Oracle® Communications Tekelec HLR Router

T1200 Upgrade Guide

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ORACLE®

Oracle Communications Tekelec HLR Router, T1200 Upgrade Guide, Release 4.0

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CAUTION: Use only the Upgrade procedure included in the Upgrade Kit.
Before upgrading any system, please access Oracle's Tekelec Customer Support site and review any Technical Service Bulletins (TSBs) that relate to this upgrade.

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

Phone: 1--888-367-8552 or 919-460-2150 (international)
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1. INTRODUCTION

1.1 Purpose and Scope

This document describes methods utilized and procedures executed to perform an application's software upgrade on in-service HLR Router system running on T1200 servers in an HLR Router network, from HLR Router software release 3.0.0-30.11.0 (or 4.0.0-40.x.0) to a later 4.0.x-40.y.0 software release. The audience for this document includes Oracle's customers as well as Global Software Delivery. This document provides step-by-step instructions to execute any HLR Router Release 4.0.x software upgrade on T1200 servers.

The HLR Router software includes all Oracle's Tekelec Platform Distribution (TPD) software. Any TPD upgrade is included automatically as part of the HLR Router software upgrade. The execution of this procedure assumes that the HLR Router software load (ISO file, CD-ROM or other form of media) has already been delivered to the customer's premises. This includes delivery of the software load to the local workstation being used to perform this upgrade.

NOTE: The distribution of the HLR Router software load is outside the scope of this procedure.

1.2 References

[1] HLR Router 4.0 Initial Installation and Configuration Guide, UG006354
[2] Database Management: Backup and System Restoration, UG005196
[3] HLR Router 4.0 Disaster Recovery Guide, UG006355
[4] Eagle XG HLR Router, Hardware Verification Plan, VP005230
[5] TEKELEC Acronym Guide, MS005077
[6] Platform 6.x Configuration Procedure Reference, 909-2209-001
[7] HLR Router Network Implimitation Guide, WI006024

1.3 Acronyms

Acronym	Meaning
CGBU	Communications Global Business Unit
CSV	Comma-separated Values
DB	Database
DP	Database Processor
DR	Disaster Recovery
GUI	Graphical User Interface
HA	High Availability
IMI	Internal Management Interface
IPM	Initial Product Manufacture
ISO	ISO 9660 file system (when used in the context of this document)
MP	Message Processing or Message Processor
NE	Network Element
NOAMP	Network OAM&P
OAM	Operations, Administration and Maintenance
OAM&P	Operations, Administration, Maintenance and Provisioning
SOAM	System OAM
TPD	Tekelec Platform Distribution
VIP	Virtual IP
VPN	Virtual Private Network
XMI	External Management Interface
XSI	External Signaling Interface

Table 1 - Acronyms

1.4 Terminology

This section describes terminology as it is used within this document.

Term	Meaning
Upgrade	The process of converting an application from its current release on a System to a newer release.
Major Upgrade	An upgrade from a current major release to a newer major release. An example of a major upgrade is: HLRR 3.0.0_30.11.0 to HLRR 4.0.0_40.14.0
Incremental Upgrade	An upgrade from a current build to a newer build within the same major release. An example of an incremental upgrade is: HLRR 4.0.0_40.5.0 to HLRR 4.0.0_40.14.0.
Software Only Upgrade	An upgrade that does not require a Database Schema change, only the software is changed.
DB Conversion Upgrade	An upgrade that requires a Database Schema change performed during upgrade that is necessitated by new feature content or bug fixes. For release 1.0, this is a manual procedure not performed automatically by software.
Single Server Upgrade	The process of converting an HLR Router server from its current release on a single server to a newer release.
Backout	The process of converting a single HLR Router server to a prior version. This could be performed due to failure in Single Server Upgrade.
Downgrade	The process of converting an HLR Router server from its current release to a prior release. This could be performed due to a misbehaving system.
Rollback	Automatic recovery procedure that puts a server into its pre-upgrade status. This procedure occurs automatically during upgrade if there is a failure.
Source Release	Software release to upgrade from.
Target Release	Software release to upgrade to.
Health Check	Procedure used to determine the health and status of the network. This includes statuses displayed from the GUI. This can be observed Pre-Server Upgrade, In-Progress Server Upgrade, and Post-Server Upgrade.
Upgrade Ready	State that allows for graceful upgrade of a server without degradation of service. It is a state that a server is required to be in before it can be upgraded. The state is defined by the following attributes: • Server is Forced Standby • Server is Application Disabled (Signaling servers will not process any traffic)
UI	User interface. "Platcfg UI" refers specifically to the Platform Configuration Utility User Interface, which is a text-based user interface.

Table 2 – Terminology

1.5 How to use this Document

When executing this document, there are a few key points which help to ensure that the user understands the author's intent. These points are as follows;

1. Before beginning a procedure, completely read the instructional text (it will appear immediately after the Section heading for each procedure) and all associated procedural WARNINGS or NOTES.
2. Before execution of a STEP within a procedure, completely read the left and right columns including any STEP specific WARNINGS or NOTES.
3. If a procedural STEP fails to execute successfully or fails to receive the desired output, STOP and contact Oracle's Tekelec Customer Service (*US: 1-888-367-8552, Intl: +1-919-460-2150)* for assistance before attempting to continue.

1.5.1 Executing Procedures

The user should be familiar with the structure and conventions used within these procedures before attempting execution.
Table 3 and the details below provide an example of how procedural steps might be displayed within this document.

Column 1: **Step**

- Column 1 in
- **Table 3** contains the Step number and also a checkbox if the step requires action by the user.
- Sub-steps within a given Step X are referred to as Step X.Y. *(See example: Step 1 has sub-steps Steps 1.1 to 1.2).*
- Each checkbox should be checked-off in order to keep track of the progress during execution of the procedure.

Column 2: **Procedure**

- Column 2 in
- **Table 3** contains a heading which indicates the server/IP being accessed as well as text instructions and/or notes to the user. This column may also describe the operations to be performed or observed during the step.

Column 3: **Result**

- Column 3 in
- **Table 3** generally displays the results of executing the instructions (shown in column 2) to the user.
- The Result column may also display any of the following:
  - Inputs (commands or responses) required by the user.
  - Outputs which should be displayed on the terminal.
  - Illustrations or graphic figures related to the step instruction.
  - Screen captures from the product GUI related to the step instruction.

Procedure XYZ: Verifying Time in GMT

Step	Procedure	Result

1. ☐	**Active NOAMP VIP (SSH):**
	
	1) Access the command prompt.
	
	2) Log into the server as the "**root**" user.
		`login as: root`
		`Password: <root_password>`
		
		NOTE: *The password will not appear on the screen as the characters are typed.*

2.	**Active NOAMP VIP (SSH):**
	
	Output similar to that shown on the right will appear as the server returns to a command prompt.
		***** TRUNCATED OUTPUT *****
		`VPATH=/opt/TKLCcomcol/runcm5.13:/opt/TKLCcomcol/cm5.13`
		`RELEASE=5.16`
		`RUNID=00`
		`VPATH=/var/TKLC/rundb:/usr/TKLC/appworks:/usr/TKLC/awpss7:/usr/TKLC/exhr`
		`PRODPATH=/opt/TKLCcomcol/cm5.13/prod`
		`RUNID=00`
		`[root@tks5031304 ~]#`

3. ☐	**Active NOAMP VIP (SSH):**
	
	Verify that the correct Date & Time are displayed in **GMT** (+/- 4 min.)
		`# date -u`
		`Thu Mar 20 15:31:06 UTC 2014`
		`#`

THIS PROCEDURE HAS BEEN COMPLETED		

Table 3 - Sample Procedure

1.6 Activity Logging

All activity while connected to the system should be logged using a convention which notates the **Customer Name**, **Site/Node** location, **Server hostname** and the **Date**. All logs should be provided to the Oracle's Tekelec Upgrade Center for archiving post upgrade.

1.7 Recommendations

No specific recommendations have been identified for the current version of this procedure.

1.7.1 Use of Health Checks

The user may execute the **Perform Health Check** or **View Logs** steps freely or repeat as many times as desired in between procedures during the upgrade process. It is not recommended to do this in between steps within a procedure, unless there is a failure to troubleshoot.

1.7.2 Large Installation Support

For large systems containing multiple Signaling Network Elements, it may not be feasible to apply the software upgrade to every Network Element within a single maintenance window. However, whenever possible, Primary and DR NOAMP Network Elements should be upgraded within the same maintenance window. When multiple maintenance windows are required, replication may be allowed and provisioning re-enabled between scheduled maintenance windows.

2. GENERAL DESCRIPTION

This document defines the step-by-step actions performed to execute a software upgrade of an in-service HLR Router application (running on T1200 servers) from the source release to the target release.

2.1 Supported Upgrade Paths

The supported HLR Router upgrade path is shown in **Figure 1**.

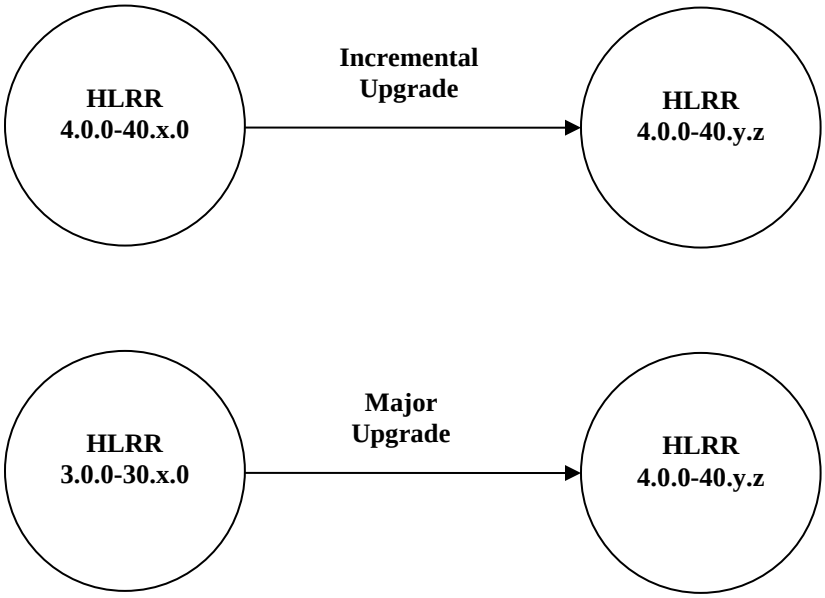


Figure 1: Supported Upgrade Paths

NOTE: *Initial installation is not within the scope of this upgrade document. See [1] for initial installation requirements.*

3. UPGRADE OVERVIEW

This section lists the required materials and information needed to execute an upgrade. It also provides a brief timing overview of the activities needed to upgrade the source release software that is installed and running on an HLR Router server to the Target Release software. The approximate time required is outlined in **Sections 3.3- 3.7**. These tables are used to plan and estimate the time necessary to complete your upgrade.

Timing values are estimates only. They estimate the completion time of a step or group of steps for an experienced user. These tables are not to be used to execute procedures. Detailed steps for each procedure begin with **Procedure** 1 in **Section** 5.

3.1 Upgrade Requirements

The following levels of access, materials and information are needed to execute an upgrade:

- Target-release ISO image file (*Example:* **`872-2696-101-4.0.0-40.14.0-x86_64.iso`**)
- VPN access to the customer's network.
- GUI access to the HLR Router NOAMP VIP with administrator privileges.
- SSH/SFTP access to the HLR Router NOAMP XMI VIP as the "root" user.

  NOTE: *All logins into the HLR Router NOAMP servers are made via the External Management (XMI) VIP unless otherwise stated.*
- User logins, passwords, IP addresses and other administration information. See Section 3.1.2.
- Direct access to server IMI IP addresses from the user's local workstation is preferable in the case of a Backout.

  NOTE: *If direct access to the IMI IP addresses cannot be made available, then target server access can be made via a tandem connection through the Active Primary NO (i.e. An SSH connection is made to the Active Primary NOAMP XMI first, then from the Active Primary NOAMP, a 2nd SSH connection can be made to the target server's IMI IP address).*

3.1.1 ISO Image File

You must obtain a copy of the target release ISO image file. This file is necessary to perform the upgrade. The HLR Router ISO image file will be in the following format:

Example: **`872-2696-101-4.0.0-40.14.0-x86_64.iso`**

NOTE: *Actual number values may vary between releases.*

Prior to the execution of this upgrade procedure it is assumed that the HLR Router ISO image file has already been delivered to the customer's system. The delivery of the ISO image requires that the file be placed on the disk of a PC workstation with GUI access to the Active Primary NOAMP XMI VIP. If the user performing the upgrade is at a remote location, it is assumed the ISO file is has already been transferred to the Active Primary NOAMP server prior to starting the upgrade procedure.

3.1.2 Logins, Passwords and Site Information

Obtain all the information requested in the following table. This ensures that the necessary administration information is available prior to an upgrade. Consider the confidential nature of the information recorded in this table.

While all of the information in the table is required to complete the upgrade, there may be security policies in place that require secure disposal once the upgrade has been completed.

NE Type	**NE Name†**
Primary NOAM&P	
DR NOAM&P	
Software	**Values**
Source Release Level:	
Target Release Level:	
Target Release ISO file name:	
Access Information	**Values**
‡ Primary NOAMP XMI VIP (**GUI**):	
‡ DR NOAMP XMI VIP:	
GUI Administrator Username:	
GUI Administrator Password:	
Customer VPN Instructions:	

Table 4 – Logins, Passwords and Site Information

† **NOTE:**	*The **NE Name** may be viewed from the Primary NOAMP GUI under this page* **[Main Menu → Configuration → Network Elements]**

‡ **NOTE:**	*The **XMI VIP** may be viewed from the Primary NOAMP GUI under this page* **[Main Menu → Configuration → Server Groups]**

3.2 Upgrade Maintenance Windows

!! WARNING !! **IT IS RECOMENDED THAT SOAM SITES CONTAINING MATED MESSAGE PROCESSORS BE UPGRADED IN SEPARATE MAINTENANCE WINDOWS IF AT ALL POSSIBLE.**

NOTE: *The **NE Name** may be viewed from the Primary NOAMP GUI under this page* **[Main Menu → Configuration → Network Elements]**

Table 5 - Upgrade Maintenance Windows

Maintenance Window 1 **Date:** _____	• Record the Site **NE Name** of the Primary NOAMP and the DR NOAMP to be upgraded during Maintenance Window 1 in the space provided below: • **"Check off"** the associated **Check Box** as Upgrade is completed for each **site**. ☐ **Primary NOAMP:** _____ ☐ **DR NOAMP:** _____
Maintenance Window 2 **Date:** _____	• Record the Site **NE Name** of each SOAM to be upgraded during Maintenance Window 2 in the space provided below: • **"Check off"** the associated check box as Upgrade is completed for each **SOAM** ☐ **SOAM1:** _____ ☐ **SOAM6:** _____ ☐ **SOAM2:** _____ ☐ **SOAM7:** _____ ☐ **SOAM3:** _____ ☐ **SOAM8:** _____ ☐ **SOAM4:** _____ ☐ **SOAM9:** _____ ☐ **SOAM5:** _____ ☐ **SOAM10:** _____
Maintenance Window 3 **Date:** _____	• Record the Site **NE Name** of each SOAM to be upgraded during Maintenance Window 3 in the space provided below: • **"Check off"** the associated check box as Upgrade is completed for each **SOAM** ☐ **SOAM1:** _____ ☐ **SOAM6:** _____ ☐ **SOAM2:** _____ ☐ **SOAM7:** _____ ☐ **SOAM3:** _____ ☐ **SOAM8:** _____ ☐ **SOAM4:** _____ ☐ **SOAM9:** _____ ☐ **SOAM5:** _____ ☐ **SOAM10:** _____

Maintenance Window 4 **Date:** _____	• Record the Site **NE Name** of each SOAM to be upgraded during Maintenance Window 4 in the space provided below: • **"Check off"** the associated check box as Upgrade is completed for each **SOAM** ☐ **SOAM1:** _____ ☐ **SOAM6:** _____ ☐ **SOAM2:** _____ ☐ **SOAM7:** _____ ☐ **SOAM3:** _____ ☐ **SOAM8:** _____ ☐ **SOAM4:** _____ ☐ **SOAM9:** _____ ☐ **SOAM5:** _____ ☐ **SOAM10:** _____
Maintenance Window 5 **Date:** _____	• Record the Site **NE Name** of each SOAM to be upgraded during Maintenance Window 5 in the space provided below: • **"Check off"** the associated check box as Upgrade is completed for each **SOAM** ☐ **SOAM1:** _____ ☐ **SOAM6:** _____ ☐ **SOAM2:** _____ ☐ **SOAM7:** _____ ☐ **SOAM3:** _____ ☐ **SOAM8:** _____ ☐ **SOAM4:** _____ ☐ **SOAM9:** _____ ☐ **SOAM5:** _____ ☐ **SOAM10:** _____
Maintenance Window 6 **Date:** _____	• Record the Site **NE Name** of each SOAM to be upgraded during Maintenance Window 6 in the space provided below: • **"Check off"** the associated check box as Upgrade is completed for each **SOAM** ☐ **SOAM1:** _____ ☐ **SOAM6:** _____ ☐ **SOAM2:** _____ ☐ **SOAM7:** _____ ☐ **SOAM3:** _____ ☐ **SOAM8:** _____ ☐ **SOAM4:** _____ ☐ **SOAM9:** _____ ☐ **SOAM5:** _____ ☐ **SOAM10:** _____

3.3 Upgrade Preparation Overview

The pre-upgrade procedures shown in the following table should be executed prior to the upgrade maintenance window and may be executed outside a maintenance window if desired.

Procedure Number	Procedure Title	Elapsed Time (Hours:Minutes)	
		This Step	Cumulative
1	*Required Materials Check*	00:15	00:15
2	*ISO Administration*	*	*

Table 6 - Upgrade Preparation Procedures

***NOTE:** *ISO transfers to the target systems cannot be estimated since times will vary significantly depending on the number of systems and the speed of the network.*

These factors significantly affect the total time needed to complete upgrade and therefore require the scheduling of multiple maintenance windows to complete all activities.

The ISO transfers to the target systems should be performed prior to, outside of, the scheduled maintenance window. The user should schedule the required maintenance windows accordingly.

3.4 Primary NOAMP / DR NOAMP Execution Overview

The procedures shown in the following table are executed inside a maintenance window.

Procedure Number	Procedure Title	Elapsed Time (Hours:Minutes)	
		This Step	Cumulative
3	*Disable Global Provisioning*	00:05	00:20
4	*Inhibit DR NOAMP Servers*	00:05	00:25
5	*Inhibit Primary NOAMP Servers*	00:05	00:30
6	*Database Backup*	01:00	01:30
7	*Upgrade DR NOAMP NE*	01:00	02:30
8	*Upgrade Primary NOAMP NE*	01:00	03:30
9	*Allow DR NOAMP* Servers	00:05	03:35
10	*Allow Primary NOAMP Servers*	00:05	03:40
11	*Enable Global Provisioning*	00:05	03:45

Table 7 - Primary NOAMP / DR NOAMP Upgrade Procedures

3.5 SOAM Upgrade Execution Overview

The procedures shown in the following table should be executed inside a maintenance window.

Procedure Number	Procedure Title	Elapsed Time (Hours:Minutes)	
		This Step	Cumulative
12	*Inhibit SOAM Servers*	00:05	03:50
13	*Upgrade SOAM NE*	01:30	05:20
14	*Allow SOAM Servers*	00:05	05:25

Table 8 - SOAM Upgrade Procedures

***NOTE:** *Times estimates do not include optional Procedures referenced in **Appendix E** for manipulation of Signaling traffic at the MP.*

3.6 Upgrade Acceptance Overview

The procedures shown in the following table should be executed inside a maintenance window.

Procedure Number	Procedure Title	Elapsed Time (Hours:Minutes)	
		This Step	Cumulative
15	*Turn off COMCOL compatibility mode (major upgrade 3.0 to 4.0 only)*	00:05	05:30
16	*Accept Upgrade*	00:05	05:35

Table 9 - Upgrade Acceptance Procedures

***NOTE:** *Times estimates do not include optional Procedures referenced in **Appendix E** for manipulation of Signaling traffic at the MP.*

3.7 Recovery Procedures Overview

Recovery procedures are covered under the Disaster Recovery Guide, [3].

***NOTE:** *Time estimates do not include optional Procedures referenced in **Appendix E** for manipulation of Signaling traffic at the MP.*

4. HLR ROUTER UPGRADE MATRIX

Upgrading the HLR Router product in the customer network is a task which requires multiple procedures of varying types. The matrix shown below provides a guide to the user as to which procedures are to be performed on which site types. As always, the user should contact the Oracle's Tekelec Customer Care Center for assistance if experiencing difficulties with the interpretation or execution of any of the procedures listed.

NOTE: *Primary Provisioning and DR NOAMPs must be upgraded in the same maintenance window.*

Site Type		1	2	3	4	5	6	7	8	9	10	11	12	13	14
☐	NOAMP / DR NOAMP Query Server	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗
☐	SOAM / MP	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓

Table 10 – HLR Router Upgrade Matrix

HLR Router Upgrade: List of Procedures

Procedure No :	Title :	Page No :
1	*Required Materials Check*	18
2	*ISO Administration & Pre-Upgrade Checks*	19
3	*Disable Global Provisioning*	27
4	*Inhibit DR NOAMP* Servers	31
5	*Inhibit Primary NOAMP Servers*	34
6	*Database Backup (All Network Elements, All Servers)*	37
7	*Upgrade DR NOAMP NE*	40
8	*Upgrade Primary NOAMP NE*	44
9	*Allow DR NOAMP Servers*	51
10	*Allow Primary NOAMP Servers*	54
11	*Enable Global Provisioning*	54
12	*Inhibit SOAM Servers*	59
13	*Upgrade SOAM NE*	64
14	*Allow SOAM Servers*	68
15	Turn off COMCOL compatibility mode (major upgrade 3.0 to 4.0 only)	72
16	*Accept Upgrade*	73

Table 11 – HLR Router Upgrade: List of Procedures

5. UPGRADE PREPARATION

This section provides detailed procedures to prepare a system for upgrade execution. These procedures may be executed outside of a maintenance window.

!! STOP !!

If upgrade is being performed from HLRR 3.0.0-30.11.0, then execute following steps on <u>every server</u> in HLRR system:

1. Obtain the tar file "**hlrr_3.0_to_4.0_upgrade.tar.bz2"** from the repository at: `/export/home/eagle/releases/TPD/prod/EXHR/4.0/UpgradeSupport/`

2. Drop this tar file at **/tmp** directory of the HLRR server (use either SCP or SFTP)

   Example:
   ```
   # scp hlrr_3.0_to_4.0_upgrade.tar.bz2 root@<server XMI address>:/tmp/.
   ```

3. Login to server as root user via SSH connection
   ```
   ssh <server XMI IP address>
   ```

4. Extract the tar file:
   ```
   # tar -xvjf /tmp/hlrr_3.0_to_4.0_upgrade.tar.bz2 -C /.
   ```

5. Upon completion, remove the tar file:
   ```
   # rm -rf /tmp/hlrr_3.0_to_4.0_upgrade.tar.bz2
   ```

6. Repeat all above on all remaining servers in HLRR system.

5.1 Required Materials Check

This procedure verifies that all required materials needed to perform an upgrade have been collected and recorded.

Procedure 1: Required Materials Check

Step	This procedure verifies that all required materials are present. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES AND ASK FOR ASSISTANCE.	
1. ☐	Verify all required materials are present.	• Materials are listed in Section 3.1: Required Materials. Verify all required materials are present.
2. ☐	Verify all administration data needed during upgrade.	• Double-check that all information in Section 3.1.2 is filled-in and accurate.

5.2 Release Notes

This section contains any release-specific information that might be helpful to complete software upgrade procedure.

5.2.1 Discrepancies in Primary NOAMP / DR NOAMP Release Levels

When upgrading HLR Router to the target release, the following alarms *may be reported* on the GUI during the period of time period when the Primary NOAMP NE is at the new software level and the DR NO Network Element is at the old software level:

- 31124: A DB replication audit command detected errors
- 31105: The DB merge process (inetmerge) is impaired by a s/w fault

These alarms, if present, will exist for the Active and Standby DR NOAMP servers. They should clear themselves automatically within 5 minutes, and will cease to be raised once the DR NOAMP NE is upgraded to the same software level as the NOAMP. To avoid seeing these alarms altogether, the upgrade of the Primary NOAMP and DR NOAMP NEs should be performed within the same maintenance window.

5.3 Perform Health Check (Upgrade Preparation)

☐ This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers. This may be executed multiple times but must also be executed at least once within the time frame of 24-36 hours prior to the start of a maintenance window.

- Execute HLR Router Health Check procedures as specified in **Appendix B.**

5.4 Perform Firmware Verification (Upgrade Preparation)

☐ This procedure is part of Software Upgrade Preparation and is used to determine whether a firmware update is required. If [4] has been provided with the upgrade kit, follow its instructions to verify the firmware on HLR Router T1200 servers. Execute firmware upgrade procedures if required by[4]:

- Execute firmware upgrade procedures if required by[4].

5.5 ISO Administration & Pre-Upgrade Checks

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

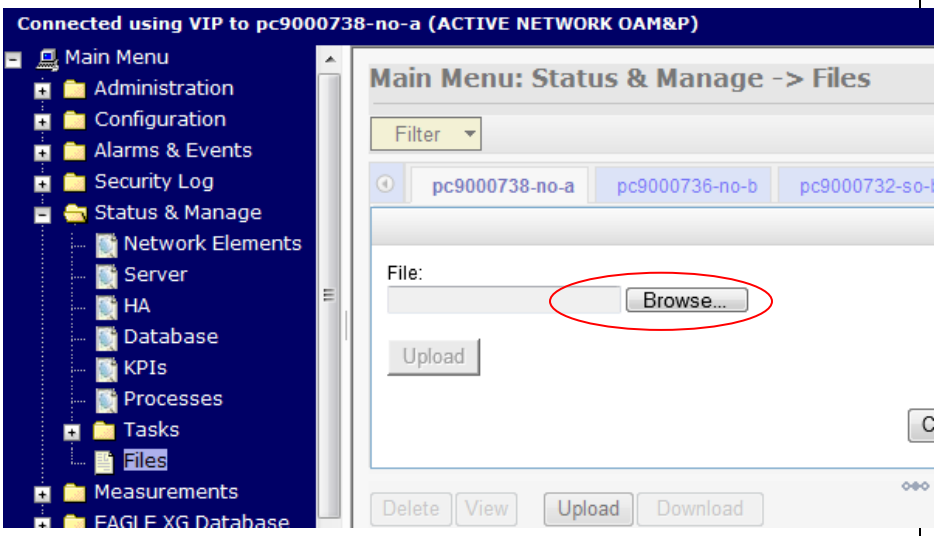
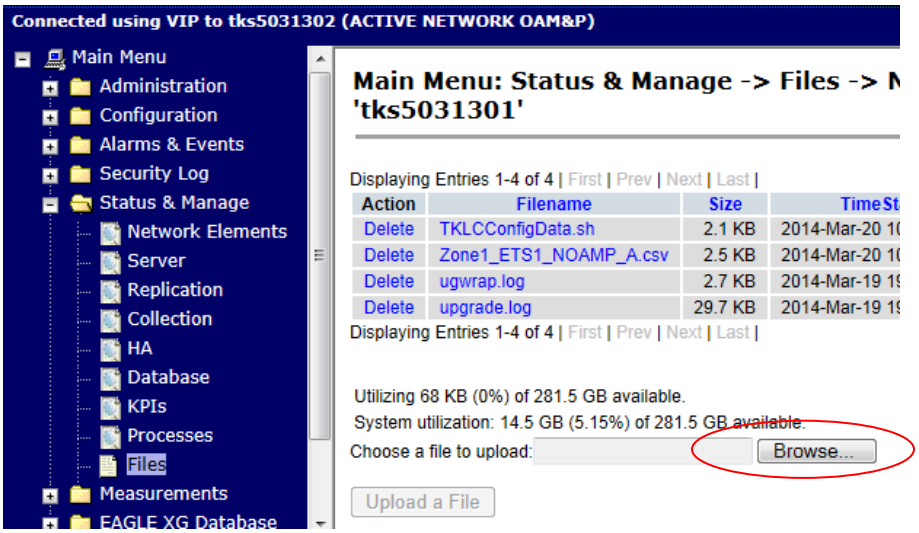
Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

SHOULD ANY STEP IN THIS PROCEDURE FAIL, STOP AND CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES FOR ASSISTANCE BEFORE CONTINUING!

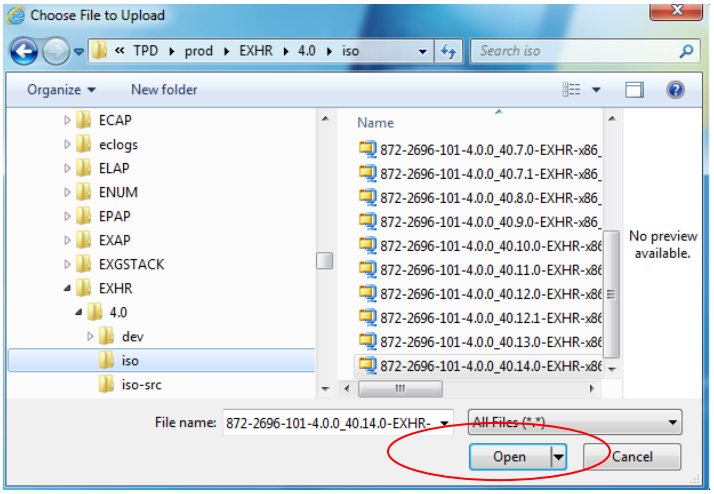
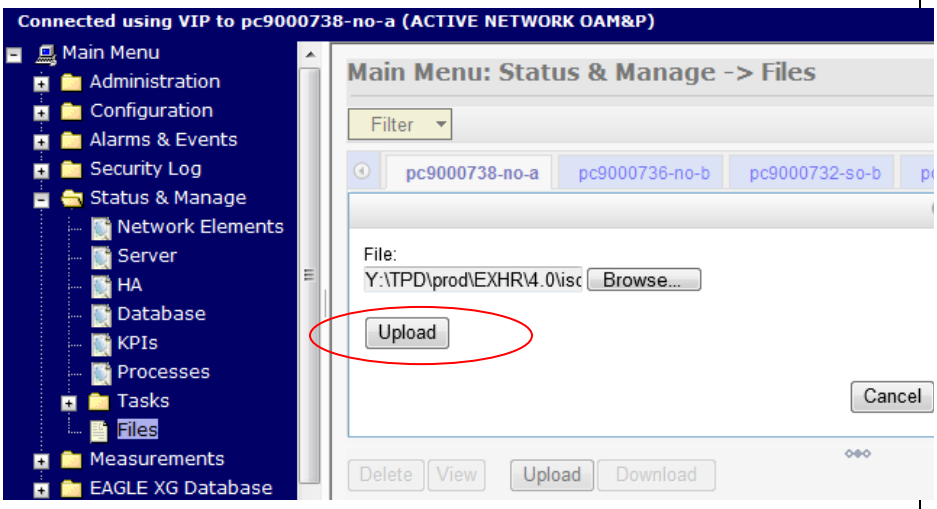
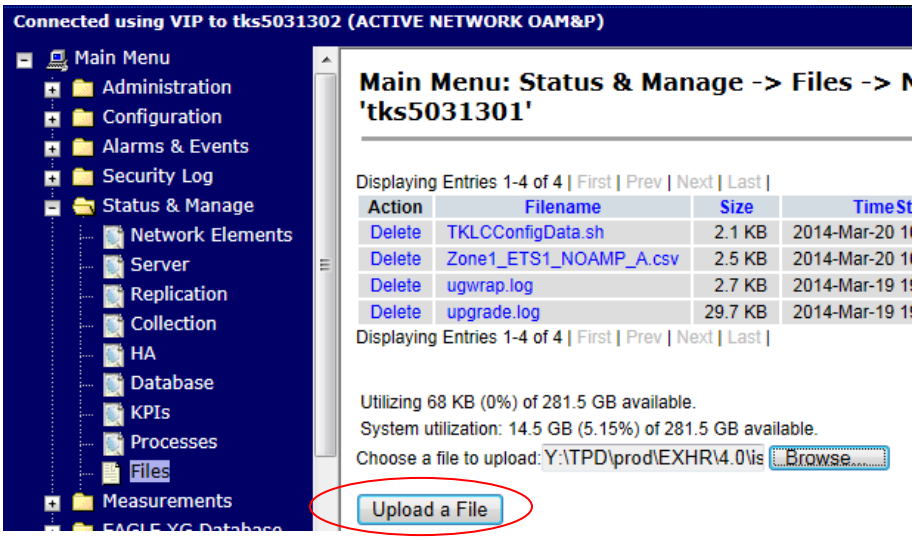
Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**

Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
2. ☐	**Active NOAMP VIP:** Upload ISO file to the Active NOAMP server **1)** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Files*** **<u>On HLRR 4.0 GUI:</u>** **2)** Using the cursor, select the active NOAMP server from the list tabs. **3)** Click on the **"Upload"** button, **4)** In the pop-up screen click on the **"Browse..."** button - OR - **<u>On HLRR 3.0 GUI:</u>** **2)** Using the cursor, select the active NOAMP server and click on "**List Files**" button **3)** Click on the **"Browse…"** button.	**<u>HLRR 4.0 GUI:</u>**  **<u>HLRR 3.0 GUI:</u>** 

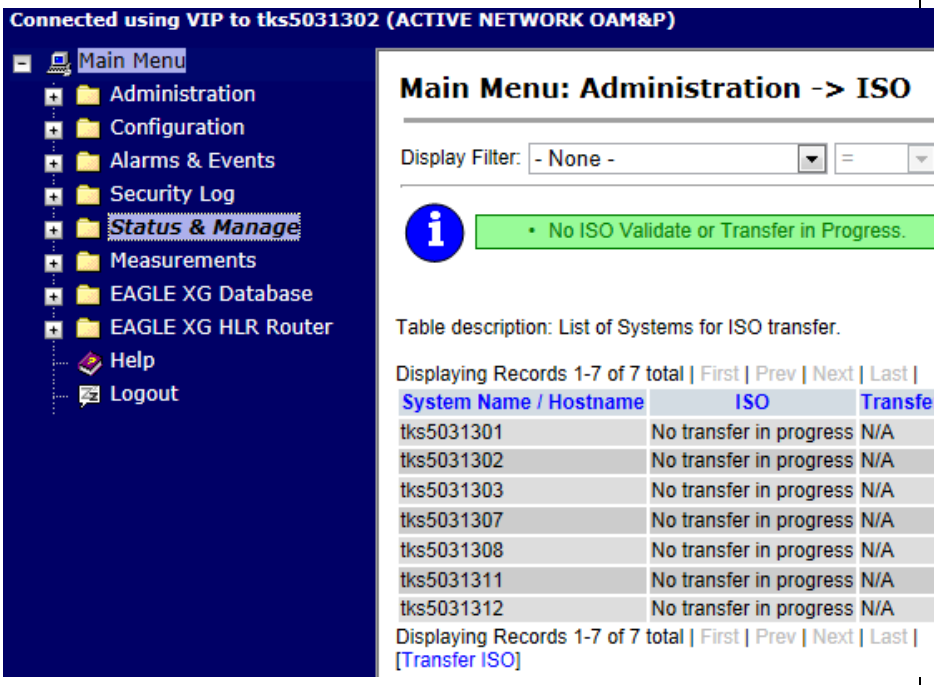
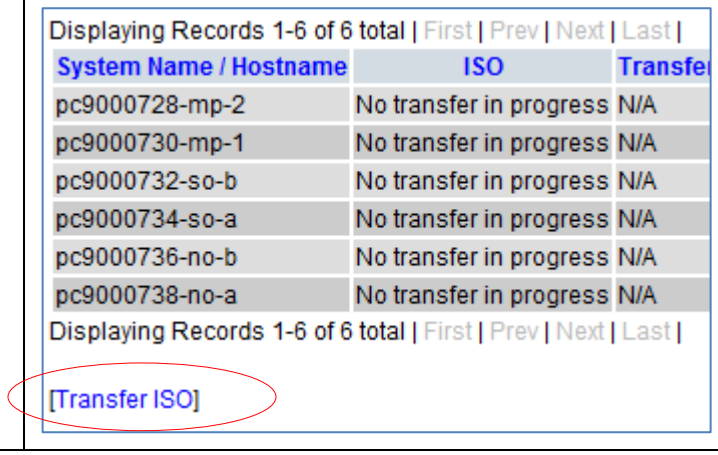
Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
3. ☐	**Active NOAMP VIP:** A pop-up window "Choose File to Upload" will appear **1)** Select the ISO file and click on the **"Open"** dialogue button. **<u>On HLRR 4.0 GUI:</u>** **2)** Click on the **"Upload"** dialogue button. -OR - **<u>On HLRR 3.0 GUI:</u>** **2)** Click on the **"Upload a File"** dialogue button. **NOTE 1:** *It is recommended to access the ISO file for the target release from a local hard drive partition as opposed to a network or flash drive location.* **NOTE 2:** *Depending on network conditions, this upload may take an extended period of time (> 60 secs.).* *Alternatively, the ISO file can be manually transferred to the **"/var/TKLC/db/filemgmt"** directory of the **Active NOAMP** server using **SFTP**.*	 **<u>HLRR 4.0 GUI:</u>**  **<u>HLRR 3.0 GUI:</u>** 

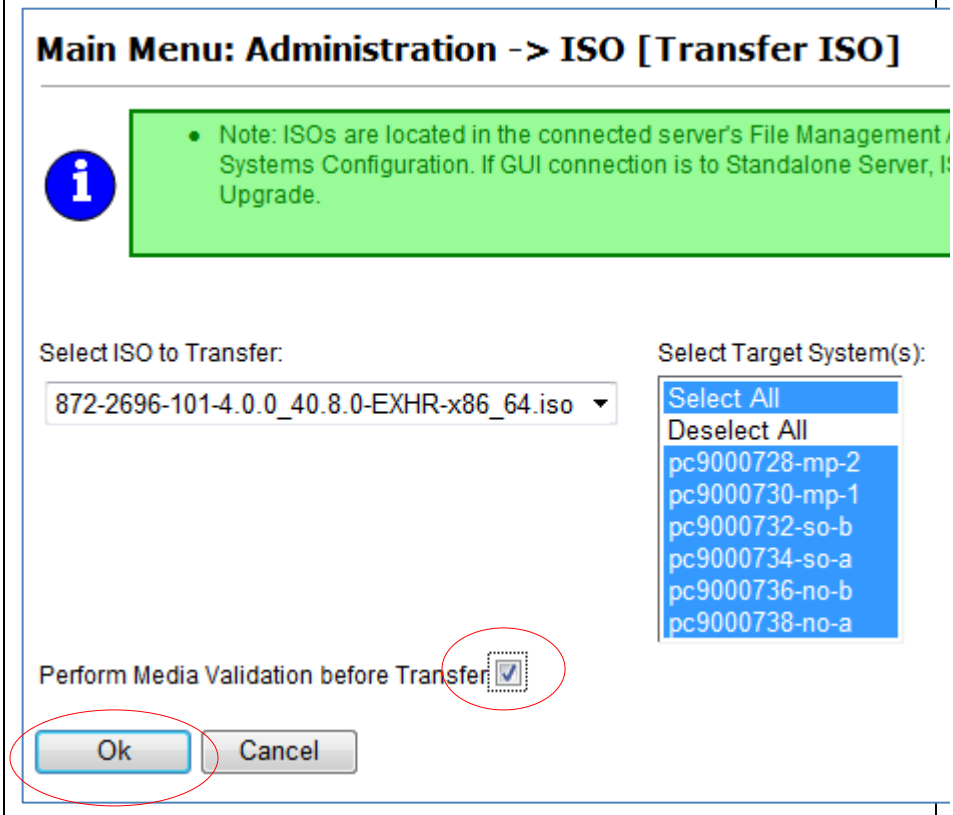
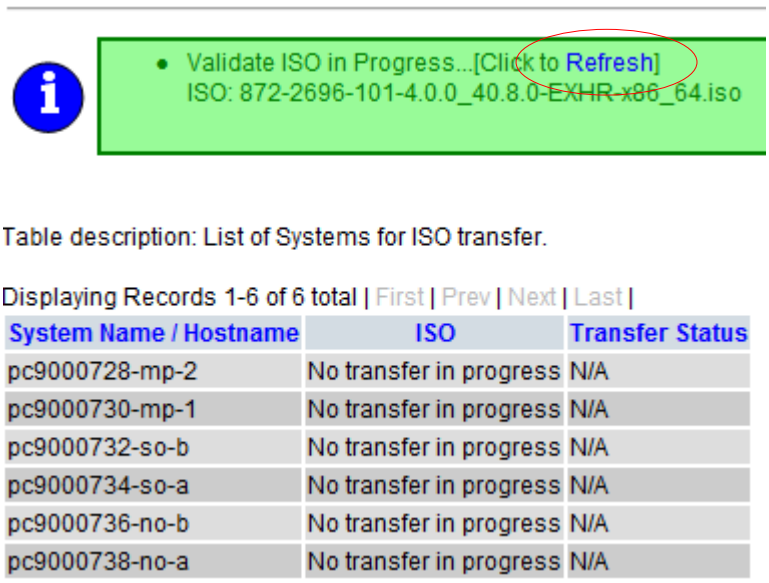
Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
4. ☐	**Active NOAMP VIP:** Click the **Timestamp** link located on the top right of the right panel.	**HLRR 4.0 GUI:** pc9000738-no-a | pc9000736-no-b | pc9000734-so-a | pc9000732-s File Name | Size | Type | Timestamp 872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso | 882.8 MB | iso | 2013-12-04 upgrade.log | 1.2 MB | log | 2013-11-25 ugwrap.log | 1.6 KB | log | 2013-11-25 **HLRR 3.0 GUI:** Filename | Size | TimeStamp ugwrap.log | 2.7 KB | 2014-Mar-19 19:33:43 upgrade.log | 29.7 KB | 2014-Mar-19 19:33:43 Zone1_ETS1_NOAMP_A.csv | 2.5 KB | 2014-Mar-20 10:21:53 TKLCConfigData.sh | 2.1 KB | 2014-Mar-20 10:26:40 872-2696-101-4.0.0_40.14.0-EXHR-x86_64.iso | 916.7 MB | 2014-Mar-21 16:54:17 Entries 1-5 of 5 | First | Prev | Next | Last |
5. ☐	**Active NOAMP VIP:** The user should be presented with a reverse-sorted list of files showing the newest files at the top. The ISO file uploaded in **Step 3** of this procedure should now appear at the top most position in the **"File Name"** column.	**HLRR 4.0 GUI:** pc9000738-no-a | pc9000736-no-b | pc9000734-so-a | pc9000732-s File Name | Size | Type | Timestamp 872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso | 882.8 MB | iso | 2013-12-04 upgrade.log | 1.2 MB | log | 2013-11-25 ugwrap.log | 1.6 KB | log | 2013-11-25 **HLRR 3.0 GUI:** Filename | Size | TimeStamp 872-2696-101-4.0.0_40.14.0-EXHR-x86_64.iso | 916.7 MB | 2014-Mar-21 16:54:1 TKLCConfigData.sh | 2.1 KB | 2014-Mar-20 10:26:4 Zone1_ETS1_NOAMP_A.csv | 2.5 KB | 2014-Mar-20 10:21:5 ugwrap.log | 2.7 KB | 2014-Mar-19 19:33:4 upgrade.log | 29.7 KB | 2014-Mar-19 19:33:4

Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** Upload ISO file to the Standby NOAMP server	Repeat steps 2, 3, 4, 5 of this Procedure to upload ISO file to the Standby Primary NOAMP server
7. ☐	**Active NOAMP VIP (GUI):** Transfer ISO to all HLRR servers via the GUI session **a)** if NOAMP VIP GUI is running on **HLRR 3.0** release, then select… **<u>Main Menu</u>** **→ Administration** **→ *ISO*** **-OR-** **b)** if NOAMP VIP GUI is running on **HLRR 4.0** release, then select… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *ISO Deployment*** …as shown on the right.	
8. ☐	**Active NOAMP VIP:** Click on the **[<u>Transfer ISO</u>]** link located in the bottom left quadrant of the screen.	

Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
9. ☐	**Active NOAMP VIP:** The user will be presented with the **[Transfer ISO]** Administration screen **1)** Using the pull-down menu, select the ISO file for the target release. **2)** Select all servers to be upgraded. **NOTE:** *This may be done one of two ways:* ***a) Select All:*** *If all servers are to be upgraded, they may be selected by clicking on the* ***"Select All"*** *option.* ***b) Multi-Select:*** *If only a group of servers are to be upgraded, they may be selected by holding down the* ***[CTRL]*** *key while using the cursor to click on the designated servers.* **3)** Click on the **"Perform Media Validation before transfer"** check box. **4)** Click on the **"Ok"** dialogue button.	
10. ☐	**Active NOAMP VIP:** **1)** The user should be presented with the **ISO** Administration screen. **2)** The progress of the individual file transfers may be monitored by periodically clicking on the **[Click to <u>Refresh</u>]** link.	

