32 No methods to run in run queue... 05/10/2012 15:51:32 Re-enabling application components... 05/10/2012 15:51:32 Not a major upgrade. 05/10/2012 15:51:32 Upgrading DB from release [9.1] 05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log] **05/10/2012 16:02:22 SDM upgrade succeed** 05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted... 05/10/2012 16:02:22 Checking mount point: / 05/10/2012 16:02:22 Checking mount point: /proc 05/10/2012 16:02:22 Checking mount point: /sys 05/10/2012 16:02:22 Checking mount point: /dev/pts 05/10/2012 16:02:22 Checking mount point: /boot 05/10/2012 16:02:22 Checking mount point: /dev/shm 05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM 05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc 05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint 05/10/2012 16:02:22 Checking mount point: /mnt/upgrade 05/10/2012 16:02:22 Will unmount in 5 seconds... 05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade
7 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
8 ☐	If server upgrade failed, rollback	1-) If server upgrade failed, backout using recovery procedure described in section 6.1.
9 ☐	Proceed with next procedure	

4.1.6 Upgrade Replica – Active Blade (SDM B-1)

This procedure upgrades the active blade of replica site (SDM B-1). At that point, traffic should already have been redirected to site A at previous procedure. No SDM application will be running on site B at the end of that procedure.

Procedure 9. Upgrade Replica – Active Blade (SDM B-1)

S T E P #	Provides the step to upgrade SDM B-1 to SDM 9.2.0. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	

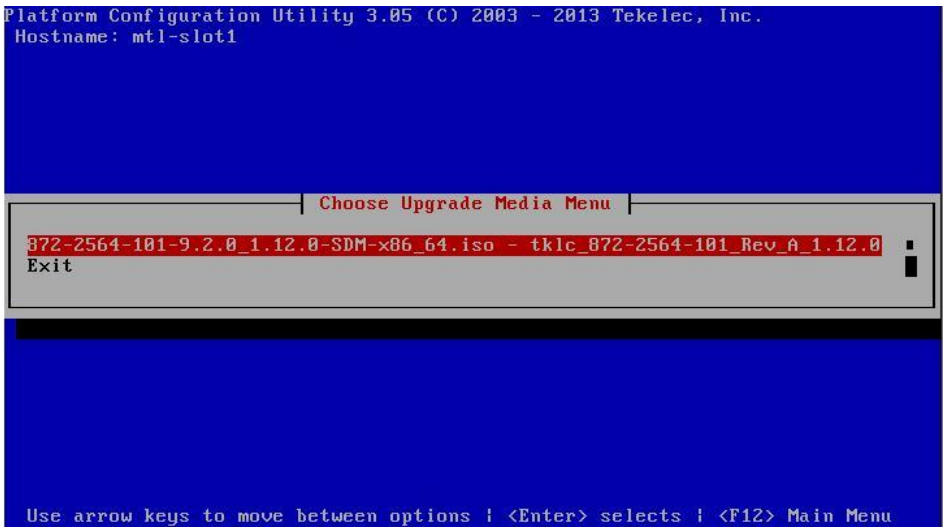
1 ☐	Connect to the SDM B-1 blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

2 ☐	Verify that SDM software is at version 9.1.1	**If Source Version is 9.1.1:**
		`# BlueVersion`
		`* Blueslice version: 9.1.1_8.3.0`

3 ☐	Validate TPD is at version 5.1.1-73.5.1 if source version is SDM 9.1.1	**If Source Version is 9.1.1:**
		`# getPlatRev`
		`5.1.1-73.5.1`

4 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 9. Upgrade Replica – Active Blade (SDM B-1)

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	`# su - platcfg`
		
		`Maintenance → Upgrade → Initiate Upgrade`
		
		Then, select the appropriate ISO upgrade media
		 
		
		NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:
		▪ **/var/TKLC/log/upgrade/upgrade.log**
		▪ **/var/TKLC/log/upgrade/ugwrap.log**
		▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log**
		▪ **/var/log/messages**
		
		The server reboot will occrs after the display of following message:
		
		`Starting syscheck: [ OK ]`
		`Enabling applications on the server...`
		`Applications Enabled.`
		`Running /usr/TKLC/plat/bin/service_conf reconfig`
		
		`UPGRADE IS COMPLETE`
		
		`Waiting for reboot`
		`Updating platform revision file...`
		
		`A reboot of the server is required.`
		`The server will be rebooted in 10 seconds`
		`[root@tpdvm15 ~]`

Procedure 9. Upgrade Replica – Active Blade (SDM B-1)

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log on SDM B-1 through ssh **# ssh** root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion **# tail –f /var/TKLC/log/upgrade/ugwrap.log** 3-) The following message indicates that the upgrade has completed successfully. 5/10/2012 15:51:32 LOG ENTRY STARTED 05/10/2012 15:51:32 IN> BlueUpgrade::new() 05/10/2012 15:51:32 OUT> BlueUpgrade::new() 05/10/2012 15:51:32 Initializing Upgrade Wrapper... 05/10/2012 15:51:32 No methods to run in run queue... 05/10/2012 15:51:32 Re-enabling application components... 05/10/2012 15:51:32 Not a major upgrade. 05/10/2012 15:51:32 Upgrading DB from release [9.1] 05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log] **05/10/2012 16:02:22 SDM upgrade succeed** 05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted... 05/10/2012 16:02:22 Checking mount point: / 05/10/2012 16:02:22 Checking mount point: /proc 05/10/2012 16:02:22 Checking mount point: /sys 05/10/2012 16:02:22 Checking mount point: /dev/pts 05/10/2012 16:02:22 Checking mount point: /boot 05/10/2012 16:02:22 Checking mount point: /dev/shm 05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM 05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc 05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint 05/10/2012 16:02:22 Checking mount point: /mnt/upgrade 05/10/2012 16:02:22 Will unmount in 5 seconds... 05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade
7 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
8 ☐	If server upgrade failed, rollback	1-) Use rollback procedure described in section 6.2 to rollback site B to 9.1.
9 ☐	Proceed with next procedure	

4.1.7 Perform Subscribers Migration

At this point, the software and configurations of both blades of site B have been upgraded but the subscribers data is no longer there. Here, we will restart each blade and perform a subscriber migration from geo-redundant site (site A). The migration is done in 2 steps:

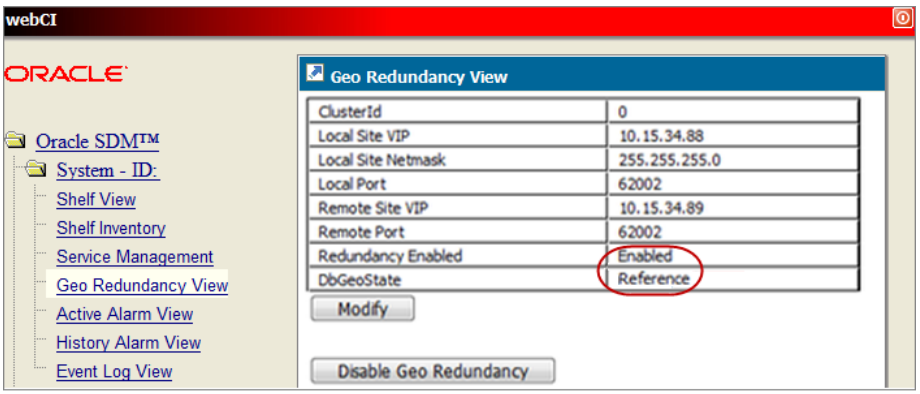
- An initial bulk migration that migrates data up to the time at which the migration has been started.
- A delta migration that start from bulk migration timestamp and that continuously migrates any data that is written to site A.

The delta migration scripts needs to run until the traffic is completely switched back to site B.

Procedure 10. Perform Subscribers Migration

S T E P #	Provides the steps to migration subscribers' data from site A to site B. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM B-1 blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Start blue service	1-) Start "blue" service **# service blue start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
3 ☐	Connect to the SDM B-2 blade through ssh with root accout using IP address recorded in iterm #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
4 ☐	Start blue service	1-) Start "blue" service **# service blue start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
5 ☐	Connect to the SDM B front-end (if applicable) blade through ssh with root accout using IP address recorded in iterm #12 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
6 ☐	Start blue service	1-) Start "blue" service **# service blue start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
7 ☐	Repeat steps 5 and 6 to all front-end nodes.	

Procedure 10. Perform Subscribers Migration

8 ☐	Connect to Site B WebCI	1-) Connect to site B WebCI with `admin` user using site B Public OAMP IP address and WebCI admin password as defined in section 3.1. First, open a web browser and login to url: *http://<Public OAMP Ip Address>:8080/webci* 2-) On the login page, enter `admin` user, password and click *Submit*.  3-) Enter **`root`** password for server when prompted.
9 ☐	Verify that Site B *DbGeoState* is Reference.	1-) In WebCI, go to System>Geo-Redundancy View 2-) Make sure Geo-Redundancy is *Enabled* and that DbGeoState is *Reference*. 

Procedure 10. Perform Subscribers Migration

<table>
<tr><td>10 ☐</td><td>Edit the migration config file to set the IP address of site A on SDM B-1.</td><td>1) On SDM B-1 shell, move to migration tool directory.
cd /var/TKLC/SDM/upgrade/migration/9.1

2) Change the permission of the file to allow write permission
chmod +w sdm_91_to_92_migration.cfg

3) Edit migration config file
vi sdm_91_to_92_migration.cfg

4) Set the variable SOURCE_SDM_IP to site A server 1 (A-1) public IP address of site A (stored in section 3.1).
##
##########
##
Configuration of sdm_91_to_92_migration.sh:
change/adapt according to your particular site survey
##
readonly SOURCE_SDM_IP=xx.xx.xx.xx
readonly SOURCE_SDM_MYSQL_USER=root
readonly SOURCE_SDM_MYSQL_PASS=root

SDM destination host should not be configurable:
IT'S ALWAYS LOCALHOST, BECAUSE THE SCRIPT _REQUIRES_ TO BE RUN
ON THE TARGET SDM MACHINE.
readonly DESTINATION_SDM_MYSQL_USER=root
readonly DESTINATION_SDM_MYSQL_PASS=root
##
DO NOT MODIFY BELOW THOSE LINES
##
##
##########
readonly CFG_VERSION='$Id: spr_91_to_92_migration.cfg 83590 2011-09-12 20:00:54Z bruno $'

5) Save and close the file</td></tr>
<tr><td>11 ☐</td><td>Perform a bulk migration.</td><td>1-) Perform bulk migration
./sdm_91_to_92_migration.sh

The migration succeeds if the migration statistics are displayed at the end and the “Migration successful message” is printed.

[Wed May 23 21:56:02 EDT 2012] ***
[Wed May 23 21:56:02 EDT 2012] *** Migration successful.
[Wed May 23 21:56:02 EDT 2012] ***</td></tr>
<tr><td>12 ☐</td><td>Start delta migration.</td><td>1-) Start delta migration
./sdm_91_to_92_migration.sh –D

The delta migration will continuously replicate new update applied on on site A until we abort the script. The delta migration will be stopped only when all traffic will be switched to site B.

Delta migration can be aborted by pressing <ctrl>-c on the shell where it has been started.</td></tr>
<tr><td>13 ☐</td><td>Proceed with next procedure</td><td></td></tr>
</table>

4.1.8 Switch Traffic to Site B

Now that Site B has been completely upgraded and that delta migration is keeping site B database synchronized, customer can switch all traffic to upgraded site.

Procedure 11. Switch Traffic Site B

S T E P #	Provides the steps switch traffic to site B. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM B-1 blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
3 ☐	Redirect all HLR/LTE-HSS and provisioning traffic to Site B SDMs.	1-) Restore traffic and provisioning on site B **NOTE:** However, take note that the previous steps may be sufficient to restore traffic. However, provisioning may need to be switch back manually.
4 ☐	Restart all HSS services	Connect to site B WebCI Go to System>ServiceManagement and expand Lte-HSS. For each LTE-HSS service: 1-) Press Stop Service 2-) Wait for the service to be stopped 3-) Press Start Service 4-) Wait for the service to start and continue with next instance if apply.
5 ☐	Validate HLR/LTE-HSS traffic and provisioning is working.	At this point, validation shall be done to verify that provisioning and signalling traffic is working properly. 1-) If provisioning or signalling traffic validation failed on site B, abort the delta migration using <ctrl-c>, switch back traffic to site A and rollback site B to 9.1 using procedure described in section 6.2.
6 ☐	Stop delta migration.	1-) Return to the shell running the delta migration script (started at step 12 of 4.1.7). 2-) Abort the delta migration script by type <ctrl-c>
7 ☐	Proceed with next procedure	

NOTE: At this point, if all previous validation succeeds, no rollback can be done on site B as the upgrade succeeds.

4.1.9 Upgrade Reference – Front-End Nodes

If the system is configured with Front-End Nodes, those servers must be upgraded first on the reference site. A node is configured as *FrontEnd* when the identity assigned to its slot is FrontEndNode. If no slot is configured as *FrontEnd*, you can skip that section and directly go to next section 4.1.10.

This procedure provides the steps required to upgrade the front-end blade on the replica site to SDM 9.2.0. The upgrade is initiated by calling `Initiate Upgrade` from platcfg tool. This command will call in the background `ugwrap` tool on the upgrade media. `ugwrap` will call a set a scripts that will automatically backup the mysql configuration and launch `upgrade_server`. `Upgrade_server` will automatically upgrade TPD to version 5.1.1 and install SDM 9.2.0 software package.

After that procedure, the will be upgraded to SDM 9.2.0 and configured the same way as it was prior to execute the upgrade.

At the end of the procedure, no SDM applications (blue service) will be started on that node.

THIS PROCEDURE MUST BE EXECUTED ON ALL FRONT-END SERVER OF REFERENCE SITE.

