5200 Paramount Parkway
Morrisville, NC 27560 USA

Oracle CGBU

Work Instruction

HLR Router 4.x NOAM Failover

E74587-02

July 2016

Errors made during these procedures may critically impact Subscriber Provisioning! These procedures should only be executed by highly skilled personnel who are very familiar with HLR Router Administration and Maintenance.

It is also recommended that My Oracle Support (MOS) be notified in advance of executing these procedures on a Production network. Refer to Appendix A: Accessing My Oracle Support (MOS), for more information on contacting MOS.

Oracle® Communications Tekelec HLR Router 4.1, HLRR NOAM Failover Work Instruction

CAUTION: Before performing a Failover on any system, please access My Oracle Support (MOS) and review any Technical Service Bulletins (TSBs) that may relate to this procedure.

My Oracle Support (MOS) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Refer to **Appendix A:** *Accessing My Oracle Support (MOS)*, for more information on contacting Oracle Customer Service.

Table of Contents

1.0 Overview of Failover Procedures

1.1 Introduction

Although each Product maintains individual Disaster Recovery Procedures, the steps required to successfully complete the transfer of functionality between a Primary and a Secondary NOAM NE is currently common to most Oracle COMCOL based products matching a 3-tier topology with an installed DR NOAM. Therefore, the intent of this document is to function as a quick reference for the HLR Router product. It should also be noted that this document goes a step further than the individual product Disaster Recovery documents in that it also offers the methodology required to perform a "graceful" Failover where the Primary NOAM is not network isolated and no outage scenario exist.

1.2 Required Materials

No physical materials are required for this procedure. However, the user must have access to an "Administrator" level account in the HLRR NOAM GUI and "root" account access (release 4.0) or "admusr" account access (release 4.1) to both the HLRR Primary and Disaster Recovery NOAM server CLI.

1.3 How to use this Document

When executing this document, there are a few 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.

If a procedural STEP fails to execute successfully, STOP and contact "My Oracle Support" (MOS). Refer to **Appendix A:** *Accessing My Oracle Support (MOS)*, for more information on contacting Oracle Customer Service.

READ "SECTION 2.0" BEFORE ATTEMPTING ANY PROCEDURES IN THIS DOCUMENT!

2.0 3-Tier NOAM Failover Process Flow Chart:

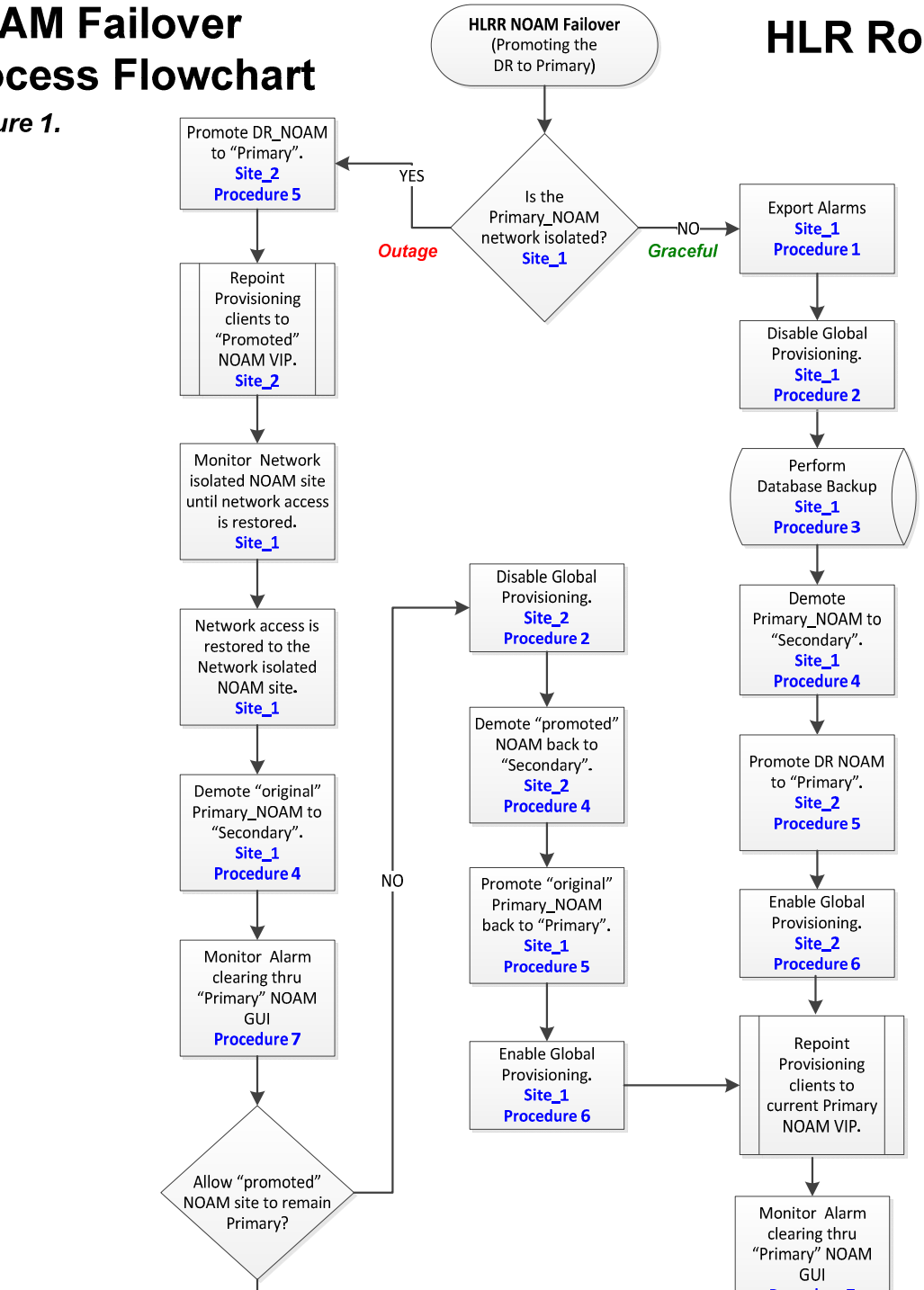
The flowchart on the following page (***Figure 1***) is intended to act as the core Procedure for HLRR NOAM failover.

- Executing to the flowchart, the user should execute all Procedures in this document as subroutines in a program (i.e. always returning to the flowchart after executing a referenced procedure).
- After completing a referenced Procedure, never continue on to the next Procedure unless directed to do so based on the logic trail followed from ***"Figure 1"***.
- The user should understand that any NOAM NE may run as the "Primary" or the "Secondary" (*Disaster Recovery mode*). Do not confuse site names or designations with the actual real-time functional state of a NOAM NE.
- Before starting this procedure, it is strongly suggested that the user print out ***Figure 1*** and record the Primary NOAM (Site_1) and Disaster Recovery NOAM (Site_2) site names in the space provided *(see detailed description in **Figure 1** Legend)*.

NOAM Failover Process Flowchart

HLR Router

Figure 1.



Legend:

Site	Role	Comments
Site_1	Primary_NOAM	Site designated as the Primary NOAM NE at the start of Failover (i.e. running in "Primary" mode).
Site_2	DR_NOAM	Site designated as the Disaster Recovery (DR) NOAM NE at the start of Failover (i.e. running in "Secondary" mode).

Site_1 = Primary_NOAM = _____ (Site Name)

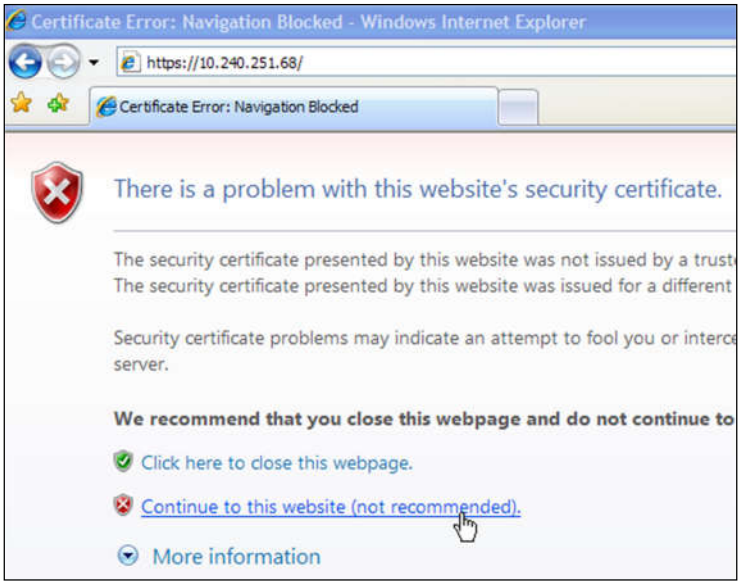
Site_2 = DR_NOAM = _____ (Site Name)

3.0 List of Procedures

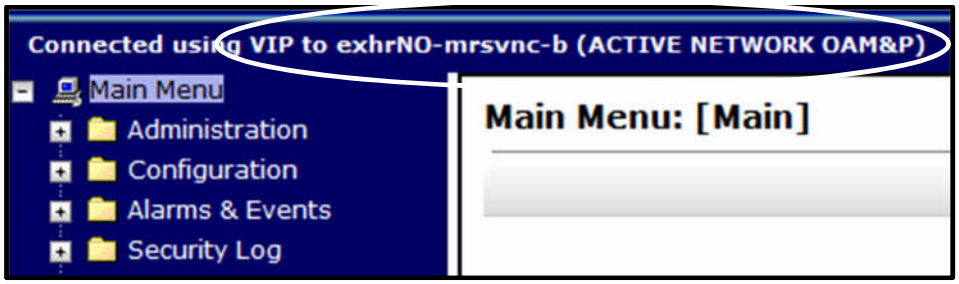
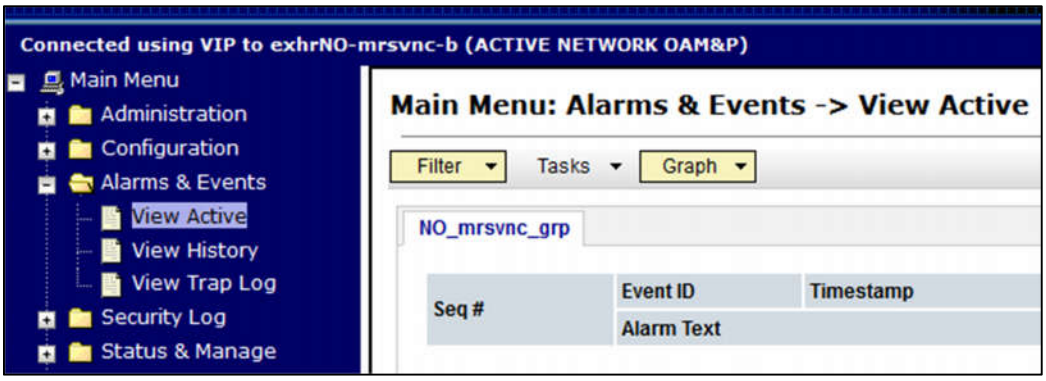
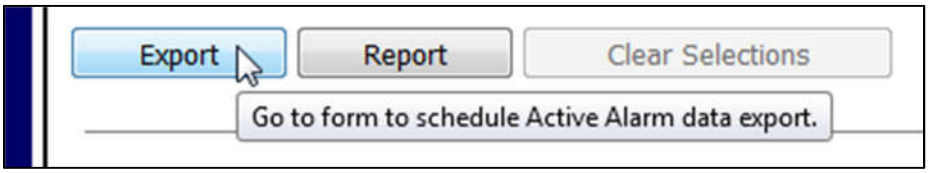
4.0 Pre-Failover Procedures