Procedure 2: ISO Administration & Pre-Upgrade Checks

Step	Procedure	Result
11. ☐	**Active NOAMP VIP:** Continue to monitor the file transfer progress until a **"Transfer Status"** of **"Complete"** is received for all selected servers.	• Transfer ISO Complete. ISO: 872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso 6 of 6 Transfers Successful. 0 of 6 Transfers Failed. Table description: List of Systems for ISO transfer. Displaying Records 1-6 of 6 total | First | Prev | Next | Last |

System Name / Hostname	ISO	Transfer
pc9000728-mp-2	872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso	Complete
pc9000730-mp-1	872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso	Complete
pc9000732-so-b	872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso	Complete
pc9000734-so-a	872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso	Complete
pc9000736-no-b	872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso	Complete
pc9000738-no-a	872-2696-101-4.0.0_40.8.0-EXHR-x86_64.iso	Complete

THIS PROCEDURE HAS BEEN COMPLETED

5.6 Perform Health Check (Post ISO Administration)

☐ This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers.

- Execute HLR Router Health Check procedures as specified in **Appendix B.**

6. PRIMARY NOAMP / DR NOAMP UPGRADE EXECUTION

Call the **Oracle's Tekelec Customer Care Center** at **1-888-FOR-TKLC** (1-888-367-8552); or 1-919-460-2150 (international) and inform them of your plans to upgrade this system prior to executing this upgrade.

Before upgrade, users must perform the system Health Check **Appendix B.**

This check ensures that the system to be upgraded is in an upgrade-ready state. Performing the system health check determines which alarms are present in the system and if upgrade can proceed with alarms.

****** WARNING *******

If there are servers in the system, which are not in Normal state, these servers should be brought to the Normal or the Application Disabled state before the upgrade process is started.

The sequence of upgrade is such that servers providing support services to other servers will be upgraded first.

****** WARNING *******

Please read the following notes on this procedure:

Procedure completion times shown here are estimates. Times may vary due to differences in database size, user experience, and user preparation.

Where possible, command response outputs are shown as accurately as possible. EXCEPTIONS are as follows:

- Session banner information such as time and date.
- System-specific configuration information such as hardware locations, IP addresses and hostnames.
- ANY information marked with "XXXX" or "YYYY." Where appropriate, instructions are provided to determine what output should be expected in place of "XXXX or YYYY"
- Aesthetic differences unrelated to functionality such as browser attributes: window size, colors, toolbars and button layouts.

After completing each step and at each point where data is recorded from the screen, the technician performing the upgrade must mark the provided Check Box.

For procedures which are executed multiple times, a mark can be made below the Check Box (in the same column) for each additional iteration the step is executed.

Retention of Captured data is required for as a future support reference this procedure is executed by someone other than Oracle's Tekelec Technical Services.

NOTE: *For large systems containing multiple Signaling Network Elements, it may not be feasible to apply the software upgrade to every Network Element within a single maintenance window. However, whenever possible, Primary and DR NOAMP Network Elements should be upgraded within the same maintenance window. If multiple maintenance windows are required, replication may be allowed and provisioning re-enabled between scheduled maintenance windows.*

6.1 **Perform Health Check** (Pre Upgrade)

☐ This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers. This may be executed multiple times but must also be executed at least once within the time frame of 24-36 hours prior to the start of a maintenance window.

- Execute HLR Router Health Check procedures as specified in **Appendix B.**

6.2 Primary NOAMP / DR NOAMP Upgrade

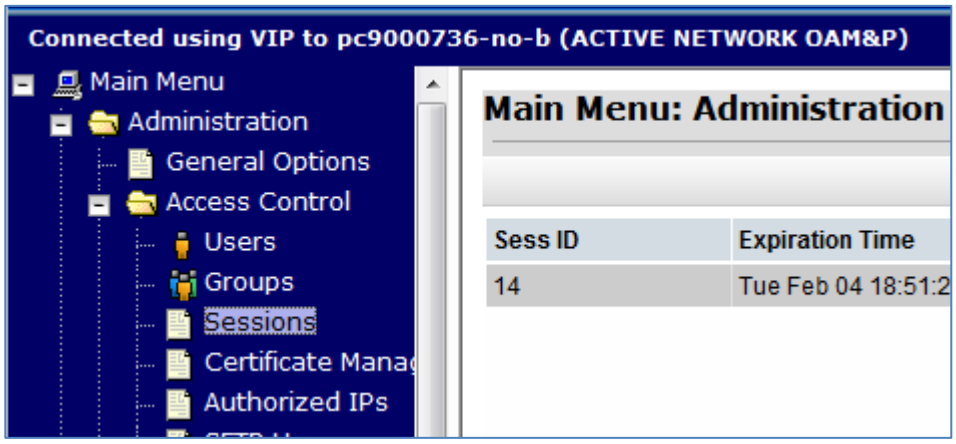
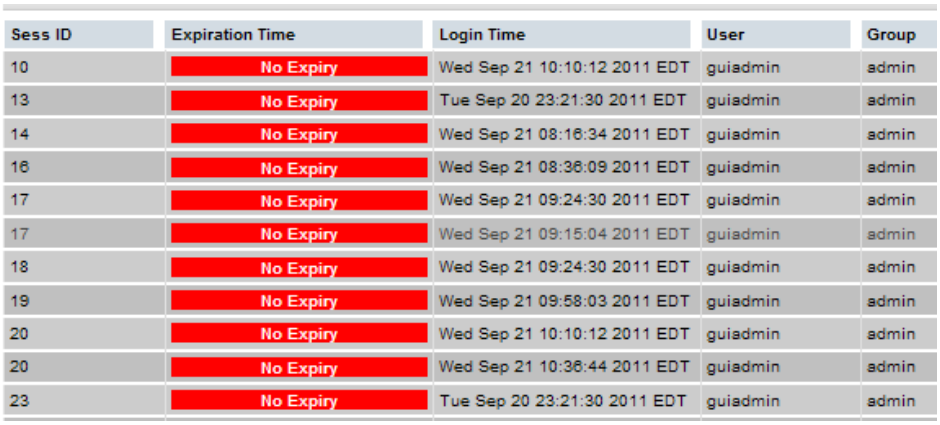
The following procedures detail how to disable Database Audit, disable global provisioning and inhibit replication to the Primary NOAMP and DR NOAMP sites. This procedure must be executed before these Network Elements can be upgraded.

WARNING: The Database Audit stays disabled throughout the whole upgrade, until all of the SOAM sites are upgraded!

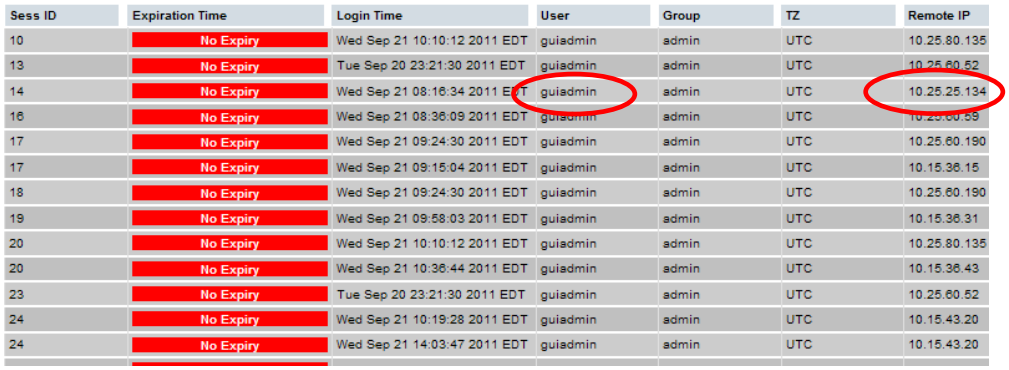
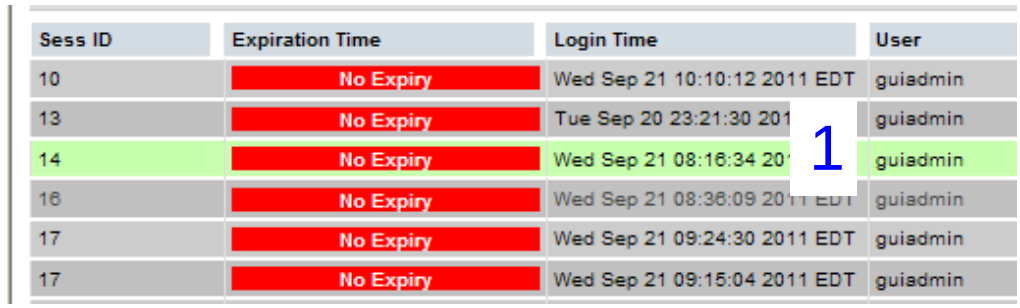
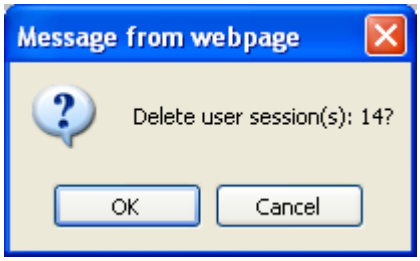
Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD ANY STEP IN THIS PROCEDURE FAIL, STOP AND CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES FOR ASSISTANCE BEFORE CONTINUING!

6.2.1 Disable Global Provisioning

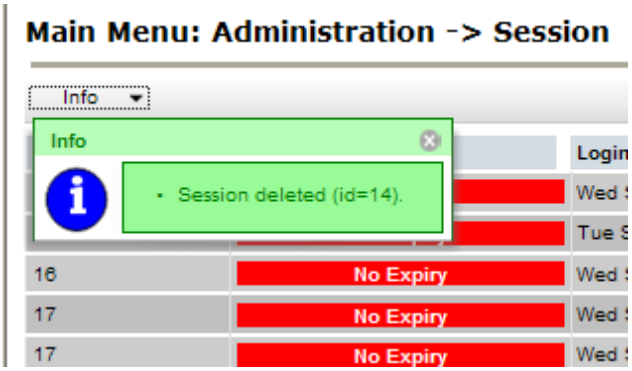
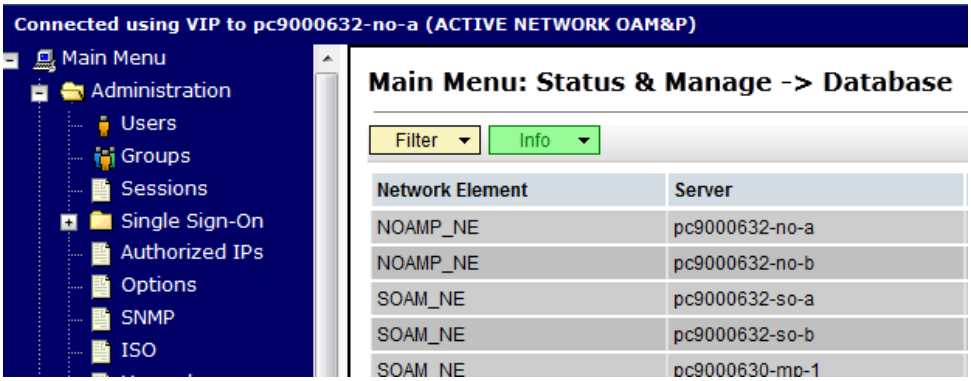
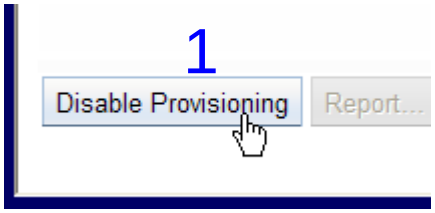
Procedure 3: Disable Global Provisioning

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** ***THIS STEP MAY ONLY BE PERFORMED BY THE CUSTOMER!*** Select… **Main Menu** **→ Administration** **→ Access Control** **→ *Sessions*** (HLRR 4.0) **-OR-** **Main Menu** **→ Administration** **→ *Session*** (HLRR 3.0) …as shown on the right.	
3. ☐	**Active NOAMP VIP:** ***THIS STEP MAY ONLY BE PERFORMED BY THE CUSTOMER!*** In the right panel, the user will be presented with the list of Active GUI sessions connected to the Active NOAMP server.	 Sess ID / Expiration Time / Login Time / User / Group 10 / No Expiry / Wed Sep 21 10:10:12 2011 EDT / guiadmin / admin 13 / No Expiry / Tue Sep 20 23:21:30 2011 EDT / guiadmin / admin 14 / No Expiry / Wed Sep 21 08:16:34 2011 EDT / guiadmin / admin 16 / No Expiry / Wed Sep 21 08:36:09 2011 EDT / guiadmin / admin 17 / No Expiry / Wed Sep 21 09:24:30 2011 EDT / guiadmin / admin 17 / No Expiry / Wed Sep 21 09:15:04 2011 EDT / guiadmin / admin 18 / No Expiry / Wed Sep 21 09:24:30 2011 EDT / guiadmin / admin 19 / No Expiry / Wed Sep 21 09:58:03 2011 EDT / guiadmin / admin 20 / No Expiry / Wed Sep 21 10:10:12 2011 EDT / guiadmin / admin 20 / No Expiry / Wed Sep 21 10:36:44 2011 EDT / guiadmin / admin 23 / No Expiry / Tue Sep 20 23:21:30 2011 EDT / guiadmin / admin

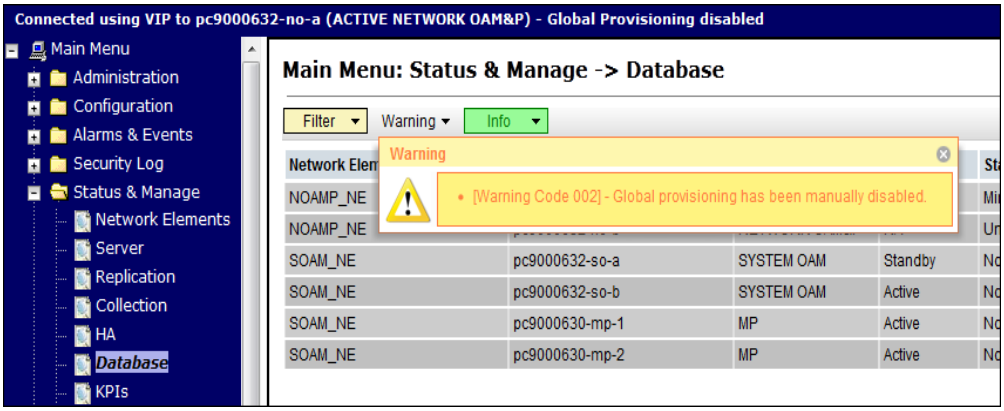
Procedure 3: Disable Global Provisioning

Step	Procedure	Result
4. ☐	**Active NOAMP VIP:** ***THIS STEP MAY ONLY BE PERFORMED BY THE CUSTOMER!*** The User ID and Remote IP address of each session will be displayed as seen on the right. Every attempt should be made to contact users not engaged in this Upgrade activity and request that they discontinue GUI access until the upgrade activity has completed.	 Sess ID / Expiration Time / Login Time / User / Group / TZ / Remote IP 10 / No Expiry / Wed Sep 21 10:10:12 2011 EDT / guiadmin / admin / UTC / 10.25.80.135 13 / No Expiry / Tue Sep 20 23:21:30 2011 EDT / guiadmin / admin / UTC / 10.25.60.52 14 / No Expiry / Wed Sep 21 08:16:34 2011 EDT / guiadmin / admin / UTC / 10.25.25.134 16 / No Expiry / Wed Sep 21 08:36:09 2011 EDT / guiadmin / admin / UTC / 10.25.60.59 17 / No Expiry / Wed Sep 21 09:24:30 2011 EDT / guiadmin / admin / UTC / 10.25.60.190 17 / No Expiry / Wed Sep 21 09:15:04 2011 EDT / guiadmin / admin / UTC / 10.15.36.15 18 / No Expiry / Wed Sep 21 09:24:30 2011 EDT / guiadmin / admin / UTC / 10.25.60.190 19 / No Expiry / Wed Sep 21 09:58:03 2011 EDT / guiadmin / admin / UTC / 10.15.36.31 20 / No Expiry / Wed Sep 21 10:10:12 2011 EDT / guiadmin / admin / UTC / 10.25.80.135 20 / No Expiry / Wed Sep 21 10:36:44 2011 EDT / guiadmin / admin / UTC / 10.15.36.43 23 / No Expiry / Tue Sep 20 23:21:30 2011 EDT / guiadmin / admin / UTC / 10.25.60.52 24 / No Expiry / Wed Sep 21 10:19:28 2011 EDT / guiadmin / admin / UTC / 10.15.43.20 24 / No Expiry / Wed Sep 21 14:03:47 2011 EDT / guiadmin / admin / UTC / 10.15.43.20
5. ☐	**Active NOAMP VIP:** ***THIS STEP MAY ONLY BE PERFORMED BY THE CUSTOMER!*** If unable to identify or contact the session owners, sessions not related to the upgrade activity may be selected and deleted as follows: **1)** Select the session for deletion with the cursor. **2)** In the bottom left of the right panel, click the **"Delete"** dialogue button. **3)** In the pop-up window, click on the **"OK"** dialogue button.	 Sess ID / Expiration Time / Login Time / User 10 / No Expiry / Wed Sep 21 10:10:12 2011 EDT / guiadmin 13 / No Expiry / Tue Sep 20 23:21:30 201 / guiadmin 14 / No Expiry / Wed Sep 21 08:16:34 20 / guiadmin 16 / No Expiry / Wed Sep 21 08:36:09 2011 EDT / guiadmin 17 / No Expiry / Wed Sep 21 09:24:30 2011 EDT / guiadmin 17 / No Expiry / Wed Sep 21 09:15:04 2011 EDT / guiadmin 1 Delete 2  Message from webpage Delete user session(s): 14? OK Cancel 3 **NOTE:** *The Session screen prevents users from deleting the session which they are currently connected to. If attempting to do so by accident, a message may be received in the Banner area stating* ***"Logout to delete your own session (id=xx)"****.*

Procedure 3: Disable Global Provisioning

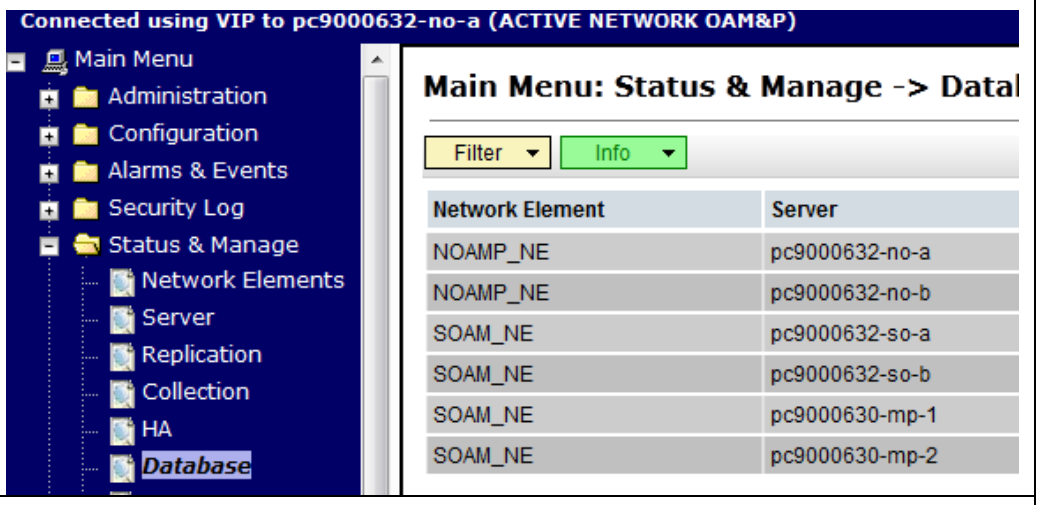
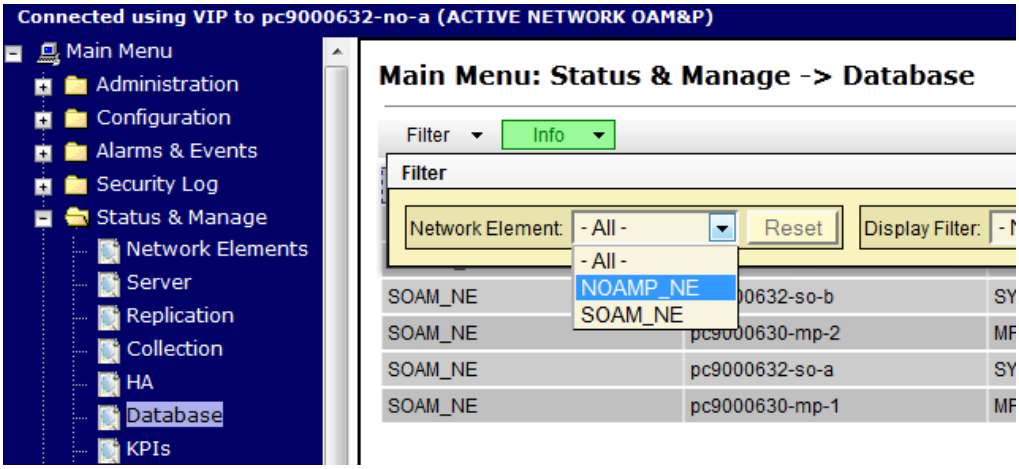
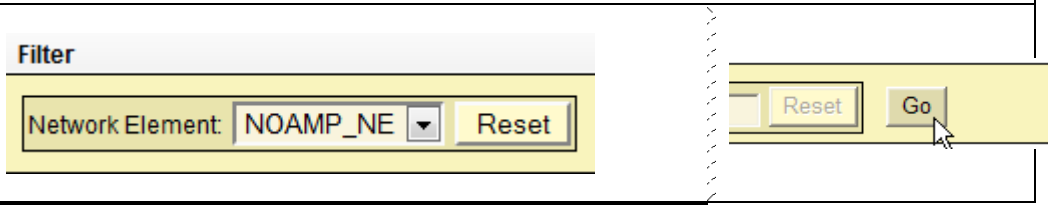
Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** ***THIS STEP MAY ONLY BE PERFORMED BY THE CUSTOMER!*** The user will receive a confirmation message in the Info tab indicating the session ID which was deleted.	
7. ☐	**Active NOAMP VIP:** ***THIS STEP MAY ONLY BE PERFORMED BY THE CUSTOMER!*** Delete any additional GUI sessions as needed.	• Repeat **Steps** 5-6 of this Procedure for each additional GUI session to be deleted.
8. ☐	**Active NOAMP VIP:** ***THIS STEP TO BE PERFORMED BY ORACLE'S TEKELEC!*** Select… **Main Menu** **→ Status & Manage** **→ *Database*** …as shown on the right.	
9. ☐	**Active NOAMP VIP:** ***THIS STEP TO BE PERFORMED BY ORACLE'S TEKELEC!*** **1)** Click on the **"Disable Provisioning"** dialogue button in the bottom left corner of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	

Procedure 3: Disable Global Provisioning

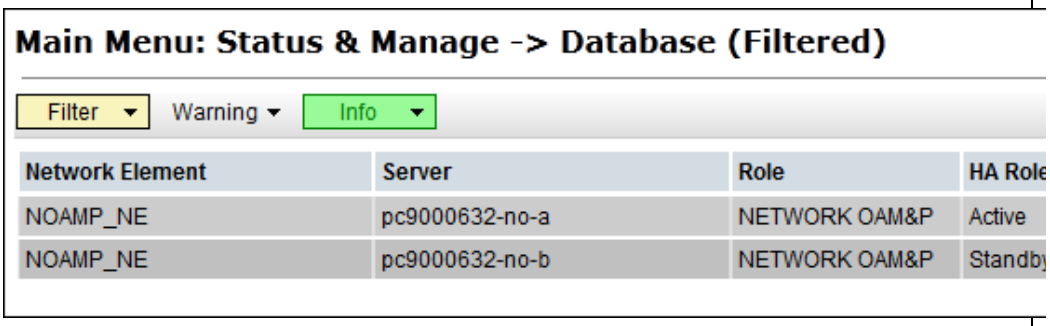
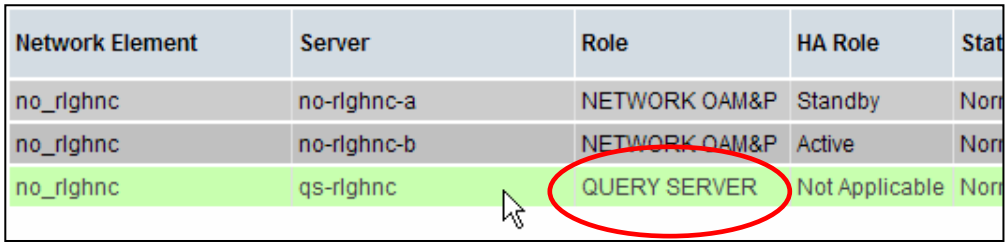
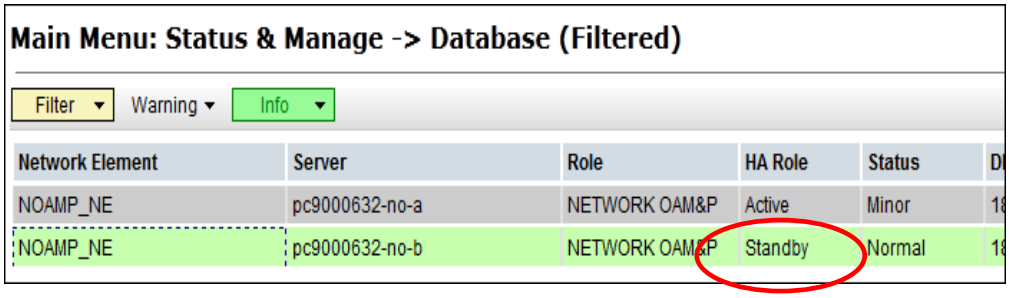
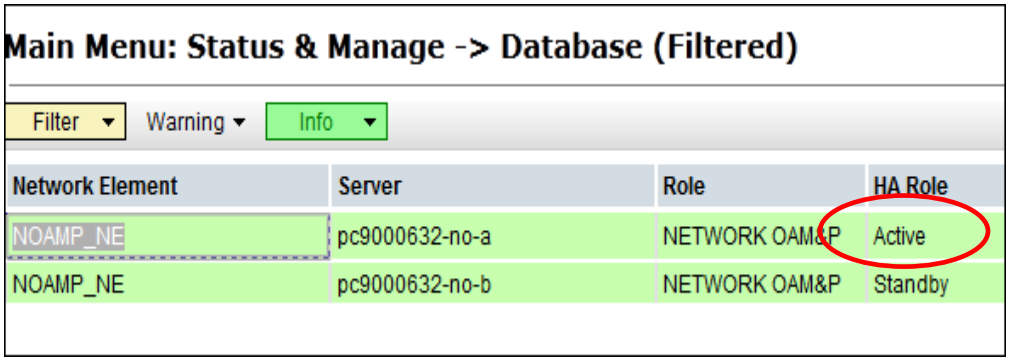
Step	Procedure	Result
10. ☐	**Active NOAMP VIP:** ***THIS STEP TO BE PERFORMED BY ORACLE'S TEKELEC!*** The user should be presented with a confirmation message (in the banner area) stating: **"Global Provisioning has been manually disabled"**. **NOTE:** *As a result of disabling Global Provisioning, Warning (**Event ID 10008**): "Global Provisioning Manually Disabled" will alarm until Global Provisioning is re-enabled.*	
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.2 Inhibit DR NOAMP Servers

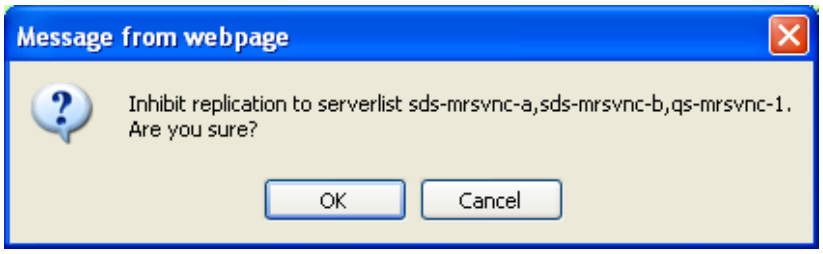
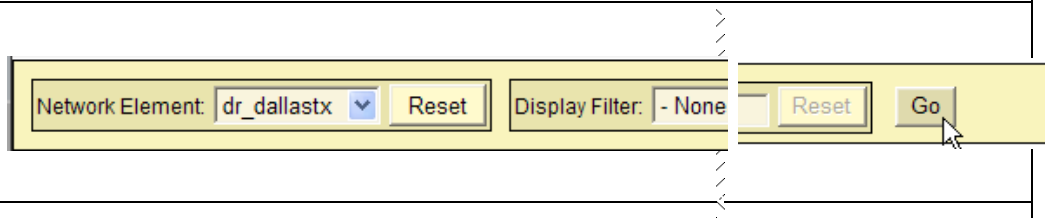
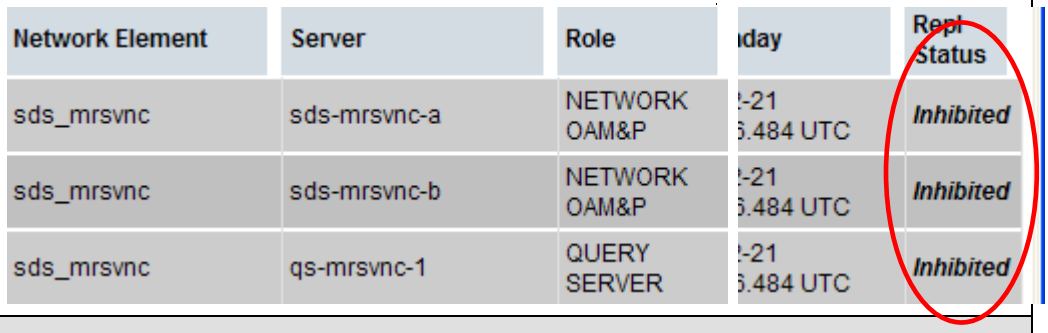
Procedure 4: Inhibit DR NOAMP Servers

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the Primary **DR NOAMP** NE in the space provided to the right.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **DR NOAMP** NE in the space provided below: **DR NOAMP&P NE:** _____
4. ☐	**Active DR NOAMP VIP:** From the **"Network Element"** filter pull-down, select the NE name for the **DR NOAMP**.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 4: Inhibit DR NOAMP Servers

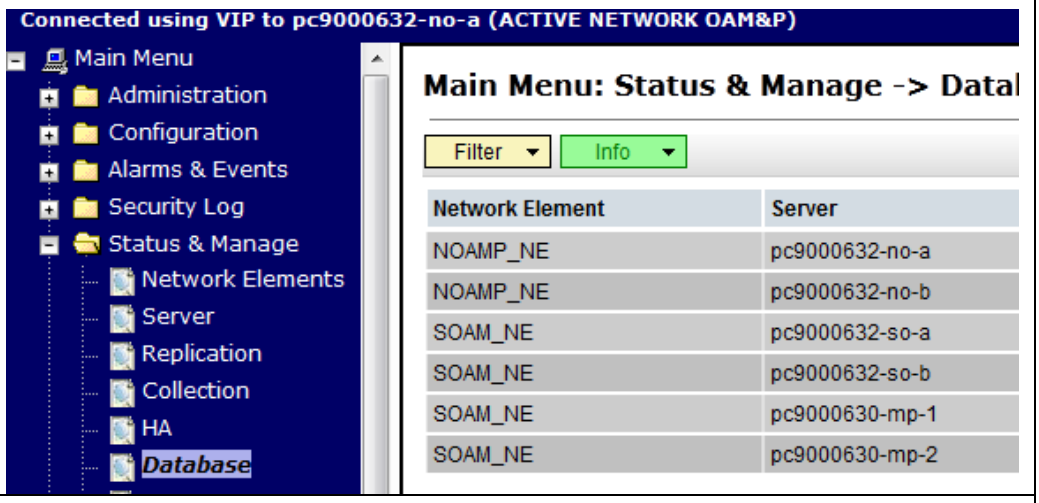
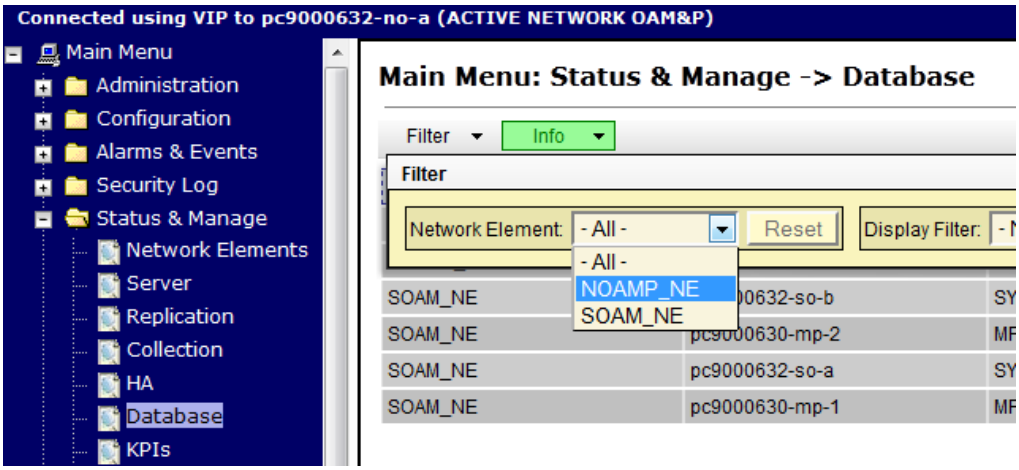
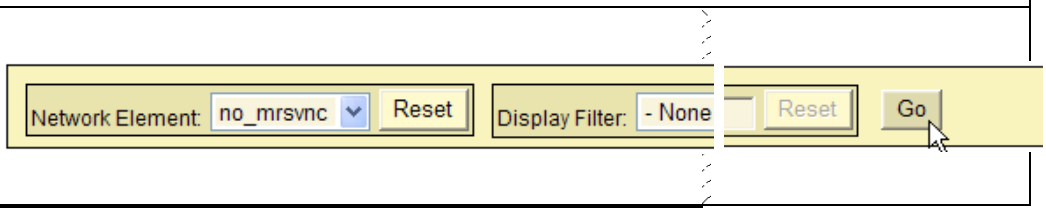
Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **DR NOAMP** NE.	
7. ☐	**(opt) Active NOAMP VIP:** Holding the **ctrl key,** use the cursor to select the server which displays **"QUERY SERVER"** under the **"Role"** column.	
8. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Standby"** under the **"Role"** column.	
9. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Active"** under the **"Role"** column.	

Procedure 4: Inhibit DR NOAMP Servers

Step	Procedure	Result
10. ☐	**Active NOAMP VIP:** **1)** Click on the **"Inhibit Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	1  2 **NOTE:** As a result of inhibiting Replication to the server, Minor Alarm *(**Event ID 31113**): "Replication Manually Disabled"* will alarm until Replication is once again allowed. **NOTE**: It may take a minute or more for the servers to transmission to "**Inhibited**" state.
11. ☐	**Active NOAMP VIP:** ***Wait*** until each server shows as inhibited before proceeding.	
12. ☐	**Active NOAMP VIP:** Verify that all servers in this Network Element now show it is **"Inhibited"** under the **"Repl Status"** column.	
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.3 Inhibit Primary NOAMP Servers

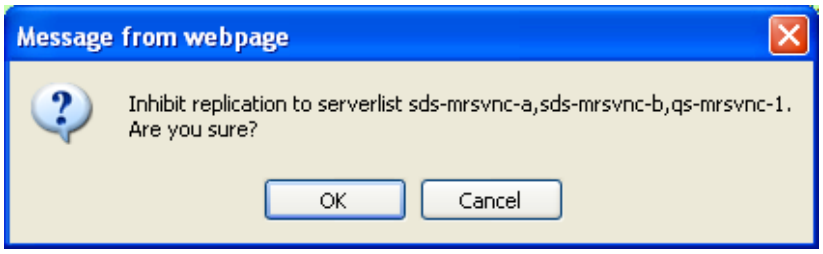
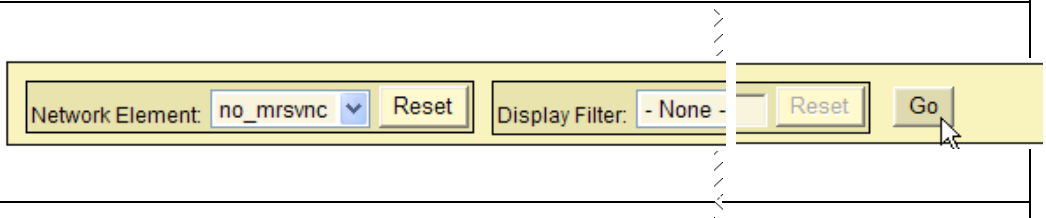
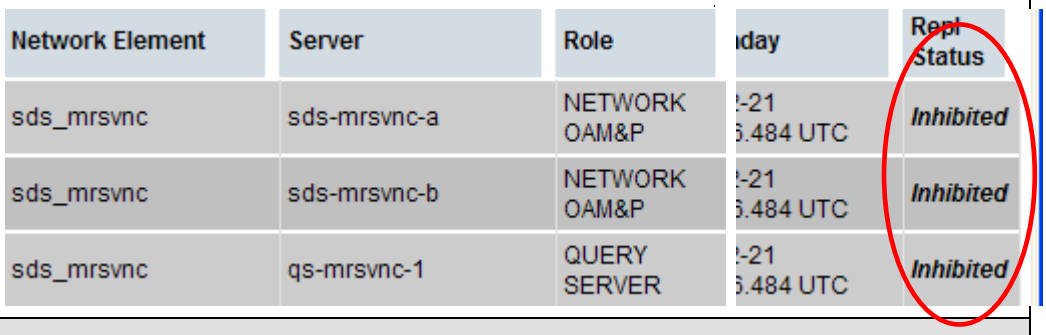
Procedure 5: Inhibit Primary NOAMP Servers

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **Main Menu** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the **Primary NOAMP** NE in the space provided to the right.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **Primary NOAMP** NE in the space provided below: **Primary NOAMP NE:** _____
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the NE name for the **Primary NOAMP**.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 5: Inhibit Primary NOAMP Servers

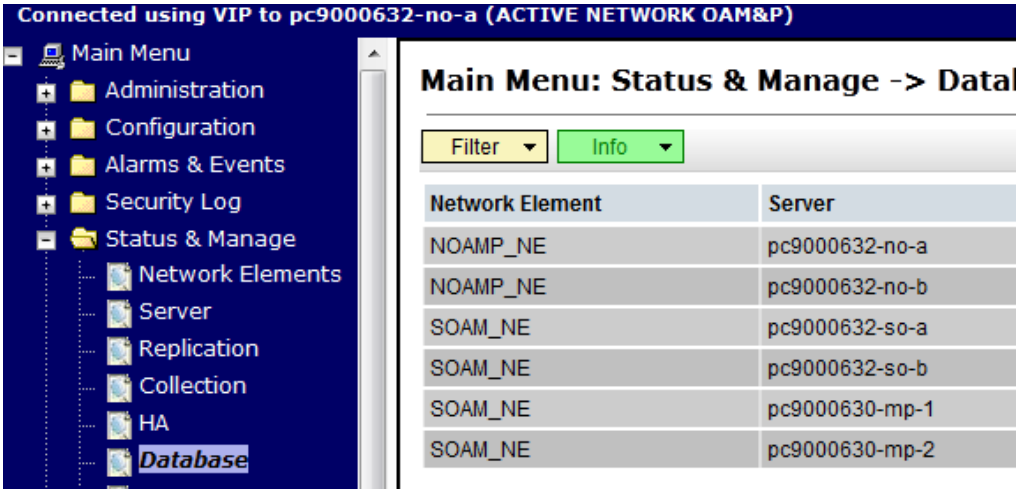
Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **Primary NOAMP** NE.	**Main Menu: Status & Manage -> Database (Filtered)** Filter ▾ Warning ▾ Info ▾ Network Element: NOAMP_NE; Server: pc9000632-no-a; Role: NETWORK OAM&P; HA Role: Active; Status: Minor Network Element: NOAMP_NE; Server: pc9000632-no-b; Role: NETWORK OAM&P; HA Role: Standby; Status: Minor
7. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Standby"** under the **"Role"** column.	**Main Menu: Status & Manage -> Database (Filtered)** Filter ▾ Info ▾ Network Element: sds_mrsvnc; Server: sds-mrsvnc-a; Role: NETWORK OAM&P; HA Role: Active; Status: Normal Network Element: sds_mrsvnc; Server: sds-mrsvnc-b; Role: NETWORK OAM&P; HA Role: Standby; Status: Normal Network Element: sds_mrsvnc; Server: qs-mrsvnc-1; Role: QUERY SERVER; HA Role: Not Applicable; Status: Normal
8. ☐	**(opt) Active NOAMP VIP:** Holding the **ctrl key,** use the cursor to select the server which displays **"QUERY SERVER"** under the **"Role"** column.	Network Element: no_mrsvnc; Server: no-mrsvnc-a; Role: NETWORK OAM&P; HA Role: Active; Stat: Nor Network Element: no_mrsvnc; Server: no-mrsvnc-b; Role: NETWORK OAM&P; HA Role: Standby; Stat: Nor Network Element: no_mrsvnc; Server: qs-mrsvnc; Role: QUERY SERVER; HA Role: Not Applicable; Stat: Nor
9. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Active"** under the **"Role"** column.	**Main Menu: Status & Manage -> Database (Filtered)** Filter ▾ Info ▾ Network Element: sds_mrsvnc; Server: sds-mrsvnc-a; Role: NETWORK OAM&P; HA Role: Active; Status: Normal Network Element: sds_mrsvnc; Server: sds-mrsvnc-b; Role: NETWORK OAM&P; HA Role: Standby; Status: Normal Network Element: sds_mrsvnc; Server: qs-mrsvnc-1; Role: QUERY SERVER; HA Role: Not Applicable; Status: Normal

Procedure 5: Inhibit Primary NOAMP Servers

Step	Procedure	Result
10. ☐	**Active NOAMP VIP:** **1)** Click on the **"Inhibit Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	 1  2 **NOTE:** As a result of inhibiting Replication to the server, Minor Alarm *(**Event ID 31113**): "Replication Manually Disabled"* will alarm until Replication is once again allowed. **NOTE**: It may take a minute or more for the servers to transmission to "**Inhibited**" state
11. ☐	**Active NOAMP VIP:** ***Wait*** until each server shows as inhibited before proceeding.	
12. ☐	**Active NOAMP VIP:** Verify that all servers in this Network Element now show it is **"Inhibited"** under the **"Repl Status"** column.	 Network Element | Server | Role | day | Repl Status sds_mrsvnc | sds-mrsvnc-a | NETWORK OAM&P | -21 .484 UTC | Inhibited sds_mrsvnc | sds-mrsvnc-b | NETWORK OAM&P | -21 .484 UTC | Inhibited sds_mrsvnc | qs-mrsvnc-1 | QUERY SERVER | -21 .484 UTC | Inhibited
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.4 Database Backup (All Network Elements, All Servers)

Procedure 6: Database Backup

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	**Active NOAMP VIP:** Record the names of all servers.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the names of all servers to the Servers Worksheet in Appendix C.5 (print or photocopy additional pages if necessary to accommodate your number of Network Elements).
4. ☐	**Active NOAMP VIP (SSH):** SSH to active NOAMP server	Use your SSH client to connect to the server (ex. ssh, putty): Note: You must consult your own software client's documentation to learn how to launch a connection. For example: `ssh <server address>`

5. ☐	**Active NOAMP VIP (SSH):**
	
	Login as root user.
		Login as "**root**":
		
		`login as: root`
		`Password: <enter password>`

	NOTE: ***The following steps provide a full backup of COMCOL run environment. These shall run from the command line of every server in every Network Element.***	
6. ☐	**Active NOAMP VIP (SSH):** Access each server on the Server Worksheet via SSH.	Reference the complete Servers Worksheet in Appendix C.5 for a list of servers. Select the next server and SSH there from the Active NOAMP. ***Note**: The Active NOAMP active server, which is our local host now, should be the first server for backup. No SSH session is required to reach this first server.* `# ssh <server name>`

Procedure 6: Database Backup

Step	Procedure	Result
7. ☐	**Remote Server (SSH):** Edit this file Appworks.db_parts	**Note:** If logged in as **admusr**, you must use sudo to execute this command. `# [sudo] vim /usr/TKLC/appworks/etc/exclude_parts.d/Appworks.db_parts`

8. ☐	**Remote Server (SSH):**
	
	Delete lines
		Delete all lines after the header comments; the resulting file should look similar to this example:
		
		`################################################################################`
		`#  Name:  Appworks.db_parts`
		`#  Title:  Lists the IDB database parts to be excluded from a full backup`
		`#  of all COMCOL DB parts.`
		`#  Author:  J Crosson`
		`# Description:`
		`#  This file lists the Comcol IDB parts that are to be excluded from a`
		`#  pre-upgrade full backup of all COMCOL DB parts.`
		`#`
		`#  The utility full_backup.pl reads this and any other Application supplied`
		`#  files named <some filename>.db_parts (a db_parts suffix) and located in`
		`#  the directory /usr/TKLC/appworks/etc/exclude_parts.d.`
		`#`
		`#  File pattern:`
		`#`
		`#  1. Lines with leading # are treated as comments`
		`#  2. Blank lines are ignored`
		`#  3. Only ONE part name per line is allowed`
		`#`
		`#  NOTE: Ref: TR005672 Section 3.2 for the parts listed below.`
		`#`
		`# Revision History`
		`#  22-Sep-2011  R Kress  remove AppworksSNMPlog from list, table`
		`################################################################################`
		
		`# Def parts`

9. ☐	**Remote Server (SSH):** Save file and exit	Save the file and exit the editor with the command "**:wq!**" `:wq!`

10. ☐	**Remote Server (SSH):**
	
	Run backup utility.
		Note: If logged in as **admusr**, you must use sudo to execute this command.
		