Procedure 12. Upgrade Reference – FrontEnd Nodes

S T E P #		
	Provides the step to upgrade SDM A Front-End nodes to SDM 9.2. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	

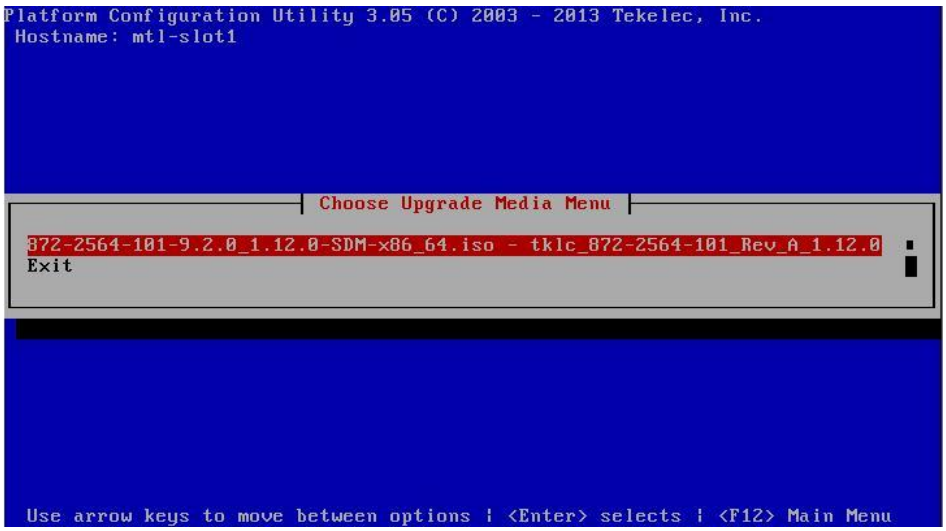
1 ☐	Connect to the SDM A front-end blade through ssh with root accout using IP address recorded in iterm #11 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

2 ☐	Verify that SDM software is at version 9.1.1	**If Source Version is 9.1.1:**
		`# BlueVersion`
		`* Blueslice version: 9.1.1_8.3.0`

3 ☐	Validate TPD is at version 5.1.1-73.5.1 if source version is SDM 9.1.1	**If Source Version is 9.1.1:**
		`# getPlatRev`
		`5.1.1-73.5.1`

4 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 12. Upgrade Reference – FrontEnd Nodes

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	**# su - platcfg** **Maintenance → Upgrade → Initiate Upgrade** Then, select the appropriate ISO upgrade media  **NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:** ▪ **/var/TKLC/log/upgrade/upgrade.log** ▪ **/var/TKLC/log/upgrade/ugwrap.log** ▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log** ▪ **/var/log/messages** **The server reboot will occurs after the display of following message:** **Starting syscheck: [OK]** **Enabling applications on the server...** **Applications Enabled.** **Running /usr/TKLC/plat/bin/service_conf reconfig** **UPGRADE IS COMPLETE** **Waiting for reboot** **Updating platform revision file...** **A reboot of the server is required.** **The server will be rebooted in 10 seconds** **[root@tpdvm15 ~]**

Procedure 12. Upgrade Reference – FrontEnd Nodes

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log through ssh **# ssh** root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion **# tail –f /var/TKLC/log/upgrade/ugwrap.log** 3-) The following message indicates that the upgrade has completed successfully. 5/10/2012 15:51:32 LOG ENTRY STARTED 05/10/2012 15:51:32 IN> BlueUpgrade::new() 05/10/2012 15:51:32 OUT> BlueUpgrade::new() 05/10/2012 15:51:32 Initializing Upgrade Wrapper... 05/10/2012 15:51:32 No methods to run in run queue... 05/10/2012 15:51:32 Re-enabling application components... 05/10/2012 15:51:32 Not a major upgrade. 05/10/2012 15:51:32 Upgrading DB from release [9.1] 05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log] **05/10/2012 16:02:22 SDM upgrade succeed** 05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted... 05/10/2012 16:02:22 Checking mount point: / 05/10/2012 16:02:22 Checking mount point: /proc 05/10/2012 16:02:22 Checking mount point: /sys 05/10/2012 16:02:22 Checking mount point: /dev/pts 05/10/2012 16:02:22 Checking mount point: /boot 05/10/2012 16:02:22 Checking mount point: /dev/shm 05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM 05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc 05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint 05/10/2012 16:02:22 Checking mount point: /mnt/upgrade 05/10/2012 16:02:22 Will unmount in 5 seconds... 05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade
7 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
8 ☐	If server upgrade failed, rollback	1-) If server upgrade failed, backout using recovery procedure described in section 6.1.
9 ☐	Proceed with next procedure	

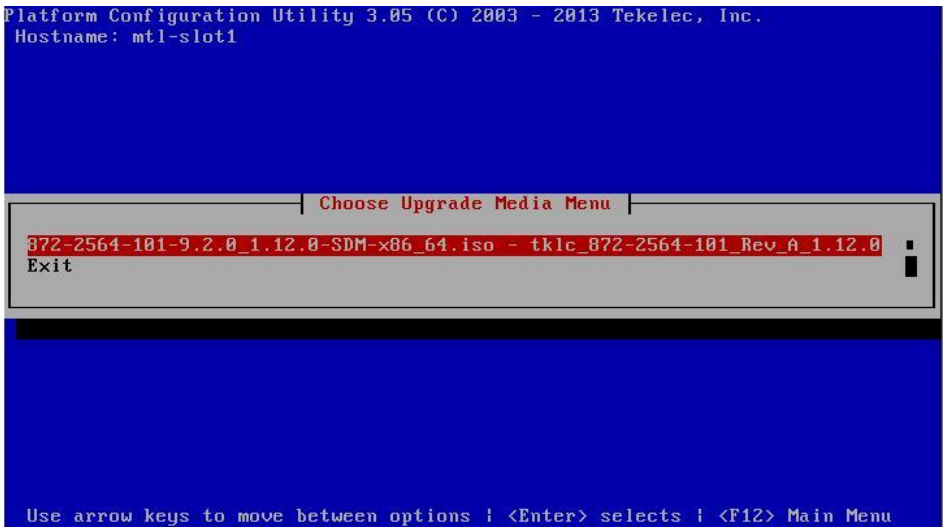
4.1.10 Upgrade Reference – Standby Blade (SDM A-2)

This procedure upgrades the standby blade of reference site (SDM A-2). At that point, traffic should already have been redirected to site B at previous procedure. No SDM application will be running on blade A-2 at the end of that procedure.

Procedure 13. Upgrade Reference – Standby Blade (SDM A-2)

S T E P #		
	Provides the step to upgrade SDM A-2 to SDM 9.2.0. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-2 blade through ssh with root accout using IP address recorded in iterm #4 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Verify that SDM software is at version 9.1.1	**If Source Version is 9.1.1:** **# BlueVersion** *** Blueslice version: 9.1.1_8.3.0**
3 ☐	Validate TPD is at version 5.1.1-73.5.1 if source version is SDM 9.1.1	**If Source Version is 9.1.1:** **# getPlatRev** 5.1.1-73.5.1
4 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 13. Upgrade Reference – Standby Blade (SDM A-2)

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	**# su - platcfg** **Maintenance → Upgrade → Initiate Upgrade** Then, select the appropriate ISO upgrade media  **NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:** ▪ **/var/TKLC/log/upgrade/upgrade.log** ▪ **/var/TKLC/log/upgrade/ugwrap.log** ▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log** ▪ **/var/log/messages** **The server reboot will occrs after the display of following message:** **Starting syscheck: [OK]** **Enabling applications on the server...** **Applications Enabled.** **Running /usr/TKLC/plat/bin/service_conf reconfig** **UPGRADE IS COMPLETE** **Waiting for reboot** **Updating platform revision file...** **A reboot of the server is required.** **The server will be rebooted in 10 seconds** **[root@tpdvm15 ~]**

Procedure 13. Upgrade Reference – Standby Blade (SDM A-2)

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log on SDM A-2 through ssh **# ssh** root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion **# tail –f /var/TKLC/log/upgrade/ugwrap.log** 3-) The following message indicates that the upgrade has completed successfully. 5/10/2012 15:51:32 LOG ENTRY STARTED 05/10/2012 15:51:32 IN> BlueUpgrade::new() 05/10/2012 15:51:32 OUT> BlueUpgrade::new() 05/10/2012 15:51:32 Initializing Upgrade Wrapper... 05/10/2012 15:51:32 No methods to run in run queue... 05/10/2012 15:51:32 Re-enabling application components... 05/10/2012 15:51:32 Not a major upgrade. 05/10/2012 15:51:32 Upgrading DB from release [9.1] 05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log] **05/10/2012 16:02:22 SDM upgrade succeed** 05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted... 05/10/2012 16:02:22 Checking mount point: / 05/10/2012 16:02:22 Checking mount point: /proc 05/10/2012 16:02:22 Checking mount point: /sys 05/10/2012 16:02:22 Checking mount point: /dev/pts 05/10/2012 16:02:22 Checking mount point: /boot 05/10/2012 16:02:22 Checking mount point: /dev/shm 05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM 05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc 05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint 05/10/2012 16:02:22 Checking mount point: /mnt/upgrade 05/10/2012 16:02:22 Will unmount in 5 seconds... 05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade
7 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
8 ☐	If server upgrade failed, call the Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**. Since the site B has been upgraded, it is not recommended but to proceed with a complete system rollback. It is still possible at that point to completely rollback the 2 sites but upgrade assistance should be request before attempting such operation.
9 ☐	Proceed with next procedure	

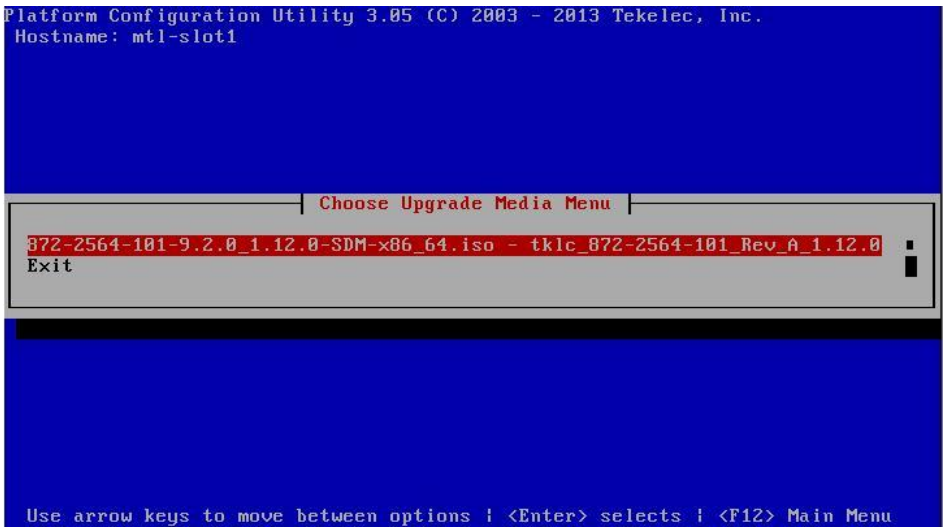
4.1.11 Upgrade Reference – Active Blade (SDM A-1)

This procedure upgrades the active blade of reference site (SDM A-1). At that point, traffic should already have been redirected to site B at section. No SDM application will be running site A at the end of that procedure.

Procedure 14. Upgrade Reference – Active Blade (SDM A-1)

S T E P #	Provides the step to upgrade SDM A-1 o SDM 9.2.0. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1 blade through ssh with root accout using IP address recorded in iterm #2 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Verify that SDM software is at version 9.1.1	**If Source Version is 9.1.1:** **# BlueVersion** *** Blueslice version: 9.1.1_8.3.0**
3 ☐	Validate TPD is at version 5.1.1-73.5.1 if source version is SDM 9.1.1	**If Source Version is 9.1.1:** **# getPlatRev** 5.1.1-73.5.1
4 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 14. Upgrade Reference – Active Blade (SDM A-1)

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	**# su - platcfg** **Maintenance → Upgrade → Initiate Upgrade** Then, select the appropriate ISO upgrade media  **NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:** ▪ **/var/TKLC/log/upgrade/upgrade.log** ▪ **/var/TKLC/log/upgrade/ugwrap.log** ▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log** ▪ **/var/log/messages** **The server reboot will occrs after the display of following message:** **Starting syscheck: [OK]** **Enabling applications on the server...** **Applications Enabled.** **Running /usr/TKLC/plat/bin/service_conf reconfig** **UPGRADE IS COMPLETE** **Waiting for reboot** **Updating platform revision file...** **A reboot of the server is required.** **The server will be rebooted in 10 seconds** **[root@tpdvm15 ~]**

Procedure 14. Upgrade Reference – Active Blade (SDM A-1)

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log on SDM A-1 through ssh **# ssh** root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion **# tail –f /var/TKLC/log/upgrade/ugwrap.log** 3-) The following message indicates that the upgrade has completed successfully. 5/10/2012 15:51:32 LOG ENTRY STARTED 05/10/2012 15:51:32 IN> BlueUpgrade::new() 05/10/2012 15:51:32 OUT> BlueUpgrade::new() 05/10/2012 15:51:32 Initializing Upgrade Wrapper... 05/10/2012 15:51:32 No methods to run in run queue... 05/10/2012 15:51:32 Re-enabling application components... 05/10/2012 15:51:32 Not a major upgrade. 05/10/2012 15:51:32 Upgrading DB from release [9.1] 05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log] **05/10/2012 16:02:22 SDM upgrade succeed** 05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted... 05/10/2012 16:02:22 Checking mount point: / 05/10/2012 16:02:22 Checking mount point: /proc 05/10/2012 16:02:22 Checking mount point: /sys 05/10/2012 16:02:22 Checking mount point: /dev/pts 05/10/2012 16:02:22 Checking mount point: /boot 05/10/2012 16:02:22 Checking mount point: /dev/shm 05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM 05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc 05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint 05/10/2012 16:02:22 Checking mount point: /mnt/upgrade 05/10/2012 16:02:22 Will unmount in 5 seconds... 05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade
7 ☐	Connect to the SDM A-1 blade through ssh with root accout using IP address recorded in iterm #2 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
8 ☐	Start blue service	1-) Start “blue” service **# service blue start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back. The duration of this step vary from minutes to hours since it depends on the customer database size.
9 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
10 ☐	If server upgrade failed, call the Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.** Since the site B has been upgraded, it is not recommended but to proceed with a complete system rollback. It is still possible at that point to completely rollback the 2 sites but upgrade assistance should be request before attempting such operation.
11 ☐	Proceed with next procedure	

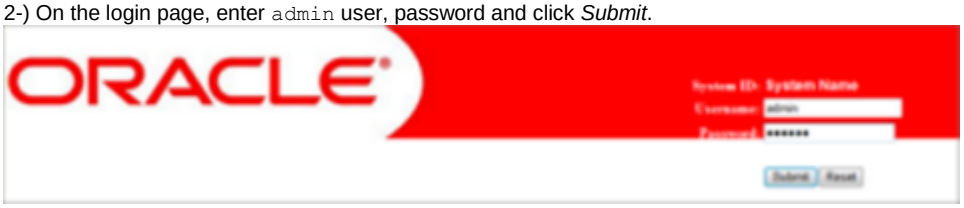
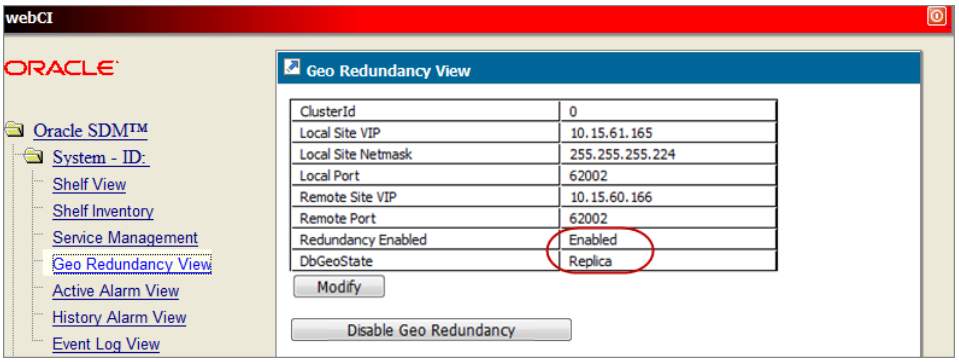
4.1.12 Re-Activate Geo-Redundancy on Site A

This procedure provides the steps required re-activate geo-redundancy on site A. This procedure will bring site A to *Replica* geo-redundancy state and site B should take *ReferenceProtected* state.