4.1 Exporting Alarms

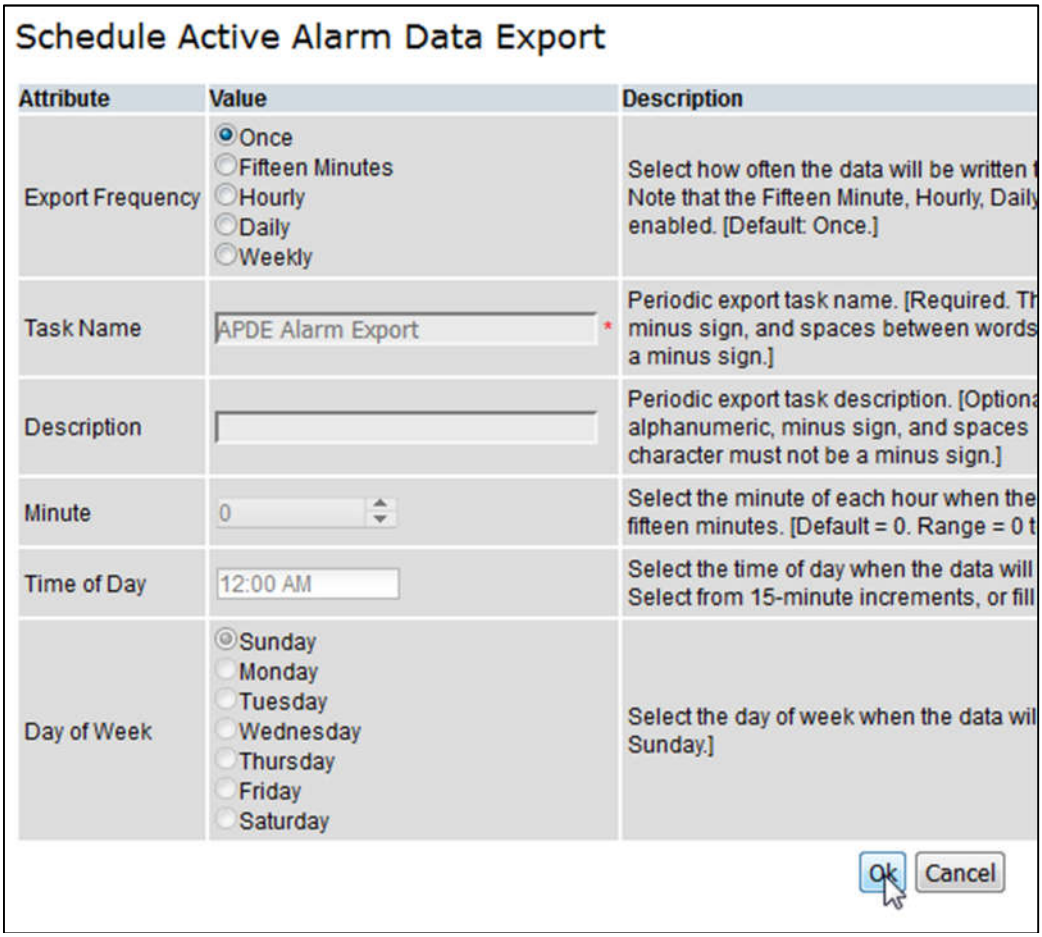
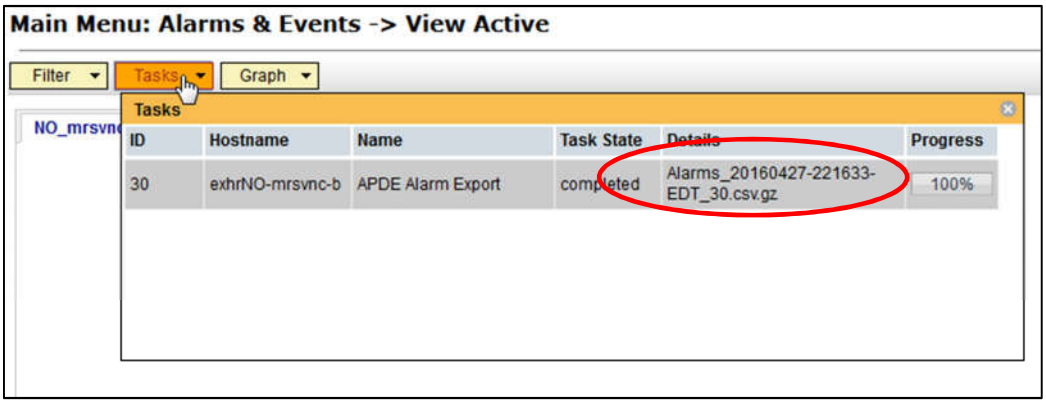
Procedure 1: Export Alarms at the Active NOAM (Site_1).

S T E P #	This procedure provides instructions on exporting alarms at the Primary Active NOAM. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	
1. ☐	**Primary NOAM VIP:** **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to **Primary Active NOAM site.** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	
2. ☐	**Primary NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using an **"Admin"** level user and password.	

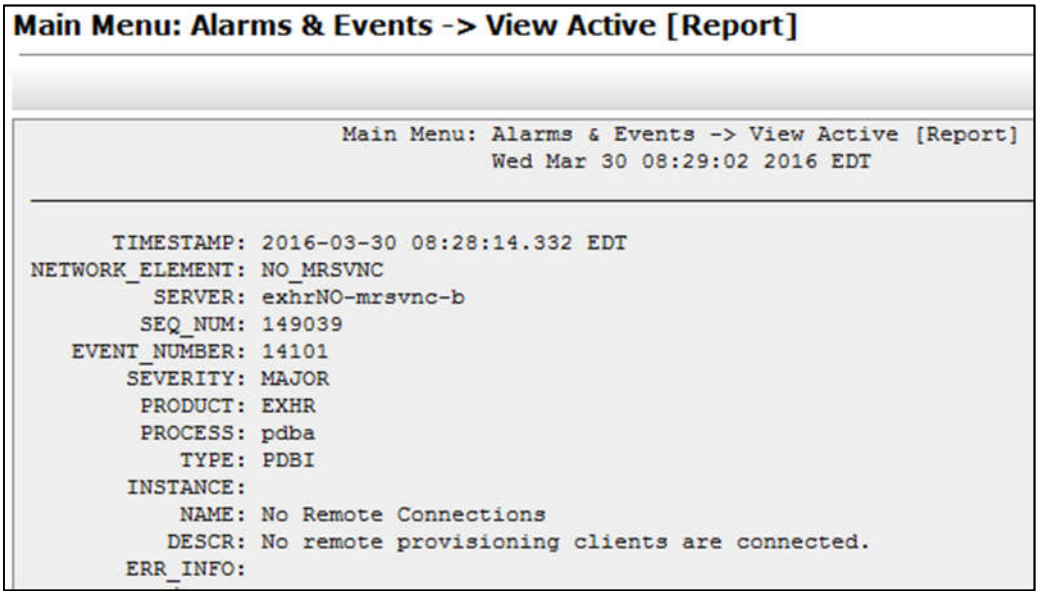
Procedure 1: Export Alarms at the Active NOAM (Site_1).

3. ☐	**Primary NOAM VIP:** The user should be presented the Product Main Menu as shown on the right. Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".**	
4. ☐	**Primary NOAM VIP:** Select… **<u>Main Menu</u>** **→ Alarm & Events** **→ *View Active*** …as shown on the right.	
5. ☐	**Active Provisioning Site VIP:** Select the **"Export"** dialogue button from the bottom left corner of the screen.	

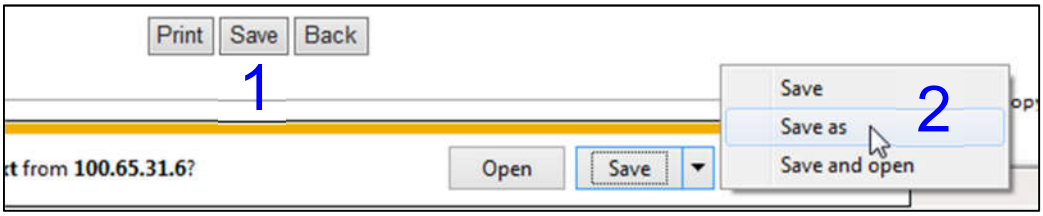
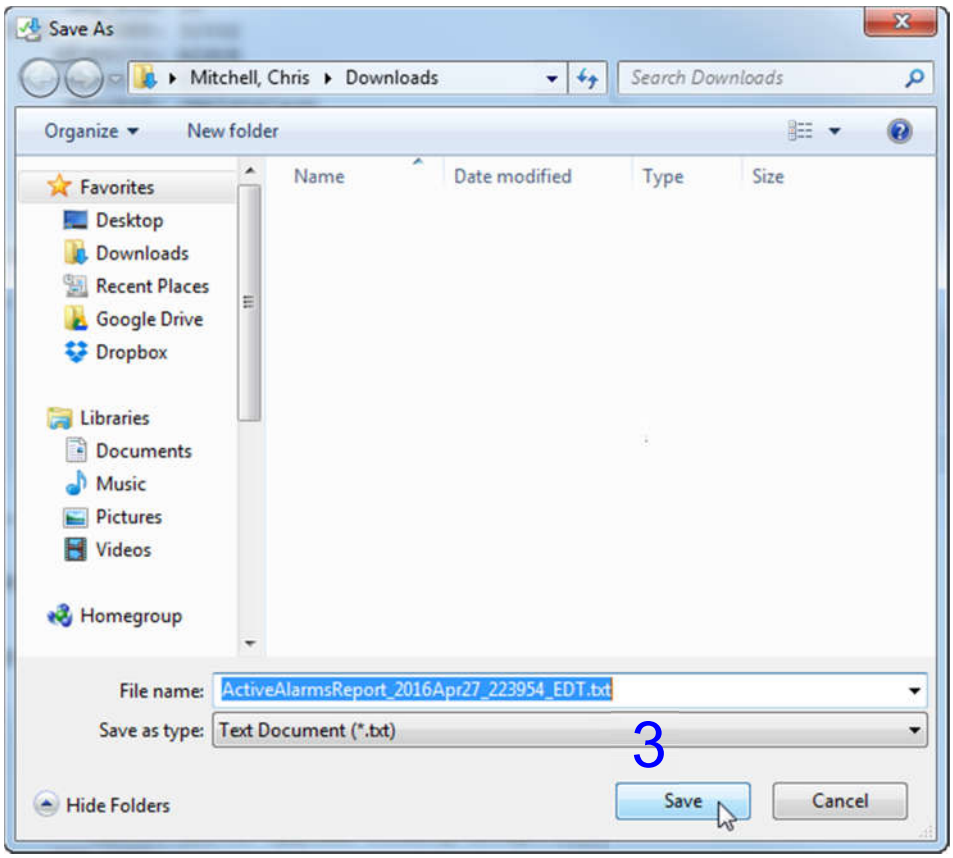
Procedure 1: Export Alarms at the Active NOAM (Site_1).

6. ☐	**Primary NOAM VIP:** Click the **"Ok"** button at the bottom of the screen.	
7. ☐	**Primary NOAM VIP:** The name of the exported Alarms CSV file will appear in the banner under the **"Tasks"** heading at the top of the right panel. **NOTE:** *Depending on the product version, the user may have to* ***left click*** *on the* ***"Tasks"*** *heading in the banner in order to see the output dialogue box.*	

Procedure 1: Export Alarms at the Active NOAM (Site_1).

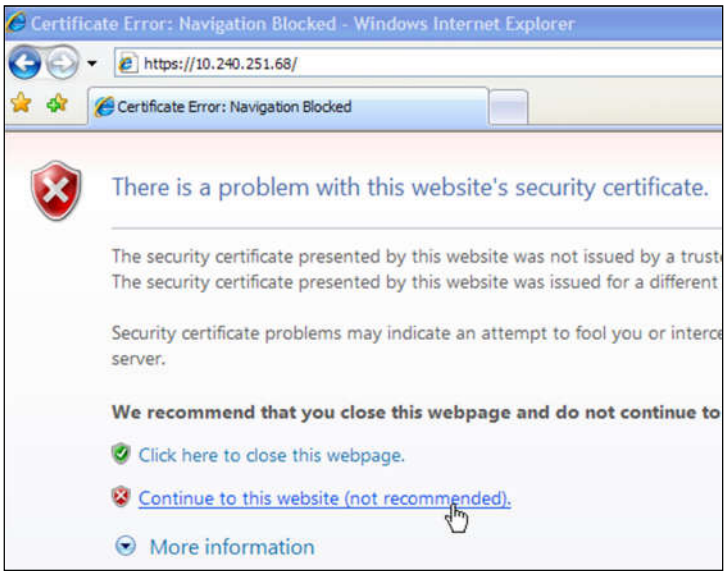
8. ☐	**Primary NOAM VIP:** Record the filename of Alarms CSV file generated in the space provided to the right. **NOTE:** *Depending on the product version, the file suffix may vary (e.g. csv, csv.gz, etc.).*	**Example:** *Alarms_<yyyymmdd> - <hhmmss> - <TimeZone>_1.csv.gz* _____ .csv.gz
9. ☐	**Primary NOAM VIP:** Select the **"Report"** dialogue button from the bottom left corner of the screen.	
10. ☐	**Primary NOAM VIP:** An **Active "Alarms & Events" Report** will be generated and displayed in the right panel.	

Procedure 1: Export Alarms at the Active NOAM (Site_1).