		`# [sudo] /usr/TKLC/appworks/sbin/full_backup`
		
		Output similar to the following will indicate successful completion:
		
		`Success: Full backup of COMCOL run env has completed.`
		`Archive file /var/TKLC/db/filemgmt/Backup.EXHR.tks5031311.FullRunEnv.MP.20140324_145034.UPG.tar.bz2 written in /var/TKLC/db/filemgmt.`
		
		(Errors will also report back to the command line.)

11. ☐	**Remote Server (SSH):** Mark this server's backup as complete.	Reference the **Servers Worksheet in Appendix C.5** and check off the server which just completed backup.

Procedure 6: Database Backup

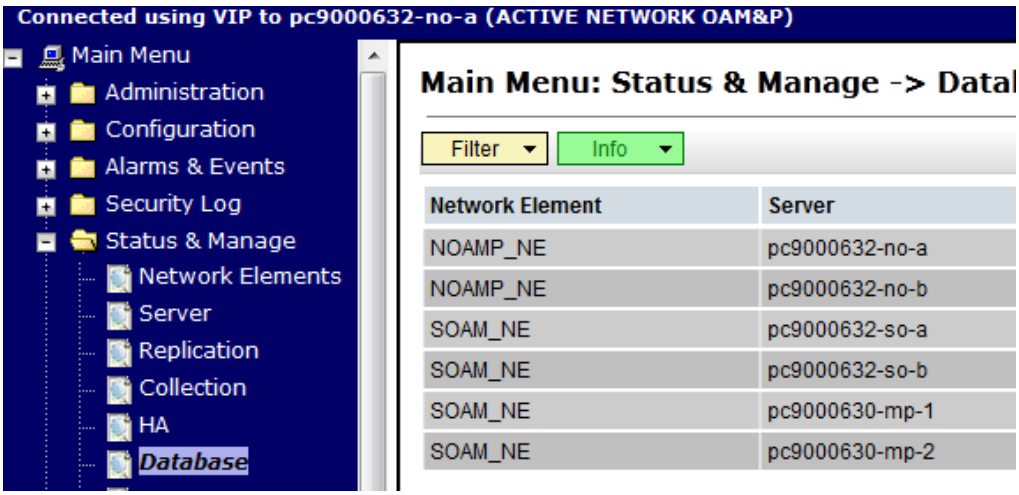
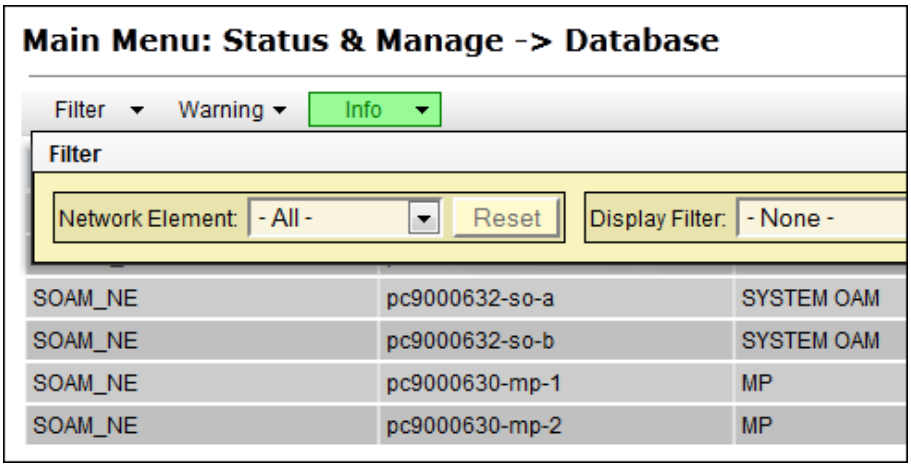
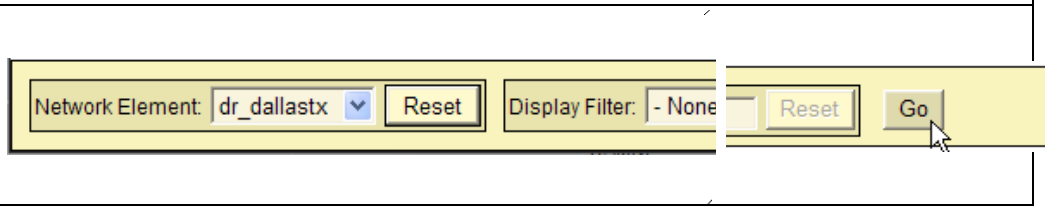
Step	Procedure	Result

12. ☐	**Remote Server (SSH):**
	
	Exit from the remote server to return to the Active NOAMP server
		Unless you are already on the Active NOAMP active server, exit to return to the Active NOAMP Server.
		
		`# exit`
		`logout`

13. ☐	**Active NOAMP VIP (SSH):** Backup all remaining servers	Repeat **Steps 6 - 12** of this Procedure for each additional server in the **Servers Worksheet Appendix C.5.**
14. ☐	**Active NOAMP VIP (SSH):** Exit from the the Active NOAMP server	`# exit` `logout`
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.5 Upgrade DR NOAMP NE

Procedure 7: Upgrade DR NOAMP NE

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the **DR NOAMP** Network Element in the space provided to the right.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **DR NOAMP** Network Element in the space provided below: **DR NOAMP Network Element:** _____
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the NE name for the **DR NOAMP**.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 7: Upgrade DR NOAMP NE

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>6.
☐</td><td>Active NOAMP VIP:

The user should be presented with the list of servers associated with DR NOAMP Network Element.</td><td>
<table>
<tr><th>Network Element</th><th>Server</th><th>Role</th><th>HA Role</th><th>Status</th></tr>
<tr><td>no_rlghnc</td><td>no-rlghnc-a</td><td>NETWORK OAM&P</td><td>Active</td><td>Normal</td></tr>
<tr><td>no_rlghnc</td><td>no-rlghnc-b</td><td>NETWORK OAM&P</td><td>Standby</td><td>Normal</td></tr>
<tr><td>no_rlghnc</td><td>qs-rlghnc</td><td>QUERY SERVER</td><td>Not Applicable</td><td>Normal</td></tr>
</table>
Identify each “Server” and its associated “Role” and “HA Role”.
</td></tr>
<tr><td>7.
☐</td><td>Active NOAMP VIP:

Record the “Server” names appropriately in the space provided to the right.</td><td>• Identify the DR NOAMP “Server” names and record them in the space provided below:

Query Server: _____
Standby NOAMP Server: _____
Active NOAMP Server: _____</td></tr>
<tr><td colspan="3">NOTE: Steps 8 - 15 of this Procedure may be executed in parallel.</td></tr>
<tr><td>8.
☐</td><td>(opt) Active NOAMP VIP:

Prepare Upgrade for the DR NOAMP - Query Server.</td><td>• Prepare Upgrade for the DR NOAMP - Query Server (identified in Step 7 of this Procedure) as specified in Appendix C.1 (Prepare Upgrade).</td></tr>
<tr><td>9.
☐</td><td>Active NOAMP VIP:

Prepare Upgrade for the DR NOAMP - Standby Server.</td><td>• Prepare Upgrade for the DR NOAMP – Standby NOAMP Server (identified in Step 7 of this Procedure) as specified in Appendix C.1 (Prepare Upgrade).</td></tr>
<tr><td>10.
☐</td><td>(opt) Active NOAMP VIP:

Initiate Upgrade for the DR NOAMP - Query Server.</td><td>• Initiate Upgrade for the DR NOAMP - Query Server (identified in Step 7 of this Procedure) as specified in Appendix C.2 (Initiate Upgrade).</td></tr>
<tr><td>11.
☐</td><td>Active NOAMP VIP:

Initiate Upgrade for the DR NOAMP - Standby NOAMP Server.</td><td>• Initiate Upgrade for the DR NOAMP – Standby NOAMP Server (identified in Step 7 of this Procedure) as specified in Appendix C.2 (Initiate Upgrade).</td></tr>
<tr><td>12.
☐</td><td>(opt) Active NOAMP VIP:

Monitor Upgrade for the DR NOAMP - Query Server.</td><td>• Monitor Upgrade for the DR NOAMP - Query Server (identified in Step 7 of this Procedure) as specified in Appendix C.3 (Monitor Upgrade).</td></tr>
</table>

Procedure 7: Upgrade DR NOAMP NE

Step	Procedure	Result
13. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **DR NOAMP - Standby NOAMP Server**.	• Monitor Upgrade for the **DR NOAMP – Standby NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.3** ***(Monitor Upgrade)***.
14. ☐	**(opt) Active NOAMP VIP:** Complete Upgrade for the **DR NOAMP - Query Server**.	• Complete Upgrade for the **DR NOAMP** - **Query Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.4** *(Complete Upgrade).* **NOTE**: You can ignore this error message "[Error Code 212] - Failed to release server from Forced Standby."
15. ☐	**Active NOAMP VIP:** Complete Upgrade for the **DR NOAMP - Standby NOAMP Server**.	• Complete Upgrade for the **DR NOAMP – Standby NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.4** ***(Complete Upgrade).*** **NOTE**: You can ignore this error message "[Error Code 212] - Failed to release server from Forced Standby."

!! STOP !!

If upgrade is being performed from HLRR 3.0.0-30.11.0 release:

1. Login to Active NOAMP server as root user via SSH connection

```
ssh <Primary NOAMP VIP IP address>
```

2. Remove from "forced standby" the **DR NOAMP – Standby NOAMP Server** *(identified in **Step** 7 of this Procedure by its <hostname>)*

```
# iset -finhibitFlag='S' NodeInfo where "hostName='<hostname>'"
```

!! WARNING !! STEPS 8 - 15 MUST BE COMPLETED BEFORE CONTINUING ON TO STEP 16.

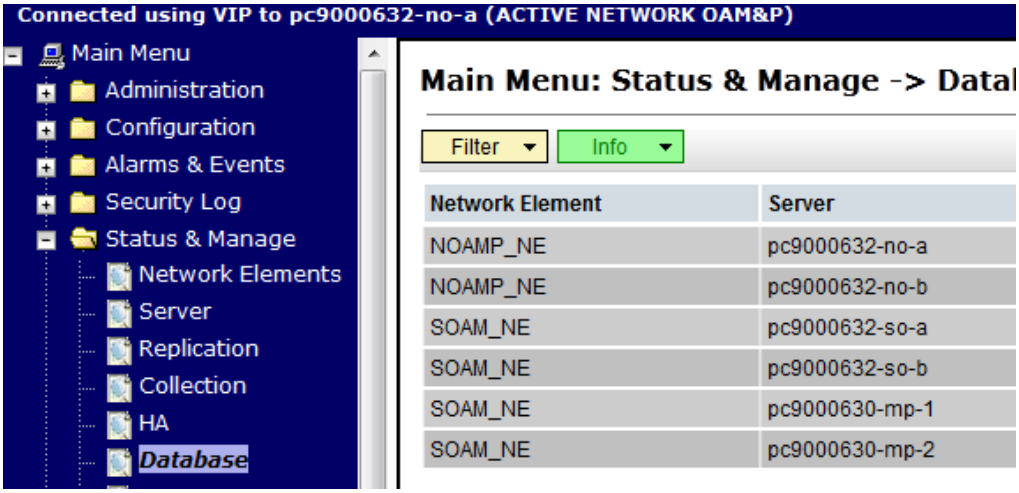
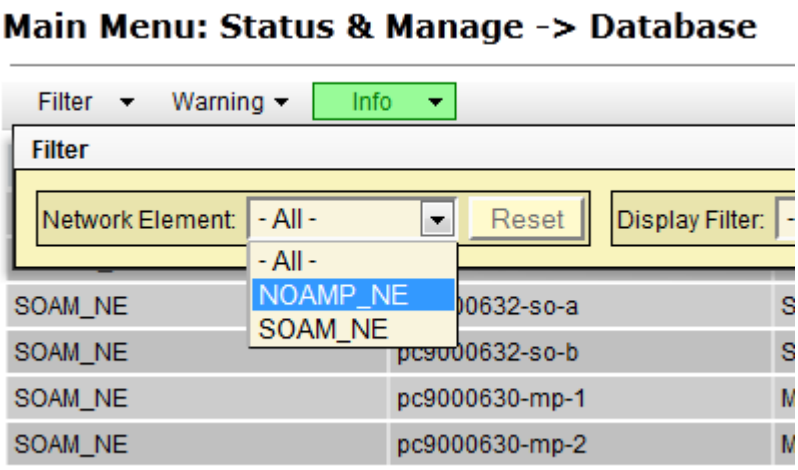
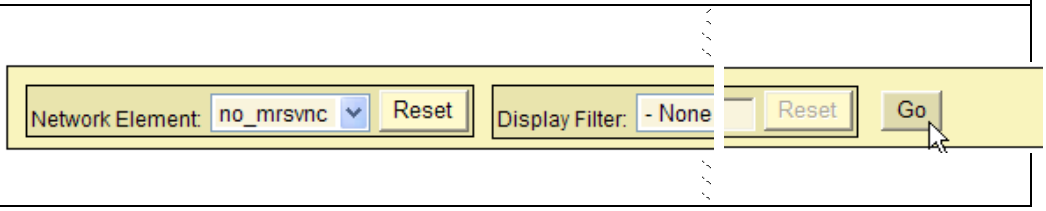
16. ☐	**Active NOAMP VIP:** Prepare Upgrade for the **DR NOAMP - Active NOAMP Server**.	• Prepare Upgrade for the **DR NOAMP** - **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.1** ***(Prepare Upgrade).***
17. ☐	**Active NOAMP VIP:** Initiate Upgrade for the **DR NOAMP - Active NOAMP Server**.	• Initiate Upgrade for the **DR NOAMP** - **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.2** ***(Initiate Upgrade).***

Procedure 7: Upgrade DR NOAMP NE

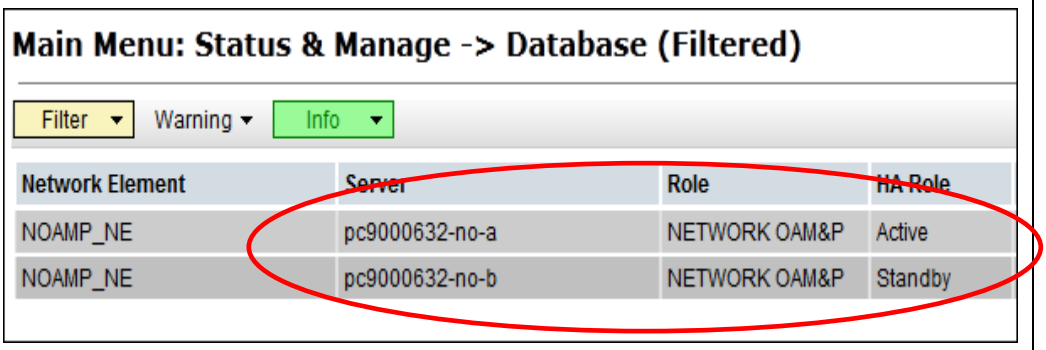
Step	Procedure	Result
18. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **DR NOAMP - Active NOAMP Server**.	• Monitor Upgrade for the **DR NOAMP** - **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.3 *(Monitor Upgrade)***.
19. ☐	**Active NOAMP VIP:** Complete Upgrade for the **DR NOAMP - Active NOAMP Server**.	• Complete Upgrade for the **DR NOAMP** - **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.4 *(Complete Upgrade).***
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.6 Upgrade Primary NOAMP NE

Procedure 8: Upgrade Primary NOAMP NE

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the **Primary NOAMP** GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the **Primary NOAMP** Network Element in the space provided to the right.	• Using the information provided **in Section 3.1.2** (*Logins, Passwords and Site Information*) record the name of the **PRIMARY NOAMP** Network Element in the space provided below: **Primary NOAMP Network Element:** _____
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the Network Element name for the **Primary NOAMP**.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 8: Upgrade Primary NOAMP NE

Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **Primary NOAMP** Network Element. Identify each "**Server**" and its associated **"Role"** and **"HA Role"**.	
7. ☐	**Active NOAMP VIP:** Record the **"Server"** names appropriately in the space provided to the right.	• Identify the **PRIMARY NOAMP "Server"** names and record them in the space provided below: **Query Server:** _____ **Standby NOAMP:** _____ **Active NOAMP:** _____

NOTE: ***Steps 8 - 15 of this Procedure may be executed in parallel.***

8. ☐	**(opt) Active NOAMP VIP:** Prepare Upgrade for the **Primary NOAMP - Query Server**.	• Prepare Upgrade for the **PRIMARY NOAMP** - **Query Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.1** *(Prepare Upgrade)***.**
9. ☐	**Active NOAMP VIP:** Prepare Upgrade for the **Primary NOAMP - Standby NOAMP Server**.	• Prepare Upgrade for the **PRIMARY NOAMP** - **Standby NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.1** *(Prepare Upgrade).*
10. ☐	**(opt) Active NOAMP VIP:** Initiate Upgrade for the **Primary NOAMP - Query Server**.	• Initiate Upgrade for the **PRIMARY NOAMP** - **Query Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.2** *(Initiate Upgrade).*
11. ☐	**Active NOAMP VIP:** Initiate Upgrade for the **Primary NOAMP - Standby NOAMP Server**.	• Initiate Upgrade for the **PRIMARY NOAMP** - **Standby NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.2** *(Initiate Upgrade).*

Procedure 8: Upgrade Primary NOAMP NE

Step	Procedure	Result
12. ☐	**(opt) Active NOAMP VIP:** Monitor Upgrade for the **Primary NOAMP - Query Server**.	• Monitor Upgrade for the **PRIMARY NOAMP** - **Query Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.3** *(Monitor Upgrade).* **NOTE:** *If upgrade is performed in parallel with the Standby NOAMP Server (see previous STEP), the Upgrade State for the Query server may not show "Success" until after the Standby NOAMP Server reaches the same state.*
13. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **Primary NOAMP - Standby Server**.	• Monitor Upgrade for the **PRIMARY NOAMP** – **Standby NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.3 *(Monitor Upgrade).***
14. ☐	**(opt) Active NOAMP VIP:** Complete Upgrade for the **Primary NOAMP - Query Server**.	• Complete Upgrade for the **PRIMARY NOAMP** - **Query Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.4** *(Complete Upgrade).*
15. ☐	**Active NOAMP VIP:** Complete Upgrade for the **Primary NOAMP - Standby NOAMP Server**.	• Complete Upgrade for the **PRIMARY NOAMP** – **Standby NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.4 *(Complete Upgrade).***

!! STOP !!

If a major upgrade is being performed from HLRR 3.0.0-30.11.0 release, then:

1. Login to Primary NOAMP server as root user via SSH connection

```
ssh <Primary NOAMP VIP IP address>
```

2. Remove the **PRIMARY NOAMP** – **Standby NOAMP Server** from "Forced Standby" *(identifiedby <hostname> in **Step 7** of this Procedure)*

```
# iset -finhibitFlag='S' NodeInfo where "hostName='<hostname>'"
```

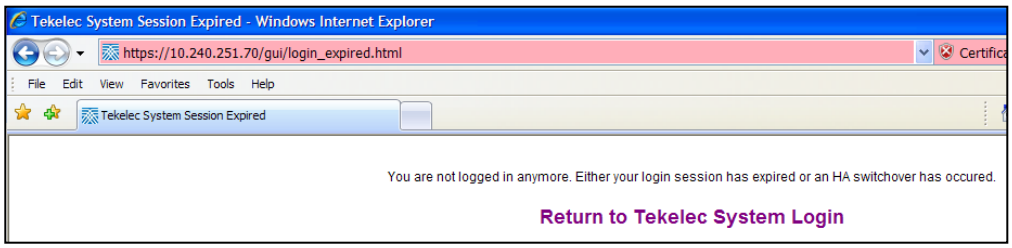
3. Move the **PRIMARY NOAMP** – **Active NOAMP Server** to "Forced Standby" *(it's hostname identified in **Step 7** of this Procedure)*

```
# iset -finhibitFlag='SH' NodeInfo where "hostName='<hostname>'"
```

NOTE: At this time, the user's SSH session will automatically terminate and the user will be logged out of the NOAMP VIP GUI.

!! WARNING !! Steps 8 - 15 MUST BE COMPLETED BEFORE CONTINUING ON TO STEP 16.

Procedure 8: Upgrade Primary NOAMP NE

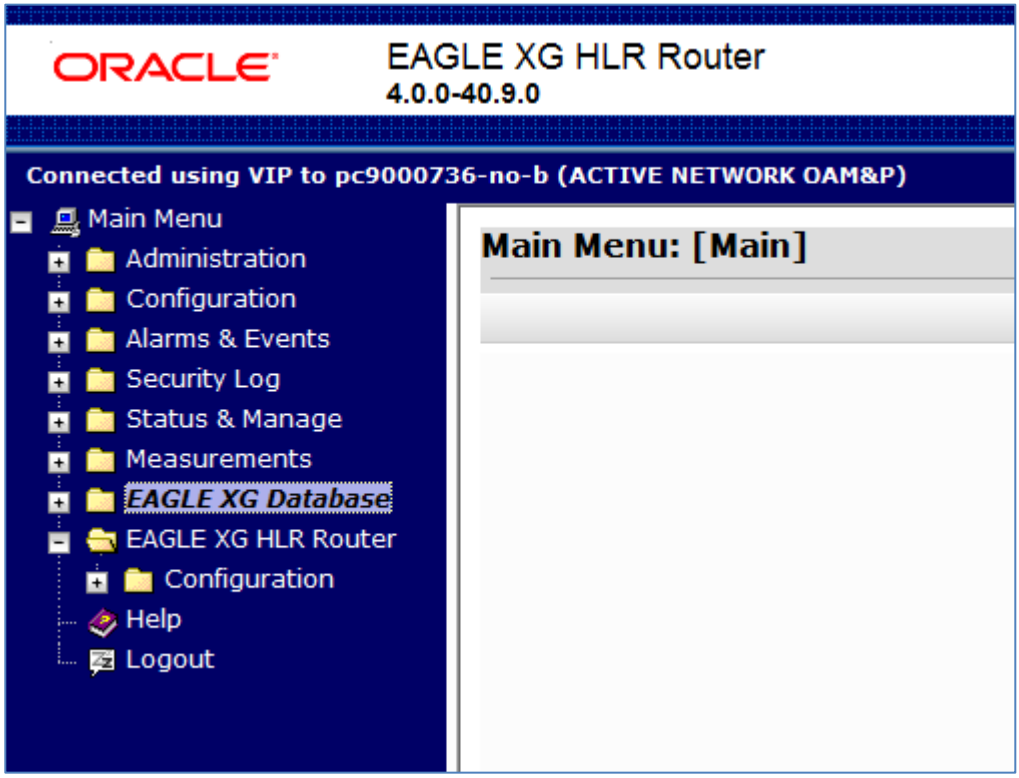
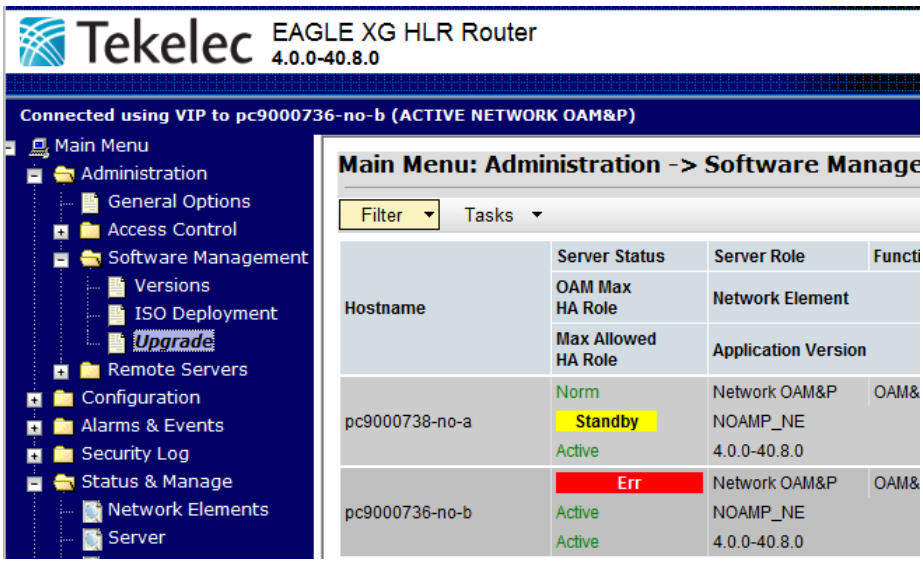
Step	Procedure	Result
16. ☐	**Active NOAMP VIP:** Prepare Upgrade for the **Primary NOAMP - Active NOAMP Server**.	Prepare Upgrade for the **PRIMARY NOAMP** - **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.1** *(Prepare Upgrade).*
!! IMPORTANT !!		**NOTE: THIS APPLIES TO INCREMENTAL 4.0 UPGRADE ONLY** **ONCE THE USER COMPLETES STEP 5 IN APPENDIX C.1, THEN THE USER SESSION WILL AUTOMATICALLY TERMINATE AT THIS TIME AND THE USER WILL BE LOGGED OUT OF THE GUI.**
17. ☐	The **"Security Alert"** dialogue box shown to the right may or may not appear at this time depending on **"Internet Explorer"** settings. If experienced, click the **"Yes"** dialogue button to continue. ***Otherwise*:** Select **"Logout"** at the top right of the screen.	
18. ☐	**Active NOAM VIP:** The user's session will end and the screen shown to the right will appear as the **Standby NOAMP&P Server** goes through **HA switchover** and becomes the **"Active"** server.	

NOTE: Wait at least 30 seconds for the **PRIMARY NOAMP – Standby NOAMP Server** to transition to the **"Active" NOAMP Server** and take control of the **VIP** address

Procedure 8: Upgrade Primary NOAMP NE

Step	Procedure	Result
19. ☐	**Active NOAM VIP:** Click the **Return to Tekelec System Login** link located on the top center of the right panel.	You are not logged in anymore. Either your login session has expired or an HA switchover has occured. **Return to Tekelec System Login**
20. ☐	**Active NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using the default user and password.	ORACLE **Oracle System Login** Fri Dec 13 15:44:38 2013 EST **Log In** Enter your username and password to log in **Session timed out at 3:44:37 pm.** Username: Password: Change password Log In Welcome to the Oracle System Login. Unauthorized access is prohibited. This Oracle system requires the use of Microsoft Internet Explorer 7.0, 8.0, or 9.0 with support for JavaScript and cookies. *Oracle and logo are registered service marks of Oracle Corporation.* *Copyright © 2013 Oracle Corporation All Rights Reserved.*

Procedure 8: Upgrade Primary NOAMP NE

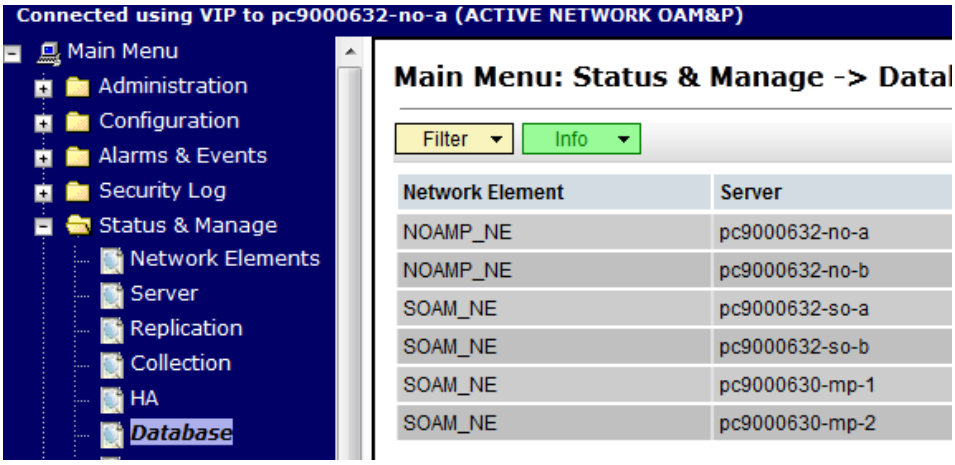
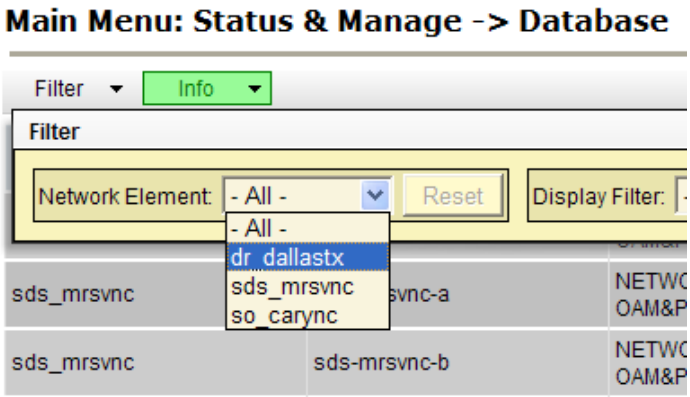
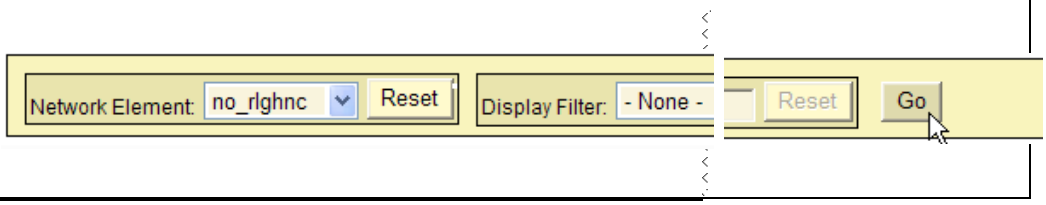
Step	Procedure	Result
21. ☐	**Active NOAM VIP:** The user should be presented the HLR Main Menu as shown on the right. Verify that the message shown across the top of the right panel indicates that the browser is using the **"VIP"** connected to the **Active Network OAM&P** server.	
22. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** (HLRR 4.0) …as shown on the right.	

Procedure 8: Upgrade Primary NOAMP NE

Step	Procedure	Result
23. ☐	**Active NOAMP VIP:** **1)** Using the vertical scroll bar in the right panel, scroll to the row containing the **Primary NOAMP - Active NOAMP Server** **2)** Verify that the **Upgrade State** shows **"Ready"**.	pc9000732-so-b | Warn / OOS / Standby | System OAM | OAM | Ready SOAM_NE 3.1.0-3.1.0_31.13.0
24. ☐	**Active NOAMP VIP:** Initiate Upgrade for the **Primary NOAMP - Active Server**.	• Initiate Upgrade for the **PRIMARY NOAMP** – **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.2 *(Initiate Upgrade).***
25. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **Primary NOAMP - Active NOAMP Server**.	• Monitor Upgrade for the **PRIMARY NOAMP** – **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.3** *(Monitor Upgrade).*
26. ☐	**Active NOAMP VIP:** Complete Upgrade for the **Primary NOAMP - Active NOAMP Server**.	• Complete Upgrade for the **PRIMARY NOAMP** - **Active NOAMP Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.4** *(Complete Upgrade).*
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.7 Allow DR NOAMP Servers

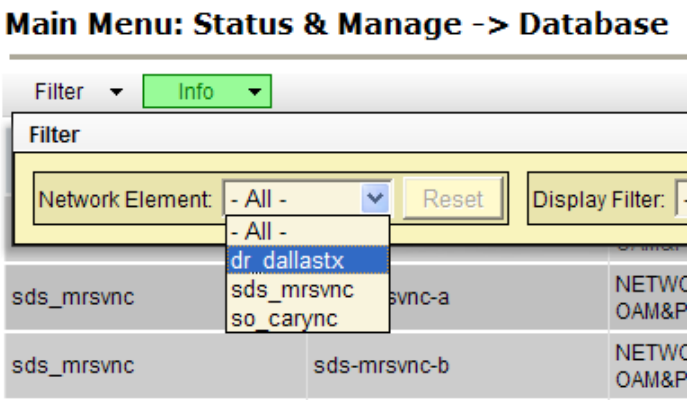
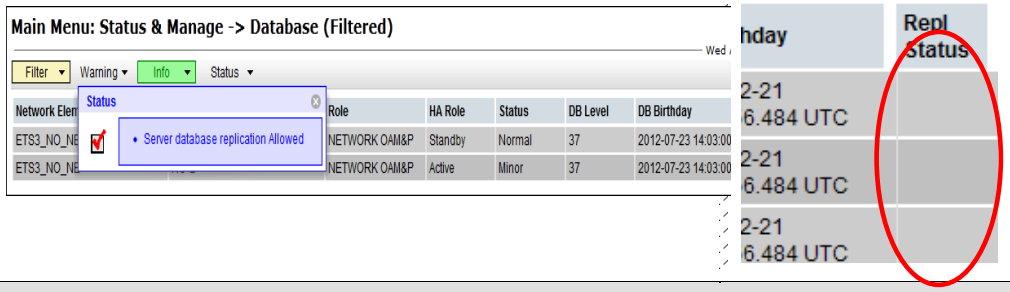
Procedure 9: Allow DR NOAMP Servers

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the Primary **DR NOAMP** NE in the space provided to the right.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **DR NOAMP** NE in the space provided below: **DR NOAMP Network Element:** _____
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the NE name for the **DR NOAMP**.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 9: Allow DR NOAMP Servers

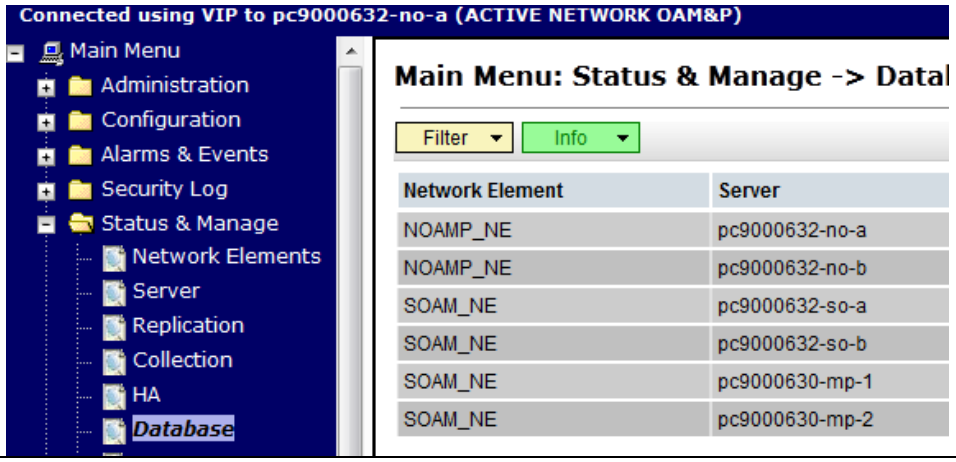
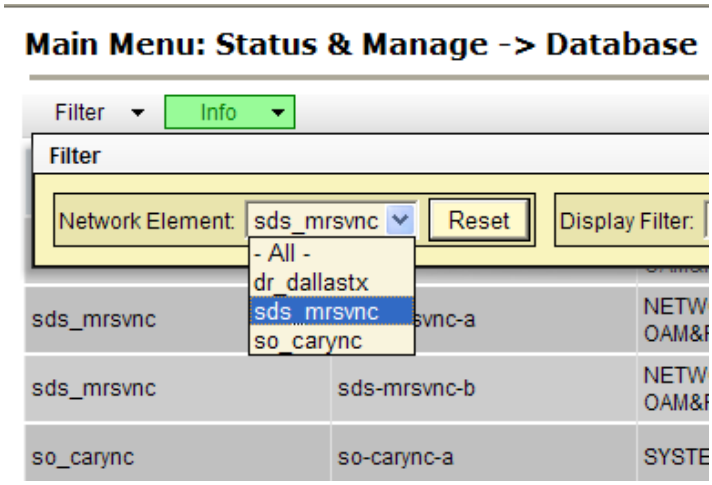
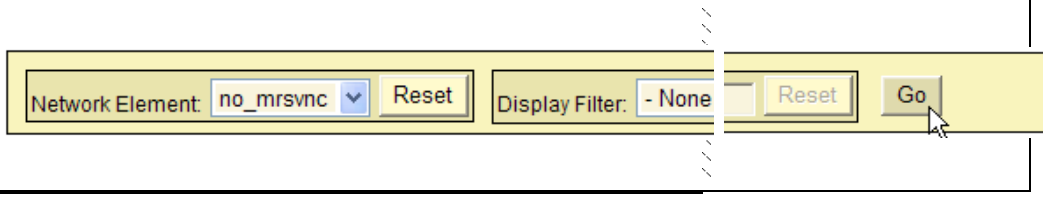
Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **DR NOAMP** NE.	Main Menu: Status & Manage -> Database (Filtered) Wed Aug 01 10:29:22 2012 EDT Filter Warning Info Network Element / Server / Role / HA Role / Status / DB Level / DB Birthday / Repl Status ETS3_NO_NE / NO-A / NETWORK OAM&P / Standby / Minor / Unknown / 2012-07-23 14:03:00.179 UTC / *Inhibited* ETS3_NO_NE / NO-B / NETWORK OAM&P / Active / Minor / 37 / 2012-07-23 14:03:00.179 UTC / *Inhibited*
7. ☐	**(opt) Active NOAMP VIP:** Using the cursor, select the server which displays **"QUERY SERVER"** under the **"Role"** column.	Network Element / Server / Role / HA Role / Status / DB Level / DB Birthday / Repl Status NO_RLGHNC / sds-rlghnc-a / NETWORK OAM&P / Standby / Minor / Unknown / 2012-01-25 21:11:32.418 UTC / *Inhibited* NO_RLGHNC / sds-rlghnc-b / NETWORK OAM&P / Active / Minor / Unknown / 2012-01-25 21:11:32.418 UTC / *Inhibited* NO_RLGHNC / sds-rlghnc-qs / QUERY SERVER / Not Applicable / Minor / Unknown / 2012-01-25 21:11:32.418 UTC / *Inhibited*
8. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Standby"** under the **"Role"** column.	Network Element / Server / Role / HA Role / Status / DB Level / DB Birthday / Repl Status sds_mrsvnc / sds-mrsvnc-a / NETWORK OAM&P / Active / Minor / 3161241 / 2012-02-21 18:20:56.484 UTC / *Inhibited* sds_mrsvnc / sds-mrsvnc-b / NETWORK OAM&P / Standby / Minor / Unknown / 2012-02-21 18:20:56.484 UTC / *Inhibited* sds_mrsvnc / qs-mrsvnc-1 / QUERY SERVER / Not Applicable / Minor / Unknown / 2012-02-21 18:20:56.484 UTC / *Inhibited*
9. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Active"** under the **"Role"** column.	Network Element / Server / Role / HA Role / Status / DB Level / DB Birthday / Repl Status sds_mrsvnc / sds-mrsvnc-a / NETWORK OAM&P / Active / Minor / 3161241 / 2012-02-21 18:20:56.484 UTC / *Inhibited* sds_mrsvnc / sds-mrsvnc-b / NETWORK OAM&P / Standby / Minor / Unknown / 2012-02-21 18:20:56.484 UTC / *Inhibited* sds_mrsvnc / qs-mrsvnc-1 / QUERY SERVER / Not Applicable / Minor / Unknown / 2012-02-21 18:20:56.484 UTC / *Inhibited*
10. ☐	**Active NOAMP VIP:** **1)** Click on the **"Allow Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button. **NOTE:** *As a result of Allowing Replication to the server, Minor Alarm (**Event ID 31113**): "Replication Manually Disabled" should clear momentarily.*	port... Allow Replication Back 1 Message from webpage Allow replication to serverlist sds-mrsvnc-a,sds-mrsvnc-b,qs-mrsvnc-1. Are you sure? OK Cancel 2 **NOTE:** It may take a minute or more for the servers to transition from "**Inhibited**" state to "**Allowed**" state

Procedure 9: Allow DR NOAMP Servers

Step	Procedure	Result
11. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the NE name for the **DR NOAMP**.	
12. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	
13. ☐	**Active NOAMP VIP:** Verify that every server in this Network Element is now **blank** under the **"Repl Status"** column.	
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.8 Allow Primary NOAMP Servers

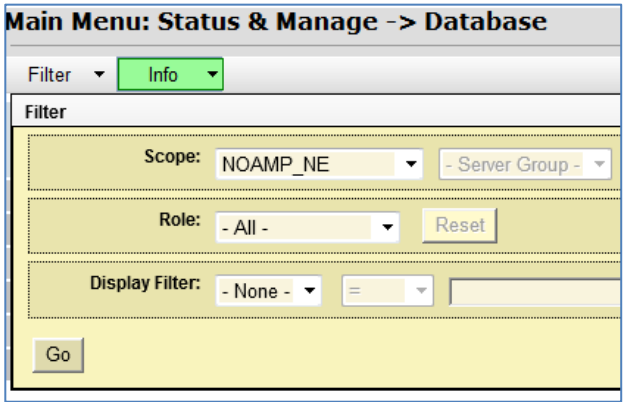
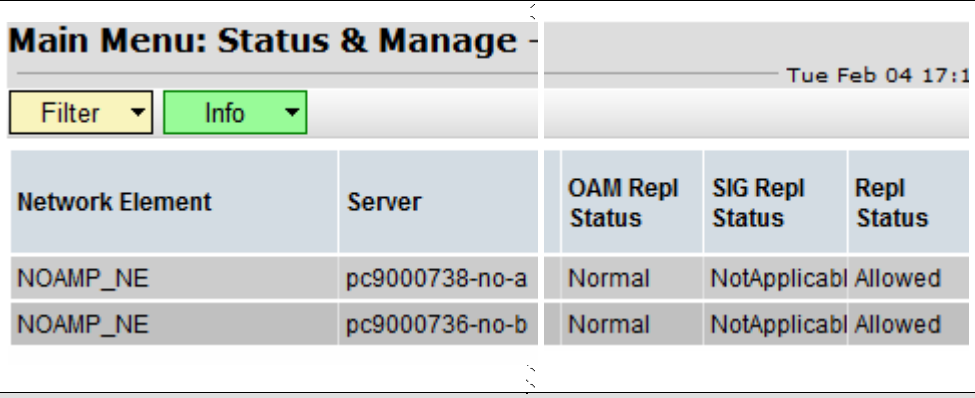
Procedure 10: Allow Primary NOAMP Servers

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the **Primary NOAMP** NE in the space provided to the right.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **Primary NOAMP** NE in the space provided below: **Primary NOAMP NE:** _____
4. ☐	**Active NOAMP VIP:** Click "**Filter**" pull-down. From the **"Network Element"** filter pull-down, select the NE name for the **Primary NOAMP**.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 10: Allow Primary NOAMP Servers