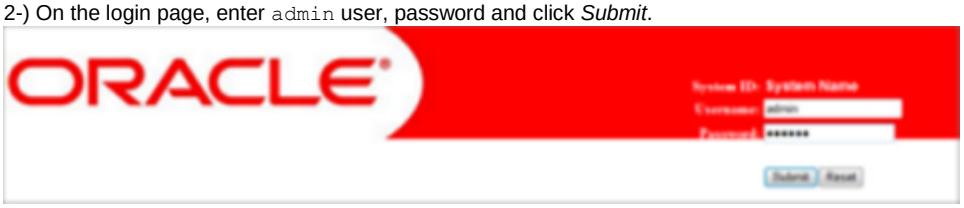
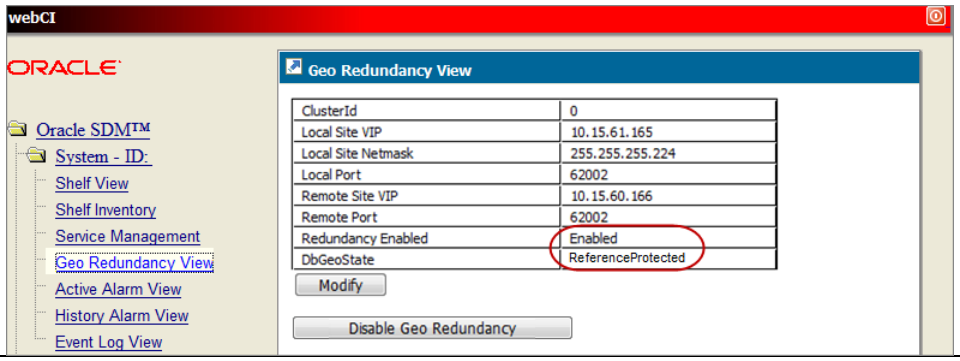
Procedure 15. Re-Activate Geo-Redundancy on Site A

S T E P #		
	Provides the steps to re-activate geo-redundancy on site A. This procedure required to restart both blade of site A. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1, SDM A-2 and all SDM A front-end nodes (if applicable) blades through ssh with root account using IP address recorded in item #2 and #4 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Open BlueCli with admin account from SDM A-1 shell.	**# BlueCli –u admin** **BlueCli (Copyright (C) 2010, Tekelec)** **Version: Build: 0** **1 :>**
3 ☐	Enable Geo-Redundancy	1-) In BlueCli, navigate to System[]:Shelf[ShelfId=1]:GeoClusterConfig[GeoClusterId=0] **1 :> System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]** **2 :System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]>** 2-) Call EnableGoRedundancy() operation. **2 :System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]>** **EnableGeoRedundancy()** **Done!** **3 :System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]>** 3-) Make sure geo-redundancy is enabled **3 :System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]> display** **GeoClusterId: 0** **GeoLocalPort: 62002** **GeoLocalSiteIp:** **GeoLocalSiteNetmask:** **GeoRemoteSiteIp:** **GeoRedundancyEnabled: 1** **GeoRemotePort: 62002** **4 :System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]>** 4-) Make sure GeoDbState is Stopped **4 :System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]>** **:Database[]** **5 :Database[]> display GeoDatabaseState[]** **SsId: 0** **DbGeoState: Stopped** **6 :Database[]>**
4 ☐	Stop Site A active Blade (SDM A-1).	1-) Stop “blue” service from SDM A-1 shell **# service blue stop**

Procedure 15. Re-Activate Geo-Redundancy on Site A

5 ☐	Start Site A active blade blue service (SDM A-1)	1-) Start "blue" service from SDM A-1 shell: `# service blue start` 2-) Wait for initialization to complete by waiting for the shell prompt to come back. At this step, Site A will synchronize the subscribers' data with Site B. Therefore, the step can take a significant amount of time depending on customer database size.
6 ☐	Start Site A standby blade blue service (SDM A-2)	1-) Start "blue" service from SDM A-2 shell: `# service blue start` 2-) Wait for initialization to complete by waiting for the shell prompt to come back. This step can take a significant amount of time depending on customer database size since the standby blade will be synchronized with the active blade of site B.
7 ☐	Start Site A front-end node blades blue service. Repeat on all front-end node of site A, if applicable.	1-) Start "blue" service from SDM A front-end node shell: `# service blue start` 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
8 ☐	Connect to Site A WebCI	1-) Connect to site A WebCI with `admin` user using site A Public OAMP IP address and WebCI admin password as defined in section 3.1. First, open a web browser and login to url: *http://<Public OAMP Ip Address>:8080/webci* 2-) On the login page, enter `admin` user, password and click *Submit*.  2-) Enter **`root`** password for server when prompted.
9 ☐	Verify that Site A is Replica.	1-) In WebCI, go to System>Geo-Redundancy View 2-) Make sure that DbGeoState go to *Replica* and that Redundancy is *Enabled*: 

Procedure 15. Re-Activate Geo-Redundancy on Site A

10 ☐	Connect to Site B WebCI	1-) Connect to site B WebCI with `admin` user using site B Public OAMP IP address and WebCI admin password as defined in section 3.1. First, open a web browser and login to url: *http://<Public OAMP Ip Address>:8080/webci* 2-) On the login page, enter `admin` user, password and click *Submit*.  2-) Enter **`root`** password for server when prompted.
11 ☐	Verify that Site B is ReferenceProtected.	1-) In the WebCI, go to System>Geo-Redundancy View 2-) Make sure that DbGeoState go to *ReferenceProtected* and that Redundancy is *Enabled*: 
12 ☐	Go to next Procedure	

4.1.13 Restore Traffic Distribution

Here we will restore traffic distribution between site A and site B.

Procedure 16. Start Site & Restore Traffic Distribution

S T E P #	Provides the steps to migrationre-activate site site A. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1 blade through ssh with root accout using IP address recorded in iterm #2 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **`root`** account: **`$ ssh root@xx.xx.xx.xx`** **`root@xx.xx.xx.xx's password:`** **`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`** 2-) Enter **`root`** password for server when prompted.

Procedure 16. Start Site & Restore Traffic Distribution

2 ☐	Restart all HSS services	Connect to site A WebCI Go to System>ServiceManagement and expand Lte-HSS. For each LTE-HSS service: 1-) Press Stop Service 2-) Wait for the service to be stoppred 3-) Press Start Service 4-) Wait for the service to start and continue with next instance if apply.
3 ☐	Redistribute HLR/LTE-HSS and provisioning traffic to Site A and B SDMs.	1-) Restore traffic and provisioning on site A and Site B. The procedure to switch traffic and provisioning is outside the scope of this procedure. **NOTE:** However, take note that the previous steps may be sufficient to restore traffic. However, provisioning may need to be switch back manually.
4 ☐	Validate HLR/HSS-LTE traffic and provisioning is working.	At this point, validation shall be done to verify that provisioning and HLR/LTE-HSS traffic is working properly. 1-) If provisioning or HLR/LTE-HSS traffic validation failed on site A, switch back traffic to site B. Since the site B has been upgraded, it is not recommended but to proceed with a complete system rollback. It is still possible at that point to completely rollback the 2 sites but upgrade assistance should be request before attempting such operation.

4.2 Post installation manual configuration

Please follow extra manual configuration step from 7.1, Activation of feature *HLR Overload Control* new mandatory options.

5. SOFTWARE UPGRADE PROCEDURE FROM 9.1.1 TO 9.2.0 NON-GEOREDUNDANT CONFIGURATION

The procedure described in this section is used to upgrade a SDM running 9.1.1 to 9.2.0 in non-geo-redundant configuration.

This procedure **CANNOT** be applied on geo-redundant system.

For HLR services, an outage of traffic of about 7 min is expected (may vary depending of HW used).

Since there is no geo-redundant site, a downtime is expected in rollback procedure.

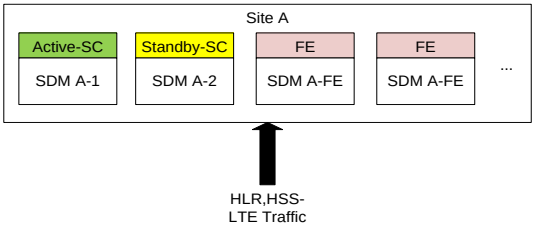
5.1 Software Upgrade Execution

These procedures are executed inside a maintenance window.

During that procedure, external nodes connected to SDM may loose connection to a specific SDM blade since a server reboot is required when upgrading each blade. However, it is assume that each external node are configured with redundant link and that they can connect during that time to the peer blade or the geo-redundant site if apply.

The procedure consist in first upgrading the active database server with a special command that will propagate database schema changes to all back-end blade in order to bring the schema to the 9.2.0. Then, a standard upgrade procedure is executed on remaining blades.

The initial setup of a non geo-redundant configuration is show in the figure below.



The sequence to upgrade this configuration would be to apply the procedure describes in this section on each server using the following order:

- Upgrade SDM A-2
- Upgrade SDM A-1
- Upgrade SDM A-FE

5.1.1 Copy ISO Image File

This procedure transfers the SDM software upgrade ISO to each server /var/TKLC/upgrade directory.

Note: ISO transfers to the target systems may require a significant amount of time depending on the number of systems and the bandwidth of the network. The ISO transfers to the target systems should be performed prior to and outside of the scheduled maintenance window. Schedule the required maintenance windows accordingly before proceeding.

The iso images are put in the /var/TKLC/upgrade directory on the server. Because the iso images are large, the following procedure includes instructions to check space available before copying the iso to this directory.

Procedure 17. Copy ISO Image File to target systems

S T E P #	This procedure upload the SDM upgrade ISO to each server. This procedure is repeated on each server in this order (SDM A-2, SDM A-1, SDM A-FE) Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the server through ssh using root account.	1. For local workstation, login using ssh to server IP address using root account: $ ssh root@xx.xx.xx.xx root@xx.xx.xx.xx's password: Last login: Mon May 7 15:47:25 2012 from 10.26.3.35 2. Enter root password for server when prompted.
2 ☐	Verify enough space exists for ISO. Verify that there is at least 1Gb in the Avail column. If not, clean up files until there is space available. 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. Removing files other than those in directory /var/TKLC/upgrade is potentially dangerous.	# df -h /var/TKLC/ Filesystem Size Used Avail Use% Mounted on /dev/mapper/vgroot-plat_var_tklc 3.9G 2.4G 1.4G 65% /var/TKLC

Procedure 17. Copy ISO Image File to target systems

3 ☐	Copy SDM 9.2.0 software ISO image file from the local workstation to the target server upgrade directory.	From the local workstation: 1. Copy SDM 9.2.0 software ISO to target server # scp <ISO Name> root@<server SSH IP>:/var/TKLC/upgrade Example: # scp 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso root@xx.xx.xx.xx:/var/TKLC/upgrade 2. Enter root password for server when prompted.
4 ☐	Verify ISO image files were copied to the correct location. Examine output of the command and verify that both ISO files are present and that file sizes appear correct.	From the server: # ls –l /var/TKLC/upgrade
5 ☐	Repeat step 1 to 4 on all servers (SDM A-2, SDM A-FE, SDM A-1)	

5.1.2 Validate ISO image file

Detailed steps are shown in the procedure below to validate the resulting ISO image file on the target system.

Procedure 18. Validate & Mount ISO image file

S T E P #	Detailed steps are shown in the procedure below to validate the resulting ISO image file on the target system. This procedure is repeated on each server (SDM A-2, SDM A-1, SDM A-FE) and front-end servers Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.
1 ☐	Connect to the Server through ssh Using the root account.	1. For local workstation, login using ssh to server IP address using root account: $ ssh root@xx.xx.xx.xx root@xx.xx.xx.xx's password: Last login: Mon May 7 15:47:25 2012 from 10.26.3.35 2. Enter root password for server when prompted.

Procedure 18. Validate & Mount ISO image file

2 ☐	Using platcfg, validate the SDM 9.2.0 software ISO is found.	# su – platcfg Maintenance → Upgrade → Validate Media
3 ☐	Validate SDM 9.2.0 sofware ISO.	Validating cdrom... ## ## ## ## ## ## ## ## ## #################################### UMVT Validate Utility v2.2.1, (c)Tekelec, June 2010 Validating /var/TKLC/upgrade/872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso Date&Time: 2012-05-07 21:33:47 Volume ID: tklc_872-2564-101_Rev_A_2.5.0 Part Number: 872-2564-101_Rev_A Version: 2.5.0 Disc Label: SDM Disc description: SDM The media validation is complete, the result is: PASS CDROM is Valid PRESS ANY KEY TO RETURN TO THE PLATCFG MENU. *Note: Do not continue if ISO image validation reports any errors or is invalid. Instead remove the ISO file and either re-copy it to the target system or regenerate it from physical media.*
4 ☐	Repeat steps 1 to 3 on each server (SDM A-1, SDM A-2, SDM-FE (front-ends))	

5.1.3 Upgrade the Standby blade server

This procedure provides the steps required to upgrade the Standby server (SDM- A-2) from 9.1.1 to another 9.2.0.

Upgrade_server will automatically upgrade TPD to appropriate version if required and install new SDM 9.2 rpm.

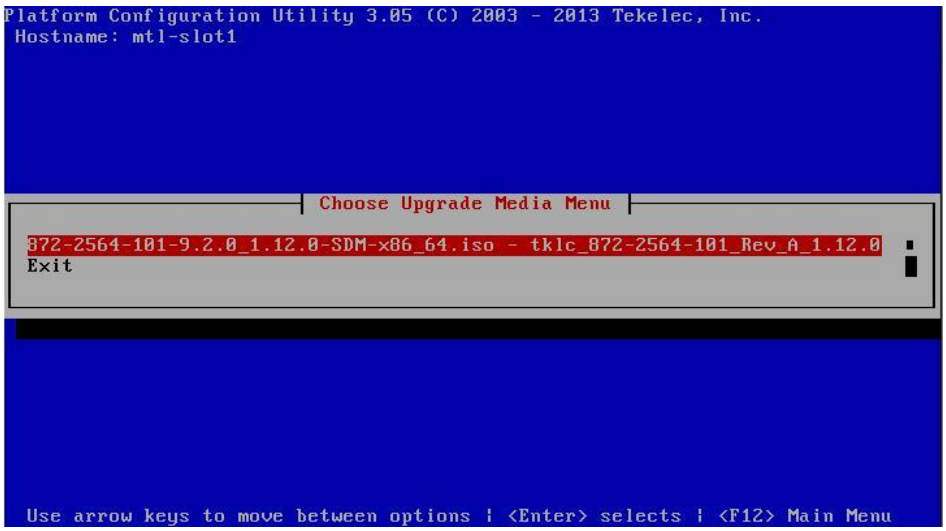
After that procedure, the server will be upgraded to SDM 9.2 and configured the same way as it was prior to execute the upgrade.

At the end of the procedure, no SDM applications (blue service) will be started on that node.