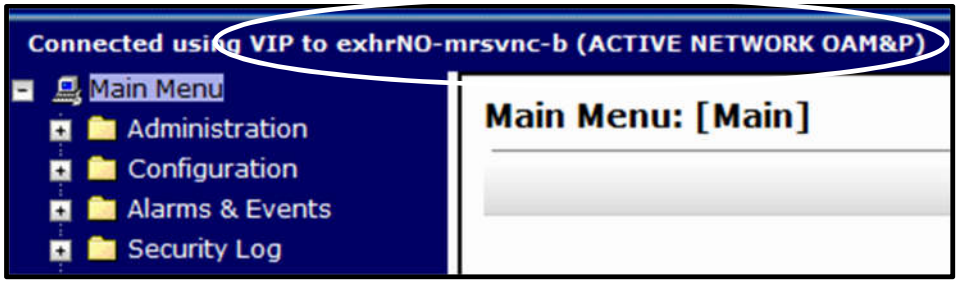
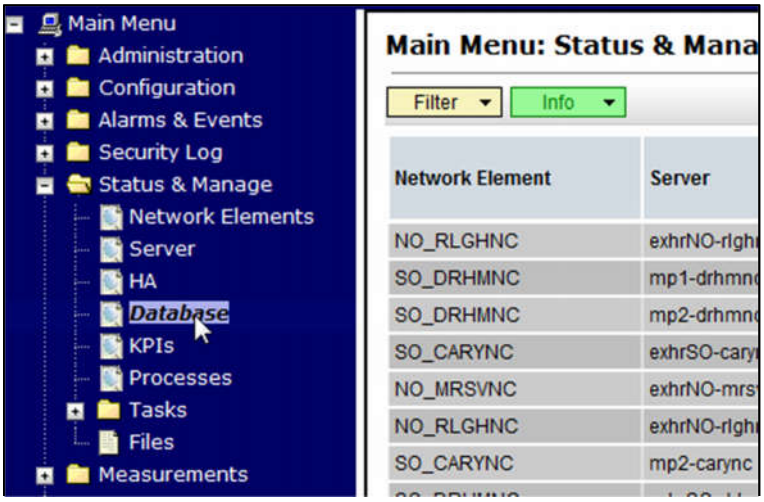
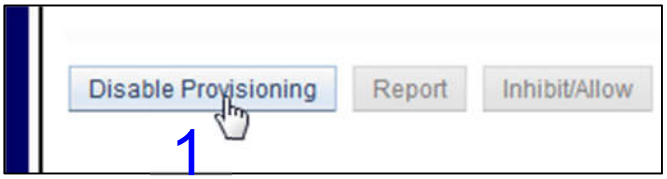
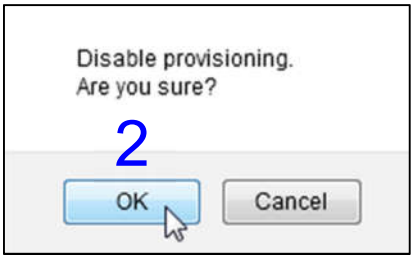
11. ☐	**Primary NOAM VIP:** **1)** Select the **"Save"** dialogue button from the bottom/middle of the right panel. **2)** Click the **"Save"** dialogue button on the *File Download* pop-up box. **3)** Select a directory on the local disk drive to store the *Active "Alarms & Events"* Report file and click the **"Save"** dialogue button.	 
This Procedure has been completed. Return to Figure 1.		

4.2 Disable Global Provisioning

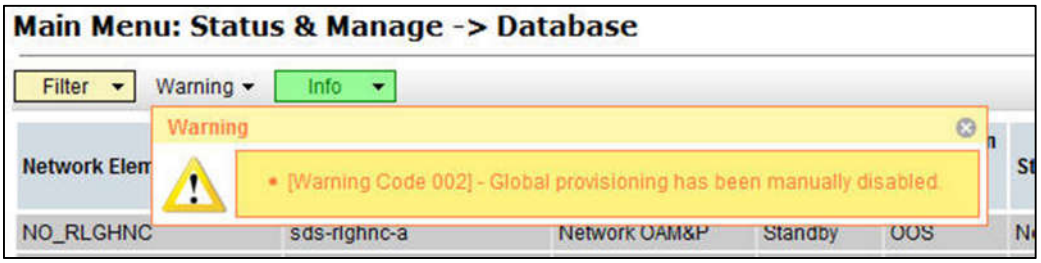
Procedure 2: Disable Global Provisioning (Site_1)

S T E P #	This procedure provides instructions on "Disabling Global Provisioning" at the Primary NOAM GUI. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	
1. ☐	**Primary NOAM VIP:** **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to **Primary Active NOAM site.** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	
2. ☐	**Primary NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using an **"Admin"** level user and password.	

Procedure 2: Disable Global Provisioning (Site_1)

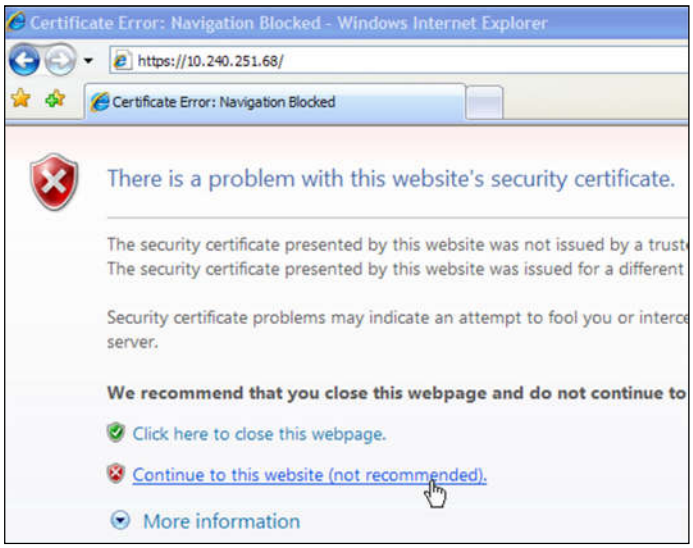
3. ☐	**Primary NOAM VIP:** The user should be presented the Product Main Menu as shown on the right. Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".**	
4. ☐	**Primary NOAM VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	
5. ☐	**Primary NOAM VIP:** **1)** Select the **"Disable Provisioning"** dialogue button located at the bottom of the right panel. **2)** Click **"OK"** on the pop-up confirmation dialogue box.	 

Procedure 2: Disable Global Provisioning (Site_1)

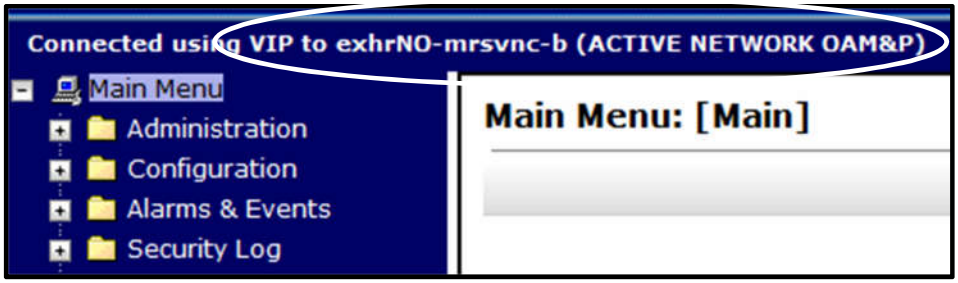
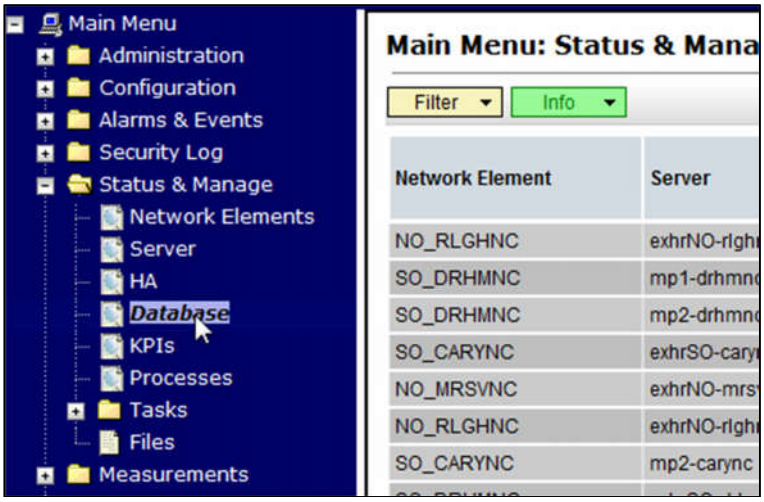
6. ☐	**Primary NOAM VIP:** A **Warning banner** message should appear indicating that "Global Provisioning has been manually disabled". **NOTE:** ***Event(s) 10008*** *will appear at this time and can be safely ignored.*	
This Procedure has been completed.		

4.3 Database Backup

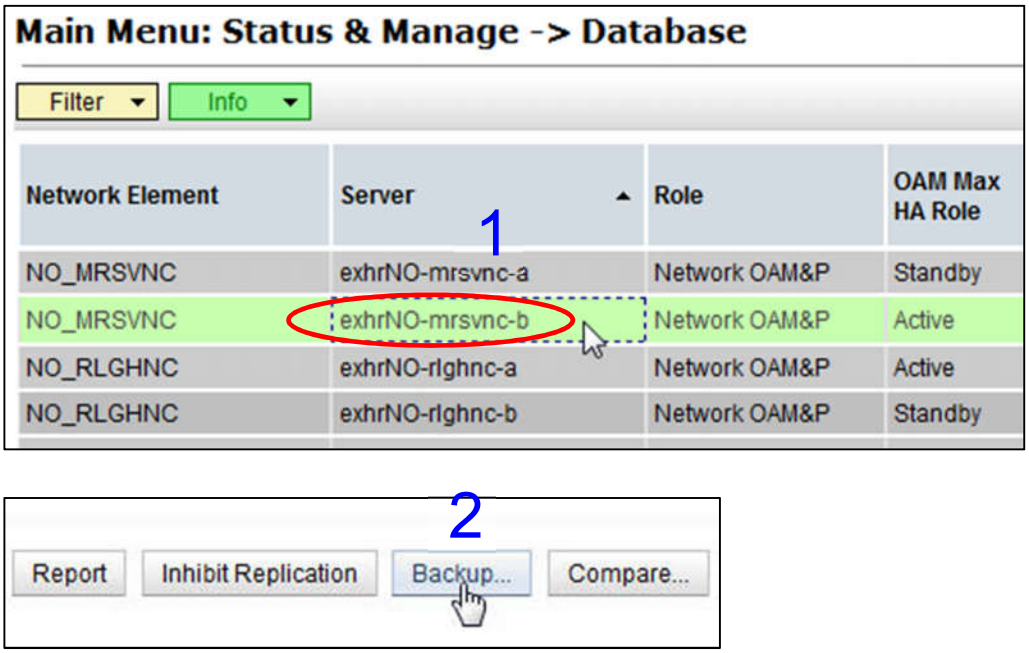
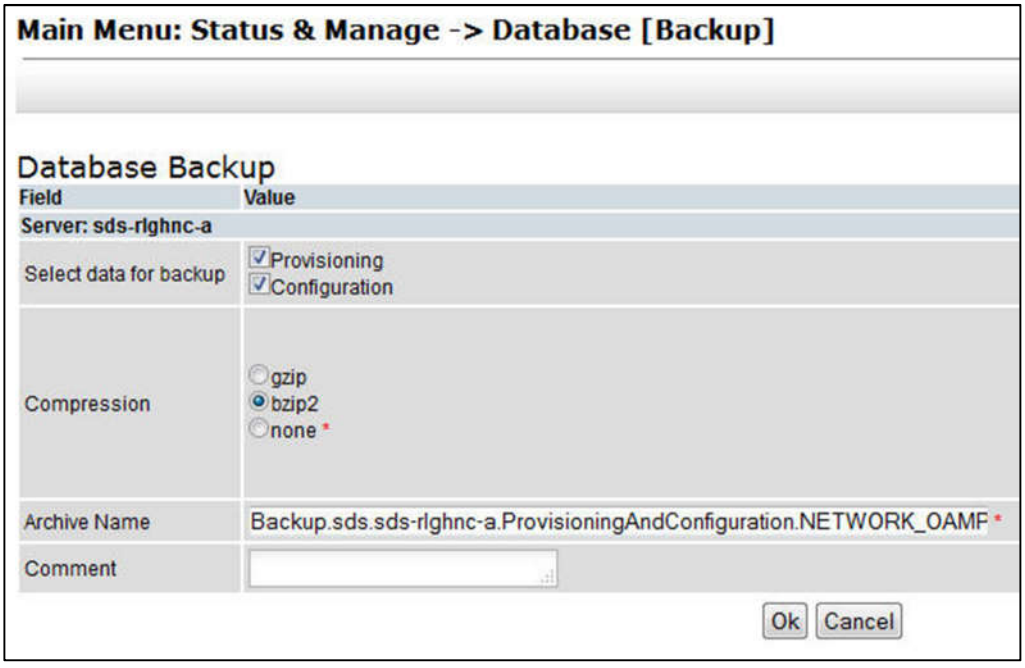
Procedure 3: Database Backup (Site_1)

S T E P #	This procedure provides instructions on performing database backup at the Primary Active NOAM. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	
1. ☐	**Primary NOAM VIP:** **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to **Primary Active NOAM site.** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	
2. ☐	**Primary NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using an **"Admin"** level user and password.	