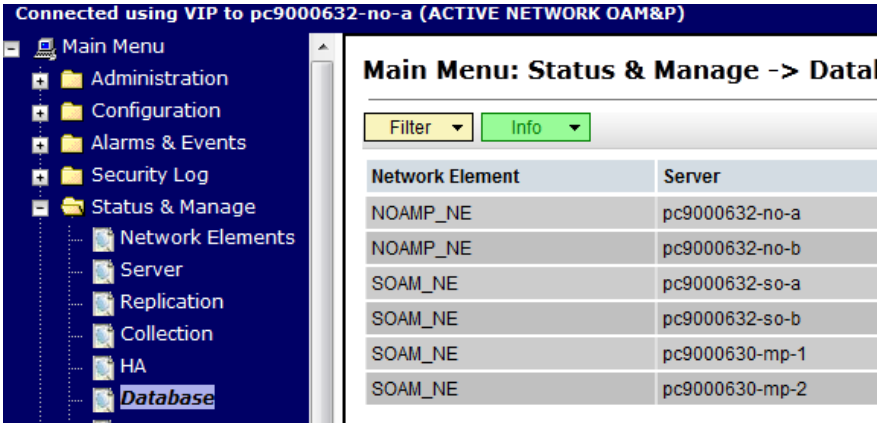
Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **Primary NOAMP** NE.	Network Element: sds_mrsvnc; Server: sds-mrsvnc-a; Role: NETWORK OAM&P; HA Role: Active; Status: Minor; DB Level: 61435; DB Birthday: 2012-01-12 14:56:51.461 UTC; Repl Status: *Inhibited* sds_mrsvnc; sds-mrsvnc-b; NETWORK OAM&P; Standby; Minor; Unknown; 2012-01-12 14:56:51.461 UTC; *Inhibited* sds_mrsvnc; qs-mrsvnc-1; QUERY SERVER; Not Applicable; Minor; Unknown; 2012-01-12 14:56:51.461 UTC; *Inhibited*
7. ☐	**(opt) Active NOAMP VIP:** Using the cursor, select the server which displays **"QUERY SERVER"** under the **"Role"** column.	Network Element; Server; Role; HA Role; Status; DB Level; DB Birthday; Repl Status NO_RLGHNC; sds-rlghnc-a; NETWORK OAM&P; Standby; Minor; Unknown; 2012-01-25 21:11:32.418 UTC; *Inhibited* NO_RLGHNC; sds-rlghnc-b; NETWORK OAM&P; Active; Minor; Unknown; 2012-01-25 21:11:32.418 UTC; *Inhibited* NO_RLGHNC; sds-rlghnc-qs; QUERY SERVER; Not Applicable; Minor; Unknown; 2012-01-25 21:11:32.418 UTC; *Inhibited*
8. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Standby"** under the **"Role"** column.	Network Element; Server; Role; HA Role; Status; DB Level; DB Birthday; Repl Status sds_mrsvnc; sds-mrsvnc-a; NETWORK OAM&P; Active; Minor; 3161241; 2012-02-21 18:20:56.484 UTC; *Inhibited* sds_mrsvnc; sds-mrsvnc-b; NETWORK OAM&P; Standby; Minor; Unknown; 2012-02-21 18:20:56.484 UTC; *Inhibited* sds_mrsvnc; qs-mrsvnc-1; QUERY SERVER; Not Applicable; Minor; Unknown; 2012-02-21 18:20:56.484 UTC; *Inhibited*
9. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, use the cursor to select the server which displays **"Active"** under the **"Role"** column.	Network Element; Server; Role; HA Role; Status; DB Level; DB Birthday; Repl Status sds_mrsvnc; sds-mrsvnc-a; NETWORK OAM&P; Active; Minor; 3161241; 2012-02-21 18:20:56.484 UTC; *Inhibited* sds_mrsvnc; sds-mrsvnc-b; NETWORK OAM&P; Standby; Minor; Unknown; 2012-02-21 18:20:56.484 UTC; *Inhibited* sds_mrsvnc; qs-mrsvnc-1; QUERY SERVER; Not Applicable; Minor; Unknown; 2012-02-21 18:20:56.484 UTC; *Inhibited*
10. ☐	**Active NOAMP VIP:** **1)** Click on the **"Allow Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button. **NOTE:** *As a result of Allowing Replication to the server, Minor Alarm (**Event ID 31113**): "Replication Manually Disabled" should clear momentarily.*	port... Allow Replication Back 1 Message from webpage Allow replication to serverlist sds-mrsvnc-a,sds-mrsvnc-b,qs-mrsvnc-1. Are you sure? OK Cancel 2 **NOTE:** It may take a minute or more for the servers to transition from "**Inhibited**" state to "**Allowed**" state

Procedure 10: Allow Primary NOAMP Servers

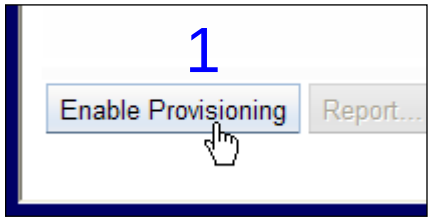
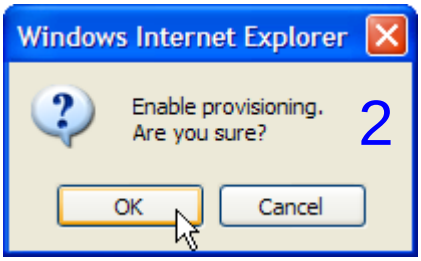
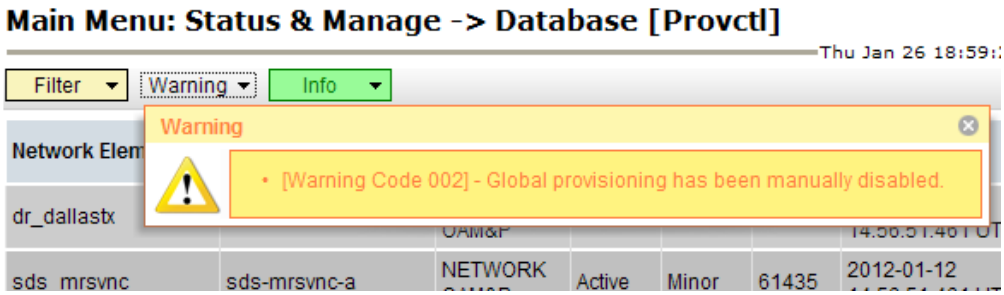
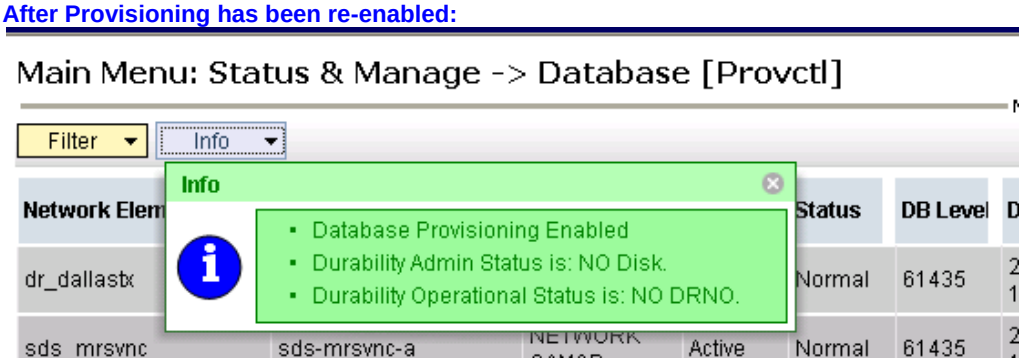
Step	Procedure	Result
11. ☐	**Active NOAMP VIP:** 1) From the **"Network Element"** filter pull-down, select the NE name for the **Primary NOAMP**. 2) Click on the **"GO"** dialogue button located on the right end of the filter bar.	
12. ☐	**Active NOAMP VIP:** Verify that every server in this Network Element shows **Allowed** under the **"Repl Status"** column.	
THIS PROCEDURE HAS BEEN COMPLETED		

6.2.9 Enable Global Provisioning

Procedure 11: Enable Global Provisioning

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	

Procedure 11: Enable Global Provisioning

Step	Procedure	Result
3. ☐	**Active NOAMP VIP:** **1)** Click on the **"Enable Provisioning"** dialogue button in the bottom left corner of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	 
4. ☐	**Active NOAMP VIP:** After re-enabling Provisioning, the screen will refresh and the previous "Warning Code" message shown in the banner area (**Global Provisioning has been manually disabled**) will be removed. **NOTE:** *As a result of enabling Global Provisioning, Minor Alarm (**Event ID 10008**): "Provisioning Manually Disabled" will be cleared.*	**Before Provisioning has been re-enabled:**  **After Provisioning has been re-enabled:** 
THIS PROCEDURE HAS BEEN COMPLETED		

6.3 Perform Health Check (Post Primary NOAMP / DR NOAMP Upgrade)

☐ This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers.

- Execute HLR Router Health Check procedures as specified in **Appendix B.**

7. SOAM UPGRADE EXECUTION

Call the **Oracle's Tekelec Customer Care Center** at **1-888-FOR-TKLC** (1-888-367-8552); or 1-919-460-2150 (international) and inform them of your plans to upgrade this system prior to executing this upgrade.

Before upgrade, users must perform the system Health Check **Appendix B.** This check ensures that the system to be upgraded is in an upgrade-ready state. Performing the system health check determines which alarms are present in the system and if upgrade can proceed with alarms.

****** WARNING *******

If there are servers in the system, which are not in Normal state, these servers should be brought to the Normal or the Application Disabled state before the upgrade process is started. The sequence of upgrade is such that servers providing support services to other servers will be upgraded first.

****** WARNING *******

Please read the following notes on this procedure:

Procedure completion times shown here are estimates. Times may vary due to differences in database size, user experience, and user preparation.

Where possible, command response outputs are shown as accurately as possible. EXCEPTIONS are as follows:

- Session banner information such as time and date.
- System-specific configuration information such as hardware locations, IP addresses and hostnames.
- ANY information marked with "XXXX" or "YYYY." Where appropriate, instructions are provided to determine what output should be expected in place of "XXXX or YYYY"
- Aesthetic differences unrelated to functionality such as browser attributes: window size, colors, toolbars and button layouts.

After completing each step and at each point where data is recorded from the screen, the technician performing the upgrade must mark the provided Check Box.

For procedures which are executed multiple times, a mark can be made below the Check Box (in the same column) for each additional iteration that is executed.

Retention of Captured data is required for as a future support reference this procedure is executed by someone other than Oracle's Tekelec Technical Services.

NOTE: For large systems containing multiple Signaling Network Elements, it may not be feasible to apply the software upgrade to every Network Element within a single maintenance window. However, whenever possible, Primary and DR NOAMP Network Elements should be upgraded within the same maintenance window. If multiple maintenance windows are required, replication may be allowed and provisioning re-enabled between scheduled maintenance windows.

7.1 **Perform Health Check** (Pre Upgrade)

☐ This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers. This may be executed multiple times but must also be executed at least once within the time frame of 24-36 hours prior to the start of a maintenance window.

- Execute HLR Router Health Check procedures as specified in **Appendix B.**

7.2 SOAM Upgrade

The following procedure details how to upgrade HLR Router SOAM sites.

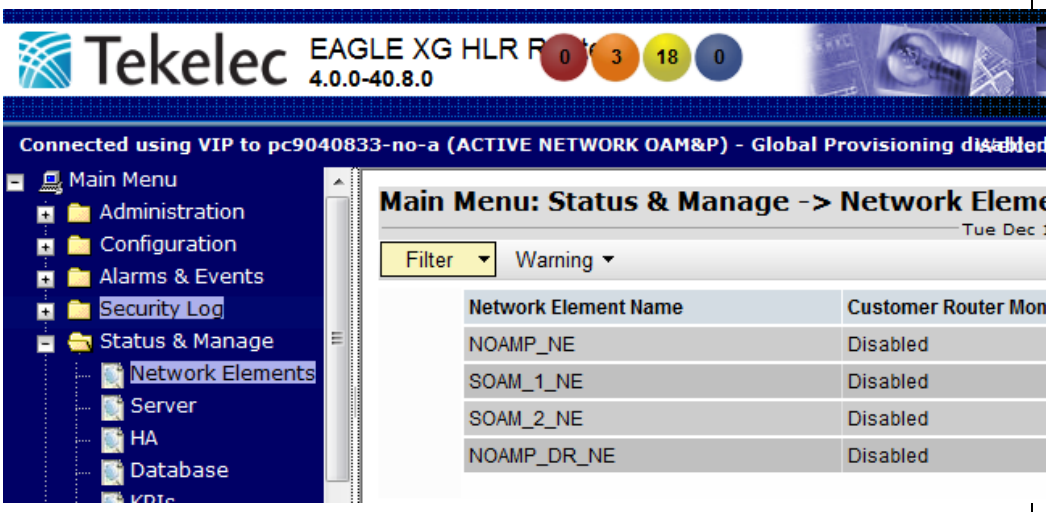
NOTE:	When upgrading HLRR system containing multiple SOAM sites, an entire SOAM site should be upgraded as one before starting up the upgrade on another SOAM site. While one SOAM site is being upgraded, all traffic should be diverted to another SOAM site and the MPs cannot be brought into service until all Section 7.2 procedures have been completed for all servers in this SOAM site.

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

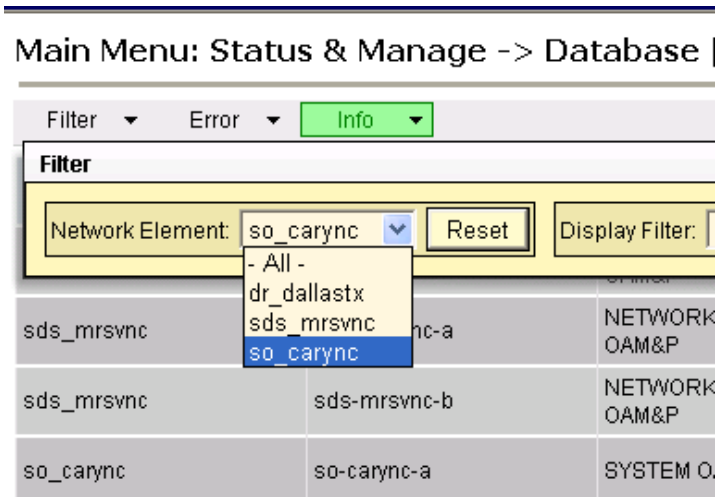
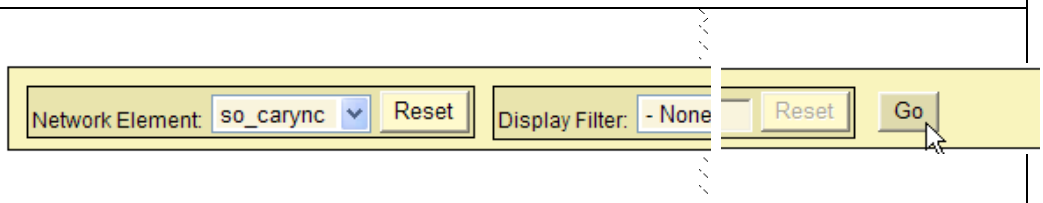
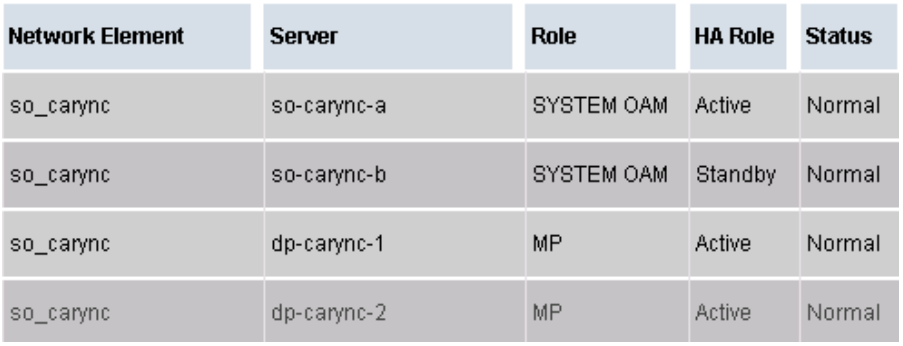
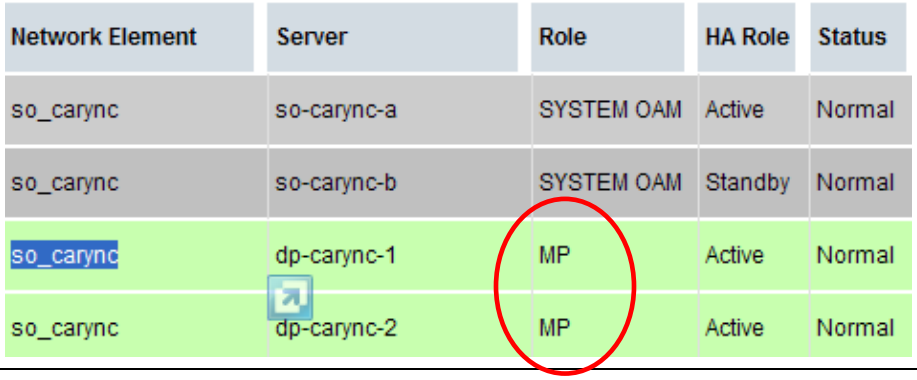
SHOULD ANY STEP IN THIS PROCEDURE FAIL, STOP AND CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES FOR ASSISTANCE BEFORE CONTINUING!

7.2.1 Inhibit SOAM Servers

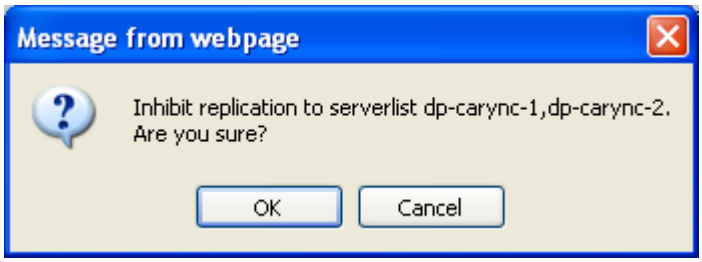
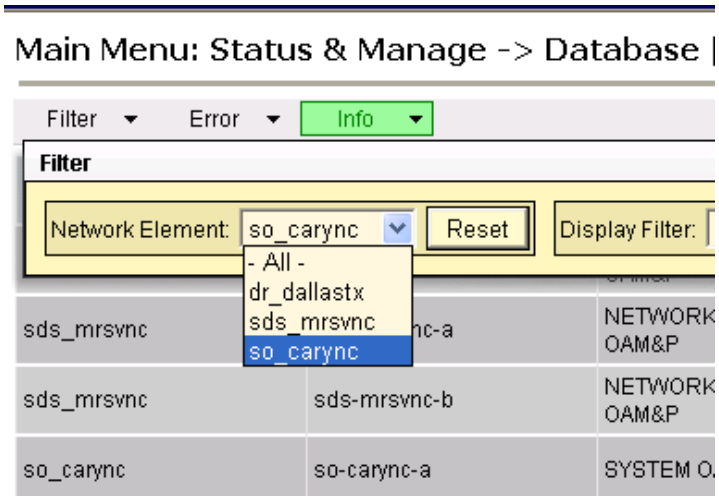
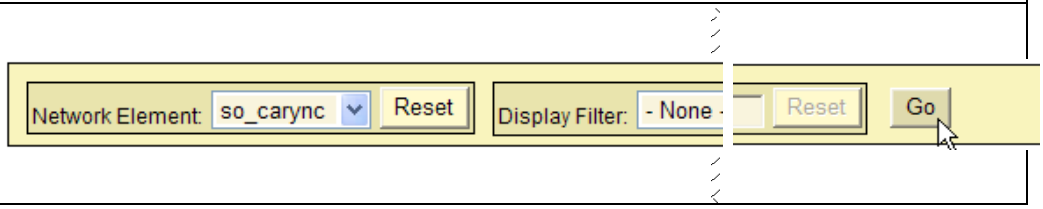
Procedure 12: Inhibit SOAM Servers

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Network Elements*** …as shown on the right.	
3. ☐	Record the name of the **SOAM** NE to be upgraded.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **SOAM** NE to be upgraded in the space provided below: **SOAM Network Element:** _____

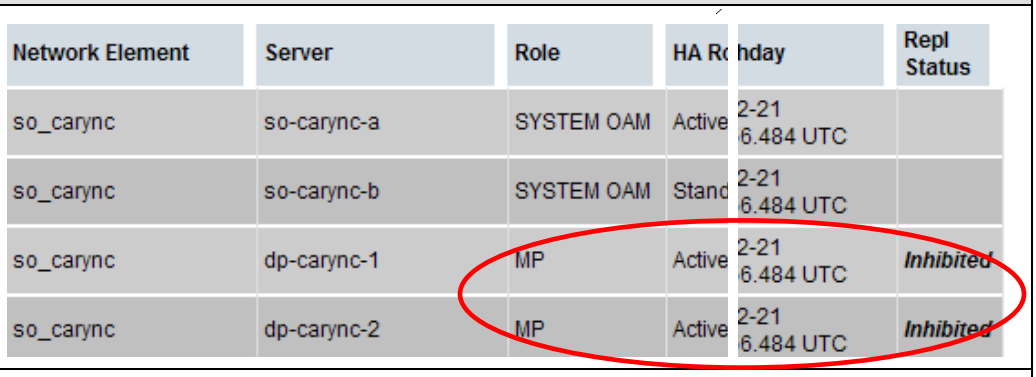
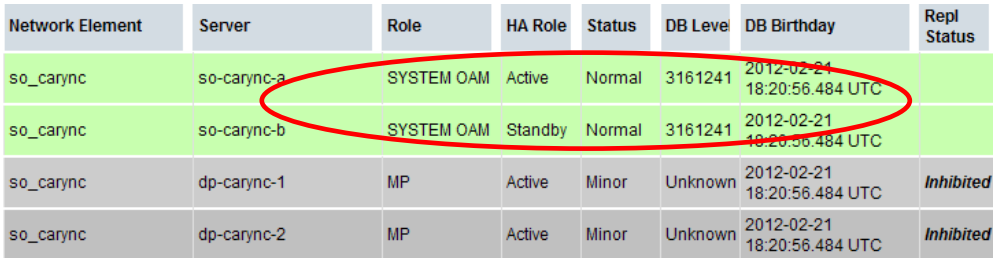
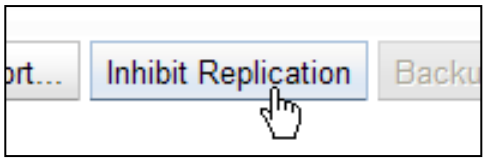
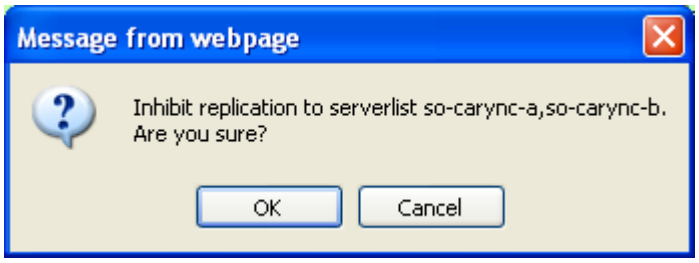
Procedure 12: Inhibit SOAM Servers

Step	Procedure	Result
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **SOAM** NE.	
7. ☐	**Active NOAMP VIP:** Using the **Ctrl** key to select multiple rows, select each server which displays **"MP"** under the **"Role"** column.	

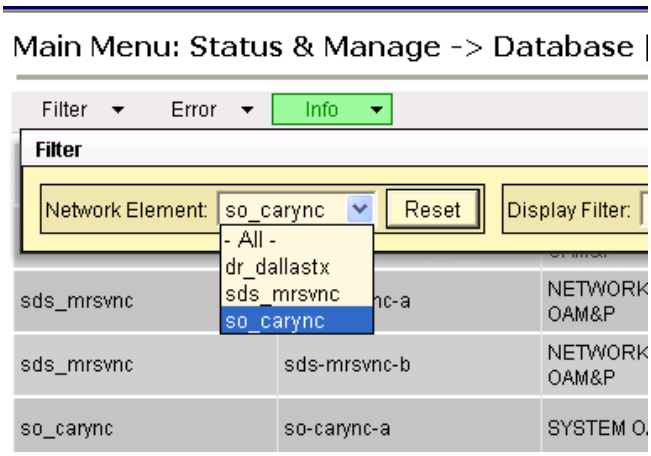
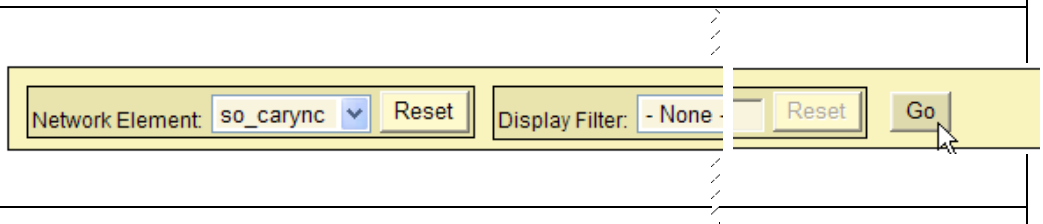
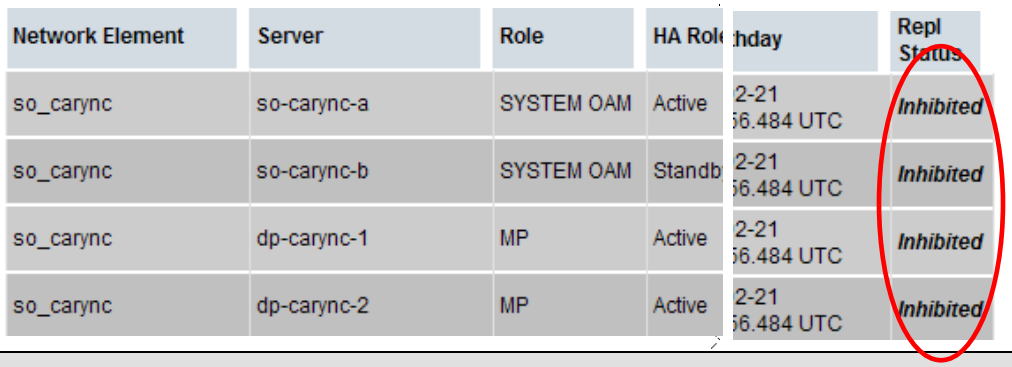
Procedure 12: Inhibit SOAM Servers

Step	Procedure	Result
8. ☐	**Active NOAMP VIP:** **1)** Click on the **"Inhibit Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	1  2 **NOTE:** *As a result of inhibiting Replication to the server, Minor Alarm (**Event ID 31113**): "Replication Manually Disabled" will alarm until Replication is once again allowed.*
9. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	
10. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 12: Inhibit SOAM Servers

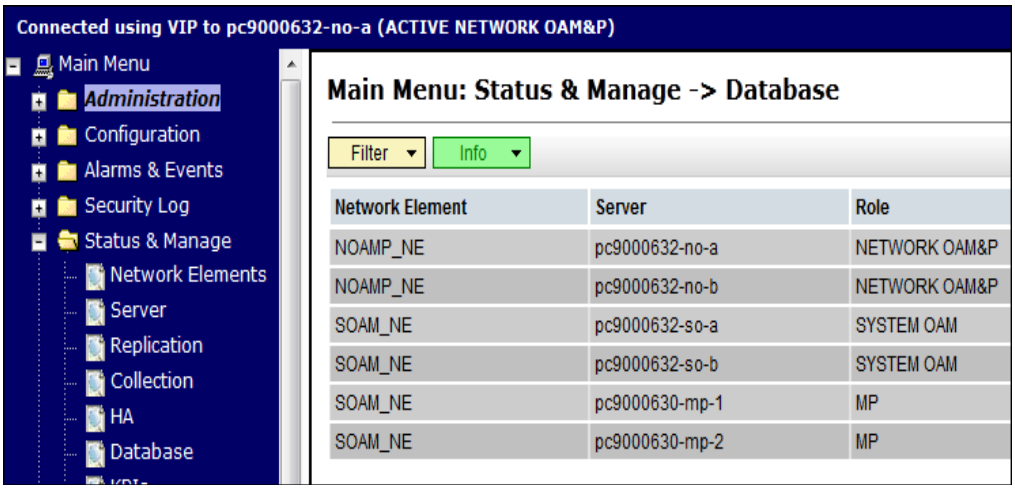
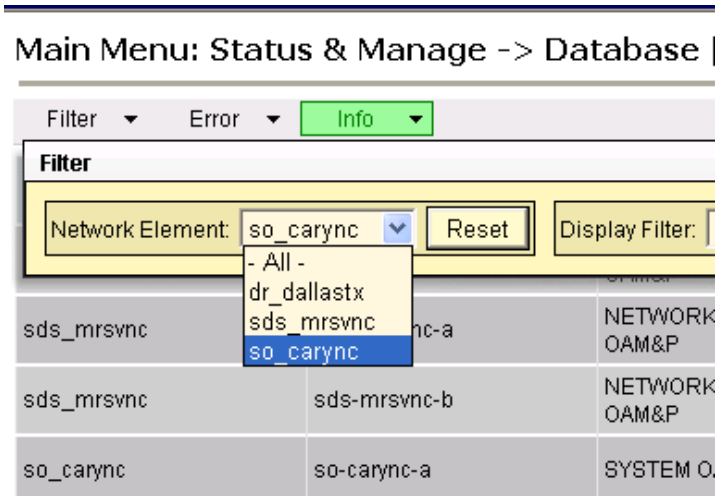
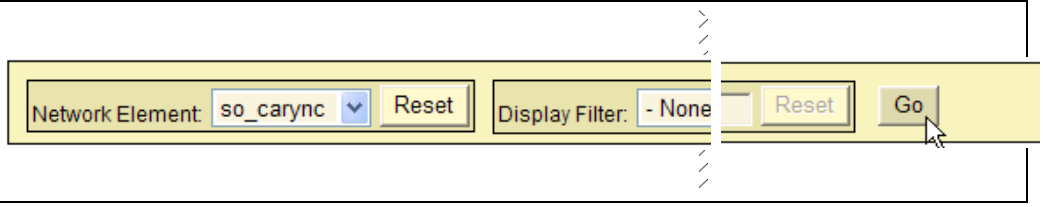
Step	Procedure	Result
11. ☐	**Active NOAMP VIP:** Verify that all **MP** servers now show **"Inhibited"** under the **"Repl Status"** column.	 Network Element | Server | Role | HA Ro hday | Repl Status so_carync | so-carync-a | SYSTEM OAM | Active | 2-21 6.484 UTC | so_carync | so-carync-b | SYSTEM OAM | Stand | 2-21 6.484 UTC | so_carync | dp-carync-1 | MP | Active | 2-21 6.484 UTC | *Inhibited* so_carync | dp-carync-2 | MP | Active | 2-21 6.484 UTC | *Inhibited*
12. ☐	**Active NOAMP VIP:** Holding the Ctrl key to select multiple rows, select the servers which display **"SYSTEM OAM"** under the **"Role"** column.	 Network Element | Server | Role | HA Role | Status | DB Level | DB Birthday | Repl Status so_carync | so-carync-a | SYSTEM OAM | Active | Normal | 3161241 | 2012-02-21 18:20:56.484 UTC | so_carync | so-carync-b | SYSTEM OAM | Standby | Normal | 3161241 | 2012-02-21 18:20:56.484 UTC | so_carync | dp-carync-1 | MP | Active | Minor | Unknown | 2012-02-21 18:20:56.484 UTC | *Inhibited* so_carync | dp-carync-2 | MP | Active | Minor | Unknown | 2012-02-21 18:20:56.484 UTC | *Inhibited*
13. ☐	**Active NOAMP VIP:** **1)** Click on the **"Inhibit Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	 rt... | Inhibit Replication | Backu 1  Message from webpage Inhibit replication to serverlist so-carync-a,so-carync-b. Are you sure? OK | Cancel 2 **NOTE:** *As a result of inhibiting Replication to the server, Minor Alarm (**Event ID 31113**): "Replication Manually Disabled" will alarm until Replication is once again allowed.*

Procedure 12: Inhibit SOAM Servers

Step	Procedure	Result
14. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	
15. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	
16. ☐	**Active NOAMP VIP:** Verify all servers in this Network Element now show **"Inhibited"** under the **"Repl Status"** column.	
THIS PROCEDURE HAS BEEN COMPLETED		

7.2.2 Upgrade SOAM NE

Procedure 13: Upgrade SOAM NE

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the **SOAM** NE in the space provided to the right.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **SOAM** Network Element in the space provided below: **SOAM Network Element:** _____
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 13: Upgrade SOAM NE

Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **SOAM** NE. Identify each "**Server**" and its associated **"Role"** and **"HA Role"**.		Network Element	Server	Role	HA Role	Status	DB Level | so_carync	so-carync-a	SYSTEM OAM	Active	Minor	Unknown so_carync	so-carync-b	SYSTEM OAM	Standby	Minor	Unknown so_carync	dp-carync-1	MP	Active	Normal	Unknown so_carync	dp-carync-2	MP	Active	Minor	Unknown
7. ☐	Using the list of servers associated with the **SOAM** NE shown in the above Step... Record the Server names of the M**Ps** associated with the **SOAM** Network Element.	• Identify the **SOAM "Server"** names and record them in the space provided below: **Standby SOAM:** _____ **Active SOAM:** _____ **MP1:** _____ **MP6:** _____ **MP2:** _____ **MP7:** _____ **MP3:** _____ **MP8:** _____ **MP4:** _____ **MP9:** _____ **MP5:** _____ **MP10:** _____
8. ☐	**Active NOAMP VIP:** Prepare Upgrade for the **Standby SOAM Server**.	• Prepare Upgrade for the **Standby SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.1 *(Prepare Upgrade).***
9. ☐	**Active NOAMP VIP:** Initiate Upgrade for the **Standby SOAM Server**.	• Initiate Upgrade for the **Standby SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.2 *(Initiate Upgrade).***
10. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **Standby SOAM Server**.	• Monitor Upgrade for the **Standby SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix** C.3 *(Monitor Upgrade).*
11. ☐	**Active NOAMP VIP:** Complete Upgrade for the **Standby SOAM Server**.	• Complete Upgrade for the **Standby SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix** C.4 *(Complete Upgrade).*

Procedure 13: Upgrade SOAM NE

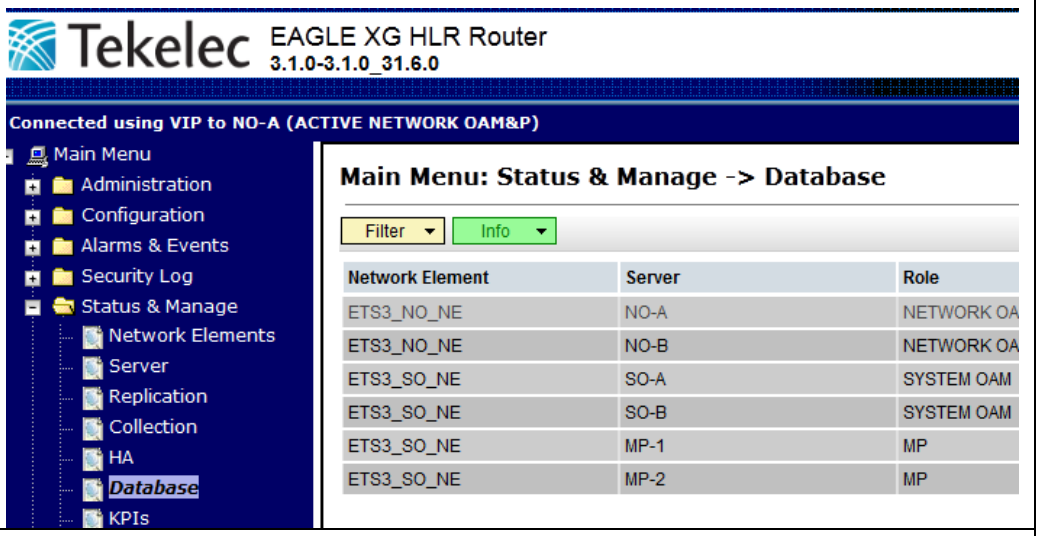
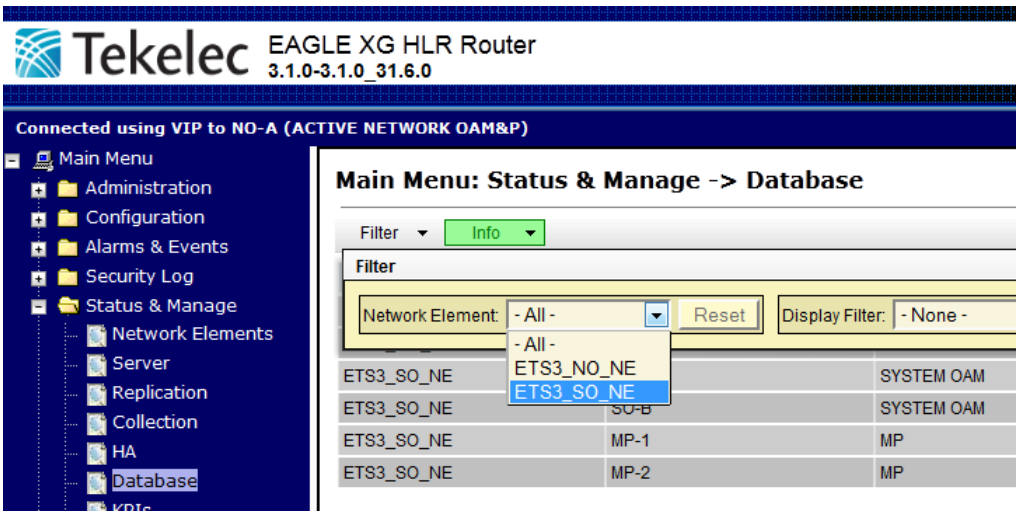
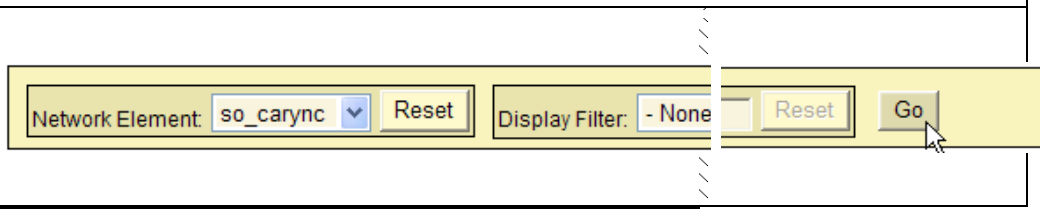
Step	Procedure	Result
	!! WARNING !!	**STEPS 8-11 MUST BE COMPLETED BEFORE CONTINUING ON TO STEP 12.**
12. ☐	**Active NOAMP VIP:** Prepare Upgrade for the **Active SOAM Server**.	• Prepare Upgrade for the **Active SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.1 *(Prepare Upgrade).***
13. ☐	**Active NOAMP VIP:** Initiate Upgrade for the **Active SOAM Server**.	• Initiate Upgrade for the **Active SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.2 *(Initiate Upgrade).***
14. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **Active SOAM Server**.	• Monitor Upgrade for the **Active SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.3** *(Monitor Upgrade).*
15. ☐	**Active NOAMP VIP:** Complete Upgrade for the **Active SOAM Server**.	• Complete Upgrade for the **Active SOAM Server** *(identified in **Step 7** of this Procedure)* as specified in **Appendix C.4** *(Complete Upgrade).*
	!! WARNING !!	**STEPS 12 - 15 MUST BE COMPLETED BEFORE CONTINUING ON TO STEP 17.**
	NOTE:	***Steps 17 - 21 of this Procedure may be executed in parallel for MPs associated with the SOAM NE being upgraded.***
16. ☐	**(Optional):** Divert traffic away from the MP prior to upgrade. **NOTE:** *This activity, if executed, is to be performed only by the customer.*	• If desired, the customer may now execute the optional procedure in **Appendix E.1** *(Diverting Signaling Traffic away from the MP).*
17. ☐	**Active NOAMP VIP:** Prepare Upgrade for the M**P1Server**.	• Prepare Upgrade for the **MP1 Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.1 *(Prepare Upgrade).***
18. ☐	**Active NOAMP VIP:** Initiate Upgrade for the **MP1 Server**.	• Initiate Upgrade for the M**P1 Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.2 *(Initiate Upgrade).***

Procedure 13: Upgrade SOAM NE

Step	Procedure	Result
19. ☐	**Active NOAMP VIP:** Monitor Upgrade for the **MP1 Server**.	• Monitor Upgrade for the **MP1 Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.3** *(Monitor Upgrade).*
20. ☐	**Active NOAMP VIP:** Complete Upgrade for the **MP1 Server**.	• Complete Upgrade for the **MP1 Server** *(identified in **Step** 7 of this Procedure)* as specified in **Appendix C.4** *(Complete Upgrade).*
21. ☐	**1)** Record the Server names of the **MPs** associated with the **SOAM** NE (identified in **Step** 7 of this Procedure). **2)** Beginning with **MP2**, repeat **Steps 17 - 21** of this Procedure for each **MP** listed to the right. **3) "Check off"** each Check Box as **Steps 17 - 21** are completed for the M**P** listed to its right.	• Record the Server name of each M**P** to be upgraded in the space provided below: • **"Check off"** the associated **Check Box** as **Steps 17 - 21** are completed for each **MP**. ☒ **MP1:** _____ ☐ **MP6:** _____ ☐ **MP2:** _____ ☐ **MP7:** _____ ☐ **MP3:** _____ ☐ **MP8:** _____ ☐ **MP4:** _____ ☐ **MP9:** _____ ☐ **MP5:** _____ ☐ **MP10:** _____
!! WARNING !!	**STEPS 17-21 MUST BE COMPLETED FOR ALL MP SERVERS ASSOCIATED WITH THE SOAM NE BEFORE CONTINUING ON TO STEP 22.**	
22. ☐	**(Optional):** Restore traffic to the MP post upgrade. **NOTE:** *This activity, if executed, is to be performed only by the customer.*	**IMPORTANT:** *Execute this step only if **Step 16**(Diverting Signaling Traffic away from the MP) of this procedure was executed.* • The customer may now execute the optional procedure in **Appendix E.2** *(Restoring Signaling Traffic to the MP)*.
THIS PROCEDURE HAS BEEN COMPLETED		

7.2.3 Allow SOAM Servers

Procedure 14: Allow SOAM Servers

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
3. ☐	Record the name of the **SOAM** NE which was upgraded in **Procedure 13**.	• Using the information provided in Section 3.1.2 (*Logins, Passwords and Site Information*) record the name of the **SOAM** NE in the space provided below: **SOAM Network Element:** _____
4. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	
5. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	

Procedure 14: Allow SOAM Servers

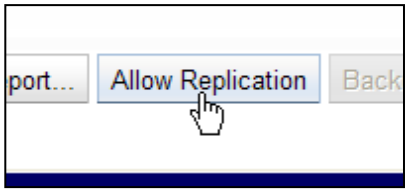
Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **SOAM** NE.	

Network Element	Server	Role	HA Role	Status	DB Level
so_carync	so-carync-a	SYSTEM OAM	Active	Minor	Unknown
so_carync	so-carync-b	SYSTEM OAM	Standby	Minor	Unknown
so_carync	dp-carync-1	MP	Active	Normal	Unknown
so_carync	dp-carync-2	MP	Active	Minor	Unknown

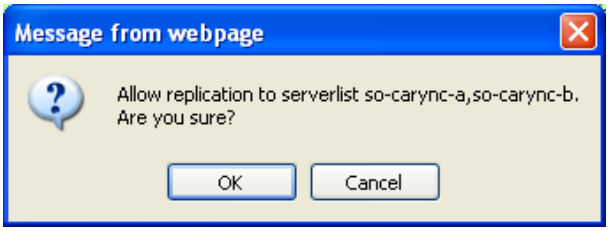
Step	Procedure	Result
7. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, select the servers that display **"SYSTEM OAM"** under the **"Role"** column.	