Procedure 19. Upgrade 9.1.1 Standby Server

S T E P #	Provides the step to upgrade SDM from SDM 9.1.1 to SDM 9.2.0 build. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	
1 ☐	Connect to the SDM A-2 blade through ssh with root accout using IP address recorded in Table 5.	1-) For local workstation, login using ssh to server IP address using root account: $ ssh root@xx.xx.xx.xx root@xx.xx.xx.xx's password: Last login: Mon May 7 15:47:25 2012 from 10.26.3.35 2-) Enter root password for server when prompted.
2 ☐	Verify that SDM software is at version 9.1.1.	# BlueVersion * Blueslice version: 9.1.1_x.x.x
3 ☐	Mount the SDM ISO on /mnt/upgrade	# loopMount –ro /var/TKLC/upgrade/<9.2 ISO file> /mnt/upgrade
4 ☐	Get the HP License information.	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO

Procedure 19. Upgrade 9.1.1 Standby Server

5 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	**# su - platcfg** **Maintenance → Upgrade → Initiate Upgrade** Then, select the appropriate ISO upgrade media  **NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file:** ▪ **/var/TKLC/log/upgrade/upgrade.log** ▪ **/var/TKLC/log/upgrade/ugwrap.log** ▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log** ▪ **/var/log/messages** **The server reboot will occurs after the display of following message:** **Starting syscheck: [OK]** **Enabling applications on the server...** **Applications Enabled.** **Running /usr/TKLC/plat/bin/service_conf reconfig** **UPGRADE IS COMPLETE** **Waiting for reboot** **Updating platform revision file...** **A reboot of the server is required.** **The server will be rebooted in 10 seconds** **[root@tpdvm15 ~]**

Procedure 19. Upgrade 9.1.1 Standby Server

6 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log on SDM through ssh # ssh root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion # tail –f /var/TKLC/log/upgrade/ugwrap.log 3-) The following message indicates that the upgrade has completed successfully. The upgrade may take some time since backup will automatically be taken. Activity can be monitored by doing a "tail –f /var/TKLC/log/upgrade/BlueUpgrade.pm.log" **5/10/2012 15:51:32 LOG ENTRY STARTED** **05/10/2012 15:51:32 IN> BlueUpgrade::new()** **05/10/2012 15:51:32 OUT> BlueUpgrade::new()** **05/10/2012 15:51:32 Initializing Upgrade Wrapper...** **05/10/2012 15:51:32 No methods to run in run queue...** **05/10/2012 15:51:32 Re-enabling application components...** **05/10/2012 15:51:32 Not a major upgrade.** **05/10/2012 15:51:32 Upgrading DB from release [9.1]** **05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log]** **05/10/2012 16:02:22 SDM upgrade succeed** **05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted...** **05/10/2012 16:02:22 Checking mount point: /** **05/10/2012 16:02:22 Checking mount point: /proc** **05/10/2012 16:02:22 Checking mount point: /sys** **05/10/2012 16:02:22 Checking mount point: /dev/pts** **05/10/2012 16:02:22 Checking mount point: /boot** **05/10/2012 16:02:22 Checking mount point: /dev/shm** **05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM** **05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc** **05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint** **05/10/2012 16:02:22 Checking mount point: /mnt/upgrade** **05/10/2012 16:02:22 Will unmount in 5 seconds...** **05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade**
7 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
8 ☐	If server upgrade failed, rollback	1-) If server upgrade failed, backout using recovery procedure described in section 6.3.
9 ☐	Proceed with next procedure	

5.1.4 Perform Subscribers Migration

At this point, the software and configurations of the Standby blade (SDM A-2) have been upgraded but the subscribers data is no longer there. Here, we will perform a subscriber migration from Active Blade (SDM A-1). The migration is done in 1 step for NON-GEO:

- A bulk migration that migrates data up to the time at which the migration has been started.

Procedure 20. Perform Subscribers Migration

S T E P #	Provides the steps to migration subscribers' data from Active Blade to Standby Blade. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	
1 ☐	Connect to the SDM A-2 blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Start mysql service	1-) Start "mysql" service **# mysqlblued start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.

3 ☐	Edit the migration config file to set the IP address of the Active Blade: SDM A-1	1-) On SDM A-2 shell, move to migration tool directory.
		# cd /var/TKLC/SDM/upgrade/migration/9.1
		
		2-) Change the permission of the file to allow write permission
		# chmod +w sdm_91_to_92_migration.cfg
		
		3-) Edit migration config file
		# vi sdm_91_to_92_migration.cfg
		
		Set the variable SOURCE_SDM_IP to the public IP address of Active Blade SDM A-1 (stored in section 3.1).
		`##########################################################################`
		`##########`
		`##`
		`## Configuration of sdm_91_to_92_migration.sh:`
		`## change/adapt according to your particular site survey`
		`##`
		`readonly SOURCE_SDM_IP=xx.xx.xx.xx`
		`readonly SOURCE_SDM_MYSQL_USER=root`
		`readonly SOURCE_SDM_MYSQL_PASS=root`
		
		`# SDM destination host should not be configurable:`
		`# IT'S ALWAYS LOCALHOST, BECAUSE THE SCRIPT _REQUIRES_ TO BE RUN`
		`# ON THE TARGET SDM MACHINE.`
		`readonly DESTINATION_SDM_MYSQL_USER=root`
		`readonly DESTINATION_SDM_MYSQL_PASS=root`
		`##`
		`## DO NOT MODIFY BELOW THOSE LINES`
		`##`
		`##########################################################################`
		`##########`
		`readonly CFG_VERSION='$Id: sdm_91_to_92_migration.cfg 83590 2011-09-12 20:00:54Z bruno $'`
		
		4-) Save and close the file

Procedure 20. Perform Subscribers Migration

4 ☐	Perform a bulk migration.	1-) Perform bulk migration
		`# ./sdm_91_to_92_migration.sh`
		
		The migration succeeds if the migration statistics are displayed at the end and the "Migration successful message" is printed.
		
		`[Wed May 23 21:56:02 EDT 2012] ***`
		`[Wed May 23 21:56:02 EDT 2012] *** Migration successful.`
		`[Wed May 23 21:56:02 EDT 2012] ***`

5 ☐	Proceed with next procedure	

5.1.5 Stop all remaining blades or servers (SDM A-1, SDM-FE)

Procedure 21. Stop all servers on SDM-B

S T E P #	The first step is to stop all servers. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	

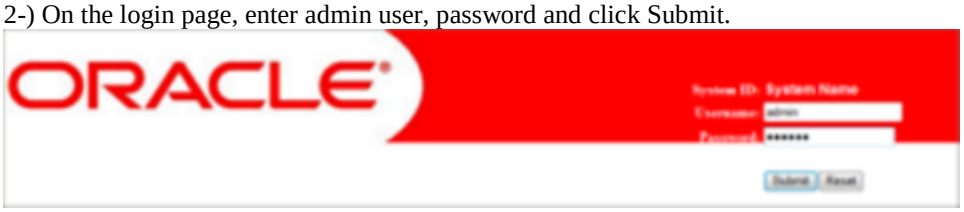
1 ☐	Connect to the SDM B-FE blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		
		2-) Enter **root** password for server when prompted.

2 ☐	Stop blue service	1-) Stop "blue" service `# service blue stop` 2-) Wait for initialization to complete by waiting for the shell prompt to come back. 3) Make sure **all** the SDM-FE are stopped
3 ☐	Repeat steps 1 and 2 for SDM A-1	Make sure all the blades are stopped (SDM A-1, SDM A-2, SDM-FE)
4 ☐	Proceed with next procedure	

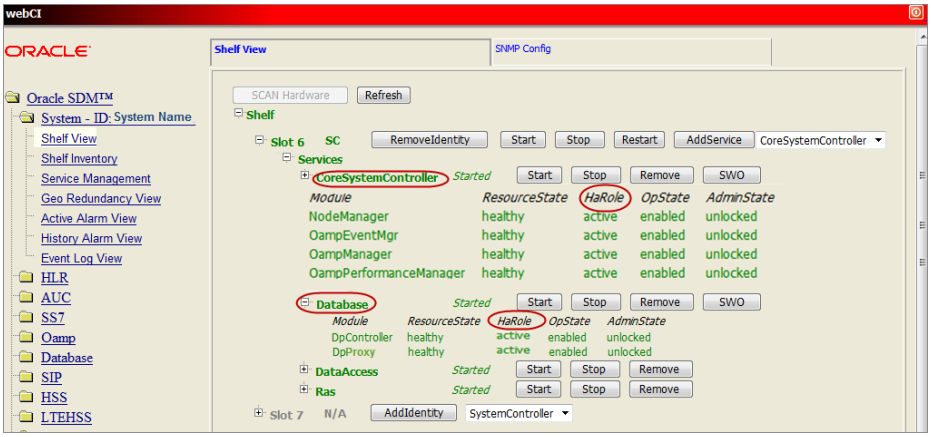
5.1.6 Start the upgraded blade or server (SDM A-2)

At this point, the software and database have been upgraded but the blade is not automatically restarted by the upgrade. Here, we will start the upgraded blade (9.2.0). We will start that blade using force command and it should come up as the new Active Blade.

Procedure 22. Start the the upgraded blade or server

S T E P #	Provides the start the upgraded blade or server. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-2 blade through ssh with root accout using IP address recorded in iterm #7 of Table 5.	1-) For local workstation, login using ssh to server IP address using root account: $ ssh root@xx.xx.xx.xx root@xx.xx.xx.xx's password: Last login: Mon May 7 15:47:25 2012 from 10.26.3.35 2-) Enter root password for server when prompted.
2 ☐	Start blue service	1-) Start "blue" service with force to make it the new Active Blade **# service blue start force** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
3 ☐	Connect to WebCI	1-) Connect to site WebCI with admin user using site Public OAMP IP address and WebCI admin password as defined in section 3.1. First, open a web browser and login to url: http://<Public OAMP Ip Address>:8080/webci 2-) On the login page, enter admin user, password and click Submit.  3-) Enter root password for server when prompted.

Procedure 22. Start the the upgraded blade or server

4 ☐	Validate that the HaRole of Database service on the upgraded slot is now active. Log in WebCI as recorded in Table 5. From Shelf View, expand the upgraded Slot up to Database Service	Go to Oracle SDM > System > Shelf View.  Make sure that the HaRole is Active for all modules in Database service.
5 ☐	Proceed with next procedure	

5.1.7 Upgrade the remaining servers (SDM A-1, SDM-FE)

This procedure provides the steps required to upgrade the remaining servers (SDM A-1, SDM-FE) from 9.1.1 to 9.2.0 build. The upgrade is initiated by calling Initiate Upgrade from platcfg tool. This command will call in the background ugwrap tool on the upgrade media. ugwrap will call a set a scripts that will automatically backup the configuration mysql database, remove SDM 9.1 blue rpm and launch upgrade_server.

Upgrade_server will automatically upgrade TPD to appropriate version if required and install new SDM 9.2.0 rpm.

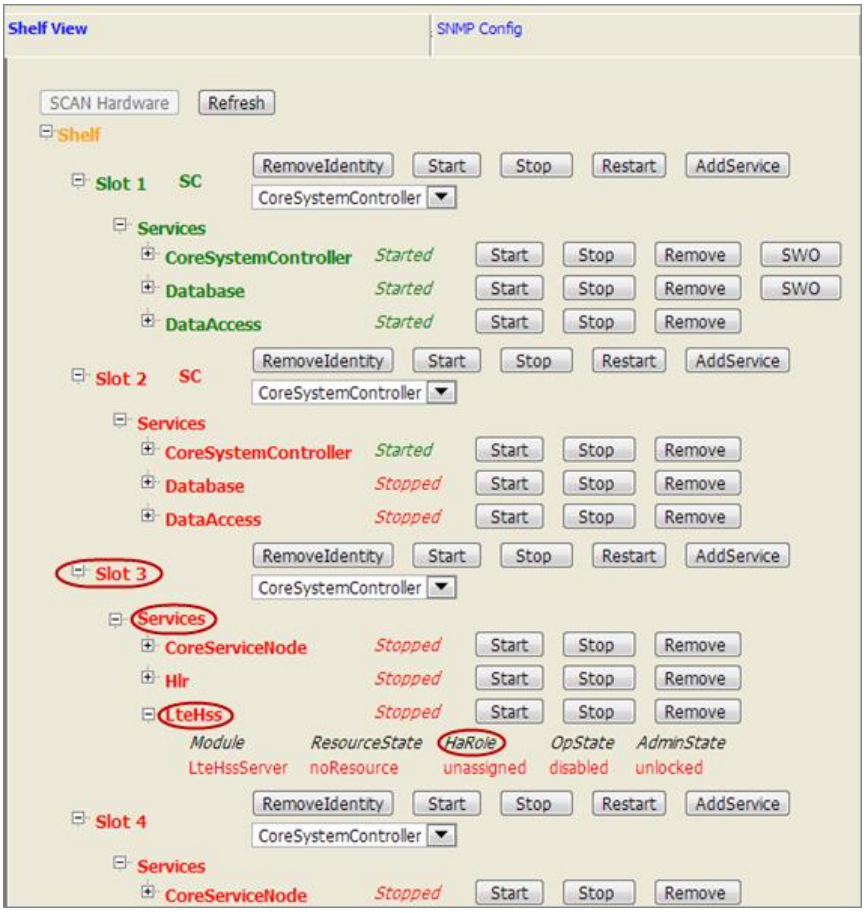
After that procedure, the server will be upgraded to SDM 9.2.0 and configured the same way as it was prior to execute the upgrade.

At the end of the procedure, no SDM applications (blue service) will be started on that node.

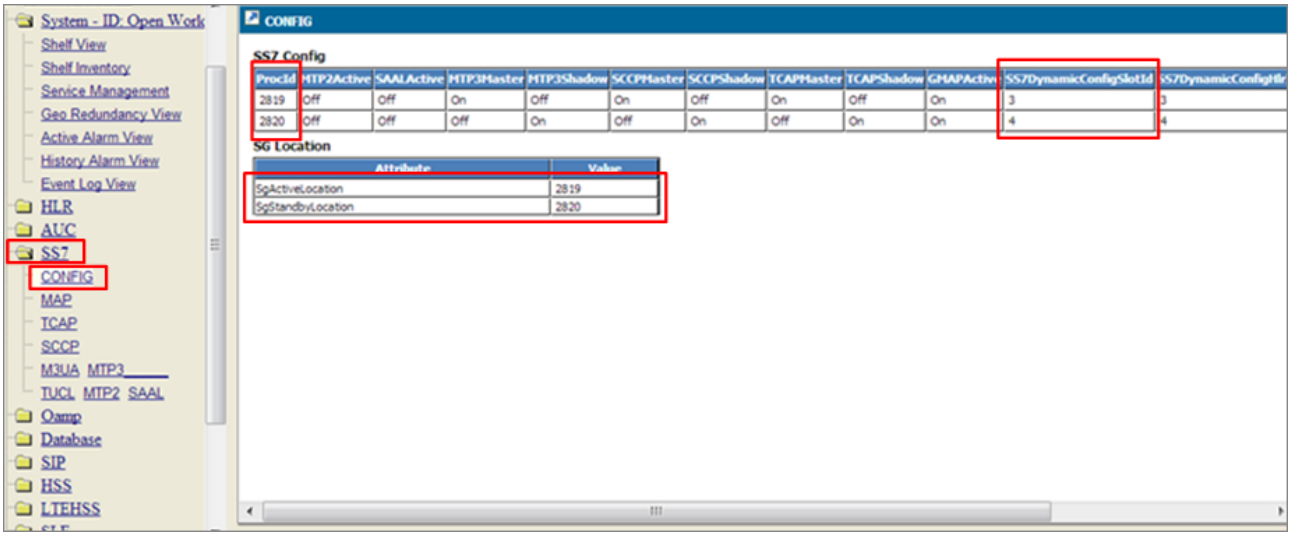
It is recommended to apply this procedure on the remaining servers in the following order:

1. Active SystemController blade (SDM A-1)
2. Front-End nodes running Hlr service with standby SG
3. Front-End nodes running Hlr service with active SG
4. Front-End nodes running Lte-Hss service with unassigned HaRole
5. Front-End nodes running Lte-Hss service with active HaRole

To find which service is running in which node, connect the WebCI, go to System>Shelf View and expand all non-gray slot. Then expand the Services value and the “Service” in order to see the HaRole.



To find which Hlr node is running standby or active SG, connect to the WebCI and go into SS7>CONFIG. Then the table SG Location gives the "ProcId" of each active (SgActiveLocation) and standby (SgStandbyLocation) SG. Then, you can use the table SS7 Config to correlate the ProcId with the slot ID using column "SS7DynamicConfigSlotId".