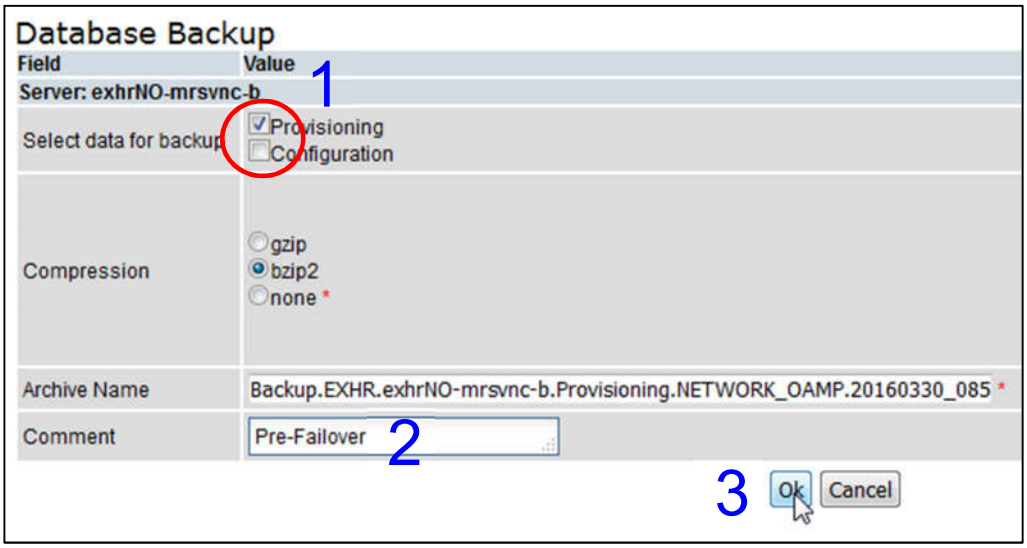
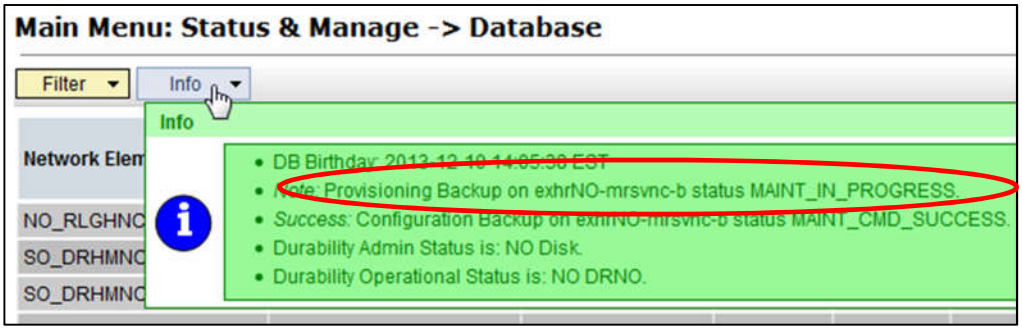
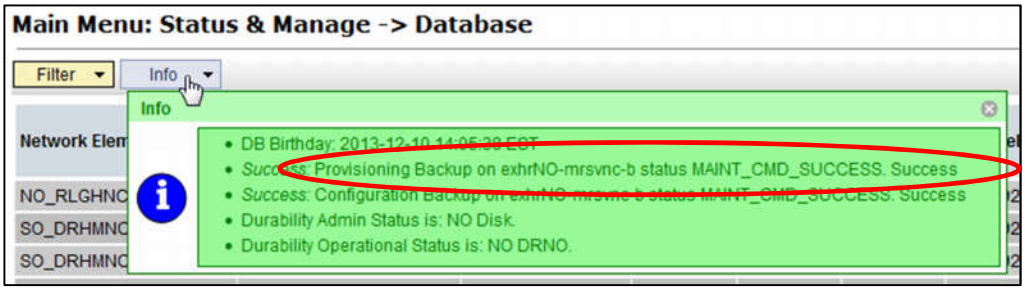
Procedure 3: Database Backup (Site_1)

3. ☐	**Primary NOAM VIP:** The user should be presented the Product Main Menu as shown on the right. **1)** Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".** **2)** Record the **Hostname** of the **Primary Active NOAM** server.	 Active NOAM Hostname: _____
4. ☐	**Primary NOAM VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Database*** …as shown on the right.	

Procedure 3: Database Backup (Site_1)

5. ☐	**Primary NOAM VIP:** **1)** Select the row containing the server hostname previously identified in **Step 3** of this procedure. **2)** Then click the "**Backup…**" button.	
6. ☐	**Primary NOAM VIP:** The user will be present with the backup form.	

Procedure 3: Database Backup (Site_1)

7. ☐	**Primary NOAM VIP:** **1) Uncheck** the **Configuration** checkbox so only **Provisioning** data is backed up. **2)** Enter a comment to reflect the reason for the manual backup in the comment field. **3)** Click **"Ok"** button.	
8. ☐	**Primary NOAM VIP:** **Left-Click** on the **Info** tab to verify that the backup shows **"MAINT_IN_PROGRESS"**.	
9. ☐	**Primary NOAM VIP:** **Left-Click** on the **Info** tab to monitor the backup status until it shows **"MAINT_CMD_SUCCESS"**. **NOTE:** ***Provisioning Database Backup*** *may take several minutes to complete. Depending on the release version, the user may have periodically click the* ***[Status & Manage → Database]*** *menu option in order for the* ***Info*** *tab information to be refreshed and display real-time status.*	
This Procedure has been completed. Return to Figure 1.		

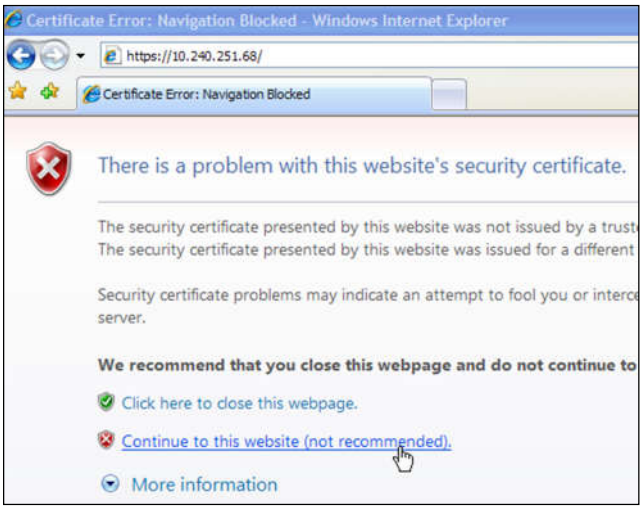
5.0 Failover Procedures

5.1 Demoting the Active NOAM from Primary to Secondary

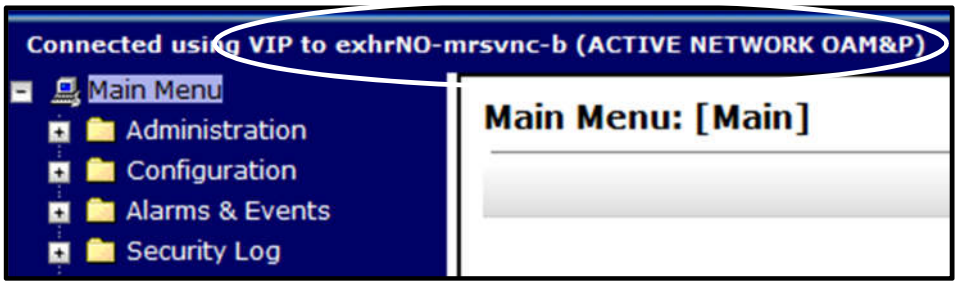
Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

S T E P #	This procedure provides instructions on Demoting the Active NOAM from Primary to DR. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.

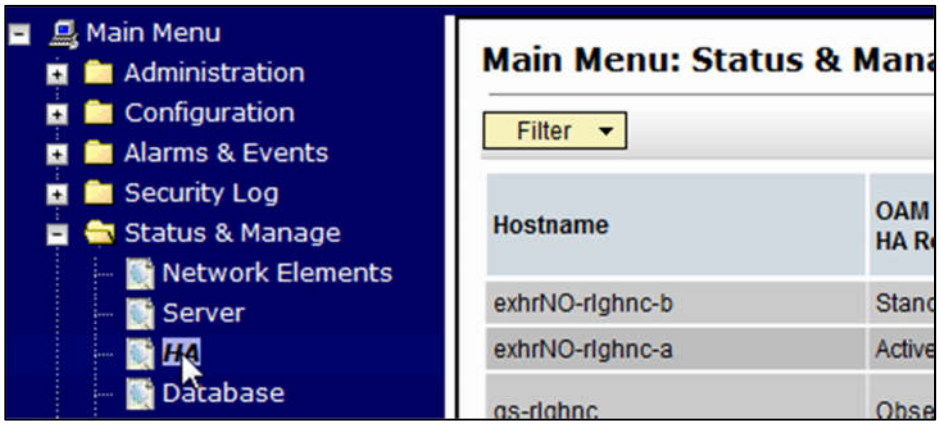
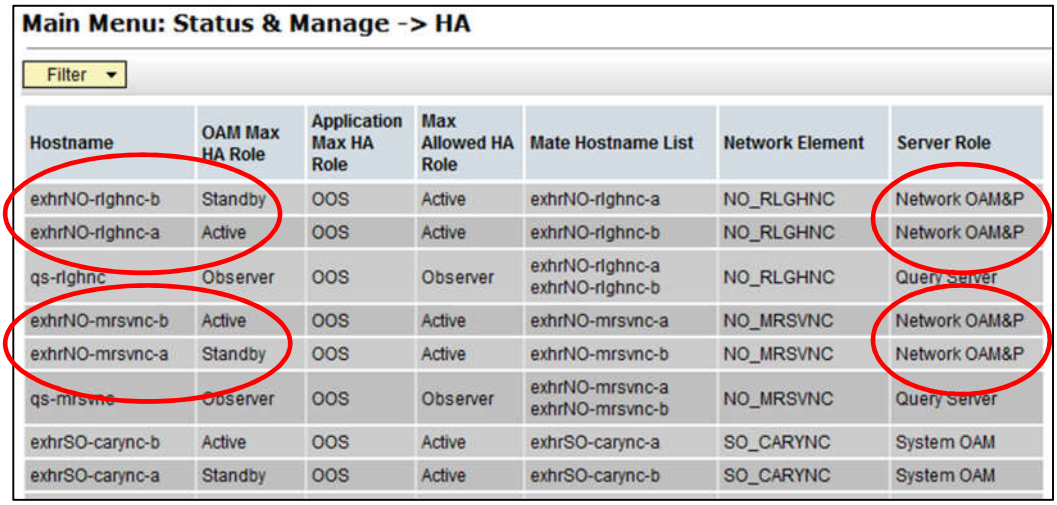
IF EXECUTING THIS PROCEDURE AFTER RECOVERY OF A NETWORK ISOLATED PRIMARY NOAM, SKIP DIRECTLY TO STEP 14.