Network Element	Server	Role	HA Role	Status	DB Level	DB Birthday	Repl Status
so_carync	so-carync-a	SYSTEM OAM	Active	Minor	Unknown	2012-02-21 18:20:56.484 UTC	*Inhibited*
so_carync	so-carync-b	SYSTEM OAM	Standby	Minor	Unknown	2012-02-21 18:20:56.484 UTC	*Inhibited*
so_carync	dp-carync-1	MP	Active	Minor	Unknown	2012-02-21 18:20:56.484 UTC	*Inhibited*
so_carync	dp-carync-2	MP	Active	Minor	Unknown	2012-02-21 18:20:56.484 UTC	*Inhibited*

Step	Procedure	Result
8. ☐	**Active NOAMP VIP:** **1)** Click on the **"Allow Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	



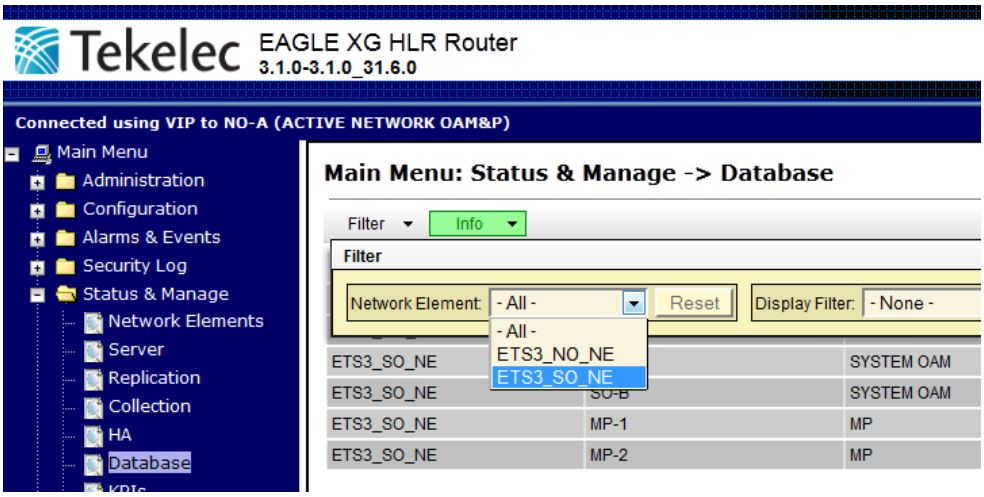
1



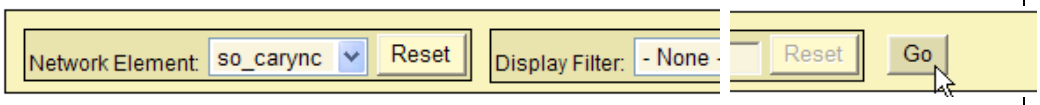
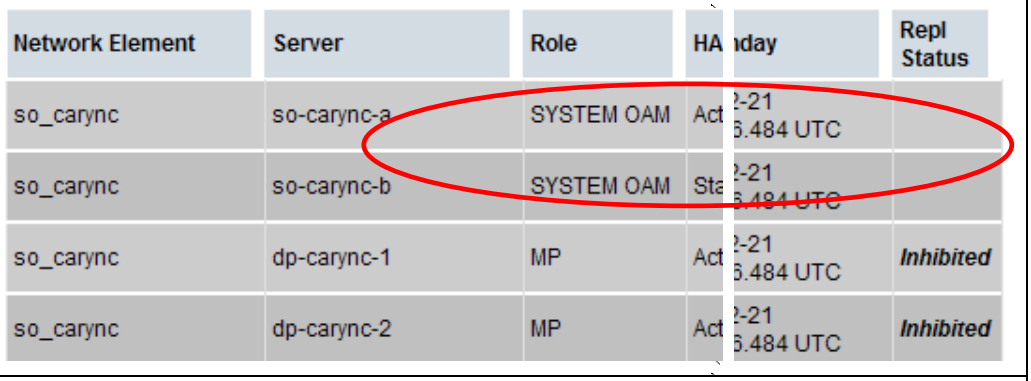
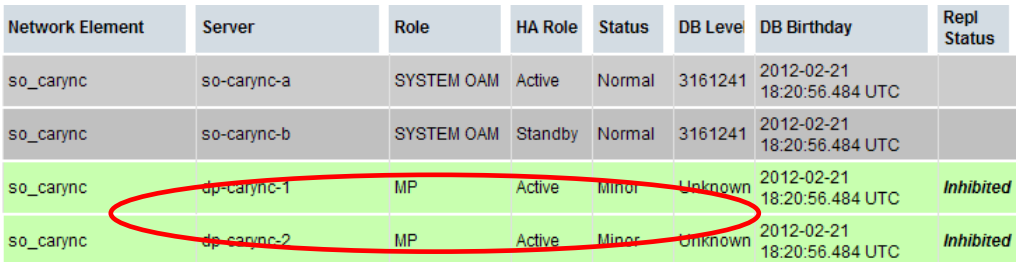
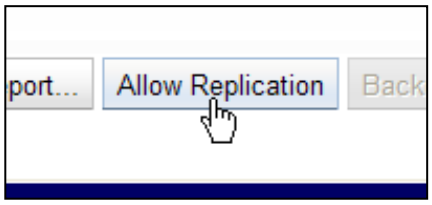
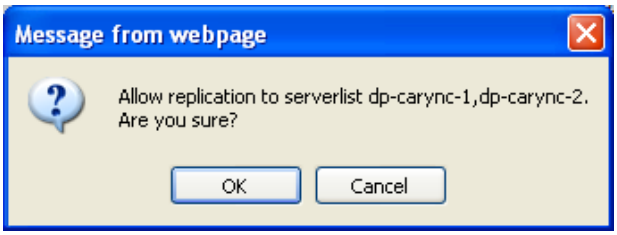
2

NOTE: *As a result of Allowing Replication to the server, Minor Alarm (**Event ID 31113**): "Replication Manually Disabled" should clear momentarily.*

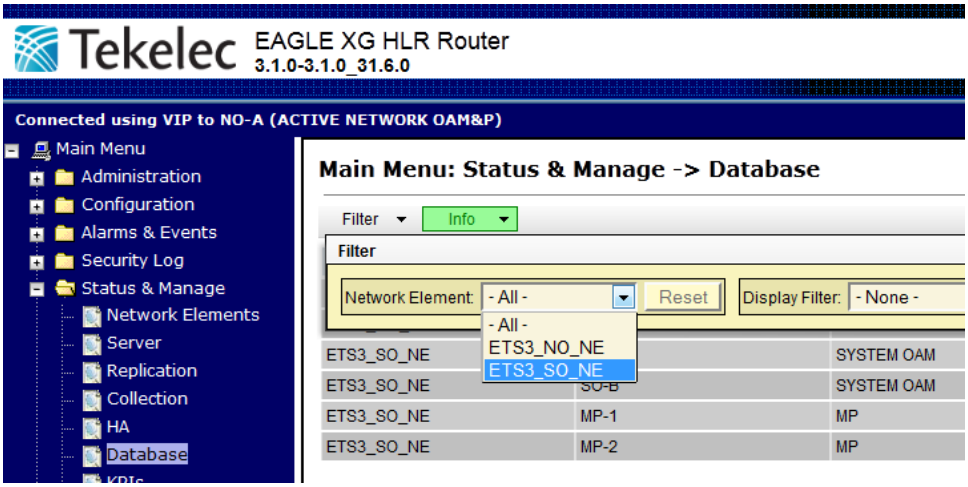
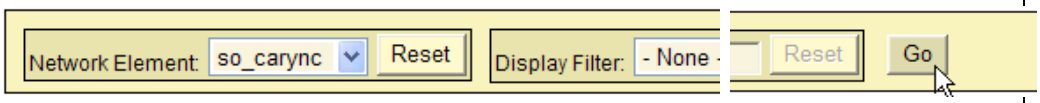
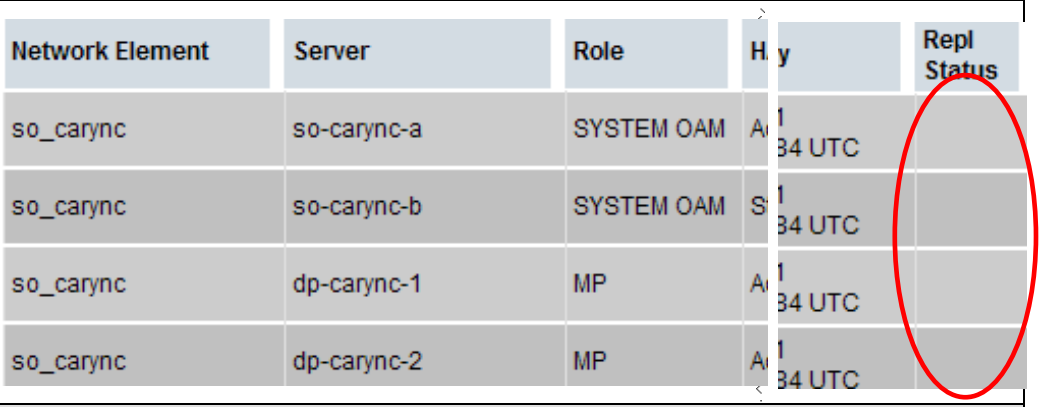
Step	Procedure	Result
9. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	



Procedure 14: Allow SOAM Servers

Step	Procedure	Result
10. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	
11. ☐	**Active NOAMP VIP:** Verify that the servers which display **"SYSTEM OAM"** under the **"Role"** column now show **blank** under the **"Repl Status"** column.	
12. ☐	**Active NOAMP VIP:** Holding the **Ctrl** key, select the servers which display **"MP"** under the **"Role"** column.	
13. ☐	**Active NOAMP VIP:** **1)** Click on the **"Allow Replication"** dialogue button in the bottom left of the right panel. **2)** In the pop-up window, click on the **"OK"** dialogue button.	 1  2 **NOTE:** *As a result of Allowing Replication to the server, Minor Alarm (**Event ID 31113**): "Replication Manually Disabled" should clear momentarily.*

Procedure 14: Allow SOAM Servers

Step	Procedure	Result
14. ☐	**Active NOAMP VIP:** From the **"Network Element"** filter pull-down, select the name for the **SOAM** NE.	
15. ☐	**Active NOAMP VIP:** Click on the **"GO"** dialogue button located on the right end of the filter bar.	
16. ☐	**Active NOAMP VIP:** Verify that all servers in this Network Element now show **blank** under the **"Repl Status"** column.	
THIS PROCEDURE HAS BEEN COMPLETED		

7.3 **Perform Health Check** (Post SOAM Upgrade)

☐ This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers.

- Execute HLR Router Health Check procedures as specified in **Appendix B.**

8. UPGRADE ACCEPTANCE

The upgrade needs either to be accepted or rejected before any subsequent upgrades may be performed in the future.

The Alarm 32532 (Server Upgrade Pending Accept/Reject) will be displayed for each server until one of these two actions (accept or reject) is performed.

An upgrade should be accepted only after it was determined to be successful as the accept is final. This frees up file storage but prevents a backout from the previous upgrade.

	!! WARNING !!	**If performing a major upgrade from HLRR 3.0 to 4.0 release, then executing "Accept" will cause a reboot of the server. Users are cautioned to not select multiple servers before selecting "Accept" button due to multiple servers rebooting as a result.** **Incremental upgrades between HLRR 4.0 releases do not cause a reboot upon upgrade acceptance.**

8.1 Turn off COMCOL compatibility mode (major upgrade 3.0 to 4.0 only)

Database replication between Comcol version 5.14 database (in HLRR 3.0) and version 6.2 database (in HLRR 4.0) requires a mediation service. Therefore, during the major upgrade servers are placed into a compatibility mode and run this mediation service. The performance and functionality of data replication is degraded while compatibility mode is engaged, so it is recommended that the mode be turned off on all servers once the full system has successfully completed the major upgrade.

This procedure is used to turn off COMCOL compatibility mode on all servers in the topology after a major upgrade from 3.1 to 4.0, and should be executed on the active NOAMP server only.

	NOTE:	**Once the COMCOL compatibility is turned off, HLRR system will not be allowed to backout to previous release from which the upgrade was done.**

Procedure 15: Turn off COMCOL compatibility mode (major upgrade 3.0 to 4.0 only)

Step	Procedure	Result
1. ☐	**Active NOAMP VIP (SSH):** SSH to active NOAMP server	Use your SSH client to connect to the server (ex. ssh, putty): Note: You must consult your own software client's documentation to learn how to launch a connection. For example: `ssh <server address>`

2. ☐	**Active NOAMP VIP (SSH):**
	
	Login as root user.
		Login as "**root**":
		
		`login as: root`
		`Password: <enter password>`

3. ☐	**Active NOAMP VIP (SSH):** Turn off compatibility mode	Execute the **setccupgradecomplete** script to turn off compatibility mode: `# /usr/TKLC/appworks/bin/setccupgradecomplete`

Procedure 15: Turn off COMCOL compatibility mode (major upgrade 3.0 to 4.0 only)

Step	Procedure	Result

4. ☐	**Active NOAMP VIP (SSH):**
	
	Verify that compatibility mode has been disabled on all servers in HLRR system
		• Query the CCUpgCompStatus database table with the command:
		`# iqt CCUpgCompStatus.1`
		• The output of this query lists each server in the system with an indication of completion in the "Result" field. (Y for complete, No for incomplete). If the Result field is 'Y' then the "Timestamp" field will indicate the time when compatibility mode was disabled.
		• A few seconds after executing the setccupgradecomplete command the query above should indicate 'Y" as the Result for each server in the HLRR system.
		Example:
		`# iqt CCUpgCompStatus.1`
		`part srcNode Hostname Timestamp Result Request_ID`
		`1 tks5031301 tks5031301 03/25/2014 13:33:12 Y 0`
		`1 tks5031302 tks5031302 03/25/2014 13:33:12 Y 0`
		`1 tks5031307 tks5031307 03/25/2014 13:33:12 Y 0`
		`1 tks5031308 tks5031308 03/25/2014 13:33:12 Y 0`

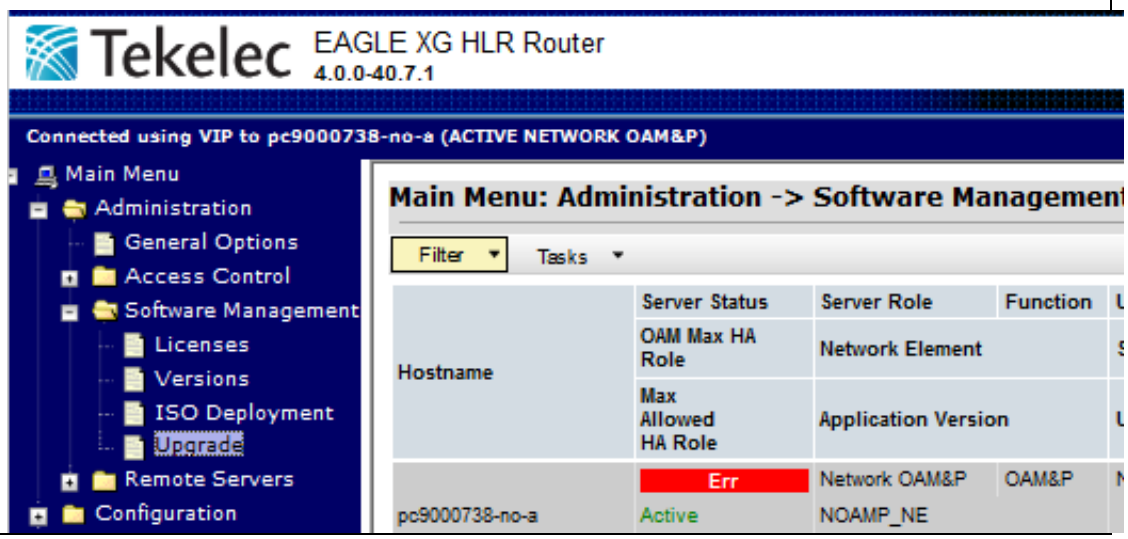
THIS PROCEDURE HAS BEEN COMPLETED		

8.2 Accept Upgrade

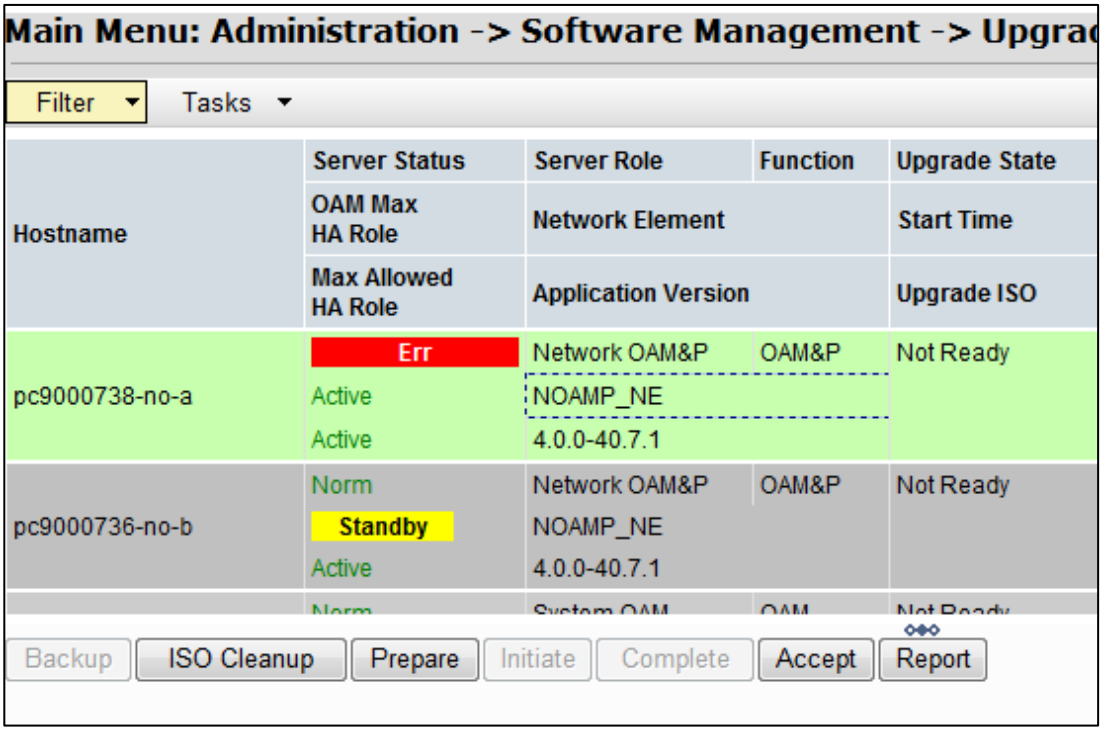
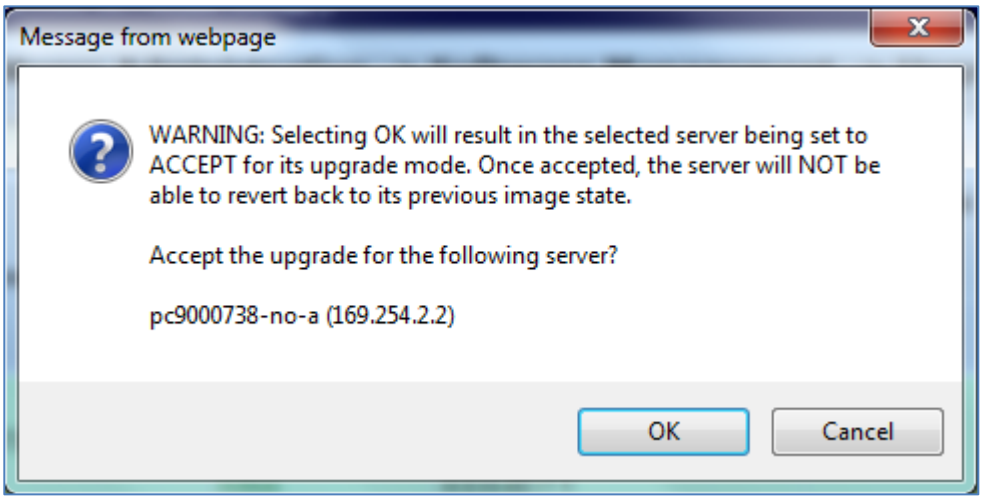
	NOTE:	**Once the upgrade is accepted for a server, that server will not be allowed to backout to previous release from which the upgrade was done**

The following procedure details how to accept a successful upgrade of HLR Router system

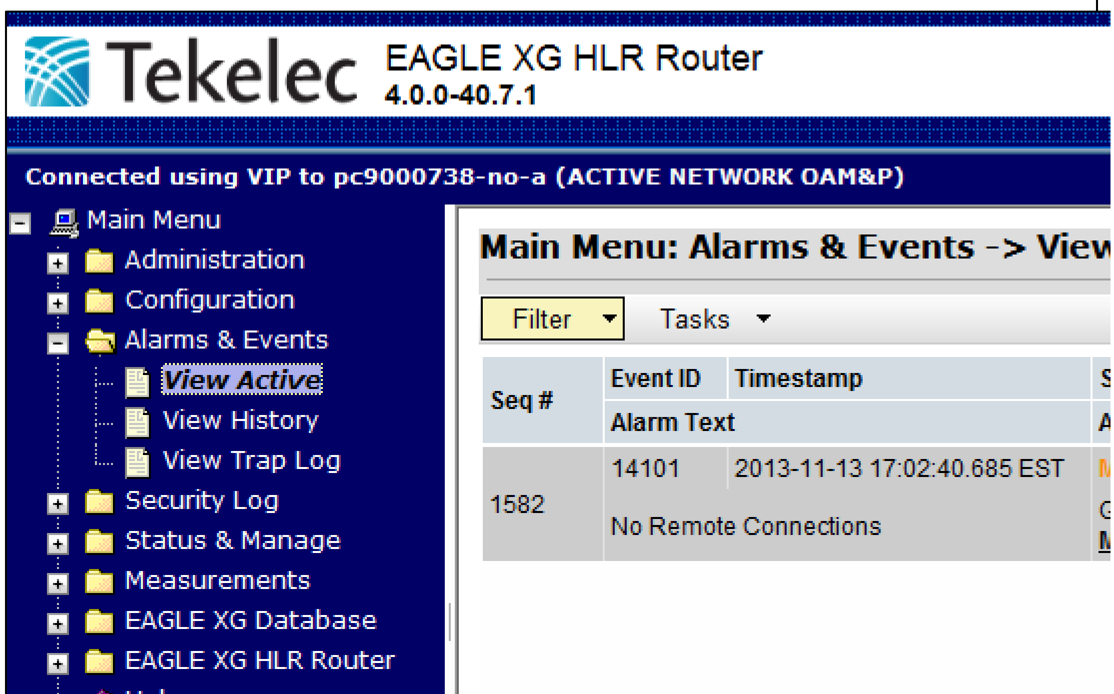
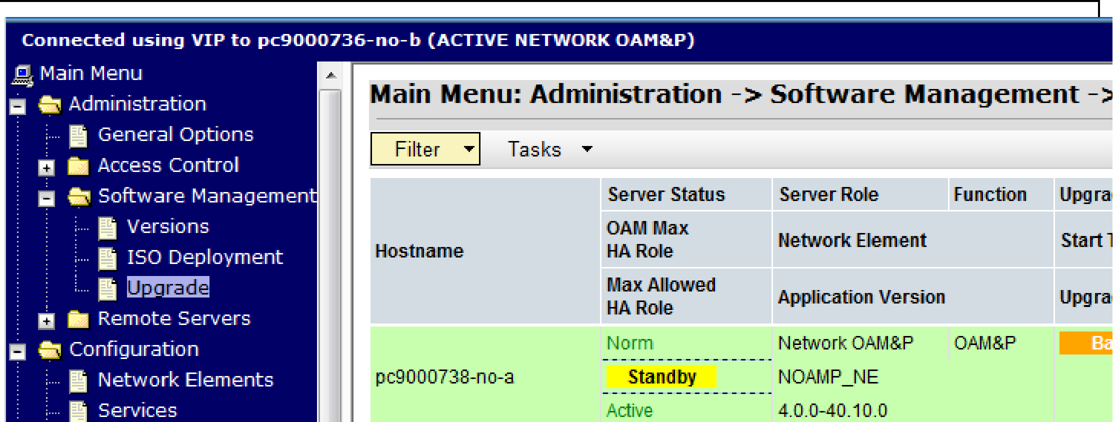
Procedure 16: Accept Upgrade

Step	Procedure	Result
1. ☐	Using the **VIP** IP, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Administration** ***→ Software Management*** ***→ Upgrade*** …as shown on the right.	

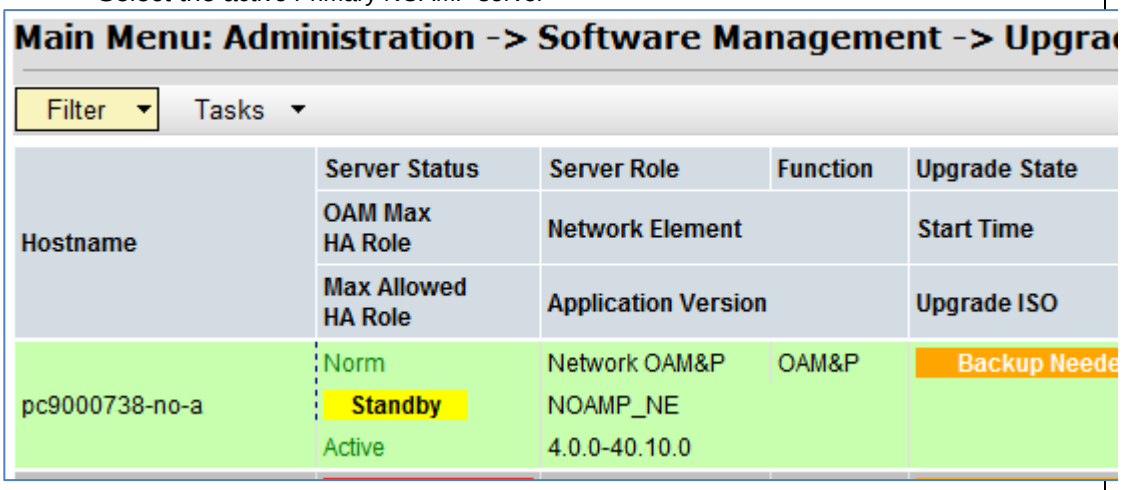
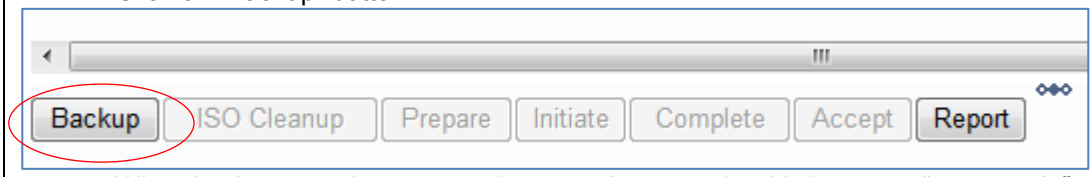
Procedure 16: Accept Upgrade

Step	Procedure	Result
3. ☐	**Active NOAMP VIP (GUI):** Accept upgrade for selected server(s)	Accept upgrade of selected server(s) • Select the server on which upgrade is to be accepted. • Click the "**Accept**" button  • A confirmation dialog will warn that once upgrade is accepted, the servers will not be able to revert back to their previous image states.  • Click "OK" • The Upgrade Administration screen re-displays. • A pulldown Info message will indicate the server(s) on which upgrade was accepted.

Procedure 16: Accept Upgrade

Step	Procedure	Result
4. ☐	**Active NOAMP VIP:** Accept upgrade of the rest of the HLRR system	Accept Upgrade on all remaining servers in the HLRR system: • Repeat all sub-steps of step 3 of this procedure on remaining serevrs until the upgrade of all servers in the HLRR system has been accepted. Note: As upgrade is accepted on each server the corresponding Alarm ID **32532** (**Server Upgrade Pending Accept/Reject)** should be removed.
5. ☐	**Active NOAMP VIP:** Verify accept	Check that alarms are removed: • Navigate to this GUI page Alarms & Events > View Active  • Verify that Alarm ID **32532** (**Server Upgrade Pending Accept/Reject)** is not displayed under active alarms on HLRR system
6. ☐	**Active NOAMP VIP:** Select… <u>**Main Menu**</u> **→ Administration** ***→ Software Management*** ***→ Upgrade*** …as shown on the right.	

Procedure 16: Accept Upgrade

Step	Procedure	Result
7. ☐	**Active NOAMP VIP:** Create backup for Active Primary NOAMP server	• Select the active Primary NOAMP server  • Click on “Backup” button  • When backup completes, server’s **Upgrade State** should change to “**Not Ready**”
8. ☐	**Active NOAMP VIP:** Create backups on the rest of the HLRR system	Create backups on all remaining servers in the HLRR system: • Repeat all sub-steps of step 7 of this procedure on remaining serevrs in HLRR system
THIS PROCEDURE HAS BEEN COMPLETED		

9. RECOVERY PROCEDURES

Upgrade procedure recovery issues should be directed to the Oracle's Tekelec Customer Care Center. Persons performing the upgrade should be familiar with these documents.

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

!! WARNING !!	**Do not attempt to perform these backout procedures without first contacting the Oracle's Tekelec Customer Care Center at 1-888-FOR-TKLC or 1-888-367-8552; or for international callers 1-919-460-2150.**

!! WARNING !!	**Backout procedures will cause traffic loss!**

NOTES:	**These recovery procedures are provided for the Backout of an Upgrade ONLY! (i.e. for the Backout from a failed target release to the previously installed release).** **Backout of an initial installation is not supported!**

9.1 Backout Setup

Identify IP addresses of all servers that needed to be backed out.

1. Select **Administration → Upgrade** (-or- **Administration → Software Management →Upgrade**)
2. Based on the "Application Version" Column, Identify all the hostnames that need to be backed out.
3. Select **Configuration → Servers**
4. Identify the IMI IP addresses of all the hostnames identified in step 2.
   These are required to access the server when performing the backout.

The reason to execute a backout has a direct impact on any additional backout preparation that must be done. Backout procedure will cause traffic loss. Since all possible reasons cannot be predicted ahead of time, contact the Oracle's Tekelec Customer Care Center as stated in the Warning box above.

NOTE: **Verify that the two backup archive files created using the procedure in Section 6.2.4 are present on every server that is to be backed-out.**

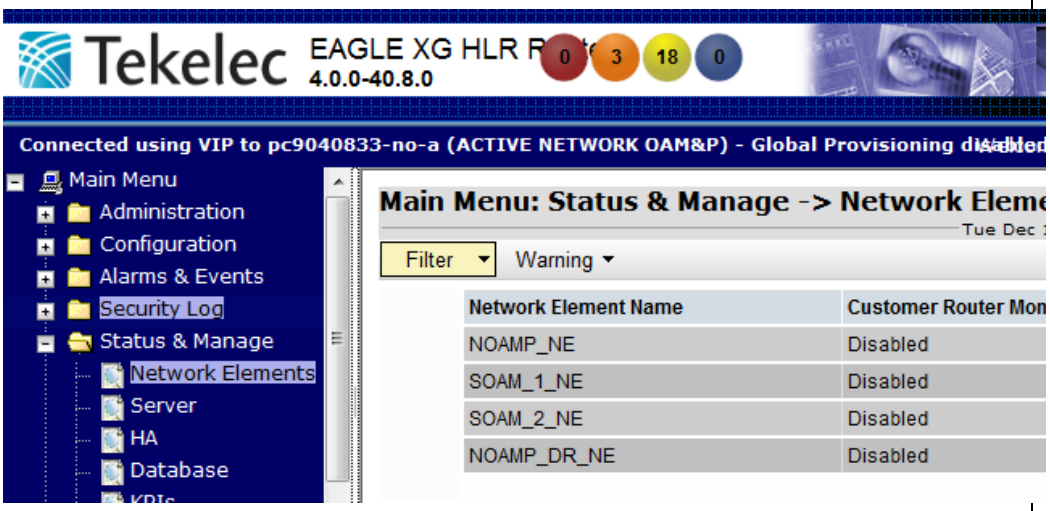
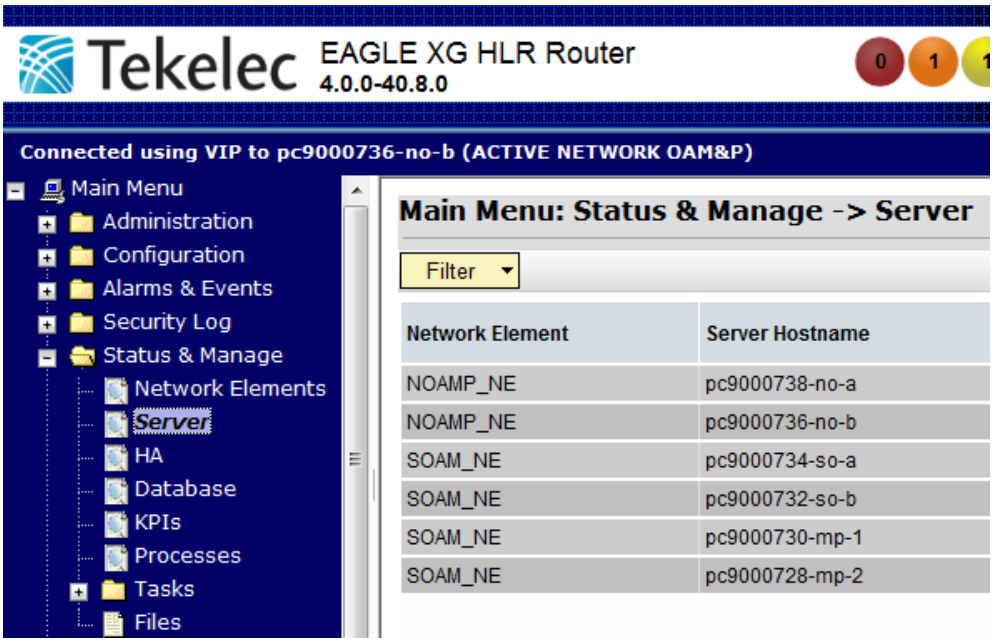
These archive files are located in the **/var/TKLC/db/filemgmt** directory and have different filenames than other database backup files.

The filenames will have the format:

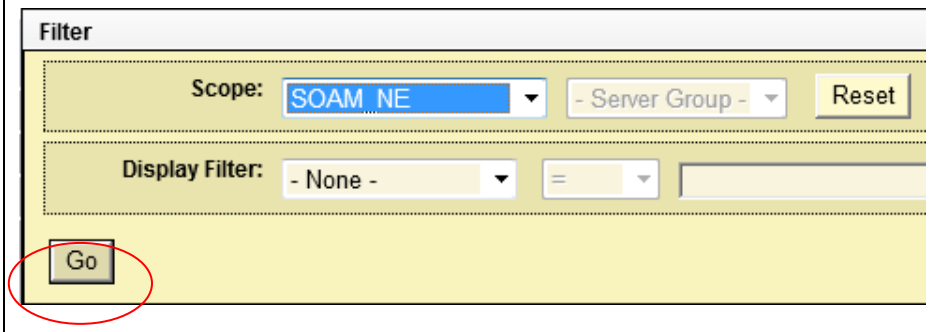
- **`Backup.<application>.<server>.FullDBParts.<role>.<date_time>.UPG.tar.bz2`**
- **`Backup. <application>.<server>.FullRunEnv.<role>.<date_time>.UPG.tar.bz2`**

9.2 Backout of SOAM / MP

Procedure 17: Backout of SOAM / MP

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Network Elements*** …as shown on the right.	
3. ☐	Record the name of the **SOAM** Network Element to be downgraded (**backed out**)	• Record the name of the **SOAM** Network Element which will be **"backed out"** **SOAM Network Element:** _____
4.	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Server*** …as shown on the right.	

Procedure 17: Backout of SOAM / MP

Step	Procedure	Result
5. ☐	**Active NOAMP VIP:** 1) From the **Status & Manage → Server** filter pull-down, select the name for the **SOAM** NE. 2) Click on the **"GO"** dialogue button located on the right end of the filter bar	
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the S**OAMP** NE. Identify each "**Server Hostname"** and its associated **"Reporting Status"** and **"Appl State"**.	**Main Menu: Status & Manage -> Server (Filtered)** Filter Network Element / Server Hostname / Appl State / Alm / DB / Reporting Status SOAM_NE / pc9000734-so-a / Enabled / Norm / Norm / Norm SOAM_NE / pc9000732-so-b / Enabled / Norm / Norm / Norm SOAM_NE / pc9000730-mp-1 / Enabled / Norm / Norm / Norm SOAM_NE / pc9000728-mp-2 / Enabled / Norm / Norm / Norm
7. ☐	Using the list of servers associated with the **SOAM NE** shown in the above Step... Record the Server names of the **MPs** associated with the **SOAM NE**.	• Identify the **SOAM "Server"** names and record them in the space provided below: **Standby SOAM:** _____ **Active SOAM:** _____ **MP1:** _____ **MP6:** _____ **MP2:** _____ **MP7:** _____ **MP3:** _____ **MP8:** _____ **MP4:** _____ **MP9:** _____ **MP5:** _____ **MP10:** _____
8. ☐	**Active NOAMP VIP:** Using the list of servers recorded in the previous step, **inhibit** all servers associated with the **SOAM NE**.	• **Inhibit** all servers associated with the **SOAM NE** as specified in **Procedure 12** *(Inhibit SOAM Servers).*

NOTE: ***Steps 9 - 11 of this Procedure may be executed in parallel for MPs associated with the SOAM site being "backed Out.***

Procedure 17: Backout of SOAM / MP

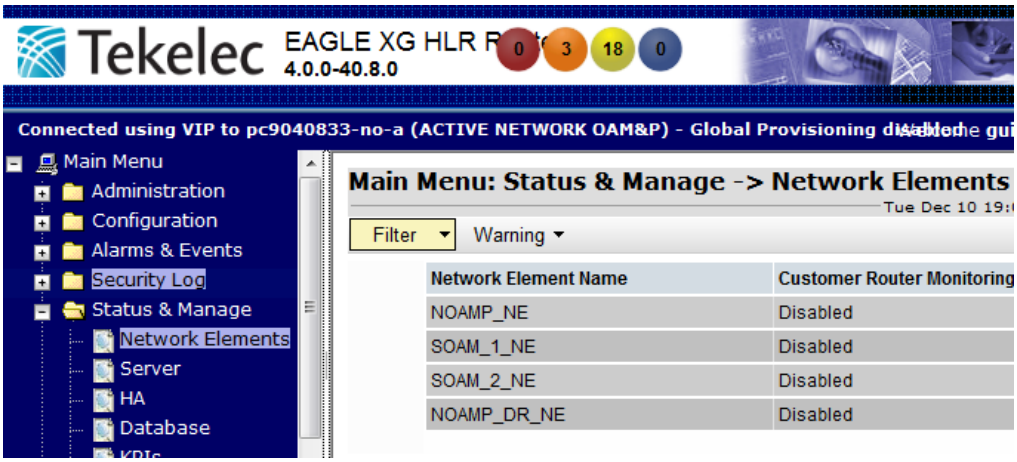
Step	Procedure	Result
9. ☐	**(Optional):** Divert traffic away from the MP prior to upgrade.	• If desired, the customer may now execute the optional procedure in **Appendix E.1** *(Diverting Signaling Traffic away from the MP).* **NOTE:** *This activity, if executed, is to be performed only by the customer.*
10. ☐	**Active NOAMP VIP:** Referencing the list of servers recorded in **Step 7** of this Procedure, execute **Appendix D** for the **MP1 Server**.	• **Backout** the target release for the **MP1 Server** as specified in **Appendix D** *(Backout of a Single Server).*
11. ☐	**1)** Record the Server names of the **MPs** associated with the **SOAM** NE (identified in **Step 7** of this Procedure). **2)** Beginning with **MP2**, execute **Appendix D** for each **MP Server** associated with **SOAM NE** **3) "Check off"** each Check Box as **Appendix D** is completed for the **MP Server** listed to its right.	• Record the Server name of each **MP** to be **"Backed Out"** in the space provided below: • **"Check off"** the associated **Check Box** as **Appendix D** is completed for each **MP**. ☒ **MP1:** _____ ☐ **MP6:** _____ ☐ **MP2:** _____ ☐ **MP7:** _____ ☐ **MP3:** _____ ☐ **MP8:** _____ ☐ **MP4:** _____ ☐ **MP9:** _____ ☐ **MP5:** _____ ☐ **MP10:** _____
12. ☐	**(Optional):** Restore traffic to the MPs post backout. **NOTE:** *This activity, if executed, is to be performed only by the customer.*	**IMPORTANT:** *Execute this step only if **Appendix E.1** (Diverting Signaling Traffic away from the MP) of this procedure was executed in **Step 9** of this Procedure).* • The customer may now execute the optional procedure in **Appendix E.2** *(Restoring Signaling Traffic to the MP)*.
13. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Standby SOAM Server**.	• **Backout** the target release for the **Standby SOAM Server** as specified in **Appendix D** *(Backout of a Single Server).*
14. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Active SOAM Server**.	• **Backout** the target release for the **Active SOAM Server** as specified in **Appendix D** *(Backout of a Single Server).*

Procedure 17: Backout of SOAM / MP

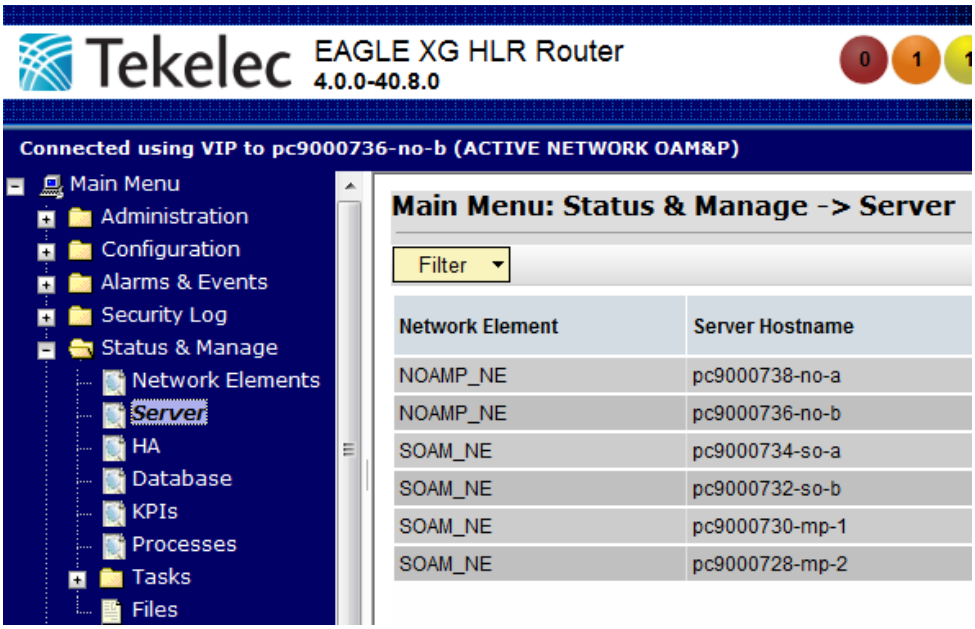
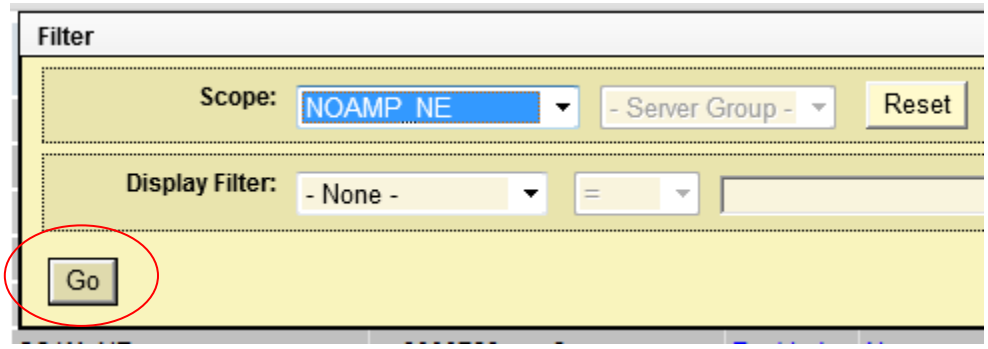
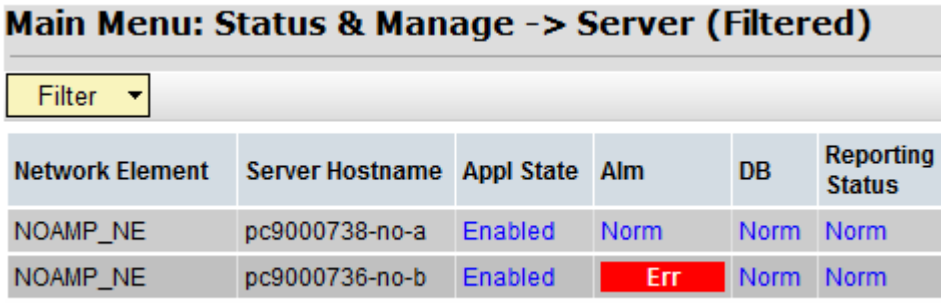
Step	Procedure	Result
15. ☐	**Active NOAMP VIP:** **Allow** all servers associated with the **SOAM NE**.	• Using the list of servers recorded in step 7, **Allow** all servers associated with the **SOAM NE** as specified in **Procedure 14** *(Allow SOAM Servers).*
16. ☐	**Active NOAMP VIP:** Execute Health Check at this time only if no other servers require back Out. Otherwise, proceed with the next Backout.	• Execute Health Check procedures (Post Backout) as specified in **Appendix B**, if Backout procedures have been completed for all required servers.
THIS PROCEDURE HAS BEEN COMPLETED		

9.3 Backout of DR NOAMP NE

Procedure 18: Backout of DR NOAMP NE

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Disable Global Provisioning.	• Execute procedure 4 “Disable Global Provisioning”.
3. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Network Elements*** …as shown on the right.	