Procedure 23. Upgrade remaining Server

S T E P #	Provides the step to upgrade SDM from SDM 9.1.1 build to SDM 9.2.0 build. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	
1 ☐	Connect to the SDM A-1 blade through ssh with root account using IP address recorded in Table 5.	1-) For local workstation, login using ssh to server IP address using root account: $ ssh root@xx.xx.xx.xx root@xx.xx.xx.xx's password: Last login: Mon May 7 15:47:25 2012 from 10.26.3.35 2-) Enter root password for server when prompted.
2 ☐	Verify that SDM software is at version 9.1.1	# BlueVersion * Blueslice version: 9.1.1_x.x.x
3 ☐	Get the HP License information	If there is a HP License/LTE-HSS service, refer to section 8.1 to note the HP License information before installing the ISO
4 ☐	Log into platcfg and initiate the upgrade using Maintenance > Upgrade > Initiate Upgrade option.	# su - platcfg Maintenance → Upgrade → Initiate Upgrade Then, select the appropriate ISO upgrade media NOTE: This step may generate a lot of output can take a significant amount of time since it needs to backup the databases, upgrade the software, reboot the server and upgrade configuration databases. Activity can be monitored by looking at following log file: /var/TKLC/log/upgrade/upgrade.log /var/TKLC/log/upgrade/ugwrap.log /var/TKLC/log/upgrade/BlueUpgrade.pm.log /var/log/messages The server reboot will occurs after the display of following message: Starting syscheck: [OK] Enabling applications on the server... Applications Enabled. Running /usr/TKLC/plat/bin/service_conf reconfig UPGRADE IS COMPLETE Waiting for reboot Updating platform revision file... A reboot of the server is required. The server will be rebooted in 10 seconds [root@tpdvm15 ~]

Procedure 23. Upgrade remaining Server

5 ☐	Verify that upgrade has completed successfully.	1-) Once the server has reboot, re-log on SDM through ssh # ssh root@xx.xx.xx.xx 2-) Monitor ugwrap.log and wait for upgrade completion # tail –f /var/TKLC/log/upgrade/ugwrap.log 3-) The following message indicates that the upgrade has completed successfully. **5/10/2012 15:51:32 LOG ENTRY STARTED** **05/10/2012 15:51:32 IN> BlueUpgrade::new()** **05/10/2012 15:51:32 OUT> BlueUpgrade::new()** **05/10/2012 15:51:32 Initializing Upgrade Wrapper...** **05/10/2012 15:51:32 No methods to run in run queue...** **05/10/2012 15:51:32 Re-enabling application components...** **05/10/2012 15:51:32 Not a major upgrade.** **05/10/2012 15:51:32 Upgrading DB from release [9.1]** **05/10/2012 15:51:32 Executing [/var/TKLC/SDM/upgrade/scripts/upgradeDb.sh 9.1 &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log]** **05/10/2012 16:02:22 SDM upgrade succeed** **05/10/2012 16:02:22 Determining if /mnt/upgrade should be unmounted...** **05/10/2012 16:02:22 Checking mount point: /** **05/10/2012 16:02:22 Checking mount point: /proc** **05/10/2012 16:02:22 Checking mount point: /sys** **05/10/2012 16:02:22 Checking mount point: /dev/pts** **05/10/2012 16:02:22 Checking mount point: /boot** **05/10/2012 16:02:22 Checking mount point: /dev/shm** **05/10/2012 16:02:22 Checking mount point: /var/TKLC/SDM** **05/10/2012 16:02:22 Checking mount point: /proc/sys/fs/binfmt_misc** **05/10/2012 16:02:22 Checking mount point: /proc/fs/vmblock/mountPoint** **05/10/2012 16:02:22 Checking mount point: /mnt/upgrade** **05/10/2012 16:02:22 Will unmount in 5 seconds...** **05/10/2012 16:02:27 COMMAND: /bin/umount -f /mnt/upgrade**
6 ☐	Verify that the HP License is still there after the upgrade	If this blade has a HP License/LTE-HSS Service, make sure that the License was not lost after the installation of the ISO. See Section 8.1 to get the HP License information. If the HP License was lost during the installation, refer to section 8.2 to re-install the HP License.
7 ☐	If server upgrade failed, rollback	1-) If server upgrade failed, backout using recovery procedure described in section 6.3.
8 ☐	Repeat step 1 to 5 for all remaining Front-End blades stopped (SDM-FE)	

5.1.8 Start SDM A-1 and start all SDM-FE Blade or server

Procedure 24. Start SDM A-1 and all SDM-FE blade

S T E P #	In this procedure, we will start SDM A-1 and all SDM-FE (Front-End) Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1 blade through ssh with root account using IP address recorded in item #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Start SDM A-1 server blue service	1-) Start SDM A-1 blue service **# service blue start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back. This step may take significant amount of time since the whole database need to synchronize with the new Active Blade SDM A-2
3 ☐	Repeat step 1 and 2 for all front-end blades (SDM-FE) defined in item #12 of **Table 5**.	
4 ☐	Validate SH traffic and provisioning is working.	At this point, validation shall be done to verify that provisioning and SH traffic is working properly.

5.2 Post installation manual configuration

Please follow extra manual configuration step from 7.1, Activation of feature *HLR Overload Control* new mandatory options.

6. RECOVERY PROCEDURES

Upgrade procedure recovery issues should be directed to the Oracle Tekelec Customer Care Center. Before executing any of these procedures, contact the Oracle Tekelec Customer Care Center at 1-888-FOR-TKLC (1-888-367-8552); or 1-919-460-2150 (international). In the event that a full installation is needed, the original Site Installation Procedure also needs to be performed. Persons performing the upgrade should be familiar with these documents.

6.1 Rollback SDM B-2 server

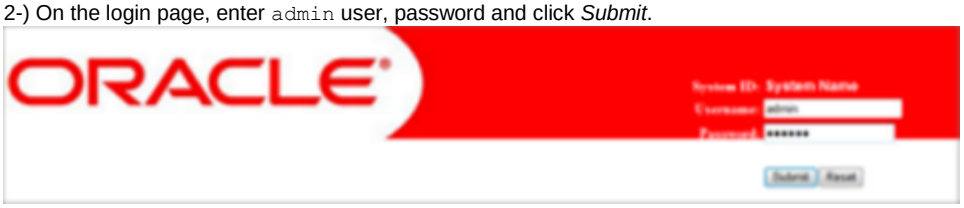
This procedure shall be used to rollback only if upgrade has failed after front-end node upgrade or SDM B-2 server (standby DB) upgrade.

Prior to execute this procedure, the following material described in section 3 is required:

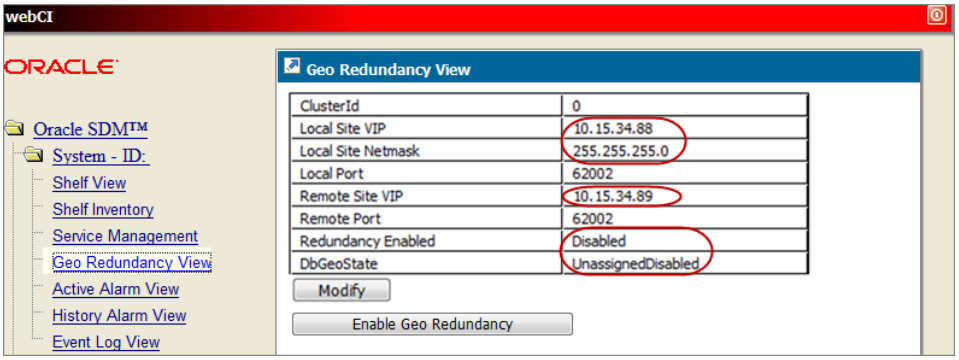
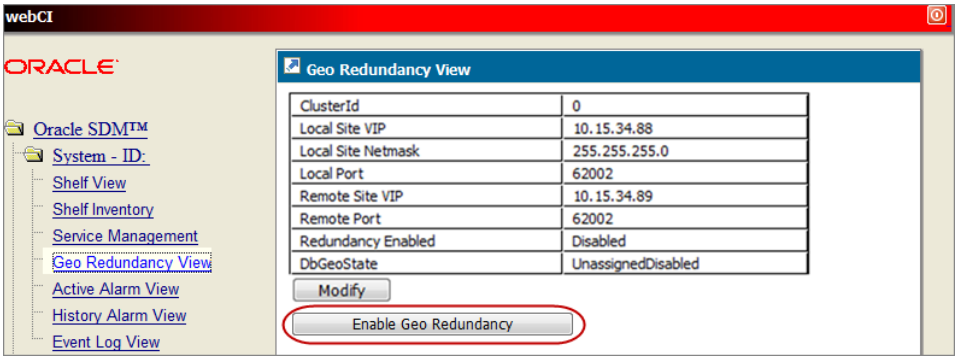
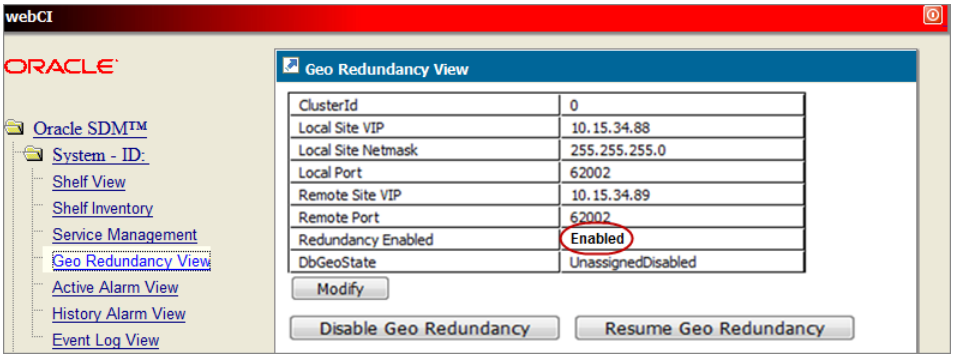
- SDM 9.2 ISO stored in /var/TKLC/upgrade/ directory.

6.1.1 Restore Geo-Redundancy

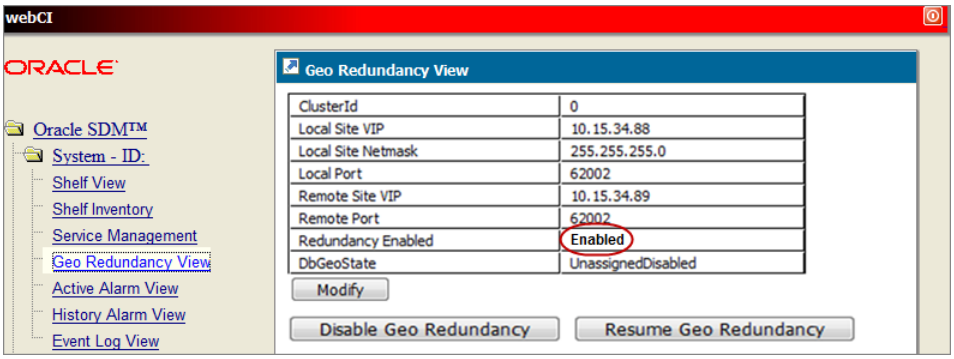
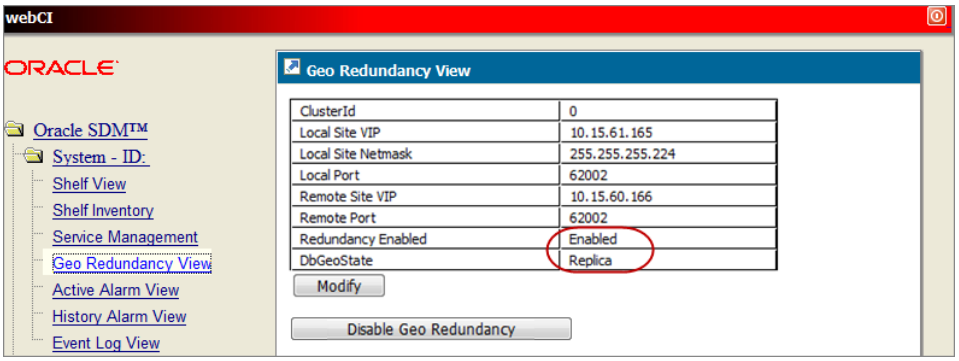
Procedure 25. Restore Geo-Redundancy

S T E P #	In this procedure, we restore geo-redundancy between Site A and Site B. Remember that prior to upgrade site B, geo-redundancy has been disabled on site A. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	
1 ☐	Login to the WebCI.	1-) Login to the WebCI using site A OAMP VIP defined in item 1 of **Table 5**. First, open a web browser and login to url: **http://<Public OAMP Ip Address>:8080/webci** 2-) On the login page, enter `admin` user, password and click *Submit*.  3-) Enter **`root`** password for server when prompted.

Procedure 25. Restore Geo-Redundancy

2 ☐	Validate that Geo-Redundancy is Disabled.	1-) Go to *System* > *Geo-Redundancy View* and verify that geo-redundancy is *Disabled* and that DbGeoState is *UnassignedDisabled*. Verify that *Local Site VIP, Local Site Netmask* and *Remote Site VIP* are properly configured. 
3 ☐	Enable Geo-Redundancy	1-) Go to *System* > *Geo-Redundancy View* and click on “Enable Geo-Redundancy” button.  2-) Verify that geo-redundancy is now *Enabled*. 

Procedure 25. Restore Geo-Redundancy

4 ☐	Resume Geo-Redundancy	1-) Click on Resume Geo-Redundancy button.  2-) Wait for synchronization to complete, DbGeoState shall go back to Replica. 
5 ☐	If server backout failed, call Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.

6.1.2 Rollback Front-End Blades

Procedure 26. Rollback Replica – Front-End Blades

S T E P #	Provides the step to rollback SDM front-end blade to SDM 9.1.1 if applicable. This procedure shall be executed only if the site is configured with front-end node. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the SDM B front-end blade through ssh with root accout using IP address recorded in iterm #11 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

Procedure 26. Rollback Replica – Front-End Blades

2 ☐	Mount the SDM 9.2 ISO on /mnt/upgrade/.	1) Call mount command to verify if SDM 9.2 ISO is already mounted **# mount** **/dev/mapper/vgroot-plat_root on / type ext3 (rw)** **proc on /proc type proc (rw)** **sysfs on /sys type sysfs (rw)** **devpts on /dev/pts type devpts (rw,gid=5,mode=620)** **/dev/sda1 on /boot type ext3 (rw)** **tmpfs on /dev/shm type tmpfs (rw)** **/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)** **none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)** **none on /proc/fs/vmblock/mountPoint type vmblock (rw)** **/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)** 2) If ISO is already mounted on /mnt/upgrade, go to next step. 3) Mount the SDM 9.2 ISO on /mnt/upgrade **# loopMount -ro /var/TKLC/upgrade/<SDM 9.2 ISO file> /mnt/upgrade** 4) Verify that the ISO has been mounted successfully **# mount** **/dev/mapper/vgroot-plat_root on / type ext3 (rw)** **proc on /proc type proc (rw)** **sysfs on /sys type sysfs (rw)** **devpts on /dev/pts type devpts (rw,gid=5,mode=620)** **/dev/sda1 on /boot type ext3 (rw)** **tmpfs on /dev/shm type tmpfs (rw)** **/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)** **none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)** **none on /proc/fs/vmblock/mountPoint type vmblock (rw)** **/var/TKLC/upgrade/ 872-2409-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)**

Procedure 26. Rollback Replica – Front-End Blades

3 ☐	Rollback the server to source release.
	
	If the source release was 9.1, the backout will rollback to a configured TPD 5.1.1_73.5.1 + SDM 9.1 installed.
		1) Using UGWRAP, initiate a backout. You have to specify the source release using 9.1. The source release is the release at which you want to rollback.
		# /mnt/upgrade/upgrade/ugwrap --release=9.1 --backout
		
		2) When the console ask "Continue backout?", type "y" and press enter key.
		