1. ☐	**Original Primary NOAM VIP:** **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to **Primary Active NOAM site.** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	

Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

2. ☐	**Original Primary NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using the default user and password.	
3. ☐	**Primary NOAM VIP:** The user should be presented the Product Main Menu as shown on the right. **1)** Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".** **2)** Record the **Hostname** of the **Primary Active NOAM** server.	 Active NOAM Hostname: _____ **NOTE:** *The server **hostname** of the **"ACTIVE NETWORK OAM&P"** identifies the current **"Primary"** NOAM site.*

Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

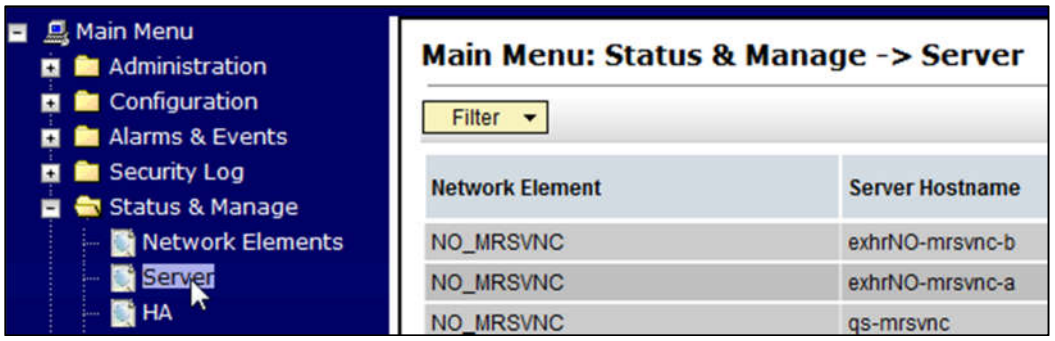
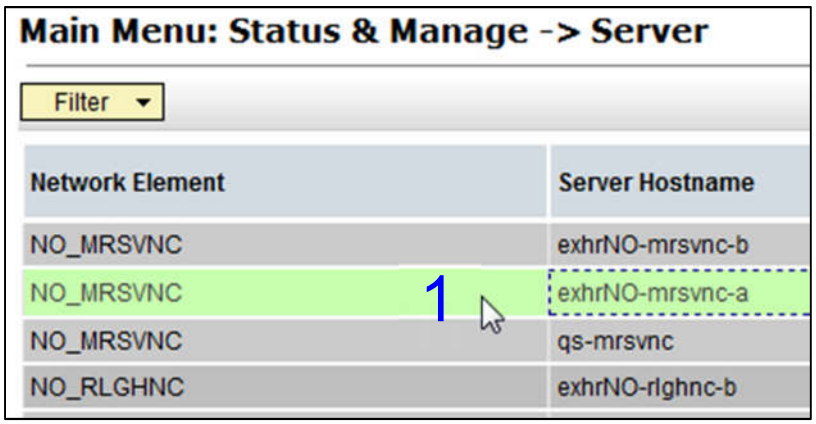
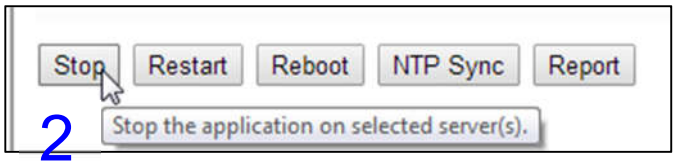
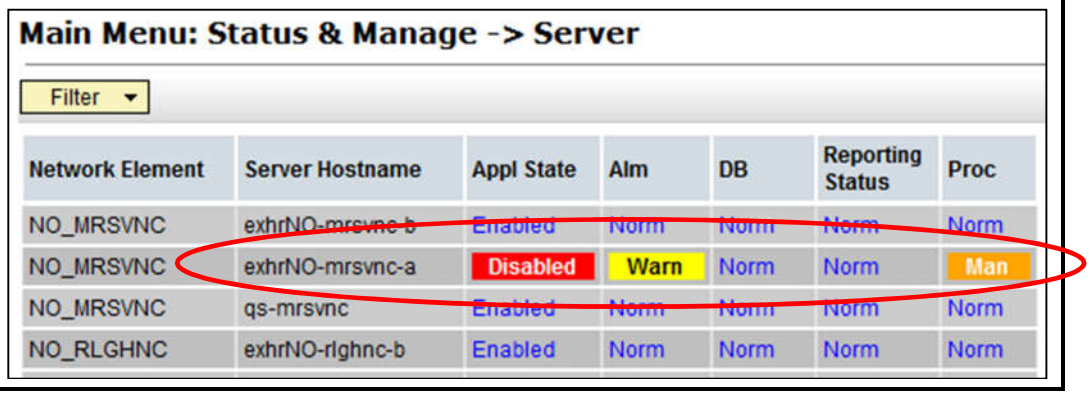
4. ☐	**Original Primary NOAM VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *HA*** …as shown on the right.	
5. ☐	**Original Primary NOAM VIP:** **1)** Use the server **hostname** recorded in **Step 3** of this procedure to identify the **"Primary"** NOAM site. **2)** In the right panel, identify the **Primary Active**, **Primary Standby**, **Secondary Active (DR)** and **Secondary Standby** NOAM Servers.	

!!! WARNING !!! DO NOT SKIP THE FOLLOWING STEP!

"Active/Standby" states for each NOAM server must be recorded as it is Critical that the SW on each server be stopped in the exact order specified in Steps 8 - 12 of this procedure.

6. ☐	**Original Primary NOAM VIP:** Record the hostnames of the **Active / Standby** NOAM servers at the **"Primary"** and **"Secondary"** (DR) NOAM sites in the space provided.	Site_1 = Primary_NOAM (Active) = _____ Site_1 = Primary_NOAM (Standby) = _____ Site_2 = DR_NOAM (Active) = _____ Site_2 = DR_NOAM (Standby) = _____

Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

7. ☐	**Original Primary NOAM VIP:** Select… **Main Menu** **→ Status & Manage** **→ *Server*** …as shown on the right.	
8. ☐	**Original Primary NOAM VIP:** Based on the information recorded in **Step 6** of this procedure… Perform the below sub-steps on the **Primary NOAM *"Standby"*** Server. **1)** Select the Server in the right panel *(**GREEN** highlight will occur)*. **2)** Click the **"Stop"** dialogue button in the button of the right panel. **3)** Click **"OK"** in the pop-up confirmation dialogue box. **NOTE:** *Alarms will begin to generate at this time including but not limited to **Event ID(s): 10075, 31102, 31106 & 31107**.*	  
9. ☐	**Original Primary NOAM VIP:** After the screen refresh, verify that the server now shows an **Appl State** value of **"Disabled"** and a **Proc** value of **"Man".**	

Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

10. ☐	**Original Primary NOAM VIP:** **"Stop"** the SW on the **Primary NOAM *"Active"*** Server.	Repeat **Steps 8- 9** of this Procedure for the **Primary NOAM *"Active"*** Server.
11. ☐	**Original Primary NOAM VIP:** **"Stop"** the SW on the **DR NOAM *"Standby"*** Server.	Repeat **Steps 8- 9** of this Procedure for the **DR NOAM *"Standby"*** Server.
12. ☐	**Original Primary NOAM VIP:** **"Stop"** the SW on the **DR NOAM *"Active"*** Server.	Repeat **Steps 8- 9** of this Procedure for the **DR NOAM *"Active"*** Server.
13. ☐	**Original Primary NOAM VIP:** **Logout** of the **Primary NOAM GUI** at this time.	

14. ☐	**Original Primary NOAM VIP (CLI):**
	
	1) Access the command prompt **(CLI)**.
	
	2) Log into the server as the **"admusr"** user.
	
	NOTE: *The password will not appear on the screen as the characters are typed.*
		`Oracle Linux Server release 6.7`
		`Kernel 2.6.32-573.18.1.e15prerel7.0.3.0.0_86.44.0 on an x86_64`
		
		`exhrNO-mrsvnc-b login: admusr`
		`Password: <admusr_password>`

15. ☐	**Original Primary NOAM VIP (CLI):**
	
	Output similar to that shown on the right will appear as the server returns to a command prompt.
		***** TRUNCATED OUTPUT *****
		`RELEASE=6.4`
		`RUNID=00`
		`VPATH=/var/TKLC/rundb:/usr/TKLC/appworks:/usr/TKLC/awpcommon:/usr/TKLC/awptransportmgr:/usr/TKLC/comagent-gui:/usr/TKLC/comagent:/usr/TKLC/awpss7:/usr/TKLC/exhr`
		`PRODPATH=/opt/comcol/prod`
		`RUNID=00`
		`[admusr@exhrNO-mrsvnc-b ~]$`

Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

16. ☐	**Original Primary NOAM VIP (CLI):** Use the **"sudo"** command to become the **"root"** user.	[**admusr**@exhrNO-mrsvnc-b ~]$ **sudo su -** ***** TRUNCATED OUTPUT ***** RELEASE=6.4 RUNID=00 VPATH=/var/TKLC/rundb:/usr/TKLC/appworks:/usr/TKLC/awpcommon:/usr/TKLC/awptransportmgr:/usr/TKLC/comagent-gui:/usr/TKLC/comagent:/usr/TKLC/awpss7:/usr/TKLC/exhr PRODPATH=/opt/comcol/prod RUNID=00 [root@exhrNO-mrsvnc-b ~]#
17. ☐	**Original Primary NOAM VIP (CLI):** **1)** Confirm via the command prompt that you are connected to the **Primary Active** NOAM server recorded in **Step 3** of this procedure. **2)** Confirm that the server is still the **Active NOAM** server, displaying **"VIP Active"**, for the given command.	[root@**exhrNO-mrsvnc-b** ~]# **ha.states -i -w |grep VIP** VIP Obsrvr qs-mrsvnc 0 0220:180815.358 VIP Stby exhrNO-mrsvnc-a 0 0220:182018.444 **VIP Active exhrNO-mrsvnc-b** 0 0220:180815.306 [root@exhrNO-mrsvnc-b ~]#
18. ☐	**Original Primary NOAM VIP (CLI):** Verify that the current value for **"myClusterRole"** is **"Primary"**.	[root@exhrNO-mrsvnc-b ~]# **top.myrole** myNodeId=A0200.195 myMasterCapable=true myMateNodeId=A0200.212 myParentCluster=00000 myClusterRole=**Primary** myClusterTimestamp=01/23/14 21:42:33.235 [root@exhrNO-mrsvnc-b ~]#
19. ☐	**Original Primary NOAM VIP (CLI):** Set the value for **"myClusterRole"** to **"Secondary".**	[root@exhrNO-mrsvnc-b ~]# **top.setSecondary** - Using my cluster: A0200 - New Secondary Timestamp: 03/12/14 14:47:07.497 - Updating A0200.195: exhrNO-mrsvnc-b - Updating A0200.212: exhrNO-mrsvnc-a [root@exhrNO-mrsvnc-b ~]#
20. ☐	**Original Primary NOAM VIP (CLI):** Verify that the value for **"myClusterRole"** is now **"Secondary"**.	[root@exhrNO-mrsvnc-b ~]# **top.myrole** myNodeId=A0200.195 myMasterCapable=true myMateNodeId=A0200.212 myParentCluster=00000 myClusterRole=**Secondary** myClusterTimestamp=03/12/14 14:47:07.497 [root@exhrNO-mrsvnc-b ~]#
21. ☐	**Original Primary NOAM VIP (CLI):** Verify the current **PID** for the **"apwSoapServer"** process.	[root@exhrNO-mrsvnc-b ~]# **pl |grep apwSoapServer** A 12476 apwSoapServer Up 04/27 11:12:59 1 !CMNOSIGCHK=1 apwSoapServer [root@exhrNO-mrsvnc-b ~]#

Procedure 4: Demoting the Active NOAM from Primary to Secondary (Site_1)

22. ☐	**Original Primary NOAM VIP (CLI):** Restart the **"apwSoapServer"** process.	[root@exhrNO-mrsvnc-b ~]# **pm.kill apwSoapServer** [root@exhrNO-mrsvnc-b ~]#
23. ☐	**Original Primary NOAM VIP (CLI):** Verify that the **PID** for the **"apwSoapServer"** process has changed from the previous value shown in **Step 21** of this procedure.	[root@exhrNO-mrsvnc-b ~]# pl |grep apwSoapServer A 22653 apwSoapServer Up 04/27 11:12:59 1 !CMNOSIGCHK=1 apwSoapServer [root@exhrNO-mrsvnc-b ~]#
24. ☐	**Original Primary NOAM VIP (CLI):** Verify the current **PID** for the **"inetmerge"** process.	[root@exhrNO-mrsvnc-b ~]# **pl |grep inetmerge** A **31958** inetmerge Up 03/25 16:07:51 1 inetmerge [root@exhrNO-mrsvnc-b ~]#
25. ☐	**Original Primary NOAM VIP (CLI):** Restart the **"inetmerge"** process.	[root@exhrNO-mrsvnc-b ~]# **pm.kill inetmerge** [root@exhrNO-mrsvnc-b ~]#
26. ☐	**Original Primary NOAM VIP (CLI):** Verify that the **PID** for the **"inetmerge"** process has changed from the previous value shown in **Step 24** of this procedure.	[root@exhrNO-mrsvnc-b ~]# **pl |grep inetmerge** A **27175** inetmerge Up 03/25 19:06:47 2 inetmerge [root@exhrNO-mrsvnc-b ~]#
27. ☐	**Original Primary NOAM VIP (CLI):** Execute a manual alarm clear for **Event ID 14101**.	[root@exhrNO-mrsvnc-b ~]# **alarm.put -e 14101 -s 5** [root@exhrNO-mrsvnc-b ~]#
28. ☐	**Original Primary NOAM VIP (CLI):** **1) Logout** of the **"root"** user shell. **2) Logout** of the **Primary NOAM VIP (CLI)**.	[root@exhrNO-mrsvnc-b ~]# **exit** logout [admusr@exhrNO-mrsvnc-b ~]$ **exit** logout
This Procedure has been completed. Return to Figure 1.		