Procedure 18: Backout of DR NOAMP NE

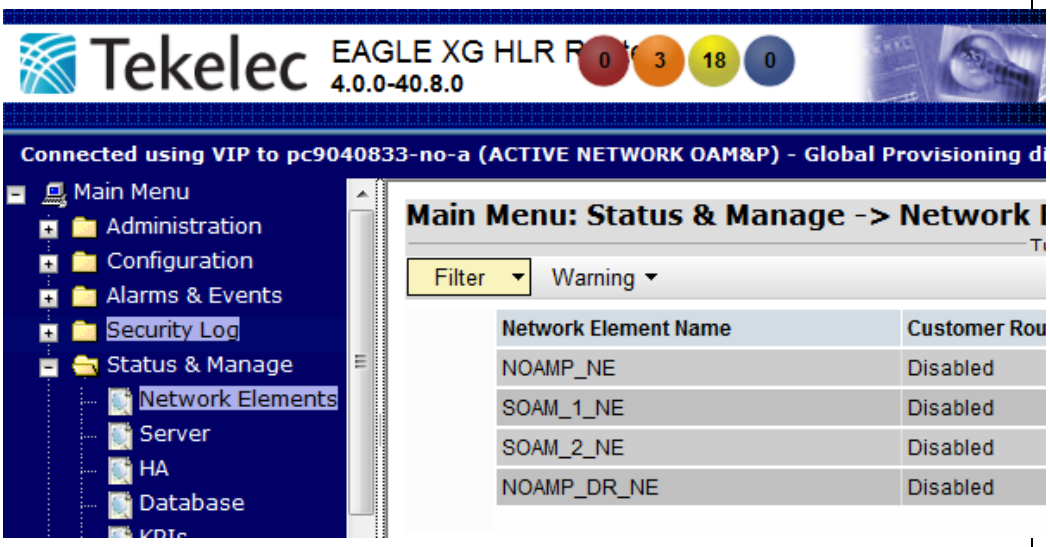
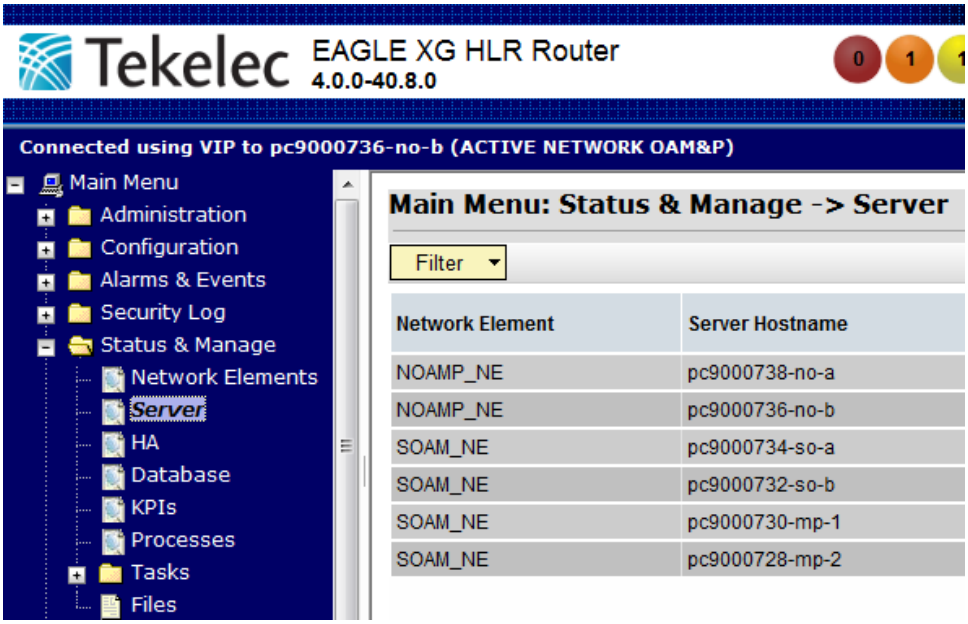
Step	Procedure	Result
4. ☐	Record the name of the **DR NOAMP** NE to be downgraded (**backed out**) in the space provided to the right.	• Record the name of the **DR NOAMP** NE which will be **"Backed out"**. **DR NOAMP NE:** _____
5. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Server*** …as shown on the right.	
6. ☐	**Active NOAMP VIP:** 1) From the **Status & Manage → Server** filter pull-down, select the name for the **DR NOAMP** NE. 2) Click on the **"GO"** dialogue button located on the right end of the filter bar	
7. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **DR NOAMP** NE. Identify each "**Server Hostname"** and its associated **"Reporting Status"** and **"Appl State"**.	

Procedure 18: Backout of DR NOAMP NE

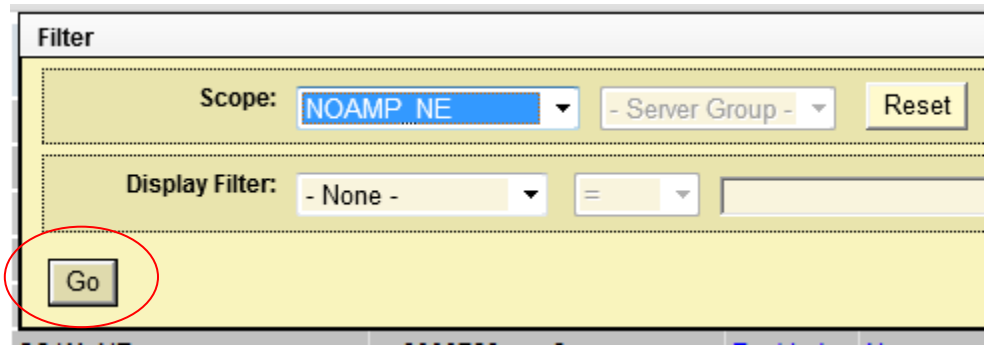
Step	Procedure	Result
8. ☐	Using the list of servers associated with the **DR NOAMP** NE shown in the above Step, record the Server names associated with the **DR NOAMP** NE.	• Identify the **DR NOAMP "Server"** names and record them in the space provided below: **Standby DR NOAMP:** _____ **Active DR NOAMP:** _____ **DR Query Server:** _____
9. ☐	**Active NOAMP VIP:** Using the list of servers recorded in previous steps, **inhibit** all servers associated with the **DR NOAMP NE**	• **Inhibit** all servers associated with the **DR NOAMP** NE as specified in **Procedure 4***(Inhibit DR NOAMP Servers).*
10. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Standby - DR NOAMP Server**	• **Backout** the target release for the **Standby DR NOAMP Server** as specified in **Appendix D** *(Backout of a Single Server).*
11. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **DR Query Server**..	• **Backout** the target release for the **DR Query Server** as specified in **Appendix D** *(Backout of a Single Server).*
12. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Active - DR NOAMP Server**.	• **Backout** the target release for the **Active DR NOAMP Server** as specified in **Appendix D** *(Backout of a Single Server).*
13. ☐	**Active NOAMP VIP:** Using the list of servers recorded in previous steps, **Allow** all servers associated with the **DR NOAMP** NE/ **Primary NOAMP** NE.	• **Allow** all servers associated with the **DR NOAMP** NE as specified in **Procedure 9** *(Allow DR NOAMP Servers).*
14. ☐	**Active NOAMP VIP:** Execute Health Check at this time only if no other servers require back Out. Otherwise, proceed with the next Backout	• Execute Health Check procedures (Post Backout) as specified in **Appendix B**, if Backout procedures have been completed for all required servers.
THIS PROCEDURE HAS BEEN COMPLETED		

9.4 Backout of Primary NOAMP NE

Procedure 19: Backout of Primary NOAMP NE

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Network Elements*** …as shown on the right.	
3. ☐	Record the name of the **DR NOAMP** NE to be downgraded (**Backed out**) in the space provided to the right.	• Record the name of the **Primary NOAMP** NE which will be **"Backed out"**. **Primary NOAMP NE:** _____
4. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Server*** …as shown on the right.	

Procedure 19: Backout of Primary NOAMP NE

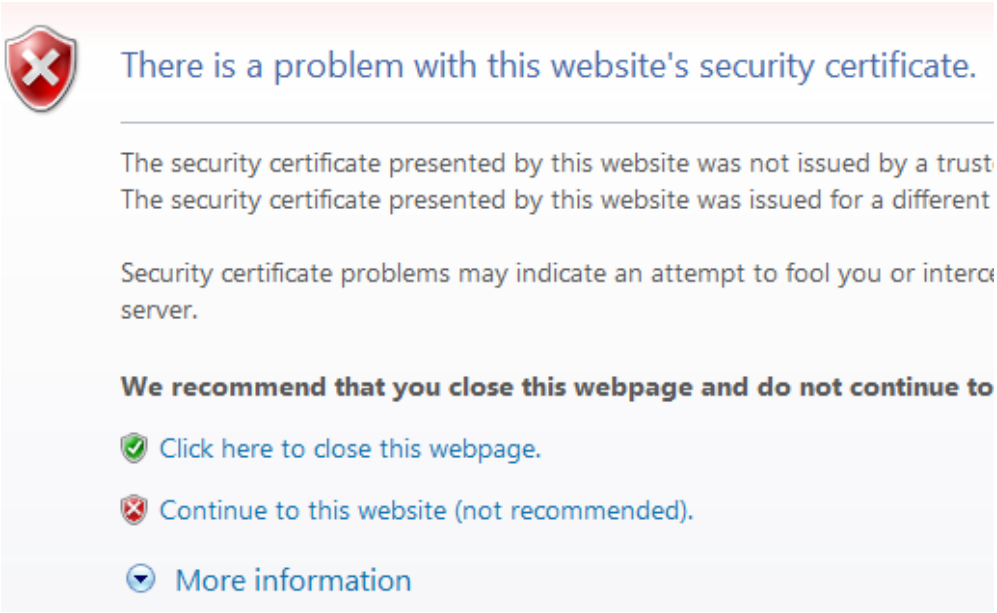
Step	Procedure	Result
5. ☐	**Active NOAMP VIP:** 1) From the **Status & Manage/Server** filter pull-down, select the name for the **Primary NOAMP** NE. 2) Click on the **"GO"** dialogue button located on the right end of the filter bar	
6. ☐	**Active NOAMP VIP:** The user should be presented with the list of servers associated with the **Primary NOAMP** NE. Identify each "**Server Hostname"** and its associated **"Reporting Status"** and **"Appl State"**.	**Main Menu: Status & Manage -> Server (Filtered)** Filter Network Element | Server Hostname | Appl State | Alm | DB | Reporting Status NOAMP_NE | pc9000738-no-a | Enabled | Norm | Norm | Norm NOAMP_NE | pc9000736-no-b | Enabled | Err | Norm | Norm
7. ☐	Using the list of servers associated with the **Primary NOAMP** NE shown in the above Step... Record the Server names associated with the **Primary NOAMP** NE.	• Identify the **Primary NOAMP "Server"** names and record them in the space provided below: **Standby Primary NOAMP:** _____ **Active Primary NOAMP:** _____ **Primary Query Server:** _____
8. ☐	**Active NOAMP VIP:** Using the list of servers recorded in previous steps, **inhibit** all servers associated with the **Primary NOAMP** NE	• **Inhibit** all servers associated with the **Primary NOAMP** NE as specified in **Procedure 4** *(Inhibit DR NOAMP Servers).*
9. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Standby Primary NOAMP Server**	• **Backout** the target release for the **Standby Primary NOAMP Server** as specified in **Appendix D** *(Backout of a Single Server).*

Procedure 19: Backout of Primary NOAMP NE

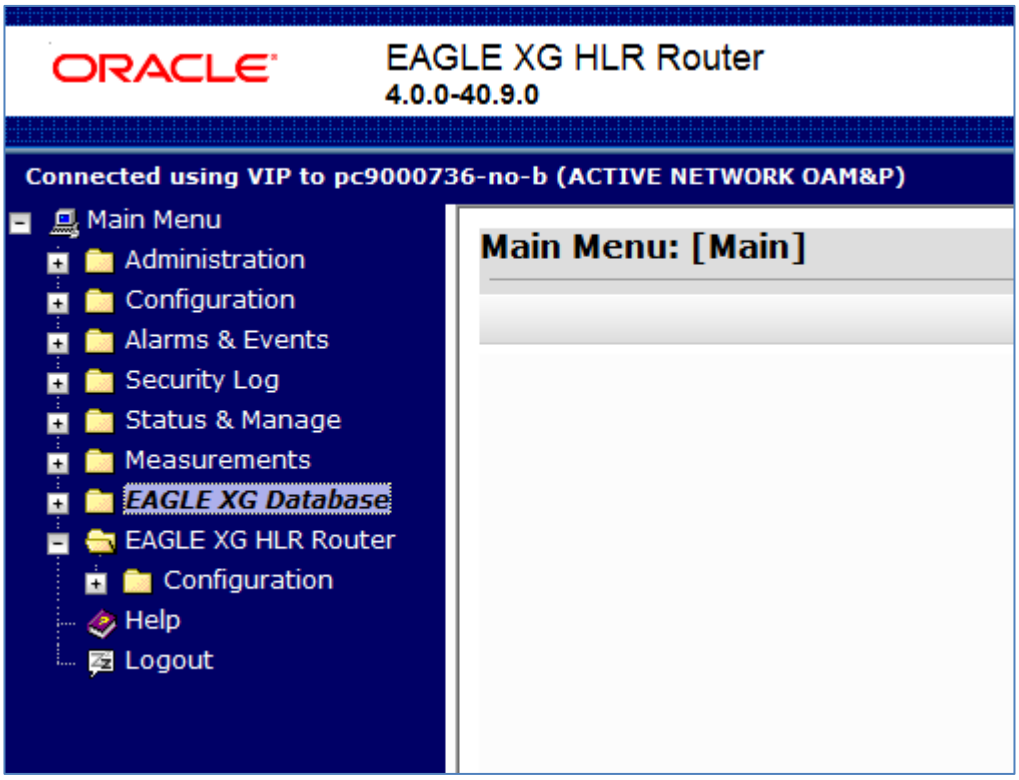
Step	Procedure	Result
10. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Primary Query Server**.	• **Backout** the target release for the **Primary Query Server** as specified in **Appendix D** *(Backout of a Single Server).*
11. ☐	**Active NOAMP VIP:** Execute **Appendix D** for the **Active Primary NOAMP Server**.	• **Backout** the target release for the **Active Primary NOAMP Server** as specified in **Appendix D** *(Backout of a Single Server).*
12. ☐	**Active NOAMP VIP:** Using the list of servers recorded in previous steps, **Allow** all servers associated with the **Primary NOAMP** NE	• **Allow** all servers associated with the **Primary NOAMP** NE as specified in **Procedure 9** *(Allow DR NOAMP Servers).*
13. ☐	**Active NOAMP VIP:** Execute Health Check at this time only if no other servers require backout.	• Execute Health Check procedures (Post Backout) as specified in **Appendix B**, if Backout procedures have been completed for all required servers.
14. ☐	Restore the provisioning Database backup	• Follow the restore provisioning Database procedures in [3].
15. ☐	**Active NOAMP VIP:** Enable Global Provisioning on NOAMP	• Execute procedure 12 to Enable Global Provisioning on NOAMP
16. ☐	Using the **VIP** address, access the SOAM GUI.	• Access the SOAM GUI as specified in **Appendix A.**
17. ☐	**Active SOAM VIP:** Enable Global Provisioning on SOAM	• Execute procedure 12 to Enable Global Provisioning on SOAM (from Step 2) **NOTE**: Execute this procedure on each SOAM network element recorded in Step 3 of Procedure 17 (Backout of SOAM / MP)
THIS PROCEDURE HAS BEEN COMPLETED		

APPENDIX A. ACCESSING THE OAM SERVER GUI (NOAMP / SOAM)

Appendix A: Accessing the OAM Server GUI (NOAMP / SOAM)

Step	Procedure	Result
1. ☐	**Active OAM VIP:** **1)** Launch **Internet Explorer 7.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to **Active OAM site** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	
2. ☐	**Active OAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using the default user and password.	

Appendix A: Accessing the OAM Server GUI (NOAMP / SOAM)

Step	Procedure	Result
3. ☐	**Active OAM VIP:** 1) The user should be presented the HLR Router Main Menu as shown on the right. 2) Verify that the message shown across the top of the right panel indicates that the browser is using the **"VIP"** connected to the **Active** OAM server.	 **NOTE:** *The message may show connection to either a **"ACTIVE NETWORK OAM&P"** or a **"SYSTEM OAM"** depending on the selected NE.*
THIS PROCEDURE HAS BEEN COMPLETED		

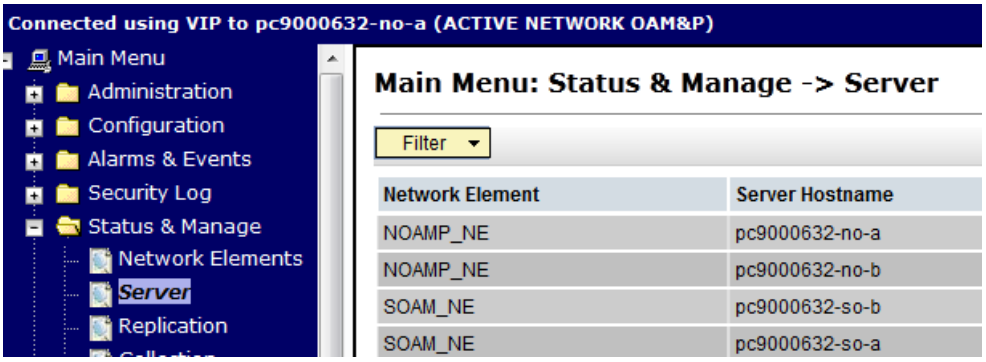
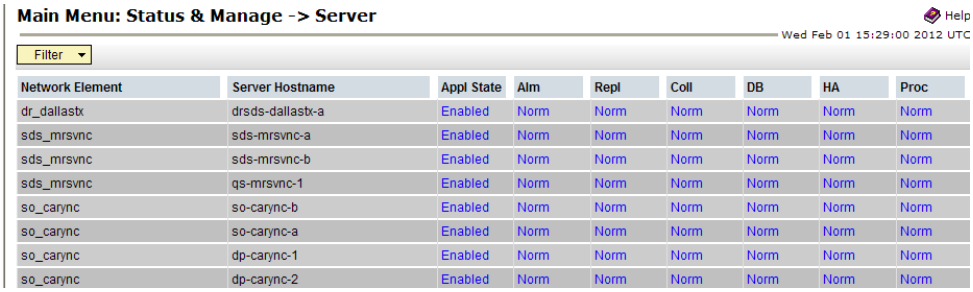
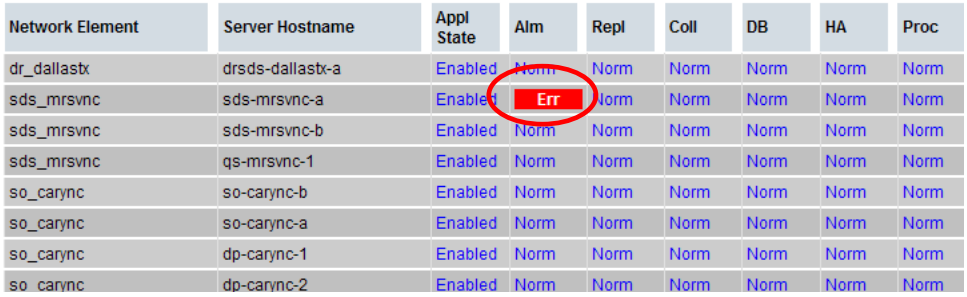
APPENDIX B. HEALTH CHECK PROCEDURES

This procedure is part of Software Upgrade Preparation and is used to determine the health and status of the HLR Router network and servers.

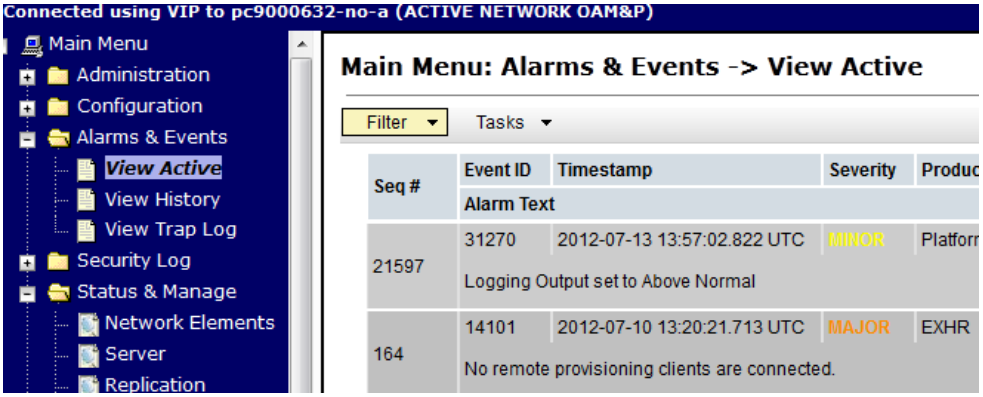
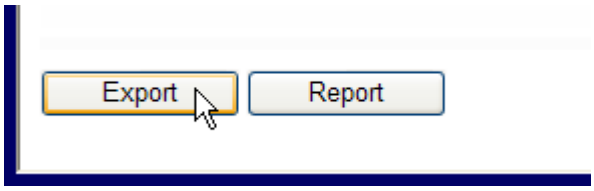
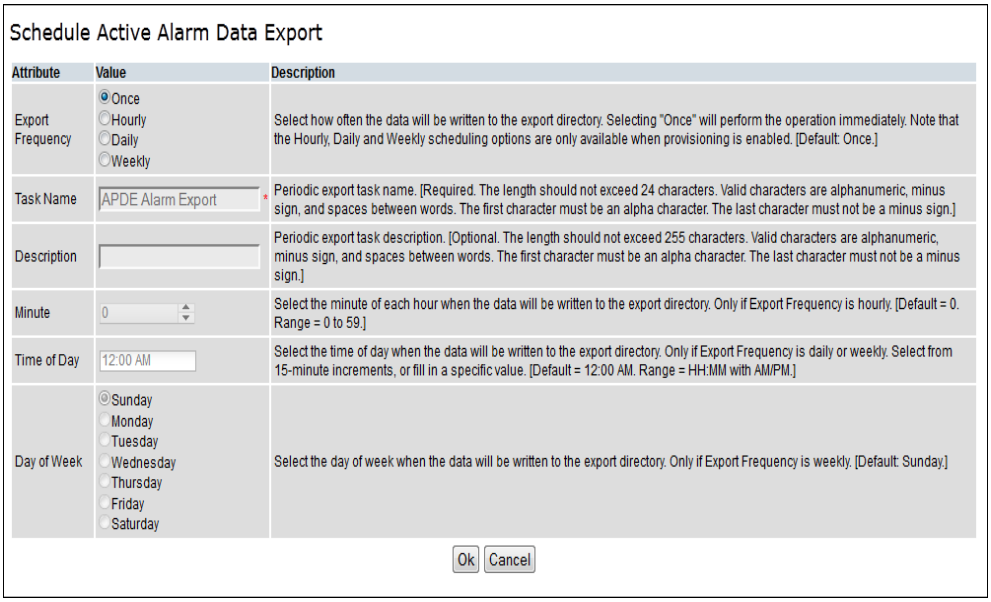
Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

SHOULD ANY STEP IN THIS PROCEDURE FAIL, STOP AND CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES FOR ASSISTANCE BEFORE CONTINUING!

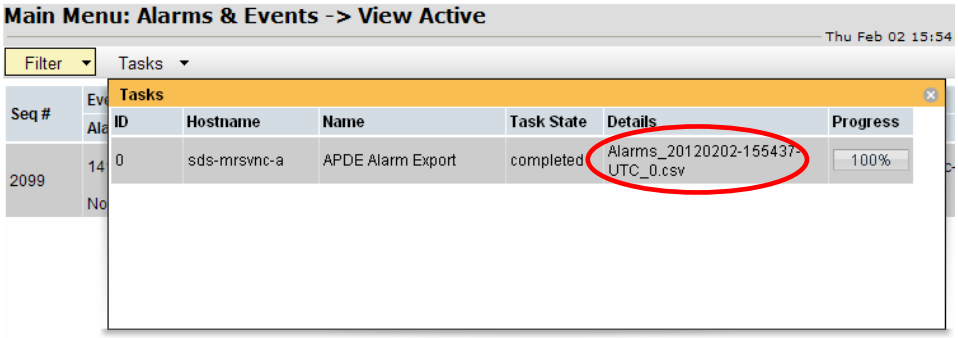
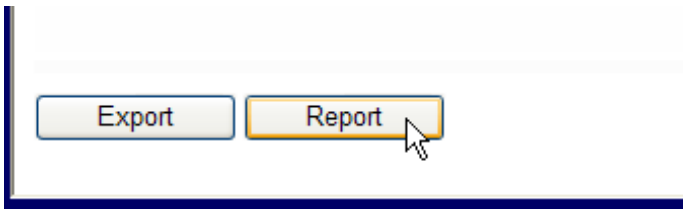
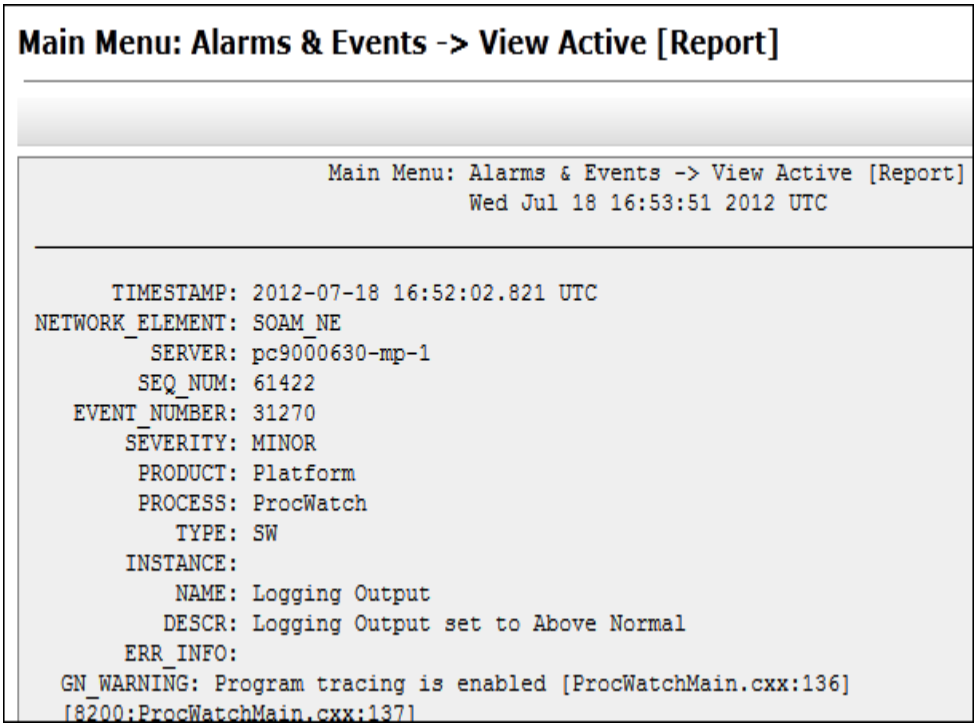
Appendix B: Health Check Procedures

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Server*** …as shown on the right.	
3. ☐	**Active NOAMP VIP:** Verify that all server statuses show **"Norm"** as shown on the right.	
4.	**Active NOAMP VIP:** If any other server statuses are present, they will appear in a colored box as shown on the right. **NOTE:** *Other server states include **"Err, Warn, Man and Unk"**.*	

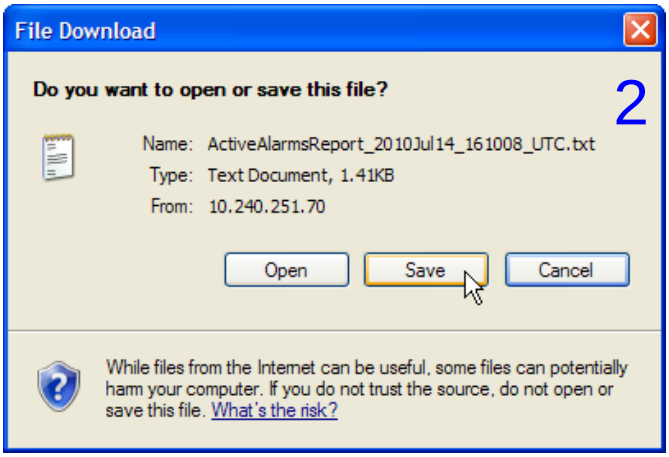
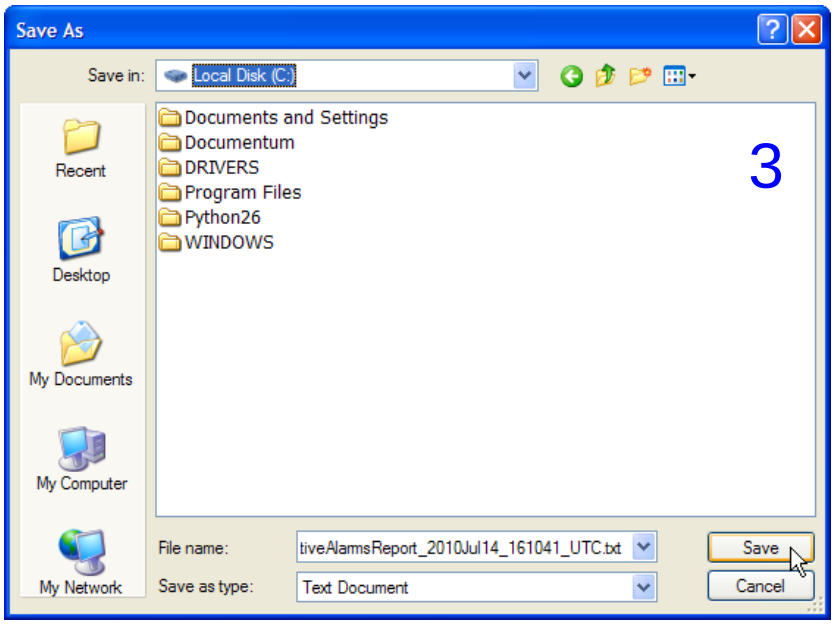
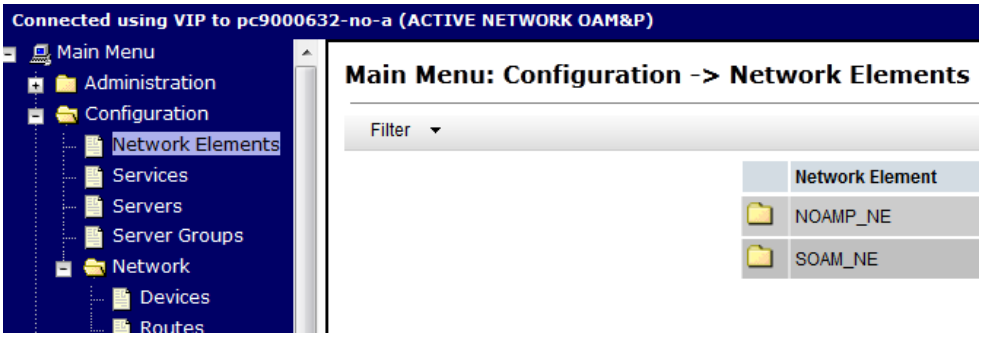
Appendix B: Health Check Procedures

Step	Procedure	Result
5. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Alarm & Events** **→ *View Active*** …as shown on the right.	 **WARNING:** *If any Alarms are present, STOP and contact Oracle's Tekelec Customer Service for assistance before attempting to continue.*
6. ☐	**Active NOAMP VIP:** Select the **"Export"** dialogue button from the bottom left corner of the screen.	
7. ☐	**Active NOAMP VIP:** Click the **"Ok"** button at the bottom of the screen.	

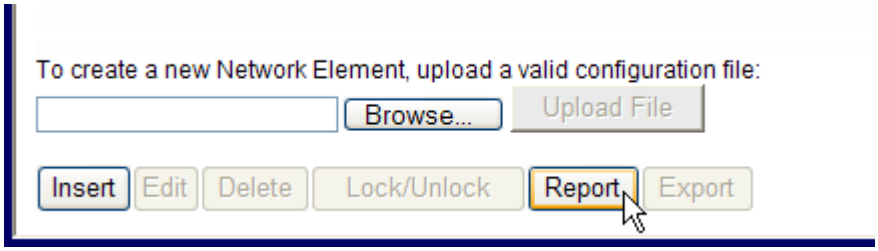
Appendix B: Health Check Procedures

Step	Procedure	Result
8. ☐	**Active NOAMP VIP:** The name of the exported Alarms CSV file will appear in the banner at the top of the right panel.	
9. ☐	**Active NOAMP VIP:** Record the filename of Alarms CSV file generated in the space provided to the right.	Example: *Alarms<yyyymmdd>_<hhmmss>.csv* Alarms _____ _ _____ .csv
10. ☐	**Active NOAMP VIP:** Select the **"Report"** dialogue button from the bottom left corner of the screen.	
11. ☐	**Active NOAMP VIP:** An **Active "Alarms & Events" Report** will be generated and displayed in the right panel.	

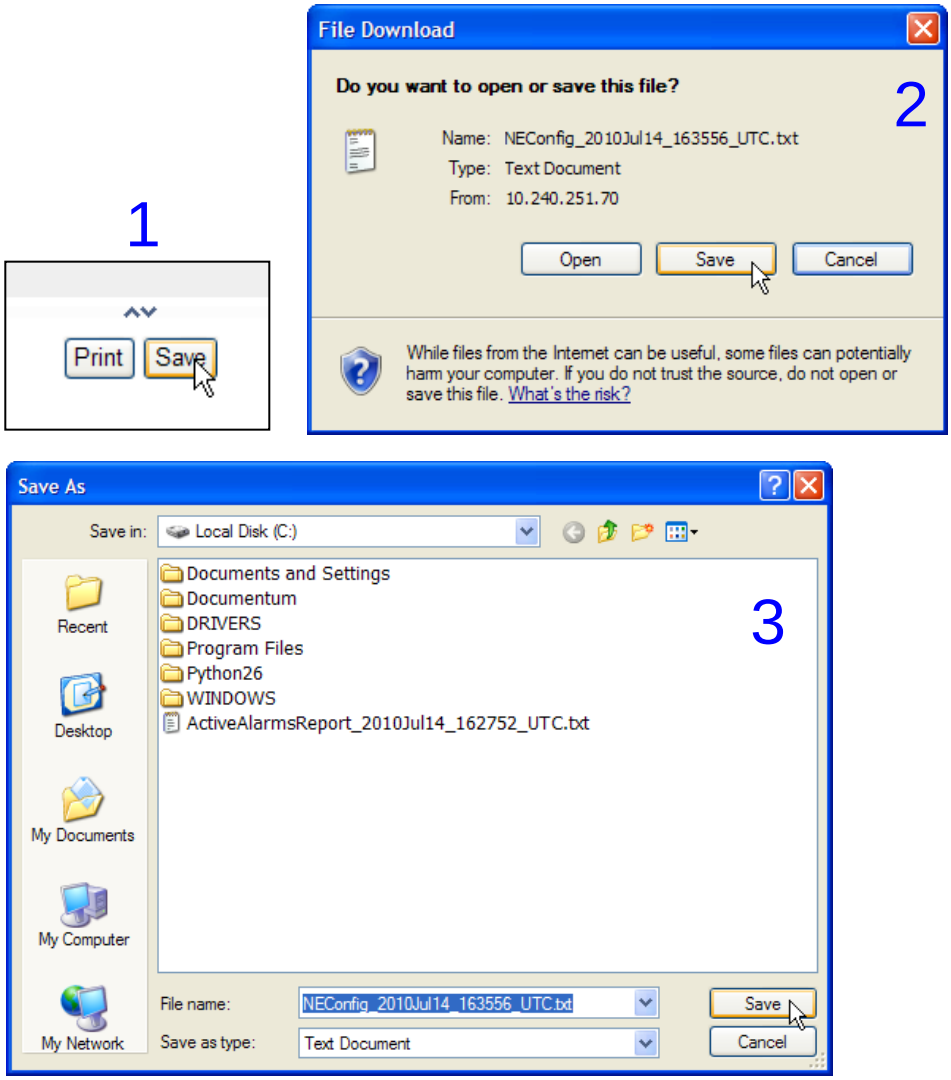
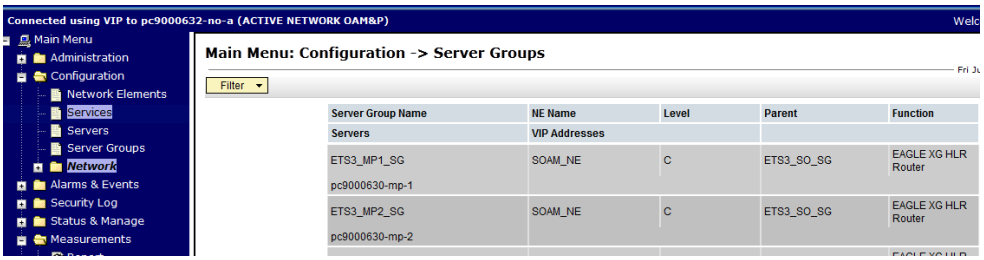
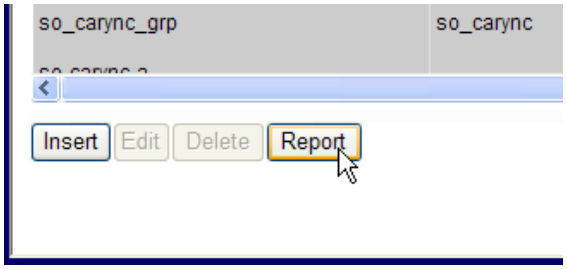
Appendix B: Health Check Procedures

Step	Procedure	Result
12. ☐	**Active NOAMP VIP:** **1)** Select the **"Save"** dialogue button from the bottom/middle of the right panel. **2)** Click the **"Save"** dialogue button on the *File Download* pop-up box. **3)** Select a directory on the local disk drive to store the *Active "Alarms & Events" Report* file and click the **"Save"** dialogue button.	  
13. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Configuration** **→ *Network Elements*** …as shown on the right.	

Appendix B: Health Check Procedures

Step	Procedure	Result
14. ☐	**Active NOAMP VIP:** Select the **"Report"** dialogue button from the bottom left corner of the screen.	
15. ☐	**Active NOAMP VIP:** A **"Network Element Report"** will be generated and displayed in the right panel.	**Main Menu: Configuration -> Network Elements [Report]** E X H R N e t w o r k E l e m e n t R e p o r t Report Generated: Wed Jul 18 17:08:12 2012 UTC From: Active NETWORK_OAMP on host pc9000632-no-a Report Version: 3.1.0-3.1.0_31.4.0 User: guiadmin Network Elements Summary NE Name: NOAMP_NE NE Name: SOAM_NE Network Report NOAMP_NE Network Name / VLAN ID / Network ID / Netmask / Gateway / Type / Default XMI / 3 / 010.250.051.000 / 255.255.255.000 / 010.250.051.001 / OAM / Yes SOAM_NE Network Name / VLAN ID / Network ID / Netmask / Gateway / Type / Default XMI / 3 / 010.250.051.000 / 255.255.255.000 / 010.250.051.001 / OAM / Yes Print Save Back

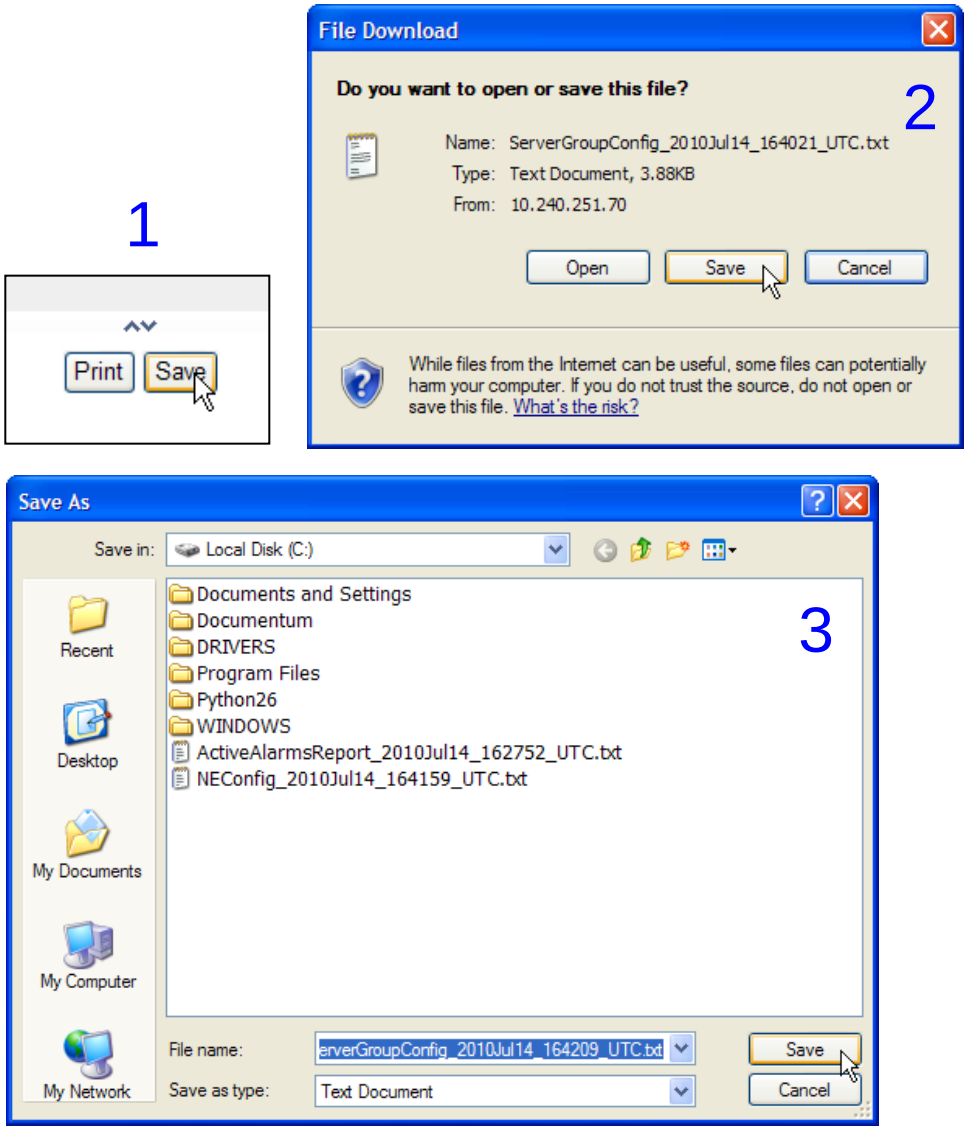
Appendix B: Health Check Procedures

Step	Procedure	Result
16. ☐	**Active NOAMP VIP:** **1)** Select the **"Save"** dialogue button from the bottom/middle of the right panel. **2)** Click the **"Save"** dialogue button on the *File Download* pop-up box. **3)** Select a directory on the local disk drive to store the *"Network Elements Report"* file and click the **"Save"** dialogue button.	
17. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Configuration** **→ *Server Groups*** …as shown on the right.	
18. ☐	**Active NOAMP VIP:** Select the **"Report"** dialogue button from the bottom left corner of the screen.	