		`[root@tpdvm18 9.2]# /mnt/upgrade/upgrade/ugwrap --backout --release=9.1`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`Executing any special platform directives`
		`Setting up application for install/upgrade`
		`Running backout_server script...`
		`Starting backout_server...`
		`Verifying that backout is possible.`
		
		`Current platform version: 5.0.0-72.44.0`
		`Backing out to platform version: 4.2.4-70.90.0`
		
		`compare_platform_versions (5.0.0-72.44.0, 4.2.4-70.90.0)`
		`compare with major upgrade boundary (3.0.0-60.0.0, 4.2.4-70.90.0)`
		`compare with no backout boundary (4.0.0-70.0.0, 4.2.4-70.90.0)`
		`Backout Date: 05/23/2012 18:22:39 UTC`
		`Continue backout? [y/N]: y`
		`Stopping cron service...`
		
		NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log file:
		▪ **/var/TKLC/log/upgrade/upgrade.log**
		▪ **/var/TKLC/log/upgrade/ugwrap.log**
		▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log**
		▪ **/var/log/messages**
		
		3) Wait for the rollback to succeed.
		
		`Starting syscheck: [ OK ]`
		`Enabling applications on the server...`
		`Applications Enabled.`
		`Running /usr/TKLC/plat/bin/service_conf reconfig`
		`WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist`
		`WARNING::or is not executable!`
		`Backout is complete. A reboot of the server is now required.`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`No methods to run in run queue...`
		`Re-enabling application components...`
		`Rollbacking config`
		
		`Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &>`
		`/var/TKLC/log/upgrade/BlueUpgrade.pm.log]`
		
		`Server rollback succeed`

4 ☐	Validate TPD is now at version 5.1.1_73.5.1.	**Source Version is 9.1:** **# getPlatRev** `5.1.1-73.5.1`

Procedure 26. Rollback Replica – Front-End Blades

5 ☐	If server backout failed, call Oracle Tekelec Customer Care Center.	1-) Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**
6 ☐	Restart SDM front-end server blue service	1-) Since SDM B-1 shall still be running at this point, the front-end configuration can be resynchronized from SDM B-1 master database just by restarting the server. From ssh shell, start blue service. `# service blue start` 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
7 ☐	Redirect all HLR/LTE-HSS and provisioning traffic to Site B SDMs.	1-) Restore traffic and provisioning on site A and site B The procedure to switch traffic and provisioning is outside the scope of this procedure.
8 ☐	Validate HLR/LTE-HSS traffic and provisioning is working.	At this point, validation shall be done to verify that provisioning and SH traffic is working properly on both sites. The procedure to validate traffic and provisioning is outside the scope of this procedure.
9 ☐	If server backout failed, call Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**
10 ☐	Repeat step 1 to 10 on all front-end server of site B.	

6.1.3 Rollback Replica Standby Blade (SDM B-2)

Procedure 27. Rollback Replica – Standby Blade (SDM B-2)

S T E P #	Provides the step to rollback SDM B-2 to SDM 9.1.1 Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	

1 ☐	Connect to the SDM B-2 blade through ssh with root accout using IP address recorded in iterm #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

Procedure 27. Rollback Replica – Standby Blade (SDM B-2)

2 ☐	Mount the SDM 9.2 ISO on /mnt/upgrade/.	1) Call mount command to verify if SDM 9.2 ISO is already mounted **# mount** **/dev/mapper/vgroot-plat_root on / type ext3 (rw)** **proc on /proc type proc (rw)** **sysfs on /sys type sysfs (rw)** **devpts on /dev/pts type devpts (rw,gid=5,mode=620)** **/dev/sda1 on /boot type ext3 (rw)** **tmpfs on /dev/shm type tmpfs (rw)** **/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)** **none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)** **none on /proc/fs/vmblock/mountPoint type vmblock (rw)** **/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)** 2) If ISO is already mounted on /mnt/upgrade, go to next step (Rollback the server to source release). 3) Mount the SDM 9.2 ISO on /mnt/upgrade **# loopMount -ro /var/TKLC/upgrade/<SDM 9.2 ISO file> /mnt/upgrade** 4) Verify that the ISO has been mounted successfully **# mount** **/dev/mapper/vgroot-plat_root on / type ext3 (rw)** **proc on /proc type proc (rw)** **sysfs on /sys type sysfs (rw)** **devpts on /dev/pts type devpts (rw,gid=5,mode=620)** **/dev/sda1 on /boot type ext3 (rw)** **tmpfs on /dev/shm type tmpfs (rw)** **/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)** **none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)** **none on /proc/fs/vmblock/mountPoint type vmblock (rw)** **/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)**

Procedure 27. Rollback Replica – Standby Blade (SDM B-2)

3 ☐	Rollback the server to source release.
	
	If the source release was 9.1, the backout will rollback to a configured TPD 5.1.1_73.5.1+ SDM 9.1 installed.
		1) Using UGWRAP, initiate a backout. You have to specify the source release using 9.1. The source release is the release at which you want to rollback.
		# /mnt/upgrade/upgrade/ugwrap --release=9.1 --backout
		
		2-) When the console ask "Continue backout?", type "y" and press enter key.
		
		`[root@tpdvm18 9.2]# /mnt/upgrade/upgrade/ugwrap --backout --release=9.1`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`Executing any special platform directives`
		`Setting up application for install/upgrade`
		`Running backout_server script...`
		`Starting backout_server...`
		`Verifying that backout is possible.`
		
		`Current platform version: 5.0.0-72.44.0`
		`Backing out to platform version: 4.2.4-70.90.0`
		
		`compare_platform_versions (5.0.0-72.44.0, 4.2.4-70.90.0)`
		`compare with major upgrade boundary (3.0.0-60.0.0, 4.2.4-70.90.0)`
		`compare with no backout boundary (4.0.0-70.0.0, 4.2.4-70.90.0)`
		`Backout Date: 05/23/2012 18:22:39 UTC`
		`Continue backout? [y/N]: y`
		`Stopping cron service...`
		
		NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log file:
		▪ **/var/TKLC/log/upgrade/upgrade.log**
		▪ **/var/TKLC/log/upgrade/ugwrap.log**
		▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log**
		▪ **/var/log/messages**
		
		3-) Wait for the rollback to succeed.
		
		`Starting syscheck: [ OK ]`
		`Enabling applications on the server...`
		`Applications Enabled.`
		`Running /usr/TKLC/plat/bin/service_conf reconfig`
		`WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist`
		`WARNING::or is not executable!`
		`Backout is complete. A reboot of the server is now required.`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`No methods to run in run queue...`
		`Re-enabling application components...`
		`Rollbacking config`
		
		`Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &>`
		`/var/TKLC/log/upgrade/BlueUpgrade.pm.log]`
		
		`Server rollback succeed`

4 ☐	Validate TPD is now at version 5.1.1_73.5.1.	**Source Version is 9.1** **# getPlatRev** `5.1.1-73.5.1`

Procedure 27. Rollback Replica – Standby Blade (SDM B-2)

5 ☐	If server backout failed, call the Oracle Tekelec Customer Care Center.	1-) Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**
6 ☐	Restart SDM B-2 server blue service	1-) Since SDM B-1 shall still be running at this point, the SDM B-2 configuration can be resynchronized from SDM B-1 master database just by restarting the server. For SDM B-2 ssh shell, start blue service. **# service blue start** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
7 ☐	Redirect all SH and provisioning traffic to Site B SDMs.	1-) Restore traffic and provisioning on site A and site B The procedure to switch traffic and provisioning is outside the scope of this procedure.
8 ☐	Validate SH traffic and provisioning is working.	At this point, validation shall be done to verify that provisioning and SH traffic is working properly on both sites. The procedure to validate traffic and provisioning is outside the scope of this procedure.
9 ☐	If server backout failed, call the Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the lTable 6: Example of procedure steps used in this document call the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**

6.2 Rollback Site B server

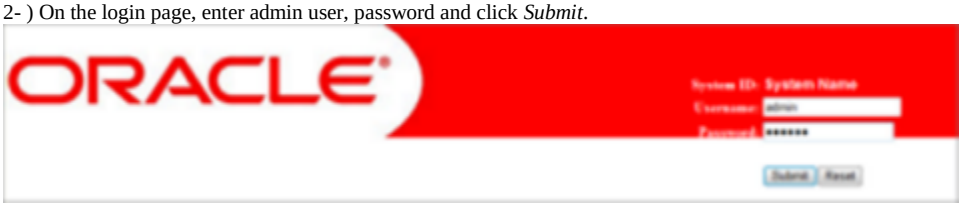
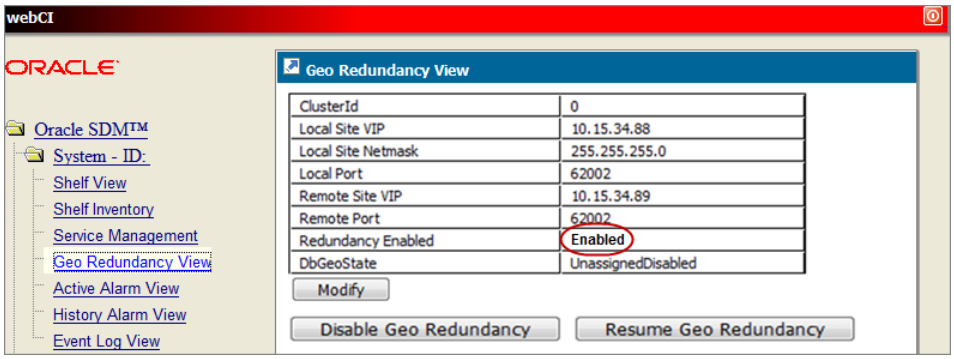
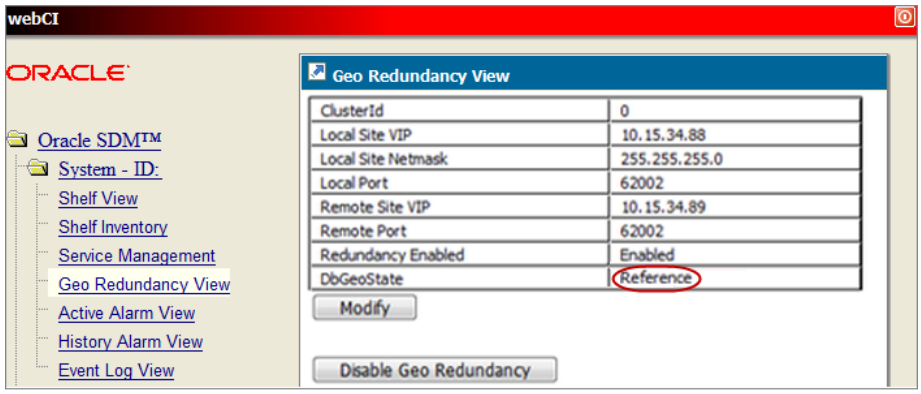
This procedure shall be used to rollback site B (SDM B-1 and SDM B-2 and front-ends) to 9.1.1 in the case of an upgrade failure. If this procedure is applied, it is assumes that server B-1 and B-2 have been upgraded. GEO links must be re-enabled first on Site A to keep the Subscriber Data.

6.2.1 Enable Geo-redundancy on site A

Procedure 28. Enable Geo-Redundancy –Active Blade (SDM A-1)

S T E P #	In this procedure, we will re-activate Geo-Redundancy on site A. Remember that prior to upgrade site B, geo-redundancy has been disabled on site A. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1 blade through ssh with root accout using IP address recorded in iterm #2 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Enable Geo-Redundancy on SDM A-1 in BlueCli	Connect to cli interface on Site A active back-end blade A-1 and enable Geo Redundancy by using the following operation: 1) BlueCli -u admin 2) System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]> EnableGeoRedundancy()

Procedure 28. Enable Geo-Redundancy –Active Blade (SDM A-1)

3 ☐	Login to the WebCI on Site A to verify Geo State.	1-) Login to the WebCI using site A OAMP VIP defined in item 1 of **Table 5**. First, open a web browser and login to url: **http://<Public OAMP Ip Address>:8080/webci** 2-) On the login page, enter admin user, password and click *Submit*.  3-) Enter the **root** password for server when prompted.
4 ☐	Verify in WebCI (Site A) that geo-redundancy is now ***Enabled*** with DbGeoState **UnassignedEnabled**	
5 ☐	Force Geo-Redundancy on SDM A-1 in BlueCli	Connect to cli interface on Site A active back-end blade A-1 and Force Geo Redundancy on Site A to Reference by using the following operation: 1) BlueCli -u admin 2) System[]:Shelf[ShelfId = 1]:GeoClusterConfig[GeoClusterId = 0]> ForceGeoReference()
6 ☐	Verify in WebCI (Site A) that geo-redundancy is now ***Enabled*** with DbGeoState **Reference**	

Procedure 28. Enable Geo-Redundancy –Active Blade (SDM A-1)

6.2.2 Stop all servers on Site B

Procedure 29. Stop all servers on SDM-B

S T E P #	The first step is to stop all servers. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM B-FE blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Stop blue service	1-) Stop "blue" service **# service blue stop** 2-) Wait for initialization to complete by waiting for the shell prompt to come back. 3) Make sure **all** the SDM-FE are stopped
3 ☐	Repeat steps 1 and 2 for SDM B-2 and SDM B-1.	
4 ☐	Proceed with next procedure	

6.2.3 Rollback SDM B-1 server

Procedure 30. Rollback Replica –Active Blade (SDM B-1)

S T E P #	Provides the step to rollback SDM B-2 to SDM 9.1.1 Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM B-1 blade through ssh with root account using IP address recorded in item #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.

Procedure 30. Rollback Replica –Active Blade (SDM B-1)

2 ☐	Mount the SDM 9.2 ISO on /mnt/upgrade/.	1) Call mount command to verify if SDM 9.1.1 ISO is already mounted
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`
		2) If ISO is already mounted on /mnt/upgrade, go to next step.
		3) Mount the SDM 9.1.1 ISO on /mnt/upgrade
		`# loopMount -ro /var/TKLC/upgrade/<SDM 9.1.1 ISO file> /mnt/upgrade`
		4) Verify that the ISO has been mounted successfully
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`

Procedure 30. Rollback Replica –Active Blade (SDM B-1)

<table>
<tr>
<td>3 ☐</td>
<td>Rollback the server to source release.

If the source release was 9.1.1, the backout will rollback to a configured TPD 5.1.1_73.5.1+ SDM 9.1.1 installed.</td>
<td>1) Using UGWRAP, initiate a backout. You have to specify the source release using 9.1. The source release is the release at which you want to rollback.
/mnt/upgrade/upgrade/ugwrap –release=9.1 --backout

2-) When the console ask “Continue backout?”, type “y” and press enter key.

<pre>[root@tpdvm18 9.2]# /mnt/upgrade/upgrade/ugwrap --backout --release=9.1
IN> BlueUpgrade::new()

OUT> BlueUpgrade::new()

Initializing Upgrade Wrapper...
Executing any special platform directives
Setting up application for install/upgrade
Running backout_server script...
Starting backout_server...
Verifying that backout is possible.

Current platform version: 5.0.0-72.44.0
Backing out to platform version: 4.2.4-70.90.0

compare_platform_versions (5.0.0-72.44.0, 4.2.4-70.90.0)
compare with major upgrade boundary (3.0.0-60.0.0, 4.2.4-70.90.0)
compare with no backout boundary (4.0.0-70.0.0, 4.2.4-70.90.0)
Backout Date: 05/23/2012 18:22:39 UTC
Continue backout? [y/N]: y
Stopping cron service...</pre>

NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log file:
▪ /var/TKLC/log/upgrade/upgrade.log
▪ /var/TKLC/log/upgrade/ugwrap.log
▪ /var/TKLC/log/upgrade/BlueUpgrade.pm.log
▪ /var/log/messages

3-) Wait for the rollback to succeed.