5.2 Promoting the DR NOAM from Secondary to Primary

Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

S T E P #	This procedure provides instructions on Promoting the DR NOAM from Secondary to Primary. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	

1. ☐	**DR NOAM VIP (CLI):**
	
	1) Access the command prompt **(CLI)**.
	
	2) Log into the server as the **"admusr"** user.
	
	NOTE: *The password will not appear on the screen as the characters are typed.*
		`Oracle Linux Server release 6.7`
		`Kernel 2.6.32-573.18.1.e15prerel7.0.3.0.0_86.44.0 on an x86_64`
		
		`exhrNO-rlghnc-a login: admusr`
		`Password: <admusr_password>`

2. ☐	**DR NOAM VIP (CLI):**
	
	Output similar to that shown on the right will appear as the server returns to a command prompt.
		***** TRUNCATED OUTPUT *****
		`RELEASE=6.4`
		`RUNID=00`
		`VPATH=/var/TKLC/rundb:/usr/TKLC/appworks:/usr/TKLC/awpcommon:/usr/TKLC/a`
		`wptransportmgr:/usr/TKLC/comagent-`
		`gui:/usr/TKLC/comagent:/usr/TKLC/awpss7:/usr/TKLC/exhr`
		`PRODPATH=/opt/comcol/prod`
		`RUNID=00`
		`[admusr@exhrNO-rlghnc-a ~]$`

3. ☐	**DR NOAM VIP (CLI):**
	
	Use the **"sudo"** command to become the **"root"** user.
		`[admusr@exhrNO-rlghnc-a ~]$ sudo su -`
		
		***** TRUNCATED OUTPUT *****
		`RELEASE=6.4`
		`RUNID=00`
		`VPATH=/var/TKLC/rundb:/usr/TKLC/appworks:/usr/TKLC/awpcommon:/usr/TKLC/a`
		`wptransportmgr:/usr/TKLC/comagent-`
		`gui:/usr/TKLC/comagent:/usr/TKLC/awpss7:/usr/TKLC/exhr`
		`PRODPATH=/opt/comcol/prod`
		`RUNID=00`
		`[root@exhrNO-rlghnc-a ~]#`

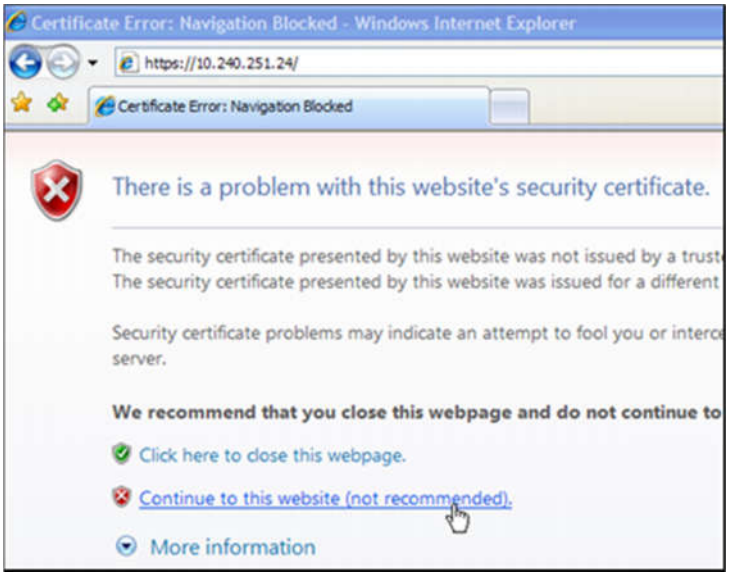
4. ☐	**DR NOAM VIP (CLI):**
	
	Verify that the current value for **"myClusterRole"** is **"Secondary"**.
		`[root@exhrNO-rlghnc-a ~]# top.myrole`
		`myNodeId=A2857.049`
		`myMasterCapable=true`
		`myMateNodeId=A2857.048`
		`myParentCluster=00000`
		`myClusterRole=Secondary`
		`myClusterTimestamp=01/01/70 00:00:00.000`
		`[root@exhrNO-rlghnc-a ~]#`

5. ☐	**DR NOAM VIP (CLI):**
	
	Set the value for **"myClusterRole"** to **"Primary".**
		`[root@exhrNO-rlghnc-a ~]# top.setPrimary`
		`- Using my cluster: A2857`
		`- New Primary Timestamp: 03/12/14 18:44:03.255`
		`- Updating A2857.048: exhrNO-rlghnc-a`
		`- Updating A2857.049: exhrNO-rlghnc-b`
		`[root@exhrNO-rlghnc-a ~]#`

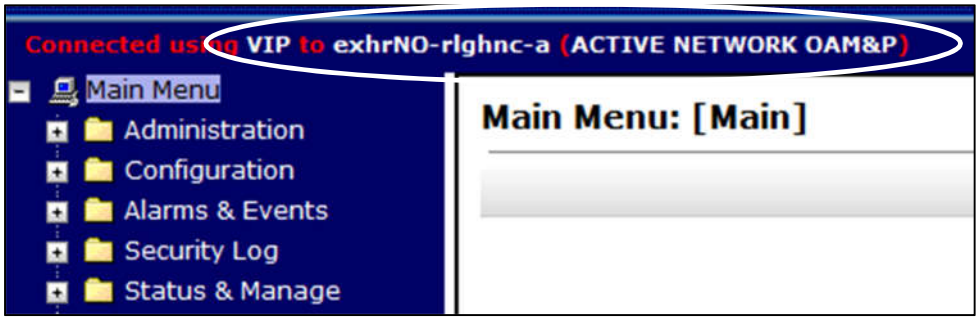
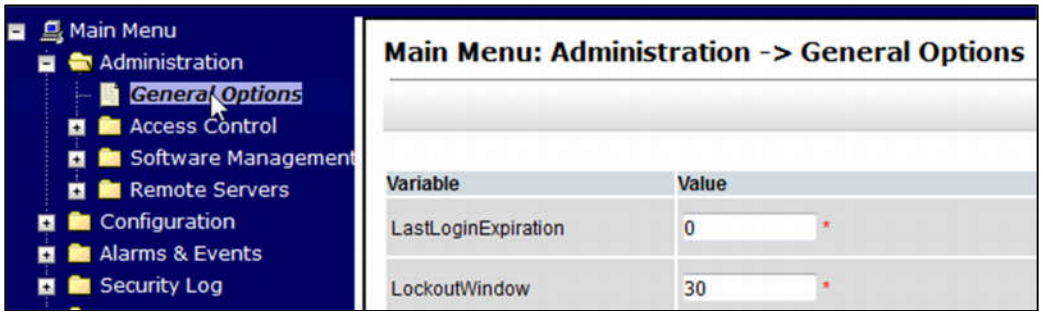
Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

6. ☐	**Primary NOAM VIP (CLI):**
	(promoted from DR)
	
	Verify that the value for **"myClusterRole"** is now **"Primary"**.
		`[root@exhrNO-rlghnc-a ~]# top.myrole`
		`myNodeId=A2857.049`
		`myMasterCapable=true`
		`myMateNodeId=A2857.048`
		`myParentCluster=00000`
		`myClusterRole=Primary`
		`myClusterTimestamp=03/12/14 18:44:03.255`
		`[root@exhrNO-rlghnc-a ~]#`

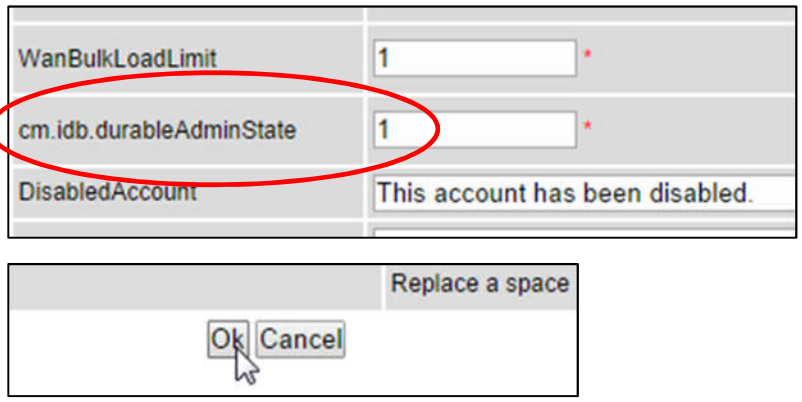
7. ☐	**Primary NOAM VIP (CLI):**
	(promoted from DR)
	
	1) Logout of the **"root"** user shell.
	
	2) Logout of the **Primary NOAM VIP (CLI)**.
		`[root@exhrNO-rlghnc-a ~]# exit`
		`logout`
		`[admusr@exhrNO-rlghnc-a ~]$ exit`
		`logout`

8. ☐	**Primary NOAM VIP:** *(promoted from DR)* **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to newly promoted **Primary Active NOAM site** (Site_2). **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	

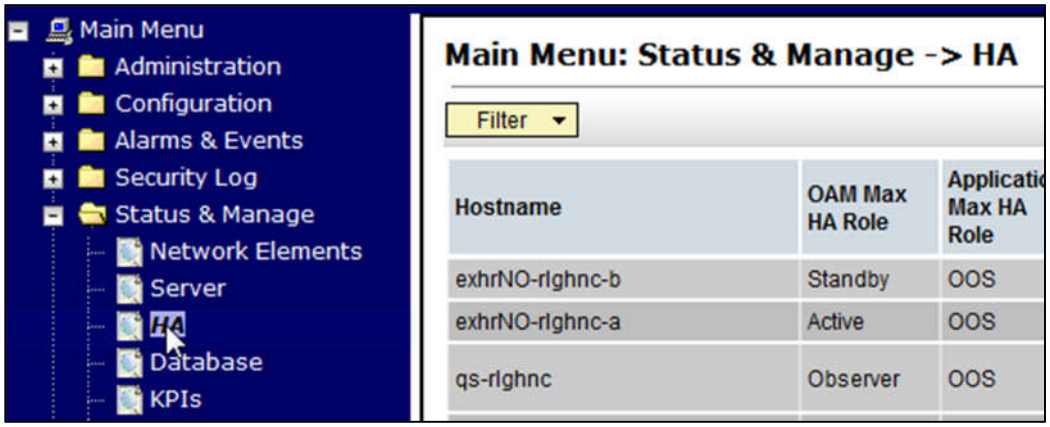
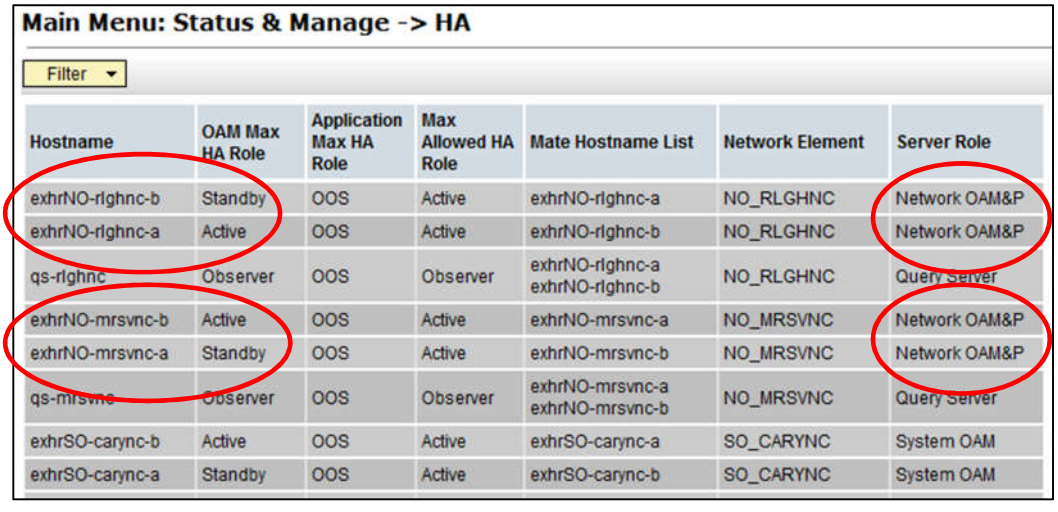
Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

9. ☐	**Primary NOAM VIP:** *(promoted from DR)* The user should be presented the login screen shown on the right. Login to the GUI using the default user and password. **NOTE:** *In an outage scenario (e.g. Primary NO site down or network isolated), login to the GUI of the newly promoted NO site can take a prolonged period of time. Please be patient and allow several minutes for the GUI login to complete.*	
10. ☐	**Primary NOAM VIP:** *(promoted from DR)* The user should be presented the Product Main Menu as shown on the right. **1)** Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".** **2)** Record the **Hostname** of the **Primary Active NOAM** server.	 Active NOAM Hostname: _____ **NOTE:** *The server **hostname** of the **"ACTIVE NETWORK OAM&P"** identifies the current **"Primary"** NOAM site.*
11. ☐	**Primary NOAM VIP:** *(promoted from DR)* Select… **Main Menu** → **Administration** → ***General Options*** …as shown on the right.	

Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

12. ☐	**Primary NOAM VIP:** *(promoted from DR)* **1)** Verify the value for the **"cm.idb. durableAdminState"**. **2)** If executing this procedure in response to a **network isolated Primary NOAM** *(outage)*, modify the **"cm.idb. durableAdminState"** value to **1** *(if necessary)* and click the **"OK"** dialogue button.	

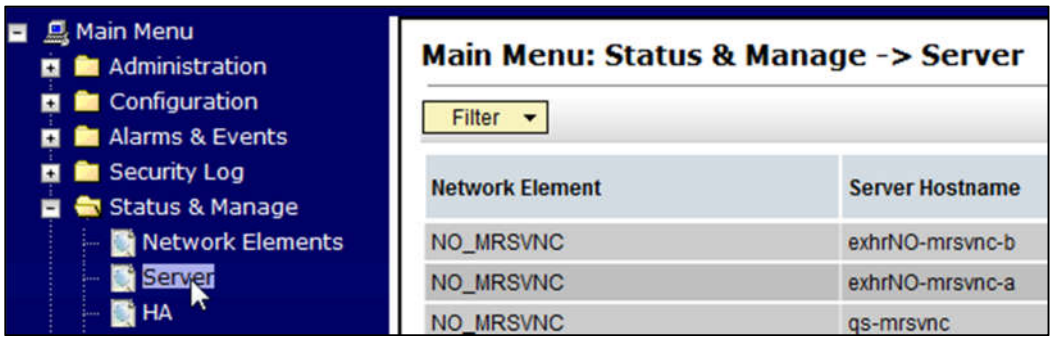
IF EXECUTING THIS PROCEDURE IN RESPONSE TO A NETWORK ISOLATED PRIMARY NOAM, SKIP THE REST OF THIS PROCEDURE AND RETURN TO FIGURE 1.

13. ☐	**Primary NOAM VIP:** *(promoted from DR)* Select… **Main Menu** → **Status & Manage** → ***HA*** …as shown on the right.	
14. ☐	**Primary NOAM VIP:** *(promoted from DR)* **1)** Use the server **hostname** recorded in **Step 10** of this procedure to identify the promoted **"Primary" NOAM** site. **2)** In the right panel, identify the current **Primary Active**, **Primary Standby**, **Secondary Active (DR)** and **Secondary Standby** NOAM Servers.	

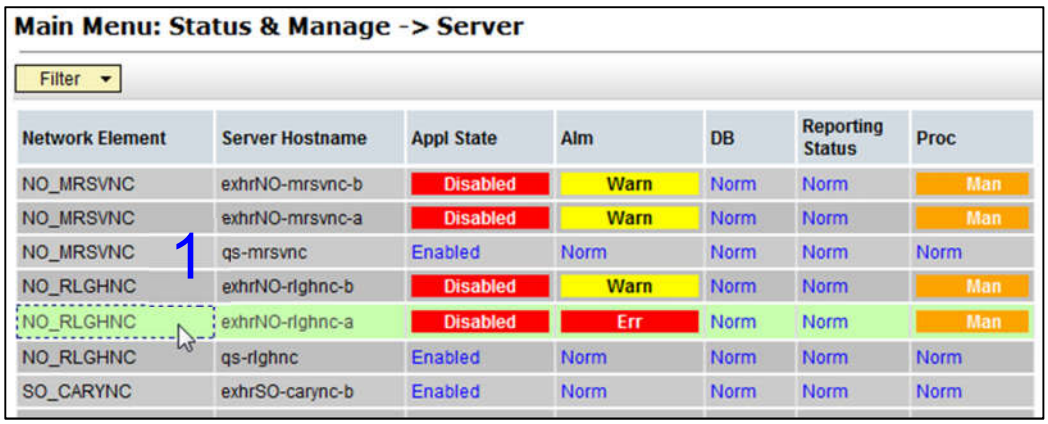
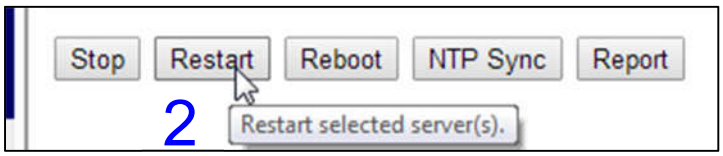
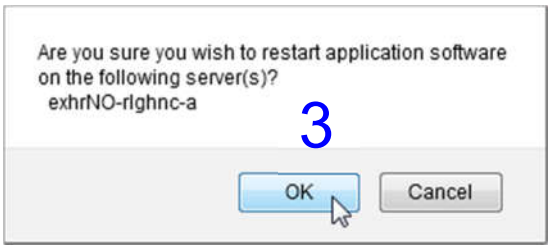
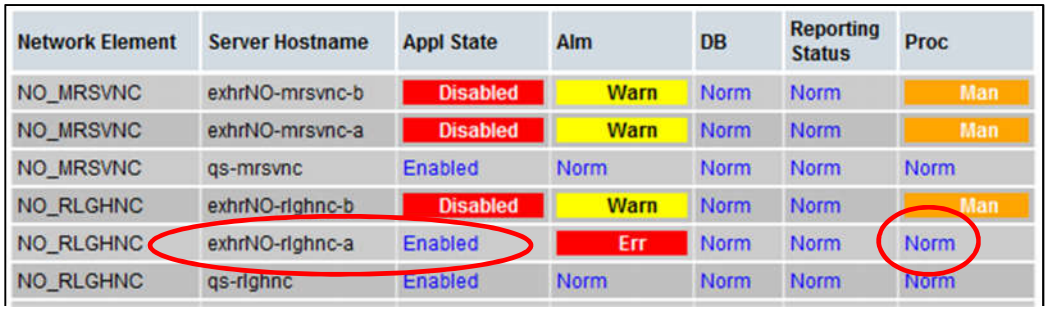
Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

!!! WARNING !!! DO NOT SKIP THE FOLLOWING STEP!

"Active/Standby" states for each NOAM server must be recorded as it is Critical that the SW on each server be restarted in the exact order specified in Steps 17 - 21 of this procedure.

15. ☐	**Primary NOAM VIP:** *(promoted from DR)* Based on the information identified in the previous step, record the hostnames of the Primary Active, Primary Standby, Secondary Active (DR) and Secondary Standby NOAM Servers.	Site_2 = Primary_NOAM (Active) = _____ Site_2 = Primary_NOAM (Standby) = _____ Site_1 = DR_NOAM (Active) = _____ Site_1 = DR_NOAM (Standby) = _____
16. ☐	**Primary NOAM VIP:** *(promoted from DR)* Select… **Main Menu** **→ Status & Manage** **→ *Server*** …as shown on the right.	

Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

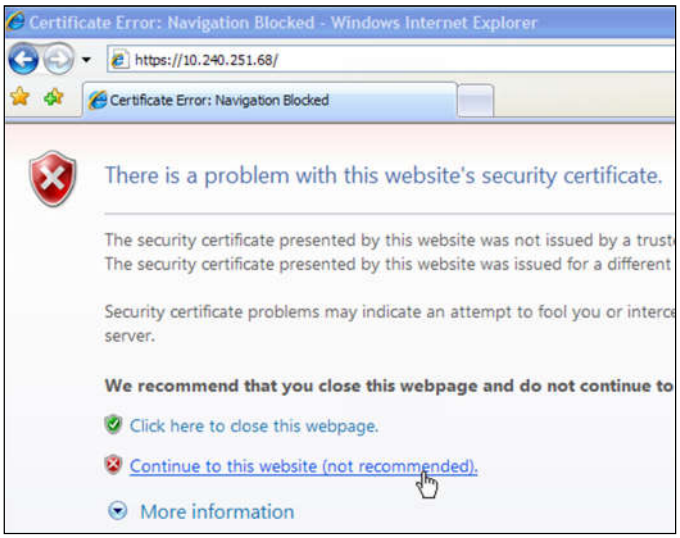
17. ☐	**Primary NOAM VIP:** *(promoted from DR)* Based on the information recorded in **Step 15** of this procedure… Perform the below sub-steps on the newly promoted **Primary NOAM *"Active"*** Server (Site_2). **1)** Select the Server in the right panel *(highlight will occur)*. **2)** Click the **"Restart"** dialogue button in the button of the right panel. **3)** Click **"OK"** in the pop-up confirmation dialogue box. **NOTE:** *Alarms will begin to generate at this time including but not limited to **Event ID(s): 10075, 31102, 31106 & 31107**.*	  
18. ☐	**Primary NOAM VIP:** *(promoted from DR)* After the screen refresh, verify that the server now shows an **Appl State** value of **"Enabled"** and a **Proc** value of **"Norm".**	
19. ☐	**Primary NOAM VIP:** *(promoted from DR)* **"Restart"** the SW on the **Primary NOAM *"Standby"*** Server.	Repeat **Steps 17 - 18** of this Procedure for the **Primary NOAM *"Standby"*** Server.
20. ☐	**Primary NOAM VIP:** *(promoted from DR)* **"Restart"** the SW on the **DR NOAM *"Standby"*** Server.	Repeat **Steps 17 - 18** of this Procedure for the **DR NOAM *"Standby"*** Server.

Procedure 5: Promoting the DR NOAM from Secondary to Primary (Site_2)

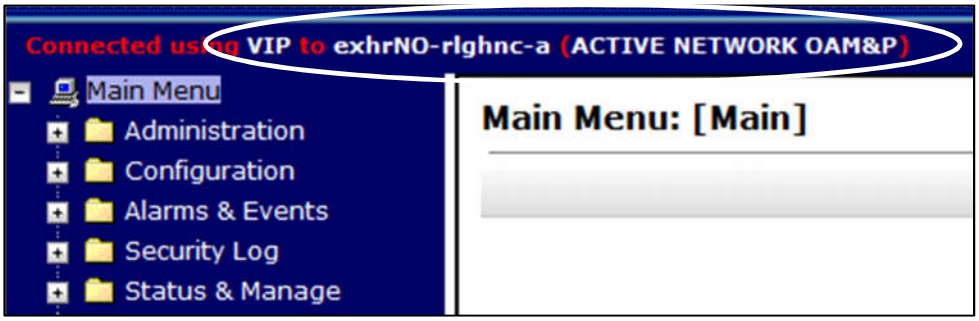
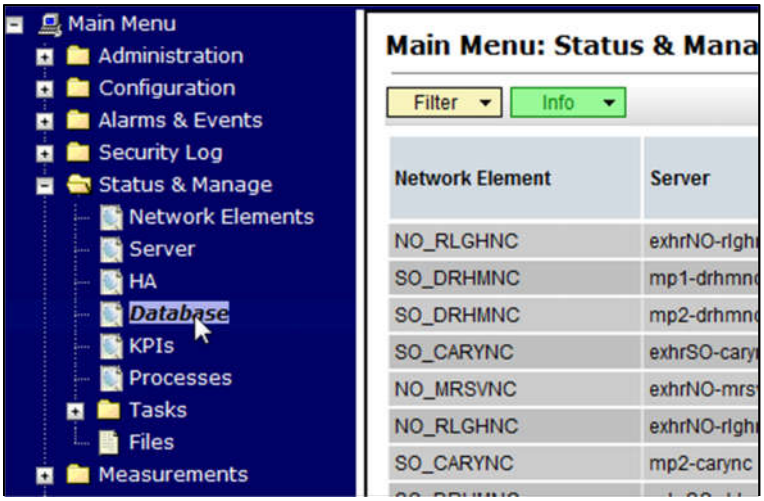
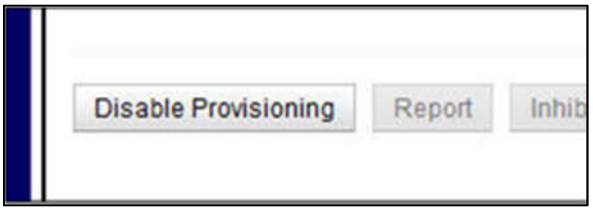
21. ☐	**Primary NOAM VIP:** *(promoted from DR)* **"Restart"** the SW on the **DR NOAM *"Active"*** Server.	Repeat **Steps 17 - 18** of this Procedure for the **DR NOAM *"Active"*** Server.
This Procedure has been completed. Return to Figure 1.		