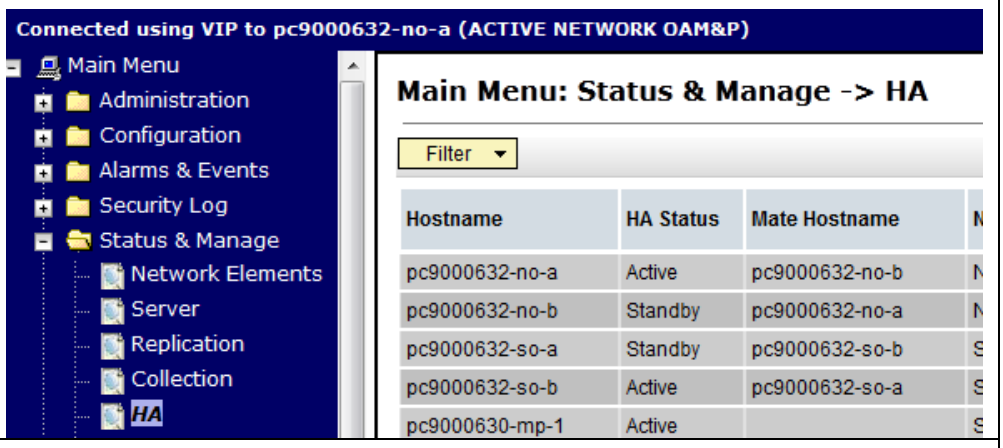
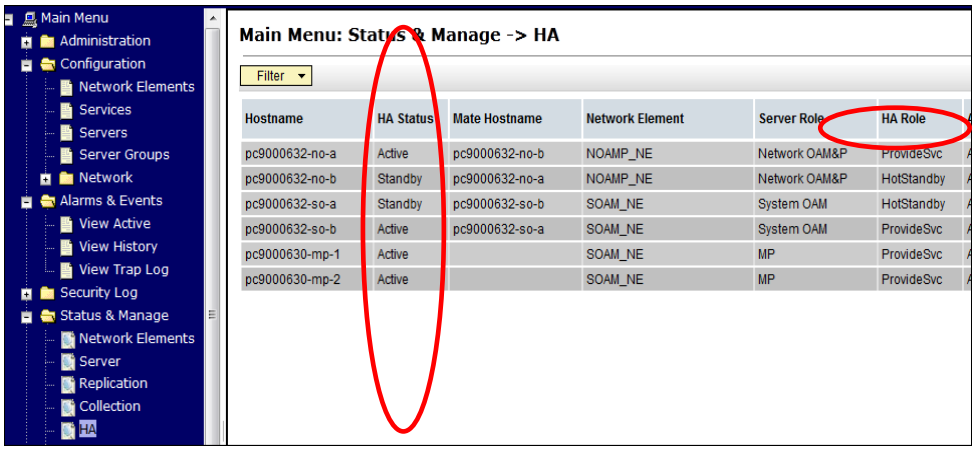
Appendix B: Health Check Procedures

Step	Procedure	Result
19. ☐	**Active NOAMP VIP:** A **"Server Group Report"** will be generated and displayed in the right panel.	**Main Menu: Configuration -> Server Groups [Report]** ========== E X H R S e r v e r G r o u p R e p o r t ========== Report Generated: Wed Jul 18 17:13:43 2012 UTC From: Active NETWORK_OAMP on host pc9000632-no-a Report Version: 3.1.0-3.1.0_31.4.0 User: guiadmin ---------- Server Groups Summary ETS3_NO_SG NE Name: NOAMP_NE Level: A Parent: NONE Function: EAGLE XG HLR Router Virtual IP Address: 010.250.051.140

Appendix B: Health Check Procedures

Step	Procedure	Result
20. ☐	**Active NOAMP VIP:** **1)** Select the **"Save"** dialogue button from the bottom/middle of the right panel. **2)** Click the **"Save"** dialogue button on the *File Download* pop-up box. **3)** Select a directory on the local disk drive to store the *"Server Group Report"* file and click the **"Save"** dialogue button.	
21. ☐	Provide the saved files to the Customer Care Center for Health Check Analysis.	• If executing this procedure as a pre or post Upgrade Health Check (HC1/HC2/HC3), provide the following saved files to the Customer Care Center for proper Health Check Analysis: ○ ***Active "Alarms & Events" Report*** *[Appendix B, Step 12]* ○ ***Network Elements Report*** *[Appendix B, Step 16]* ○ ***Server Group Report*** *[Appendix B, Step 20]*

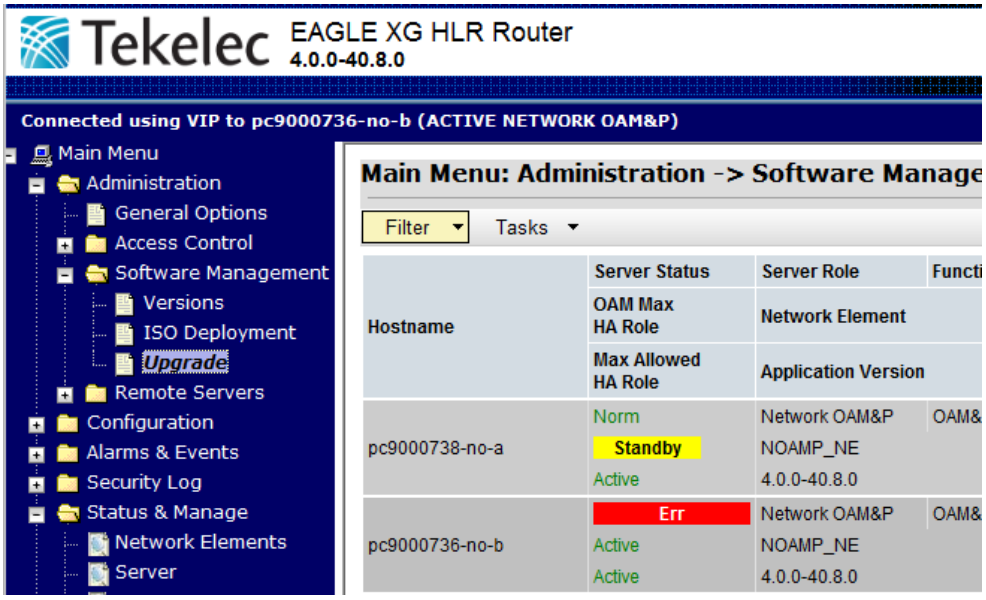
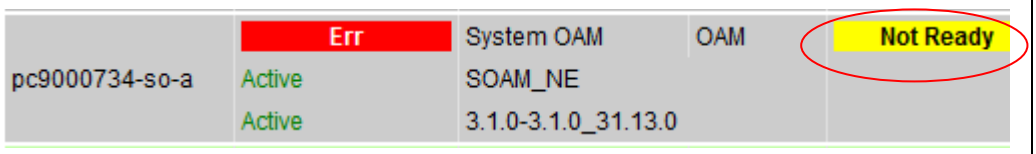
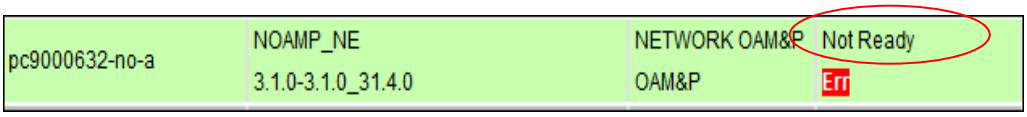
Appendix B: Health Check Procedures

Step	Procedure	Result
22. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *HA*** …as shown on the right.	
23. ☐	**Active NOAMP VIP:** **1)** Verify that the **"HA Status"** for all servers shows either **"Active"** or **"Standby"** as shown to the right. **NOTE:** *An **"HA Status"** of **"N/A"** is allowed when Server Role is **"QS"**.*	
24. ☐	**Active NOAMP VIP:** Repeat **Step** of this procedure until the last page of the **[Main Menu: *Status & Manage* → *HA*]** screen is reached.	• Verify the **"HA Status"** for each page of the **[Main Menu: *Status & Manage* → *HA*]** screen, and click "**Next**" to reach the next page.
THIS PROCEDURE HAS BEEN COMPLETED		

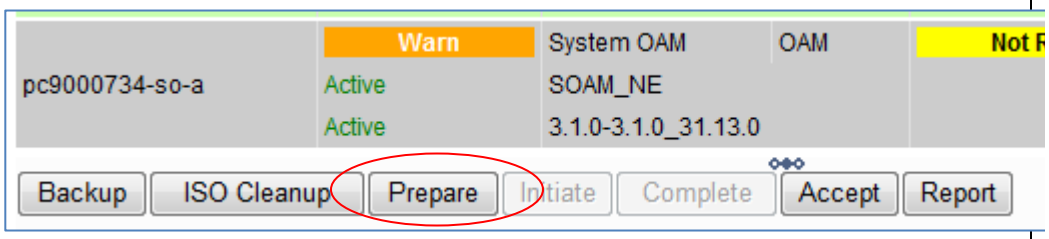
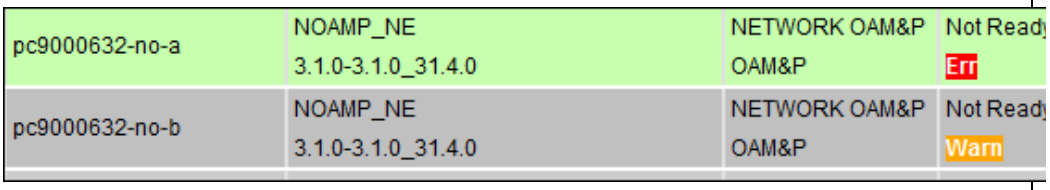
APPENDIX C. UPGRADE OF A SINGLE SERVER

C.1 Prepare Upgrade

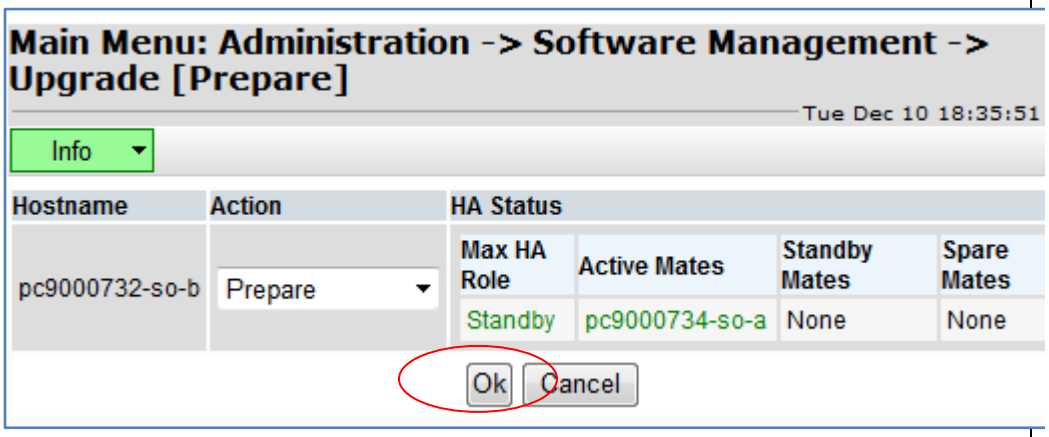
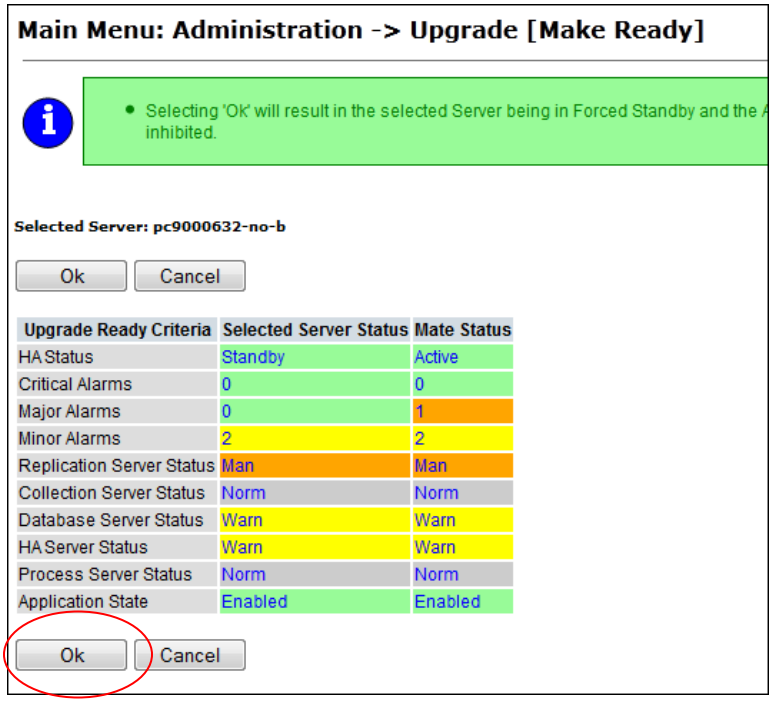
Appendix C.1: Prepare Upgrade

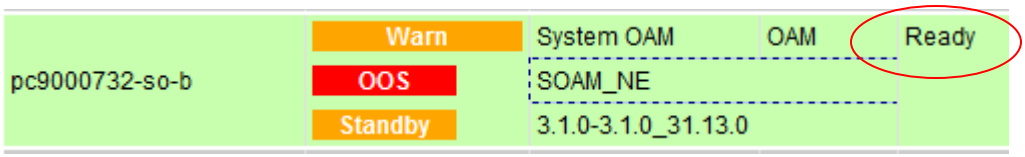
Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** (HLRR 4.0) **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** (HLRR 3.0) …as shown on the right.	
3. ☐	**Active NOAMP VIP:** **1)** Using the vertical scroll bar in the right panel, scroll to the row containing the **hostname** of the server to be upgraded. **2)** Verify that the **Upgrade State** shows **"Not Ready"**.	**<u>On HLRR 4.0 GUI:</u>**  **<u>On HLRR 3.0 GUI:</u>** 

Appendix C.1: Prepare Upgrade

Step	Procedure	Result
4. ☐	**Active NOAMP VIP:** **1)** Using the cursor, select the row containing the **hostname** of the server to be upgraded. **2)** Click the **"Prepare"** or **"Prepare Upgrade"** dialogue button located in the bottom of the right panel.	**On HLRR 4.0 GUI:**  **On HLRR 3.0 GUI:** 

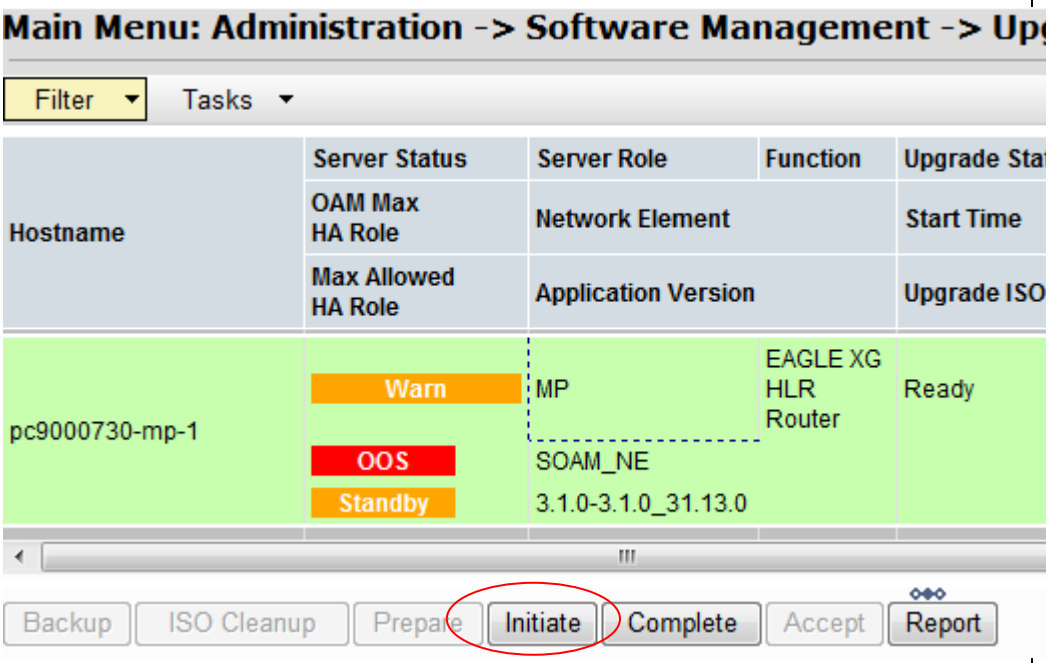
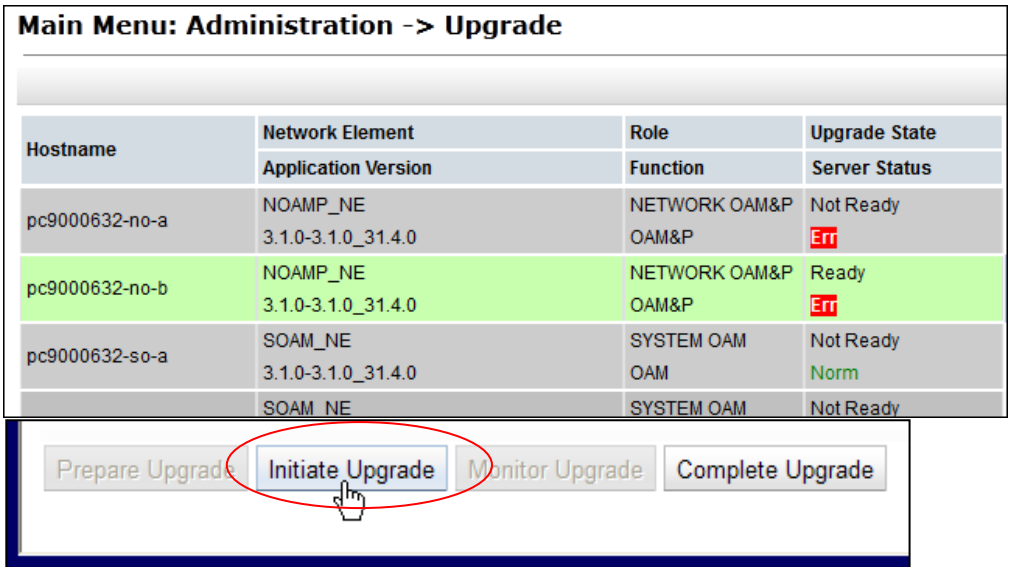
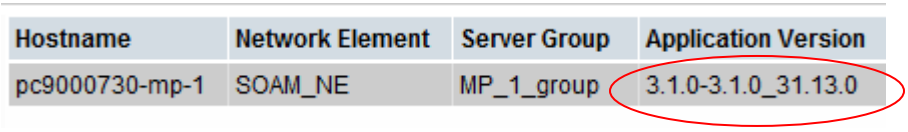
Appendix C.1: Prepare Upgrade

Step	Procedure	Result
5. ☐	**Active NOAMP VIP:** The user should be presented with the **Upgrade [Prepare]** -or- **Upgrade [Make Ready]** Administration screen. Click any **"Ok"** dialogue button.	**On HLRR 4.0 GUI:**  **On HLRR 3.0 GUI:** 

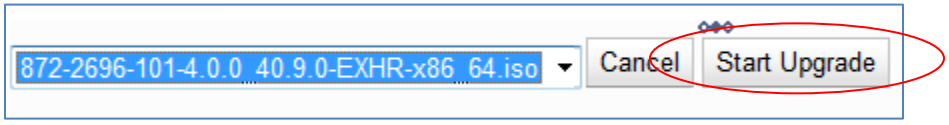
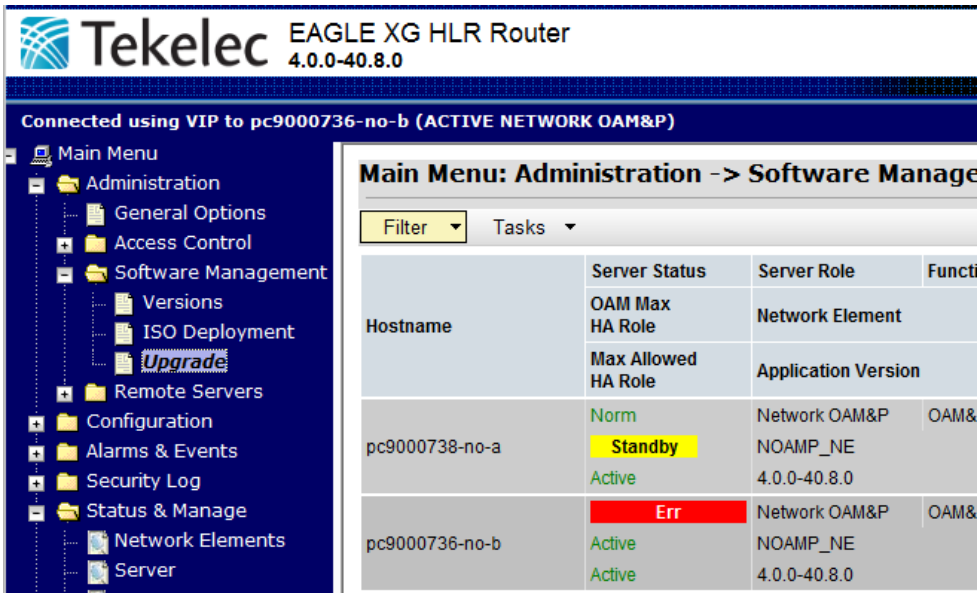
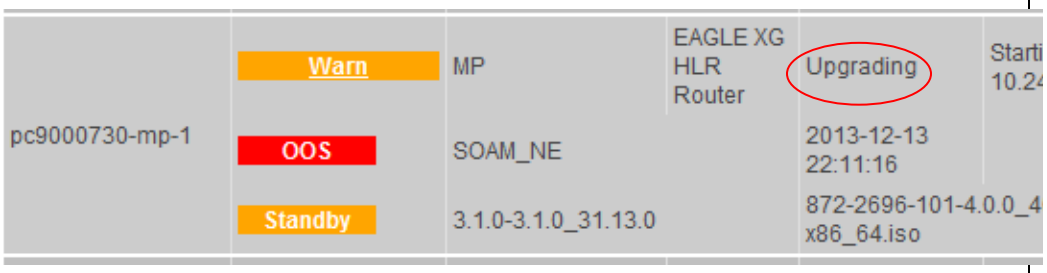
6. ☐	**Active NOAMP VIP:** **1)** Using the vertical scroll bar in the right panel, scroll to the row containing the **hostname** of the server to be upgraded. **2)** Verify that the **Upgrade State** shows **"Ready"**. **NOTE:** *If the **Upgrade State** fails to show **"Ready"**, the user may need to refresh the screen by selecting:* **Main Menu** **→ Administration** **→ Software Management** **→ *Upgrade*** (HLRR 4.0) **-OR-** **Main Menu** **→ Administration** **→ *Upgrade*** (HLRR 3.0) *for a 2nd time and repeating sub-steps 1) & 2) associated with this step.*	**On HLRR 4.0 GUI:**  **On HLRR 3.0 GUI:**
THIS PROCEDURE HAS BEEN COMPLETED		

C.2 Initiate Upgrade

Appendix C.2: Initiate Upgrade

Step	Procedure	Result
7. ☐	**Active NOAMP VIP:** **1)** Using the cursor, select the row containing the **hostname** of the server to be upgraded. **2)** Click the **"Initiate"** or **"Initiate Upgrade"** dialogue button located across the bottom left of the right panel.	**On HLRR 4.0 GUI:**  **On HLRR 3.0 GUI:** 
8. ☐	**Active NOAMP VIP:** Verify that the **Application Version** shows the ***<source_release>*.**	

Appendix C.2: Initiate Upgrade

Step	Procedure	Result
9. ☐	**Active NOAMP VIP:** 1) Using the pull-down menu, select ***<target_release>*.** 2) Click the **"Start Upgrade"** dialogue button	
10. ☐	**Active NOAMP VIP:** The user is returned to the… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** (HLRR 4.0) **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** (HLRR 3.0) …screen as shown on the right.	
11. ☐	**Active NOAMP VIP:** **1)** Using the vertical scroll bar in the right panel, scroll to the row containing the **hostname** of the server to be upgraded. **2)** Verify that the **Upgrade State** shows **"Upgrading"**.	**<u>On HLRR 4.0 GUI:</u>**  **<u>On HLRR 3.0 GUI:</u>** **NOTE:** *As a result of the server under going upgrade, several alarms related to* ***inetmerge, inetrep, inetsync, cmha, raclerk, era etc…*** *(****Event IDs 31000, 31101, 31102, 31105, 31106, 31107, 14301, 31202, 31233, 31283****) may appear and remain present until the upgrade has been completed. They will be cleared some time later.*
THIS PROCEDURE HAS BEEN COMPLETED		

C.3 Monitor Upgrade

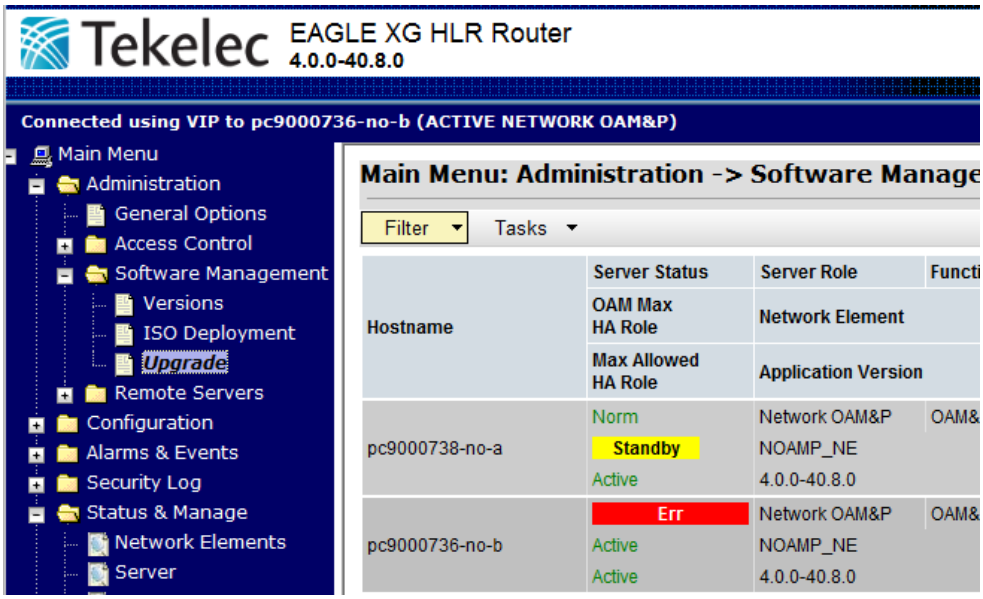
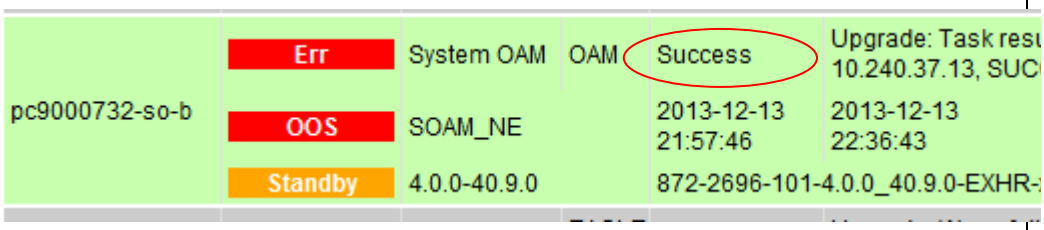
Appendix C.3: Monitor Upgrade

Step	Procedure	Result
12. ☐	**Active NOAMP VIP:** **1)** Using the cursor, select the row containing the **hostname** of the server to be upgraded. **2)** On HLRR 3.0 GUI – click the **"Monitor Upgrade"** dialogue button located across the bottom of the right panel.	**On HLRR 4.0 GUI:** pc9000732-so-b | Unk / OOS / Standby | System OAM / SOAM_NE | OAM | Upgrading | 2013-12-13 21:57:46 | 872-2696-101-4.0.0_40 x86_64.iso | Upgra task s 10.24 IN_PR Note: To motitor the upgrade process continue to refresh **Main Menu → Administration → Software Management → *Upgrade*** (HLRR 4.0 only) **On HLRR 3.0 GUI:** sds-mrsvnc-b | sds_mrsvnc 3.0.0-3.0.0_10.8.0 | NETWORK OAM&P OAM&P | Not Ready Err qs-mrsvnc-1 | sds_mrsvnc 3.0.0-3.0.0_10.8.0 | QUERY_SERVER UNDEFINED | Upgrading Err Prepare Upgrade | Initiate Upgrade | Monitor Upgrade | Complete Upgrade
13. ☐	**Active NOAMP VIP:** The user should be presented with the **Upgrade [Monitor]** Administration screen. The initial values for the **Current Status /Details** fields should be **Upgrading /UPGRADING**. **NOTE:** *As the upgrade progresses, time values will continue to update every 30 seconds.*	**On HLRR 3.0 GUI only:** **Main Menu: Administration -> Upgrade [Monitor]** Information Item | Current Status | Details Server Name / IP | pc9000632-no-b | 10.250.51.81 Upgrade ISO | 872-2470-101-3.1.0_31.5.0-EXHR-x86_64.iso | - Upgrade Started | 2012-Jul-20 17:53:22 UTC | 2 min, 45 sec ago Last Status Response | Upgrade: retrieved TPD task state for IP: 10.250.51.81 is IN_PROGRESS_STATE | - Received at | 2012-Jul-20 17:54:23 UTC | 1 min, 44 sec ago Upgrade State | Upgrading | UPGRADING

Appendix C.3: Monitor Upgrade

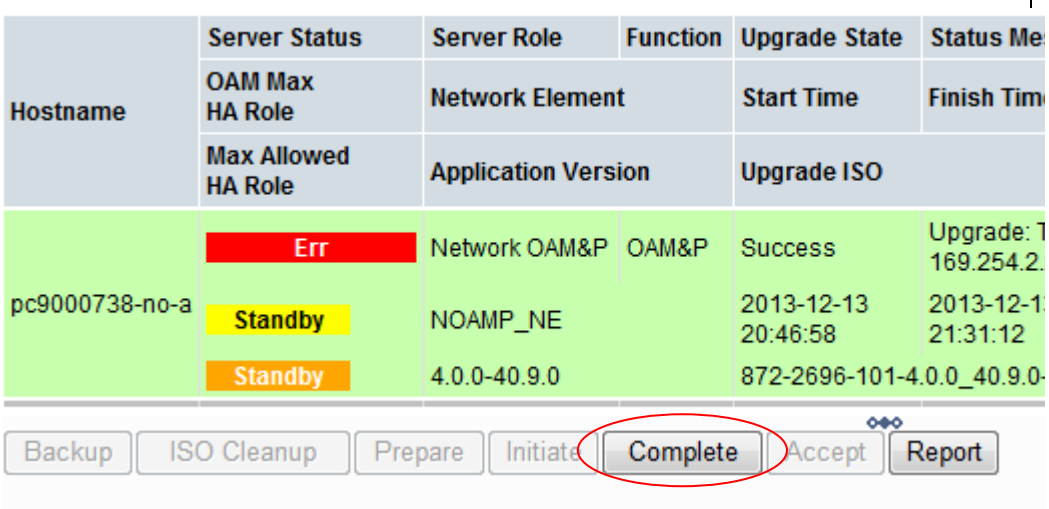
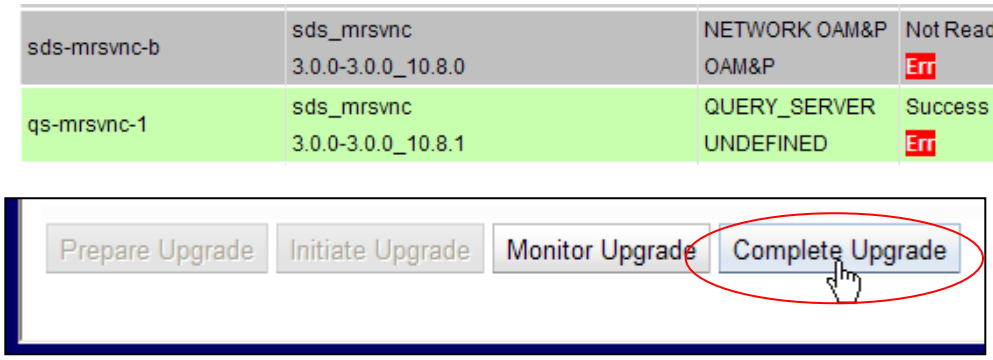
Step	Procedure	Result
14. ☐	**Active NOAMP VIP:** When the server initiates a post-upgrade reboot, the values for the **Current Status /Details** fields will change to **Upgrading /UNKOWN**.	**On HLRR 3.0 GUI only:** **Main Menu: Administration -> Software Upgrade [Monitor]** Fri Jan 27 22:41:46 2012 Information Item: Server Name / IP — Current Status: qs-mrsvnc-1 — Details: 169.254.100.13 Information Item: Upgrade ISO — Current Status: 872-2358-102-3.0.0_10.8.1-SDS-x86_64.iso — Details: - Information Item: Upgrade Started — Current Status: 2012-Jan-27 22:38:27 UTC — Details: 3 min, 19 sec ago Information Item: Last Status Response — Current Status: Upgrade: Warn: failed to get TPD task state for IP: 169.254.100.13, server could be rebooting. — Details: - Information Item: Received at — Current Status: 2012-Jan-27 22:41:44 UTC — Details: 2 sec ago Information Item: Upgrade State — Current Status: Upgrading — Details: UNKNOWN
15. ☐	**Active NOAMP VIP:** After the post-upgrade reboot has been completed, the values for the **Current Status /Details** fields will change to **Success/SUCCESS**.	**On HLRR 3.0 GUI only:** **Main Menu: Administration -> Software Upgrade [Monitor]** Fri Jan 27 22:51:06 2012 Information Item: Server Name / IP — Current Status: qs-mrsvnc-1 — Details: 169.254.100.13 Information Item: Upgrade ISO — Current Status: 872-2358-102-3.0.0_10.8.1-SDS-x86_64.iso — Details: - Information Item: Upgrade Started — Current Status: 2012-Jan-27 22:38:27 UTC — Details: 12 min, 39 sec ago Information Item: Last Status Response — Current Status: Upgrade: Task result for IP: 169.254.100.13, SUCCESS — Details: - Information Item: Received at — Current Status: 2012-Jan-27 22:50:00 UTC — Details: 1 min, 6 sec ago Information Item: Upgrade State — Current Status: Success — Details: SUCCESS
16. ☐	**Active NOAMP VIP:** Click the **"Return to server list"** dialogue button located on the bottom left of the right panel.	**On HLRR 3.0 GUI only:** Return to server list

Appendix C.3: Monitor Upgrade

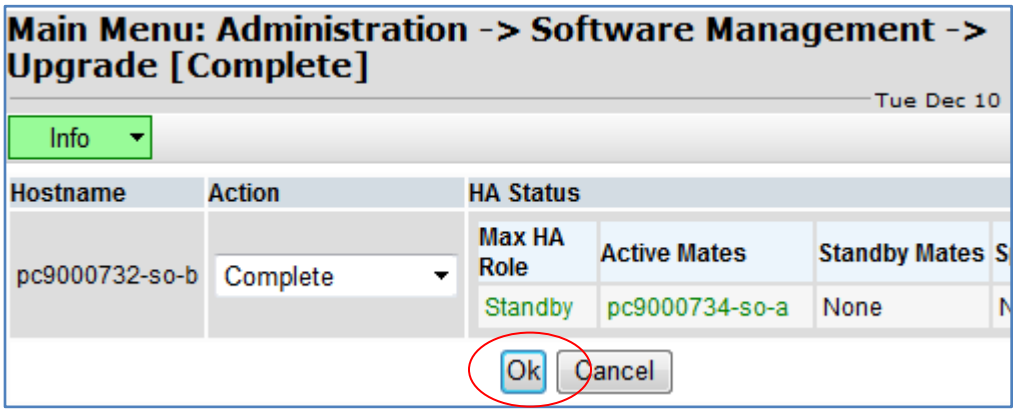
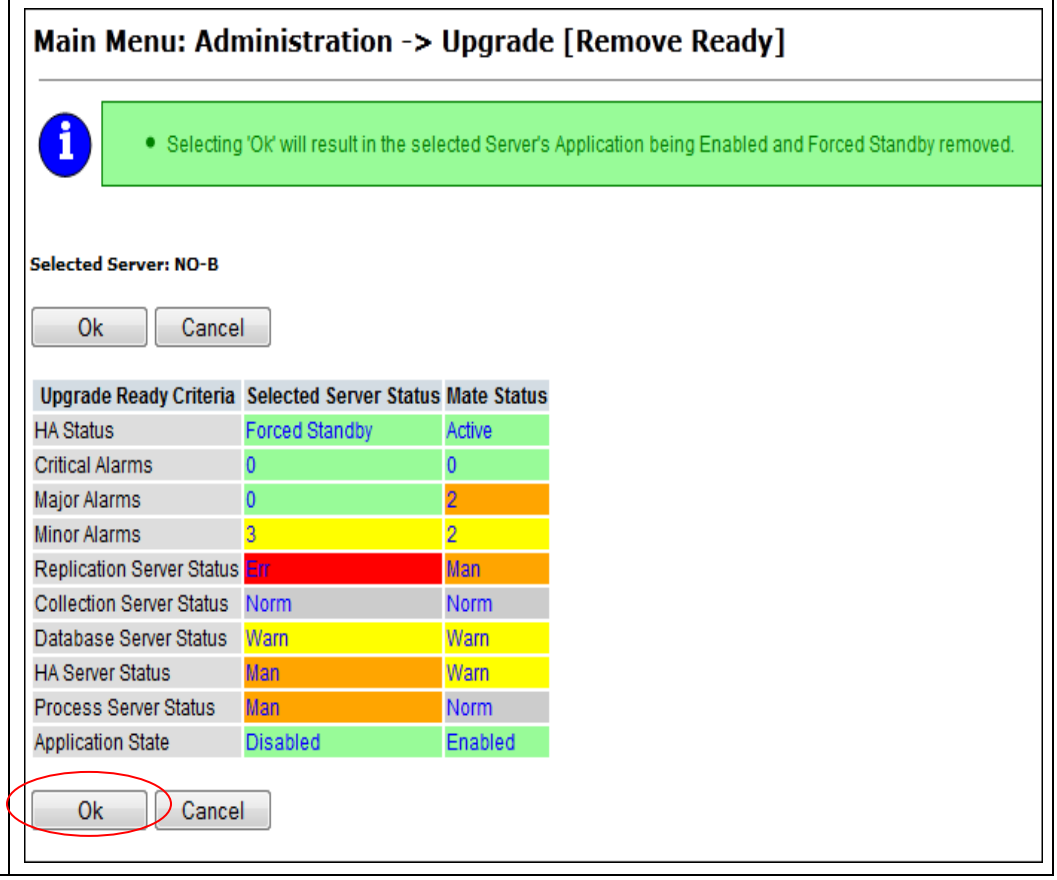
Step	Procedure	Result
17. ☐	**Active NOAMP VIP:** The user is returned to the… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** (HLRR 4.0) **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** (HLRR 3.0) …screen as shown on the right.	
18. ☐	**Active NOAMP VIP:** **1)** Using the vertical scroll bar in the right panel, scroll to the row containing the **hostname** of the server to be upgraded. **2)** Verify that the **Upgrade State** shows **"Success"**.	**<u>On HLRR 4.0 GUI:</u>**  **<u>On HLRR 3.0 GUI:</u>**
THIS PROCEDURE HAS BEEN COMPLETED		

C.4 Complete Upgrade

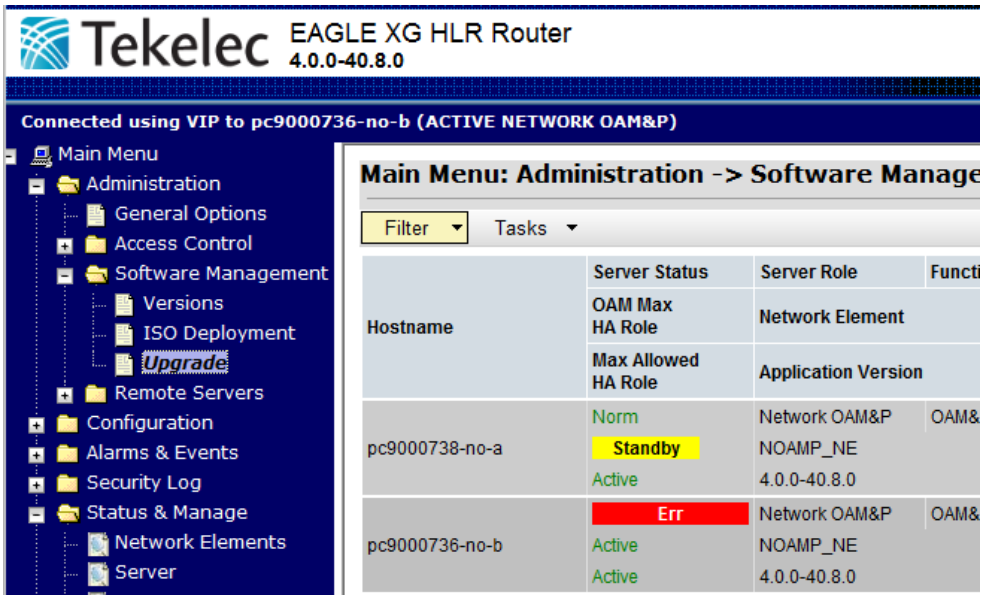
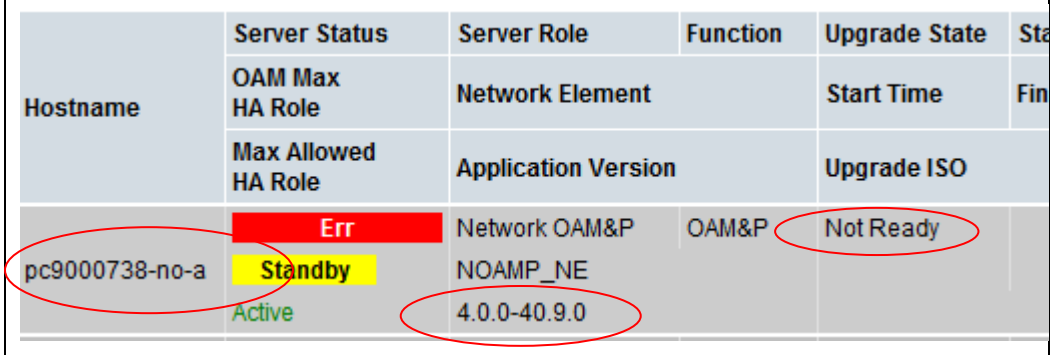
Appendix C.4: Complete Upgrade

Step	Procedure	Result
19. ☐	**Active NOAMP VIP:** **1)** Using the cursor, select the row containing the **hostname** of the server to be upgraded. **2)** Click the **"Complete"** or **"Complete Upgrade"** dialogue button located across the bottom of the right panel.	**On HLRR 4.0 GUI:**  **On HLRR 3.0 GUI:** 

Appendix C.4: Complete Upgrade

Step	Procedure	Result
20. ☐	**Active NOAMP VIP:** The user should be presented with the **Upgrade [Complete]** -or- **Upgrade [Remove Ready]** Administration screen. Click any **"Ok"** dialogue button.	**On HLRR 4.0 GUI:**  **NOTE 1:** *An error message stating **"SOAP error while clearing upgrade status of hostname…"** may appear on the GUI after clicking the **"Ok"** dialogue button. This error message is expected for the Backout scenario and may be ignored* **NOTE 2:** *An error code 212 stating: "**Failed to release server from Forced Standby**" may appear on the GUI after clicking the **"Ok"** dialogue button. This error code is premature, and you can ignore it and continue.* **On HLRR 3.0 GUI:** 

Appendix C.4: Complete Upgrade

Step	Procedure	Result
21. ☐	**Active NOAMP VIP:** The user is returned to the… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** (HLRR 4.0) **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** (HLRR 3.0) …screen as shown on the right.	
22. ☐	**Active NOAMP VIP:** **1)** Using the vertical scroll bar in the right panel, scroll to the row containing the **hostname** of the server to be upgraded. **2)** Verify that the **Application Version** now shows the ***<target_release>***. **3)** Verify that the **Upgrade State** shows **"Not Ready"**. **NOTE:** *If the **Upgrade State** fails to show **"Not Ready"**, the user may need to refresh the screen for a 2nd time and repeating sub-steps 1) thru 3) associated with this step.*	**<u>On HLRR 4.0 GUI:</u>**  **<u>On HLRR 3.0 GUI:</u>** **NOTE:** *If the **Upgrade State** fails to show **"Success"**, the user may need to refresh this screen*

Appendix C.4: Complete Upgrade

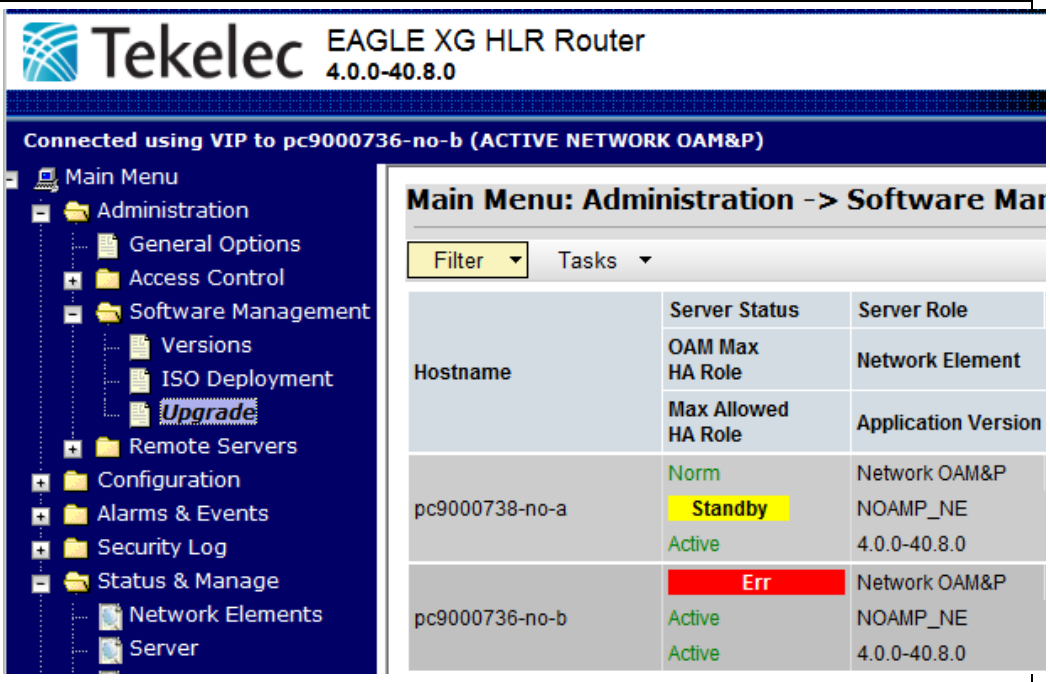
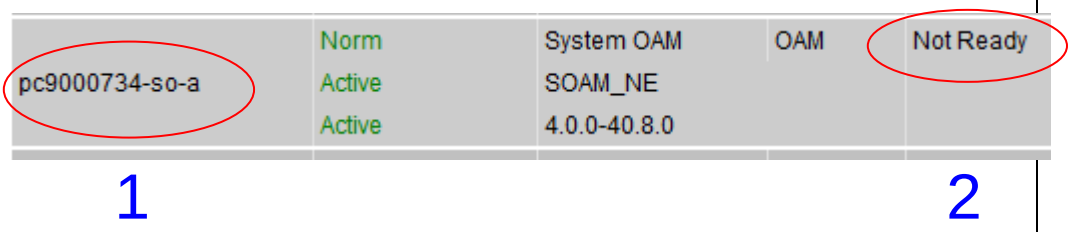
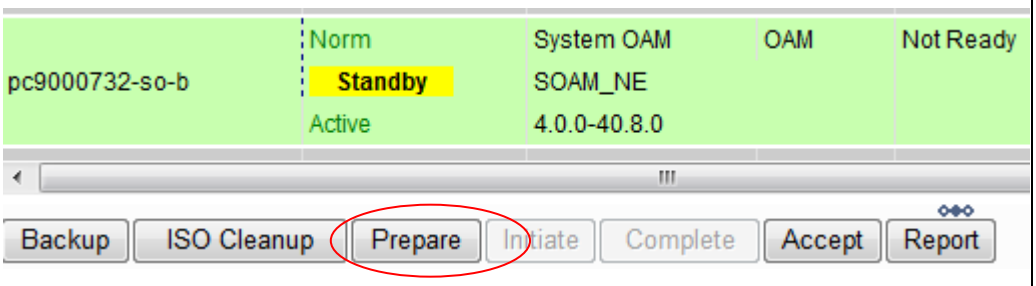
Step	Procedure	Result
23. ☐	**Active NOAMP VIP:** View post-upgrade status	View post-upgrade status of the server(s): HLRR system will have the following expected alarm for the upgraded server: • Alarm ID = **10008** (Provisioning Manually Disabled) Servers that still have replication disabled will have the following expected alarm: • Alarm ID = **31113** (Replication Manually Disabled) You may also see the alarms: • Alarm ID = **10009** (Config and Prov DB not yet synchronized) • Alarm ID = **32532** (Server Upgrade Pending Accept/Reject)
24. ☐	**Active NOAMP VIP:** Clear browser cache	Javascript libraries, images and other objects are often modified in the upgrade. Browsers can sometimes cause GUI problems by holding on to the old objects in the built-in cache. To prevent these problems always clear the browser cache after upgrade: 1. Simultaneously hold down the CTRL+SHIFT+DELETE keys. 2. Select the appropriate type of objects and delete from the cache via the pop-up dialog. For Internet Explorer the relevant object type is “Temporary Internet Files”. Other browsers may label these objects differently.
THIS PROCEDURE HAS BEEN COMPLETED		