<pre>Starting syscheck: [OK]
Enabling applications on the server...
Applications Enabled.
Running /usr/TKLC/plat/bin/service_conf reconfig
WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist
WARNING::or is not executable!
Backout is complete. A reboot of the server is now required.
IN> BlueUpgrade::new()

OUT> BlueUpgrade::new()

Initializing Upgrade Wrapper...
No methods to run in run queue...
Re-enabling application components...
Rollbacking config

Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &>
/var/TKLC/log/upgrade/BlueUpgrade.pm.log]</pre>

Server rollback succeed</td>
</tr>
<tr>
<td>4 ☐</td>
<td>Validate TPD is now at version 5.1.1_73.5.1 if source release was 9.1.1</td>
<td>Source Version is 9.1.1:
getPlatRev
5.1.1-73.5.1</td>
</tr>
</table>

Procedure 30. Rollback Replica –Active Blade (SDM B-1)

5 ☐	If server backout failed, call the Oracle Tekelec Customer Care Center.	1-) Should this procedure fail, contacts the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**. •
6 ☐	Configure blade as system controller.	`# configurecontroller.sh -blue`
7 ☐	If server backout failed, call the Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.

6.2.4 Rollback SDM B-2 server

Procedure 31. Rollback Replica – Standby Blade (SDM B-2)

S T E P #	Provides the step to rollback SDM B-2 to SDM 9.1.1. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the SDM B-2 blade through ssh with root account using IP address recorded in item #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using `root` account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter `root` password for server when prompted.

2 ☐	Mount the SDM 9.2 ISO on /mnt/upgrade/.	1) Call mount command to verify if SDM 9.2 ISO is already mounted
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`
		2) If ISO is already mounted on /mnt/upgrade, go to next step.
		3) Mount the SDM 9.2 ISO on /mnt/upgrade
		`# loopMount -ro /var/TKLC/upgrade/<SDM 9.2 ISO file> /mnt/upgrade`
		4) Verify that the ISO has been mounted successfully
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`

Procedure 31. Rollback Replica – Standby Blade (SDM B-2)

<table>
<tr>
<td>3 ☐</td>
<td>Rollback the server to source release.

If the source release was 9.1.1, the backout will rollback to a configured TPD 5.1.1_73.5.1+ SDM 9.1.1 installed.</td>
<td>1) Using UGWRAP, initiate a backout. You have to specify the source release 9.1. The source release is the release at which you want to rollback.
/mnt/upgrade/upgrade/ugwrap –release=9.1 --backout

2-) When the console ask “Continue backout?”, type “y” and press enter key.

<pre>[root@tpdvm18 9.2]# /mnt/upgrade/upgrade/ugwrap --backout --release=9.1
IN> BlueUpgrade::new()

OUT> BlueUpgrade::new()

Initializing Upgrade Wrapper...
Executing any special platform directives
Setting up application for install/upgrade
Running backout_server script...
Starting backout_server...
Verifying that backout is possible.

Current platform version: 5.0.0-72.44.0
Backing out to platform version: 4.2.4-70.90.0

compare_platform_versions (5.0.0-72.44.0, 4.2.4-70.90.0)
compare with major upgrade boundary (3.0.0-60.0.0, 4.2.4-70.90.0)
compare with no backout boundary (4.0.0-70.0.0, 4.2.4-70.90.0)
Backout Date: 05/23/2012 18:22:39 UTC
Continue backout? [y/N]: y
Stopping cron service...</pre>

NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log file:
▪ /var/TKLC/log/upgrade/upgrade.log
▪ /var/TKLC/log/upgrade/ugwrap.log
▪ /var/TKLC/log/upgrade/BlueUpgrade.pm.log
▪ /var/log/messages

3-) Wait for the rollback to succeed.

<pre>Starting syscheck: [OK]
Enabling applications on the server...
Applications Enabled.
Running /usr/TKLC/plat/bin/service_conf reconfig
WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist
WARNING::or is not executable!
Backout is complete. A reboot of the server is now required.
IN> BlueUpgrade::new()

OUT> BlueUpgrade::new()

Initializing Upgrade Wrapper...
No methods to run in run queue...
Re-enabling application components...
Rollbacking config

Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &>
/var/TKLC/log/upgrade/BlueUpgrade.pm.log]</pre>

Server rollback succeed</td>
</tr>
<tr>
<td>4 ☐</td>
<td>Validate TPD is now at version 5.1.1_73.5.1 if source release was 9.1.1.</td>
<td>Source Version is 9.1.1:
getPlatRev
5.1.1-73.5.1</td>
</tr>
</table>

Procedure 31. Rollback Replica – Standby Blade (SDM B-2)

5 ☐	If server backout failed, call the Oracle Tekelec Customer Care Center.	1-) Should this procedure fail, contacts the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.

6.2.5 Rollback Front-End Blades

Procedure 32. Rollback Replica – Front-End Blades

S T E P #	Provides the step to rollback SDM front-end blade to SDM 9.1.1 if applicable. This procedure shall be executed only if the site is configured with front-end node. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the SDM B front-end blade through ssh with root account using IP address recorded in item #11 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		
		2-) Enter **root** password for server when prompted.

2 ☐	Mount the SDM 9.2 ISO on /mnt/upgrade/.	1) Call mount command to verify if SDM 9.2 ISO is already mounted
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`
		2) If ISO is already mounted on /mnt/upgrade, go to next step.
		3) Mount the SDM 9.2 ISO on /mnt/upgrade
		`# loopMount -ro /var/TKLC/upgrade/<SDM 9.2 ISO file> /mnt/upgrade`
		4) Verify that the ISO has been mounted successfully
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/ 872-2564-101-9.2.0_1.12.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`

Procedure 32. Rollback Replica – Front-End Blades

3 ☐	Rollback the server to source release.
	
	If the source release was 9.1.1, the backout will rollback to a configured TPD 5.1.1_73.5.1+ SDM 9.1.1 installed.
		1) Using UGWRAP, initiate a backout. You have to specify the source release using 9.1. The source release is the release at which you want to rollback.
		# /mnt/upgrade/upgrade/ugwrap –release=9.1 --backout
		
		2-) When the console ask “Continue backout?”, type “y” and press enter key.
		
		`[root@tpdvm18 9.2]# /mnt/upgrade/upgrade/ugwrap --backout --release=9.1`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`Executing any special platform directives`
		`Setting up application for install/upgrade`
		`Running backout_server script...`
		`Starting backout_server...`
		`Verifying that backout is possible.`
		
		`Current platform version: 5.0.0-72.44.0`
		`Backing out to platform version: 4.2.4-70.90.0`
		
		`compare_platform_versions (5.0.0-72.44.0, 4.2.4-70.90.0)`
		`compare with major upgrade boundary (3.0.0-60.0.0, 4.2.4-70.90.0)`
		`compare with no backout boundary (4.0.0-70.0.0, 4.2.4-70.90.0)`
		`Backout Date: 05/23/2012 18:22:39 UTC`
		`Continue backout? [y/N]: y`
		`Stopping cron service...`
		
		NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log file:
		▪ **/var/TKLC/log/upgrade/upgrade.log**
		▪ **/var/TKLC/log/upgrade/ugwrap.log**
		▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log**
		▪ **/var/log/messages**
		
		3-) Wait for the rollback to succeed.
		
		`Starting syscheck: [ OK ]`
		`Enabling applications on the server...`
		`Applications Enabled.`
		`Running /usr/TKLC/plat/bin/service_conf reconfig`
		`WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist`
		`WARNING::or is not executable!`
		`Backout is complete. A reboot of the server is now required.`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`No methods to run in run queue...`
		`Re-enabling application components...`
		`Rollbacking config`
		
		`Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &>`
		`/var/TKLC/log/upgrade/BlueUpgrade.pm.log]`
		
		`Server rollback succeed`

4 ☐	Validate TPD is now at version 5.1.1_73.5.1 if source release was 9.1.1	**Source Version is 9.1.1:** **# getPlatRev** `5.1.1-73.5.1`

Procedure 32. Rollback Replica – Front-End Blades

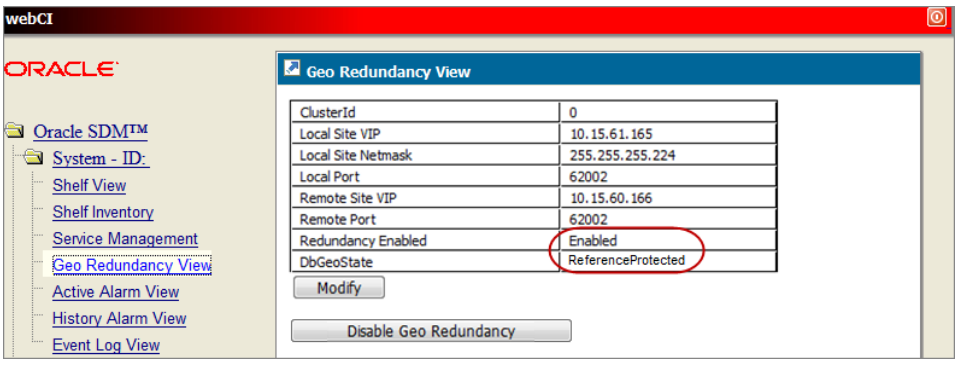
5 ☐	If server backout failed, call Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.
6 ☐	Repeat step 1 to 13 on all front-end server of site B.	

6.2.6 Start Active Blade, Standby blade, front-end-blades on Site B and re-distribute traffic

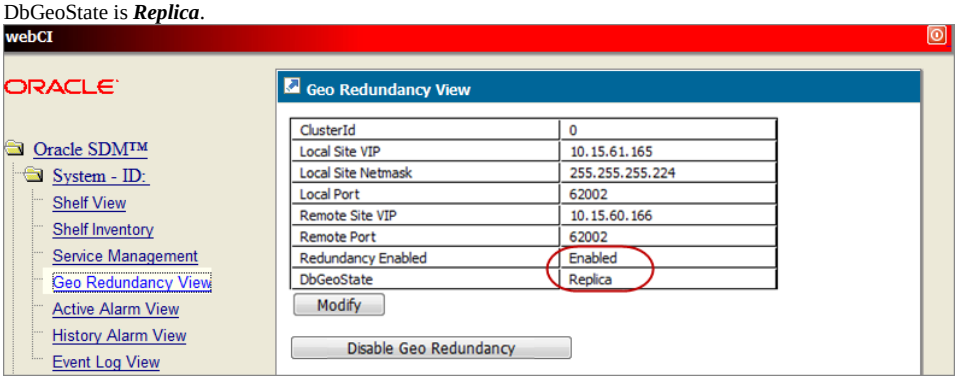
Procedure 33. Start Blades on Site B and re-distribute traffic

S T E P #		
	In this procedure, we will start SDM B-1 Active Blade, SDM B-2 standby blade, SDM-FE blade and re-distribute SH and provisioning traffic between site A and site B. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the SDM B-1 blade through ssh with root account using IP address recorded in item #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

2 ☐	Start SDM B-1 server blue service	1-) Start SDM B-1 blue service `# service blue start` 2-) Wait for initialization to complete by waiting for the shell prompt to come back. This step may take significant amount of time since the whole database need to GEO resynchronize with SDM A.
3 ☐	Verify on the WebCi of Site **A** that Geo-Redundancy state was changed to **ReferenceProtected**	1-) SITE A: Go to *System* > *Geo-Redundancy View* and make sure that DbGeoState is ***ReferenceProtected***. 

Procedure 33. Start Blades on Site B and re-distribute traffic

4 ☐	Verify on the WebCi of Site **B** that Geo-Redundancy state was changed to **Replica**	SITE B: Go to *System > Geo-Redundancy View* and verify that geo-redundancy is *Enabled* and that DbGeoState is ***Replica***. 
5 ☐	Connect to the SDM B-2 blade through ssh with root account using IP address recorded in item #9 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **`root`** account: **`$ ssh root@xx.xx.xx.xx`** **`root@xx.xx.xx.xx's password:`** **`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`** 2-) Enter **`root`** password for server when prompted.
6 ☐	Start SDM B-2 server blue service	1-) Start SDM B-2 blue service **`# service blue start`** 2-) Wait for initialization to complete by waiting for the shell prompt to come back. This step may take significant amount of time since the whole database need to resynchronize with active blade SDM B-1.
7 ☐	Repeat step 5 and 6 for all front-end blades defined in item #12 of **Table 5**.	
8 ☐	Redistribute SH and provisioning traffic to Site A and B SDMs.	1-) Restore traffic and provisioning on site A and Site B. The procedure to switch traffic and provisioning is outside the scope of this procedure.
9 ☐	Validate SH traffic and provisioning is working.	At this point, validation shall be done to verify that provisioning and SH traffic is working properly.
10 ☐	If server backout failed, call Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.

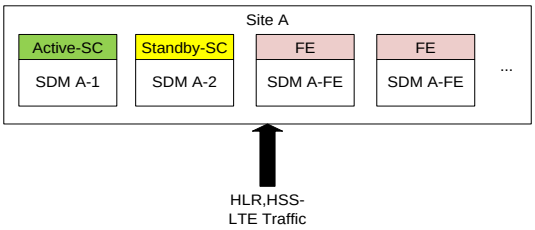
6.3 Rollback to 9.1.1 in non-georedundant configuration

This procedure shall be used to rollback a non-georedundant site to 9.1.1from 9.2 FOA/GA build.

Prior to execute this procedure, the following material is required:

- SDM 9.2 ISO stored in /var/TKLC/upgrade/ directory.

The initial setup is:



where at least one server has been upgraded to 9.1 FOA/GA build. This rollback procedure will restore the database backup taken prior to executing the upgrade procedure.

This rollback procedure will create an outage of signaling and provisioning.

6.3.1 Rollback procedure when a single (StdBy) server has been upgraded

6.3.1.1 Stop StdBy server

Procedure 34. Stop StdBy server

S T E P #	The first step is to stop the standby server. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the SDM-StdBy blade through ssh with root accout using IP address recorded in item #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

2 ☐	Stop blue service	1-) Stop "blue" service `# service blue stop` 2-) Wait for initialization to complete by waiting for the shell prompt to come back.

6.3.1.2 Rollback StdBy server

Procedure 35: Rollback **server**

S T E P #	Provides the step to rollback SDM blade to 9.1.3_x.x.x. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Customer Care Center and ask for **UPGRADE ASSISTANCE**.	

1 ☐	Connect to the SDM StdBy blade through ssh with root accout using IP address recorded in item #11 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account:
		`$ ssh root@xx.xx.xx.xx`
		`root@xx.xx.xx.xx's password:`
		`Last login: Mon May 7 15:47:25 2012 from 10.26.3.35`
		2-) Enter **root** password for server when prompted.

Procedure 35: Rollback **server**

2 ☐	Mount the SDM 9.2.x ISO on /mnt/upgrade/.	5) Call mount command to verify if SDM 9.2.x ISO is already mounted **# mount** **/dev/mapper/vgroot-plat_root on / type ext3 (rw)** **proc on /proc type proc (rw)** **sysfs on /sys type sysfs (rw)** **devpts on /dev/pts type devpts (rw,gid=5,mode=620)** **/dev/mapper/vgroot-plat_var on /var type ext3 (rw)** **/dev/mapper/vgroot-plat_var_tklc on /var/TKLC type ext3 (rw)** **/dev/mapper/vgroot-plat_tmp on /tmp type ext3 (rw)** **/dev/mapper/vgroot-plat_usr on /usr type ext3 (rw)** **/dev/sda1 on /boot type ext3 (rw)** **tmpfs on /dev/shm type tmpfs (rw)** **/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)** **none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)** **none on /proc/fs/vmblock/mountPoint type vmblock (rw)** **/var/TKLC/upgrade/872-2564-103-9.2.6_4.19.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)** If ISO is already mounted on /mnt/upgrade, go to next step (Rollback the server to source release). 6) Mount the SDM 9.3.1 ISO on /mnt/upgrade **# loopMount -ro /var/TKLC/upgrade/<SDM 9.3.1 ISO file> /mnt/upgrade** 7) Verify that the ISO has been mounted successfully **# mount** **/dev/mapper/vgroot-plat_root on / type ext3 (rw)** **proc on /proc type proc (rw)** **sysfs on /sys type sysfs (rw)** **devpts on /dev/pts type devpts (rw,gid=5,mode=620)** **/dev/mapper/vgroot-plat_var on /var type ext3 (rw)** **/dev/mapper/vgroot-plat_var_tklc on /var/TKLC type ext3 (rw)** **/dev/mapper/vgroot-plat_tmp on /tmp type ext3 (rw)** **/dev/mapper/vgroot-plat_usr on /usr type ext3 (rw)** **/dev/sda1 on /boot type ext3 (rw)** **tmpfs on /dev/shm type tmpfs (rw)** **/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)** **none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)** **none on /proc/fs/vmblock/mountPoint type vmblock (rw)** **/var/TKLC/upgrade/872-2564-103-9.2.6_4.19.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)**

Procedure 35: Rollback **server**

3 ☐	Rollback the server to source release.	1) Using UGWRAP, initiate a backout.
		# /mnt/upgrade/upgrade/ugwrap –release=9.1 --backout
		
		2-) When the console ask “Continue backout?”, type “y” and press enter key.
		