5.3 Enable Global Provisioning

Procedure 6: Enable Global Provisioning (Site_2)

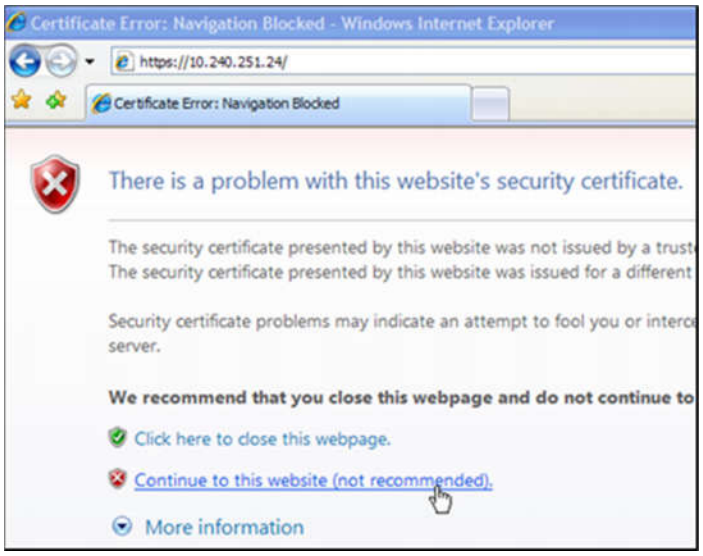
S T E P #	This procedure provides instructions on "Enable Global Provisioning" at the "newly promoted" Primary NOAM GUI. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	
1. ☐	**Primary NOAM VIP:** **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to **Primary Active NOAM site.** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	
2. ☐	**Primary NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using an **"Admin"** level user and password.	

Procedure 6: Enable Global Provisioning (Site_2)

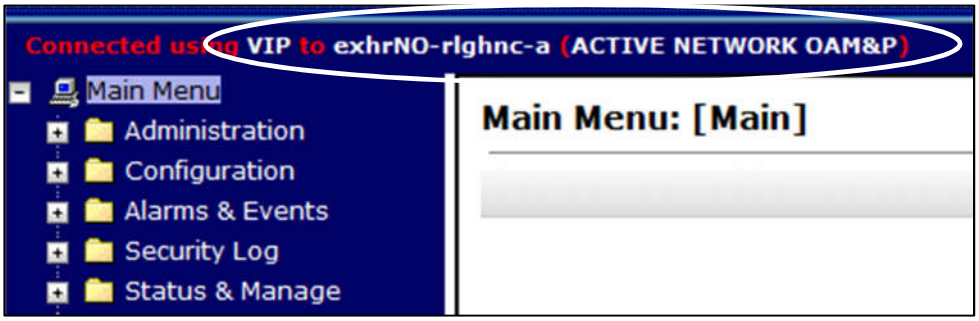
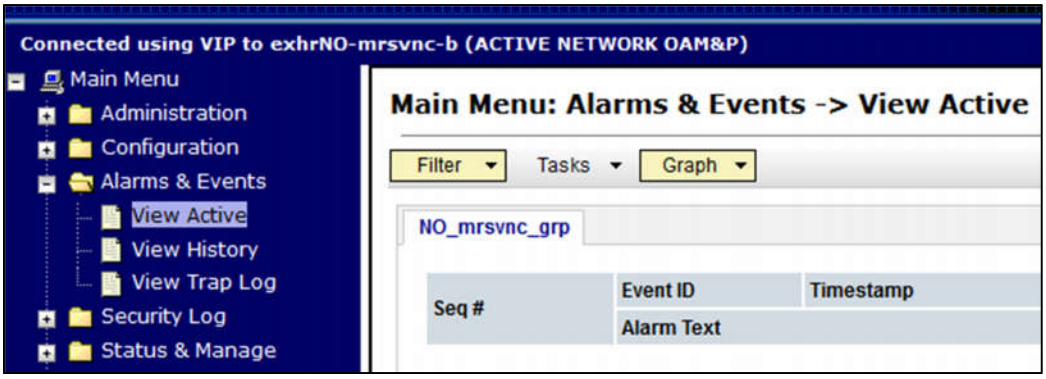
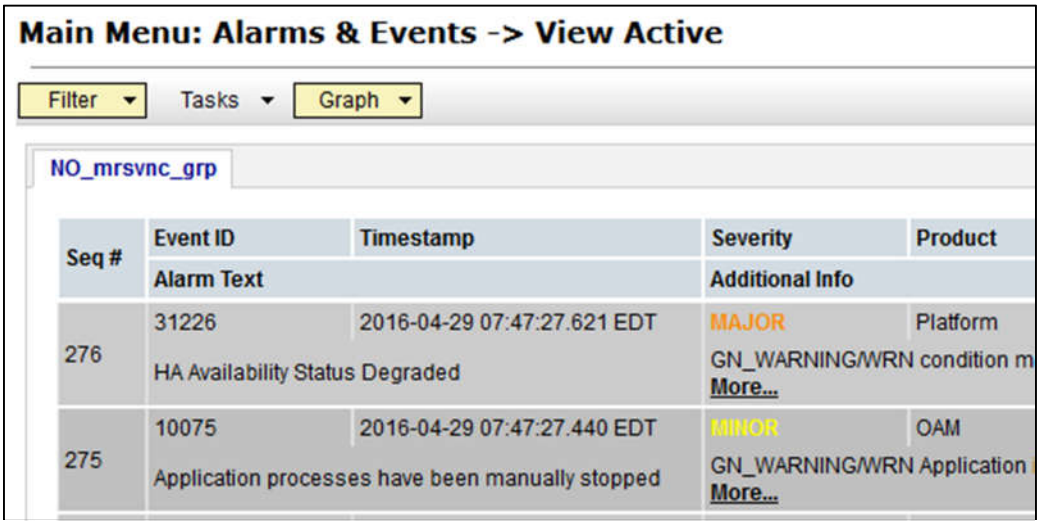
3. ☐	**Primary NOAM VIP:** The user should be presented the Product Main Menu as shown on the right. Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".**	
4. ☐	**Primary NOAM VIP:** Select… **Main Menu** **→ Status & Manage** **→ *Database*** …as shown on the right.	
5. ☐	**Primary NOAM VIP:** **1)** Select the **"Enable Provisioning"** dialogue button located at the bottom of the right panel. **2)** Click **"OK"** on the pop-up confirmation dialogue box.	
6. ☐	**Primary NOAM VIP:** Verify that the dialogue button located at the bottom of the right panel now displays the text **"Disable Provisioning".**	
This Procedure has been completed.		

6.0 Verifying Alarm Status (after failover)

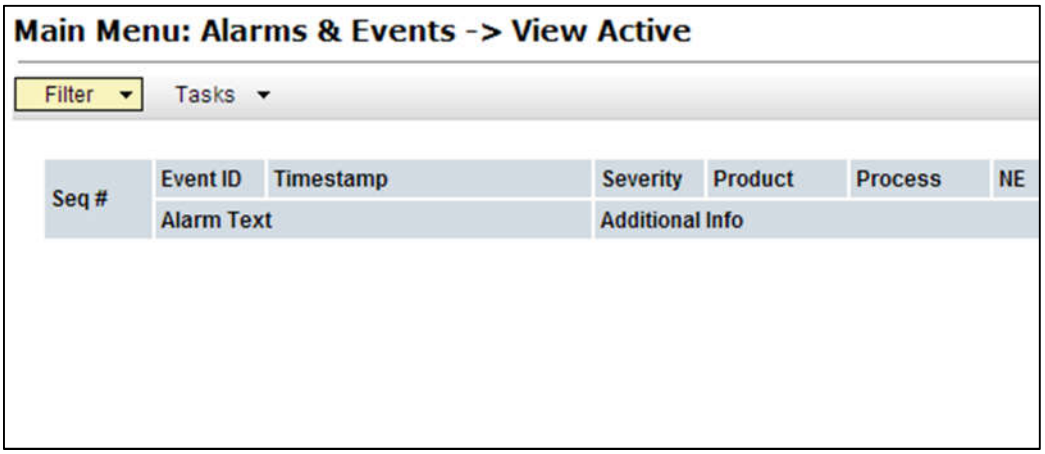
Procedure 7: Verify Alarm Status (system wide) at the Active Primary NOAM

S T E P #	This procedure provides instructions on verifying alarms at the Primary Active NOAM. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	
1. ☐	**Primary NOAM VIP:** **1)** Launch **Internet Explorer 8.x** or higher and connect to the XMI Virtual IP address (VIP) assigned to newly promoted **Primary Active NOAM site.** **2)** If a Certificate Error is received, click on the link which states… **"Continue to this website (not recommended)."**	
2. ☐	**Primary NOAM VIP:** The user should be presented the login screen shown on the right. Login to the GUI using the default user and password.	

Procedure 7: Verify Alarm Status (system wide) at the Active Primary NOAM

3. ☐	**Primary NOAM VIP:** The user should be presented the Product Main Menu as shown on the right. Verify that the banner message shown across the top of the right panel indicates that the browser is using the **"VIP"** to connect to the **"ACTIVE NETWORK OAM&P".**	
4. ☐	**Primary NOAM VIP:** Select… **<u>Main Menu</u>** **→ Alarm & Events** **→ *View Active*** …as shown on the right.	
5. ☐	**Primary NOAM VIP:** The user is presented with the current list of Active Alarms. **NOTE:** *Alarms visible at this time may include but are not limited to* ***Event ID(s): 10075, 14152, 14201, 14203, 31102, 31102, 31106, 31107 & 31214****.*	

Procedure 7: Verify Alarm Status (system wide) at the Active Primary NOAM

6. ☐	**Primary NOAM VIP:** Monitor the current list of "Active" alarms until all alarms associated with the Failover have cleared. **NOTE:** *The user should allow at least **15 minutes** for resulting alarms to clear before attempting any troubleshooting activities.*	
7. ☐	**Primary NOAM VIP:** Contact "My Oracle Support" (MOS) if assistance is needed in clearing any persistent or reoccurring alarms.	• Refer to **Appendix A:** *Accessing My Oracle Support (MOS)*, for more information on contacting Oracle Customer Service. **NOTE:** *If alarms fail to clear that are related to features that use **SSH key exchange** based **file transfer** and the user wishes to re-enable them prior to performing a Failover back to the original Primary/Secondary states, then the feature may be reconfigured using the product feature's initial configuration procedures.* *Here is a partial list of features that use **SSH key exchange** based file transfer:* ○ ***HLRR:** provimport, provexport, PDE, APDE* ○ ***HLRR:** Alarms related to **SSH key exchange** based file transfer may include but are not limited to **Event ID(s): 14152, 14201, 14203 & 31214**.*
This Procedure has been completed. Return to Figure 1.		

7.0 Backout Procedure

Procedure 8: Reversing Primary/Secondary NOAM Failover (Backout)

S T E P #	This procedure provides instructions on reversing Primary/DR NOAM Failover. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. IF THIS PROCEDURE FAILS, CONTACT "MY ORACLE SUPPORT" (MOS) FOR ASSISTANCE.	
7. ☐	**Repeat Procedures in Figure 1.**	**The user should recognize that the Primary/Secondary NOAM statuses are now reversed from what they were prior to the execution of this procedure!!!** Replace the **Site_1** and **Site_2** names in the bottom of **Figure 1** according to the **real-time** status **(Primary/Secondary)** for each **NOAM** site and follow the **Figure 1** Flowchart.
This Procedure has been completed.		

APPENDIX A: ACCESSING MY ORACLE SUPPORT (MOS)

My Oracle Support

My Oracle Support (MOS) (*https://support.oracle.com*) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at **1-800-223-1711** (toll-free in the US), or call the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. When calling, there are multiple layers of menus selections. Make the selections in the sequence shown below on the Support telephone menu:

1. For the first set of menu options, select 2, "New Service Request". You will hear another set of menu options.
2. In this set of menu options, select 3, "Hardware, Networking and Solaris Operating System Support". A third set of menu options begins.
3. In the third set of options, select 2, "Non-technical issue". Then you will be connected to a live agent who can assist you with MOS registration and provide Support Identifiers. Simply mention you are a Tekelec Customer new to MOS.

MOS is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the CAS main number at **1-800-223-1711** (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Locate Product Documentation on the Oracle Help Center Site

Oracle customer documentation is available on the web at the Oracle Help Center (OHC) site, http://docs.oracle.com. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

1. Access the OHC site at http://docs.oracle.com.
2. Click **Industries**.
3. Under the Oracle Communications subheading, click the **Oracle Communications documentation** link.

   The Communications Documentation page appears. Most products covered by these documentation sets will appear under the headings "Network Session Delivery and Control Infrastructure" or "Platforms."
4. Click the Product and then the Release Number. A list of the entire documentation set for the selected product and release appears.
5. To download a file to your location, right-click the PDF link, select **Save target as** (or similar command based on your browser), and save to a local folder.