C.5 Server Worksheet

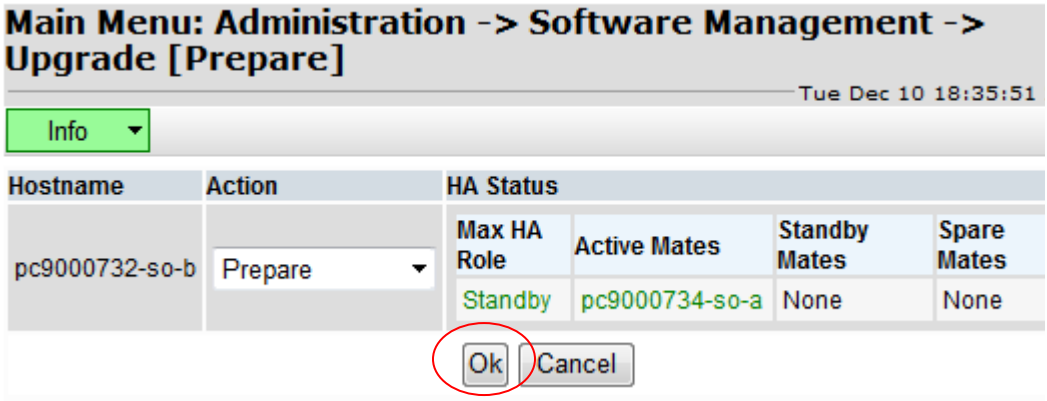
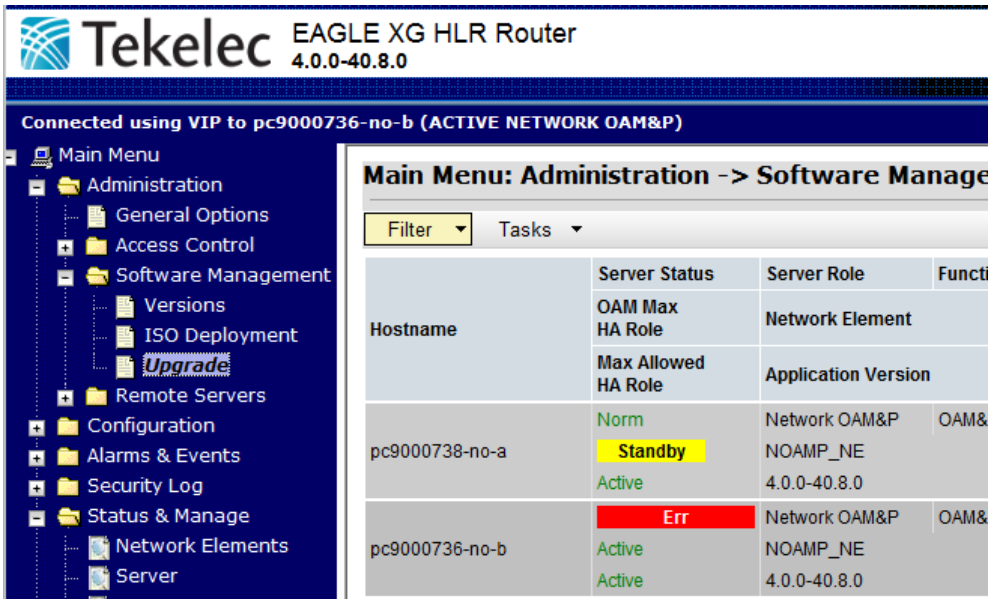
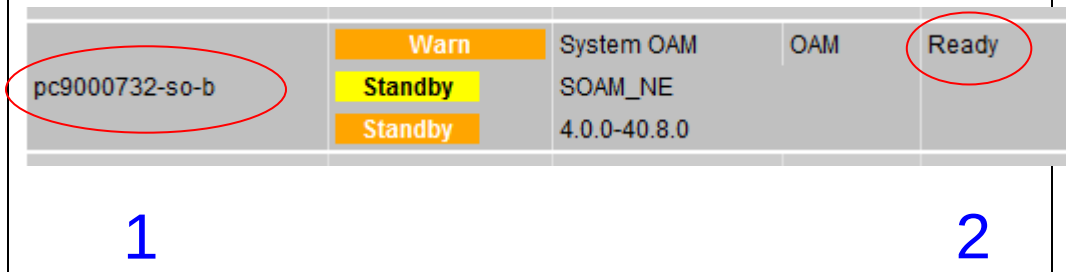
☐ Active Primary NOAMP: _____ ☐ Standby Primary NOAMP:_____	☐ Active DR NOAMP: _____ ☐ Standby DR NOAMP:_____
☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____	☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____
☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____	☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____
☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____	☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____
☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____	☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____
☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____	☐ Active SOAM: _____ ☐ Standby SOAM: _____ ☐ MP1: _____ ☐ MP2: _____

APPENDIX D. BACKOUT OF A SINGLE SERVER

Appendix D: Backout of a Single Server

Step	Procedure	Result
1. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**
2. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** **-OR-** **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** …as shown on the right.	
3. ☐	**Active NOAMP VIP:** **1)** Scroll to the row containing the **hostname** of the server to be backed-out. **2)** Verify that the **Upgrade State** shows **"Not Ready"**.	
4. ☐	**Active NOAMP VIP:** **1)** Using the cursor, select the row containing **hostname** of the server to be upgraded. **2)** Click the **"Prepare"** or **"Prepare Upgrade"** dialogue button located in bottom of the right panel.	

Appendix D: Backout of a Single Server

Step	Procedure	Result
5. ☐	**Active NOAMP VIP:** The user should be presented with the **Upgrade [Prepare]** Administration screen. Click the **"Ok"** dialogue button located at the bottom left of the server status table.	
6. ☐	**Active NOAMP VIP:** The user is returned to… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** …as shown on the right.	
7. ☐	**Active NOAMP VIP:** **1)** Scroll to the row containing the **hostname** of the server to be backed-out. **2)** Verify that the **Upgrade State** shows **"Ready"**.	
8. ☐	**Server IMI IP (SSH):** SSH to server	Use your SSH client to connect to the server (ex. ssh, putty): `ssh <server address>`

9. ☐	**Server IMI IP (SSH):**
	
	Login as root user
		Login as "**root**":
		
		`login as: root`
		`Password: <enter password>`

Appendix D: Backout of a Single Server

Step	Procedure	Result

10. ☐	**Server IMI IP (SSH):**
	
	Execute the backout
		1. Find out the state of the server which is going to be backed out. Server shall be in Standby/Spare. Execute following command to find the HA state:
		
		`# ha.mystate`
		
		NOTE: If the state of the server is Active then move to step 1 mentioned above.
		
		2. Execute the backout using the ugwrap script:
		
		`# screen`
		`# /var/TKLC/backout/reject`
		
		NOTE: If backout asks if you would like to continue backout, answer "**y**".

11. ☐	**Server IMI IP (SSH):** Backout proceeds	Many informational messages will come across the terminal screen as the backout proceeds. Finally, after backout is complete, the server will automatically reboot.

12. ☐	**Server IMI IP (SSH):**
	
	SSH to server and login as root user
		Use your SSH client to connect to the server (ex. ssh, putty):
		
		`ssh <server address>`
		
		`login as: root`
		`password: <enter password>`

13. ☐	**Server IMI IP (SSH):**
	
	Restore the full DB run environment for HLRR 3.0
		Execute the backout_restore utility to restore the full database run environment:
		
		`# screen`
		`# /var/tmp/backout_restore`
		
		NOTE: If asked if you would like to proceed, answer "**y**".
		
		If the restore was successful, the following will be displayed:
		
		`Success: Full restore of COMCOL run env has completed. Return to the backout procedure document for further instruction.`
		
		If an error is encountered and reported by the utility, then work with Oracle's Tekelec Customer Care Center for further instructions.

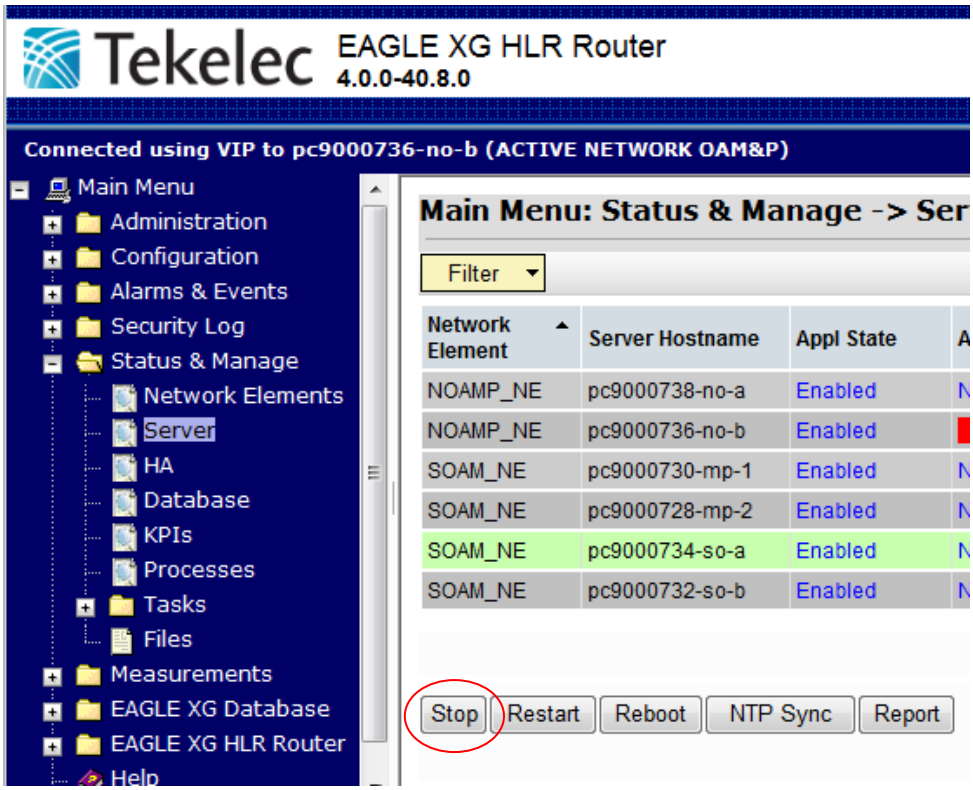
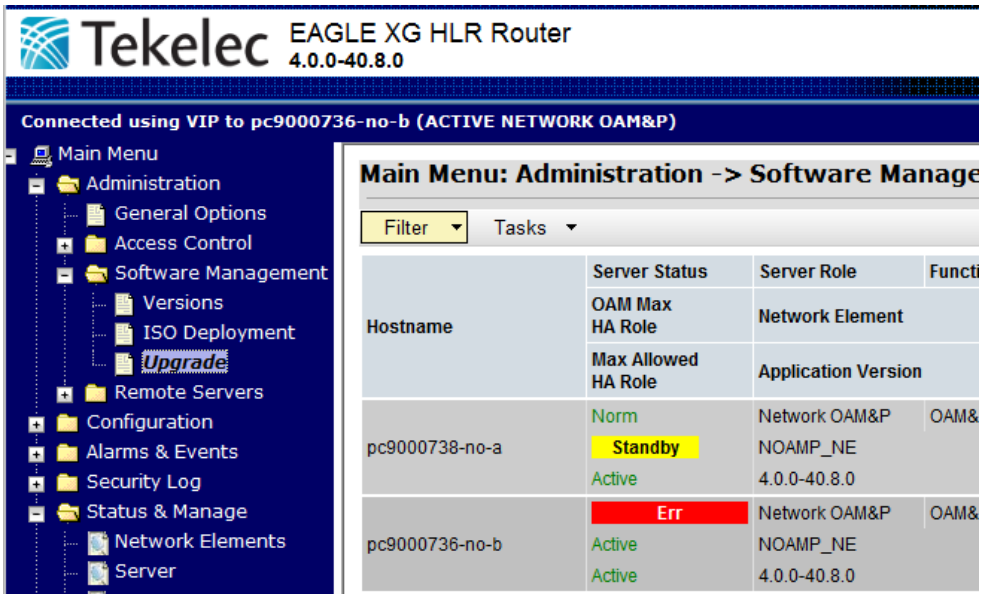
14. ☐	**Server IMI IP (SSH):**
	
	Workaround for major backout (HLRR 4.0 -> HLRR 3.0) only
	
	Make sure that that a mate OAM server comes up in the forced Standby state
		If the backed out server is Standby NOAMP or SOAM (first NOAMP or SOAM server to be backed out), then update the NodeInfo table to make sure the server will not automatically be active in the OAM pair to enter split brain (Active-Active).
		
		`# prod.dbup`
		
		Change the inhibitFlag setting of the NO/SO (backed out server) to 'SH'
		
		`# iset -finhibitFlag='SH' NodeInfo where "nodeName='<hostname_of_backedout_server>'"`

15. ☐	**Server IMI IP (SSH):** Reboot the server	Enter the following command to reboot the server. This step can take several minutes and will terminate SSH session `# init 6`

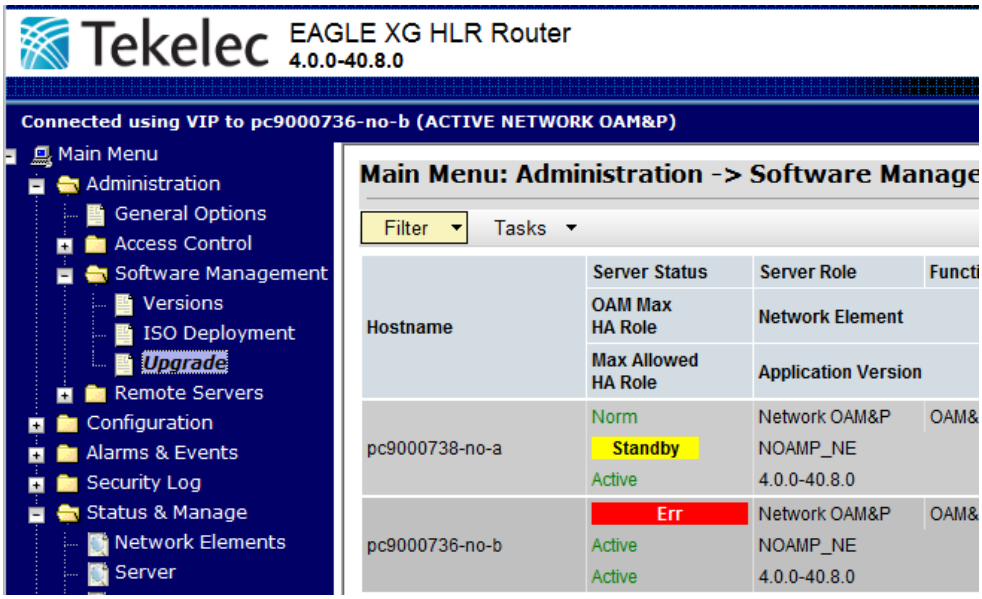
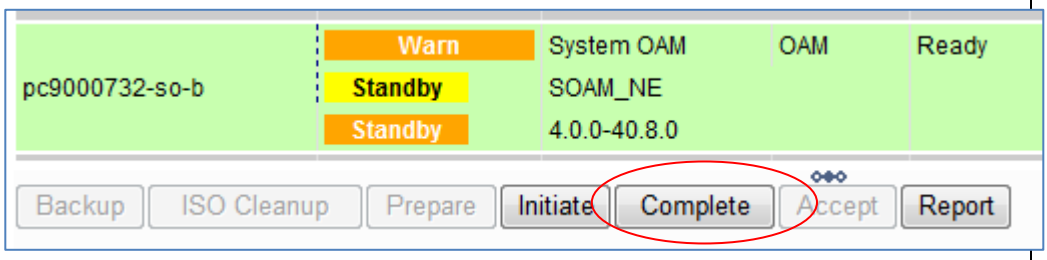
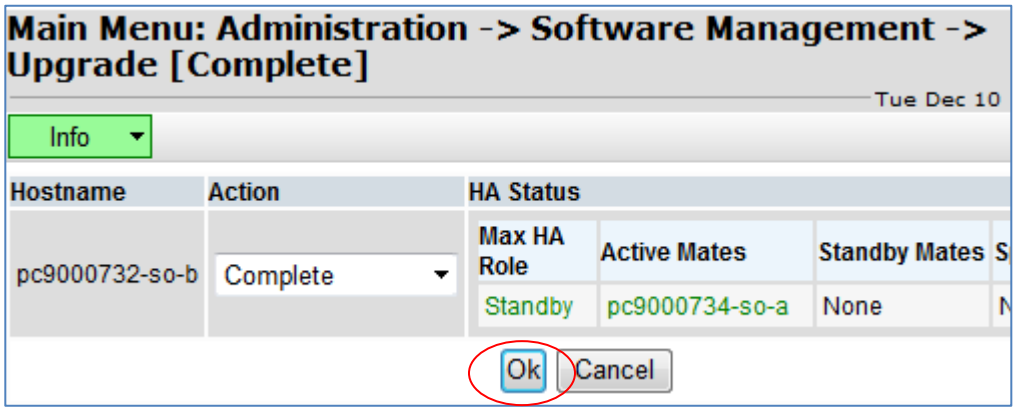
Appendix D: Backout of a Single Server

Step	Procedure	Result
16. ☐	**Active NOAMP VIP (SSH):** Workaround for major backout (HLRR 4.0 -> HLRR 3.0) only	NOTE: This is workaround for major backout (HLRR 4.0 -> HLRR 3.0) only and is to be performed on the active Primary NOAMP server. If the backed out server is Standby NOAMP or SOAM (first NO or SO to be backed out), you must cause a switchover by logging in to the active NOAMP and modifying the NodeInfo table. 1. Wait until the backed-out server has completely rebooted and came back up after completing Step 15 of this procedure. 2. Use your SSH client, login to active Primary NOAMP server as root user **ssh <server address>** login as: **root** password: **<enter password>** 3. Change the node capability of active NO/SO server to "Stby", and change the node capability of backed out standby NO/SO server to "Active" **# iset -fnodeCapability='Stby' NodeInfo where "nodeName='<hostname_of_active_server>'" && iset -fnodeCapability='Active' NodeInfo where "nodeName='<hostname_of_backedout_standby_server>'"** Note: This will cause a switchover, so if logged into the VIP then the GUI session will be logged out. Login back to VIP and continue procedure.
17. ☐	**Server IMI IP (SSH):** SSH to backed-out server and login as root user	Use your SSH client to connect to the server (ex. ssh, putty): **ssh <server address>** login as: **root** password: **<enter password>**
18. ☐	**Server IMI IP (SSH):** Verify services restart	**<u>If this is an NOAMP or SOAM server,</u>** verify httpd service is running. Execute the command: **# service httpd status** Verify expected output displays httpd is running (the process IDs are variable so the list of numbers can be ignored): **httpd <process IDs will be listed here> is running...** If httpd is still not running after ~3 minutes, then services have failed to restart. Contact Oracle's Tekelec Customer Care Center for further instructions. Execute following command to gather output : **# syscheck -v** Exit from the command line of backed-out server. # **exit**
19. ☐	Using the **VIP** address, access the Primary NOAMP GUI.	• Access the Primary NOAMP GUI as specified in **Appendix A.**

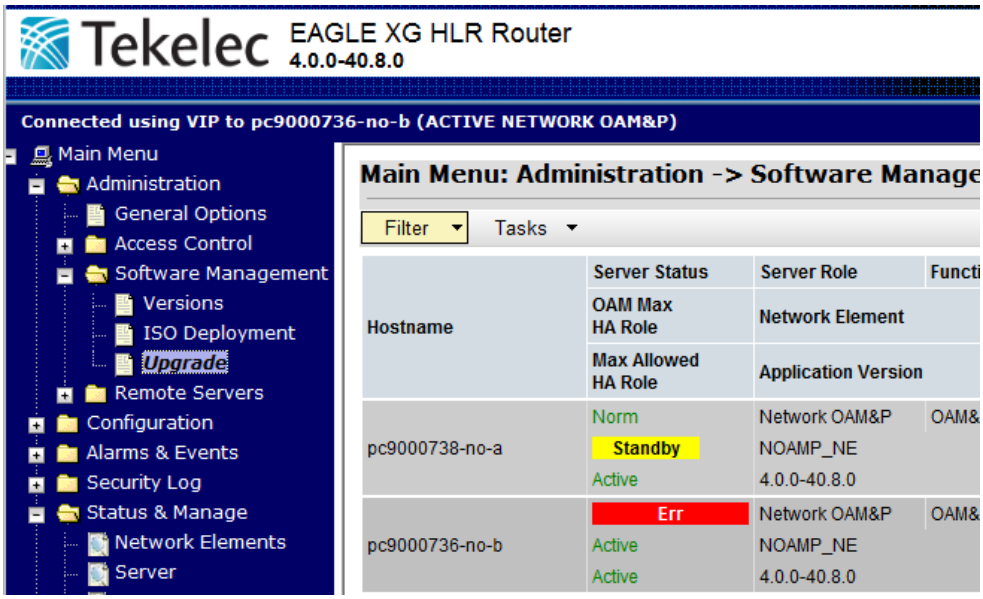
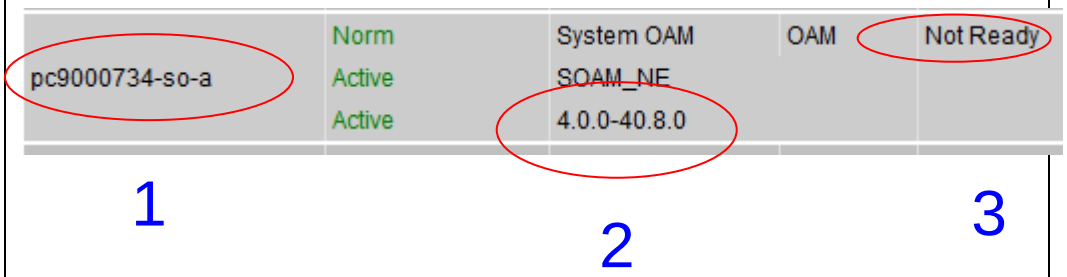
Appendix D: Backout of a Single Server

Step	Procedure	Result
20. ☐	**Active NOAMP VIP:** Remove Downgrade Ready status **1)** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Server*** …as shown on the right. **2)** Server Status screen displays **3)** If the server just backed-out shows "Application State" as "Enabled", then select this server and press the **"Stop"** button.	
21. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** …as shown on the right.	

Appendix D: Backout of a Single Server

Step	Procedure	Result
22. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** …as shown on the right.	
23. ☐	**Active NOAMP VIP:** **1)** Select the row containing the **hostname** of the server to be upgraded. **2)** Click **"Complete Upgrade"** -or- **"Complete"** dialogue button located across the bottom left of the right panel.	
24. ☐	**Active NOAMP VIP:** The user should be presented with the **Upgrade [Complete]** -or- **Upgrade [Remove Ready]** Administration screen. Click the **"Ok"** dialogue button located at the bottom left of the server status table.	 **NOTE:** *An error message stating **"SOAP error while clearing upgrade status of hostname…"** may be received after clicking the **"Ok"** dialogue button. This error message is expected for the Backout scenario and may be ignored*

Appendix D: Backout of a Single Server

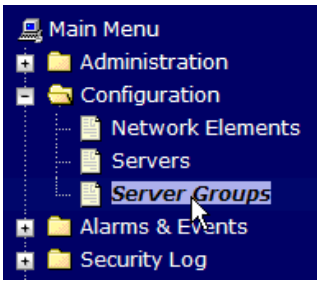
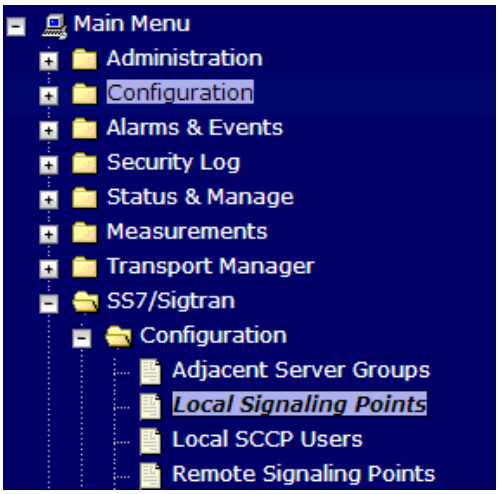
Step	Procedure	Result
25. ☐	**Active NOAMP VIP:** The user is returned to the… **<u>Main Menu</u>** **→ Administration** **→ Software Management** **→ *Upgrade*** **-OR-** **<u>Main Menu</u>** **→ Administration** **→ *Upgrade*** …screen as shown on the right.	
26. ☐	**Active NOAMP VIP:** **1)** Scroll to the row containing the **hostname** of the server to be upgraded. **2)** Verify that the **Application Version** now shows the ***<backout_release>*** **3)** Verify that the **Upgrade State** now shows **"Not Ready"**.	 **NOTE:** *If the **Upgrade State** fails to show **"Not Ready"**, the user may need to refresh the screen for a 2nd time and repeating sub-steps 1) thru 3) associated with this step.*
THIS PROCEDURE HAS BEEN COMPLETED		

APPENDIX E. MANIPULATING SIGNALING TRAFFIC AT THE MP

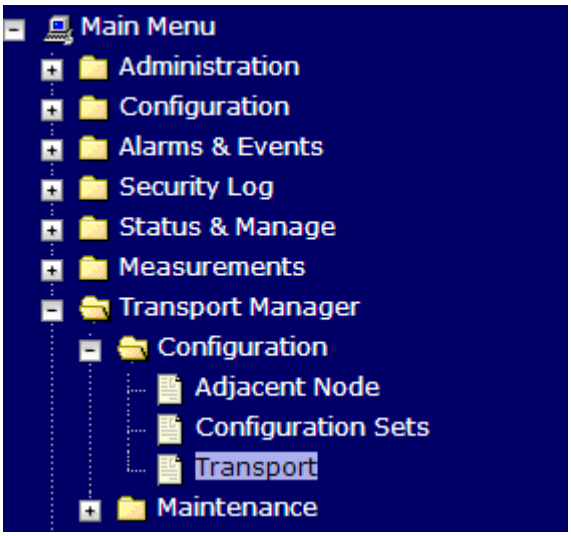
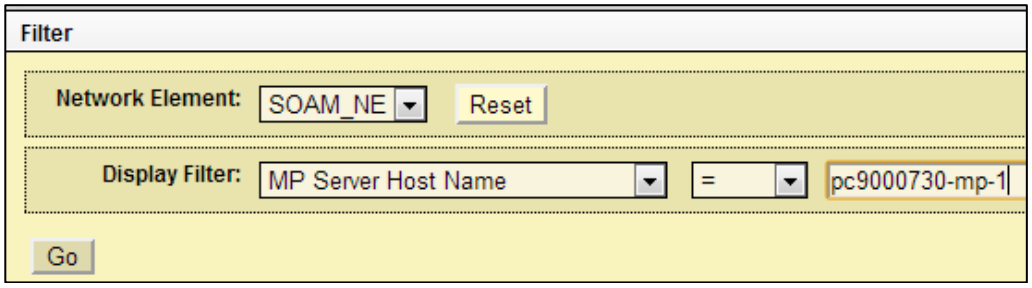
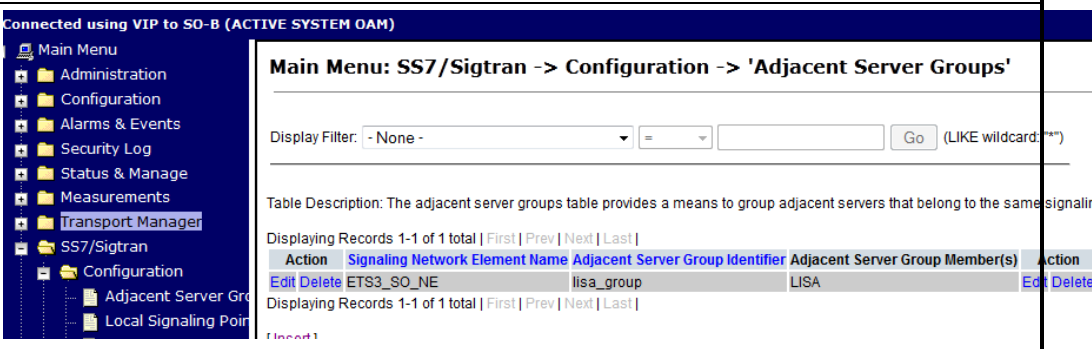
E.1 Diverting Signaling Traffic away from the MP

When doing maintenance activity such as upgrade or backout on an MP, it is recommended to divert signaling traffic away from the MP until maintenance activity has completed. Although each MP has a regionally diverse mate, these steps should eliminate the possibility of traffic loss at the MP which is undergoing maintenance (upgrade or backout).

Appendix E.1: Diverting Signaling Traffic away from the MP

Step	This procedure verifies that all required materials are present. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES AND **FOR ASSISTANCE.**	
1. ☐	Record the **hostname** of the **MP**.	• Record the **hostname** of the **MP** undergoing maintenance activity: **MP hostname:** _____
2. ☐	Using the **VIP** address, access the SOAM GUI.	• Access the SOAM GUI as specified in **Appendix A.**
3. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ Configuration** **→ *Server Groups*** …as shown on the right.	
4. ☐	**SOAM VIP:** Record the **MP** Server Group.	• Record the name of the **MP Server Group**: **MP Server Group:** _____
5. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ SS7/Sigtran** **→ Configuration** **→ *Local Signaling Points*** …as shown on the right.	

Appendix E.1: Diverting Signaling Traffic away from the MP

6. ☐	**SOAM VIP:** Record the **MP** True Point Code (**TPC**) and Capability Point code (**CPC**).	• Record the True Point Code (**TPC**) and Capability Point Code (**CPC**) for the **MP Server Group**: **MP TPC:** _____ **MP CPC:** _____
7. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ Transport Manager** **→ Configuration** **→ Transport** …as shown on the right.	
8. ☐	**SOAM VIP:** Set the **Display Filter** to filter on the **MP Server Hostname**.	
9. ☐	**SOAM VIP:** Record the one of the **"Adjacent Node"** entries associated with the **MP**	• Record the **1st entry** in the **Adjacent Node** column: **Adjacent Node:** _____
10. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ SS7/Sigtran** **→ Configuration** **→ *Adjacent Server Groups*** …as shown on the right.	

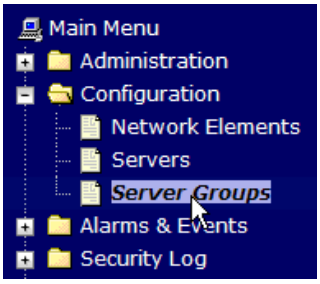
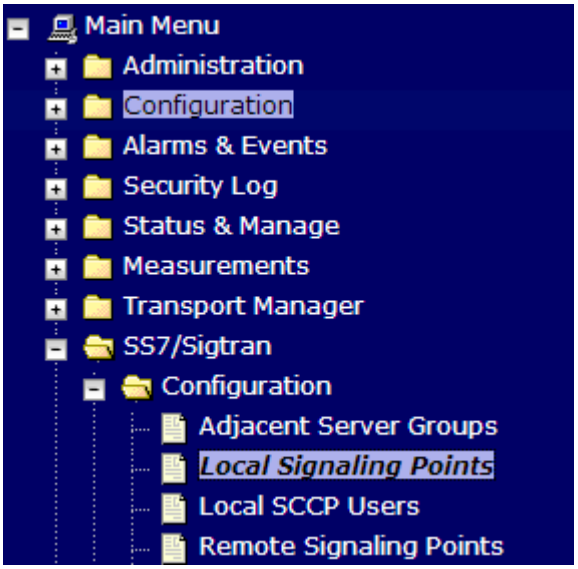
Appendix E.1: Diverting Signaling Traffic away from the MP

11. ☐	**SOAM VIP:** Using the **"Adjacent Node"** entry recorded in **Step 9** of this procedure determine the associated Eagle STPs.	• Using the **"Adjacent Server"** entry to cross-reference, determine the associated Eagle STPs under the **"Adjacent Server Group Identifier"** column. **Eagle STP 1:** _____ **Eagle STP 2:** _____
The following steps are executed on the Eagle STPs		
12. ☐	**EAGLE STP 1:** Increase the Route cost to the MP CPC high enough to eliminate signaling traffic on the route.	• On **Eagle STP 1**, increase the relative cost of link set to the MP TPC for route to the **MP CPC** using **"chg-rte"** command. • Wait at least 30 seconds before continuing on to the next Step.
13. ☐	**EAGLE STP 1:** Disable the link to the **MP TPC**.	• On **Eagle STP 1**, disable the link going to the **MP TPC** using the **"dact-slk"** command.
14. ☐	**EAGLE STP 2:** Increase the Route cost to the MP CPC high enough to eliminate signaling traffic on the route.	• On **Eagle STP 2**, increase the relative cost of link set to the MP TPC for route to the **MP CPC** using **"chg-rte"** command. • Wait at least 30 seconds before continuing on to the next Step.
15. ☐	**EAGLE STP 2:** Disable the link to the **MP TPC**.	• On **Eagle STP 2**, disable the link going to the **MP TPC** using the **"dact-slk"** command.
THIS PROCEDURE HAS BEEN COMPLETED		

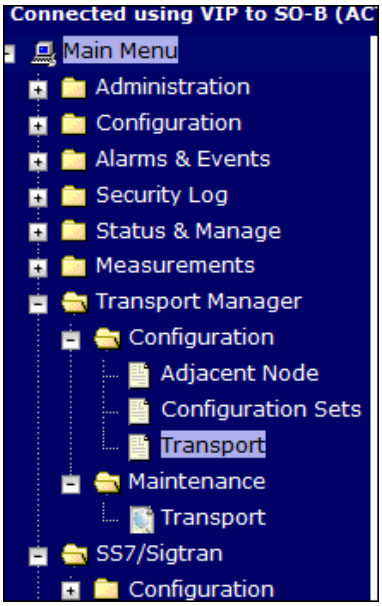
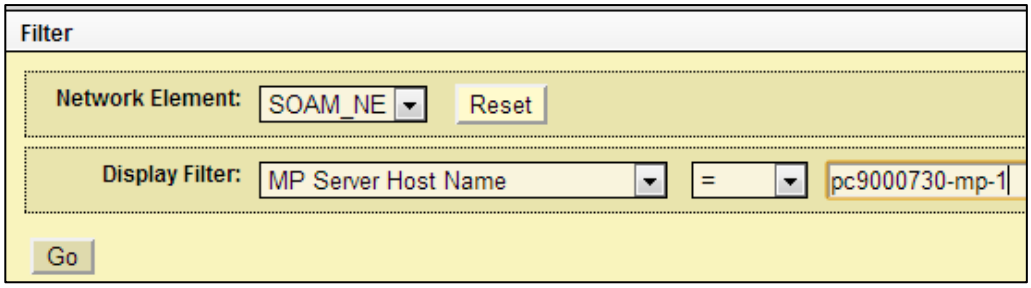
E.2 Restoring Signaling Traffic to the MP

When doing maintenance activity such as upgrade on an MP, it is recommended to divert signaling traffic away from the MP until maintenance activity has completed. Although each MP has a regionally diverse mate, these steps should eliminate the possibility of traffic loss at the MP undergoing maintenance.

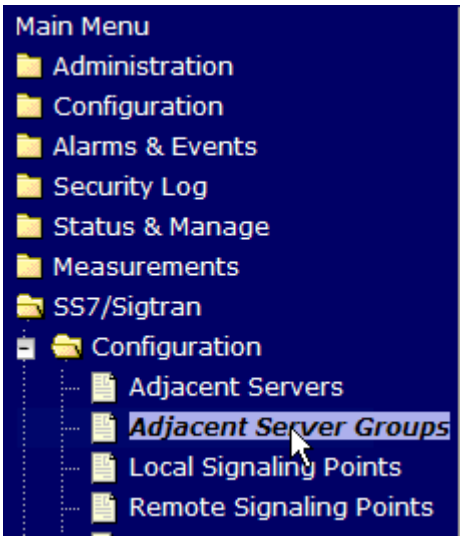
Appendix E.2: Restoring Signaling Traffic to the MP

Step	This procedure verifies that all required materials are present. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. SHOULD THIS PROCEDURE FAIL, CONTACT ORACLE'S TEKELEC TECHNICAL SERVICES AND **ASK FOR UPGRADE ASSISTANCE**.	
1. ☐	Record the **hostname** of the **MP**.	• Record the **hostname** of the **MP** undergoing maintenance activity: **MP hostname:** _____
2. ☐	Using the **VIP** address, access the SOAM GUI.	• Access the SOAM GUI as specified in **Appendix A.**
3. ☐	**SOAM VIP:** Select… **Main Menu** **→ Configuration** **→ *Server Groups*** …as shown on the right.	
4. ☐	**SOAM VIP:** Record the **MP** Server Group.	• Record the name of the **MP Server Group**: **MP Server Group:** _____
5. ☐	**SOAM VIP:** Select… **Main Menu** **→ SS7/Sigtran** **→ Configuration** **→ *Local Signaling Points*** …as shown on the right.	

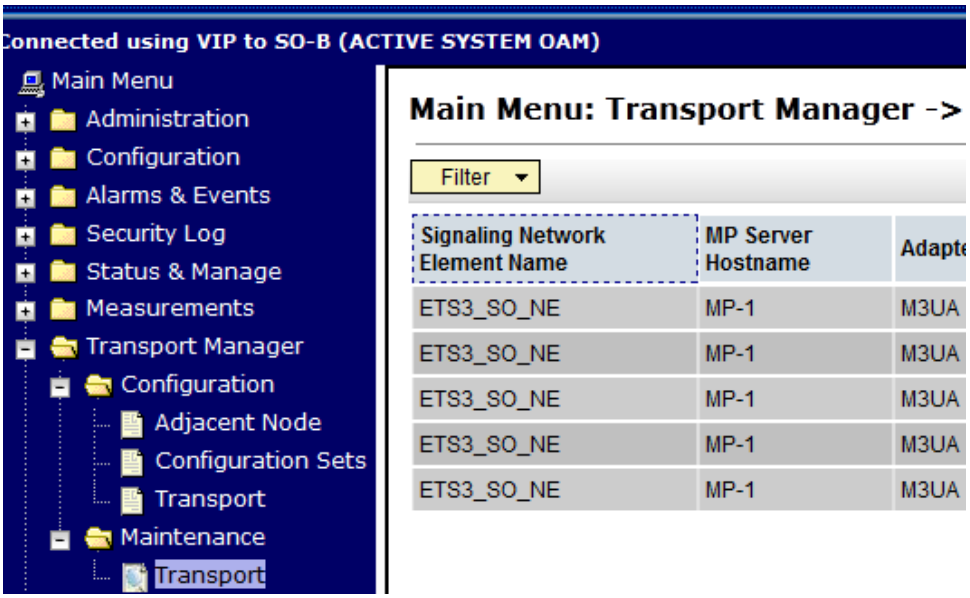
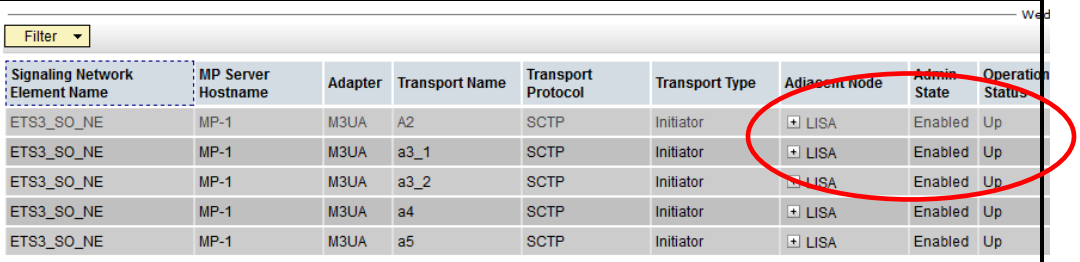
Appendix E.2: Restoring Signaling Traffic to the MP

6. ☐	**SOAM VIP:** Record the **MP** True Point Code (**TPC**) and Capability Point code (**CPC**).	• Record the True Point Code (**TPC**) and Capability Point Code (**CPC**) for the **MP Server Group**: **MP TPC:** _____ **MP CPC:** _____
7. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ Transport Manager** **→ Configuration** **→ Transport** …as shown on the right.	
8. ☐	**SOAM VIP:** Set the **Display Filter** to filter on the **MP server Hostname**.	
9. ☐	**SOAM VIP:** Record the one of the **"Adjacent Node"** entries associated with the **MP**.	• Record the **1st entry** in the **Adjacent Node** column: **Adjacent Node:** _____

Appendix E.2: Restoring Signaling Traffic to the MP

10. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ SS7/Sigtran** **→ Configuration** **→ *Adjacent Server Groups*** …as shown on the right.	
11. ☐	**SOAM VIP:** Using the **"Adjacent Server"** entry recorded in **Step 10** of this procedure determine the associated Eagle STPs.	• Using the **"Adjacent Server"** entry to cross-reference, determine the associated Eagle STPs under the **"Adjacent Server Group Identifier"** column. **Eagle STP 1:** _____ **Eagle STP 2:** _____
The following Steps 12 - 15 are executed on the Eagle STPs		
12. ☐	**EAGLE STP 1:** Reduce the Route cost to the **MP CPC** to restore Signaling traffic on the route.	• On **Eagle STP 1**, reduce the relative cost (to the pre-maintenance value) of link set to the MP TPC for route to the **MP CPC** using **"chg-rte"** command. • Wait at least 30 seconds before continuing on to the next Step.
13. ☐	**EAGLE STP 1:** Enable the link to the **MP TP**C.	• On **Eagle STP 1**, enable the link going to the **MP TPC** using the **"act-slk"** command.
14. ☐	**EAGLE STP 2:** Reduce the Route cost to the **MP CPC** to restore Signaling traffic on the route.	• On **Eagle STP 2**, reduce the relative cost (to the pre-maintenance value) of link set to the MP TPC for route to the **MP CPC** using **"chg-rte"** command. • Wait at least 30 seconds before continuing on to the next Step.
15. ☐	**EAGLE STP 2:** Enable the link to the **MP TP**C.	• On **Eagle STP 2**, enable the link going to the **MP TPC** using the **"act-slk"** command.

Appendix E.2: Restoring Signaling Traffic to the MP

16. ☐	**SOAM VIP:** Select… **<u>Main Menu</u>** **→ Transport Manager** **→ *Configuration*** **→Maintenance** **→Transport** …as shown on the right.	
17. ☐	**SOAM VIP:** Verify that all configured Associations are **Admin State = Enabled** with Operational **Status = Up Reason = Normal**.	
THIS PROCEDURE HAS BEEN COMPLETED		

APPENDIX F. ACCESSING ORACLE'S TEKELEC CUSTOMER SUPPORT SITE

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

1. Go to Oracle's 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**.