		`[root@tpdvm3 9.1]# /mnt/upgrade/upgrade/ugwrap -release=9.1 --backout`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`Executing any special platform directives`
		`Setting up application for install/upgrade`
		`Trying to ger release from state variable`
		
		`CleanupSDM [] before rollback`
		
		`Executing [/mnt/upgrade/upgrade/SDM/scripts/prepare_rollback.sh >>`
		`/var/TKLC/log/upgrade/BlueUpgrade.pm.log 2>&1]`
		
		`Broadcast message from root (pts/0) (Thu Nov 6 11:55:58 2014):`
		
		`SDM 'blue' STOP sequence initiated`
		
		`Broadcast message from root (pts/0) (Thu Nov 6 11:56:00 2014):`
		
		`SDM 'blue' STOP sequence has completed`
		`SDM rollback cleanup succeed`
		
		`Running backout_server script...`
		`Starting backout_server...`
		`Verifying that backout is possible.`
		
		`Current platform version: 5.1.1-73.5.5`
		`Backing out to platform version: 5.1.1-73.5.3`
		
		`compare_platform_versions (5.1.1-73.5.5, 5.1.1-73.5.3)`
		`compare with major upgrade boundary (3.0.0-60.0.0, 5.1.1-73.5.3)`
		`compare with no backout boundary (4.0.0-70.0.0, 5.1.1-73.5.3)`
		`Backout Date: 11/06/2014 16:24:26 UTC`
		`Continue backout? [y/N]: y`[2]
		`Stopping cron service...`
		
		NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log file:
		▪ **/var/TKLC/log/upgrade/upgrade.log**
		▪ **/var/TKLC/log/upgrade/ugwrap.log**
		▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log**
		▪ **/var/log/messages**
		
		Server rollback succeed
		
		Note: Please ensure that all patches have been applied (if needed).

[2] Note that every other input on the terminal other than “y” (i.e. CR, enter, space) will be considered as “N” and may lead to Rollback failure.

Procedure 35: Rollback **server**

4 ☐	Wait for the rollback to succeed.
	
	On active SC blade (SDM-A1) and front-end (SDM-FE), the rollback succeed when the message "Server rollback succeed" appears.
		Wait for the rollback to succeed on SDM-A1 and SPR-FE
		
		`Starting syscheck: [ OK ]`
		`Enabling applications on the server...`
		`Applications Enabled.`
		`Running /usr/TKLC/plat/bin/service_conf reconfig`
		`WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist`
		`WARNING::or is not executable!`
		`Backout is complete. A reboot of the server is now required.`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`No methods to run in run queue...`
		`Re-enabling application components...`
		`Rollbacking config`
		
		`Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log]`
		
		`Server rollback succeed`
		
		Note: Please ensure that all patches have been applied.
		
		Wait for the rollback to succeed on SDM-A2 (standby SC) by monitoring /var/TKLC/log/upgrade.log and wait for the message "Backout is complete".[3]
		
		1363621093:: Backout is complete. A reboot of the server is now required.

5 ☐	Validate TPD is at version 5.1.1-73.5.3 if source version is SDM 9.1.3	**`# getPlatRev`** `5.1.1-73.5.3`
6 ☐	If server backout failed, call the Oracle Customer Care Center.	1-) Should this procedure fail, contact the Oracle Customer Care Center and ask for **UPGRADE ASSISTANCE.**
7 ☐	Reboot the server	**`#reboot`** 1-) After reboot, blue service shall automatically restart - if it's not starting, start manually with : **service blue start** 2-) Wait for blue service to come-up completely before starting remaining servers. 3-) The reboot is complete when you can start the BlueCli on that blade: `# BlueCli –u admin`
8 ☐	If the server backout failed, call the Oracle Customer Care Center.	Should this procedure fail, contact the Oracle Customer Care Center and ask for **UPGRADE ASSISTANCE.**

[3] The *mysqlblued* process may take up to 15 minutes to terminate (timeout) – DO NOT end it by "kill -9 procid" or CTRL-C as unexpected behaviour may arise.

6.3.2 Rollback procedure when all servers have been upgraded

6.3.2.1 Stop all servers

Procedure 36. Stop all servers

S T E P #	The first step is to stop all servers. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1 blade through ssh with root accout using IP address recorded in iterm #7 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.
2 ☐	Stop blue service	1-) Stop "blue" service **# service blue stop** 2-) Wait for initialization to complete by waiting for the shell prompt to come back.
3 ☐	Repeat steps 1 and 2 for SDM A-2 and SDM a-FE.	
4 ☐	Proceed with next procedure	

6.3.3 Rollback all blades

Procedure 37. Rollback all blades

S T E P #	Provides the step to rollback SDM blades to 9.1.1_x.x.x. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**	
1 ☐	Connect to the SDM A-1 blade through ssh with root accout using IP address recorded in iterm #11 of **Table 5**.	1-) For local workstation, login using ssh to server IP address using **root** account: **$ ssh root@xx.xx.xx.xx** **root@xx.xx.xx.xx's password:** **Last login: Mon May 7 15:47:25 2012 from 10.26.3.35** 2-) Enter **root** password for server when prompted.

Procedure 37. Rollback all blades

2 ☐	Mount the SDM 9.2 ISO on /mnt/upgrade/.	1) Call mount command to verify if SDM 9.2 ISO is already mounted
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/mapper/vgroot-plat_var on /var type ext3 (rw)`
		`/dev/mapper/vgroot-plat_var_tklc on /var/TKLC type ext3 (rw)`
		`/dev/mapper/vgroot-plat_tmp on /tmp type ext3 (rw)`
		`/dev/mapper/vgroot-plat_usr on /usr type ext3 (rw)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/872-2564-103-9.2.6_4.19.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`
		
		If ISO is already mounted on /mnt/upgrade, go to next step (Rollback the server to source release).
		
		2) Mount the SDM 9.2 ISO on /mnt/upgrade
		`# loopMount -ro /var/TKLC/upgrade/<SDM 9.2 ISO file> /mnt/upgrade`
		3) Verify that the ISO has been mounted successfully
		`# mount`
		`/dev/mapper/vgroot-plat_root on / type ext3 (rw)`
		`proc on /proc type proc (rw)`
		`sysfs on /sys type sysfs (rw)`
		`devpts on /dev/pts type devpts (rw,gid=5,mode=620)`
		`/dev/mapper/vgroot-plat_var on /var type ext3 (rw)`
		`/dev/mapper/vgroot-plat_var_tklc on /var/TKLC type ext3 (rw)`
		`/dev/mapper/vgroot-plat_tmp on /tmp type ext3 (rw)`
		`/dev/mapper/vgroot-plat_usr on /usr type ext3 (rw)`
		`/dev/sda1 on /boot type ext3 (rw)`
		`tmpfs on /dev/shm type tmpfs (rw)`
		`/dev/mapper/vgroot-SDM on /var/TKLC/SDM type ext3 (rw)`
		`none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)`
		`none on /proc/fs/vmblock/mountPoint type vmblock (rw)`
		`/var/TKLC/upgrade/872-2564-103-9.2.6_4.19.0-SDM-x86_64.iso on /mnt/upgrade type iso9660 (ro,loop=/dev/loop0)`

Procedure 37. Rollback all blades

3 ☐	Rollback the server to source release.	1) Using UGWRAP, initiate a backout.
		# /mnt/upgrade/upgrade/ugwrap –release=9.1 --backout
		
		2-) When the console ask “Continue backout?”, type “y” and press enter key.
		
		`[root@tpdvm3 9.1]# /mnt/upgrade/upgrade/ugwrap -release=9.1 --backout`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`Executing any special platform directives`
		`Setting up application for install/upgrade`
		`Trying to ger release from state variable`
		
		`CleanupSDM [] before rollback`
		
		`Executing [/mnt/upgrade/upgrade/SDM/scripts/prepare_rollback.sh >>`
		`/var/TKLC/log/upgrade/BlueUpgrade.pm.log 2>&1]`
		
		`Broadcast message from root (pts/0) (Thu Nov 6 11:55:58 2014):`
		
		`SDM 'blue' STOP sequence initiated`
		
		`Broadcast message from root (pts/0) (Thu Nov 6 11:56:00 2014):`
		
		`SDM 'blue' STOP sequence has completed`
		`SDM rollback cleanup succeed`
		
		`Running backout_server script...`
		`Starting backout_server...`
		`Verifying that backout is possible.`
		
		`Current platform version: 5.1.1-73.5.5`
		`Backing out to platform version: 5.1.1-73.5.3`
		
		`compare_platform_versions (5.1.1-73.5.5, 5.1.1-73.5.3)`
		`compare with major upgrade boundary (3.0.0-60.0.0, 5.1.1-73.5.3)`
		`compare with no backout boundary (4.0.0-70.0.0, 5.1.1-73.5.3)`
		`Backout Date: 11/06/2014 16:24:26 UTC`
		`Continue backout? [y/N]: y`[4]
		`Stopping cron service...`
		
		NOTE: This step may generate a lot of output can take a significant amount of time since it needs to rollback the OS to a previous TPD version. Activity can be monitored by looking at following log files:
		▪ **/var/TKLC/log/upgrade/upgrade.log**
		▪ **/var/TKLC/log/upgrade/ugwrap.log**
		▪ **/var/TKLC/log/upgrade/BlueUpgrade.pm.log**
		▪ **/var/log/messages**
		
		`Server rollback succeed`

[4] Note that every other input on the terminal other than “y” (i.e. CR, enter, space) will be considered as “N” and may lead to Rollback failure.

Procedure 37. Rollback all blades

4 ☐	Wait for the rollback to succeed.
	
	On active SC blade (SDM-A1) and front-end (SDM-FE), the rollback succeed when the message "Server rollback succeed" appears.
		Wait for the rollback to succeed on SDM-A1 and SDM-FE
		
		`Starting syscheck: [ OK ]`
		`Enabling applications on the server...`
		`Applications Enabled.`
		`Running /usr/TKLC/plat/bin/service_conf reconfig`
		`WARNING::Service RC script (/etc/rc.d/init.d/blueBoot) does not exist`
		`WARNING::or is not executable!`
		`Backout is complete. A reboot of the server is now required.`
		`IN> BlueUpgrade::new()`
		
		`OUT> BlueUpgrade::new()`
		
		`Initializing Upgrade Wrapper...`
		`No methods to run in run queue...`
		`Re-enabling application components...`
		`Rollbacking config`
		
		`Executing [/var/TKLC/SDM/upgrade/scripts/rollbackConfig.sh &> /var/TKLC/log/upgrade/BlueUpgrade.pm.log]`
		
		`Server rollback succeed`
		
		Wait for the rollback to succeed on SDM-A2 (standby SC) by monitoring /var/TKLC/log/upgrade.log and wait for the message "Backout is complete".
		
		1363621093:: Backout is complete. A reboot of the server is now required.

5 ☐	Validate TPD is now at version 5.1.1_73.5.1 if source release was 9.1.1.	**Source Version is 9.1.1:** **`# getPlatRev`** `5.1.1-73.5.1`
6 ☐	If server backout failed, call Tekelec Customer Care Center.	1-) Should this procedure fail, contact the Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**
7 ☐	Reboot the server	**`#reboot`** 1-) After reboot, blue service shall automatically restart - if it's not starting, start manually with : **service blue start** 2-) Wait for blue service to come-up completely before starting remaining servers. 3-) The reboot is complete when you can start the BlueCli on that blade: `# BlueCli –u admin`
8 ☐	Repeat step 1 to 7 on server SDM A-2 and SDM A-FE.	
8 ☐	If server backout failed, call Oracle Tekelec Customer Care Center.	Should this procedure fail, contact the Oracle Tekelec Customer Care Center and ask for **UPGRADE ASSISTANCE.**

The *mysqlblued* process may take up to 15 minutes to terminate (timeout) – DO NOT end it by "kill -9 procid" or CTRL-C as unexpected behaviour may arise.

7. ADDITIONAL MANUAL STEPS AFTER SUCCESSFUL SWU

7.1 Activation of feature *HLR Overload Control* new mandatory options

This release includes the *HLR Overload Control* feature of which a subset of two options are required to be manually activated after the SWU.

Procedure 38. Activate Hlr Overload Control new options subset

S T E P #	Please follow the manual steps.	
1 ☐	Log on the Active System controller, and open mysql, and select bluehlr database	# mysql –p<root password> mysql> use bluehlr_[1|2]
2 ☐	Activate *CCPUBucketOn*	mysql> update hlroverloadcontrol set CCPUBucketOn=1;
3 ☐	Activate *RestartSystemIfAlwaysOverloaded*	mysql> update hlroverloadcontrol set RestartSystemIfAlwaysOverloaded=1;
4 ☐	Restart all Hlr Services one by one	Stop and restart all hlr services using webci
5 ☐	If this is a GEO red system, repeat steps 1 to 4 on the other geo system.	

8. HP LICENSE

8.1 Get the HP License information

To get the HP License information, execute this command:

/opt/OC/bin/oclicoam show codewords

Make sure an HP License was installed and note the codewords (short/long)

Codeword Long : _____

Codeword Short : _____

8.2 Install HP license

If the HP license was lost, add the license and use the codewords that was noted in section 8.1

The procedure to add the HP license/codeword is:

Lte-HSS service has to be running on the blade

/opt/OC/bin/oclicoam add ‘short-codeword’

/opt/OC/bin/oclicoam add ‘long-codeword’

/opt/OC/bin/oclicoam save

/blue/bin/init.d/LteHssServer restart

Make sure license was installed and saved, verify with this command:

/opt/OC/bin/oclicoam show codewords

APPENDIX A. ACCESSING ORACLE'S CUSTOMER SUPPORT SITE

Access to the Oracle Customer Support site is restricted to current Oracle customers. This section describes how to log into the Oracle Customer Support site and how to locate upgrade procedures. Viewing these files requires Adobe Acrobat Reader.

1. Go to the Oracle Tekelec Customer Support login page at https://support.tekelec.com/index.asp
2. Enter your assigned username and chosen password and click **Login.**

   Or, if you do not have access to the Customer Support site, click **Need an Account?**
   Follow instructions on the screen.

   Note: After 20 minutes of inactivity, you will be logged off, and you must repeat this step to regain access.
3. After successful login, select a product from the Product Support drop-down menu.
4. Select a release number from the Product Support Release drop-down menu.
5. Locate the Upgrade Procedures section.
6. To open the procedure in the same window, click the procedure name. To open the procedure in a new window, right-click the procedure name and select **open in New Window**.
7. To download the procedure, right-click the procedure name and select **Save Target As**.